

**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, 2019**

or

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

Commission file number: **001-37352**

Virtu Financial, Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

32-0420206

(I.R.S. Employer Identification No.)

**One Liberty Plaza
165 Broadway**

New York, New York

(Address of principal executive offices)

10006

(Zip Code)

(212) 418-0100

(Registrant's telephone number, including area code)

(Former name, former address and former fiscal year, if changed since last report)

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

Title of each class	Trading symbol(s)	Name of each exchange on which registered
Class A common stock, par value \$0.00001 per share	VIRT	The NASDAQ Stock Market LLC

Class of Stock	Shares outstanding as of November 8, 2019
Class A common stock, par value \$0.00001 per share	117,735,981
Class C common stock, par value \$0.00001 per share	12,904,525
Class D common stock, par value \$0.00001 per share	60,091,740

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

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

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

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

Emerging growth company

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

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

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FOR THE QUARTER ENDED SEPTEMBER 30, 2019

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Unless the context otherwise requires, the terms “we,” “us,” “our,” “Virtu” and the “Company” refer to Virtu Financial, Inc., a Delaware corporation, and its consolidated subsidiaries and the term “Virtu Financial” refers to Virtu Financial LLC, a Delaware limited liability company and a consolidated subsidiary of ours.

PART I - FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

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Virtu Financial, Inc. and Subsidiaries
Condensed Consolidated Statements of Financial Condition (Unaudited)

(in thousands, except share data)	September 30, 2019	December 31, 2018
Assets		
Cash and cash equivalents	\$ 372,710	\$ 729,547
Cash restricted or segregated under regulations and other	22,109	6,500
Securities borrowed	1,578,941	1,399,684
Securities purchased under agreements to resell	18,805	15,475
Receivables from broker-dealers and clearing organizations	1,563,731	1,101,449
Trading assets, at fair value:		
Financial instruments owned	1,753,886	1,848,806
Financial instruments owned and pledged	920,950	791,115
Receivables from customers	267,108	10,567
Property, equipment and capitalized software (net of accumulated depreciation of \$441,215 and \$323,718 as of September 30, 2019 and December 31, 2018, respectively)	117,236	113,322
Operating lease right-of-use assets	305,116	—
Goodwill	1,195,477	836,583
Intangibles (net of accumulated amortization of \$199,080 and \$148,644 as of September 30, 2019 and December 31, 2018, respectively)	513,153	83,989
Deferred tax assets	247,612	200,359
Other assets (\$49,312 and \$48,273, at fair value, as of September 30, 2019 and December 31, 2018, respectively)	309,911	243,582
Total assets	\$ 9,186,745	\$ 7,380,978
Liabilities and equity		
Liabilities		
Short-term borrowings	\$ 94,888	\$ 15,128
Securities loaned	1,093,321	1,130,039
Securities sold under agreements to repurchase	281,783	281,861
Payables to broker-dealers and clearing organizations	1,024,549	567,441
Payables to customers	118,259	10,860
Trading liabilities, at fair value:		
Financial instruments sold, not yet purchased	2,248,932	2,475,395
Tax receivable agreement obligations	256,700	214,403
Deferred tax liabilities	65,861	—
Accounts payable, accrued expenses and other liabilities	395,987	284,115
Operating lease liabilities	375,390	—
Long-term borrowings	1,934,358	907,037
Total liabilities	7,890,028	5,886,279
Commitments and Contingencies (Note 15)		
Virtu Financial Inc. Stockholders' equity		
Class A common stock (par value \$0.00001), Authorized — 1,000,000,000 and 1,000,000,000 shares, Issued — 119,894,982 and 108,955,048 shares, Outstanding — 117,716,211 and 106,776,277 shares at September 30, 2019 and December 31, 2018, respectively	1	1
Class B common stock (par value \$0.00001), Authorized — 175,000,000 and 175,000,000 shares, Issued and Outstanding — 0 and 0 shares at September 30, 2019 and December 31, 2018, respectively	—	—
Class C common stock (par value \$0.00001), Authorized — 90,000,000 and 90,000,000 shares, Issued and Outstanding — 12,904,525 and 13,749,886 shares at September 30, 2019 and December 31, 2018, respectively	—	—
Class D common stock (par value \$0.00001), Authorized — 175,000,000 and 175,000,000 shares, Issued and Outstanding — 60,091,740 and 69,091,740 shares at September 30, 2019 and December 31, 2018, respectively	1	1
Treasury stock, at cost, 2,178,771 and 2,178,771 shares at September 30, 2019 and December 31, 2018, respectively	(55,005)	(55,005)
Additional paid-in capital	1,070,123	1,010,468
Retained earnings (accumulated deficit)	(40,120)	96,513
Accumulated other comprehensive income (loss)	(5,986)	(82)

Virtu Financial, Inc. and Subsidiaries
Condensed Consolidated Statements of Financial Condition (Unaudited)

(in thousands, except share data)	September 30, 2019	December 31, 2018
Total Virtu Financial Inc. stockholders' equity	969,014	1,051,896
Noncontrolling interest	327,703	442,803
Total equity	1,296,717	1,494,699
Total liabilities and equity	\$ 9,186,745	\$ 7,380,978

See accompanying notes to the Condensed Consolidated Financial Statements (Unaudited).

Virtu Financial, Inc. and Subsidiaries
Condensed Consolidated Statements of Comprehensive Income (Loss) (Unaudited)

(in thousands, except share and per share data)	For the Three Months Ended September 30,		For the Nine Months Ended September 30,	
	2019	2018	2019	2018
Revenues:				
Trading income, net	\$ 220,148	\$ 235,699	\$ 683,611	\$ 900,454
Interest and dividends income	23,352	21,451	76,645	61,337
Commissions, net and technology services	139,627	40,252	359,894	140,661
Other, net	2,237	(2,279)	6,662	335,851
Total revenue	385,364	295,123	1,126,812	1,438,303
Operating Expenses:				
Brokerage, exchange and clearance fees, net	74,315	68,638	214,219	229,779
Communication and data processing	59,767	39,516	156,004	137,793
Employee compensation and payroll taxes	90,595	44,827	282,135	150,723
Payments for order flow	24,474	18,283	71,671	50,381
Interest and dividends expense	34,546	32,566	116,739	101,199
Operations and administrative	28,357	17,254	85,232	53,671
Depreciation and amortization	17,598	16,012	48,859	47,558
Amortization of purchased intangibles and acquired capitalized software	18,908	6,367	50,436	20,042
Termination of office leases	1,278	1,440	66,490	23,300
Debt issue cost related to debt refinancing and prepayment	—	3,347	7,894	11,727
Transaction advisory fees and expenses	7,163	(261)	24,074	8,985
Charges related to share based compensation at IPO	—	—	—	24
Financing interest expense on long-term borrowings	34,191	17,709	91,669	55,536
Total operating expenses	391,192	265,698	1,215,422	890,718
Income (loss) before income taxes and noncontrolling interest	(5,828)	29,425	(88,610)	547,585
Provision for (benefit from) income taxes	(644)	13,815	(14,322)	75,330
Net income (loss)	(5,184)	15,610	(74,288)	472,255
Noncontrolling interest	872	(6,998)	33,412	(263,682)
Net income (loss) available for common stockholders	\$ (4,312)	\$ 8,612	\$ (40,876)	\$ 208,573
Earnings (loss) per share				
Basic	\$ (0.04)	\$ 0.08	\$ (0.38)	\$ 2.07
Diluted	\$ (0.04)	\$ 0.08	\$ (0.38)	\$ 2.04
Weighted average common shares outstanding				
Basic	117,548,769	106,692,034	112,602,934	99,038,084
Diluted	117,548,769	107,128,206	112,602,934	100,468,860
Net income (loss)	\$ (5,184)	\$ 15,610	\$ (74,288)	\$ 472,255
Other comprehensive income (loss)				
Foreign exchange translation adjustment, net of taxes	(7,197)	(666)	(10,057)	(3,713)
Comprehensive income (loss)	(12,381)	14,944	(84,345)	468,542
Less: Comprehensive income (loss) attributable to noncontrolling interest	3,598	(6,708)	37,221	(262,239)
Comprehensive income (loss) attributable to common stockholders	\$ (8,783)	\$ 8,236	\$ (47,124)	\$ 206,303

See accompanying notes to the Condensed Consolidated Financial Statements (Unaudited).

Virtu Financial, Inc. and Subsidiaries
Condensed Consolidated Statements of Changes in Equity (Unaudited)
Three and Nine Months Ended September 30, 2019 and 2018

(in thousands, except share and interest data)	Class A Common Stock		Class C Common Stock		Class D Common Stock		Treasury Stock		Additional Paid-in Capital	Retained Earnings (Accumulated Deficit)	Accumulated Other Comprehensive Income (Loss)	Total Virtu Financial Inc. Stockholders' Equity	Non-Controlling Interest	Total Equity
	Shares	Amounts	Shares	Amounts	Shares	Amounts	Shares	Amounts	Amounts					
Balance at December 31, 2018	108,955,048	\$ 1	13,749,886	\$ —	69,091,740	\$ 1	(2,178,771)	\$(55,005)	\$ 1,010,468	\$ 96,513	\$ (82)	\$ 1,051,896	\$ 442,803	\$ 1,494,699
Share based compensation	965,421	—	—	—	—	—	—	—	30,764	—	—	30,764	—	30,764
Repurchase of Class C common stock	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Treasury stock purchases	(325,195)	—	—	—	—	—	—	—	—	(8,805)	—	(8,805)	—	(8,805)
Stock options exercised	86,224	—	—	—	—	—	—	—	859	—	—	859	—	859
Net income (loss)	—	—	—	—	—	—	—	—	—	(6,673)	—	(6,673)	(6,946)	(13,619)
Foreign exchange translation adjustment	—	—	—	—	—	—	—	—	—	—	(2,136)	(2,136)	(1,608)	(3,744)
Distribution from Virtu Financial to non-controlling interest	—	—	—	—	—	—	—	—	—	—	—	—	(37,196)	(37,196)
Dividends	—	—	—	—	—	—	—	—	—	(26,312)	—	(26,312)	—	(26,312)
Issuance of common stock in connection with employee exchanges	240,000	—	—	—	—	—	—	—	—	—	—	—	—	—
Repurchase of Virtu Financial Units and corresponding number of Class C common stock in connection with employee exchanges	—	—	(240,000)	—	—	—	—	—	—	—	—	—	—	—
Balance at March 31, 2019	109,921,498	\$ 1	13,509,886	\$ —	69,091,740	\$ 1	(2,178,771)	\$(55,005)	\$ 1,042,091	\$ 54,723	\$ (2,218)	\$ 1,039,593	\$ 397,053	\$ 1,436,646
Share based compensation	257,750	—	—	—	—	—	—	—	16,443	—	—	16,443	—	16,443
Repurchase of Class C common stock	—	—	(3,584)	—	—	—	—	—	—	(96)	—	(96)	—	(96)
Treasury stock purchases	(90,852)	—	—	—	—	—	—	—	—	(2,093)	—	(2,093)	—	(2,093)
Stock option exercised	35,120	—	—	—	—	—	—	—	72	—	—	72	—	72
Net income (loss)	—	—	—	—	—	—	—	—	—	(29,891)	—	(29,891)	(25,594)	(55,485)
Foreign exchange translation adjustment	—	—	—	—	—	—	—	—	—	—	548	548	336	884
Distribution from Virtu Financial to non-controlling interest	—	—	—	—	—	—	—	—	—	—	—	—	(14,891)	(14,891)
Dividends	—	—	—	—	—	—	—	—	—	(28,592)	—	(28,592)	—	(28,592)
Issuance of common stock in connection with employee exchanges	367,900	—	—	—	—	—	—	—	—	—	—	—	—	—
Issuance of Common Stock in connection with secondary offering, net of offering costs	9,000,000	—	—	—	(9,000,000)	—	—	—	(375)	—	—	(375)	—	(375)
Repurchase of Virtu Financial Units and corresponding number of Class C common stock in connection with employee exchanges	—	—	(367,900)	—	—	—	—	—	—	—	—	—	—	—
Issuance of tax receivable agreements in connection with employee exchange	—	—	—	—	—	—	—	—	(644)	—	—	(644)	—	(644)
Balance at June 30, 2019	119,491,416	\$ 1	13,138,402	\$ —	60,091,740	\$ 1	(2,178,771)	\$(55,005)	\$ 1,057,587	\$ (5,949)	\$ (1,670)	\$ 994,965	\$ 356,904	\$ 1,351,869
Share based compensation	227,579	—	—	—	—	—	—	—	12,536	—	—	12,536	—	12,536
Repurchase of Class C common stock	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Treasury stock purchases	(57,890)	—	—	—	—	—	—	—	—	(1,167)	—	(1,167)	—	(1,167)
Stock option exercised	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Net income	—	—	—	—	—	—	—	—	—	(4,312)	—	(4,312)	(872)	(5,184)
Foreign exchange translation adjustment	—	—	—	—	—	—	—	—	—	—	(4,316)	(4,316)	(2,881)	(7,197)
Distribution from Virtu Financial to non-controlling interest	—	—	—	—	—	—	—	—	—	—	—	—	(25,448)	(25,448)
Dividends	—	—	—	—	—	—	—	—	—	(28,692)	—	(28,692)	—	(28,692)
Issuance of Class A common stock	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Issuance of common stock in connection with employee exchanges	233,877	—	—	—	—	—	—	—	—	—	—	—	—	—

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(in thousands, except share and interest data)	Class A Common Stock		Class C Common Stock		Class D Common Stock		Treasury Stock		Additional Paid-in Capital	Retained Earnings (Accumulated Deficit)	Accumulated Other Comprehensive Income (Loss)	Total Virtu Financial Inc. Stockholders' Equity	Non-Controlling Interest	Total Equity
	Shares	Amounts	Shares	Amounts	Shares	Amounts	Shares	Amounts	Amounts					
Issuance of Common Stock in connection with secondary offering, net of offering costs	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Repurchase of Virtu Financial Units and corresponding number of Class C common stock in connection with employee exchanges	—	—	(233,877)	—	—	—	—	—	—	—	—	—	—	—
Issuance of tax receivable agreements in connection with employee exchange	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Balance at September 30, 2019	119,894,982	\$ 1	12,904,525	\$ —	60,091,740	\$ 1	(2,178,771)	\$ (55,005)	\$ 1,070,123	\$ (40,120)	\$ (5,986)	\$ 969,014	\$ 327,703	\$ 1,296,717

(in thousands, except share and interest data)	Class A Common Stock		Class C Common Stock		Class D Common Stock		Treasury Stock		Additional Paid-in Capital	Retained Earnings (Accumulated Deficit)	Accumulated Other Comprehensive Income (Loss)	Total Virtu Financial Inc. Stockholders' Equity	Non-Controlling Interest	Total Equity
	Shares	Amounts	Shares	Amounts	Shares	Amounts	Shares	Amounts	Amounts					
Balance at December 31, 2017	90,415,532	\$ 1	17,880,239	\$ —	79,610,490	\$ 1	(616,923)	\$ (11,041)	\$ 900,746	\$ (62,129)	\$ 2,991	\$ 830,569	\$ 321,009	\$ 1,151,578
Share based compensation	744,536	—	—	—	—	—	—	—	16,632	—	—	16,632	—	16,632
Repurchase of Class C common stock	—	—	(18,154)	—	—	—	—	—	—	(332)	—	(332)	—	(332)
Treasury stock purchases	—	—	—	—	—	—	(558,084)	(14,444)	—	—	—	(14,444)	—	(14,444)
Stock options exercised	732,000	—	—	—	—	—	—	—	13,908	—	—	13,908	—	13,908
Net income	—	—	—	—	—	—	—	—	—	174,751	—	174,751	235,271	410,022
Foreign exchange translation adjustment	—	—	—	—	—	—	—	—	—	—	1,241	1,241	1,288	2,529
Distribution from Virtu Financial to non-controlling interest	—	—	—	—	—	—	—	—	—	—	—	—	(99,038)	(99,038)
Dividends	—	—	—	—	—	—	—	—	—	(22,380)	—	(22,380)	—	(22,380)
Issuance of common stock in connection with employee exchanges	795,521	—	—	—	—	—	—	—	—	—	—	—	—	—
Repurchase of Virtu Financial Units and corresponding number of Class C common stock in connection with employee exchanges	—	—	(795,521)	—	—	—	—	—	—	—	—	—	—	—
Balance at March 31, 2018	92,687,589	\$ 1	17,066,564	\$ —	79,610,490	\$ 1	(1,175,007)	\$ (25,485)	\$ 931,286	\$ 89,910	\$ 4,232	\$ 999,945	\$ 458,530	\$ 1,458,475
Share based compensation	(150,000)	—	—	—	—	—	—	—	6,011	—	—	6,011	—	6,011
Repurchase of Class C common stock	—	—	(22,601)	—	—	—	—	—	—	(756)	—	(756)	—	(756)
Treasury stock purchases	—	—	—	—	—	—	(1,003,764)	(29,520)	—	—	—	(29,520)	—	(29,520)
Stock option exercised	3,317,057	—	—	—	—	—	—	—	63,024	—	—	63,024	—	63,024
Net income	—	—	—	—	—	—	—	—	—	25,209	—	25,209	21,413	46,622
Foreign exchange translation adjustment	—	—	—	—	—	—	—	—	—	—	(3,135)	(3,135)	(2,441)	(5,576)
Distribution from Virtu Financial to non-controlling interest	—	—	—	—	—	—	—	—	—	—	—	—	(66,575)	(66,575)
Dividends	—	—	—	—	—	—	—	—	—	(25,930)	—	(25,930)	—	(25,930)
Issuance of common stock in connection with employee exchanges	2,712,696	—	—	—	—	—	—	—	—	—	—	—	—	—
Issuance of Common Stock in connection with secondary offering, net of offering costs	10,518,750	—	—	—	(10,518,750)	—	—	—	(710)	—	—	(710)	—	(710)
Repurchase of Virtu Financial Units and corresponding number of Class C common stock in connection with employee exchanges	—	—	(2,712,696)	—	—	—	—	—	—	—	—	—	—	—
Issuance of tax receivable agreements in connection with employee exchange	—	—	—	—	—	—	—	—	(3,439)	—	—	(3,439)	—	(3,439)

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(in thousands, except share and interest data)	Class A Common Stock		Class C Common Stock		Class D Common Stock		Treasury Stock		Additional Paid-in Capital	Retained Earnings (Accumulated Deficit)	Accumulated Other Comprehensive Income (Loss)	Total Virtu Financial Inc. Stockholders' Equity	Non-Controlling Interest	Total Equity
	Shares	Amounts	Shares	Amounts	Shares	Amounts	Shares	Amounts	Amounts					
Balance at June 30, 2018	109,086,092	\$ 1	14,331,267	\$ —	69,091,740	\$ 1	(2,178,771)	\$ (55,005)	\$ 996,172	\$ 88,433	\$ 1,097	\$ 1,030,699	\$ 410,927	\$ 1,441,626
Share based compensation	75,979	—	—	—	—	—	—	—	6,065	—	—	6,065	—	6,065
Repurchase of Class C common stock	—	—	(330,136)	—	—	—	—	—	—	(7,128)	—	(7,128)	—	(7,128)
Treasury stock purchases	(664,450)	—	—	—	—	—	—	—	—	(14,254)	—	(14,254)	—	(14,254)
Stock option exercised	9,616	—	—	—	—	—	—	—	(178)	—	—	(178)	—	(178)
Net income	—	—	—	—	—	—	—	—	—	8,612	—	8,612	6,998	15,610
Foreign exchange translation adjustment	—	—	—	—	—	—	—	—	—	—	(376)	(376)	(290)	(666)
Distribution from Virtu Financial to non-controlling interest	—	—	—	—	—	—	—	—	—	—	—	—	(30,448)	(30,448)
Dividends	—	—	—	—	—	—	—	—	—	(26,017)	—	(26,017)	—	(26,017)
Issuance of Class A common stock	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Issuance of common stock in connection with employee exchanges	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Issuance of Common Stock in connection with secondary offering, net of offering costs	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Repurchase of Virtu Financial Units and corresponding number of Class C common stock in connection with employee exchanges	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Issuance of tax receivable agreements in connection with employee exchange	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Balance at September 30, 2018	108,507,237	\$ 1	14,001,131	\$ —	69,091,740	\$ 1	(2,178,771)	\$ (55,005)	\$ 1,002,059	\$ 49,646	\$ 721	\$ 997,423	\$ 387,187	\$ 1,384,610

See accompanying notes to the Condensed Consolidated Financial Statements (Unaudited).

Virtu Financial, Inc. and Subsidiaries
Condensed Consolidated Statements of Cash Flows (Unaudited)

(in thousands)	Nine Months Ended September 30,	
	2019	2018
Cash flows from operating activities		
Net income (loss)	\$ (74,288)	\$ 472,255
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	48,859	47,558
Amortization of purchased intangibles and acquired capitalized software	50,436	20,042
Debt issue cost related to debt refinancing and prepayment	7,896	10,645
Amortization of debt issuance costs and deferred financing fees	9,513	7,973
Termination of office leases	66,490	23,300
Share based compensation	55,690	22,537
Reserve for legal matters	—	1,620
Write-down of assets	—	3,221
Connectivity early termination	—	7,062
Deferred taxes	11,595	8,818
Gain on sale of businesses	—	(335,211)
Other	1,229	69
Changes in operating assets and liabilities (1):		
Securities borrowed	(166,075)	165,383
Securities purchased under agreements to resell	(3,330)	(10,014)
Receivables from broker-dealers and clearing organizations	(134,170)	(143,746)
Trading assets, at fair value	(34,392)	(214,131)
Receivables from customers	(133,844)	18,087
Other assets	(31,740)	94,851
Securities loaned	(54,381)	45,458
Securities sold under agreements to repurchase	(78)	(89,404)
Payables to broker-dealers and clearing organizations	305,065	236,138
Payables to customers	(9,020)	(28,875)
Trading liabilities, at fair value	(226,474)	13,496
Accounts payable, accrued expenses and other liabilities	(35,203)	(63,621)
Net cash provided by (used in) operating activities	(346,222)	313,511
Cash flows from investing activities		
Development of capitalized software	(25,638)	(18,431)
Acquisition of property and equipment	(17,101)	(18,715)
Proceeds from sale of telecommunication assets	—	600
Proceeds from sale of BondPoint	—	400,192
ITG Acquisition, net of cash acquired, described in Note 3	(835,581)	—
Investment in joint ventures	(4,500)	—
Net cash provided by (used in) investing activities	(882,820)	363,646
Cash flows from financing activities		
Distribution from Virtu Financial to non-controlling interest	(77,535)	(196,061)
Dividends	(83,596)	(74,327)
Repurchase of Class C common stock	(96)	(8,216)
Purchase of treasury stock	(12,065)	(58,218)
Stock options exercised	931	76,754
Short-term borrowings, net	63,748	(15,000)
Proceeds from long-term borrowings	1,492,500	—
Repayment of long term borrowings	(450,000)	(500,000)
Tax receivable agreement obligations	—	(12,359)
Debt issuance costs	(35,702)	(2,261)
Issuance of common stock in connection with secondary offering, net of offering costs	(375)	(710)
Net cash provided by (used in) financing activities	897,810	(790,398)
Effect of exchange rate changes on cash and cash equivalents	(9,996)	(3,713)

(in thousands)	Nine Months Ended September 30,	
	2019	2018
Net increase (decrease) in cash and cash equivalents	(341,228)	(116,954)
Cash and cash equivalents beginning of period	736,047	532,887
Cash and cash equivalents, end of period	<u>\$ 394,819</u>	<u>\$ 415,933</u>
Supplementary disclosure of cash flow information		
Cash paid for interest	\$ 127,477	\$ 89,102
Cash paid for taxes	5,003	84,337
Non-cash investing activities		
Share based compensation to developers relating to capitalized software	1,434	2,055
Non-cash financing activities		
Tax receivable agreement described in Note 6	(644)	—
(1) Net of ITG Acquisition; see Note 3		

See accompanying notes to the Condensed Consolidated Financial Statements (Unaudited).

Virtu Financial, Inc. and Subsidiaries
Notes to Condensed Consolidated Financial Statements (Unaudited)
(dollars in thousands, except shares and per share amounts, unless otherwise noted)

1. Organization and Basis of Presentation

Organization

The accompanying condensed consolidated financial statements include the accounts and operations of Virtu Financial, Inc. (“VFI” or, collectively with its wholly owned or controlled subsidiaries, “Virtu” or the “Company”). VFI is a Delaware corporation whose primary asset is its ownership interest in Virtu Financial LLC (“Virtu Financial”). As of September 30, 2019, VFI owned approximately 62.1% of the membership interests of Virtu Financial. VFI is the sole managing member of Virtu Financial and operates and controls all of the businesses and affairs of Virtu Financial and its subsidiaries (the “Group”).

