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 September 30, 2020

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 **(State or other jurisdiction of incorporation or organization)**	**52-2230784** **(IRS Employer Identification No.)**
55 Hudson Yards, 15th Floor New York, New York **(Address of principal executive offices)**	**10001** **(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 October 28, 2020, the number of shares of the Registrant's voting common stock outstanding was 37,963,482.

MARKETAXESS HOLDINGS INC.
FORM 10-Q FOR THE QUARTERLY PERIOD ENDED SEPTEMBER 30, 2020
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PART I — Financial Information

Item 1. Financial Statements

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

	As of	
	September 30, 2020	**December 31, 2019**
	(In thousands, except share and per share amounts)	
ASSETS		
Cash and cash equivalents	$ 310,368	$ 270,12
Cash segregated under federal regulations	50,033	—
Investments, at fair value	31,274	230,47
Accounts receivable, net of allowance of $166 and $57 as of September 30, 2020 and December 31, 2019, respectively	81,706	62,01
Receivables from broker-dealers, clearing organizations and customers	380,853	—
Goodwill	147,388	146,86
Intangible assets, net of accumulated amortization	58,873	60,98
Furniture, equipment, leasehold improvements and capitalized software, net of accumulated depreciation and amortization	82,074	71,79
Operating lease right-of-use assets	76,692	81,39
Prepaid expenses and other assets	26,191	30,77
Deferred tax assets, net	52	50
Total assets	$ 1,245,504	$ 954,93
LIABILITIES AND STOCKHOLDERS' EQUITY		
Liabilities		
Accrued employee compensation	$ 50,926	$ 47,36
Payables to broker-dealers, clearing organizations and customers	138,120	—
Income and other tax liabilities	34,822	16,69
Deferred revenue	5,092	3,49
Accounts payable, accrued expenses and other liabilities	25,297	19,29
Operating lease liabilities	93,708	97,99
Total liabilities	347,965	184,83
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 September 30, 2020 and December 31, 2019	$ —	$ —
Series A Preferred Stock, $0.001 par value, 110,000 shares authorized, no shares issued and outstanding as of September 30, 2020 and December 31, 2019	—	—
Common stock voting, $0.003 par value, 110,000,000 shares authorized, 40,809,252 shares and 40,746,593 shares issued and 37,964,882 shares and 37,935,984 shares outstanding as of September 30, 2020 and December 31, 2019, respectively	122	12
Common stock non-voting, $0.003 par value, 10,000,000 shares authorized, no shares issued and outstanding as of September 30, 2020 and December 31, 2019	—	—
Additional paid-in capital	327,646	342,54
Treasury stock - Common stock voting, at cost, 2,844,370 and 2,810,609 shares as of September 30, 2020 and December 31, 2019, respectively	(168,841)	(153,38
Retained earnings	749,211	591,08
Accumulated other comprehensive loss	(10,599)	(10,27
Total stockholders' equity	897,539	770,09
Total liabilities and stockholders' equity	$ 1,245,504	$ 954,93

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

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(Unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
	(In thousands, except per share amounts)			
Revenues				
Commissions	$ 150,586	$ 119,869	$ 478,632	$ 346,753
Information services	8,501	7,693	25,570	22,215
Post-trade services	4,689	3,784	12,896	11,840
Other	230	251	681	770
Total revenues	164,006	131,597	517,779	381,578
Expenses				
Employee compensation and benefits	37,583	32,681	120,413	97,962
Depreciation and amortization	9,032	6,700	25,404	19,127
Technology and communications	8,417	7,381	25,170	19,637
Professional and consulting fees	8,269	7,018	22,009	19,145
Occupancy	3,445	2,802	10,205	8,549
Marketing and advertising	1,148	2,506	5,633	8,472
Clearing costs	4,838	2,782	16,061	7,969
General and administrative	3,467	3,762	9,853	10,686
Total expenses	76,199	65,632	234,748	191,547
Operating income	87,807	65,965	283,031	190,031
Other income (expense)				
Investment income	344	2,211	2,327	6,296
Interest expense	(1,046)	—	(1,046)	—
Other, net	860	(838)	(242)	(860)
Total other income (expense)	158	1,373	1,039	5,436
Income before income taxes	87,965	67,338	284,070	195,467
Provision for income taxes	20,189	13,336	57,624	40,838
Net income	$ 67,776	$ 54,002	$ 226,446	$ 154,629
Net income per common share				
Basic	$ 1.81	$ 1.46	$ 6.06	$ 4.17
Diluted	$ 1.78	$ 1.42	$ 5.94	$ 4.08
Cash dividends declared per common share	$ 0.60	$ 0.51	$ 1.80	$ 1.53
Weighted average shares outstanding				
Basic	37,386	37,066	37,343	37,053
Diluted	38,160	37,995	38,129	37,913

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

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

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	**2019**	**2020**	**2019**
	(In thousands)			
Net income	$ 67,776	$ 54,002	$ 226,446	$ 154,629
Net cumulative translation adjustment and foreign currency exchange hedge, net of tax of $1,654, $1,021, $(908) and $1,281, respectively	4,423	(1,416)	213	(1,398)
Net unrealized (loss) gain on securities available-for-sale, net of tax of $(276), $22, $(172), and $309, respectively	(871)	70	(542)	988
Comprehensive income	$ 71,328	$ 52,656	$ 226,117	$ 154,219

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 Stockholder Equity
	(In thousands, except per share amounts)					
Balance at January 1, 2020	$ 122	$ 342,541	$ (153,388)	$ 591,086	$ (10,270)	$ 770,0
Net income	—	—	—	74,816	—	74,8
Cumulative translation adjustment and foreign currency exchange hedge, net of tax	—	—	—	—	(3,859)	(3,8
Unrealized net loss on securities available-for-sale, net of tax	—	—	—	—	(491)	(4
Stock-based compensation	—	6,677	—	—	—	6,6
Exercise of stock options	—	80	—	—	—	
Withholding tax payments on restricted stock vesting and stock option exercises	—	(21,243)	—	—	—	(21,2
Repurchases of common stock	—	—	(5,415)	—	—	(5,4
Cash dividend on common stock ($0.60 per share)	—	—	—	(22,773)	—	(22,7
Balance at March 31, 2020	122	328,055	(158,803)	643,129	(14,620)	797,8
Net income	—	—	—	83,854	—	83,8
Cumulative translation adjustment and foreign currency exchange hedge, net of tax	—	—	—	—	(351)	(3
Unrealized net gain on securities available-for-sale, net of tax	—	—	—	—	820	8
Stock-based compensation	—	5,791	—	—	—	5,7
Exercise of stock options	—	659	—	—	—	6
Withholding tax payments on restricted stock vesting and stock option exercises	—	(6,535)	—	—	—	(6,5
Repurchases of common stock	—	—	(5,873)	—	—	(5,8
Cash dividend on common stock ($0.60 per share)	—	—	—	(22,764)	—	(22,7
Balance at June 30, 2020	122	327,970	(164,676)	704,219	(14,151)	853,4
Net income	—	—	—	67,776	—	67,7
Cumulative translation adjustment and foreign currency exchange hedge, net of tax	—	—	—	—	4,423	4,4
Unrealized net loss on securities available-for-sale, net of tax	—	—	—	—	(871)	(8
Stock-based compensation	—	6,451	—	—	—	6,4
Exercise of stock options	—	9	—	—	—	
Withholding tax payments on restricted stock vesting and stock option exercises	—	(6,784)	—	—	—	(6,7
Repurchases of common stock	—	—	(4,165)	—	—	(4,1
Cash dividend on common stock ($0.60 per share)	—	—	—	(22,784)	—	(22,7
Balance at September 30, 2020	$ 122	$ 327,646	$ (168,841)	$ 749,211	$ (10,599)	$ 897,5

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, 2019	$ 122	$ 341,860	$ (184,962)	$ 463,252	$ (12,394)	$ 607,878
Net income	—	—	—	52,522	—	52,522
Cumulative translation adjustment and foreign currency exchange hedge, net of tax	—	—	—	—	1,118	1,118
Unrealized net gain on securities available-for-sale, net of tax	—	—	—	—	459	459
Stock-based compensation	—	5,196	—	—	—	5,196
Exercise of stock options	—	172	—	—	—	172
Withholding tax payments on restricted stock vesting and stock option exercises	—	(11,803)	—	—	—	(11,803)
Repurchases of common stock	—	—	(5,184)	—	—	(5,184)
Cash dividend on common stock ($0.51 per share)	—	—	—	(19,212)	—	(19,212)
Balance at March 31, 2019	122	335,425	(190,146)	496,562	(10,817)	631,146
Net income	—	—	—	48,105	—	48,105
Cumulative translation adjustment and foreign currency exchange hedge, net of tax	—	—	—	—	(1,100)	(1,100)
Unrealized net gain on securities available-for-sale, net of tax	—	—	—	—	459	459
Stock-based compensation	—	5,929	—	—	—	5,929
Exercise of stock options	—	350	—	—	—	350
Withholding tax payments on restricted stock vesting and stock option exercises	—	(258)	—	—	—	(258)
Repurchases of common stock	—	—	(3,486)	—	—	(3,486)
Cash dividend on common stock ($0.51 per share)	—	—	—	(19,237)	—	(19,237)
Balance at June 30, 2019	122	341,446	(193,632)	525,430	(11,458)	661,908
Net income	—	—	—	54,002	—	54,002
Cumulative translation adjustment and foreign currency exchange hedge, net of tax	—	—	—	—	(1,416)	(1,416)
Unrealized net gain on securities available-for-sale, net of tax	—	—	—	—	70	70
Stock-based compensation	—	7,944	—	—	—	7,944
Exercise of stock options	—	363	—	—	—	363
Withholding tax payments on restricted stock vesting and stock option exercises	—	(6,210)	—	—	—	(6,210)
Repurchases of common stock	—	—	(2,770)	—	—	(2,770)
Cash dividend on common stock ($0.51 per share)	—	—	—	(19,268)	—	(19,268)
Balance at September 30, 2019	$ 122	$ 343,543	$ (196,402)	$ 560,164	$ (12,804)	$ 694,623

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

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

	Nine Months Ended September 30,	
	2020	2019
	(In thousands)	
Cash flows from operating activities		
Net income	$ 226,446	$ 154,629
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	25,404	19,127
Amortization of operating lease right-of-use assets	5,146	4,304
Stock-based compensation expense	18,919	19,069
Deferred taxes	8,655	73
Other	727	886
Changes in operating assets and liabilities:		
(Increase) in accounts receivable	(20,232)	(15,479)
(Increase) in receivables from broker-dealers, clearing organizations and customers	(304,023)	—
Decrease in prepaid expenses and other assets	521	3,855
Decrease (increase) in trading investments	62,636	(371)
(Increase) in mutual funds held in rabbi trust	(1,819)	(1,770)
Increase (decrease) in accrued employee compensation	3,561	(3,971)
Increase in payables to broker-dealers, clearing organizations and customers	138,120	—
Increase (decrease) in income and other tax liabilities	10,098	(3,279)
Increase in deferred revenue	1,593	921
Increase (decrease) in accounts payable, accrued expenses and other liabilities	5,786	(2,000)
(Decrease) increase in operating lease liabilities	(4,669)	800
Net cash provided by operating activities	176,869	176,794
Cash flows from investing activities		
Acquisition of business, net of cash and cash equivalents acquired	(527)	—
Available-for-sale investments		
Proceeds from maturities and sales	170,657	156,809
Purchases	(32,865)	(149,575)
Purchases of furniture, equipment and leasehold improvements	(13,022)	(8,683)
Capitalization of software development costs	(21,124)	(13,863)
Other	—	22
Net cash provided by (used in) investing activities	103,119	(15,290)
Cash flows from financing activities		
Cash dividend on common stock	(68,104)	(57,233)
Exercise of stock options	748	885
Withholding tax payments on restricted stock vesting and stock option exercises	(34,562)	(18,271)
Repurchases of common stock	(15,453)	(11,440)
Proceeds from short-term borrowings	478,356	—
Repayments of short-term borrowings	(478,356)	—
Net cash (used in) financing activities	(117,371)	(86,059)
Effect of exchange rate changes on cash and cash equivalents	431	(1,261)
Cash and cash equivalents including restricted cash		
Net increase for the period	163,048	74,184
Beginning of period	274,253	247,458
End of period	$ 437,301	$ 321,642
Supplemental cash flow information		
Non-cash activity		
Operating lease right-of-use assets obtained in exchange for operating lease liabilities	$ 705	$ 422

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 1,700 institutional investor and broker-dealer firms are active users of MarketAxess’ 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 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 offers 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, 2019. The consolidated financial information as of December 31, 2019 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.

Accounting Pronouncements, Recently Adopted

In August 2018, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update (“ASU”) 2018-15, “Intangibles—Goodwill and Other—Internal-Use Software: Customer’s Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract” (“ASU 2018-15”). The standard requires the capitalization of implementation costs incurred in a cloud computing arrangement to be aligned with the requirements for capitalizing costs incurred to develop or obtain internal-use software. The updated guidance is effective for annual and interim reporting periods beginning after December 15, 2019, with early adoption permitted. The Company adopted ASU 2018-15 effective July 1, 2019 on a prospective basis. Adoption of this guidance did not have a material impact on the Company’s Consolidated Financial Statements.

In January 2017, the FASB issued ASU 2017-04, “Intangibles-Goodwill and Other” (“ASU 2017-04”). ASU 2017-04 simplifies the testing for goodwill impairment, which eliminates the requirement to determine the fair value of individual assets and liabilities of a reporting unit to measure goodwill impairment. Instead, goodwill impairment testing will be performed by comparing the fair value of the reporting unit with its carrying amount and recognizing impairment by which the carrying amount exceeds the reporting unit’s fair value. The Company adopted ASU 2017-04 effective January 1, 2020 on a prospective basis. Adoption of this guidance did not have a material impact on the Company’s Consolidated Financial Statements.

Cash and Cash Equivalents

Cash and cash equivalents includes cash and money market instruments that are primarily maintained at two major global banks. Given this concentration, the Company is exposed to certain credit risk in relation to its deposits at these banks. 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. The Company's available-for-sale investments are comprised of investment grade corporate debt securities. 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 and U.S. Treasuries and are carried at fair value, with realized and unrealized gains or losses included in other, net in the Consolidated Statements of Operations.

The Company assesses whether an other-than-temporary impairment loss on the available-for-sale investments has occurred due to declines in fair value or other market conditions. The portion of an other-than-temporary impairment related to credit loss is recorded as a charge to other, net income in the Consolidated Statements of Operations. The remainder is recognized in accumulated other comprehensive loss if the Company does not intend to sell the security and it is more likely than not that the Company will not be required to sell the security prior to recovery. No charges for other-than-temporary losses were recorded during the three and nine months ended September 30, 2020 and 2019, respectively.

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's U.S. broker-dealer subsidiary 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 Doubtful Accounts

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 doubtful accounts is based upon the historical collection experience and specific collection issues that have been identified. Additions to the allowance for doubtful accounts are charged to bad debt expense, which is included in general and administrative expense in the Company's Consolidated Statements of Operations.

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 pre-paid asset on the balance sheet 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 platforms and, under certain plans, distribution fees or monthly minimum fees to use the platforms for a particular product area. Variable transaction fees are recognized on a trade date basis and 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. Under the Company's disclosed trading transaction fee plans, 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. 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 revenue for these trades is recorded on a trade-date basis. 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 September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
	(In thousands)			
Commission revenue by fee type				
Variable transaction fees				
Disclosed trading	$ 80,354	$ 69,541	$ 260,233	$ 202,905
Open Trading - matched principal trading	40,565	26,444	128,296	72,934
U.S. Treasuries - matched principal trading	2,264	—	9,851	—
Total variable transaction fees	123,183	95,985	398,380	275,839
Distribution fees and unused minimum fees	27,403	23,884	80,252	70,914
Total commissions	$ 150,586	$ 119,869	$ 478,632	$ 346,753

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 September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
	(In thousands)			
Information services revenue by timing of recognition				
Services transferred over time	$ 8,227	$ 7,203	$ 23,852	$ 21,472
Services transferred at a point in time	274	490	1,718	743
Total information services revenues	$ 8,501	$ 7,693	$ 25,570	$ 22,215

Post-trade services – Post-trade services revenue is generated from regulatory transaction reporting, trade publication and trade matching services. Customers are generally billed 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 September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
	(In thousands)			
Post-trade services revenue by timing of recognition				
Services transferred over time	$ 4,557	$ 3,775	$ 12,655	$ 11,811
Services transferred at a point in time	132	9	241	29
Total post-trade services revenues	$ 4,689	$ 3,784	$ 12,896	$ 11,840

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, 2019	Payments received in advance of services to be performed	Revenue recognized for services performed during the period	Foreign Currency Translation	September 30, 2020
			(In thousands)		
Information services	$ 2,138	$ 7,467	$ (6,093)	$ —	$ 3,512
Post-trade services	1,361	11,490	(11,234)	(37)	1,580
Total deferred revenue	$ 3,499	$ 18,957	$ (17,327)	$ (37)	$ 5,092

The majority of the Company's contracts are short-term in nature with durations of less than one year. For contracts extending beyond one year, the aggregate amount of the transaction price allocated to remaining performance obligations was $27.3 million as of September 30, 2020. The Company expects to recognize revenue associated with the remaining performance obligations over the next 23 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 through tax expense 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. Subsequent to 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 September 30, 2020, 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 September 30, 2020, the Company's subsidiaries maintained aggregate net capital and financial resources that was $305.6 million in excess of the required levels of $23.7 million.

In August 2020, one of the Company's U.S. broker-dealer subsidiaries converted to a self-clearing model for the U.S. bond trades to which it is a counterparty via its Open Trading™ functionality. Previously, these bond transactions were settled through a third-party clearing broker. As a result of this conversion, the broker-dealer subsidiary 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 September 30, 2020, the broker-dealer subsidiary had a balance of $50.0 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 September 30, 2020				
Money market funds	$ 24,424	$ —	$ —	$ 24,424
Securities available-for-sale				
Corporate debt	—	—	—	—
Trading securities				
Corporate debt	—	23,237	—	23,237
Mutual funds held in rabbi trust	—	8,037	—	8,037
Foreign currency forward position	—	(1,932)	—	(1,932)
Total	$ 24,424	$ 29,342	$ —	$ 53,766
As of December 31, 2019				
Money market funds	$ 99,755	$ —	$ —	$ 99,755
Securities available-for-sale				
Corporate debt	—	137,835	—	137,835
Trading securities				
Corporate debt	—	31,120	—	31,120
U.S. Treasuries	—	55,305	—	55,305
Mutual funds held in rabbi trust	—	6,217	—	6,217
Foreign currency forward position	—	(2,772)	—	(2,772)
Total	$ 99,755	$ 227,705	$ —	$ 327,460

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 nine months ended September 30, 2020 and 2019.

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 September 30, 2020						
Financial assets not measured at fair value:						
Cash and cash equivalents	$ 310,368	$ 310,368	$ 310,368	$ —	$ —	$ 310,368
Cash segregated under federal regulations	50,033	50,033	50,033	—	—	50,033
Receivables from broker-dealers, clearing organizations and customers	380,853	380,853	76,830	304,023	—	380,853
Total	$ 741,254	$ 741,254	$ 437,231	$ 304,023	$ —	$ 741,254
Financial liabilities not measured at fair value:						
Payables to broker-dealers, clearing organizations and customers	$ 138,120	$ 138,120	$ —	$ 138,120	$ —	$ 138,120
As of December 31, 2019						
Financial assets not measured at fair value:						
Cash and cash equivalents	$ 270,124	$ 270,124	$ 270,124	$ —	$ —	$ 270,124

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. A summary of the Company's foreign currency forward position is as follows:

	As of	
	September 30, 2020	December 31, 2019
	(In thousands)	
Notional value	$ 157,195	$ 155,885
Fair value of notional	159,127	158,657
Fair value of the (liability)	$ (1,932)	$ (2,772)

The following is a summary of the Company's investments:

	Amortized cost	Gross unrealized gains	Gross unrealized losses	Estimated fair value
	(In thousands)			
As of September 30, 2020				
Trading securities				
Corporate debt	$ 23,130	$ 107	$ -	$ 23,237
Mutual funds held in rabbi trust	7,680	126	231	8,037
Total trading securities	30,810	233	231	31,274
Total investments	$ 30,810	$ 233	$ 231	$ 31,274
As of December 31, 2019				
Securities available-for-sale				
Corporate debt	$ 137,119	$ 721	$ (5)	$ 137,835
Trading securities				
Corporate debt	31,120	14	(14)	31,120
U.S. Treasuries	54,738	567	—	55,305
Mutual funds held in rabbi trust	5,173	1,044	—	6,217
Total trading securities	91,031	1,625	(14)	92,642
Total investments	$ 228,150	$ 2,346	$ (19)	$ 230,477

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

	As of September 30, 2020	As of December 31, 2019
	(In thousands)	
Less than one year	$ 21,362	$ 120,850
Due in 1 - 5 years	9,912	109,627
Total	$ 31,274	$ 230,477

Proceeds from the sales and maturities of investments during the nine months ended September 30, 2020 and 2019 were $252.2 million and $238.5 million, respectively.

The following table provides fair values and unrealized losses on investments and by the aging of the securities' continuous unrealized loss position as of September 30, 2020 and December 31, 2019:

	Less than Twelve Months		Twelve Months or More		Total	
	Estimated fair value	Gross unrealized losses	Estimated fair value	Gross unrealized losses	Estimated fair value	Gross unrealized losses
	(In thousands)					
As of September 30, 2020						
Corporate debt	$ —	$ —	$ —	$ —	$ —	$ —
As of December 31, 2019						
Corporate debt	$ 27,999	$ (18)	$ 4,406	$ (1)	$ 32,405	$ (19)

5. Receivables from and payables to broker-dealers, clearing organizations and customers

As of September 30, 2020 and December 31, 2019, receivables from and payables to broker-dealers, clearing organizations and customers consisted of the following:

	September 30, 2020		December 31, 2019	
Receivables from broker-dealers, clearing organizations and customers:				
Securities failed-to-deliver - broker-dealers	$	111,605	$	-
Securities failed-to-deliver - customers		184,214		-
Deposits with clearing organizations and broker-dealers		76,830		-
Other		8,204		-
Total	$	380,853	$	—
Payables to broker-dealers, clearing organizations and customers:				
Securities failed-to-receive - broker-dealers	$	84,932	$	-
Securities failed-to-receive - customers		46,091		-
Other		7,097		-
Total	$	138,120	$	—

6. Acquisitions

On November 1, 2019, the Company and one of its subsidiaries completed their acquisition of all of the outstanding equity interests of LiquidityEdge LLC (“LiquidityEdge”) pursuant to the terms and conditions of a Unit Purchase Agreement entered into among the Company, LiquidityEdge, the holders of all the outstanding equity interests in LiquidityEdge and certain other persons named therein on August 12, 2019 (as amended, the “Agreement”). The aggregate consideration for the acquisition was $152.7 million, comprised of approximately $103.9 million in cash and 146,450 shares of common stock of the Company (valued at approximately $48.8 million as of the closing date of the acquisition, as described below). The aggregate consideration was increased by $0.5 million in the first quarter of 2020 to adjust for cash on hand, outstanding debt, transaction expenses and working capital as set forth in the Agreement. A portion of the stock consideration, amounting to 43,937 shares of common stock, was placed in escrow for up to 18 months to secure the sellers’ indemnification obligations under the Agreement. In addition, under the Agreement, the sellers were generally prohibited from transferring any of the Company common stock received in the acquisition for a period of six months following the November 1, 2019 closing date. The value ascribed to the shares by the Company was discounted from the market value on the date of closing to reflect the non-marketability of such shares during the restriction period.

LiquidityEdge is a limited liability company organized in the state of Delaware and is a broker-dealer registered with the SEC and the Financial Industry Regulatory Authority (“FINRA”). LiquidityEdge offers an electronic trading platform for U.S. Treasuries.