The Company is a leading financial firm that leverages cutting edge technology to deliver liquidity to the global markets and innovative, transparent trading solutions to its clients. The Company provides deep liquidity in over 25,000 financial instruments, at over 235 venues, in 36 countries worldwide to help create more efficient markets. Leveraging its global market structure expertise and scaled, multi-asset infrastructure, the Company provides its clients a robust product suite including offerings in execution, liquidity sourcing, analytics and broker-neutral, multi-dealer platforms in workflow technology. The Company’s product offerings allow its clients to trade on hundreds of venues across over 50 countries and in multiple asset classes, including global equities, ETFs, foreign exchange, futures, fixed income and myriad other commodities. The Company’s integrated, multi-asset analytics platform provides a range of pre and post-trade services, data products and compliance tools that its clients rely upon to invest, trade and manage risk across global markets.

On July 20, 2017 (the “KCG Closing Date”), the Company completed the all-cash acquisition of KCG Holdings, Inc. (“KCG”) (the “Acquisition of KCG”).

On March 1, 2019 (the “ITG Closing Date”), the Company completed the acquisition of Investment Technology Group, Inc. and its subsidiaries (“ITG”) in an all-cash transaction valued at \$30.30 per ITG share, for a total of approximately \$1.0 billion (the “ITG Acquisition”). See Note 3 “ITG Acquisition” for further details. ITG was a global financial technology company that will contribute to the Company’s Execution Services segment.

Virtu Financial’s principal subsidiaries include Virtu Financial BD LLC (“VFBD”), Virtu Americas LLC (“VAL”), Virtu ITG LLC (“VITG”), Virtu Alternet Securities LLC (“VALT”) and Virtu Financial Capital Markets LLC (“VFCM”, collectively with VFBD, VAL, VITG, and VALT, the “broker-dealers”), which are self-clearing U.S. broker-dealers. Other principal U.S. subsidiaries include Virtu Financial Global Markets LLC, a U.S. trading entity focused on futures and currencies; Virtu ITG Analytics LLC, a provider of pre and post-trade analysis, fair value, and trade optimization services; and Virtu ITG Platforms LLC, a provider of workflow technology solutions and network connectivity services. Principal foreign subsidiaries include Virtu Financial Ireland Limited and Virtu ITG Europe Limited, each formed in Ireland; Virtu ITG Canada Corp. and Virtu Financial Canada ULC, each formed in Canada; Virtu Financial Asia Pty Ltd. and Virtu ITG Australia Limited, each formed in Australia; Virtu ITG Hong Kong Limited, formed in Hong Kong; and Virtu Financial Singapore Pte. Ltd. and Virtu ITG Singapore Pte. Ltd., each formed in Singapore, all of which are trading entities focused on asset classes in their respective geographic regions.

The Company has two operating segments: (i) Market Making and (ii) Execution Services; and one non-operating segment: Corporate. See Note 21 “Geographic Information and Business Segments” for a further discussion of the Company’s segments.

Basis of Consolidation and Form of Presentation

These condensed consolidated financial statements are presented in U.S. dollars, have been prepared pursuant to the rules and regulations of the U.S. Securities and Exchange Commission (“SEC”) regarding financial reporting with respect to Form 10-Q and accounting standards generally accepted in the United States of America (“U.S. GAAP”) promulgated by the Financial Accounting Standards Board (“FASB”) in the Accounting Standards Codification (“ASC” or the “Codification”), 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 periods presented. Certain information and footnote disclosures normally included in financial statements prepared in accordance with U.S. GAAP have been condensed or omitted in accordance with SEC rules and regulations. The

condensed 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, 2018. The condensed consolidated financial statements of the Company include its equity interests in Virtu Financial and its subsidiaries. The Company operates and controls all business and affairs of Virtu Financial and its operating subsidiaries indirectly through its equity interest in Virtu Financial.

Certain reclassifications have been made to the prior periods' condensed consolidated financial statements in order to conform to the current period presentation. Such reclassifications are immaterial, individually and in the aggregate, to both current and all previously issued financial statements taken as a whole and have no effect on previously reported consolidated net income available to common stockholders.

The condensed consolidated financial statements include the accounts of the Company and its majority and wholly-owned subsidiaries. As sole managing member of Virtu Financial, the Company exerts control over the Group's operations. The Company consolidates Virtu Financial and its subsidiaries' financial statements and records the interests in Virtu Financial that the Company does not own as noncontrolling interests. All intercompany accounts and transactions have been eliminated in consolidation.

As discussed in Note 3 "ITG Acquisition", the Company has accounted for the ITG Acquisition under the acquisition method of accounting. Under the acquisition method of accounting, the assets and liabilities of ITG, as of the ITG Closing Date, were recorded at their respective fair values and added to the carrying value of the Company's existing assets and liabilities. The reported financial condition, results of operations and cash flows of the Company for the periods following the ITG Acquisition reflect ITG's and the Company's balances, and reflect the impact of purchase accounting adjustments. The financial results for the three months ended September 30, 2019 comprise our results and the results of ITG for the entire applicable period. The financial results for the nine months ended September 30, 2019 comprise our results for the entire applicable period and the results of ITG from the ITG Closing Date through September 30, 2019. All periods prior to the ITG Closing Date comprise solely our results.

2. Summary of Significant Accounting Policies

Use of Estimates

The Company's condensed consolidated financial statements are prepared in conformity with U.S. GAAP, which require management to make estimates and assumptions regarding measurements including the fair value of trading assets and liabilities, goodwill and intangibles, compensation accruals, capitalized software, income tax, leases, litigation accruals, and other matters that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the condensed consolidated financial statements and the reported amounts of revenue and expenses during the reporting period. Accordingly, actual results could differ materially from those estimates.

Earnings Per Share

Earnings per share ("EPS") is calculated on both a basic and diluted basis. Basic EPS excludes dilution and is calculated by dividing income available to common stockholders by the weighted-average number of common shares outstanding for the period. Diluted EPS is calculated by dividing the net income available for common stockholders by the diluted weighted average shares outstanding for that period. Diluted EPS includes the determinants of the basic EPS and, in addition, reflects the dilutive effect of shares of common stock estimated to be distributed in the future under the Company's share based compensation plans.

The Company grants restricted stock units ("RSUs"), certain of which entitle recipients to receive nonforfeitable dividends during the vesting period on a basis equivalent to the dividends paid to holders of common stock. As a result, the unvested RSUs meet the definition of a participating security requiring the application of the two-class method. Under the two-class method, earnings available to common shareholders, including both distributed and undistributed earnings, are allocated to each class of common stock and participating securities according to dividends declared and participating rights in undistributed earnings, which may cause diluted EPS to be more dilutive than the calculation using the treasury stock method.

Cash and Cash Equivalents

Cash and cash equivalents include money market accounts, which are payable on demand, and short-term investments with an original maturity of less than 90 days. The Company maintains cash in bank deposit accounts that, at times, may exceed federally insured limits. The Company manages this risk by selecting financial institutions deemed highly creditworthy to minimize the risk.

Cash restricted or segregated under regulations and other represents (i) special reserve bank accounts for the exclusive benefit of customers (“Special Reserve Bank Account”) maintained by VAL and VITG in accordance with Rule 15c3-3 of the Securities Exchange Act of 1934, as amended (“Customer Protection Rule”), or proprietary accounts of broker-dealers, (ii) funds on deposit for Canadian and European trade clearing and settlement activity, (iii) segregated balances under a collateral account control agreement for the benefit of certain customers in Hong Kong, and (iv) funds relating to the securitization of bank guarantees supporting certain of the Company’s foreign leases.

Securities Borrowed and Securities Loaned

The Company conducts securities borrowing and lending activities with external counterparties. In connection with these transactions, the Company receives or posts collateral, which comprises cash and/or securities. In accordance with substantially all of its stock borrow agreements, the Company is permitted to sell or repledge the securities received. Securities borrowed or loaned are recorded based on the amount of cash collateral advanced or received. The initial cash collateral advanced or received generally approximates or is greater than 102% of the fair value of the underlying securities borrowed or loaned. The Company monitors the fair value of securities borrowed and loaned, and delivers or obtains additional collateral as appropriate. Receivables and payables with the same counterparty are not offset in the condensed consolidated statements of financial condition. Interest received or paid by the Company for these transactions is recorded gross on an accrual basis under Interest and dividends income or Interest and dividends expense in the condensed consolidated statements of comprehensive income.

Securities Purchased Under Agreements to Resell and Securities Sold Under Agreements to Repurchase

In a repurchase agreement, securities sold under agreements to repurchase are treated as collateralized financing transactions and are recorded at contract value, plus accrued interest, which approximates fair value. It is the Company's policy that its custodian take possession of the underlying collateral securities with a fair value approximately equal to the principal amount of the repurchase transaction, including accrued interest. For reverse repurchase agreements, the Company typically requires delivery of collateral with a fair value approximately equal to the carrying value of the relevant assets in the condensed consolidated statements of financial condition. To ensure that the fair value of the underlying collateral remains sufficient, the collateral is valued daily with additional collateral obtained or excess collateral returned, as permitted under contractual provisions. The Company does not net securities purchased under agreements to resell transactions with securities sold under agreements to repurchase transactions entered into with the same counterparty.

The Company has entered into bilateral and tri-party term and overnight repurchase and other collateralized financing agreements which bear interest at negotiated rates. The Company receives cash and makes delivery of financial instruments to a custodian who monitors the market value of these instruments on a daily basis. The market value of the instruments delivered must be equal to or in excess of the principal amount loaned under the repurchase agreements plus the agreed upon margin requirement. The custodian may request additional collateral, if appropriate. Interest received or paid by the Company for these transactions is recorded gross on an accrual basis under Interest and dividends income or Interest and dividends expense in the condensed consolidated statements of comprehensive income.

Receivables from/Payables to Broker-dealers and Clearing Organizations

Receivables from and payables to broker-dealers and clearing organizations primarily represent amounts due for unsettled trades, open equity in futures transactions, securities failed to deliver or failed to receive, deposits with clearing organizations or exchanges, and balances due from or due to prime brokers in relation to the Company’s trading. Amounts receivable from broker-dealers and clearing organizations may be restricted to the extent that they serve as deposits for securities sold, not yet purchased. The Company presents its balances, including outstanding principal balances on all broker credit facilities, on a net-by-counterparty basis within receivables from and payables to broker-dealers and clearing organizations when the criteria for offsetting are met.

In the normal course of business, a significant portion of the Company’s securities transactions, money balances, and security positions are transacted with several third-party brokers. The Company is subject to credit risk to the extent any broker

with whom it conducts business is unable to fulfill contractual obligations on its behalf. The Company monitors the financial condition of such brokers and to minimize the risk of any losses from these counterparties.

Financial Instruments Owned Including Those Pledged as Collateral and Financial Instruments Sold, Not Yet Purchased

Financial instruments owned and Financial instruments sold, not yet purchased relate to market making and trading activities, and include listed and other equity securities, listed equity options and fixed income securities.

The Company records financial instruments owned, including those pledged as collateral, and financial instruments sold, not yet purchased at fair value. Gains and losses arising from financial instrument transactions are recorded net on a trade-date basis in trading income, net, in the condensed consolidated statements of comprehensive income.

Fair Value Measurements

Fair value is defined as the price that would be received to sell an asset or would be paid to transfer a liability (i.e., the exit price) in an orderly transaction between market participants at the measurement date. Fair value measurements are not adjusted for transaction costs. The recognition of “block discounts” for large holdings of unrestricted financial instruments where quoted prices are readily and regularly available in an active market is prohibited. The Company categorizes its financial instruments into a three level hierarchy which prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy level assigned to each financial instrument is based on the assessment of the transparency and reliability of the inputs used in the valuation of such financial instruments at the measurement date based on the lowest level of input that is significant to the fair value measurement. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (level 1 measurement) and the lowest priority to unobservable inputs (level 3 measurements).

Financial instruments measured and reported at fair value are classified and disclosed in one of the following categories based on inputs:

Level 1 — Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities;

Level 2 — Quoted prices in markets that are not active and financial instruments for which all significant inputs are observable, either directly or indirectly; or

Level 3 — Prices or valuations that require inputs that are both significant to the fair value measurement and unobservable.

Transfers in or out of levels are recognized based on the beginning fair value of the period in which they occurred.

Fair Value Option

The fair value option election allows entities to make an irrevocable election of fair value as the initial and subsequent measurement attribute for certain eligible financial assets and liabilities. Unrealized gains and losses on items for which the fair value option has been elected are recorded in other, net in the condensed consolidated statements of comprehensive income. The decision to elect the fair value option is determined on an instrument by instrument basis, which must be applied to an entire instrument and is irrevocable once elected.

Derivative Instruments

Derivative instruments are used for trading purposes, including economic hedges of trading instruments, are carried at fair value, and include futures, forward contracts, and options. Gains or losses on these derivative instruments are recognized currently within Trading income, net in the condensed consolidated statement of comprehensive income. Fair values for exchange-traded derivatives, principally futures, are based on quoted market prices. Fair values for over-the-counter derivative instruments, principally forward contracts, are based on the values of the underlying financial instruments within the contract. The underlying instruments are currencies, which are actively traded. The Company presents its derivatives balances on a net-by-counterparty basis when the criteria for offsetting are met. Cash flows associated with such derivative activities are included in cash flows from operating activities on the condensed consolidated statements of cash flows.

Client Commission Arrangements

Institutional customers are permitted to allocate a portion of their gross commissions to pay for research products and other services provided by third parties and the Company's subsidiaries. The amounts allocated for those purposes are commonly referred to as client commission arrangements. The cost of independent research and directed brokerage arrangements is accounted for on an accrual basis. Commission revenue is recorded when earned on a trade date basis. Payments relating to client commission arrangements are netted against the commission revenues. Research receivable, including prepaid research on behalf of customers and balance transfers due from other broker-dealers, net of an allowance is included in Receivables from customers and Receivables from broker-dealers and clearing organizations, while accrued research payable is included in Accounts payable, accrued expenses, and other liabilities in the condensed consolidated statements of financial condition.

Property and Equipment

Property and equipment are carried at cost, less accumulated depreciation, except for the assets acquired in connection with acquisitions using the purchase accounting method, which were recorded at fair value on the respective date of acquisitions. Depreciation is provided using the straight-line method over estimated useful lives of the underlying assets. Routine maintenance, repairs and replacement costs are expensed as incurred and improvements that appreciably extend the useful life of the assets are capitalized. When property and equipment are sold or otherwise disposed of, the cost and related accumulated depreciation are removed from the accounts and any resulting gain or loss is recognized in income. Property and equipment are reviewed for impairment whenever events or changes in circumstances indicate that the related carrying amount may not be recoverable. Furniture, fixtures, and equipment are depreciated over three to seven years. Leasehold improvements are amortized over the lesser of the life of the improvement or the term of the lease.

Capitalized Software

The Company capitalizes costs of materials, consultants, and payroll and payroll related costs for employees incurred in developing internal-use software and software to be sold, leased, or marketed. Costs incurred during the preliminary project and post-implementation stages are charged to expense.

Management's judgment is required in determining the point at which various projects enter the stages at which costs may be capitalized, in assessing the ongoing value of the capitalized costs, and in determining the estimated useful lives over which the costs are amortized.

Capitalized software development costs and related accumulated amortization are included in Property, equipment and capitalized software in the accompanying condensed consolidated statements of financial condition and are amortized over a period of 1.5 to 3 years, which represents the estimated useful lives of the underlying software.

Leases

The Company determines if an arrangement is a lease at inception. Operating leases are included in Operating lease right-of-use assets and Operating lease liabilities on the condensed consolidated statements of financial condition. Operating lease right-of-use ("ROU") assets are assets that represent the lessee's right to use, or control the use of, a specified asset for the lease term. Finance leases consist primarily of leases for technology and equipment and are included in Property, equipment, and capitalized software and Accounts payable, accrued expenses and other liabilities on the condensed consolidated statements of financial condition. ROU assets and lease liabilities are recognized based on the present value of the future minimum lease payments over the lease term at the commencement date. The Company uses its incremental borrowing rate based on the information available at the commencement date in determining the present value of future payments. The ROU assets are reduced by lease incentives and initial direct costs incurred. The Company's lease terms may include options to extend or terminate the lease when it is reasonably certain that the Company will exercise that option. Lease expense for operating leases and amortization of the finance lease ROU asset is recognized on a straight-line basis over the lease term. Certain of the Company's lease agreements contain fixed lease payments that contain lease and non-lease components; for such leases, the Company accounts for the lease and non-lease components as a single lease component.

Goodwill

Goodwill represents the excess of the purchase price over the underlying net tangible and intangible assets of the Company's acquisitions. Goodwill is not amortized but is assessed for impairment on an annual basis and between annual assessments whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. Goodwill is assessed at the reporting unit level, which is defined as an operating segment or one level below the operating segment.

The Company assesses goodwill for impairment on an annual basis on July 1 and on an interim basis when certain events occur or certain circumstances exist. In the impairment assessment as of July 1, 2019, the Company assessed qualitative factors as described in ASC 350-20 for each of its reporting units for any indicators that the fair values of the reporting units were less than their carrying values. No impairment was identified.

Intangible Assets

The Company amortizes finite-lived intangible assets over their estimated useful lives. Finite-lived intangible assets are tested for impairment when impairment indicators are present, and if impaired, they are written down to fair value.

Exchange Memberships and Stock

Exchange memberships are recorded at cost or, if any other than temporary impairment in value has occurred, at a value that reflects management's estimate of fair value. Exchange memberships acquired in connection with the Acquisition of KCG and the ITG Acquisition were recorded at their fair values on the dates of acquisition. Exchange stock includes shares that entitle the Company to certain trading privileges. The Company's exchange memberships and stock are included in Intangibles in the condensed consolidated statements of financial condition.

Trading Income, net

Trading income, net is comprised of changes in the fair value of trading assets and liabilities (i.e., unrealized gains and losses) and realized gains and losses on trading assets and liabilities. Trading gains and losses on financial instruments owned and financial instruments sold, not yet purchased are recorded on the trade date and reported on a net basis in the condensed consolidated statements of comprehensive income.

Commissions, net and Technology Services

Commissions, net, which primarily comprise commissions and commission equivalents earned on institutional client orders, are recorded on a trade date basis. Under a commission management program, the Company allows institutional clients to allocate a portion of their gross commissions to pay for research and other services provided by third parties. The Company recognizes the related revenue when the third party research services are rendered and payments are made. As the Company acts as an agent in these transactions, it records such expenses on a net basis within Commissions, net and technology services in the condensed consolidated statements of comprehensive income.

Technology services revenues consist of technology licensing fees and agency commission fees. Technology licensing fees are earned from third parties for licensing of the Company's proprietary risk management and trading infrastructure technology and the provision of associated management and hosting services. These fees include both upfront and annual recurring fees, as well as, in certain cases, contingent fees based on client revenues, which represent variable consideration. The services offered under these contracts have the same pattern of transfer; accordingly, they are being measured and recognized as a single performance obligation. The performance obligation is satisfied over time, and accordingly, revenue is recognized as time passes. Variable consideration has not been included in the transaction price as the amount of consideration is contingent on factors outside the Company's control and thus it is not probable that a significant reversal of cumulative revenue recognized will not occur. Recurring fees, which exclude variable consideration, are billed and collected on a quarterly basis.

The Company provides order management software ("OMS") and related software products and connectivity services to customers and recognizes license fee revenues and monthly connectivity fees. License fee revenues, generated for the use of the Company's OMS and other software products, is fixed and recognized at the point in time at which the customer is able to use and benefit from the license. Connectivity revenue is variable in nature, based on the number of live connections, and is recognized over time on a monthly basis using a time-based measure of progress.

The Company also provides analytics products and services to customers and recognizes subscription fees, which are fixed for the contract term, based on when the products and services are delivered. Analytics products and services may be bundled with trade execution services, in which case commissions are allocated to the analytics performance obligations using an allocation methodology.

Interest and Dividends Income/Interest and Dividends Expense

Interest income and interest expense are accrued in accordance with contractual rates. Interest income consists of interest earned on collateralized financing arrangements and on cash held by brokers. Interest expense includes interest expense from collateralized transactions, margin and related lines of credit. Dividends on financial instruments owned including those pledged as collateral and financial instruments sold, not yet purchased are recorded on the ex-dividend date and interest is recognized on an accrual basis.

Brokerage, Exchange and Clearance Fees, Net

Brokerage, exchange and clearance fees, net, comprise the costs of executing and clearing trades and are recorded on a trade date basis. Rebates consist of volume discounts, credits or payments received from exchanges or other market places related to the placement and/or removal of liquidity from the order flow in the marketplace. Rebates are recorded on an accrual basis and included net within brokerage, exchange and clearance fees in the accompanying condensed consolidated statements of comprehensive income.

Payments for Order Flow

Payments for order flow represent payments to broker-dealer clients, in the normal course of business, for directing their order flow in U.S. equities to the Company. Payments for order flow are recorded on a trade-date basis in the condensed consolidated statements of comprehensive income.

Income Taxes

The Company is subject to U.S. federal, state and local income taxes on its taxable income. The Company's subsidiaries are subject to income taxes in the respective jurisdictions (including foreign jurisdictions) in which they operate.

The provision for income tax is comprised of current tax and deferred tax. Current tax represents the tax on current year tax returns, using tax rates enacted at the balance sheet date. The deferred tax assets are recognized in full and then reduced by a valuation allowance if it is more likely than not that some or all of the deferred tax assets will not be recognized.

The Company recognizes the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by the applicable taxing authority, including resolution of the appeals or litigation processes, based on the technical merits of the position. The tax benefits recognized in the condensed consolidated financial statements from such a position are measured based on the largest benefit for each such position that has a greater than fifty percent likelihood of being realized upon ultimate resolution. Many factors are considered when evaluating and estimating the tax positions and tax benefits. Such estimates involve interpretations of regulations, rulings, case law, etc. and are inherently complex. The Company's estimates may require periodic adjustments and may not accurately anticipate actual outcomes as resolution of income tax treatments in individual jurisdictions typically would not be known for several years after completion of any fiscal year.

Comprehensive Income and Foreign Currency Translation

Comprehensive income consists of two components: net income and other comprehensive income ("OCI"). The Company's OCI is comprised of foreign currency translation adjustments. Assets and liabilities of operations having non-U.S. dollar functional currencies are translated at period-end exchange rates, and revenues and expenses are translated at weighted average exchange rates for the period. Gains and losses resulting from translating foreign currency financial statements, net of related tax effects, are reflected in Accumulated other comprehensive income, a separate component of stockholders' equity.

The Company's foreign subsidiaries generally use the U.S. dollar as their functional currency. The Company also has subsidiaries that utilize a functional currency other than the U.S. dollar, primarily comprising its subsidiaries domiciled in Ireland, which utilize the Euro and Pound Sterling as the functional currency.

The Company may seek to reduce the impact of fluctuations in foreign exchange rates on its net investment in certain non-U.S. operations through the use of foreign currency forward contracts. For foreign currency forward contracts designated as hedges, the Company assesses its risk management objectives 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. The effectiveness of the hedge is assessed based on the overall changes in the fair value of the forward contracts. For qualifying net investment hedges, any gains or losses, to the extent effective, are included in Accumulated other comprehensive income on the condensed consolidated statements of financial condition and Cumulative translation adjustment, net of tax, on the condensed consolidated statements of comprehensive income. The ineffective portion, if any, is recorded in Other, net on the condensed consolidated statements of operations.

Share-Based Compensation

The fair value of awards issued for compensation prior to the Company's initial public offering in April 2015 (the "IPO") and certain reorganization transactions consummated in connection with the IPO (the "Reorganization Transactions") was determined by management, with the assistance of an independent third party valuation firm, using a projected annual forfeiture rate, where applicable, on the date of grant.

Share-based awards issued for compensation in connection with or subsequent to the Reorganization Transactions and the IPO pursuant to the Virtu Financial, Inc. 2015 Management Incentive Plan (as amended, the "Amended and Restated 2015 Management Incentive Plan") and pursuant to the Amended and Restated Investment Technology Group, Inc. 2007 Omnibus Equity Compensation Plan, dated as of June 8, 2017 (the "Amended and Restated ITG 2007 Equity Plan"), were in the form of stock options, Class A common stock, par value \$0.00001 per share (the "Class A Common Stock") and RSUs, as applicable. The fair value of the stock option grants is determined through the application of the Black-Scholes-Merton model. The fair value of the Class A Common Stock and RSUs are determined based on the volume weighted average price for the three days preceding the grant, and with respect to the RSUs, a projected annual forfeiture rate. The fair value of share-based awards granted to employees is expensed based on the vesting conditions and are recognized on a straight-line basis over the vesting period. The Company records as treasury stock shares repurchased from its employees for the purpose of settling tax liabilities incurred upon the issuance of Class A Common Stock, the vesting of RSUs or the exercise of stock options.

Variable Interest Entities

A variable interest entity ("VIE") is an entity that lacks one or more of the following characteristics: (i) the total equity investment at risk is sufficient to enable the entity to finance its activities independently and (ii) the equity holders have the power to direct the activities of the entity that most significantly impact its economic performance, the obligation to absorb the losses of the entity and the right to receive the residual returns of the entity.

The Company will be considered to have a controlling financial interest and will consolidate a VIE if it has both (i) the power to direct the activities of the VIE that most significantly impact the VIE's economic performance and (ii) the obligation to absorb losses of the VIE or the right to receive benefits from the VIE that could potentially be significant to the VIE.

In October 2016, the Company invested in a joint venture ("JV") with nine other parties. One of the parties was KCG. Upon the Acquisition of KCG, KCG was required to relinquish its ownership in the JV. As of September 30, 2019, each of the parties owns approximately 10% of the voting shares and 10% of the equity of this JV. In addition, as a result of the Acquisition of KCG, the Company owns 50% of the voting shares and 50% of the equity of another JV. These two JVs build and maintain microwave communication networks in the U.S., Europe, and Asia. The Company and its JV partners each pay monthly fees for the use of the microwave communication networks in connection with their respective trading activities, and the JVs may sell excess bandwidth that is not utilized by the JV members to third parties.

The Company also has an interest in a JV that offers derivatives trading technology and execution services to broker-dealers, professional traders and select hedge funds. As of September 30, 2019, the Company held approximately a 10% indirect minority stake in this JV.

The Company's three JVs meet the criteria to be considered VIEs. In each of the JVs, the Company does not have the power to direct the activities of the VIE that most significantly impact the VIE's economic performance; therefore it does not have a controlling financial interest in and does not consolidate the JVs. The Company records its interest in each JV under the equity method of accounting and records its investment in the JVs within Other assets and its amounts payable for communication services provided by the JV within Accounts Payable, accrued expenses and other liabilities on the condensed consolidated statements of financial condition. The Company records its pro-rata share of each JV's earnings or losses within

Other, net and fees related to the use of communication services provided by the JVs within Communications and data processing on the condensed consolidated statements of comprehensive income.

The Company's exposure to the obligations of these VIEs is generally limited to its interests in each respective JV, which is the carrying value of the equity investment in each JV.

The following table presents the Company's nonconsolidated VIEs at September 30, 2019:

(in thousands)	Carrying Amount		Maximum Exposure to Loss	VIEs' assets
	Asset	Liability		
Equity investment	\$ 17,520	\$ —	\$ 17,520	\$ 52,995

The following table presents the Company's nonconsolidated VIEs at December 31, 2018:

(in thousands)	Carrying Amount		Maximum Exposure to Loss	VIEs' assets
	Asset	Liability		
Equity investment	\$ 18,254	\$ —	\$ 18,254	\$ 49,450

Accounting Pronouncements, Recently Adopted

Revenue Recognition - In May 2014, the FASB issued Accounting Standard Update ("ASU") 2014-09, *Revenue from Contracts with Customers*. ASU 2014-09 is a comprehensive new revenue recognition model that requires a company to recognize revenue to depict the transfer of goods or services to a customer at an amount that reflects the consideration it expects to receive in exchange for those goods or services. ASU 2014-09 also requires additional disclosure about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments and changes in judgments and assets recognized from costs incurred to obtain or fulfill a contract. For a discussion of the impact of the standard on the Company's revenues as well as the additional disclosures required by the new standard, see Note 13 "Revenues from Contracts with Customers".

Leases — In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. Under the new ASU, a lessee is required to recognize assets and liabilities for leases with lease terms of more than 12 months. The liability is equal to the present value of the future lease payments. The ROU asset is based on the liability, subject to adjustment, such as for initial direct costs. For statement of comprehensive income purposes, leases are classified as either operating or finance. Operating leases result in straight-line expense (similar to previous operating lease guidance) while finance leases result in a front-loaded expense pattern (similar to previous capital lease guidance). Classification is based on criteria that are largely similar to those applied in previous lease accounting, but without explicit bright lines.

The Company adopted this ASU on January 1, 2019 using the modified retrospective method of implementation. The Company elected to recognize the cumulative effect adjustment to the opening balance of retained earnings in the period of adoption rather than in the earliest period presented. The Company elected not to recognize lease assets and lease liabilities for leases with a determined lease term of twelve months or less that are not expected to be renewed. The Company elected several practical expedients upon transition, including the expedient not to re-assess the lease population as long as contracts were properly scoped as a lease under previous guidance, not to re-assess existing lease classification for existing leases, not to adjust existing costs that were capitalized, and not to separate lease and non-lease components of fixed lease payments.

The standard had a material impact on the Company's condensed consolidated statements of financial condition due to the recognition of ROU assets and lease liabilities for operating leases, while the Company's accounting for finance leases remained substantially unchanged. The standard had an immaterial impact on the condensed consolidated statements of comprehensive income. The additional disclosures required by the new standard have been included in Note 16 "Leases".

Stock Compensation - In June 2018, the FASB issued ASU 2018-07, *Compensation, Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting*, with the objective of conforming the accounting for share-based awards to non-employees to the accounting for awards granted to employees. Previously, non-employee awards were measured at the vesting date, rather than the grant date, which effectively required the awards to be marked to market until the award vested. Under the new ASU, companies are required to measure non-employee awards at the fair value of the

instruments issued at the grant date. Entities can also consider the probability of the recipient satisfying any performance conditions. The Company adopted this standard on January 1, 2019. The Company does not currently make share-based awards to non-employees, and the adoption of this ASU did not have a material impact on its condensed consolidated financial statements.

Goodwill - In January 2017, the FASB issued ASU 2017-04, *Intangibles—Goodwill and Other (Topic 350), Simplifying the Test for Goodwill Impairment*. To simplify the subsequent measurement of goodwill, this ASU eliminated Step 2 from the goodwill impairment test. In computing the implied fair value of goodwill under Step 2, an entity had to perform procedures to determine the fair value at the impairment testing date of its assets and liabilities (including unrecognized assets and liabilities) following the procedure that would be required in determining the fair value of assets acquired and liabilities assumed in a business combination. Instead, under this ASU, an entity should perform its annual, or interim, goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount. An entity should recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value; however, the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit. This ASU also eliminated the requirements for any reporting unit with a zero or negative carrying amount to perform a qualitative assessment and, if it fails that qualitative test, to perform Step 2 of the goodwill impairment test. This ASU is effective for public entities in fiscal years beginning after December 15, 2019. The Company early adopted this standard as of January 1, 2019, and the adoption of this ASU did not have a material impact on its condensed consolidated financial statements.

Accounting Pronouncements, Not Yet Adopted as of September 30, 2019

Fair Value Measurement - In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement*, which modified the disclosure requirements on fair value measurements in ASC Topic 820, Fair Value Measurement. Disclosure requirements were eliminated for the amount of and reasons for transfers between Level 1 and Level 2 of the fair value hierarchy, the policy for timing of transfers between levels, and the valuation processes for Level 3 fair value measurements. Disclosure requirements were modified for liquidation of investments in certain entities that calculate net asset value, and for measurement uncertainty disclosures. Disclosure requirements were added for changes in unrealized gains and losses for the period included in other comprehensive income for recurring Level 3 fair value measurements held at the end of the reporting period and the range and weighted average of significant unobservable inputs used to develop Level 3 fair value measurements. The ASU is effective for periods beginning after December 15, 2019, including interim periods within that fiscal year. The Company does not expect the adoption of this ASU to have a material impact on its condensed consolidated financial statements.

Consolidation - In October 2018, the FASB issued ASU 2018-17, *Consolidation (Topic 810): Targeted Improvements to Related Party Guidance for Variable Interest Entities*, which modified how VIEs are assessed for consolidation purposes under ASC Topic 810, Consolidation. Under the update, indirect interests held through related parties in common control arrangements should be considered on a proportional basis for determining whether fees paid to decision makers and service providers are variable interests. The ASU is effective for periods beginning after December 15, 2019, including interim periods within that fiscal year. The Company does not expect the adoption of this ASU to have a material impact on its condensed consolidated financial statements.

Measurement of Credit Losses on Financial Instruments - In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses (Topic 326) - Measurement of Credit Losses on Financial Instruments*. This ASU amends several aspects of the measurement of credit losses on financial instruments, including replacing the existing incurred credit loss model and other models with the Current Expected Credit Losses model ("CECL"). Under CECL, the allowance for losses for financial assets that are measured at amortized cost reflects management's estimate of credit losses over the remaining expected life of the financial assets. Expected credit losses for newly recognized financial assets, as well as changes to expected credit losses during the period, would be recognized in earnings, and adoption of the ASU will generally result in earlier recognition of credit losses. Expected credit losses will be measured based on historical experience, current conditions and forecasts that affect the collectability of the reported amount, and credit losses will be generally recognized earlier than under current U.S. GAAP. In June 2019, the FASB issued ASU 2019-05, *Financial Instruments—Credit Losses (Topic 326): Targeted Transition Relief*, which provides entities with an option to irrevocably elect the fair value option on an instrument-by-instrument basis for certain instruments upon adoption of the new Credit Losses standard. The ASUs are effective for periods beginning after December 15, 2019, including interim periods within that fiscal year.

The Company is currently in the process of identifying and developing the changes to the Company's existing models and processes that will be required under CECL. As of September 30, 2019, the ASU is expected to impact only those financial instruments that are carried by the Company at amortized cost such as collateralized financing arrangements (repurchase agreements and securities borrowing/ lending transactions) and receivables from customers, broker-dealers and clearing

organizations, and therefore the Company expects the ASU to have a limited impact on its financial condition, results of operations and cash flows. However, the ultimate impact of adoption of this ASU on the firm's financial condition, results of operations and cash flows will depend on, among other things, the economic environment and the type of financial assets held by the firm on the date of adoption.

3. ITG Acquisition

Background

On the ITG Closing Date, the Company completed the ITG Acquisition. In connection with the ITG Acquisition, Virtu Financial, VFH Parent LLC, a Delaware limited liability company and a subsidiary of Virtu Financial ("VFH") and Impala Borrower LLC (the "Acquisition Borrower"), a subsidiary of the Company, entered into a Credit Agreement dated as of March 1, 2019 (the "Credit Agreement"), with the lenders party thereto, Jefferies Finance LLC, as administrative agent and Jefferies Finance LLC and RBC Capital Markets, as joint lead arrangers and joint bookrunners. The Credit Agreement provides (i) a senior secured first lien term loan in an aggregate principal amount of \$1.5 billion, drawn in its entirety on the ITG Closing Date, with approximately \$404.5 million being borrowed by VFH to repay all amounts outstanding under its existing term loan facility and the remaining approximately \$1,095.0 million being borrowed by the Acquisition Borrower to finance the consideration and fees and expenses paid in connection with the ITG Acquisition, and (ii) a \$50.0 million senior secured first lien revolving facility to VFH, with a \$5.0 million letter of credit subfacility and a \$5.0 million swingline subfacility. After the closing of the ITG Acquisition, VFH assumed the obligations of the Acquisition Borrower in respect of the acquisition term loans. Additionally, on the ITG Closing Date, the Company's fourth amended and restated credit agreement (as amended on January 2, 2018 and September 19, 2018, the "Fourth Amended and Restated Credit Agreement") with the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent, sole lead arranger and bookrunner, was terminated.

Accounting treatment of the ITG Acquisition

The ITG Acquisition has been accounted for as a business combination pursuant to ASC 805, *Business Combinations* by the Company using the acquisition method of accounting. Under the acquisition method, the assets and liabilities of ITG, as of the ITG Closing Date, were recorded at their respective fair values and added to the carrying value of the Company's existing assets and liabilities. The reported financial condition and results of operations of the Company for the periods following the ITG Closing Date reflect ITG's and the Company's balances and reflect the impact of purchase accounting adjustments. As the Company is the accounting acquirer, the financial results for the three and nine months ended September 30, 2019 comprise the results of the Company for the entire applicable period and the results of ITG from the ITG Closing Date through September 30, 2019. All periods prior to the ITG Closing Date comprise solely the results of the Company.

Certain former ITG management employees were terminated upon the ITG Acquisition, and as a result were paid an aggregate of \$17.6 million pursuant to their existing employment contracts and arrangements. This amount has been recognized as an expense by the Company and is included in Employee compensation and payroll taxes in the condensed consolidated statements of comprehensive income for the nine months ended September 30, 2019.

Purchase price and goodwill

The aggregate cash purchase price of \$1.0 billion was determined as the sum of the fair value, at \$30.30 per share, of ITG shares outstanding held by former ITG stockholders at closing and the fair value of certain ITG employee stock-based awards that were outstanding, and which vested at the ITG Closing Date.

The purchase price has been allocated to the assets acquired and liabilities assumed using their estimated fair values at the ITG Closing Date. The Company has not yet completed its analysis to finalize the allocation of the purchase price to the ITG acquired assets and liabilities. The allocation of the purchase price may be modified over the measurement period, as more information is obtained about the fair values of assets acquired and liabilities assumed. The Company has engaged third party specialists for the purchase price allocation.

The amounts in the table below represent the allocation of the purchase price and are subject to revision during the remainder of the measurement period, a period not to exceed twelve months from the ITG Closing Date. An adjustment to the provisional fair value of Accounts Payable and accrued expenses and other liabilities was recorded during the three months ended September 30, 2019 to reflect the settlement of a legal matter (see Note 15 “Commitments, Contingencies and Guarantees”). Further adjustments during the measurement period will be recorded in the reporting period in which the adjustment amounts are determined. The following table summarizes the estimated fair values of the assets acquired and liabilities assumed at the ITG Closing Date:

(in thousands)	June 30, 2019	Measurement Period	September 30, 2019
Cash and equivalents	\$ 197,072	\$ —	\$ 197,072
Cash and securities segregated under federal regulations	14,232	—	14,232
Securities borrowed	13,182	—	13,182
Receivables from broker dealers and clearing organizations	328,112	—	328,112
Financial instruments owned, at fair value	523	—	523
Receivables from customers	122,697	—	122,697
Property, equipment and capitalized software (net)	46,408	—	46,408
Intangibles	479,600	—	479,600
Deferred tax assets	17,221	—	17,221
Operating lease right-of-use assets	87,236	—	87,236
Other assets	36,053	—	36,053
Total Assets	1,342,336	—	1,342,336
Short-term borrowings	18,651	—	18,651
Securities loaned	17,663	—	17,663
Payables to broker dealers and clearing organizations	152,043	—	152,043
Payables to customers	116,419	—	116,419
Financial instruments sold, not yet purchased, at fair value	11	—	11
Accounts payable and accrued expenses and other liabilities	180,227	(1,479)	178,748
Operating lease liabilities	104,983	—	104,983
Deferred tax liabilities	65,888	—	65,888
Total Liabilities	655,885	(1,479)	654,406
Total identified assets acquired, net of assumed liabilities	686,451	1,479	687,930
Goodwill	360,434	(1,479)	358,955
Total Purchase Price	\$ 1,046,885	\$ —	\$ 1,046,885

Amounts preliminarily allocated to intangible assets, the amortization period and goodwill were as follows:

(in thousands)	Amount	Amortization Years
Technology	\$ 93,000	5
Customer relationships	383,000	10
Trade names	3,600	3
Intangible assets	479,600	
Goodwill	358,955	
Total	\$ 838,555	

The total Goodwill of \$359.0 million has been assigned to the Execution Services segment. Such goodwill is attributable to the expansion of product offerings and expected synergies of the combined workforce, products and technologies of the Company and ITG.

Assumption of Equity Compensation Plan

On the ITG Closing Date, the Company assumed the Amended and Restated ITG 2007 Equity Plan and certain stock option awards, restricted stock unit awards, deferred stock unit awards and performance stock unit awards granted under the Amended and Restated ITG 2007 Equity Plan (the “Assumed Awards”). The Assumed Awards are subject to the same terms and conditions that were applicable to them under the Amended and Restated ITG 2007 Equity Plan, except that (i) the Assumed Awards relate to shares of the Company’s Class A Common Stock, (ii) the number of shares of Class A Common Stock subject to the Assumed Awards was the result of an adjustment based upon an Exchange Ratio (as defined in the Agreement and Plan of Merger by and between the Company, Impala Merger Sub, Inc., a Delaware corporation and an indirect wholly owned subsidiary of the Company, and ITG, dated as of November 6, 2018, the “ITG Merger Agreement”) and (iii) the performance share unit awards were converted into service-based vesting restricted stock unit awards that were no longer subject to any performance-based vesting conditions. As of the ITG Closing Date, the aggregate number of shares of Class A Common Stock subject to such Assumed Awards was 2,497,028 and the aggregate number of shares of Class A Common Stock that remained issuable pursuant to the Amended and Restated ITG 2007 Equity Plan was 1,230,406. The Company filed with the Securities and Exchange Commission a Registration Statement on Form S-8 on the ITG Closing Date to register such shares of Class A Common Stock.

Tax treatment of the ITG Acquisition

The ITG Acquisition will be treated as a tax-free transaction as described in Section 351 of the Internal Revenue Code. ITG’s tax basis in its assets and liabilities therefore generally carried over to the Company following the ITG Acquisition. None of the goodwill is expected to be deductible for tax purposes.

The Company recorded deferred tax assets of \$17.2 million and deferred tax liabilities of \$65.9 million with respect to recording ITG’s assets and liabilities under the purchase method of accounting as described above as well as recording the value of other tax attributes acquired as a result of the ITG Acquisition, as described in Note 14 “Income Taxes”.

Pro forma results

Included in the Company’s results for the three and nine months ended September 30, 2019 are results from the business acquired as a result of the ITG Acquisition, from the ITG Closing Date through September 30, 2019 as follows:

(in thousands)	Three Months Ended September 30, 2019		Nine Months Ended September 30, 2019	
Revenues	\$	100,114	\$	242,175
Income (loss) before income taxes		(8,657)		(58,730)

The financial information in the table below summarizes the combined pro forma results of operations of the Company and ITG, based on adding the pre-tax historical results of ITG and the Company, and adjusting primarily for amortization of intangibles created in the ITG Acquisition, debt raised in conjunction with the ITG Acquisition and

nonrecurring costs associated with the ITG Acquisition, which comprise advisory and other professional fees incurred by the Company and ITG of \$15.1 million and \$18.2 million, respectively. The pro forma data assumes all of ITG's issued and outstanding shares of common stock, par value \$0.01 per share, were cancelled and extinguished and converted into the right to receive \$30.30 in cash, without interest, less any applicable withholding taxes on January 1, 2018 and does not include adjustments to reflect the Company's operating costs or expected differences in the way funds generated by the Company are invested.

This pro forma financial information is based on estimates and assumptions that have been made solely for purposes of developing such pro forma information, including, without limitation, preliminary purchase accounting adjustments. The pro forma financial information does not reflect any synergies or operating cost reductions that may be achieved from the combined operations. The pro forma financial information combines the historical results for the Company and ITG for the three and nine months ended September 30, 2019 and 2018:

(in thousands)	For the Three Months Ended September 30,		For the Nine Months Ended September 30,	
	2019	2018	2019	2018
Revenue	\$ 385,365	\$ 295,124	\$ 1,202,071	\$ 1,698,264
Net income (loss)	1,482	3,097	(69,408)	383,941
Net income (loss) available for common stockholders	(681)	2,801	(38,191)	169,569

4. Sale of BondPoint

In October 2017, the Company entered into an Asset Purchase Agreement with Intercontinental Exchange ("ICE") pursuant to which the Company has agreed to sell specified assets and to assign specified liabilities constituting its BondPoint division and fixed income venue ("BondPoint"). BondPoint is a provider of electronic fixed income trading solutions for the buy-side and sell-side offering access to centralized liquidity and automated trade execution services.

On January 2, 2018, the Company completed the sale of BondPoint to ICE for total gross proceeds of \$400.2 million in cash. The Company incurred one-time transaction costs of \$8.5 million, which included professional fees of \$7.1 million related to the sale and \$1.4 million of compensation expense, which is recorded in Transaction advisory fees and expenses and Employee compensation and payroll taxes, respectively, on the condensed consolidated statement of comprehensive income. The Company recognized a gain on sale of \$337.6 million, which is recorded in Other, net on the condensed consolidated statement of comprehensive income for the nine months ended September 30, 2018.

A summary of the carrying value of BondPoint and gain on sale of BondPoint is as follows:

(in thousands)	
Total sale proceeds received	\$ 400,192
Business assets and liabilities held for sale as of December 31, 2017:	
Receivables from broker dealers and clearing organizations	3,383
Intangibles and other assets	51,687
Liabilities	(728)
Total carrying value of BondPoint as of December 31, 2017:	54,342
Goodwill adjustment allocated to BondPoint	8,300
Gain on sale of BondPoint	337,550
Transaction costs	8,568
Gain on sale of BondPoint, net of transaction costs	\$ 328,982

5. Earnings per Share

The below table contains a reconciliation of net income (loss) before noncontrolling interest to net income (loss) available for common stockholders:

(in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Income (loss) before income taxes and noncontrolling interest	\$ (5,828)	\$ 29,425	\$ (88,610)	\$ 547,585
Provision for (benefit from) income taxes	(644)	13,815	(14,322)	75,330
Net income (loss)	(5,184)	15,610	(74,288)	472,255
Noncontrolling interest	872	(6,998)	33,412	(263,682)
Net income (loss) available for common stockholders	\$ (4,312)	\$ 8,612	\$ (40,876)	\$ 208,573

The calculation of basic and diluted earnings per share is presented below:

(in thousands, except for share or per share data)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Basic earnings (loss) per share:				
Net income (loss) available for common stockholders	\$ (4,312)	\$ 8,612	\$ (40,876)	\$ 208,573
Less: Dividends and undistributed earnings allocated to participating securities	(461)	(418)	(1,368)	(4,029)
Net income (loss) available for common stockholders, net of dividends and undistributed earnings allocated to participating securities	(4,773)	8,194	(42,244)	204,544
Weighted average shares of common stock outstanding:				
Class A	117,548,769	106,692,034	112,602,934	99,038,084
Basic earnings (loss) per share	\$ (0.04)	\$ 0.08	\$ (0.38)	\$ 2.07

(in thousands, except for share or per share data)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Diluted earnings (loss) per share:				
Net income (loss) available for common stockholders, net of dividends and undistributed earnings allocated to participating securities	\$ (4,773)	\$ 8,194	\$ (42,244)	\$ 204,544
Weighted average shares of common stock outstanding:				
Class A				
Issued and outstanding	117,548,769	106,692,034	112,602,934	99,038,084
Issuable pursuant to Amended and Restated 2015 Management Incentive Plan (1)	—	436,172	—	1,430,776
	117,548,769	107,128,206	112,602,934	100,468,860
Diluted earnings (loss) per share	\$ (0.04)	\$ 0.08	\$ (0.38)	\$ 2.04

- (1) The dilutive impact excludes from the computation of earnings (loss) per share for the three and nine months ended September 30, 2019, respectively, 205,683 and 574,047 unexercised stock options and 221,837 and 264,866 restricted stock units issuable pursuant to Amended and Restated Investment Technology Group, Inc. 2007 Omnibus Equity Compensation Plan because the inclusion of the options and restricted stock units would have been anti-dilutive.

6. Tax Receivable Agreements

In connection with the IPO and the Reorganization Transactions, the Company entered into tax receivable agreements to make payments to certain pre-IPO equityholders (“Virtu Members”) that are generally equal to 85% of the applicable cash tax savings, if any, that the Company actually realizes as a result of favorable tax attributes that were and will continue to be available to the Company as a result of the Reorganization Transactions, exchanges of membership interests for Class A Common Stock or Class B common stock, par value \$0.00001 per share (the “Class B Common Stock”), and payments made

under the tax receivable agreements. Payments will occur only after the filing of the U.S. federal and state income tax returns and realization of the cash tax savings from the favorable tax attributes. The Company made its first payment of \$7.0 million in February 2017 and its second payment of \$12.4 million in September 2018.

As a result of (i) the purchase of equity interests in Virtu Financial from certain Virtu Members in connection with the Reorganization Transactions, (ii) the purchase of non-voting common interest units in Virtu Financial (the “Virtu Financial Units”) (along with the corresponding shares of Class C common stock, par value \$0.00001 per share (the “Class C Common Stock”) from certain of the Virtu Members in connection with the IPO, (iii) the purchase of Virtu Financial Units (along with the corresponding shares of Class C Common Stock) and the exchange of Virtu Financial Units (along with the corresponding shares of Class C Common Stock) for shares of Class A Common Stock in connection with the secondary offerings completed in November 2015 (the “November 2015 Secondary Offering”) and September 2016 (the “September 2016 Secondary Offering”), and (iv) the purchase of Virtu Financial Units (along with corresponding shares of the Company’s Class D common stock, par value \$0.00001 per share (the “Class D Common Stock”) the May 2018 Secondary Offering (defined below) and the May 2019 Secondary Offering (defined below, and, together with the November 2015 Secondary Offering, the September 2016 Secondary Offering, and the May 2018 Secondary Offering, the “Secondary Offerings”), payments to certain Virtu Members in respect of the purchases are expected to range from approximately \$2.6 million to \$19.9 million per year over the next 15 years.

In connection with the employee exchanges and May 2018 Secondary Offering between the Company and TJMT Holdings LLC and the other selling stockholders, both as described in Note 18 “Capital Structure”, the Company recorded an additional deferred tax asset of \$78.7 million and payment liability pursuant to the tax receivable agreements of \$79.7 million, with the \$1.0 million difference recorded as a decrease to additional paid-in capital.

In connection with the May 2019 Secondary Offering, as described in Note 18 “Capital Structure”, the Company recorded an additional deferred tax asset of \$41.7 million and payment liability pursuant to the tax receivable agreements of \$42.3 million, with the \$0.6 million difference recorded as a decrease to additional paid-in capital.