The Company has completed an allocation of the purchase price to the fair value of assets acquired and liabilities assumed at the date of acquisition. The Company utilized an independent third-party to determine the fair value of the acquired intangible assets. The purchase price allocation as of September 30, 2020 is as follows (in thousands):

Purchase price	$	153,210
Less: acquired cash		(2,935)
Purchase price, net of acquired cash		150,275
Accounts receivable		(1,811)
Intangible assets		(58,780)
Prepaid expenses and other assets		(4,168)
Accounts payable, accrued expenses and other liabilities		2,165
Goodwill	$	87,681

The acquired intangible assets are as follows (in thousands, except for useful lives):

		Costs	Useful Lives
Customer relationships	$	58,690	15 years
Tradename - finite life		90	1 year
Total	$	58,780	

In September 2020, the Company entered into agreements to acquire Regulatory Services GmbH, the pan-European regulatory reporting business of Deutsche Börse Group, and MuniBrokers LLC, a central electronic venue serving municipal bond inter-dealer brokers and dealers. The acquisitions are expected to close in the fourth quarter of 2020, subject to the satisfaction of customary closing conditions.

7. Goodwill and Intangible Assets

Goodwill and intangible assets with indefinite lives was $147.4 million and $146.9 million as of September 30, 2020 and December 31, 2019, respectively. Intangible assets that are subject to amortization, including the related accumulated amortization, are comprised of the following:

	September 30, 2020			December 31, 2019		
	Cost	Accumulated amortization	Net carrying amount	Cost	Accumulated amortization	Net carrying amount
			(In thousands)			
Technology	$ 5,770	$ (5,770)	$ —	$ 5,770	$ (5,770)	$ —
Customer relationships	64,326	(5,481)	58,845	64,332	(3,451)	60,881
Non-competition agreements	380	(380)	-	380	(380)	-
Tradenames	400	(372)	28	490	(385)	105
Total	$ 70,876	$ (12,003)	58,873	$ 70,972	$ (9,986)	$ 60,986

Amortization expense associated with identifiable intangible assets was $2.0 million and $0.3 million for the nine months ended September 30, 2020 and 2019, respectively. Estimated total amortization expense is $3.2 million, $5.7 million, $6.9. million, $7.9 million and $6.7 million, respectively, for each year from 2020 through 2024.

8. Income Taxes

The provision for income taxes consists of the following:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Current:		(In thousands)		
Federal	$ 4,566	$ 9,628	$ 23,219	$ 26,100
State and local	8,176	1,865	15,003	5,215
Foreign	3,571	3,385	10,759	9,429
Total current provision	16,313	14,878	48,981	40,744
Deferred:				
Federal	2,974	(1,231)	6,354	195
State and local	547	(214)	1,165	4
Foreign	355	(97)	1,124	(105)
Total deferred provision	3,876	(1,542)	8,643	94
Provision for income taxes	$ 20,189	$ 13,336	$ 57,624	$ 40,838
Effective tax rate	23.0%	19.8%	20.3%	20.9%

The Company recognized excess tax benefits on share-based payments of $5.9 million and $3.5 million through the provision for income taxes for the three months ended September 30, 2020 and 2019, respectively, and $17.9 and $7.0 million for the nine months ended September 30, 2020 and 2019, respectively. During the three months ended September 30, 2020, the Company recorded an additional provision for unrecognized tax benefits of $4.8 million.

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. Other than New York State, the Company is no longer subject to tax examinations by tax authorities for years prior to 2016.

9. Stock-Based Compensation Plans

Total stock-based compensation expense was as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
	(In thousands)			
Employees	$ 6,133	$ 7,706	$ 18,044	$ 18,267
Non-employee directors	318	238	875	802
Total stock-based compensation	$ 6,451	$ 7,944	$ 18,919	$ 19,069

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 nine months ended September 30, 2020, the Company granted to employees a total of 39,827 shares of restricted stock or restricted stock units, 13,900 options to purchase shares of common stock and performance-based shares with an expected pay-out at target of 13,295 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 $378.49 and $360.90, respectively. Based on the Black-Scholes option pricing model, the weighted-average fair value for each option granted was $91.43 per share.

As of September 30, 2020, the total unrecognized compensation cost related to all non-vested awards was $38.4 million. That cost is expected to be recognized over a weighted-average period of 1.9 years.

On June 8, 2020, the Company's stockholders approved the Company's 2020 Equity Incentive Plan, which replaces the Company's 2012 Incentive Plan. An additional 2,500,000 shares are now available under the 2020 Equity Incentive Plan for the grant of stock options, stock appreciation rights, restricted stock, performance shares, performance units, or other stock-based awards as incentives and rewards to encourage employees, consultants and non-employee directors to participate in the long-term success of the Company.

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 September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
	(In thousands)			
Basic weighted average shares outstanding	37,386	37,066	37,343	37,053
Dilutive effect of stock options and restricted stock	774	929	786	860
Diluted weighted average shares outstanding	38,160	37,995	38,129	37,913

Stock options and restricted stock totaling 753 shares and 5,646 shares for the three months ended September 30, 2020 and 2019, respectively, and 27,606 and 194,672 shares for the nine months ended September 30, 2020, and 2019, 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

Revolving Credit Agreement

The Company is party to an amended and restated credit agreement (the "Credit Agreement") that provides for revolving loans and letters of credit up to an aggregate of $450.0 million. In August 2020, the Credit Agreement was amended to increase the aggregate commitments from $100.0 million to $450.0 million and to permit investments and loans of up to $500.0 million in a broker-dealer subsidiary of the Company. The Credit Agreement was further amended in October 2020 to extend the maturity date from October 2020 until the earlier to occur of (i) the date that the Company enters into a new credit facility with JPMorgan Chase Bank, N.A. that is intended to replace the Credit Agreement, and (ii) November 16, 2020. As of September 30, 2020, the Company had $1.0 million in letters of credit outstanding and $449.0 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 Company incurred $0.8 million of interest expense on borrowings under the Credit Agreement for the three months ended September 30, 2020. The Credit Agreement requires that the Company satisfy certain covenants, which include leverage ratios and minimum earnings before interest, tax, depreciation and amortization ("EBITDA") requirements. The Company was in compliance with all applicable covenants at September 30, 2020 and December 31, 2019.

Collateralized Agreement

In connection with its self-clearing operations, one of the Company's broker-dealer subsidiaries has 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. 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 $0.1 million of interest expense on borrowings under the Collateralized Agreement during the three months ended September 30, 2020. As of September 30, 2020, the Company had no borrowings outstanding and $200.0 million in available borrowing capacity under the Collateralized Agreement.

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 September 30,		Nine Months Ended September 30,	
Lease cost:	**Classification**	**2020**	**2019**	**2020**	**2019**
		(In thousands)			
Operating lease cost	Occupancy	$ 3,432	$ 2,602	$ 10,238	$ 8,003
Operating lease cost for subleased/assigned properties	Other, net	609	707	1,780	1,863
Variable lease costs	Occupancy	3	9	26	164
Sublease income subleased/assigned properties	Other, net	(605)	(707)	(1,776)	(1,863)
Net lease cost		$ 3,439	$ 2,611	$ 10,268	$ 8,167

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	**September 30, 2020**	**December 31, 2019**
Weighted average remaining lease term (in years)	12.9	13.3
Weighted average discount rate	5.9%	5.9%

The following table presents the maturity of lease liabilities as of September 30, 2020:

		(In thousands)
Remainder of 2020	$	2,417
2021		11,979
2022		10,328
2023		10,083
2024		10,750
2025 and thereafter		89,546
Total lease payments		135,103
Less: interest		41,395
Operating lease liabilities	$	93,708

The Company has entered into agreements that sublease or assign the Company’s lease obligations on three properties to third parties and is contingently liable should the third parties default on future lease obligations through the lease termination dates of November 2020 and May 2022. The aggregate amount of the future lease obligations under these arrangements is $2.6 million as of September 30, 2020.

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. In August 2020, one of the Company's U.S. broker-dealer subsidiaries converted to a self-clearing model for the settlement of such transactions. The Company's other U.S. and U.K subsidiaries continue to settle their transactions through third-party clearing brokers. 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 broker models, the Company is exposed to credit risk in the event a counterparty does not fulfill its obligation to complete a transaction or if there is a miscommunication or other 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 nine months ended September 30, 2020 and 2019.

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. For the nine months ended September 30, 2020, the Company repurchased 37,312 shares of common stock at a cost of $15.5 million. Shares repurchased under the 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 product 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 nine months ended September 30, 2020 and 2019, 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. Information regarding revenue for the three and nine months ended September 30, 2020 and 2019 and long-lived assets as of September 30, 2020 and December 31, 2019 was as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	**2019**	**2020**	**2019**
	(In thousands)			
Revenues				
United States	$ 138,134	$ 109,526	$ 437,471	$ 317,282
United Kingdom	20,556	21,417	65,061	62,390
Other	5,316	654	15,247	1,906
Total	$ 164,006	$ 131,597	$ 517,779	$ 381,578

	As of	
	September 30, 2020	December 31, 2019
	(In thousands)	
Long-lived assets, as defined		
United States	$ 65,357	$ 62,356
United Kingdom	16,700	9,410
Other	17	29
Total	$ 82,074	$ 71,795

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	September 30, 2020	December 31, 2019
Cash and cash equivalents	Cash and cash equivalents	$ 310,368	$ 270,124
Cash segregated for regulatory purposes	Cash segregated under federal regulations and other	50,033	-
Deposits with clearing organizations and broker-dealers	Receivables from broker-dealers, clearing organizations and customers	76,830	-
Other deposits	Prepaid expenses and other assets	70	4,129
Total		$ 437,301	$ 274,253

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 1,700 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+ ™ 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 platform 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 1,700 active institutional investor and broker-dealer participants to drive more clients to our leading electronic fixed-income trading platform;
- 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 platforms to our clients. In September 2020, we entered into agreements to acquire Regulatory Services GmbH, the pan-European regulatory reporting business of Deutsche Börse Group, and MuniBrokers LLC, a central electronic venue serving municipal bond inter-dealer brokers and dealers. The acquisitions are expected to close in the fourth quarter of 2020, subject to the satisfaction of customary closing conditions.

Critical Factors Affecting Our Industry and Our Company

Recent Developments – COVID-19 Pandemic and Other Matters

The global economy is currently experiencing a period of significant turmoil and deteriorating economic conditions due to the outbreak of the COVID-19 pandemic (the "Pandemic"). The steep drop in economic activity in the first quarter had an immediate and substantial impact on global credit markets with sharp credit spread widening. Credit yield spreads in U.S. corporate bonds, as measured by the Credit Suisse Liquid U.S. Corporate Index ("LUCI"), increased from 1.1% over U.S Treasuries in December 2019 to 1.5% in March 2020 and credit spread volatility in U.S. corporate bonds, as measured by the LUCI Index, increased from 1.1% in December 2019 to 11.6% in March 2020. During the second and third quarters, both credit spreads and credit spread volatility tightened dramatically and issuance of U.S. investment grade and high-yield corporate bonds reached record levels. The average daily trading volume of U.S. high-grade and high-yield corporate bonds for the nine months ended September 30, 2020, as measured by Trade Reporting and Compliance Engine ("TRACE"), increased by 14.8% and 23.3%, respectively, compared to the nine months ended September 30, 2019.

As a result of the Pandemic, we have experienced significant changes in our daily operations. In mid-March, we successfully implemented a global work from home mandate for all of our employees and, as a result, we have continued 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. Since the outbreak of the Pandemic, we have 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, shelter in place, stay at home or lockdown orders and business limitations and shutdowns. 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 where local regulations have permitted. 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 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 and the adverse impact that a global recession could have on liquidity and market volumes in the global credit markets.

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, including our dividend and stock repurchase programs. We ended the quarter with a strong balance sheet, no borrowings and with capital significantly in excess of our regulatory requirements.

In response to the current economic conditions, the Federal Reserve Bank of New York ("FRBNY") has established a Secondary Market Corporate Credit Facility ("Facility") that will lend money, on a recourse basis, to a special purpose vehicle ("SPV") that will purchase in the secondary market corporate debt issued by eligible issuers. The SPV will purchase in the secondary market eligible individual corporate bonds, as well as eligible corporate bond portfolios in the form of exchange-traded funds ("ETFs"). In September 2020, we were designated by the FRBNY as an Eligible Seller for the Facility, which will allow us to provide end investors and broker-dealers the opportunity to use Open Trading to respond directly and anonymously to the FRBNY's requests to purchase bonds. The combined size of the Facility and the related Primary Market Corporate Credit Facility is expected to be up to $750 billion. It is not possible at this point in time to predict the effects of the Facility on U.S. secondary credit market volumes or our trading volumes.