As a result of the reduction in the U.S. corporate income tax rate as described below, the aforementioned deferred tax asset and related payment liability were subsequently reduced as described below. The amounts recorded as of September 30, 2019 are based on best estimates available at the respective dates and may be subject to change after the filing of the Company’s U.S. federal and state income tax returns for the years in which tax savings were realized.

At December 31, 2017, the Company recorded a reduction of its tax receivable agreement obligation of \$86.6 million due to the change in the corporate income tax rate. At September 30, 2019 and December 31, 2018, the Company’s remaining deferred tax assets that relate to the matters described above were approximately \$195.7 million and \$167.1 million, respectively, and the Company’s liabilities over the next 15 years pursuant to the tax receivable agreements were approximately \$256.7 million and \$214.4 million, respectively.

For the tax receivable agreements discussed above, the cash savings realized by the Company are computed by comparing the actual income tax liability of the Company to the amount of such taxes the Company would have been required to pay had there been (i) no increase to the tax basis of the assets of Virtu Financial as a result of the purchase or exchange of Virtu Financial Units, (ii) no tax benefit from the tax basis in the intangible assets of Virtu Financial on the date of the IPO and (iii) no tax benefit as a result of the Net Operating Losses (“NOLs”) and other tax attributes of Virtu Financial. Subsequent adjustments of the tax receivable agreements obligations due to certain events (e.g., changes to the expected realization of NOLs or changes in tax rates) will be recognized within income before taxes and noncontrolling interests in the condensed consolidated statements of comprehensive income.

7. Goodwill and Intangible Assets

The Company has two operating segments: (i) Market Making; (ii) Execution Services; and one non-operating segment: Corporate. As of September 30, 2019 and December 31, 2018, the Company’s total amount of goodwill recorded was \$1,195.5 million and \$836.6 million, respectively. The Company recognized \$359.0 million of goodwill in connection with the ITG Acquisition, which was recorded in the Execution Services segment. No goodwill impairment was recognized during the three and nine months ended September 30, 2019 and 2018.

The following table presents the details of goodwill by segment:

(in thousands)	Market Making	Execution Services	Corporate	Total
Balance as of December 31, 2018	\$ 755,292	\$ 81,291	\$ —	\$ 836,583
Goodwill recognized in ITG Acquisition	—	358,955	—	358,955
Currency translation adjustment	—	(61)	—	(61)
Balance as of September 30, 2019	<u>\$ 755,292</u>	<u>\$ 440,185</u>	<u>\$ —</u>	<u>\$ 1,195,477</u>

As of September 30, 2019 and December 31, 2018, the Company's total amount of intangible assets recorded was \$513.2 million and \$84.0 million, respectively. The Company acquired \$479.6 million of intangible assets in connection with the ITG Acquisition. Acquired intangible assets consisted of the following as of September 30, 2019 and December 31, 2018:

(in thousands)	As of September 30, 2019				Useful Lives (Years)	
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount			
Purchased technology	\$ 110,000	\$ 110,000	\$ —	1.4	to	2.5
ETF issuer relationships	950	743	207	9		
ETF buyer relationships	950	743	207	9		
Technology	153,000	53,746	99,254	1	to	6
Customer relationships	432,000	31,312	400,688	10	to	12
Trade name	3,600	700	2,900	3		
Favorable occupancy leases	5,895	1,836	4,059	3	to	15
Exchange memberships	5,838	—	5,838	Indefinite		
	<u>\$ 712,233</u>	<u>\$ 199,080</u>	<u>\$ 513,153</u>			

(in thousands)	As of December 31, 2018				Useful Lives (Years)	
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount			
Purchased technology	\$ 110,000	\$ 110,000	\$ —	1.4	to	2.5
ETF issuer relationships	950	665	285	9		
ETF buyer relationships	950	665	285	9		
Technology	60,000	30,185	29,815	1	to	6
Customer relationships	49,000	5,905	43,095	12		
Favorable occupancy leases	5,895	1,224	4,671	3	to	15
Exchange memberships	5,838	—	5,838	Indefinite		
	<u>\$ 232,633</u>	<u>\$ 148,644</u>	<u>\$ 83,989</u>			

Amortization expense relating to finite-lived intangible assets was approximately \$18.9 million and \$6.4 million for the three months ended September 30, 2019 and 2018, respectively, and \$50.4 million and \$20.0 million for the nine months ended September 30, 2019 and 2018, respectively. This is included in Amortization of purchased intangibles and acquired capitalized software in the accompanying condensed consolidated statements of comprehensive income.

8. Receivables from/Payables to Broker-Dealers and Clearing Organizations

The following is a summary of receivables from and payables to brokers-dealers and clearing organizations at September 30, 2019 and December 31, 2018:

(in thousands)	September 30, 2019	December 31, 2018
Assets		
Due from prime brokers	\$ 251,375	\$ 302,152
Deposits with clearing organizations	251,290	84,509
Net equity with futures commission merchants	234,583	294,884
Unsettled trades with clearing organization	513,325	193,544
Securities failed to deliver	304,937	218,663
Commissions and fees	8,221	7,697
Total receivables from broker-dealers and clearing organizations	<u>\$ 1,563,731</u>	<u>\$ 1,101,449</u>
Liabilities		
Due to prime brokers	\$ 255,443	\$ 354,300
Net equity with futures commission merchants	56,706	47,998
Unsettled trades with clearing organization	537,230	90,021
Securities failed to receive	173,662	73,547
Commissions and fees	1,508	1,575
Total payables to broker-dealers and clearing organizations	<u>\$ 1,024,549</u>	<u>\$ 567,441</u>

Included as a deduction from “Due from prime brokers” and “Net equity with futures commission merchants” is the outstanding principal balance on all of the Company’s short-term credit facilities (described in Note 10 “Borrowings”) of approximately \$133.4 million and \$184.6 million as of September 30, 2019 and December 31, 2018, respectively. The loan proceeds from the credit facilities are available only to meet the initial margin requirements associated with the Company’s ordinary course futures and other trading positions, which are held in the Company’s trading accounts with an affiliate of the respective financial institutions. The credit facilities are fully collateralized by the Company’s trading accounts and deposit accounts with these financial institutions. “Securities failed to deliver” and “Securities failed to receive” include amounts with a clearing organization and other broker-dealers.

9. Collateralized Transactions

The Company is permitted to sell or repledge securities received as collateral and use these securities to secure repurchase agreements, enter into securities lending transactions or deliver these securities to counterparties or clearing organizations to cover short positions. At September 30, 2019 and December 31, 2018, substantially all of the securities received as collateral have been repledged. The fair value of the collateralized transactions at September 30, 2019 and December 31, 2018 are summarized as follows:

(in thousands)	September 30, 2019	December 31, 2018
Securities received as collateral:		
Securities borrowed	\$ 1,526,350	\$ 1,361,635
Securities purchased under agreements to resell	18,796	15,475
	<u>\$ 1,545,146</u>	<u>\$ 1,377,110</u>

In the normal course of business, the Company pledges qualified securities with clearing organizations to satisfy daily margin and clearing fund requirements.

Financial instruments owned and pledged, where the counterparty has the right to repledge, at September 30, 2019 and December 31, 2018 consisted of the following:

(in thousands)	September 30, 2019	December 31, 2018
Equities	\$ 878,727	\$ 748,846
Exchange traded notes	42,223	42,269
	<u>\$ 920,950</u>	<u>\$ 791,115</u>

10. Borrowings

Broker-Dealer Credit Facilities

The Company is a party to two secured credit facilities with a financial institution to finance overnight securities positions purchased as part of its ordinary course broker-dealer market making activities. One of the facilities (the “Uncommitted Facility”) is provided on an uncommitted basis with an aggregate borrowing limit of \$200 million and is collateralized by the trading and deposit account of one of the Company’s broker-dealer subsidiaries maintained at the financial institution.

On November 3, 2017, the Company entered into the second credit facility (the “Committed Facility”) with the same financial institution for an aggregate borrowing limit of \$500 million. The Committed Facility was subsequently amended and restated March 1, 2019 to increase the borrowing limit to \$600 million and to enable a broker-dealer subsidiary of ITG as a borrower thereunder. The Committed Facility consists of two borrowing bases: Borrowing Base A Loan is to be used to finance the purchase and settlement of securities; Borrowing Base B Loan is to be used to fund margin deposit with the National Securities Clearing Corporation. Each of the broker-dealers has a sublimit under Borrowing Base A Loan, from \$300 million to \$600 million, which bears interest at the adjusted LIBOR or base rate plus 1.25% per annum. Each of the broker-dealers has a sublimit under Borrowing Base B Loan, from \$40 million to \$150 million, which bears interest at the adjusted LIBOR or base rate plus 2.50% per annum. A commitment fee of 0.50% per annum on the average daily unused portion of this facility is payable quarterly in arrears.

The following summarizes the Company’s broker-dealer credit facilities' carrying values, net of unamortized debt issuance costs, where applicable. These balances are included within Short-term borrowings on the condensed consolidated statement of financial condition.

At September 30, 2019					
(in thousands)	Interest Rate	Financing Available	Borrowing Outstanding	Deferred Debt Issuance Cost	Outstanding Borrowings, net
Broker-dealer credit facilities:					
Uncommitted facility	2.83%	\$ 200,000	\$ 30,000	\$ (1,256)	\$ 28,744
Committed facility	3.27%	600,000	7,000	(2,550)	4,450
		<u>\$ 800,000</u>	<u>\$ 37,000</u>	<u>\$ (3,806)</u>	<u>\$ 33,194</u>
At December 31, 2018					
(in thousands)	Interest Rate	Financing Available	Borrowing Outstanding	Deferred Debt Issuance Cost	Outstanding Borrowings, net
Broker-dealer credit facilities:					
Uncommitted facility	3.40%	\$ 200,000	\$ 10,000	\$ (832)	\$ 9,168
Committed facility	3.75%	500,000	7,000	(1,040)	5,960
		<u>\$ 700,000</u>	<u>\$ 17,000</u>	<u>\$ (1,872)</u>	<u>\$ 15,128</u>

The following summarizes interest expense for the broker-dealer facilities. Interest expense is included within Interest and dividends expense in the accompanying condensed consolidated statements of comprehensive income.

(in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Broker-dealer credit facilities:				
Uncommitted facility	\$ 327	\$ 428	\$ 688	\$ 1,458
Committed facility	138	60	393	212
	<u>\$ 465</u>	<u>\$ 488</u>	<u>\$ 1,081</u>	<u>\$ 1,670</u>

Short-Term Bank Loans

The Company’s international securities clearance and settlement activities are funded with operating cash or with short-term bank loans in the form of overdraft facilities. At September 30, 2019, there was \$62.4 million outstanding under these facilities at a weighted average interest rate of approximately 0.2% associated with international settlement activities. These short-term bank loan balances are included within Short-term borrowings on the condensed consolidated statement of financial condition.

Short-Term Credit Facilities

The Company maintains short-term credit facilities with various prime brokers and other financial institutions from which it receives execution or clearing services. The proceeds of these facilities are used to meet margin requirements associated with the products traded by the Company in the ordinary course, and amounts borrowed are collateralized by the Company's trading accounts with the applicable financial institution.

	At September 30, 2019		
	Weighted Average Interest Rate	Financing Available	Borrowing Outstanding
Short-Term Credit Facilities:			
Short-term credit facilities (1)	4.66%	\$ 526,000	\$ 133,411
		<u>\$ 526,000</u>	<u>\$ 133,411</u>
	At December 31, 2018		
	Weighted Average Interest Rate	Financing Available	Borrowing Outstanding
Short-Term Credit Facilities:			
Short-term credit facilities (1)	5.03%	\$ 566,000	\$ 184,608
		<u>\$ 566,000</u>	<u>\$ 184,608</u>

(1) Outstanding borrowings are included with Receivables from/ Payables to broker-dealers and clearing organizations within the condensed consolidated statements of financial condition.

Interest expense in relation to the facilities was approximately \$1.6 million and \$1.5 million for the three months ended September 30, 2019 and 2018, respectively, and \$5.3 million and \$5.0 million for the nine months ended September 30, 2019 and 2018, respectively.

Long-Term Borrowings

The following summarizes the Company's long-term borrowings, net of unamortized discount and debt issuance costs, where applicable:

(in thousands)	Maturity Date	Interest Rate	At September 30, 2019			
			Outstanding Principal	Discount	Deferred Debt Issuance Cost	Outstanding Borrowings, net
Long-term borrowings:						
First Lien Term Loan Facility	March 2026	6.04%	\$ 1,450,000	\$ (6,643)	\$ (27,427)	\$ 1,415,930
Senior Secured Second Lien Notes	June 2022	6.75%	500,000	—	(13,949)	486,051
SBI bonds	January 2020	5.00%	32,383	—	(6)	32,377
			<u>\$ 1,982,383</u>	<u>\$ (6,643)</u>	<u>\$ (41,382)</u>	<u>\$ 1,934,358</u>
(in thousands)	Maturity Date	Interest Rate	At December 31, 2018			
			Outstanding Principal	Discount	Deferred Debt Issuance Cost	Outstanding Borrowings, net
Long-term borrowings:						
Fourth Amended and Restated Credit Facility	December 2021	5.55%	\$ 400,000	\$ (332)	\$ (6,704)	\$ 392,964
Senior Secured Second Lien Notes	June 2022	6.75%	500,000	—	(17,811)	482,189
SBI bonds	January 2020	5.00%	31,908	—	(24)	31,884
			<u>\$ 931,908</u>	<u>\$ (332)</u>	<u>\$ (24,539)</u>	<u>\$ 907,037</u>

Credit Agreement

As described in Note 3 "ITG Acquisition", in connection with the ITG Acquisition, Virtu Financial, VFH and the Acquisition Borrower entered into the Credit Agreement, with the lenders party thereto, Jefferies Finance LLC, as administrative agent and Jefferies Finance LLC and RBC Capital Markets, as joint lead arrangers and joint bookrunners.

The Credit Agreement provides (i) a senior secured first lien term loan (the “First Lien Term Loan Facility”) in an aggregate principal amount of \$1,500 million, drawn in its entirety on the ITG Closing Date, with approximately \$404.5 million borrowed by VFH to repay all amounts outstanding under the Existing Term Loan Facility (as defined below) and the remaining approximately \$1,095 million borrowed by the Acquisition Borrower to finance the consideration and fees and expenses paid in connection with the ITG Acquisition, and (ii) a \$50.0 million senior secured first lien revolving facility to VFH (the “First Lien Revolving Facility”), with a \$5.0 million letter of credit subfacility and a \$5.0 million swingline subfacility. After the ITG Closing Date, VFH assumed the obligations of the Acquisition Borrower in respect of the acquisition term loans. During the nine months ended September 30, 2019, \$50.0 million was repaid under the First Lien Term Loan Facility. As of September 30, 2019, \$1,450 million was outstanding under the First Lien Term Loan Facility. As described in Note 23 “Subsequent Events”, the Credit Agreement was amended as of October 9, 2019 and VFH borrowed an additional \$525.0 million of incremental first lien term loans, the proceeds of which were used together with cash on hand to redeem the Notes (as defined below).

The term loan borrowings and revolver borrowings under the Credit Agreement will bear interest at a per annum rate equal to, at the Company's election, either (i) the greatest of (a) the prime rate in effect, (b) the greater of (1) the federal funds effective rate and (2) the overnight bank funding rate, in each case plus 0.5%, (c) an adjusted LIBOR rate for a Eurodollar borrowing with an interest period of one month plus 1% and (d) 1.00%, plus, in each case, 2.50%, with a stepdown to 2.25% based on VFH's first lien leverage ratio, or (ii) the greater of (x) an adjusted LIBOR rate for the interest period in effect and (y) 0%, plus, in each case, 3.50%, with a stepdown to 3.25% based on VFH's first lien leverage ratio. In addition, a commitment fee accrues at a rate of 0.50% per annum on the average daily unused amount of the First Lien Revolving Facility, with stepdowns to 0.375% and 0.25% per annum based on VFH's first lien leverage ratio, and is payable quarterly in arrears.

The First Lien Revolving Facility under the Credit Agreement is subject to a springing net first lien leverage ratio which may spring into effect as of the last day of a fiscal quarter based on the usage of the aggregate revolving commitments as of such date. VFH is also subject to contingent principal prepayments based on excess cash flow and certain other triggering events. Borrowings under the Credit Agreement are guaranteed by Virtu Financial and VFH's material non-regulated restricted subsidiaries and secured by substantially all of the assets of VFH and the guarantors, in each case, subject to certain exceptions.

Under the Credit Agreement, term loans will mature on March 1, 2026; provided that unless at least \$400 million of VFH's existing 6.750% second lien notes due 2022 have been repaid or refinanced (the “repayment requirement”) prior to the date that is 91 days prior to the maturity of the second lien notes (the “term springing maturity date”), the term loans will mature on the term springing maturity date. The term loans amortize in annual installments equal to 1.0% of the original aggregate principal amount of the term loans. The revolving commitments will terminate on March 1, 2022; provided that unless the repayment requirement is satisfied on or prior to the date that is 182 days prior to the maturity of the second lien notes (the “revolving springing maturity date”), the revolving commitments will terminate on the revolving springing maturity date.

The Credit Agreement contains certain customary covenants and certain customary events of default, including relating to a change of control. If an event of default occurs and is continuing, the lenders under the Credit Agreement will be entitled to take various actions, including the acceleration of amounts outstanding under the Credit Agreement and all actions permitted to be taken by a secured creditor in respect of the collateral securing the obligations under the Credit Agreement.

To finance the Acquisition of KCG, on June 30, 2017, Virtu Financial and VFH previously entered into the Fourth Amended and Restated Credit Agreement which, upon the closing of the Acquisition of KCG, provided for an aggregate \$1.15 billion of first lien secured term loans (the “Existing Term Loan Facility”). As described above, the Existing Term Loan Facility was fully terminated following its repayment in full with the proceeds of the First Lien Term Loan Facility.

Senior Secured Second Lien Notes

To finance the Acquisition of KCG, on June 16, 2017, Orchestra Borrower LLC (the “Escrow Issuer”), a wholly owned subsidiary of Virtu Financial, and Orchestra Co-Issuer, Inc. (the “Co-Issuer”) completed the offering of \$500.0 million aggregate principal amount of 6.750% Senior Secured Second Lien Notes due 2022 (the “Notes”). The Notes were issued under an Indenture, dated June 16, 2017 (the “Indenture”), among the Escrow Issuer, the Co-Issuer and U.S. Bank National Association, as trustee and collateral agent. The Notes mature on June 15, 2022.

On July 20, 2017, VFH assumed all of the obligations of the Escrow Issuer under the Indenture and the Notes. The Notes are guaranteed by Virtu Financial and each of Virtu Financial's wholly-owned domestic restricted subsidiaries that guarantees the Credit Agreement.

The Indenture imposes certain limitations on the Company, and contains certain customary events of default, including, among others, payment defaults related to the failure to pay principal or interest on the Notes, covenant defaults, final maturity default or cross-acceleration with respect to material indebtedness and certain bankruptcy events. The gross proceeds from the Notes were deposited into a segregated escrow account with an escrow agent. The proceeds were released from escrow as of the KCG Closing Date and were used to finance, in part, the Acquisition of KCG, and to repay certain indebtedness of the Company and KCG. As described in Note 23 "Subsequent Events", the Credit Agreement was amended as of October 9, 2019 and VFH borrowed an additional \$525.0 million of incremental first lien term loans, the proceeds of which were used together with cash on hand to redeem the Notes and the Indenture was fully terminated following such redemption.

SBI Bonds

On July 25, 2016, VFH issued Japanese Yen Bonds (collectively the "SBI Bonds") in the aggregate principal amount of ¥3.5 billion (\$33.1 million at issuance date) to SBI Life Insurance Co., Ltd. and SBI Insurance Co., Ltd. The proceeds from the SBI Bonds were used to partially fund the investment in SBI (as described in Note 11 "Financial Assets and Liabilities"). The SBI Bonds are guaranteed by Virtu Financial. The SBI Bonds are subject to fluctuations on the Japanese Yen currency rates relative to the Company's reporting currency (U.S. Dollar) with the changes reflected in other, net in the condensed consolidated statements of comprehensive income. The principal balance was ¥3.5 billion (\$32.4 million) as of September 30, 2019 and ¥3.5 billion (\$31.9 million) as of December 31, 2018. The Company recorded a loss of \$0.1 million and a loss of \$0.9 million due to the change in currency rates during the three months ended September 30, 2019 and 2018, respectively, and a gain of \$0.4 million and a loss of \$0.3 million during the nine months ended September 30, 2019 and 2018, respectively.

As of September 30, 2019, aggregate future required minimum principal payments based on the terms of the long-term borrowings were as follows:

(in thousands)	September 30, 2019
2019	\$ —
2020	47,383
2021	15,000
2022	515,000
2023 and thereafter	1,405,000
Total principal of long-term borrowings	<u>\$ 1,982,383</u>

11. Financial Assets and Liabilities

Financial Instruments Measured at Fair Value

The fair value of equities, options, on-the-run U.S. government obligations and exchange traded notes is estimated using recently executed transactions and market price quotations in active markets and are categorized as Level 1 with the exception of inactively traded equities and certain other financial instruments, which are categorized as Level 2. The Company's corporate bonds, derivative contracts and other U.S. and non-U.S. government obligations have been categorized as Level 2. Fair value of the Company's derivative contracts is based on the indicative prices obtained from a number of banks and broker-dealers, as well as management's own analyses. The indicative prices have been independently validated through the Company's risk management systems, which are designed to check prices with information independently obtained from exchanges and venues where such financial instruments are listed or to compare prices of similar instruments with similar maturities for listed financial futures in foreign exchange.

The Company prices certain financial instruments held for trading at fair value based on theoretical prices, which can differ from quoted market prices. The theoretical prices reflect price adjustments primarily caused by the fact that the Company continuously prices its financial instruments based on all available information. This information includes prices for identical and near-identical positions, as well as the prices for securities underlying the Company's positions, on other exchanges that are open after the exchange on which the financial instruments is traded closes. The Company validates that all price adjustments can be substantiated with market inputs and checks the theoretical prices independently. Consequently, such financial instruments are classified as Level 2.

There were no transfers of financial instruments between levels during the three and nine months ended September 30, 2019 and 2018.

Fair value measurements for those items measured on a recurring basis are summarized below as of September 30, 2019:

(in thousands)	September 30, 2019					Total Fair Value
	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Counterparty and Cash Collateral Netting		
Assets						
Financial instruments owned, at fair value:						
Equity securities	\$ 624,354	\$ 884,159	\$ —	\$ —	\$ 1,508,513	
U.S. and Non-U.S. government obligations	67,503	15,640	—	—	83,143	
Corporate Bonds	—	131,921	—	—	131,921	
Exchange traded notes	947	14,864	—	—	15,811	
Currency forwards	—	747,197	—	(735,762)	11,435	
Options	3,063	—	—	—	3,063	
	<u>695,867</u>	<u>1,793,781</u>	<u>—</u>	<u>(735,762)</u>	<u>1,753,886</u>	
Financial instruments owned, pledged as collateral:						
Equity securities	473,489	405,238	—	—	878,727	
Exchange traded notes	6,197	36,026	—	—	42,223	
	<u>479,686</u>	<u>441,264</u>	<u>—</u>	<u>—</u>	<u>920,950</u>	
Other Assets						
Equity investment	—	—	46,280	—	46,280	
Exchange stock	3,032	—	—	—	3,032	
	<u>3,032</u>	<u>—</u>	<u>46,280</u>	<u>—</u>	<u>49,312</u>	
Liabilities						
Financial instruments sold, not yet purchased, at fair value:						
Equity securities	960,521	1,128,344	—	—	2,088,865	
U.S. and Non-U.S. government obligations	32,836	1,673	—	—	34,509	
Corporate Bonds	—	89,715	—	—	89,715	
Exchange traded notes	80	32,688	—	—	32,768	
Currency forwards	—	750,209	—	(750,209)	—	
Options	3,075	—	—	—	3,075	
	<u>\$ 996,512</u>	<u>\$ 2,002,629</u>	<u>\$ —</u>	<u>\$ (750,209)</u>	<u>\$ 2,248,932</u>	

Fair value measurements for those items measured on a recurring basis are summarized below as of December 31, 2018:

(in thousands)	December 31, 2018				
	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Counterparty and Cash Collateral Netting	Total Fair Value
Assets					
Financial instruments owned, at fair value:					
Equity securities	\$ 587,680	\$ 1,022,221	\$ —	\$ —	\$ 1,609,901
U.S. and Non-U.S. government obligations	91,466	14,547	—	—	106,013
Corporate Bonds	—	87,500	—	—	87,500
Exchange traded notes	3,396	27,966	—	—	31,362
Currency forwards	—	2,792,373	—	(2,790,242)	2,131
Options	11,899	—	—	—	11,899
	<u>694,441</u>	<u>3,944,607</u>	<u>—</u>	<u>(2,790,242)</u>	<u>1,848,806</u>
Financial instruments owned, pledged as collateral:					
Equity securities	389,810	359,036	—	—	748,846
U.S. and Non-U.S. government obligations	—	—	—	—	—
Exchange traded notes	6,968	35,301	—	—	42,269
	<u>396,778</u>	<u>394,337</u>	<u>—</u>	<u>—</u>	<u>791,115</u>
Other Assets					
Equity investment	—	—	45,856	—	45,856
Exchange stock	2,417	—	—	—	2,417
	<u>2,417</u>	<u>—</u>	<u>45,856</u>	<u>—</u>	<u>48,273</u>
Liabilities					
Financial instruments sold, not yet purchased, at fair value:					
Equity securities	931,992	1,336,338	—	—	2,268,330
U.S. and Non-U.S. government obligations	112,058	3,054	—	—	115,112
Corporate Bonds	—	40,123	—	—	40,123
Exchange traded notes	371	39,613	—	—	39,984
Currency forwards	—	2,720,749	—	(2,719,954)	795
Options	11,051	—	—	—	11,051
	<u>\$ 1,055,472</u>	<u>\$ 4,139,877</u>	<u>\$ —</u>	<u>\$ (2,719,954)</u>	<u>\$ 2,475,395</u>

SBI Investment

The Company has a minority investment (the “SBI Investment”) in SBI Japannext Co., Ltd. (“SBI”), a proprietary trading system based in Tokyo. In connection with the SBI Investment, the Company issued the SBI Bonds (as described in Note 10 “Borrowings”) and used the proceeds to partially finance the transaction. As of September 30, 2019, the fair value of the SBI Investment was determined using the discounted cash flow method, an income approach, with the discount rate of 15.0% applied to the cash flow forecasts. The Company also used a market approach based on 12.6x average price/earnings multiples of comparable companies to corroborate the income approach. The fair value of the SBI Investment at September 30, 2019 was determined by taking the weighted average of enterprise valuations based on discounted cash flow on projected income from the next five years, the implied enterprise valuations on comparable companies, and the implied enterprise valuations on comparable transactions. The fair value measurement is highly sensitive to significant changes in the unobservable inputs and significant increases (decreases) in discount rate or decreases (increases) in price/earnings multiples would result in a significantly lower (higher) fair value measurement. Changes in the fair value of the SBI Investment are reflected in Other, net in the condensed consolidated statements of comprehensive income.