On August 10, 2020, MarketAxess Corporation, our broker-dealer subsidiary, converted to self-clearing for the U.S bond trades to which MarketAxess Corporation is a counterparty via its Open Trading™ functionality. On August 19, 2020, we amended our Amended and Restated Credit Agreement (the "Credit Agreement") with JPMorgan Chase Bank, N.A. to, among other things, (i) permit investments of up to $500 million in MarketAxess Corporation and (ii) increase the aggregate commitments of the lenders under the Credit Agreement from $100 million to $450 million, which we intend to use from time to time to make advances to our broker-dealer subsidiaries to assist with certain capital or liquidity requirements related to our self-clearing and trade settlement activities and for other general corporate purposes.

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.

Our results of operations are impacted by a number of factors, including market conditions and the overall level of market volumes in our core products. In the nine months ended September 30, 2020, estimated U.S. high-grade and U.S. high-yield market volume, as reported by TRACE, increased 15.5% and 23.9%, respectively, compared to the nine months ended September 30, 2019. We experienced increased trading volumes and market share in the nine months ended September 30, 2020 due to the extreme market dislocation and volatility caused by the Pandemic.

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 platform, 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 enforcement of new laws and regulations that apply to our business. The current regulatory environment in the United States may be subject to future legislative changes. In 2017, the SEC established a Fixed Income Market Structure Advisory Committee in order to provide the SEC with diverse perspectives on the structure and operations of the U.S. fixed-income markets, as well as advice and recommendations on matters related to fixed-income market structure. The impact of any 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 (commonly referred to as "Brexit"), triggering a period during which the U.K. will continue to observe applicable E.U. regulations through December 31, 2020 or any later extension date (the "Transition Period"). In preparation for Brexit, we obtained authorizations from the Netherlands Authority for the Financial Markets for our subsidiaries in the Netherlands in 2019 and, during the Transition Period, we are able to provide regulated services to our European clients in reliance on the cross-border services passport held by our Dutch subsidiaries. Brexit is expected to lead 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 could 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.

We experience cyber-attacks and attempted security breaches. Cyber security 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 and 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. Under our disclosed trading transaction fee plans, 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 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 and data feeds provided by outside vendors or service providers. 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 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 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 nine months ended September 30, 2020, 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, 2019.

Recent Accounting Pronouncements

See Note 2 to the Consolidated Financial Statements for a discussion on recent accounting pronouncements, including but not limited to the Company's adoption of the new U.S. GAAP cloud computing arrangements standard on a prospective basis effective July 1, 2019.

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 September 30, 2020 Compared to Three Months Ended September 30, 2019

On November 1, 2019, we completed our acquisition of LiquidityEdge, now operating as MarketAxess Rates, which enabled us to expand our trading capabilities to include U.S. Treasuries. For additional information regarding this acquisition, see Note 6 to the Consolidated Financial Statements.

The following table summarizes our financial results for the three months ended September 30, 2020 and 2019. Results for the three months ended September 30, 2020 include MarketAxess Rates related revenue of $2.4 million and expenses of $3.3 million, including amortization of acquired intangibles expense of $0.6 million:

	Three Months Ended September 30,			
	2020	2019	$ Change	% Change
	($ in thousands, except per share amounts)			
Revenues	$ 164,006	$ 131,597	$ 32,409	24.6 %
Expenses	76,199	65,632	10,567	16.1
Operating income	87,807	65,965	21,842	33.1
Other income	158	1,373	(1,215)	(88.5)
Income before income taxes	87,965	67,338	20,627	30.6
Provision for income taxes	20,189	13,336	6,853	51.4
Net income	$ 67,776	$ 54,002	$ 13,774	25.5 %
Net income per common share - Diluted	$ 1.78	$ 1.42	$ 0.36	25.4 %

A 6.5% change in the average foreign currency exchange rates of the British pound sterling compared to the U.S. dollar from the three months ended September 30, 2019 had the effect of increasing revenues and expenses by $1.2 million and $1.0 million, respectively, for the three months ended September 30, 2020.

Revenues

Our revenues for the three months ended September 30, 2020 and 2019, and the resulting dollar and percentage changes, were as follows:

	Three Months Ended September 30,					
	2020		2019			
	($ in thousands)					
		% of Revenues		% of Revenues	$ Change	% Change
Commissions	$ 150,586	91.8 %	$ 119,869	91.1 %	$ 30,717	25.6 %
Information services	8,501	5.2	7,693	5.8	808	10.5
Post-trade services	4,689	2.9	3,784	2.9	905	23.9
Other	230	0.1	251	0.2	(21)	(8.4)
Total revenues	$ 164,006	100.0 %	$ 131,597	100.0 %	$ 32,409	24.6 %

Commissions. Our commission revenues for the three months ended September 30, 2020 and 2019, and the resulting dollar and percentage changes, were as follows:

	Three Months Ended September 30,			
	2020	2019	$ Change	% Change
	($ in thousands)			
Variable transaction fees				
U.S. high-grade	$ 60,861	$ 45,409	$ 15,452	34.0 %
Other credit	59,131	50,009	9,122	18.2
Total credit	119,992	95,418	24,574	25.8
Rates	3,191	567	2,624	462.8
Total variable transaction fees	123,183	95,985	27,198	28.3
Distribution fees				
U.S. high-grade	20,760	17,777	2,983	16.8
Other credit	6,586	5,986	600	10.0
Total credit	27,346	23,763	3,583	15.1
Rates	57	121	(64)	(52.9)
Total distribution fees	27,403	23,884	3,519	14.7
Total commissions	$ 150,586	$ 119,869	$ 30,717	25.6 %

U.S. high-grade variable transaction fees increased $15.5 million due to a 16.5% increase in trading volume and a 15.0% increase in average variable transaction fee per million. Other credit variable transaction fees increased $9.1 million due to a 11.3% increase in trading volume and a 6.2% increase in the average variable transaction fee per million. Open Trading volume totaled $200.3 billion during the three months ended September 30, 2020, up 41.3%, and represented 32.9% and 27.6% of variable transaction fees for the three months ended September 30, 2020 and 2019, respectively. The 462.8% increase in variable transaction fees for rates was attributable to the inclusion of U.S. Treasuries trading volume and commissions from LiquidityEdge, which was acquired in November 2019.

U.S. high-grade and other credit distribution fees increased $3.0 million and $0.6 million, respectively, 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 September 30, 2020 and 2019 were as follows:

	Three Months Ended September 30,			
	2020	2019	$ Change	% Change
	($ in millions)			
Trading volume data				
U.S. high-grade - fixed rate	$ 295,781	$ 245,027	$ 50,754	20.7 %
U.S. high-grade - floating rate	9,450	16,918	(7,468)	(44.1)
Total U.S. high grade	305,231	261,945	43,286	16.5
Other credit	283,920	255,097	28,823	11.3
Total credit	$ 589,151	$ 517,042	$ 72,109	13.9 %
Rates	760,676	11,661	749,015	N/M
Number of U.S. Trading Days	64	64		
Number of U.K. Trading Days	65	65		

For volume reporting purposes, transactions in foreign currencies are converted to U.S. dollars at average monthly rates. The 16.5% increase in our U.S. high-grade volume was principally due to an increase in our estimated market share coupled with growth in overall market volume. Our estimated market share of total U.S. high-grade corporate bond volume increased to 22.2% for the three months ended September 30, 2020 from 20.2% for the three months ended September 30, 2019. Estimated U.S. high-grade TRACE volume increased by 6.2% to $1.4 trillion for the three months ended September 30, 2020.

Other credit volumes increased by 11.3% due to increases of 45.6% in high-yield bond volume and 4.3% in Eurobonds volume, as a result of increases in estimated high-yield and Eurobond market share and estimated high-yield market volume. Estimated TRACE reported high-yield market volumes were up 8.6%. Emerging markets volume was down 1.6% mainly due to the 20.6% reduction in TRACE and Trax® reported emerging markets market volume.

Our average variable transaction fee per million for the three months ended September 30, 2020 and 2019 was as follows:

	Three Months Ended September 30,			
	2020	2019	$ Change	% Change
Average variable transaction fee per million				
U.S. high-grade - fixed rate	$ 204.24	$ 181.45	$ 22.79	12.6%
U.S. high-grade - floating rate	47.75	56.08	(8.33)	(14.9)
Total U.S. high-grade	199.39	173.35	26.04	15.0
Other credit	208.27	196.04	12.23	6.2
Total credit	203.67	184.55	19.12	10.4
Rates	4.19	48.65	(44.45)	(91.4)

Total U.S. high-grade average variable transaction fee per million increased 15.0% to $199 per million for the three months ended September 30, 2020 mainly due to an increase in the duration of bonds traded on our platforms. Other credit average variable transaction fee per million increased 6.2% to $208 per million for the three months ended September 30, 2020 mainly due to a larger percentage of trading volume in high-yield bonds that command higher fees per million. The significant decrease in the average variable transaction fee per million for rates products was primarily attributable to the inclusion of U.S. Treasuries trading volumes that command lower fees per million.

Information Services. Information services revenue increased $0.8 million for the three months ended September 30, 2020 due revenue from new data contracts of $0.5 million and the positive impact of foreign exchange of $0.3 million.

Post-Trade Services. Post-trade services revenue increased $0.9 million for the three months ended September 30, 2020 due to revenue from new Securities Finance Transaction Regulation ("SFTR") reporting services of $0.4 million and the positive impact of foreign exchange of $0.3 million.

Expenses

The following table summarizes our expenses for the three months ended September 30, 2020 and 2019. Expenses for the three months ended September 30, 2020 include $3.3 million of expenses related to MarketAxess Rates, including amortization of acquired intangibles expense of $0.6 million.

	Three Months Ended September 30,			
	2020	2019	$ Change	% Change
	($ in thousands)			
Expenses				
Employee compensation and benefits	$ 37,583	$ 32,681	$ 4,902	15.0 %
Depreciation and amortization	9,032	6,700	2,332	34.8
Technology and communications	8,417	7,381	1,036	14.0
Professional and consulting fees	8,269	7,018	1,251	17.8
Occupancy	3,445	2,802	643	22.9
Marketing and advertising	1,148	2,506	(1,358)	(54.2)
Clearing costs	4,838	2,782	2,056	73.9
General and administrative	3,467	3,762	(295)	(7.8)
Total expenses	$ 76,199	$ 65,632	$ 10,567	16.1 %

Employee compensation and benefits increased by $4.9 million, primarily due to higher salaries, taxes and benefits of $4.5 million on higher employee headcount, and employee incentive compensation of $1.4 million, which is tied to operating performance, offset by a $1.0 million reduction in stock-based compensation expense.

Depreciation and amortization increased by $2.3 million primarily due to higher amortization of software development costs of $1.4 million and amortization of acquired intangibles expense of $0.6 million. For the three months ended September 30, 2020 and 2019, $3.8 million and $2.6 million, respectively, of equipment purchases and leasehold improvements and $8.1 million and $6.6 million, respectively, of software development costs were capitalized.

Technology and communications expenses increased by $1.0 million primarily due to U.S. Treasury platform licensing costs of $0.5 million and higher software subscription costs of $0.4 million.

Professional and consulting fees increased $1.3 million mainly due to higher consulting fees associated with our self-clearing initiative of $0.9 milllion and a $0.3 million increase in recruiting fees.

Marketing and advertising expense decreased $1.4 million due to reduced sales related travel and entertainment activities as a result of the Pandemic.

Clearing costs increased by $2.1 million primarily due to $1.3 million of additional clearing expenses associated with higher Open Trading volume and $0.8 million of clearing expenses associated with U.S. Treasuries matched principal transactions. Clearing costs as a percentage of Open Trading matched principal trading revenue from credit products decreased from 10.5% to 10.0%.

General and administrative expenses decreased $0.3 million as a result of lower general travel and entertainment expense.

Other Income (Expense)

Our other income for the three months ended September 30, 2020 and 2019, and the resulting dollar and percentage changes, were as follows:

	Three Months Ended September 30,			
	2020	2019	$ Change	% Change
	($ in thousands)			
Investment income	$ 344	$ 2,211	$ (1,867)	(84.4) %
Interest expense	(1,046)	—	(1,046)	NM
Other, net	860	(838)	1,698	(202.7)
Total other income	$ 158	$ 1,373	$ (1,215)	(88.5) %

Investment income decreased by $1.9 million primarily due to lower investment balances, due in part to the $103.9 million of cash paid for the LiquidityEdge acquisition in November 2019, new self-clearing related deposit, reserve and liquidity requirements and a decrease in interest rates.

Interest expense increased by $1.0 million due to short-term borrowing activity during the three months ended September 30, 2020.

Other, net increased by $1.7 million primarily due to $1.1 million in realized gains on available-for-sale investments that were sold during the three months ended September 30, 2020.

Provision for Income Taxes

The provision for income taxes and effective tax rate for the three months ended September 30, 2020 and 2019 were as follows:

	Three Months Ended September 30,			
	2020	2019	$ Change	% Change
	($ in thousands)			
Provision for income taxes	$ 20,189	$ 13,336	$ 6,853	51.4 %
Effective tax rate	23.0%	19.8%		

The income tax provision reflected $5.9 million and $3.5 million of excess tax benefits related to share-based compensation awards that vested or were exercised during the three months ended September 30, 2020 and 2019, respectively. During the three months ended September 30, 2020, we recorded an additional provision for unrecognized tax benefits of $4.8 million. 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.

Nine Months Ended September 30, 2020 Compared to Nine Months Ended September 30, 2019

The following table summarizes our financial results for the nine months ended September 30, 2020 and 2019. Results for the nine months ended September 30, 2020 include MarketAxess Rates related revenue of $10.5 million and expenses of $12.1 million, including amortization of acquired intangibles expense of $1.8 million:

	Nine Months Ended September 30,			
	2020	2019	$ Change	% Change
	($ in thousands, except per share amounts)			
Revenues	$ 517,779	$ 381,578	$ 136,201	35.7 %
Expenses	234,748	191,547	43,201	22.6
Operating income	283,031	190,031	93,000	48.9
Other income	1,039	5,436	(4,397)	(80.9)
Income before income taxes	284,070	195,467	88,603	45.3
Provision for income taxes	57,624	40,838	16,786	41.1
Net income	$ 226,446	$ 154,629	$ 71,817	46.4 %
Net income per common share - Diluted	$ 5.94	$ 4.08	$ 1.86	45.6 %

Revenues

Our revenues for the nine months ended September 30, 2020 and 2019, and the resulting dollar and percentage changes, were as follows:

	Nine Months Ended September 30,					
	2020		2019			
	($ in thousands)					
		% of Revenues		% of Revenues	$ Change	% Change
Commissions	$ 478,632	92.4 %	$ 346,753	90.9 %	$ 131,879	38.0 %
Information services	25,570	4.9	22,215	5.8	3,355	15.1
Post-trade services	12,896	2.5	11,840	3.1	1,056	8.9
Other	681	0.2	770	0.2	(89)	(11.6)
Total revenues	$ 517,779	100.0 %	$ 381,578	100.0 %	$ 136,201	35.7 %

Commissions. Our commission revenues for the nine months ended September 30, 2020 and 2019, and the resulting dollar and percentage changes, were as follows:

	Nine Months Ended September 30,			
	2020	2019	$ Change	% Change
	($ in thousands)			
Variable transaction fees				
U.S. high-grade	$ 194,039	$ 130,824	$ 63,215	48.3 %
Other credit	191,718	143,276	48,442	33.8
Total credit	385,757	274,100	111,657	40.7
Rates	12,623	1,739	10,884	625.9
Total variable transaction fees	398,380	275,839	122,541	44.4
Distribution fees				
U.S. high-grade	60,369	53,238	7,131	13.4
Other credit	19,573	17,318	2,255	13.0
Total credit	79,942	70,556	9,386	13.3
Rates	310	358	(48)	(13.4)
Total distribution fees	80,252	70,914	9,338	13.2
Total commissions	$ 478,632	$ 346,753	$ 131,879	38.0 %

U.S. high-grade variable transaction fees increased $63.2 million due to a 30.5% increase in trading volume and a 13.7% increase in average variable transaction fee per million. Other credit variable transaction fees increased $48.4 million due to a 27.5% increase in trading volume and a 5.0% increase in the average variable transaction fee per million. Open Trading volume totaled $652.6 billion during the nine months ended September 30, 2020, up 60.4%, and represented 32.2% and 26.4% of variable transaction fees for the nine months ended September 30, 2020 and 2019, respectively. The 625.9% increase in variable transaction fees for rates was attributable to the inclusion of U.S. Treasuries trading volume and commissions from LiquidityEdge, which was acquired in November 2019.

U.S. high-grade and other credit distribution fees increased $7.1 million and $2.3 million, respectively, 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 nine months ended September 30, 2020 and 2019 were as follows:

	Nine Months Ended September 30,			
	2020	2019	$ Change	% Change
	($ in millions)			
Trading volume data				
U.S. high-grade - fixed rate	$ 1,005,975	$ 753,885	$ 252,090	33.4 %
U.S. high-grade - floating rate	43,830	50,830	(7,000)	(13.8)
Total U.S. high grade	1,049,805	804,715	245,090	30.5
Other credit	940,939	738,091	202,848	27.5
Total credit	$ 1,990,744	$ 1,542,806	$ 447,938	29.0 %
Rates	3,161,148	39,111	3,122,037	N/M
Number of U.S. Trading Days	189	188		
Number of U.K. Trading Days	190	189		

For volume reporting purposes, transactions in foreign currencies are converted to U.S. dollars at average monthly rates. The 30.5% increase in our U.S. high-grade volume was principally due to an increase in our estimated market share coupled with growth in overall market volume. Our estimated market share of total U.S. high-grade corporate bond volume increased to 21.2% for the nine months ended September 30, 2020 from 18.8% for the nine months ended September 30, 2019. Estimated U.S. high-grade TRACE volume increased by 15.5% to $4.9 trillion for the nine months ended September 30, 2020.

Other credit volumes increased by 27.5% due to increases of 66.4% in high-yield bond volume, 18.2% in Eurobonds volume, and 13.6% in emerging markets bond volume as a result of increases in estimated market share and estimated market volumes. Estimated TRACE and Trax® reported high-yield, Eurobonds and emerging markets market volumes were up 23.9%, 11.8% and 0.6%, respectively.

Our average variable transaction fee per million for the nine months ended September 30, 2020 and 2019 was as follows:

	Nine Months Ended September 30,			
	2020	2019	$ Change	% Change
Average variable transaction fee per million				
U.S. high-grade - fixed rate	$ 190.68	$ 169.10	$ 21.58	12.8%
U.S. high-grade - floating rate	50.60	65.80	(15.20)	(23.1)
Total U.S. high-grade	184.83	162.57	22.26	13.7
Other credit	203.75	194.12	9.63	5.0
Total credit	193.78	177.66	16.11	9.1
Rates	3.99	44.46	(40.47)	(91.0)

Total U.S. high-grade average variable transaction fee per million increased 13.7% to $185 per million for the nine months ended September 30, 2020 mainly due to an increase in the duration of bonds traded on our platforms. Other credit average variable transaction fee per million increased 5.0% to $204 per million for the nine months ended September 30, 2020 mainly due to a larger percentage of trading volume in high-yield bonds that command higher fees per million. The significant decrease in the average variable transaction fee per million for rates products was primarily attributable to the inclusion of U.S. Treasuries trading volumes that command lower fees per million.

Information Services. Information services revenue increased $3.4 million for the nine months ended September 30, 2020 principally due to new data contracts.

Post-Trade Services. Post-trade services revenue increased $1.1 million for the nine months ended September 30, 2020 due to new post-trade services contracts related to new regulatory reporting requirements stemming from MiFID II and SFTR.

Expenses

The following table summarizes our expenses for the nine months ended September 30, 2020 and 2019. Expenses for the nine months ended September 30, 2020 include $12.1 million of expenses related to MarketAxess Rates, including amortization of acquired intangibles expense of $1.8 million.

	Nine Months Ended September 30,			
	2020	**2019**	**$ Change**	**% Change**
	($ in thousands)			
Expenses				
Employee compensation and benefits	$ 120,413	$ 97,962	$ 22,451	22.9 %
Depreciation and amortization	25,404	19,127	6,277	32.8
Technology and communications	25,170	19,637	5,533	28.2
Professional and consulting fees	22,009	19,145	2,864	15.0
Occupancy	10,205	8,549	1,656	19.4
Marketing and advertising	5,633	8,472	(2,839)	(33.5)
Clearing costs	16,061	7,969	8,092	101.5
General and administrative	9,853	10,686	(833)	(7.8)
Total expenses	$ 234,748	$ 191,547	$ 43,201	22.6 %

Employee compensation and benefits increased by $22.5 million, primarily due to higher employee incentive compensation of $10.3 million, which is tied to operating performanc, and an increase of $12.0 million in salaries, taxes and benefits on higher employee headcount.

Depreciation and amortization increased by $6.3 million primarily due to higher amortization of software development costs of $3.5 million and amortization of acquired intangibles expense of $1.8 million. For the nine months ended September 30, 2020 and 2019, $13.0 million and $8.7 million, respectively, of equipment purchases and leasehold improvements and $21.1 million and $13.9 million, respectively, of software development costs were capitalized.

Technology and communications expenses increased by $5.5 million primarily due to higher cloud hosting costs of $1.3 million, IT license and support costs of $1.1 million and U.S. Treasury platform licensing costs of $2.2 million.

Professional and consulting fees increased $2.9 million mainly due to higher recruiting fees of $1.2 million and consulting expenses of $1.3 million related to our self-clearing initiative.

Marketing and advertising expense decreased $2.8 million due to reduced sales related travel and entertainment activities as a result of the Pandemic.

Clearing costs increased by $8.1 million primarily due to $4.7 million of clearing expenses associated with higher Open Trading volume and $3.4 million of clearing expenses associated with U.S. Treasuries matched principal transactions. Clearing costs as a percentage of Open Trading matched principal trading revenue from credit products decreased from 10.9% to 9.9%.

General and administrative expenses decreased $0.8 million as a result of lower general travel and entertainment expense.

Other Income (Expense)

Our other income for the nine months ended September 30, 2020 and 2019, and the resulting dollar and percentage changes, were as follows:

	Nine Months Ended September 30,			
	2020	2019	$ Change	% Change
	($ in thousands)			
Investment income	$ 2,327	$ 6,296	$ (3,969)	(63.0) %
Interest expense	(1,046)	—	(1,046)	NM
Other income, net	(242)	(860)	618	(71.9)
Total other income	$ 1,039	$ 5,436	$ (4,397)	(80.9) %

Investment income decreased by $4.0 million primarily due to lower investment balances, due in part to the $103.9 million of cash paid for the LiquidityEdge acquisition in November 2019, new self-clearing related deposit, reserve and liquidity requirements and a decrease in interest rates.

Interest expense increased by $1.0 million due to short-term borrowing activity during the nine months ended September 30, 2020.

Other, net increased by $0.6 million primarily due to $1.1 million in realized gains on available-for-sale investments offset by $0.4 million in foreign currency transaction losses during the nine months ended September 30, 2020.

Provision for Income Taxes

The provision for income taxes and effective tax rate for the nine months ended September 30, 2020 and 2019 were as follows:

	Nine Months Ended September 30,			
	2020	2019	$ Change	% Change
	($ in thousands)			
Provision for income taxes	$ 57,624	$ 40,838	$ 16,786	41.1 %
Effective tax rate	20.3%	20.9%		

The income tax provision reflected $17.9 million and $7.0 million of excess tax benefits related to share-based compensation awards that vested or were exercised during the nine months ended September 30, 2020 and 2019, respectively. During the nine months ended September 30, 2020, we recorded an additional provision for unrecognized tax benefits of $4.8 million. 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 nine months ended September 30, 2020, we have met our funding requirements through cash on hand, internally generated funds and short-term borrowings. Cash and cash equivalents and investments totaled $341.6 million at September 30, 2020. Our investments are 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. We believe our investments as of September 30, 2020 that were in an unrealized loss position were not other-than-temporarily impaired, nor has any event occurred subsequent to that date, including the recent developments related to the Pandemic, that would indicate any other-than-temporary impairment.

We are party to an amended and restated credit agreement (the "Credit Agreement") that provides for revolving loans and letters of credit up to an aggregate of $450.0 million. In August 2020, the Credit Agreement was amended to increase the aggregate commitments from $100.0 million to $450.0 million and to permit investments and loans of up to $500.0 million in our broker-dealer subsidiary. The Credit Agreement was further amended in October 2020 to extend the maturity date from October 2020 until the earlier to occur of (i) the date that we enter into a new credit facility with JPMorgan Chase Bank, N.A. that is intended to replace the Credit Agreement, and (ii) November 16, 2020. As of September 30, 2020, we had $1.0 million in letters of credit outstanding and $449.0 million in available borrowing capacity under the Credit Agreement.