Financial Instruments Not Measured at Fair Value

The table below presents the carrying value, fair value and fair value hierarchy category of certain financial instruments that are not measured at fair value on the condensed consolidated statement of financial condition. The table below excludes non-financial assets and liabilities. The carrying value of financial instruments not measured at fair value categorized in the fair value hierarchy as Level 1 and Level 2 approximates fair value due to the relatively short-term nature of the underlying assets. The fair value of the Company's long-term borrowings is based on quoted prices from the market for similar instruments, and is categorized as Level 2 in the fair value hierarchy.

The table below summarizes financial assets and liabilities not carried at fair value on a recurring basis as of September 30, 2019:

(in thousands)	September 30, 2019				
	Carrying Value	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets					
Cash and cash equivalents	\$ 372,710	\$ 372,710	\$ 372,710	\$ —	\$ —
Cash restricted or segregated under regulations and other	22,109	22,109	22,109	—	—
Securities borrowed	1,578,941	1,578,941	—	1,578,941	—
Securities purchased under agreements to resell	18,805	18,805	—	18,805	—
Receivables from broker-dealers and clearing organizations	1,563,731	1,563,731	107,520	1,456,211	—
Total Assets	3,556,296	3,556,296	502,339	3,053,957	—
Liabilities					
Short-term borrowings	94,888	94,888	—	94,888	—
Long-term borrowings	1,934,358	2,003,203	—	2,003,203	—
Securities loaned	1,093,321	1,093,321	—	1,093,321	—
Securities sold under agreements to repurchase	281,783	281,783	—	281,783	—
Payables to broker-dealers and clearing organizations	1,024,549	1,024,549	118,388	906,161	—
Total Liabilities	\$ 4,428,899	\$ 4,497,744	\$ 118,388	\$ 4,379,356	\$ —

The table below summarizes financial assets and liabilities not carried at fair value on a recurring basis as of December 31, 2018:

(in thousands)	December 31, 2018				
	Carrying Value	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets					
Cash and cash equivalents	\$ 736,047	\$ 736,047	\$ 736,047	\$ —	\$ —
Securities borrowed	1,399,684	1,399,684	—	1,399,684	—
Securities purchased under agreements to resell	15,475	15,475	—	15,475	—
Receivables from broker-dealers and clearing organizations	1,101,449	1,101,449	71,288	1,030,161	—
Total Assets	3,252,655	3,252,655	807,335	2,445,320	—
Liabilities					
Short-term borrowings	15,128	15,128	—	15,128	—
Long-term borrowings	907,037	916,465	—	916,465	—
Securities loaned	1,130,039	1,130,039	—	1,130,039	—
Securities sold under agreements to repurchase	281,861	281,861	—	281,861	—
Payables to broker dealer and clearing organizations	567,441	567,441	1,031	566,410	—
Total Liabilities	\$ 2,901,506	\$ 2,910,934	\$ 1,031	\$ 2,909,903	\$ —

The following presents the changes in Level 3 financial instruments measured at fair value on a recurring basis:

Nine Months Ended September 30, 2019							
(in thousands)	Balance at December 31, 2018	Purchases	Total Realized and Unrealized Gains / (Losses)	Net Transfers into (out of) Level 3	Settlement	Balance at September 30, 2019	Change in Net Unrealized Gains / (Losses) on Investments still held at September 30, 2019
Assets							
Other assets:							
Equity investment	\$ 45,856	\$ —	\$ 424	\$ —	\$ —	\$ 46,280	\$ 424
Total	45,856	—	424	—	—	46,280	424

Nine Months Ended September 30, 2018							
(in thousands)	Balance at December 31, 2017	Purchases	Total Realized and Unrealized Gains / (Losses)	Net Transfers into (out of) Level 3	Settlement	Balance at September 30, 2018	Change in Net Unrealized Gains / (Losses) on Investments still held at September 30, 2018
Assets							
Other assets:							
Equity investment	\$ 40,588	\$ —	\$ (345)	\$ —	\$ —	\$ 40,243	\$ (345)
Total	40,588	—	(345)	—	—	40,243	(345)

Offsetting of Financial Assets and Liabilities

The Company does not net securities borrowed and securities loaned, or securities purchased under agreements to resell and securities sold under agreements to repurchase. These financial instruments are presented on a gross basis in the condensed consolidated statements of financial condition. In the tables below, the amounts of financial instruments owned that are not offset in the condensed consolidated statements of financial condition, but could be netted against financial liabilities with specific counterparties under legally enforceable master netting agreements in the event of default, are presented to provide financial statement readers with the Company's estimate of its net exposure to counterparties for these financial instruments.

The following tables set forth the gross and net presentation of certain financial assets and financial liabilities as of September 30, 2019 and December 31, 2018:

September 30, 2019

(in thousands)	Gross Amounts of Recognized Assets	Gross Amounts Offset in the Condensed Consolidated Statement of Financial Condition	Net Amounts of Assets Presented in the Condensed Consolidated Statement of Financial Condition	Gross Amounts Not Offset in the Condensed Consolidated Statement of Financial Condition		Net Amount
				Financial Instruments	Cash Collateral Received	
Offsetting of Financial Assets:						
Securities borrowed	\$ 1,578,941	\$ —	\$ 1,578,941	\$ (1,526,350)	\$ (11,018)	\$ 41,573
Securities purchased under agreements to resell	18,805	—	18,805	(18,796)	—	9
Trading assets, at fair value:						
Currency forwards	747,197	(735,762)	11,435	—	—	11,435
Options	3,063	—	3,063	(3,063)	—	—
Total	\$ 2,348,006	\$ (735,762)	\$ 1,612,244	\$ (1,548,209)	\$ (11,018)	\$ 53,017

(in thousands)	Gross Amounts of Recognized Liabilities	Gross Amounts Offset in the Condensed Consolidated Statement of Financial Condition	Net Amounts of Liabilities Presented in the Condensed Consolidated Statement of Financial Condition	Gross Amounts Not Offset in the Condensed Consolidated Statement of Financial Condition		Net Amount
				Financial Instruments	Cash Collateral Pledged	
Offsetting of Financial Liabilities:						
Securities loaned	\$ 1,093,321	\$ —	\$ 1,093,321	\$ (1,072,823)	\$ (11,336)	\$ 9,162
Securities sold under agreements to repurchase	281,783	—	281,783	(281,783)	—	—
Trading liabilities, at fair value:						
Currency forwards	750,209	(750,209)	—	—	—	—
Options	3,075	—	3,075	(3,063)	—	12
Total	\$ 2,128,388	\$ (750,209)	\$ 1,378,179	\$ (1,357,669)	\$ (11,336)	\$ 9,174

December 31, 2018

(in thousands)	Gross Amounts of Recognized Assets	Gross Amounts Offset in the Condensed Consolidated Statement of Financial Condition	Net Amounts of Assets Presented in the Condensed Consolidated Statement of Financial Condition	Gross Amounts Not Offset in the Condensed Consolidated Statement of Financial Condition		Net Amount
				Financial Instruments	Cash Collateral Received	
Offsetting of Financial Assets:						
Securities borrowed	\$ 1,399,684	\$ —	\$ 1,399,684	\$ (1,361,635)	\$ (8,822)	\$ 29,227
Securities purchased under agreements to resell	15,475	—	15,475	(15,475)	—	—
Trading assets, at fair value:						
Currency forwards	2,792,373	(2,790,242)	2,131	—	—	2,131
Options	11,899	—	11,899	(11,899)	—	—
Total	\$ 4,219,431	\$ (2,790,242)	\$ 1,429,189	\$ (1,389,009)	\$ (8,822)	\$ 31,358

(in thousands)	Gross Amounts of Recognized Liabilities	Gross Amounts Offset in the Consolidated Statement of Financial Condition	Net Amounts of Liabilities Presented in the Consolidated Statement of Financial Condition	Gross Amounts Not Offset in the Consolidated Statement of Financial Condition		Net Amount
				Financial Instruments	Cash Collateral Pledged	
Offsetting of Financial Liabilities:						
Securities loaned	\$ 1,130,039	\$ —	\$ 1,130,039	\$ (1,108,461)	\$ (8,822)	\$ 12,756
Securities sold under agreements to repurchase	281,861	—	281,861	(281,861)	—	—
Trading liabilities, at fair value:						
Currency forwards	2,720,749	(2,719,954)	795	—	(792)	3
Options	11,051	—	11,051	(11,051)	—	—
Total	\$ 4,143,700	\$ (2,719,954)	\$ 1,423,746	\$ (1,401,373)	\$ (9,614)	\$ 12,759

The following table presents gross obligations for securities sold under agreements to repurchase and for securities lending transactions by remaining contractual maturity and the class of collateral pledged:

(in thousands)	September 30, 2019				
	Remaining Contractual Maturity				
	Overnight and Continuous	Less than 30 days	30 - 60 days	61 - 90 Days	Total
Securities sold under agreements to repurchase:					
Equity securities	\$ —	\$ 75,000	\$ 50,000	\$ 150,000	\$ 275,000
U.S. and Non-U.S. government obligations	6,783	—	—	—	6,783
Total	6,783	75,000	50,000	150,000	281,783
Securities loaned:					
Equity securities	1,093,321	—	—	—	1,093,321
Total	\$ 1,093,321	\$ —	\$ —	\$ —	\$ 1,093,321
(in thousands)	December 31, 2018				
	Remaining Contractual Maturity				
	Overnight and Continuous	Less than 30 days	30 - 60 days	61 - 90 Days	Total
Securities sold under agreements to repurchase:					
Equity securities	\$ —	\$ 45,000	\$ 65,000	\$ 160,000	\$ 270,000
U.S. and Non-U.S. government obligations	11,861	—	—	—	11,861
Total	11,861	45,000	65,000	160,000	281,861
Securities loaned:					
Equity securities	1,130,039	—	—	—	1,130,039
Total	\$ 1,130,039	\$ —	\$ —	\$ —	\$ 1,130,039

12. Derivative Instruments

The fair value of the Company's derivative instruments on a gross basis consisted of the following at September 30, 2019 and December 31, 2018:

(in thousands)		September 30, 2019		December 31, 2018	
Derivatives Assets	Financial Statements Location	Fair Value	Notional	Fair Value	Notional
Derivative instruments not designated as hedging instruments:					
Equities futures	Receivables from broker-dealers and clearing organizations	\$ 69	\$ 2,022,448	\$ (15,382)	\$ 2,891,606
Commodity futures	Receivables from broker-dealers and clearing organizations	(107,082)	7,603,440	69,235	11,595,215
Currency futures	Receivables from broker-dealers and clearing organizations	(22)	1,093,194	(9,432)	3,756,914
Fixed income futures	Receivables from broker-dealers and clearing organizations	39	123,655	(28)	18,694
Options	Financial instruments owned	3,063	277,247	11,899	659,101
Currency forwards	Financial instruments owned	747,197	58,058,222	2,792,373	171,288,432
Derivatives Liabilities					
Derivatives Liabilities	Financial Statements Location	Fair Value	Notional	Fair Value	Notional
Derivative instruments not designated as hedging instruments:					
Equities futures	Payables to broker-dealers and clearing organizations	\$ 293	\$ 175,051	\$ 468	\$ 106,487
Commodity futures	Payables to broker-dealers and clearing organizations	119,540	3,662,819	(375)	54,782
Currency futures	Payables to broker-dealers and clearing organizations	375	2,449,801	(30,643)	6,239,725
Fixed income futures	Payables to broker-dealers and clearing organizations	—	611	93	8,591
Options	Financial instruments sold, not yet purchased	3,075	295,325	11,051	608,756
Currency forwards	Financial instruments sold, not yet purchased	750,209	58,059,728	2,720,749	171,252,224
Derivative instruments designated as hedging instruments:					
Currency forwards	Financial instruments sold, not yet purchased	—	—	(792)	13,501

Amounts included in receivables from and payables to broker-dealers and clearing organizations represent net variation margin on long and short futures contracts.

The following table summarizes the net gain (loss) from derivative instruments not designated as hedging instruments under ASC 815, which are recorded in trading income, net, and from those designated as hedging instruments under ASC 815, which are recorded in accumulated other comprehensive income in the accompanying condensed consolidated statements of comprehensive income for the three and nine months ended September 30, 2019 and 2018.

(in thousands)		Three Months Ended September 30,		Nine Months Ended September 30,	
Derivative instruments not designated as hedging instruments:	Financial Statements Location	2019	2018	2019	2018
Futures	Trading income, net	\$ (109,912)	\$ 103,950	\$ 45,698	\$ (325,556)
Currency forwards	Trading income, net	38,738	(47,882)	(6,304)	148,706
Options	Trading income, net	(8,735)	1,161	(3,737)	(7,575)
		<u>\$ (79,909)</u>	<u>\$ 57,229</u>	<u>\$ 35,657</u>	<u>\$ (184,425)</u>
Derivative instruments designated as hedging instruments:					
Foreign exchange - forward contract	Accumulated other comprehensive income	<u>\$ —</u>	<u>\$ 699</u>	<u>\$ —</u>	<u>\$ 855</u>

13. Revenues from Contracts with Customers

Revenue Recognition

The Company adopted ASC Topic 606, Revenue from Contracts with Customers as of January 1, 2018 in the condensed consolidated financial statements by applying the modified retrospective method. The Company's revenue recognition methods for its contracts with customers prior to the adoption of Topic 606 are consistent with its methods after the adoption of Topic 606. Accordingly, the adoption of the new standard did not result in a transition adjustment to opening retained earnings, and as a result, revenues for contracts with customers would not have been adjusted in prior periods and are not presented herein on an adjusted basis. As a result of the ITG Acquisition, subsequent to the ITG Closing Date, the Company has additional revenue streams as described below.

The new revenue guidance does not apply to revenue associated with financial instruments, including loans and securities that are accounted for under other U.S. GAAP, and as a result, did not have an impact on the market making elements of the Company's condensed consolidated statement of comprehensive income most closely associated with financial instruments, including trading income, net and interest and dividend income. The new standard primarily impacts the presentation of the Company's Execution Services revenue streams discussed below, all of which are presented within Commissions, net and technology services on the Company's condensed consolidated statements of comprehensive income.

Commissions, net. The Company earns commission revenue by acting as an agent on behalf of customers. The Company's performance obligations consist of trade execution and clearing services and are satisfied on the trade date; accordingly, commission revenues are recorded on the trade date. Commission revenues are paid on settlement date; therefore, a receivable is recognized as of the trade date. Under a commission management program, the Company allows institutional clients to allocate a portion of their gross commissions to pay for research and other services provided by third parties. As the Company acts as an agent in these transactions, it records such expenses on a net basis within Commissions, net and technology services in the condensed consolidated statements of comprehensive income.

Technology services. The Company's technology services revenues consist of technology licensing fees and agency commission fees. Technology licensing fees are earned from third parties for licensing of the Company's proprietary risk management and trading infrastructure technology and the provision of associated management and hosting services. These fees include both upfront and annual recurring fees as well as, in certain cases, contingent fees based on customer revenues, which represent variable consideration. The services offered under these contracts are delivered as an integrated package and are interdependent and have the same pattern of transfer to the customer; accordingly, the Company measures and recognizes them as a single performance obligation. The performance obligation is satisfied over time, and, therefore, revenue is recognized as time passes. Variable consideration has not been included in the transaction price as the amount of consideration is contingent on factors outside the Company's control and thus it is not probable that a significant reversal of cumulative revenue recognized will not occur. Recurring fees, which exclude variable consideration, are billed and collected on a quarterly basis and are included within Receivables from broker-dealers and clearing organizations.

Workflow technology. Through its front-end workflow solutions and network capabilities, the Company provides order and trade execution management and order routing services.

The Company provides trade order routing from its execution management system ("EMS") to its execution services offerings, with each trade order routed through the EMS representing a separate performance obligation that is satisfied at a point in time. Commissions earned are fixed and revenue is recognized on the trade date. A portion of the commissions earned on the trade is then allocated to workflow technology based on the stand-alone selling price paid by third-party brokers for order routing. The remaining commission is allocated to commissions, net using a residual allocation approach.

The Company participates in commission share arrangements, where trade orders are routed to third-party brokers from its EMS and its order management system ("OMS"). Commission share revenues from third-party brokers are generally fixed and revenue is recognized at a point in time on the trade date.

The Company provides OMS and related software products and connectivity services to customers and recognizes license fee revenues and monthly connectivity fees. License fee revenues, generated for the use of the Company's OMS and other software products, is fixed and recognized at the point in time at which the customer is able to use and benefit from the license. Connectivity revenue is variable in nature, based on the number of live connections, and is recognized over time on a monthly basis using a time-based measure of progress.

Analytics. The Company provides customers with analytics products and services, including trading and portfolio analytics tools. The Company provides analytics products and services to customers and recognizes subscription fees, which are fixed for the contract term, based on when the products and services are delivered. Analytics services can be delivered either over time (when customers are provided with distinct ongoing access to analytics data) or at a point in time (when reports are only delivered to the customer on a periodic basis). Over time performance obligations are recognized using a time-based measure of progress on a monthly basis, since the analytics products and services are continually provided to the client. Point in time performance obligations are recognized when the analytics reports are delivered to the client.

Analytics products and services can also be paid for through variable bundled arrangements with trade execution services. Customers agree to pay for analytics products and services with commissions generated from trade execution services, and commissions are allocated to the analytics performance obligation(s) using:

- (i) the commission value for each customer for the products and services it receives, which is priced using the value for similar stand-alone subscription arrangements; and
- (ii) a calculated ratio of the commission value for the products and services relative to the total amount of commissions generated from the customer.

For these bundled commission arrangements, the allocated commissions to each analytics performance obligation are then recognized as revenue when the analytics product is delivered, either over time or at a point in time. These allocated commissions may be deferred if the allocated amount exceeds the amount recognizable based on delivery.

Disaggregation of Revenues

The following tables present the Company's revenue from contracts with customers disaggregated by the services described above, by timing of revenue recognition, reconciled to the Company's segments, for the three months ended September 30, 2019 and 2018:

(in thousands)	Three Months Ended September 30, 2019			
	Market Making	Execution Services	Corporate	Total
Revenues from contracts with customers:				
Commissions, net	\$ 7,252	\$ 98,365	\$ —	\$ 105,617
Workflow technology	—	24,041	—	24,041
Analytics	—	9,969	—	9,969
Total revenue from contracts with customers	7,252	132,375	—	139,627
Other sources of revenue	243,545	1,994	198	245,737
Total revenues	250,797	134,369	198	385,364
Timing of revenue recognition:				
Services transferred at a point in time	250,797	114,864	198	365,859
Services transferred over time	—	19,505	—	19,505
Total Revenues	\$ 250,797	\$ 134,369	\$ 198	\$ 385,364

Three months ended September 30, 2018

(in thousands)	Market Making	Execution Services	Corporate	Total
Revenues from contracts with customers:				
Commissions, net	\$ 6,587	\$ 33,332	\$ —	\$ 39,919
Technology services	—	333	—	333
Total revenue from contracts with customers	6,587	33,665	—	40,252
Other sources of revenue	257,783	541	(3,453)	254,871
Total revenues	<u>264,370</u>	<u>34,206</u>	<u>(3,453)</u>	<u>295,123</u>
Timing of revenue recognition:				
Services transferred at a point in time	264,370	33,873	(3,453)	294,790
Services transferred over time	—	333	—	333
Total revenues	<u>\$ 264,370</u>	<u>\$ 34,206</u>	<u>\$ (3,453)</u>	<u>\$ 295,123</u>

The following tables present the Company's revenue from contracts with customers disaggregated by the services described above, by timing of revenue recognition, reconciled to the Company's segments, for the nine months ended September 30, 2019 and 2018:

Nine Months Ended September 30, 2019

(in thousands)	Market Making	Execution Services	Corporate	Total
Revenues from contracts with customers:				
Commissions, net	\$ 17,213	\$ 259,846	\$ —	\$ 277,059
Workflow technology	—	58,369	—	58,369
Analytics	—	24,466	—	24,466
Total revenue from contracts with customers	17,213	342,681	—	359,894
Other sources of revenue	747,809	17,230	1,879	766,918
Total revenues	<u>765,022</u>	<u>359,911</u>	<u>1,879</u>	<u>1,126,812</u>
Timing of revenue recognition:				
Services transferred at a point in time	765,022	313,358	1,879	1,080,259
Services transferred over time	—	46,553	—	46,553
Total revenues	<u>\$ 765,022</u>	<u>\$ 359,911</u>	<u>\$ 1,879</u>	<u>\$ 1,126,812</u>

(in thousands)	Nine Months Ended September 30, 2018			
	Market Making	Execution Services	Corporate	Total
Revenues from contracts with customers:				
Commissions, net	\$ 21,886	\$ 113,786	\$ —	\$ 135,672
Technology services	—	4,989	—	4,989
Total revenue from contracts with customers	21,886	118,775	—	140,661
Other sources of revenue	962,715	339,984	(5,057)	1,297,642
Total revenues	<u>984,601</u>	<u>458,759</u>	<u>(5,057)</u>	<u>1,438,303</u>
Timing of revenue recognition:				
Services transferred at a point in time	984,601	453,770	(5,057)	1,433,314
Services transferred over time	—	4,989	—	4,989
Total revenues	<u>\$ 984,601</u>	<u>\$ 458,759</u>	<u>\$ (5,057)</u>	<u>\$ 1,438,303</u>

Remaining Performance Obligations and Revenue Recognized from Past Performance Obligations

As of September 30, 2019, the aggregate amount of the transaction price allocated to the performance obligations relating to technology services, workflow technology, and analytics revenues that are unsatisfied (or partially unsatisfied) was not material.

For the three and nine months ended September 30, 2019, the Company recognized \$0.3 million and \$1.0 million of revenue related to performance obligations that had been satisfied in previous periods.

Contract Assets and Contract Liabilities

The timing of the revenue recognition may differ from the timing of payment from customers. The Company records a receivable when revenue is recognized prior to payment, and when the Company has an unconditional right to payment. The Company records a contract liability when payment is received prior to the time at which the satisfaction of the service obligation occurs.

Receivables related to revenues from contracts with customers amounted to \$54.0 million and \$1.7 million as of September 30, 2019 and December 31, 2018, respectively. The Company did not identify any contract assets. There were no impairment losses on receivables as of September 30, 2019.

Deferred revenue primarily relates to deferred commissions allocated to analytics products and subscription fees billed in advance of satisfying the performance obligations. Deferred revenue related to contracts with customers was \$10.0 million as of September 30, 2019. During the three and nine months ended September 30, 2019, the Company recognized revenue of \$8.1 million and \$23.1 million, respectively, that was initially recorded as deferred revenue.

The Company has not identified any costs to obtain or fulfill its contracts under ASC 606.