In connection with its self-clearing operations, MarketAxess Corporation, our broker-dealer subsidiary, has entered into an agreement (the "Collateralized Agreement") with its settlement bank to provide loans up to an aggregate of $200.0 million. Borrowings under the Collateralized Agreement are collateralized by securities pledged by MarketAxess Corporation to the settlement bank, subject to applicable haircuts and concentration limits. As of September 30, 2020, MarketAxess Corporation had no borrowings outstanding and $200.0 million in available borrowing capacity under the Collateralized Agreement.

As a result of our self-clearing 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 September 30, 2020, the aggregate amount of the positions financed, deposits and customer reserve balances associated with our self-clearing activities was $270.3 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:

	Nine Months Ended September 30,			
	2020	2019	$ Change	% Change
	($ in thousands)			
Net cash provided by operating activities	$ 176,869	$ 176,794	$ 75	0.0 %
Net cash provided by (used in) investing activities	103,119	(15,290)	118,409	(774.4)
Net cash (used in) financing activities	(117,371)	(86,059)	(31,312)	36.4
Effect of exchange rate changes on cash and cash equivalents	431	(1,261)	1,692	(134.2)
Net increase for the period	$ 163,048	$ 74,184	$ 88,864	119.8 %

The $0.1 million increase in net cash provided by operating activities was primarily due to increases in net income of $71.8 million, net sales and maturities of trading investments of $63.0 million, income tax liabilities of $13.4 million, deferred taxes of $8.6 million, accounts payable, accrued expenses and other liabilities of $7.9 million and depreciation and amortization of $6.3 million. These increases in cash provided were offset by increases of $165.9 million in net receivables from broker-dealers, clearing organizations and customers associated with our self-clearing conversion and $4.8 million in accounts receivable.

The $118.4 million increase in net cash provided by investing activities was primarily due to an increase in net sales of available-for-sale investments of $130.6 million, offset by an increase in capital expenditures of $11.6 million.

The $31.3 million increase in net cash (used in) financing activities was principally due to increases in withholding tax payments on restricted stock vesting and stock option exercises of $16.3 million, cash dividends paid on common stock of $10.9 million and repurchases of common stock of $4.0 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 September 30, 2020, each of our subsidiaries that are subject to these regulations had net capital or financial resources in excess of their minimum requirements. As of September 30, 2020, our subsidiaries maintained aggregate net capital and financial resources that were $305.6 million in excess of the required levels of $23.7 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 September 30, 2020, the amount of unrestricted cash held by our non-U.S. subsidiaries was $146.3 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. In August 2020, one of our U.S. broker-dealer subsidiaries converted to a self-clearing model for the settlement of such transactions. Our other U.S. and U.K subsidiaries continue to settle their transactions through third-party clearing brokers. 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 broker models, we are exposed to credit risk in the event a counterparty does not fulfill its obligation to complete a transaction or if there is a miscommunication or other 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 nine months ended September 30, 2020 and 2019.

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, our Board of Directors authorized a two-year share repurchase program for up to $100.0 million that commenced in April 2019. Shares repurchased under the program will be held in treasury for future use.

In October 2020, our Board of Directors approved a quarterly cash dividend of $0.60 per share payable on November 25, 2020 to stockholders of record as of the close of business on November 11, 2020. 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.

In September 2020, we entered into agreements to acquire Regulatory Services GmbH, the pan-European regulatory reporting business of Deutsche Börse Group, and MuniBrokers LLC, a central electronic venue serving municipal bond inter-dealer brokers and dealers. Both acquisitions are expected to close in the fourth quarter of 2020, subject to the satisfaction of customary closing conditions. The aggregate purchase price for the two transactions is approximately $88.0 million in cash, plus transaction costs, with $39.0 million in the aggregate payable in connection with the respective closings and up to $48.0 million in the aggregate in contingent consideration payable within 18 months to three years of the closings. The aggregate purchase price for the two transactions is expected to be funded from available cash on hand.

__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”). We define 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 (added to FCF as a result of our self-clearing conversion), 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 September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
	($ in thousands)			
Net income	$ 67,776	$ 54,002	$ 226,446	$ 154,629
Add back:				
Interest expense	1,046	—	1,046	—
Provision for income taxes	20,189	13,336	57,624	40,838
Depreciation and amortization	9,032	6,700	25,404	19,127
Earnings before interest, taxes, depreciation and amortization	$ 98,043	$ 74,038	$ 310,520	$ 214,594

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

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
	($ in thousands)			
Net cash provided by operating activities	$ (48,353)	$ 67,692	$ 176,869	$ 176,794
Exclude: Net change in trading investments	638	9,225	(62,636)	371
Exclude: Net change in fail-to-deliver/receive from broker-dealers, clearing organizations and customers	164,797	-	164,797	-
Less: Purchases of furniture, equipment and leasehold improvements	(3,758)	(2,569)	(13,022)	(8,683)
Less: Capitalization of software development costs	(8,121)	(6,553)	(21,124)	(13,863)
Free Cash Flow	$ 105,203	$ 67,795	$ 244,884	$ 154,619

__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 September 30, 2020, 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	$ 135,103	$ 2,417	$ 22,307	$ 20,833	$ 89,546
Foreign currency forward contract	159,127	159,127	—	—	—
	$ 294,230	$ 161,544	$ 22,307	$ 20,833	$ 89,546

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 September 30, 2020, the notional value of the only foreign currency forward contract outstanding was $157.2 million and the fair value of the liability was $1.9 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 September 30, 2020, we had $23.2 million of investments, which were invested 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 September 30, 2020, our cash and cash equivalents and investments amounted to $341.6 million. A hypothetical 100 basis point decrease in interest rates would decrease our investment income by approximately $3.3 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 September 30, 2020, approximately 13.0% of our revenue and 26.3% 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 $8.4 million and operating expenses by approximately $7.4 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 September 30, 2020, the fair value of the notional amount of our foreign currency forward contract was $159.1 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. In August 2020, one of our U.S. broker-dealer subsidiaries converted to a self-clearing model for the settlement of such transactions. Our other U.S. and U.K subsidiaries continue to settle their transactions through third-party clearing brokers. 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 two 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 September 30, 2020. 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.* As a result of the Pandemic, our global workforce rapidly shifted to a work-from-home environment beginning in mid-March 2020. We have concluded that the changes to the working environment as a result of this shift did not have a material effect on our internal control over financial reporting during the third quarter.

In August 2020, one of our U.S. broker-dealer subsidiaries converted to a self-clearing model for the bond transactions we execute between our institutional investor and broker-dealer clients on a matched principal basis where we serve as a counterparty to both the buyer and the seller. Previously, the transactions were settled through a third-party clearing broker. The self-clearing conversion represents a material change in internal control over financial reporting since management’s last assessment, which was completed as of June 30, 2020.

There were no other 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 September 30, 2020 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.

Item 1A. Risk Factors

With the exception of the following items, 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, 2019. For a discussion of the risk factors affecting the Company, see "Risk Factors" in Part I, Item 1A of our 2019 Form 10-K.

Our business has been, and our results of operations and financial condition may be, impacted by the outbreak of, and global response to, the COVID-19 Pandemic and such impact could be materially adverse.

The global spread of the novel coronavirus (COVID-19) has created significant volatility in the markets we serve, and has increased uncertainty and economic disruption. The extent to which the Pandemic impacts our business, operations, and financial results is uncertain and will depend on numerous evolving factors that we may not be able to accurately predict, including:

- the duration, scope and severity of the Pandemic;
- governmental and business actions taken in response to the Pandemic and the impact of those actions on global economic activity;
- the actions taken in response to economic disruption;
- the impact of the economic and business disruptions on the trading needs of our clients and the resulting impact on their demand for our electronic trading platforms and solutions;
- adverse market conditions, including unforeseen market closures, disruptions in trading, significant declines in market volumes, credit availability and other liquidity concerns;
- the increase in business failures, liquidations or bankruptcies among market participants that use our electronic trading platforms or to whom we are a trading counterparty; and
- our ability to provide our electronic trading platforms and other solutions, including as a result of our employees or our clients' employees working remotely and/or closures of offices and facilities.

In addition, the increase in our employees working remotely has amplified certain risks to our business, including increased demand on our information technology resources and systems, increased phishing and other cybersecurity attacks as cybercriminals try to exploit the uncertainty surrounding the Pandemic, and an increase in the number of points of potential attack, such as laptops and mobile devices (both of which are now being used in increased numbers), to be secured, and any failure to effectively manage these risks, including to timely identify and appropriately respond to any cyberattacks, may adversely affect our business.

Due to the uncertainty of the duration, scope and severity of the Pandemic, the uncertainty as to what governmental measures may yet be taken in response to the Pandemic and the unpredictable effect on our business, our employees and our clients, we are not able to reasonably estimate the extent of any potential impact of the Pandemic on our financial condition or results of operations at this time, but the impact could be material. Even after the current COVID-19 outbreak has subsided, we may continue to experience impacts to our business as a result of the Pandemic's global economic impact. Further, as the COVID-19 situation is unprecedented and continuously evolving, COVID-19 may also affect our operating and financial results in a manner that is not presently known to us or in a manner that we currently do not consider to present significant risks to our operations.

Any of the above factors could cause or contribute to the risks and uncertainties identified in our fiscal 2019 Form 10-K and could materially adversely affect our business, financial condition and results of operations.

Self-clearing exposes us to significant operational, financial and liquidity risks

We began self-clearing substantially all of our bond transactions for our U.S. operations in the third quarter of 2020 and we may expand self-clearing to our foreign operations in the future. Self-clearing requires us to finance transactions and maintain margin deposits at clearing organizations. Self-clearing exposes our business to operational risks, including business and technology disruption, operational inefficiencies, liquidity and financing risks, regulatory risks and potentially increased expenses. In connection with our conversion to self-clearing for our U.S. operations in 2020, we experienced operational inefficiencies and technology issues which, in combination with the capital and liquidity requirements that are imposed on all new self-clearing members, resulted in increased fail rates in the immediate period following the conversion. In the future, we may encounter difficulties with self-clearing that lead to operating inefficiencies, technology issues, dissatisfaction amongst our client base, disruption in the infrastructure that supports the business, inadequate liquidity, increased margin requirements with clearing organizations and third-party settlement agents who provide financing with respect to transactions, reductions in available borrowing capacity and financial loss. Any such delay, disruption, expense or failure could adversely affect our ability to effect transactions and manage our exposure to risk. Moreover, any of these events could have a material adverse effect on our business, financial condition and operating results.

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 September 30, 2020, 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)
July 1, 2020 - July 31, 2020	24,908	$ 520.18	600	$ 76,342
August 1, 2020 - August 31, 2020	3,123	493.15	3,000	74,861
September 1, 2020 - September 30, 2020	5,148	463.40	5,148	72,476
Total	33,179	$ 467.06	8,748	

During the three months ended September 30, 2020, we repurchased 33,179 shares of common stock. The repurchases included 8,748 shares repurchased in connection with our share repurchase program and 24,431 shares surrendered by employees to us to satisfy the withholding tax obligations upon the exercise of stock options and vesting of restricted shares.