14. Income Taxes

The Company is subject to U.S. federal, state and local income tax at the rate applicable to corporations less the rate attributable to the noncontrolling interest in Virtu Financial. These noncontrolling interests are subject to U.S. taxation as partnerships. Accordingly, for the three months ended September 30, 2019 and 2018, the income attributable to these noncontrolling interests is reported in the condensed consolidated statements of comprehensive income, but the related U.S. income tax expense attributable to these noncontrolling interests is not reported by the Company as it is the obligation of the individual partners. The Company's provisions for (benefits from) income taxes and effective tax rates were \$(0.6) million and 9.9%, and \$13.8 million and 46.9%, for the three months ended September 30, 2019 and 2018, respectively, and \$(14.3) million and 16.0%, and \$75.3 million and 13.8% for the nine months ended September 30, 2019 and 2018, respectively. Income tax expense is also affected by the differing effective tax rates in foreign, state and local jurisdictions where certain of the Company's subsidiaries are subject to corporate taxation.

Included in Other assets on the condensed consolidated statements of financial condition at September 30, 2019 and December 31, 2018 are current income tax receivables of \$69.7 million and \$41.1 million, respectively. The balances at September 30, 2019 and December 31, 2018 primarily comprise income tax benefits due to the Company from federal, state and local, and foreign tax jurisdictions based on income before taxes. Included in Accounts payable, accrued expenses and other liabilities on the condensed consolidated statements of financial condition at September 30, 2019 and December 31, 2018 are current tax liabilities of \$9.8 million and \$10.0 million, respectively. The balances at September 30, 2019 and December 31, 2018 primarily comprise income taxes owed to federal, state and local, and foreign tax jurisdictions based on income before taxes.

Deferred income taxes arise primarily due to the amortization of the deferred tax assets recognized in connection with the IPO (see Note 6 "Tax Receivable Agreements"), the Acquisition of KCG and the ITG Acquisition (see Note 3 "ITG Acquisition"), differences in the valuation of financial assets and liabilities, and other temporary differences arising from the deductibility of compensation, depreciation, and other expenses in different time periods for book and income tax return purposes.

There are no expiration dates on the deferred tax assets. The provisions of ASC 740 require that carrying amounts of deferred tax assets be reduced by a valuation allowance if, based on the available evidence, it is more likely than not that some portion or all of the deferred tax assets will not be realized. Accordingly, the need to establish valuation allowances for deferred tax assets is assessed periodically with appropriate consideration given to all positive and negative evidence related to the realization of the deferred tax assets. As a result of the Acquisition of KCG, the Company has non-U.S. net operating losses at September 30, 2019 and December 31, 2018 of \$239.3 million and \$239.3 million, respectively, and has recorded a related deferred tax asset of \$44.9 million and \$44.9 million, respectively. A full valuation allowance was also recorded against this deferred tax asset at September 30, 2019 and December 31, 2018 as it is more likely than not that this deferred tax asset will not be realized. No valuation allowance against the remaining deferred taxes was recorded as of September 30, 2019 and December 31, 2018 because it is more likely than not that these deferred tax assets will be fully realized.

The Company is subject to taxation in U.S. federal, state, local and foreign jurisdictions. As of September 30, 2019, the Company's tax years for 2013 through 2017 and 2010 through 2017 are subject to examination by U.S. and non-U.S. tax authorities, respectively. As a result of the ITG Acquisition and the Acquisition of KCG, the Company has assumed any ITG and KCG tax exposures. In addition, the Company is subject to state and local income tax examinations in various jurisdictions for the tax years 2013 through 2017. The final outcome of these examinations is not yet determinable. However, the Company anticipates that adjustments to the unrecognized tax benefits, if any, will not result in a material change to the financial condition, results of operations and cash flows.

The Company's policy for recording interest and penalties associated with audits is to record such items as a component of income or loss before income taxes and noncontrolling interest. Penalties, if any, are recorded in Operations and administrative expense and interest received or paid is recorded in Other, net or Operations and administrative expense in the condensed consolidated statement of comprehensive income.

The Company had \$9.3 million of unrecognized tax benefits as of September 30, 2019, all of which would affect the Company's effective tax rate if recognized. The Company has determined that there are no uncertain tax positions that would have a material impact on the Company's financial position as of September 30, 2019.

15. Commitments, Contingencies and Guarantees

Legal Proceedings

In the ordinary course of business, the nature of the Company's business subjects it to claims, lawsuits, regulatory examinations or investigations and other proceedings. The Company and its subsidiaries are subject to several of these matters at the present time. Given the inherent difficulty of predicting the outcome of litigation and regulatory matters, particularly in regulatory examinations or investigations or other proceedings in which substantial or indeterminate judgments, settlements, disgorgements, restitution, penalties, injunctions, damages or fines are sought, or where such matters are in the early stages, the Company cannot estimate losses or ranges of losses for such matters where there is only a reasonable possibility that a loss may be incurred. In addition, there are numerous factors that result in a greater degree of complexity in class-action lawsuits as compared to other types of litigation. There can be no assurance that these legal proceedings will not have a material adverse effect on the Company's results of operations in any future period, and a material judgment, fine or sanction could have a material adverse impact on the Company's financial condition, results of operations and cash flows. However, it is the opinion of management, after consultation with legal counsel that, based on information currently available, the ultimate outcome of these matters will not have a material adverse impact on the business, financial condition or operating results of the Company, although they might be material to the operating results for any particular reporting period. The Company carries directors' and officers' liability insurance coverage and other insurance coverages for potential claims, including securities actions, against the Company and its respective directors and officers.

In connection with the Acquisition of KCG, a previously filed complaint, which was initially captioned *Greenway v. KCG Holdings, Inc., et al., Case No. 2017-421-JTL* and filed on behalf of a putative class in Delaware Chancery Court, was recaptioned *Chester County Employees' Retirement Fund v. KCG Holdings, Inc., et al.*, amended and refiled on February 14, 2018 to include claims for the alleged breach of fiduciary duties against former KCG board members, claims against each of the Company and Jefferies LLC for allegedly aiding and abetting the KCG board members' alleged breaches of fiduciary duty and a claim against the Company and Jefferies LLC for alleged civil conspiracy. The amended complaint was again amended on July 16, 2018 with the filing of the Verified Second Amended Class Action Complaint (the "Second Amended Complaint") to include additional factual allegations. In October 2019, the parties reached an agreement in principle to settle the matter. The agreement is subject to customary conditions including execution of definitive settlement documentation and final court approval. The proposed settlement contains no admission of any liability or wrongdoing on the part of the defendants, each of whom continues to deny all of the allegations against them and believes that the claims are without merit. Though the Company believes the likelihood of approval of the settlement is probable, we cannot predict with certainty the outcome of the litigation, and if an agreement is not reached or the settlement is not finally approved by the Court, we believe that we have meritorious defenses to the claims in the operative complaint.

On January 29, 2019, the Company was named as a defendant in *Ford v. ProShares Trust II, et al.*, No. 19-cv-886. The complaint was filed in federal district court in New York on behalf of a putative class, and asserts claims against the Company and numerous other financial institutions under Section 11 of the Securities Act of 1933 in connection with trading in a ProShares inverse-volatility ETF. Additionally, on February 27, 2019, and March 1, 2019, the Company was named as a defendant in *Bittner v. ProShares Trust II, et al.*, No. 19-cv-1840, and *Mareno v. ProShares Trust II, et al.*, No. 19-cv-1955, respectively. The complaints were filed in federal district court in New York on behalf of putative classes, and asserted substantially similar claims against the Company and other financial institutions. On April 29, 2019, these three actions were consolidated in federal district court in New York as *In re ProShares Trust II Securities Litigation*, No. 19-cv-886-DLC. A consolidated amended complaint, which did not specify the amount of alleged damages, was filed in the consolidated action on June 21, 2019. Defendants moved to dismiss the consolidated amended complaint on August 2, 2019. In response, plaintiffs filed a consolidated second amended complaint on September 6, 2019, which complaint also does not specify the amount of alleged damages. Defendants moved to dismiss the consolidated second amended complaint on September 27, 2019. The Company believes that the claims are without merit and is defending itself vigorously.

As a result of the ITG Acquisition, the Company assumed potential liabilities relating to ITG's business, including but not limited to those potential liabilities arising from or related to pending, threatened or potential litigation or regulatory matters. These matters include but are not necessarily limited to a Statement of Claim filed on July 27, 2018 by a former employee of ITG requesting a FINRA arbitration. The former ITG employee alleges that ITG breached the non-disparagement clause in his July 2011 separation agreement and tortiously interfered with his business relations. On June 26, 2019, the former employee informed the Company that he was seeking damages of approximately \$65 million (exclusive of claims for pre-judgment interest, punitive damages, costs and fees). In an award dated October 24, 2019, the FINRA arbitration panel awarded the claimant \$3 million in compensatory damages, and ordered the Company to pay additional fees and expenses which totaled an additional amount of approximately \$3 million. The Company has paid all such amounts due to the claimant in full and final.

satisfaction of the award. The Company is vigorously seeking confirmation of the payment of a portion of the award from an insurance carrier.

Other Legal and Regulatory Matters

The Company owns subsidiaries including regulated entities that are subject to extensive oversight under federal, state and applicable international laws as well as self-regulatory organization (“SRO”) rules. Changes in market structure and the need to remain competitive require constant changes to the Company’s systems, order routing and order handling procedures. The Company makes these changes while continuously endeavoring to comply with many complex laws and rules. Compliance, surveillance and trading issues common in the securities industry are monitored by, reported to, and/or reviewed in the ordinary course of business by the Company’s regulators in the U.S. and abroad. As a major order flow execution destination, the Company is named from time to time in, or is asked to respond to a number of regulatory matters brought by U.S. regulators, foreign regulators, SROs, as well as actions brought by private plaintiffs, which arise from its business activities. There has recently been an increased focus by regulators on Anti-Money Laundering and sanctions compliance by broker-dealers and similar entities, as well as an enhanced interest on suspicious activity reporting and transactions involving microcap and low-priced securities. In addition, there has been an increased focus by Congress, federal and state regulators, SROs and the media on market structure issues, and in particular, high frequency trading, best execution, internalization, alternative trading system (“ATS”) manner of operations, market fragmentation and complexity, colocation, cybersecurity, access to market data feeds and remuneration arrangements, such as payment for order flow and exchange fee structures. From time to time, the Company is the subject of requests for information and documents from the SEC, the Financial Industry Regulatory Authority and other regulators. It is the Company’s practice to cooperate and comply with the requests for information and documents.

The Company is currently the subject of various regulatory reviews and investigations by federal and foreign regulators and SROs, including the SEC and the Financial Industry Regulatory Authority. In some instances, these matters may result in a disciplinary action and/or a civil or administrative action. For example, in December 2015, the Autorité des Marchés Financiers (“AMF”) fined the Company’s European subsidiary in the amount of €5.0 million (approximately \$5.4 million) based on its allegations that the subsidiary of a predecessor entity engaged in price manipulation and violations of the AMF General Regulation and Euronext Market Rules. The fine was subsequently reduced in 2017 to €3.3 million (approximately \$3.9 million) and in 2018 was reduced to €3.0 million (approximately \$3.4 million). The Company has fully reserved for the monetary penalty as of September 30, 2019 and anticipates paying the fine during the year ending December 31, 2019.

Representations and Warranties; Indemnification Arrangements

In the normal course of its operations, the Company enters into contracts that contain a variety of representations and warranties in addition to indemnification obligations. The Company’s maximum exposure under these arrangements is currently unknown, as any such exposure could relate to claims not yet brought or events which have not yet occurred. For example, in November 2013, KCG sold Urban Financial of America, LLC (“Urban”), the reverse mortgage origination and securitization business previously owned by Knight Capital Group, Inc., to an investor group now known as Finance of America Reverse, LLC (“FAR”). Pursuant to the terms of the Stock Purchase Agreement between KCG and FAR, Virtu has certain continuing obligations related to KCG’s prior ownership of Urban and has been and, in the future may be, advised by FAR of potential claims thereunder.

Consistent with standard business practices in the normal course of business, the Company has provided general indemnifications to its managers, officers, directors, employees, and agents against expenses, legal fees, judgments, fines, settlements, and other amounts actually and reasonably incurred by such persons under certain circumstances as more fully disclosed in its operating agreement. The overall maximum amount of the obligations (if any) cannot reasonably be estimated as it will depend on the facts and circumstances that give rise to any future claims.

16. Leases

The Company adopted ASU 2016-02 on January 1, 2019, and elected the modified retrospective method of implementation. The standard requires the recognition of ROU assets and lease liabilities for leases, which are defined as a contract, or part of a contract, that conveys the right to control the use of identified property, plant or equipment for a period of time in exchange for consideration. The Company has elected the practical expedient which allows for leases with an initial term of 12 months or less to be excluded from recognition on the condensed consolidated statement of financial condition and for which lease expense is recognized on a straight-line basis over the lease term.

For the Company, Topic 842 primarily affected the accounting treatment for operating lease agreements in which the Company is the lessee. These leases are primarily for corporate office space, datacenters, and technology equipment. The leases have remaining terms of 1 year to 13 years, some of which include options to extend the initial term at the Company's discretion. The lease terms used in calculating ROU assets and lease liabilities include the options to extend the initial term when the Company is reasonably certain of exercising the options. The Company's lease agreements do not contain any material residual value guarantees, restrictions or covenants. In addition to the base rental costs, the Company's lease agreements for corporate office space generally provide for rent escalations resulting from increased assessments for operating expenses, real estate taxes and other charges. Payments for such reimbursable expenses are considered variable and are recognized as variable lease costs in the period in which the obligation for those payments was incurred.

The Company also subleases certain office space and facilities to third parties. The subleases have remaining terms of 1 to 13 years. The Company recognizes sublease income on a straight-line basis over the term of the sublease within Other, net on the condensed consolidated statement of comprehensive income.

As the implied discount rate for most of the Company's leases is not readily determinable, the Company uses its incremental borrowing rate on its secured borrowings, which was based on the information available as of the initial transition date, January 1, 2019, in determining the present value of lease payments.

During the nine months ended September 30, 2019, the Company ceased use of certain office lease premises as part of its ongoing effort to consolidate office space. For the three months ended September 30, 2019, the Company recognized \$1.3 million in Termination of office leases on the condensed consolidated statement of comprehensive income related to these premises, comprised entirely of impairment of ROU assets. For the nine months ended September 30, 2019, the Company recognized \$66.5 million in Termination of office leases on the condensed consolidated statement of comprehensive income, comprising \$27.0 million of impairments of ROU assets, \$37.9 million of write-offs of leasehold improvements and fixed assets, and \$1.5 million of dilapidation charges.

Lease assets and liabilities are summarized as follows:

(in thousands)	Financial Statement Location	September 30, 2019
Operating leases		
Operating lease right-of-use assets	Operating lease right-of-use assets	\$ 305,116
Operating lease liabilities	Operating lease liabilities	375,390
Finance leases		
Property and equipment, at cost	Property, equipment, and capitalized software, net	39,591
Accumulated depreciation	Property, equipment, and capitalized software, net	(23,416)
Finance lease liabilities	Accounts payable, accrued expenses, and other liabilities	16,577

Weighted average remaining lease term and discount rate are as follows:

	September 30, 2019
Weighted average remaining lease term	
Operating leases	7.68 years
Finance leases	1.61 years
Weighted average discount rate	
Operating leases	5.70%
Finance leases	3.51%

The components of lease expense for the three and nine months ended September 30, 2019 were as follows:

(in thousands)	Three Months Ended September 30, 2019	Nine Months Ended September 30, 2019
Operating lease cost:		
Fixed	\$ 18,637	\$ 52,722
Variable	2,352	6,365
Impairment of ROU Asset	1,185	27,042
Total Operating lease cost	22,174	86,129
Finance lease cost:		
Amortization of right-of-use assets	3,277	9,329
Interest on lease liabilities	165	525
Total Finance lease cost	3,442	9,854
Sublease income	3,024	8,939

Future minimum lease payments under operating and finance leases with non-cancelable lease terms, as of September 30, 2019, are as follows:

(in thousands)	Operating Leases	Finance Leases
2019	\$ 19,006	\$ 3,542
2020	75,121	10,925
2021	72,079	3,305
2022	65,907	565
2023	62,783	—
2024 and thereafter	172,856	—
Total lease payments	467,752	18,337
Less imputed interest	(92,362)	(1,760)
Total lease liability	\$ 375,390	\$ 16,577

Future lease payments under non-cancelable leases and sublease receipts as of December 31, 2018 are as follows:

(thousands)	Capital	Operating	Subleases
2019	\$ 21,983	\$ 32,755	\$ (8,979)
2020	11,283	30,473	(9,324)
2021	1,651	25,564	(8,844)
2022	—	22,710	(8,552)
2023	—	21,456	(8,695)
Thereafter	—	113,779	(36,312)
Total minimum lease payments	\$ 34,917	\$ 246,737	\$ (80,706)

17. Cash

The following table provides a reconciliation of cash and cash equivalents together with restricted cash as reported within the condensed consolidated statements of financial condition to the sum of the same such amounts shown in the condensed consolidated statements of cash flows.

(in thousands)	September 30, 2019	December 31, 2018
Cash and cash equivalents	\$ 372,710	\$ 729,547
Cash restricted or segregated under regulations and other	22,109	6,500
Total cash, cash equivalents and restricted cash shown in the statement of cash flows	<u>\$ 394,819</u>	<u>\$ 736,047</u>

18. Capital Structure

The Company has four classes of authorized common stock. The Class A Common Stock and the Class C Common Stock have one vote per share. The Class B Common Stock and the Class D Common Stock have 10 votes per share. Shares of the Company's common stock generally vote together as a single class on all matters submitted to a vote of the Company's stockholders.

During the period prior to the Reorganization Transactions and IPO, Class A-2 profits interests and Class B interests in Virtu Financial were issued to Employee Holdco (as defined below) on behalf of certain key employees and stakeholders. In connection with the Reorganization Transactions, all Class A-2 profits interests and Class B interests were reclassified into Virtu Financial Units. As of September 30, 2019 and December 31, 2018, there were 7,937,299 and 8,760,755 Virtu Financial Units outstanding held by Employee Holdco, respectively, and 823,456 and 3,289,067 of such Virtu Financial Units and corresponding Class C Common Stock were exchanged into Class A Common Stock, forfeited or repurchased during the nine months ended September 30, 2019 and 2018, respectively.

Amended and Restated 2015 Management Incentive Plan

The Company's board of directors and stockholders adopted the 2015 Management Incentive Plan, which became effective upon consummation of the IPO, and was subsequently amended and restated following receipt of approval from the Company's stockholders on June 30, 2017. The Amended and Restated 2015 Management Incentive Plan provides for the grant of stock options, restricted stock units, and other awards based on an aggregate of 16,000,000 shares of Class A Common Stock, subject to additional sublimits, including limits on the total option grant to any one participant in a single year and the total performance award to any one participant in a single year.

Amended and Restated Investment Technology Group, Inc. 2007 Omnibus Equity Compensation Plan

On the ITG Closing Date, the Company assumed the Amended and Restated ITG 2007 Equity Plan and the Assumed Awards. As of the ITG Closing Date, the aggregate number of shares of Class A Common Stock subject to such Assumed Awards was 2,497,028 and the aggregate number of shares of Class A Common Stock that remained issuable pursuant to the Amended and Restated ITG 2007 Equity Plan was 1,230,406.

Acquisition of KCG

On the KCG Closing Date, the Company completed the all-cash Acquisition of KCG. In connection with the Acquisition of KCG, the Company issued 8,012,821 shares of the Company's Class A Common Stock to Aranda Investments Pte. Ltd. ("Aranda"), an affiliate of Temasek Holdings (Private) Limited ("Temasek"), for an aggregate purchase price of approximately \$125.0 million and 40,064,103 shares of the Company's Class A Common Stock to North Island Holdings I, LP (the "North Island Stockholder") for an aggregate purchase price of approximately \$618.7 million, in each case in accordance with terms of an investment agreement in a private placement exempt from the registration requirements of the Securities Act of 1933, as amended (the "Securities Act"), pursuant to Section 4(a)(2) of the Securities Act. The investment agreements are described in, and the full text thereof is filed as an exhibit to, the Company's 2018 annual report on Form 10-K filed with the Securities and Exchange Commission on March 1, 2019.

Share Repurchase Program

In February 2018, the Company's board of directors authorized a new share repurchase program of up to \$50.0 million in Class A Common Stock and Virtu Financial Units by March 31, 2019. On July 27, 2018, the Company's board of directors authorized the expansion of the Company's share repurchase program, increasing the total authorized amount by \$50.0 million to \$100.0 million and extending the duration of the program through September 30, 2019. Since the inception of the program in February 2018, the Company has repurchased approximately 2.6 million shares of Class A Common Stock and Virtu Financial Units for approximately \$65.9 million. At September 30, 2019, the Company had approximately \$34.1 million remaining capacity for future purchases of shares of Class A Common Stock and Virtu Financial Units under the program. Pursuant to the program, the Company may repurchase shares from time to time in open market transactions, privately negotiated transactions or by other means. Repurchases may also be made under Rule 10b5-1 plans. The timing and amount of repurchase transactions will be determined by the Company's management based on its evaluation of market conditions, share price, legal requirements and other factors. The program may be suspended, modified or discontinued at any time without prior notice.

The stock and common units repurchase program expired on September 30, 2019.

Secondary Offerings

In May 2018, the Company and certain selling stockholders completed a public offering (the "May 2018 Secondary Offering") of 17,250,000 shares of Class A Common Stock by the Company and certain selling stockholders at a purchase price per share of \$27.16 (the offering price to the public of \$28.00 per share minus the underwriters' discount), which included the exercise in full by the underwriters of their option to purchase additional shares in the May 2018 Secondary Offering. The Company sold 10,518,750 shares of Class A Common Stock in the offering, the net proceeds of which were used to purchase an equivalent number of Virtu Financial Units and corresponding shares of Class D Common Stock from TJMT Holdings LLC pursuant to that certain Member Purchase Agreement, entered into on May 15, 2018 by and between the Company and TJMT Holdings LLC. The selling stockholders sold 6,731,250 shares of Class A Common Stock in the May 2018 Secondary Offering, including 2,081,250 shares of Class A Common Stock issued by the Company upon the exercise of vested stock options.

In connection with the May 2018 Secondary Offering, the Company, TJMT Holdings LLC, the North Island Stockholder, Havelock Fund Investments Pte. Ltd. ("Havelock") and Aranda entered into that certain Amendment No. 1 to the Amended and Restated Registration Rights Agreement dated April 20, 2017, by and among the Company, TJMT Holdings LLC, the North Island Stockholder, Havelock, Aranda and certain direct or indirect equityholders of the Company (the "Amended and Restated Registration Rights Agreement") to add Mr. Vincent Viola and Mr. Michael Viola, directors of the Company, and to confirm that certain other persons (including the Company's CEO) remain parties to the Amended and Restated Registration Rights Agreement.

In May 2019, the Company completed a public offering (the "May 2019 Secondary Offering") of 9,000,000 shares of Class A Common Stock at a purchase price per share paid by the underwriters of \$22.00, the proceeds of which were used to purchase an equivalent number of Virtu Financial Units and corresponding shares of Class D Common Stock from TJMT Holdings LLC pursuant to that certain Member Purchase Agreement, entered into on May 14, 2019 by and between the Company and TJMT Holdings LLC.

Employee Exchanges

During the nine months ended September 30, 2019 and 2018, pursuant to the exchange agreement by and among the Company, Virtu Financial and holders of Virtu Financial Units, certain current and former employees elected to exchange 823,456 and 3,508,217 units, respectively in Virtu Financial held directly or on their behalf by Virtu Employee Holdco LLC ("Employee Holdco") on a one-for-one basis for shares of Class A Common Stock.

As a result of the completion of the IPO, the Reorganization Transactions, the Secondary Offerings, employee exchanges, and the share issuance in connection with the Acquisition of KCG, the Company holds approximately a 62.1% interest in Virtu Financial at September 30, 2019.

19. Share-based Compensation

Pursuant to the Amended and Restated 2015 Management Incentive Plan as described in Note 18 “Capital Structure”, and in connection with the IPO, non-qualified stock options to purchase shares of Class A Common Stock were granted, each of which vests in equal annual installments over a period of four years from grant date and expires not later than 10 years from the date of grant.

The following table summarizes activity related to stock options for the nine months ended September 30, 2019 and 2018:

	Options Outstanding			Options Exercisable	
	Number of Options	Weighted Average Exercise Price Per Share	Weighted Average Remaining Contractual Life	Number of Options	Weighted Average Exercise Price Per Share
At December 31, 2017	7,783,000	\$ 19.00	7.29	3,891,500	\$ 19.00
Granted	—	—	—	—	—
Exercised	(4,086,558)	19.00	—	(4,086,558)	19.00
Forfeited or expired	(83,750)	—	—	—	—
At September 30, 2018	<u>3,612,692</u>	19.00	6.55	1,741,942	19.00
At December 31, 2018	3,486,150	19.00	6.30	1,660,400	19.00
Granted	156,129	13.60	4.87	156,129	13.60
Exercised	(353,500)	19.00	—	(353,500)	19.00
Forfeited or expired	(40,000)	—	—	—	—
At September 30, 2019	<u>3,248,779</u>	18.74	5.49	3,248,779	18.74

The expected life has been determined based on an average of vesting and contractual period. The risk-free interest rate was determined based on the yields available on U.S. Treasury zero-coupon issues. The expected stock price volatility was determined based on historical volatilities of comparable companies. The expected dividend yield was determined based on estimated future dividend payments divided by the IPO stock price.

The Company recognized \$1.4 million for the three months ended September 30, 2018, and \$1.4 million and \$4.2 million for the nine months ended September 30, 2019 and 2018, respectively, of compensation expense in relation to the stock options issued and outstanding. As of September 30, 2019 the stock options to purchase shares of Class A Common Stock were fully vested. As of December 31, 2018, total unrecognized share-based compensation expense related to unvested stock options was \$1.6 million, and the amount was to be recognized over a weighted average period of 0.3 years.

Amended and Restated Investment Technology Group, Inc. 2007 Omnibus Equity Compensation Plan

On the ITG Closing Date, the Company assumed the Amended and Restated ITG 2007 Equity Plan and the Assumed Awards. The Assumed Awards are subject to the same terms and conditions that were applicable to them under the Amended and Restated ITG 2007 Equity Plan, except that (i) the Assumed Awards relate to shares of the Company’s Class A Common Stock, (ii) the number of shares of Class A Common Stock subject to the Assumed Awards was the result of an adjustment based upon an Exchange Ratio (as defined in the ITG Merger Agreement) and (iii) the performance share unit awards were converted into service-based vesting restricted stock unit awards that were no longer subject to any performance based vesting conditions. As of the ITG Closing Date, the aggregate number of shares of Class A Common Stock subject to such Assumed Awards was 2,497,028 and the aggregate number of shares of Class A Common Stock that remained issuable pursuant to the Amended and Restated ITG 2007 Equity Plan was 1,230,406. The Company filed a Registration Statement on Form S-8 on the ITG Closing Date to register such shares of Class A Common Stock.

Class A Common Stock and Restricted Stock Units

Pursuant to the Amended and Restated 2015 Management Incentive Plan as described in Note 18 “Capital Structure”, subsequent to the IPO, shares of immediately vested Class A Common Stock and restricted stock units were granted, with the latter vesting over a period of up to 4 years. The fair value of the Class A Common Stock and RSUs was determined based on a volume weighted average price and is being recognized on a straight-line basis over the vesting period. For the nine months ended September 30, 2019 and 2018, respectively, there were 423,393 and 594,536 shares of immediately vested Class A Common Stock granted as part of year-end compensation. In addition, the Company accrued compensation expense of \$5.9 million and \$2.5 million for the three months ended September 30, 2019 and 2018, respectively, and \$8.4 million and \$7.1 million for the nine months ended September 30, 2019 and 2018, respectively, related to immediately vested Class A Common Stock expected to be awarded as part of year-end incentive compensation, which was included in Employee compensation and payroll taxes on the condensed consolidated statements of comprehensive income and Accounts payable, accrued expenses and other liabilities on the condensed consolidated statements of financial condition.

The following table summarizes activity related to the RSUs (including the Assumed Awards):

	Number of Shares	Weighted Average Fair Value
At December 31, 2017	853,047	\$ 17.94
Granted	1,265,899	20.89
Forfeited	(127,493)	18.30
Vested	(83,942)	18.25
At September 30, 2018	<u>1,907,511</u>	19.86
At December 31, 2018	1,378,922	20.03
Granted	3,605,114	25.07
Forfeited	(326,458)	21.58
Vested	(1,047,866)	24.08
At September 30, 2019	<u>3,609,712</u>	23.75

The Company recognized \$13.0 million and \$4.6 million for the three months ended September 30, 2019 and 2018, respectively, and \$52.6 million and \$13.1 million for the nine months ended September 30, 2019 and 2018, respectively, of compensation expense in relation to the restricted stock units. As of September 30, 2019 and December 31, 2018, total unrecognized share-based compensation expense related to unvested RSUs was \$57.3 million and \$21.3 million, respectively, and this amount is to be recognized over a weighted average period of 1.64 and 1.7 years, respectively.

20. Regulatory Requirement*U.S. Subsidiaries*

As of September 30, 2019 and December 31, 2018, U.S. broker-dealer subsidiaries of the Company are subject to the SEC Uniform Net Capital Rule 15c3-1, which requires the maintenance of minimum net capital for each of the five U.S. broker-dealers as detailed in the table below. Pursuant to NYSE rules, VAL was also required to maintain \$1.0 million of capital in connection with the operation of its designated market maker (“DMM”) business as of September 30, 2019. The required amount is determined under the exchange rules as the greater of (i) \$1 million or (ii) \$75,000 for every 0.1% of NYSE transaction dollar volume in each of the securities for which the Company is registered as the DMM.

The regulatory capital and regulatory capital requirements of the U.S broker-dealer subsidiaries as of September 30, 2019 were as follows:

(in thousands)	Regulatory Capital	Regulatory Capital Requirement	Excess Regulatory Capital
Virtu Americas LLC	\$ 335,436	\$ 2,748	\$ 332,688
Virtu Financial BD LLC	151,750	1,000	150,750
Virtu Financial Capital Markets LLC	3,572	1,000	2,572
Virtu ITG LLC	54,625	1,000	53,625
Virtu Alternet Securities LLC	1,983	100	1,883

The regulatory capital and regulatory capital requirements of the U.S. broker-dealer subsidiaries as of December 31, 2018 were as follows:

(in thousands)	Regulatory Capital	Regulatory Capital Requirement	Excess Regulatory Capital
Virtu Americas LLC	\$ 381,211	\$ 2,035	\$ 379,176
Virtu Financial BD LLC	133,850	1,000	132,850
Virtu Financial Capital Markets LLC	9,457	1,000	8,457

As of September 30, 2019, VAL and VITG had \$2.0 million and \$7.4 million, respectively, of cash in special reserve bank accounts for the benefit of customers pursuant to SEC Rule 15c3-3, *Computation for Determination of Reserve Requirements*, and \$2.5 million and \$5.4 million, respectively, of cash in reserve bank accounts for the benefit of proprietary accounts of brokers. The balances are included within Cash restricted or segregated under regulations and other on the condensed consolidated statement of financial condition.

Foreign Subsidiaries

The Company's foreign subsidiaries are subject to regulatory capital requirements set by local regulatory bodies, including the Investment Industry Regulatory Organization of Canada ("IIROC"), the Central Bank of Ireland, the Financial Conduct Authority in the United Kingdom, the Australian Securities Exchange, the Securities and Futures Commission in Hong Kong, and the Monetary Authority of Singapore. Virtu Financial Canada ULC was admitted to membership in IIROC in March 2019. The regulatory net capital balances and regulatory capital requirements applicable to these subsidiaries as of September 30, 2019 were as follows:

(in thousands)	Regulatory Capital	Regulatory Capital Requirement	Excess Regulatory Capital
Canada			
Virtu ITG Canada Corp	\$ 17,120	\$ 189	\$ 16,931
TriAct Canada Marketplace LP	1,358	189	1,169
Virtu Financial Canada ULC	2,502	189	2,313
Ireland			
Virtu ITG Europe Limited	51,173	31,078	20,095
Virtu Financial Ireland Limited	76,200	36,646	39,554
United Kingdom			
Virtu ITG UK Limited	1,274	922	352
Asia Pacific			
Virtu ITG Australia Limited	24,286	7,876	16,410
Virtu ITG Hong Kong Limited	2,565	612	1,953
Virtu ITG Singapore Pte Limited	1,047	72	975

As of September 30, 2019, Virtu ITG Europe Limited and Virtu ITG Canada Corp had \$4.1 million and \$0.4 million, respectively, of funds on deposit for trade clearing and settlement activity, and Virtu ITG Hong Kong Ltd had \$30 thousand of segregated balances under a collateral account control agreement for the benefit of certain customers.

21. Geographic Information and Business Segments

The Company operates its business in the U.S. and internationally, primarily in Europe and Asia. Significant transactions and balances between geographic regions occur primarily as a result of certain of the Company's subsidiaries incurring operating expenses such as employee compensation, communications and data processing and other overhead costs,

for the purpose of providing execution, clearing and other support services to affiliates. Charges for transactions between regions are designed to approximate full costs. Intra-region income and expenses and related balances have been eliminated in the geographic information presented below to accurately reflect the external business conducted in each geographical region. The revenues are attributed to countries based on the locations of the subsidiaries. The following table presents total revenues by geographic area for the three and nine months ended September 30, 2019 and 2018:

(in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Revenues:				
United States (1)	\$ 280,879	\$ 245,631	\$ 846,289	\$ 1,266,047
Ireland	54,399	21,938	138,964	60,563
United Kingdom	(1,334)	479	(1,867)	15,324
Singapore	26,260	26,921	82,805	95,757
Canada	14,739	—	35,039	—
Australia	9,504	—	23,397	—
Others	917	154	2,185	612
Total revenues	\$ 385,364	\$ 295,123	\$ 1,126,812	\$ 1,438,303

(1) Includes \$337.6 million gain on sale of BondPoint for the nine months ended September 30, 2018.

The Company has two operating segments: (i) Market Making and (ii) Execution Services; and one non-operating segment: Corporate.

The Market Making segment principally consists of market making in the cash, futures and options markets across global equities, options, fixed income, currencies and commodities. As a market maker, the Company commits capital on a principal basis by offering to buy securities from, or sell securities to, broker-dealers, banks and institutions. The Company engages in principal trading in the Market Making segment direct to clients as well as in a supplemental capacity on exchanges, ECNs and ATSS. The Company is an active participant on all major global equity and futures exchanges and also trades on substantially all domestic electronic options exchanges. As a complement to electronic market making, the cash trading business handles specialized orders and also transacts on the OTC Link ATS operated by OTC Markets Group Inc. and the AIM.

The Execution Services segment comprises agency-based trading and trading venues, offering execution services in global equities, options, futures and fixed income on behalf of institutions, banks and broker-dealers as well as technology services revenues. The Company earns commissions and commission equivalents as an agent on behalf of clients as well as between principals to transactions; in addition, the Company will commit capital on behalf of clients as needed. Agency-based, execution-only trading in the segment is done primarily through a variety of access points including: (i) algorithmic trading and order routing in global equities and options; (ii) institutional sales traders who offer portfolio trading and single stock sales trading which provides execution expertise for program, block and riskless principal trades in global equities and ETFs; and (iii) matching of client conditional orders in POSIT Alert and in the Company's ATSS, including Virtu MatchIt, POSIT, and MATCHNow. The Execution Services segment also includes revenues derived from providing (a) proprietary risk management and trading infrastructure technology to select third parties for a service fee, (b) workflow technology, the Company's integrated, broker-neutral trading tools delivered across the globe including trade order and execution management and order management software applications and network connectivity and (c) trading analytics, including (1) tools enabling portfolio managers and traders to improve pre-trade, real-time and post-trade execution performance, (2) portfolio construction and optimization decisions and (3) securities valuation.

The Corporate segment contains the Company's investments, principally in strategic trading-related opportunities and maintains corporate overhead expenses and all other income and expenses that are not attributable to the Company's other segments.

Management evaluates the performance of its segments on a pre-tax basis. Segment assets and liabilities are not used for evaluating segment performance or in deciding how to allocate resources to segments. The Company's total revenues and income before income taxes and noncontrolling interest ("Pre-tax earnings") by segment for the three months ended September 30, 2019 and 2018 are summarized in the following table:

(in thousands)	Market Making	Execution Services	Corporate (1)	Consolidated Total
2019:				
Total revenue	\$ 250,797	\$ 134,369	\$ 198	\$ 385,364
Income before income taxes and noncontrolling interest	30,375	(29,202)	(7,001)	(5,828)
2018:				
Total revenue	264,370	34,206	(3,453)	295,123
Income (loss) before income taxes and noncontrolling interest	39,744	129	(10,448)	29,425

The Company's Pre-tax earnings by segment for the nine months ended September 30, 2019 and 2018 are summarized in the following table:

(in thousands)	Market Making	Execution Services	Corporate (1)	Consolidated Total
2019				
Total revenue	\$ 765,022	\$ 359,911	\$ 1,879	\$ 1,126,812
Income before income taxes and noncontrolling interest	99,876	(95,303)	(93,183)	(88,610)
2018				
Total revenue	984,601	458,759	(5,057)	1,438,303
Income (loss) before income taxes and noncontrolling interest	262,910	331,703	(47,028)	547,585

22. Related Party Transactions

The Company incurs expenses and maintains balances with its affiliates in the ordinary course of business. As of September 30, 2019, and December 31, 2018 the Company had a net receivable from its affiliates of \$0.8 million and a net payable to its affiliates of \$3.0 million, respectively.

The Company has held a minority interest in SBI since 2016 (see Note 11 "Financial Assets and Liabilities"). The Company pays exchange fees to SBI for the trading activities conducted on its proprietary trading system. The Company paid \$4.0 million and \$1.5 million for the three months ended September 30, 2019 and 2018, respectively, and \$10.2 million and \$6.2 million for the nine months ended September 30, 2019 and 2018, respectively, to SBI for these trading activities.

The Company makes payments to two JVs (see Note 2 "Summary of Significant Accounting Policies") to fund the construction of the microwave communication networks, and to purchase microwave communication networks, which are recorded within communications and data processing on the condensed consolidated statements of comprehensive income. The Company made payments of \$5.2 million and \$3.0 million to the JVs for the three months ended September 30, 2019 and 2018, respectively, and \$15.6 million and \$13.1 million for the nine months ended September 30, 2019 and 2018, respectively.

The Company purchases network connections services from affiliates of Level 3 Communications ("Level 3"). Temasek and its affiliates have a significant ownership interest in Level 3. The Company paid \$0.3 million and \$0.4 million for the three months ended September 30, 2019 and 2018, respectively, and \$1.1 million and \$1.9 million for the nine months ended September 30, 2019 and 2018, respectively, to Level 3 for these services.

23. Subsequent Events

The Company has evaluated subsequent events for adjustment to or disclosure in its condensed consolidated financial statements through the date of this report, and has not identified any recordable or disclosable events, not otherwise reported in these condensed consolidated financial statements or the notes thereto, except for the following:

On November 5, 2019, the Company's board of directors declared a dividend of \$0.24 per share of Class A Common Stock and Class B Common Stock and per participating Restricted Stock Unit that will be paid on December 16, 2019 to holders of record as of December 2, 2019.

On October 9, 2019 (the "Closing Date"), VFH entered into Amendment No. 1 ("Amendment No. 1"), which amended the Credit Agreement dated as of March 1, 2019 (as amended by Amendment No. 1, the "Amended Credit Agreement") by and

among VFH, Virtu Financial, the lenders party thereto, and Jefferies Finance, LLC (“Jefferies”), as administrative agent and collateral agent (in such capacities, the “Agent”), to, among other things, provide for \$525.0 million in aggregate principal amount of incremental term loans (the “Incremental Term Loans”), and amend the related collateral agreement. On the Closing Date, VFH borrowed the Incremental Term Loans and used the proceeds together with available cash to redeem all of the \$500.0 million aggregate principal amount of the outstanding 6.750% Senior Secured Second Lien Notes due 2022 issued by VFH and Orchestra Co Issuer, Inc., a Delaware corporation and indirect subsidiary of the Company, and pay related fees and expenses. The terms, conditions and covenants applicable to the Incremental Term Loans are the same as the terms, conditions and covenants applicable to the existing term loans under the Credit Agreement, including a maturity date of March 1, 2026. The Company also entered into a five-year \$525 million floating to fixed interest rate swap agreement that effectively fixes interest payment obligations on the Incremental Term Loans at 4.8% through September 2024.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following management's discussion and analysis covers the three and nine months ended September 30, 2019, and 2018 and should be read in conjunction with the condensed consolidated financial statements of Virtu Financial, Inc. (the "Company"). This management's discussion and analysis contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those discussed below. Unless otherwise stated, all amounts are presented in thousands of dollars.

Forward-Looking Statements

This quarterly report on Form 10-Q contains forward-looking statements. You should not place undue reliance on forward-looking statements because they are subject to numerous uncertainties and factors relating to our operations and business environment, all of which are difficult to predict and many of which are beyond our control. Forward-looking statements include information concerning our possible or assumed future results of operations, including descriptions of our business strategy. These forward-looking statements can be identified by the use of forward-looking terminology, including the terms "may," "will," "should," "believe," "expect," "anticipate," "intend," "plan," "estimate," "project" or, in each case, their negative, or other variations or comparable terminology and expressions. These statements are based on assumptions that we have made in light of our experience in the industry as well as our perceptions of historical trends, current conditions, expected future developments and other factors we believe are appropriate under the circumstances. As you read and consider this quarterly report on Form 10-Q, you should understand that forward-looking statements are not guarantees of performance or results and that our actual results of operations, financial condition and liquidity, and the development of the industry in which we operate, may differ materially from those made in or suggested by the forward-looking statements contained in this quarterly report on Form 10-Q. By their nature, forward-looking statements involve known and unknown risks and uncertainties, including those described under the heading "Risk Factors" in this quarterly report on Form 10-Q, because they relate to events and depend on circumstances that may or may not occur in the future. Although we believe that the forward-looking statements contained in this quarterly report on Form 10-Q are based on reasonable assumptions, you should be aware that many factors, including those described under the heading "Risk Factors" in this quarterly report on Form 10-Q or in Part I, Item 1A. "Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2018 as filed with the Securities and Exchange Commission ("SEC") on March 1, 2019 (the "2018 Form 10-K"), could affect our actual financial results or results of operations and cash flows, and could cause actual results to differ materially from those in such forward-looking statements, including but not limited to:

- reduced levels of overall trading activity;
- dependence upon trading counterparties and clearing houses performing their obligations to us;
- failures of our customized trading platform;
- risks inherent to the electronic market making business and trading generally;
- increased competition in market making activities and execution services;
- dependence on continued access to sources of liquidity;
- risks associated with self-clearing and other operational elements of our business;
- obligations to comply with applicable regulatory capital requirements;
- litigation or other legal and regulatory-based liabilities;
- proposed legislation that would impose taxes on certain financial transactions in the European Union, the U.S. and other jurisdictions;
- obligations to comply with laws and regulations applicable to our operations in the U.S. and abroad;
- enhanced media and regulatory scrutiny and its impact upon public perception of us or of companies in our industry;
- need to maintain and continue developing proprietary technologies;
- the effect of the ITG Acquisition (as defined below) on existing business relationships, operating results, and ongoing business operations generally;
- the significant costs and significant indebtedness that we have incurred in connection with the ITG Acquisition, and the integration of ITG (as defined below) into our business;

- the risk that we may encounter significant difficulties or delays in integrating the ITG business with ours and that the anticipated benefits, cost savings and synergies or capital release may not be achieved;
- the assumption of potential liabilities and risks relating to ITG's business;
- capacity constraints, system failures, and delays;
- dependence on third party infrastructure or systems;
- use of open source software;
- failure to protect or enforce our intellectual property rights in our proprietary technology;
- failure to protect confidential and proprietary information;
- failure to protect our systems from internal or external cyber threats that could result in damage to our computer systems, business interruption, loss of data or other consequences;
- risks associated with international operations and expansion, including failed acquisitions or dispositions;
- the effects of and changes in economic conditions (such as volatility in the financial markets, inflation, monetary conditions and foreign currency and exchange rate fluctuations, foreign currency controls and/or government mandated pricing controls, as well as in trade, monetary, fiscal and tax policies in international markets) and political conditions (such as military actions and terrorist activities);
- risks associated with potential growth and associated corporate actions;
- inability to access, or delay in accessing the capital markets to sell shares or raise additional capital;
- loss of key executives and failure to recruit and retain qualified personnel; and
- risks associated with losing access to a significant exchange or other trading venue.

Our forward-looking statements made herein are made only as of the date of this quarterly report on Form 10-Q. We expressly disclaim any intent, obligation or undertaking to update or revise any forward-looking statements made herein to reflect any change in our expectations with regard thereto or any change in events, conditions or circumstances on which any such statements are based. All subsequent written and oral forward-looking statements attributable to us or persons acting on our behalf are expressly qualified in their entirety by the cautionary statements contained in this quarterly report on Form 10-Q.

Basis of Preparation

Our condensed consolidated financial statements for the three and nine months ended September 30, 2019 and 2018 reflect our operations and those of our consolidated subsidiaries. As discussed in Note 1 “Organization and Basis of Presentation” and in Note 3 “ITG Acquisition” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q, we have accounted for the ITG Acquisition under the acquisition method of accounting. Under the acquisition method of accounting, the assets and liabilities of ITG, as of the ITG Closing Date (as defined below), were recorded at their respective fair values and added to the carrying value of our existing assets and liabilities. Our reported financial condition, results of operations and cash flows for the periods following the ITG Closing Date reflect ITG's and our balances, and reflect the impact of purchase accounting adjustments. The financial results for the three months ended September 30, 2019 comprise our results and the results of ITG for the entire applicable period. The financial results for the nine months ended September 30, 2019 comprise our results for the entire applicable period and the results of ITG from the ITG Closing Date through September 30, 2019. All periods prior to the ITG Closing Date comprise solely our results.

Overview

We are a leading financial services firm that leverages cutting edge technology to deliver liquidity to the global markets and innovative, transparent trading solutions to our clients. Leveraging our global market structure expertise and scaled, multi-asset technology infrastructure, we provide our clients a robust product suite including offerings in execution, liquidity sourcing, analytics and broker-neutral, multi-dealer platforms in workflow technology. Our product offerings allow our clients to trade on hundreds of venues across over 50 countries and in multiple asset classes, including global equities, ETFs, foreign exchange, futures, fixed income and myriad other commodities. Our integrated, multi-asset analytics platform provides a range of pre and post-trade services, data products and compliance tools that our clients rely upon to invest, trade and manage risk across global markets. We believe that our broad diversification, in combination with our proprietary technology platform and low-cost structure gives us the scale necessary to grow our business around the globe as we service clients and facilitate risk transfer between global capital markets participants by supplying competitive liquidity while at the same time earning attractive margins and returns.

Technology and operational efficiency are at the core of our business, and our focus on technology is a key element of our success. We have developed a proprietary, multi-asset, multi-currency technology platform that is highly reliable, scalable and modular, and we integrate directly with exchanges, liquidity centers, and our clients. Our market data, order routing, transaction processing, risk management and market surveillance technology modules manage our market making and execution services activities in an efficient manner and enable us to scale our activities globally across additional securities and other financial instruments and asset classes without significant incremental costs or third party licensing or processing fees.

We believe that technology-enabled market makers and execution services providers like Virtu serve an important role in maintaining and enhancing the overall health and efficiency of the global capital markets by ensuring that market participants have an efficient means to transfer risk and analyze the quality of execution. We believe that all market participants benefit from the increased liquidity, lower overall trading costs and execution transparency that Virtu provides.

Our execution services and client solutions products are transparent, because we believe transparency makes markets more efficient and helps investors make better, more informed decisions. We use the latest technology to create and deliver liquidity to global markets and innovative trading solutions and analytics tools to our clients. We interact directly with hundreds of retail brokers, Registered Investment Advisors, private client networks, sell-side brokers, and buy-side institutions.

On July 20, 2017 (the “KCG Closing Date”), the Company completed the all-cash acquisition of KCG Holdings, Inc. (“KCG”) (the “Acquisition of KCG”). KCG was a leading independent securities firm offering clients a range of services designed to address trading needs across asset classes, product types and geographies.

As described below, we completed the ITG Acquisition on the ITG Closing Date. ITG was a global financial technology company that offered a suite of trading and financial technology products to help leading brokers and asset managers improve returns for investors around the world. ITG empowered traders to reduce the end-to-end cost of implementing investments via liquidity, execution, analytics and workflow technology solutions.

We have two operating segments: Market Making and Execution Services, and one non-operating segment: Corporate. Our management allocates resources, assesses performance and manages our business according to these segments.

Market Making

We leverage cutting edge technology to provide competitive and deep liquidity that helps to create more efficient markets around the world. As a market maker and liquidity provider, we stand ready, at any time, to buy or sell a broad range of securities, and we generate revenue by buying and selling large volumes of securities and other financial instruments and earning small bid/ask spreads. Our market structure expertise, broad diversification, and scalable execution technology enable us to provide competitive bids and offers in over 25,000 securities and other financial instruments, on over 235 venues, in 36 countries worldwide. We use the latest technology to create and deliver liquidity to the global markets and automate our market making, risk controls, and post-trade processes. As a market maker, we interact directly with hundreds of retail brokers, Registered Investment Advisors, private client networks, sell-side brokers, and buy-side institutions.

We believe the overall level of volumes and realized volatility in the various markets we serve have the greatest impact on our market making businesses. Increases in market volatility can cause bid/ask spreads to widen as market participants are more willing to pay market makers like us to transact immediately and as a result market makers' capture rate per notional amount transacted will increase.