On January 30 2019, we announced that our Board of Directors authorized a two-year share repurchase program for up to $100.0 million of our common stock that commenced in April 2019 and will expire on March 31, 2021. Shares repurchased under the 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
10.1	Severance Protection Agreement, dated as of July 31, 2020, by and between MarketAxess and Tony Delise (incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K filed on August 4, 2020)
10.2	Severance Protection Agreement, dated as of July 31, 2020, by and between MarketAxess and Scott Pintoff (incorporated by reference to Exhibit 10.2 to the Company’s Current Report on Form 8-K filed on August 4, 2020)
10.3	Severance Protection Agreement, dated as of July 31, 2020, by and between MarketAxess and Kevin McPherson (incorporated by reference to Exhibit 10.3 to the Company’s Current Report on Form 8-K filed on August 4, 2020)
10.4	Severance Protection Agreement, dated as of July 31, 2020, by and between MarketAxess and Nick Themelis (incorporated by reference to Exhibit 10.4 to the Company’s Current Report on Form 8-K filed on August 4, 2020)
10.5	MarketAxess Europe Limited Severance Protection Agreement, dated as of July 31, 2020, by and between MarketAxess Europe and Christophe Roupie (incorporated by reference to Exhibit 10.5 to the Company’s Current Report on Form 8-K filed on August 4, 2020)
10.6*	Third Amendment, dated as of August 19, 2020, to Amended and Restated Credit Agreement by and among MarketAxess Holdings., the other loan parties party thereto, the lenders party thereto and JPMorgan Chase Bank, N.A. as administrative agent
10.7*	Fourth Amendment, dated October 8, 2020, to Amended and Restated Credit Agreement by and among MarketAxess Holdings Inc., the other loan parties party thereto, the lenders party thereto and JPMorgan Chase Bank, N.A. as administrative agent
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 September 30, 2020 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: October 30, 2020	By: /s/ RICHARD M. MCVEY Richard M. McVey Chief Executive Officer (principal executive officer)
Date: October 30, 2020	By: /s/ ANTONIO L. DELISE Antonio L. DeLise Chief Financial Officer (principal financial and accounting officer)

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Third Amendment to Amended and Restated Credit Agreement

This Third Amendment to Amended and Restated Credit Agreement (herein, the *"Amendment"*) entered into as of August 19, 2020, is by and among MarketAxess Holdings Inc. (the *"Borrower"*), the Lenders party hereto and JPMorgan Chase Bank, N.A (the *"Administrative Agent"*).

Preliminary Statements

A.The Borrower, the Administrative Agent and the Lenders have entered into that certain Amended and Restated Credit Agreement dated as of October 30, 2015 (as amended, restated, supplemented or otherwise modified prior to the date hereof including pursuant to that certain Omnibus Amendment dated as of October 19, 2017, the *"Existing Credit Agreement"*).

B.The Borrower has requested that the Lenders increase the Aggregate Commitments under the Existing Credit Agreement which the Borrower intends to use to make advances to certain Broker-Dealer Subsidiaries to fund the self-clearing and trading activities of such Broker-Dealer Subsidiaries and for other general corporate purposes and to make certain other amendments to the Existing Credit Agreement, and the Lenders are willing to do so under the terms and conditions set forth in this Amendment.

C. The Existing Credit Agreement as amended by this Amendment is hereinafter referred to as the "*Credit Agreement*". Any capitalized terms used herein without definition shall have the same meanings herein as such terms have in the Credit Agreement.

Now, Therefore, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

Section 1. Amendments to the Existing Credit Agreement.

Subject to the satisfaction of the conditions precedent set forth in Section 2 below, the Existing Credit Agreement shall be and hereby is amended as follows:

1.1.Each of the following defined terms appearing in Section 1.01 of the Credit Agreement is hereby amended and restated in its entirety and as so amended and restated shall read as follows:

1.1.Each of the following defined terms appearing in Section 1.01 of the Credit Agreement is hereby amended and restated in its entirety and as so amended and restated shall read as follows:

"***Aggregate Commitments***" means the aggregate amount of the Commitments of all of the Lenders, as reduced or increased from time to time pursuant to the terms and conditions hereof. As of the Third Amendment Effective Date, the Aggregate Commitments are $450,000,000.

“***Broker-Dealer Subsidiary***” means any Subsidiary that (a) is a “registered broker and/or dealer or other regulated investment firm or trading platform” under the Securities Exchange Act or under any similar foreign law or regulatory regime established for the registration of brokers and/or dealers or trading platform of securities and/or (b) is required to be registered under the Commodity Exchange Act or under any similar regulatory regime established for the registration of operators, merchants, brokers and/or dealers of commodities, including, but not limited to, future commissions merchants, introducing brokers and commodity pool operators. For the avoidance of doubt, as of the Third Amendment Effective Date, MarketAxess Corporation, MarketAxess Europe Limited, MarketAxess Plataforma de Negociação Ltda., MarketAxess SEF Corporation, MarketAxess Capital Limited, MarketAxess Singapore PTE Limited, LiquidityEdge and MarketAxess NL BV are the only existing Broker-Dealer Subsidiaries.

“***Commitment***” means, with respect to each Lender, the commitment of such Lender to make Revolving Loans and to acquire participations in Letters of Credit and Swingline Loans hereunder, expressed as an amount representing the maximum aggregate amount of such Lender’s Revolving Credit Exposure hereunder, as such commitment may be (a) reduced from time to time pursuant to Section 2.08 or increased from time to time pursuant to Section 2.20 and (b) reduced or increased from time to time pursuant to assignments by or to such Lender pursuant to Section 9.04. The initial amount of each Lender’s Commitment is set forth on Schedule 2.01, or in the Assignment and Assumption or other documentation contemplated hereby pursuant to which such Lender shall have assumed its Commitment, as applicable. As of the Third Amendment Effective Date, there is a single Lender, and the initial aggregate amount of the Lender’s Commitment is $450,000,000.

1.2.Section 1.01 of the Credit Agreement is hereby further amended by inserting the following new defined terms in the correct alphabetical sequence to read as follows:

*“**Material Broker-Dealer Subsidiary**”* means each of (i) MarketAxess Corporation, (ii) MarketAxess Capital Limited, (iii) LiquidityEdge, (iv) MarketAxess Europe Limited, and (v) any other Broker Dealer Subsidiary that (a) is self-clearing its trades or (b) has gross revenues in excess of 5% of consolidated group revenues.

*“**Third Amendment Effective Date**”* means August 19, 2020.

1.3.Section 5.02 of the Credit Agreement is hereby amended by (i) deleting the *"and"* appearing at the end of clause (e) thereof, (ii) replacing the period at the end of clause (f) with a semicolon, and (iii) adding new clauses (g) and (h) immediately following clause (f) to read follows:

> (g)the formation, conversion, or acquisition of any Subsidiary that is a Broker-Dealer Subsidiary and that is not included in the last sentence of the definition of "Broker-Dealer Subsidiary"; and
>
> (h)the failure of any Broker-Dealer Subsidiary to meet the minimum capital requirements imposed by applicable regulatory authorities and how the Borrower plans to address such failure.

1.4.Section 5.06 of the Credit Agreement is hereby amended and restated in its entirety and as so amended and restated shall read as follows:

> SECTION 5.06 Books and Records; Inspection Rights. The Borrower will, and will cause each of its Subsidiaries to, (a) keep proper books of record and account in which full, true and correct in all material respects entries are made of all material financial dealings and transactions in relation to its business and activities, and (b) permit any representatives designated by the Administrative Agent or any Lender, upon reasonable prior notice, to visit and inspect its properties, to examine and make extracts from its books and records, to discuss its affairs, finances and condition with its officers and independent accountants (and hereby authorizes the Administrative Agent and each Lender to contact its independent accountants directly) and to provide contact information for each bank where each Loan Party has a depository and/or securities account and each such Loan Party hereby authorizes the Administrative Agent and each Lender to contact the bank(s) in order to request bank statements and/or balances, all at such reasonable times and as often as reasonably requested. Notwithstanding the foregoing, Administrative Agent and each Lender shall provide notice to Borrower prior to contacting its independent accountants pursuant to this Section 5.06 and shall provide Borrower the opportunity to join any such conversations with its independent accountants.

1.5.Section 6.01(c) of the Credit Agreement is hereby amended and restated in its entirety and as so amended and restated shall read as follows:

> (c)Indebtedness of the Borrower owed to any Subsidiary and of any Subsidiary owed to the Borrower or any other Subsidiary; provided, that (a) Indebtedness of any Subsidiary that is not a Loan Party owed to any Loan Party shall be subject to the

limitations set forth in Section 6.04, and (b) Indebtedness of any Subsidiary that is a Loan Party owed to any Subsidiary that is not a Loan Party shall be subordinated in right of payment to the Obligations on terms reasonably acceptable to the Administrative Agent; provided, further that notwithstanding the foregoing, the aggregate principal amount of Indebtedness of MarketAxess Corporation owed to any Loan Party at any time outstanding shall not exceed $500,000,000;

1.6.Section 6.04(d) of the Credit Agreement is hereby amended and restated in its entirety and as so amended and restated shall read as follows:

(d)Investments (i) by the Loan Parties in the Equity Interests of their respective subsidiaries that are not Loan Parties, (ii) by Subsidiaries that are not Loan Parties in the Equity Interests of their respective Subsidiaries, or (iii) consisting of loans or advances made by any Loan Party or any Broker-Dealer Subsidiary to any Subsidiary that is not a Loan Party, in an aggregate amount for all Investments covered by this clause (d) not to exceed the greater of (i) $50,000,000 and (ii) 15% of Consolidated Net Tangible Assets (measured as of the date of each Investment) at any time (as such amount is reduced by Guarantees permitted under the proviso to Section 6.01(d)); provided that notwithstanding the foregoing, the Loan Parties may make loans and advances to MarketAxess Corporation in an aggregate principal amount for all such loans and advances at any time outstanding not to exceed $500,000,000;

1.7.Section 6.09(b) of the Credit Agreement is hereby amended and restated in its entirety and as so amended and restated shall read as follows:

(b)Broker-Dealer Subsidiaries. The Borrower will not permit the monthly Regulatory Net Capital maintained by the Material Broker-Dealer Subsidiaries in the aggregate to be less than the amount that is 25% greater than the amount required to meet all net capital requirements imposed by any applicable regulatory authority on or with respect to Material Broker-Dealer Subsidiaries. The Borrower shall make such computations demonstrating compliance as of the last day of each fiscal quarter concurrently with any delivery of financial statements under Section 5.01 (a) or (b) and a duly completed Compliance Certificate.

1.8.Section 9.06(b) of the Credit Agreement is hereby amended and restated in its entirety and as so amended and restated shall read as follows:

(b)Delivery of an executed counterpart of a signature page of this Agreement by telecopy, emailed pdf. or any other electronic means that reproduces an image of the actual executed signature page shall be effective as delivery of a manually executed counterpart of this Agreement. The words "execution," "signed," "signature," "delivery," and words of like import in or relating to any document to be signed in connection with this Agreement and the transactions contemplated hereby shall be deemed to include Electronic Signatures, deliveries or the keeping of records in electronic form, each of which shall be of the same legal effect, validity or enforceability as a manually executed signature, physical delivery thereof or the use of a paper--based recordkeeping system, as the case may be, to the extent and as provided for in any applicable law, including the Federal Electronic Signatures in Global and National Commerce Act, the New York State Electronic Signatures and Records Act, or any other similar state laws based on the Uniform Electronic Transactions Act; provided that nothing herein shall require the Administrative Agent to accept electronic signatures in any form or format without its prior written consent. Without limiting the generality of the foregoing, the Borrower hereby (i) agrees that, for all purposes, including without limitation, in connection with any workout, restructuring, enforcement of remedies, bankruptcy proceedings or litigation among the Administrative Agent, the Lenders and the Loan Parties, electronic images of this Agreement or any other Loan Documents (in each case, including with respect to any signature pages thereto) shall have the same legal effect, validity and enforceability as any paper original, and (ii) waives any argument, defense or right to contest the validity or enforceability of the Loan Documents based solely on the lack of paper original copies of any Loan Documents, including with respect to any signature pages thereto.

1.9.Schedule 2.01 to the Credit Agreement is hereby deleted in its entirety and replaced with Schedule 2.01 attached hereto as **Exhibit A**.

1.10Exhibit D to the Credit Agreement is hereby amended by replacing each reference to *"MarketAxess Corporation and MarketAxess Capital Limited"* with *"the Material Broker-Dealer Subsidiaries"*.

SECTION 2. CONDITIONS PRECEDENT.

The effectiveness of this Amendment is subject to the satisfaction of all of the following conditions precedent:

2.1.The Borrower, the Lenders and the Administrative Agent shall have executed and delivered this Amendment.

2.2.The Administrative Agent shall have received all other agreements, documents, instruments and other items set forth on the closing checklist attached hereto as **Exhibit B** attached hereto, each in form and substance reasonably satisfactory to the Administrative Agent.

2.3.Since December 31, 2019, there has been no event, development or circumstance that, individually or in the aggregate, could reasonably be expected to have a Material Adverse Effect.

2.4.The Borrower shall have paid on demand all costs and expenses of or incurred by the Administrative Agent in connection with the negotiation, preparation, execution and delivery of this Amendment, including the reasonable and documented fees and expenses of one external counsel for the Administrative Agent, in each case to the extent invoiced as of the date of this Amendment.

2.5.As consideration for the increase in the Aggregate Commitments and the other agreements set forth in this Amendment, the Borrower shall pay to the Administrative Agent, for the ratable benefit of each Lender, an amendment fee (the "*Amendment Fee*") in an amount equal to 0.075% of the increase to such Lender's Commitment under the Credit Agreement effective as of the date hereof, and such Amendment Fee shall be due and payable on the date hereof.

2.6.Legal matters incident to the execution and delivery of this Amendment shall be satisfactory to the Administrative Agent and its counsel.

SECTION 3. REPRESENTATIONS; AGREEMENT REGARDING EXPANSION OPTION.

3.1In order to induce the Lenders to execute and deliver this Amendment, the Borrower hereby represents to the Lenders that as of the date hereof (a) the representations and warranties set forth in the Loan Documents are and shall be and remain true and correct in all material respects (except in the case of a representation or warranty qualified by materiality in which case such representation or warranty shall be true and correct in all respects) as of the date hereof except for representations and warranties that relate to a prior date, which shall have been true and correct in all material respects (except in the case of a representation or warranty qualified by materiality in which case such representation or warranty shall be true and correct in all respects) as of the applicable date on which they were made and (b) no Default or Event of Default has occurred and is continuing after giving effect to this Amendment or shall result immediately after giving effect to this Amendment.

3.2In addition, the Borrower, by executing this Amendment, hereby represents and warrants that the Person executing this Amendment on behalf of such party is duly authorized to do so, such party has full right and authority to enter into this Amendment and to consummate the transactions described in this Amendment, and this Amendment constitutes the valid and legally binding obligation of such party and is enforceable against such party in accordance with its terms.

3.3Borrower acknowledges and agrees that the increase in Aggregate Commitments provided by this Third Amendment represents the election by Borrower of its expansion option referenced in Section 2.20 of the Credit Agreement and upon effectiveness of this Amendment, no further increases may be requested pursuant to such provision.

SECTION 4. MISCELLANEOUS.

4.1.This Amendment amends the Existing Credit Agreement. The execution of this Amendment and any other Loan Documents executed in connection herewith does not extinguish the indebtedness outstanding in connection with the Existing Credit Agreement nor does it constitute a novation with respect to such indebtedness. The Grantors previously executed and delivered to the Lenders the Security Agreement and certain other Collateral Documents. Each Grantor hereby acknowledges and agrees that the Liens created and provided for by the Collateral Documents continue to secure, among other things, the Obligations arising under the Credit Agreement as amended hereby; and the Collateral Documents and the rights and remedies of the Lenders thereunder, the obligations of the Borrower thereunder, and the Liens created and provided for thereunder remain in full force and effect and shall not be affected, impaired or discharged hereby. Nothing herein contained shall in any manner affect or impair the priority of the Liens and security interests created and provided for by the Collateral Documents as to the indebtedness which would be secured thereby prior to giving effect to this Amendment. In addition, the Borrower hereby ratifies and confirms its obligations under each other Loan Document, including but not limited to the Amended and Restated Guarantee Agreement.

4.2.Except as specifically amended herein, the Credit Agreement and each other Loan Document shall continue in full force and effect in accordance with its original terms. Reference to this specific Amendment need not be made in the Credit Agreement or any other instrument or document executed in connection therewith, or in any certificate, letter or communication issued or made pursuant to or with respect to the Credit Agreement, any reference in any of such items to the Credit Agreement being sufficient to refer to the Credit Agreement as amended hereby.

4.3.This Amendment may be executed in any number of counterparts, and by the different parties on different counterpart signature pages, all of which taken together shall constitute one and the same agreement. Any of the parties hereto may execute this Amendment by signing any such counterpart and each of such counterparts shall for all purposes be deemed to be an original. Delivery of a counterpart hereof by facsimile transmission or by e-mail transmission of an Adobe portable document format file (also known as a *"PDF"* file) shall be effective as delivery of a manually executed counterpart hereof. This Amendment shall be construed in accordance with and governed by the law of the State of New York.

[SIGNATURE PAGES TO FOLLOW]

This Third Amendment to Amended and Restated Credit Agreement is entered into as of the date and year first above written.

MarketAxess Holdings Inc., as Borrower

By: /s/ Antonio DeLise

Name:Antonio Delise

Name:Antonio Delise

Title: Chief Financial Officer

Title: Chief Financial Officer

JPMorgan Chase Bank, N.A., individually, and as
Administrative Agent, Swingline Lender and Issuing Bank

By: /s/ Jennifer M. Dunneback

Name: Jennifer M. Dunneback

Name: Jennifer M. Dunneback

Title: Vice President

Title: Vice President

Exhibit A to Third Amendment

<u>Schedule 2.01</u>
Commitments

<u>Lender</u>	**<u>Commitment</u>**
JPMORGAN CHASE BANK, N.A.	$450,000,000

Fourth Amendment to Amended and Restated Credit Agreement

This Fourth Amendment to Amended and Restated Credit Agreement (herein, the *"Amendment"*) entered into as of October 8, 2020, is by and among MarketAxess Holdings Inc. (the *"Borrower"*), the Lenders party hereto and JPMorgan Chase Bank, N.A (the *"Administrative Agent"*).

Preliminary Statements

A.The Borrower, the Administrative Agent and the Lenders have entered into that certain Amended and Restated Credit Agreement dated as of October 30, 2015 (as amended, restated, supplemented or otherwise modified prior to the date hereof including pursuant to that certain Omnibus Amendment dated as of October 19, 2017, the *"Existing Credit Agreement"*).

B.The Borrower has requested that the Lenders extend the Maturity Date under the Existing Credit Agreement, and the Lenders are willing to do so under the terms and conditions set forth in this Amendment.

C. The Existing Credit Agreement as amended by this Amendment is hereinafter referred to as the "*Credit Agreement*". Any capitalized terms used herein without definition shall have the same meanings herein as such terms have in the Credit Agreement.

Now, Therefore, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

Section 1. Amendments to the Existing Credit Agreement.

Subject to the satisfaction of the conditions precedent set forth in Section 2 below, the Existing Credit Agreement shall be and hereby is amended as follows:

1.1.The following defined term appearing in Section 1.01 of the Credit Agreement is hereby amended and restated in its entirety and as so amended and restated shall read as follows:

1.1.The following defined term appearing in Section 1.01 of the Credit Agreement is hereby amended and restated in its entirety and as so amended and restated shall read as follows:

"***Maturity Date***" means the earlier to occur of (i) the date that the Borrower enters into a new facility with the Administrative Agent that is intended to replace this Agreement and (ii) November 16, 2020.

Section 2. Conditions Precedent.

The effectiveness of this Amendment is subject to the satisfaction of all of the following conditions precedent:

2.1.The Borrower, the Lenders and the Administrative Agent shall have executed and delivered this Amendment.

2.2.Since December 31, 2019, there has been no event, development or circumstance that, individually or in the aggregate, could reasonably be expected to have a Material Adverse Effect.

2.3.As consideration for the agreements set forth in this Amendment, the Borrower shall pay to the Administrative Agent a non-refundable extension fee (the "*Extension Fee*") in an amount equal to $50,000, and such Extension Fee shall be due and payable on the date hereof.

2.4.The Borrower shall have paid on demand all costs and expenses of or incurred by the Administrative Agent in connection with the negotiation, preparation, execution and delivery of this Amendment, including the reasonable and documented fees and expenses of one external counsel for the Administrative Agent, in each case to the extent invoiced as of the date of this Amendment.

2.5.Legal matters incident to the execution and delivery of this Amendment shall be satisfactory to the Administrative Agent and its counsel.

SECTION 3. REPRESENTATIONS.

3.1In order to induce the Lenders to execute and deliver this Amendment, the Borrower hereby represents to the Lenders that as of the date hereof (a) the representations and warranties set forth in the Loan Documents are and shall be and remain true and correct in all material respects (except in the case of a representation or warranty qualified by materiality in which case such representation or warranty shall be true and correct in all respects) as of the date hereof except for representations and warranties that relate to a prior date, which shall have been true and correct in all material respects (except in the case of a representation or warranty qualified by materiality in which case such representation or warranty shall be true and correct in all respects) as of the applicable date on which they were made and (b) no Default or Event of Default has occurred and is continuing after giving effect to this Amendment or shall result immediately after giving effect to this Amendment.

3.2In addition, the Borrower, by executing this Amendment, hereby represents and warrants that the Person executing this Amendment on behalf of such party is duly authorized to do so, such party has full right and authority to enter into this Amendment and to consummate the transactions described in this Amendment, and this Amendment constitutes the valid and legally binding obligation of such party and is enforceable against such party in accordance with its terms.

SECTION 4. MISCELLANEOUS.

4.1.This Amendment amends the Existing Credit Agreement and is a Loan Document. The execution of this Amendment and any other Loan Documents executed in connection herewith does not extinguish the indebtedness outstanding in connection with the Existing Credit Agreement nor does it constitute a novation with respect to such indebtedness. The Grantors previously executed and delivered to the Lenders the Security Agreement and certain other Collateral Documents. Each Grantor hereby acknowledges and agrees that the Liens created and provided for by the Collateral Documents continue to secure, among other things, the Obligations arising under the Credit Agreement as amended hereby; and the Collateral Documents and the rights and remedies of the Lenders thereunder, the obligations of the Borrower thereunder, and the Liens created and provided for thereunder remain in full force and effect and shall not be affected, impaired or discharged hereby. Nothing herein contained shall in any manner affect or impair the priority of the Liens and security interests created and provided for by the Collateral Documents as to the indebtedness which would be secured thereby prior to giving effect to this Amendment. In addition, the Borrower hereby ratifies and confirms its obligations under each other Loan Document, including but not limited to the Amended and Restated Guarantee Agreement.

4.2.Except as specifically amended herein, the Credit Agreement and each other Loan Document shall continue in full force and effect in accordance with its original terms. Reference to this specific Amendment need not be made in the Credit Agreement or any other instrument or document executed in connection therewith, or in any certificate, letter or communication issued or made pursuant to or with respect to the Credit Agreement, any reference in any of such items to the Credit Agreement being sufficient to refer to the Credit Agreement as amended hereby.

4.3.This Amendment may be executed in any number of counterparts, and by the different parties on different counterpart signature pages, all of which taken together shall constitute one and the same agreement. Any of the parties hereto may execute this Amendment by signing any such counterpart and each of such counterparts shall for all purposes be deemed to be an original. Delivery of a counterpart hereof by facsimile transmission or by e-mail transmission of an Adobe portable document format file (also known as a *"PDF"* file) shall be effective as delivery of a manually executed counterpart hereof. This Amendment may be in the form of an Electronic Record and may be executed using Electronic Signatures (including, without limitation, facsimile and .pdf) and shall be considered an original, and shall have the same legal effect, validity and enforceability as a paper record. For the avoidance of doubt, the authorization under this paragraph may include, without limitation, use or acceptance by the Administrative Agent of a manually signed paper Amendment which has been converted into electronic form (such as scanned into PDF format), or an electronically signed Amendment converted into another format, for transmission, delivery and/or retention. For purposes hereof, "Electronic Record" and "Electronic Signature" shall have the meanings assigned to them, respectively, by 15 USC §7006, as it may be amended from time to time. This Amendment shall be construed in accordance with and governed by the law of the State of New York.

[Signature Pages to Follow]

This Fourth Amendment to Amended and Restated Credit Agreement is entered into as of the date and year first above written.

MARKETAXESS HOLDINGS INC., as Borrower

By: /s/ Antonio L. DeLise

Name: Antonio L. DeLise

Name: Antonio L. DeLise

Title: Chief Financial Officer

Title: Chief Financial Officer

JPMorgan Chase Bank, N.A., individually, and as
Administrative Agent, Swingline Lender and Issuing Bank

By: /s/ Jennifer M. Dunneback

Name: Jennifer M. Dunneback

Name: Jennifer M. Dunneback

Title: Vice President

Title: Vice President

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: October 30, 2020

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: October 30, 2020

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 September 30, 2020

In connection with the Quarterly Report on Form 10-Q of MarketAxess Holdings Inc. (the “Company”) for the quarter ended September 30, 2020, 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

October 30, 2020

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 September 30, 2020

In connection with the Quarterly Report on Form 10-Q of MarketAxess Holdings Inc. (the "Company") for the quarter ended September 30, 2020, 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

October 30, 2020

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.