Execution Services

We offer agency execution services and trading venues that provide transparent trading in global equities, ETFs, fixed income, currencies, and commodities to institutions, banks and broker-dealers. We generally earn commissions when transacting as an agent for our clients. Agency-based, execution-only trading within the segment is done primarily through a variety of access points including: (a) algorithmic trading and order routing; (b) institutional sales traders who offer portfolio trading and single stock sales trading which provides execution expertise for program, block and riskless principal trades in global equities and ETFs; and (c) matching of client conditional orders in POSIT Alert and in our alternative trading systems (“ATS”), including Virtu MatchIt, POSIT and MATCHNow. We also earn revenues (a) by providing our proprietary technology and infrastructure to select third parties for a service fee, (b) through workflow technology and our integrated, broker-neutral trading tools delivered across the globe including order and execution management systems and order management software applications and network connectivity and (c) through trading analytics, including (1) tools enabling portfolio managers and traders to improve pre-trade, real-time and post-trade execution performance, (2) portfolio construction and optimization decisions and (3) securities valuation.

Corporate

Our Corporate segment contains investments principally in strategic financial services-oriented opportunities and maintains corporate overhead expenses and all other income and expenses that are not attributable to our other segments.

Acquisition of Investment Technology Group, Inc.

On March 1, 2019 (the “ITG Closing Date”), we announced the completion of our previously announced acquisition of Investment Technology Group, Inc. (“ITG”) in a cash transaction valued at \$30.30 per ITG share, or a total of approximately \$1.0 billion (the “ITG Acquisition”). In connection with the ITG Acquisition, Virtu Financial, VFH Parent LLC, a Delaware limited liability company and a subsidiary of Virtu Financial (“VFH”) and Impala Borrower LLC (the “Acquisition Borrower”), a subsidiary of the Company, entered into a Credit Agreement (the “Credit Agreement”), with the lenders party thereto, Jefferies Finance LLC, as administrative agent and Jefferies Finance LLC and RBC Capital Markets, as joint lead arrangers and joint bookrunners. The Credit Agreement provides (i) a senior secured first lien term loan (the “First Lien Term Loan Facility”) in an aggregate principal amount of \$1.5 billion, drawn in its entirety on the ITG Closing Date, with approximately \$404.5 million being borrowed by VFH to repay all amounts outstanding under its existing term loan facility and the remaining approximately \$1,095.0 million being borrowed by the Acquisition Borrower to finance the consideration and fees and expenses to be paid in connection with the ITG Acquisition, and (ii) a \$50.0 million senior secured first lien revolving facility to VFH (the “First Lien Revolving Facility”), with a \$5.0 million letter of credit subfacility and a \$5.0 million swingline subfacility. After the closing of the ITG Acquisition, VFH assumed the obligations of the Acquisition Borrower in respect of the acquisition term loans. Additionally, on the ITG Closing Date, the Company’s fourth amended and restated credit agreement, dated as of June 30, 2017 (as amended on January 2, 2018 and September 19, 2018, the “Fourth Amended and Restated Credit Agreement”) was terminated.

Amended and Restated 2015 Management Incentive Plan

The Company’s board of directors and stockholders adopted the 2015 Management Incentive Plan, which became effective upon consummation of the Company’s initial public offering in April 2015 (the “IPO”) and was subsequently amended and restated following receipt of approval from the Company’s stockholders on June 30, 2017 (the “Amended and Restated 2015 Management Incentive Plan”). The Amended and Restated 2015 Management Incentive Plan provides for the grant of stock options, restricted stock units, and other awards based on an aggregate of 16,000,000 shares of Class A common stock, par value \$0.00001 per share (the “Class A Common Stock”), subject to additional sublimits, including limits on the total option grant to any one participant in a single year and the total performance award to any one participant in a single year.

In connection with the IPO, non-qualified stock options to purchase 9,228,000 shares were granted at the IPO per share price, each of which vests in equal annual installments over a period of four years from the grant date and expires not later than 10 years from the grant date. Subsequent to the IPO and through September 30, 2019, options to purchase 1,613,750 shares in the aggregate were forfeited and 4,521,600 options were exercised. The fair value of the stock option grants was determined through the application of the Black-Scholes-Merton model and is being recognized on a straight-line basis over the vesting period. In connection with and subsequent to the IPO, 1,677,318 shares of immediately vested Class A Common Stock and 2,620,051 restricted stock units were granted, which vest over a period of up to 4 years and are settled in shares of Class A Common Stock. The fair value of the Class A Common Stock and restricted stock units was determined based on the volume weighted average price for the three days preceding the grant, and with respect to the restricted stock units is recognized on a straight-line basis over the vesting period.

Amended and Restated Investment Technology Group, Inc. 2007 Omnibus Equity Compensation Plan

On the ITG Closing Date, the Company assumed the Amended and Restated ITG 2007 Omnibus Equity Compensation Plan, dated as of June 8, 2017 (the “Amended and Restated ITG 2007 Equity Plan”) and certain stock option awards, restricted stock unit awards, deferred stock unit awards and performance stock unit awards granted under the Amended and Restated ITG 2007 Equity Plan (the “Assumed Awards”). The Assumed Awards are subject to the same terms and conditions that were applicable to them under the Amended and Restated ITG 2007 Equity Plan, except that (i) the Assumed Awards relate to shares of the Company’s Class A Common Stock, (ii) the number of shares of Class A Common Stock subject to the Assumed Awards was the result of an adjustment based upon an Exchange Ratio (as defined in the Agreement and Plan of Merger by and between the Company, Impala Merger Sub, Inc., a Delaware corporation and an indirect wholly owned subsidiary of the Company, and ITG, dated as of November 6, 2018, the “ITG Merger Agreement”) and (iii) the performance share unit awards were converted into service-based vesting restricted stock unit awards that were no longer subject to any performance based vesting conditions. As of the ITG Closing Date, the aggregate number of shares of Class A Common Stock subject to such Assumed Awards was 2,497,028 and the aggregate number of shares of Class A Common Stock that remained issuable pursuant to the Amended and Restated ITG 2007 Equity Plan was 1,230,406. The Company filed a Registration Statement on Form S-8 on the ITG Closing Date to register such shares of Class A Common Stock.

Parent Company Financial Information

There are no material differences between our condensed consolidated financial statements and the financial statements of Virtu Financial LLC (“Virtu Financial”) except as follows: (i) cash and cash equivalents reflected on our condensed consolidated statement of financial condition in the amount of \$3.4 million; (ii) deferred tax assets reflected on our condensed consolidated statement of financial condition in the amount of \$218.3 million and tax receivable agreement obligation in the amount of \$256.7 million, in each case as described in greater detail in Note 6 “Tax Receivable Agreements” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q; (iii) a portion of the member's equity of Virtu Financial is represented as non-controlling interest on our condensed consolidated statement of financial condition; and (iv) provision for (benefit from) corporate income tax in the amounts of \$2.9 million and \$(12.3) million reflected on our condensed consolidated statements of comprehensive income for the three and nine months ended September 30, 2019, respectively.

Components of Our Results of Operations

The following table shows our i) Total revenue, ii) Total operating expenses, and iii) Income before income taxes and noncontrolling interest by segment for the three and nine months ended September 30, 2019 and 2018:

(in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Market Making				
Total revenue	\$ 250,797	\$ 264,370	\$ 765,022	\$ 984,601
Total operating expenses	220,422	224,626	665,146	721,691
Income before income taxes and noncontrolling interest	30,375	39,744	99,876	262,910
Execution Services				
Total revenue	134,369	34,206	359,911	458,759
Total operating expenses	163,571	34,077	455,214	127,056
Income (loss) before income taxes and noncontrolling interest	(29,202)	129	(95,303)	331,703
Corporate				
Total revenue	198	(3,453)	1,879	(5,057)
Total operating expenses	7,199	6,995	95,062	41,971
Income (loss) before income taxes and noncontrolling interest	(7,001)	(10,448)	(93,183)	(47,028)
Consolidated				
Total revenue	385,364	295,123	1,126,812	1,438,303
Total operating expenses	391,192	265,698	1,215,422	890,718
Income (loss) before income taxes and noncontrolling interest	\$ (5,828)	\$ 29,425	\$ (88,610)	\$ 547,585

The following table shows our results of operations for the three and nine months ended September 30, 2019 and 2018:

(in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Revenues:				
Trading income, net	\$ 220,148	\$ 235,699	\$ 683,611	\$ 900,454
Interest and dividends income	23,352	21,451	76,645	61,337
Commissions, net and technology services	139,627	40,252	359,894	140,661
Other, net	2,237	(2,279)	6,662	335,851
Total revenue	385,364	295,123	1,126,812	1,438,303
Operating Expenses:				
Brokerage, exchange and clearance fees, net	74,315	68,638	214,219	229,779
Communication and data processing	59,767	39,516	156,004	137,793
Employee compensation and payroll taxes	90,595	44,827	282,135	150,723
Payments for order flow	24,474	18,283	71,671	50,381
Interest and dividends expense	34,546	32,566	116,739	101,199
Operations and administrative	28,357	17,254	85,232	53,671
Depreciation and amortization	17,598	16,012	48,859	47,558
Amortization of purchased intangibles and acquired capitalized software	18,908	6,367	50,436	20,042
Termination of office leases	1,278	1,440	66,490	23,300
Debt issue cost related to debt refinancing and prepayment	—	3,347	7,894	11,727
Transaction advisory fees and expenses	7,163	(261)	24,074	8,985
Charges related to share based compensation at IPO	—	—	—	24
Financing interest expense on long-term borrowings	34,191	17,709	91,669	55,536
Total operating expenses	391,192	265,698	1,215,422	890,718
Income (loss) before income taxes and noncontrolling interest	(5,828)	29,425	(88,610)	547,585
Provision for (benefit from) income taxes	(644)	13,815	(14,322)	75,330
Net income (loss)	\$ (5,184)	\$ 15,610	\$ (74,288)	\$ 472,255

Total Revenues

Revenues are generated through market marking activities, commissions and fees on execution services activities, which include recurring subscriptions on workflow technology and analytic products. The majority of our revenue is generated through market making activities, which is recorded as Trading income, net and Interest and dividends income. Commissions and fees are derived from commissions charged for trade executions in agency execution services. We earn commissions and commission equivalents, as well as, in certain cases, contingent fees based on client revenues, which represents variable consideration. The services offered under these contracts have the same pattern of transfer; accordingly, they are being measured and recognized as a single performance obligation. The performance obligation is satisfied over time, and accordingly, revenue is recognized as time passes. Variable consideration has not been included in the transaction price as the amount of consideration is contingent on factors outside our control and thus it is not probable that a significant reversal of cumulative revenue recognized will not occur.

Recurring revenues are primarily derived from workflow technology connectivity fees generated for matching client orders, and analytics services to select third parties. Revenues from connectivity fees are recognized and billed to clients on a monthly basis. Revenues from commissions attributable to analytic products under bundled arrangements will be recognized over the course of the year as the performance obligations for those analytics products are satisfied.

Trading income, net. Trading income, net represents revenue earned from bid/ask spreads. Trading income is generated in the normal course of our market making activities and is typically proportional to the level of trading activity, or volumes, in the asset classes we serve. Our trading income is highly diversified by asset class and geography and is comprised of small amounts earned on millions of trades on various exchanges, primarily in the following two categories: Global Equities, and Global FICC, Options and Other. Our trading income, net, results from gains and losses associated with trading strategies, which are designed to capture small bid ask spreads. Trading income, net, accounted for 57% and 80% of our total revenues for the three months ended September 30, 2019 and 2018, respectively, and 61% and 63% for the nine months ended September 30, 2019 and 2018, respectively.

Interest and dividends income. Our market making activities require us to hold securities on a regular basis, and we generate revenues in the form of interest and dividends income from these securities. Interest is also earned on securities borrowed from other market participants pursuant to collateralized financing arrangements and on cash held by brokers. Dividends income arises from holding market making positions over dates on which dividends are paid to shareholders of record.

Commissions, net and technology services. We earn revenues on transactions for which we charge explicit commissions or commission equivalents, which include the majority of our institutional client orders. Commissions and fees are primarily affected by changes in our equities, fixed income and futures transaction volumes with institutional clients, which vary based on client relationships; changes in commission rates; client experience on the various platforms; level of volume based fees from providing liquidity to other trading venues; and the level of our soft dollar and commission recapture activity. Agency commission fees are charged for agency trades executed by us on behalf of third party broker-dealers, institutions and other financial institutions. Revenue is recognized on a trade date basis, which is the point at which the performance obligation to the customer is satisfied, based on the trade volume executed. In addition, we offer workflow technology and analytics services to select third parties. Revenues are derived from fees generated by matching sell-side and buy-side clients orders, and analytic products delivered to the clients.

Technology licensing fees are charged for the licensing of our proprietary technology and the provision of related services, including hosting, management and support. These fees include an up-front component and a recurring fee for the relevant terms, which may include both fixed and variable components. Revenue is recognized ratably for these services over the contractual term of the agreement.

Other, net. We have interests in multiple strategic investments and telecommunications joint ventures (“JVs”). We record our pro-rata share of each JV’s earnings or losses within other, net, while fees related to the use of communication services provided by the JVs are recorded within communications and data processing. In addition, we also recorded gains or losses on certain one-time transactions, including the sale of our BondPoint business (“BondPoint”) to Intercontinental Exchange (“ICE”) in 2018, within Other, net (see Note 4 “Sale of BondPoint” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q).

We have a minority investment (the “SBI Investment”) in SBI Japannext Co., Ltd. (“SBI”), a proprietary trading system based in Tokyo. In connection with the investment, we issued bonds to certain affiliates of SBI and used the proceeds to partially

finance the transaction. Revenues or losses are recognized due to the changes in fair value of the investment or fluctuations in Japanese Yen conversion rates within Other, net.

Operating Expenses

Brokerage, exchange and clearance fees, net. Brokerage, exchange and clearance fees are our most significant expenses, which include the direct expenses of executing and clearing transactions that we consummate in the course of our market making activities. Brokerage, exchange and clearance fees primarily consist of fees charged by third parties for executing, processing and settling trades. These fees generally increase and decrease in direct correlation with the level of trading activity, or volumes, in the markets we serve. Execution fees are paid primarily to exchanges and venues where we trade. Clearance fees are paid to clearing houses and clearing agents. Rebates based on volume discounts, credits or payments received from exchanges or other marketplaces are netted against brokerage, exchange and clearance fees.

Payments for order flow. Payments for order flow represent payments to broker-dealer clients, in the normal course of business, for directing their order flow to us primarily in U.S. equities. Payments for order flow will fluctuate as we modify our rates and as the portion of our clients that do not accept payments for order flow varies. Payments for order flow also fluctuate based on U.S. equity share and option volumes, our profitability and the mix of market orders, limit orders, and customers.

Communication and data processing. Communication and data processing represent primarily fixed expenses for leased equipment, equipment co-location, network lines and connectivity for our trading centers and co-location facilities. Communications expense consists primarily of the cost of voice and data telecommunication lines supporting our business, including connectivity to data centers, exchanges, markets and liquidity pools around the world, and data processing expense consists primarily of market data subscription fees that we pay to third parties to receive price quotes and related information.

Employee compensation and payroll taxes. Employee compensation and payroll taxes include employee salaries, cash and non-cash incentive compensation, employee benefits, payroll taxes, severance and other employee related costs. Employee compensation and payroll taxes also includes non-cash compensation expenses with respect to the stock options and restricted stock units granted in connection with and subsequent to the IPO pursuant to the Amended and Restated 2015 Management Incentive Plan and stock options and restricted stock units granted pursuant to the Amended and Restated ITG 2007 Equity Plan.

Interest and dividends expense. We incur interest expense from loaning certain equity securities in the general course of our market making activities pursuant to collateralized lending transactions. Typically, dividend expense is incurred when a dividend is paid on securities sold short.

Operations and administrative. Operations and administrative expense represents occupancy, recruiting, travel and related expense, professional fees and other expenses.

Depreciation and amortization. Depreciation and amortization expense results from the depreciation of fixed assets, such as computing and communications hardware, as well as amortization of leasehold improvements and capitalized in-house software development. We depreciate our computer hardware and related software, office hardware and furniture and fixtures on a straight-line basis over a period of 3 to 7 years based on the estimated useful life of the underlying asset, and we amortize our capitalized software development costs on a straight-line basis over a period of 1.5 to 2.5 years, which represents the estimated useful lives of the underlying software. We amortize leasehold improvements on a straight-line basis over the lesser of the life of the improvement or the term of the lease.

Amortization of purchased intangibles and acquired capitalized software. Amortization of purchased intangibles and acquired capitalized software represents the amortization of finite lived intangible assets acquired in connection with the acquisition of certain assets from Nyenburgh Holding B.V., Teza Technologies, the Acquisition of KCG, and the ITG Acquisition. These assets are amortized over their useful lives, ranging from 1 to 15 years, except for certain assets which were categorized as having indefinite useful lives.

Termination of office leases. Termination of office leases represents the write-off expense related to certain office space we ceased use of as part of the effort to integrate and consolidate office space in connection with the ITG Acquisition. The aggregate write-off amount includes the impairment of operating lease right-of-use assets, leasehold improvements and fixed assets, and dilapidation charges.

Debt issue costs related to debt refinancing and prepayment. As a result of the refinancing or early termination of our long-term borrowings, we accelerate the capitalized debt issue costs and the discount on the term loan that would otherwise be amortized or accreted over the life of the term loan.

Transaction advisory fees and expenses. Transaction advisory fees and expenses primarily reflect professional fees incurred by us in connection with the ITG Acquisition and with the sale of BondPoint in 2018.

Charges related to share based compensation at IPO. At the consummation of the IPO and through the three and nine months ended September 30, 2019, we recognized non-cash compensation expenses in respect of the outstanding time-vested Class B interests of Virtu Financial (the “Virtu Class B Interests”) and Class B interests of Virtu East MIP LLC (the “East MIP Class B Interests”), net of capitalization and amortization of costs attributable to employees incurred in development of software for internal use, as defined and discussed in Note 19 “Share-based Compensation” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q.

Financing interest expense on long-term borrowings. Financing interest expense reflects interest accrued on outstanding indebtedness under our long-term borrowing arrangements.

Provision for (benefit from) income taxes

We are subject to U.S. federal, state and local income tax at the rate applicable to corporations less the rate attributable to the noncontrolling interest in Virtu Financial.

Our effective tax rate is subject to significant variation due to several factors, including variability in our pre-tax and taxable income and loss and the jurisdictions to which they relate, changes in how we do business, acquisitions and investments, audit-related developments, tax law developments (including changes in statutes, regulations, case law, and administrative practices), and relative changes of expenses or losses for which tax benefits are not recognized. Additionally, our effective tax rate can be more or less volatile based on the amount of pre-tax income or loss. For example, the impact of discrete items and non-deductible expenses on our effective tax rate is greater when our pre-tax income is lower.

We regularly assess whether it is more likely than not that we will realize our deferred tax assets in each taxing jurisdiction in which we operate. In performing this assessment with respect to each jurisdiction, we review all available evidence, including actual and expected future earnings, capital gains, and investment in such jurisdiction, the carry-forward periods available to us for tax reporting purposes, and other relevant factors. See Note 14 “Income Taxes” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q for additional information.

Non-GAAP Financial Measures and Other Items

To supplement our condensed consolidated financial statements presented in accordance with generally accepted accounting principles in the United States (“U.S. GAAP”), we use the following non-U.S. GAAP (“non-GAAP”) financial measures of financial performance:

- “Adjusted Net Trading Income”, which is the amount of revenue we generate from our market making activities, or trading income, net, plus commissions, net and technology services, plus interest and dividends income, less direct costs associated with those revenues, including brokerage, exchange and clearance fees, net, payments for order flow, and interest and dividends expense. Management believes that this measurement is useful for comparing general operating performance from period to period. Although we use Adjusted Net Trading Income as a financial measure to assess the performance of our business, the use of Adjusted Net Trading Income is limited because it does not include certain material costs that are necessary to operate our business. Our presentation of Adjusted Net Trading Income should not be construed as an indication that our future results will be unaffected by revenues or expenses that are not directly associated with our market making activities.
- “EBITDA”, which measures our operating performance by adjusting net income to exclude financing interest expense on long-term borrowings, debt issue cost related to debt refinancing, depreciation and amortization, amortization of purchased intangibles and acquired capitalized software, and income tax expense, and “Adjusted EBITDA”, which measures our operating performance by further adjusting EBITDA to exclude severance, reserve for legal matters, transaction advisory fees and expenses, termination of office leases, acquisition related retention bonus, connectivity early termination, trading related settlement income, gain on sale of businesses, other, net, write-down of assets, share based compensation, charges related to share based compensation at IPO, Amended and Restated 2015 Management Incentive Plan, and charges related to share based compensation at IPO.

- “Normalized Adjusted Net Income”, “Normalized Adjusted Net Income before income taxes”, “Normalized provision for income taxes”, and “Normalized Adjusted EPS”, which we calculate by adjusting Net Income to exclude certain items including IPO-related adjustments and other non-cash items, assuming that all vested and unvested common interest units in Virtu Financial (“Virtu Financial Units”) have been exchanged for Class A Common Stock, and applying an effective tax rate, which was between approximately 23% and 24% beginning January 1, 2018.
- Operating Margins, which are calculated by dividing net income, EBITDA, and Adjusted EBITDA by Adjusted Net Trading Income.

Adjusted Net Trading Income, EBITDA, Adjusted EBITDA, Normalized Adjusted Net Income, Normalized Adjusted Net Income before income taxes, Normalized provision for income taxes, Normalized Adjusted EPS, and Operating Margins are non-GAAP financial measures used by management in evaluating operating performance and in making strategic decisions. Additional information provided regarding the breakdown of total Adjusted Net Trading Income by category is also a non-GAAP financial measure but is not used by the Company in evaluating operating performance and in making strategic decisions. In addition, these non-GAAP financial measures or similar non-GAAP financial measures are used by research analysts, investment bankers and lenders to assess our operating performance. Management believes that the presentation of Adjusted Net Trading Income, EBITDA, Adjusted EBITDA, Normalized Adjusted Net Income, Normalized Adjusted Net Income before income taxes, Normalized provision for income taxes, Normalized Adjusted EPS, and Operating Margins provide useful information to investors regarding our results of operations and cash flows because they assist both investors and management in analyzing and benchmarking the performance and value of our business. Adjusted Net Trading Income, EBITDA, Adjusted EBITDA, Normalized Adjusted Net Income, Normalized Adjusted Net Income before income taxes, Normalized provision for income taxes, Normalized Adjusted EPS, and Operating Margins provide indicators of general economic performance that are not affected by fluctuations in certain costs or other items. Accordingly, management believes that these measurements are useful for comparing general operating performance from period to period. Furthermore, our Credit Agreement contains covenants and other tests based on metrics similar to Adjusted EBITDA. Other companies may define Adjusted Net Trading Income, Adjusted EBITDA, Normalized Adjusted Net Income, Normalized Adjusted Net Income before income taxes, Normalized provision for income taxes, Normalized Adjusted EPS, and Operating Margins differently, and as a result our measures of Adjusted Net Trading Income, Adjusted EBITDA, Normalized Adjusted Net Income, Normalized Adjusted Net Income before income taxes, Normalized provision for income taxes, Normalized Adjusted EPS, and Operating Margins may not be directly comparable to those of other companies. Although we use these non-GAAP measures as financial measures to assess the performance of our business, such use is limited because they do not include certain material costs necessary to operate our business.

Adjusted Net Trading Income, EBITDA, Adjusted EBITDA, Normalized Adjusted Net Income, Normalized Adjusted Net Income before income taxes, Normalized provision for income taxes, Normalized Adjusted EPS, and Operating Margins should be considered in addition to, and not as a substitute for, Net Income in accordance with U.S. GAAP as a measure of performance. Our presentation of Adjusted Net Trading Income, EBITDA, Adjusted EBITDA, Normalized Adjusted Net Income, Normalized Adjusted Net Income before income taxes, Normalized provision for income taxes, Normalized Adjusted EPS, and Operating Margins should not be construed as an indication that our future results will be unaffected by unusual or nonrecurring items. Adjusted Net Trading Income, Normalized Adjusted Net Income, Normalized Adjusted Net Income before income taxes, Normalized provision for income taxes, Normalized Adjusted EPS, Operating Margins and our EBITDA-based measures have limitations as analytical tools, and you should not consider them in isolation or as substitutes for analysis of our results as reported under U.S. GAAP. Some of these limitations are:

- they do not reflect every cash expenditure, future requirements for capital expenditures or contractual commitments;
- our EBITDA-based measures do not reflect the significant interest expense or the cash requirements necessary to service interest or principal payment on our debt;
- although depreciation and amortization are non-cash charges, the assets being depreciated and amortized will often have to be replaced or require improvements in the future, and our EBITDA-based measures do not reflect any cash requirement for such replacements or improvements;
- they are not adjusted for all non-cash income or expense items that are reflected in our statements of cash flows;
- they do not reflect the impact of earnings or charges resulting from matters we consider not to be indicative of our ongoing operations; and
- they do not reflect limitations on our costs related to transferring earnings from our subsidiaries to us.

Because of these limitations, Adjusted Net Trading Income, EBITDA, Adjusted EBITDA, Normalized Adjusted Net Income, Normalized Adjusted Net Income before income taxes, Normalized provision for income taxes, Normalized Adjusted EPS, and Operating Margins are not intended as alternatives to Net Income as indicators of our operating performance and should not be considered as measures of discretionary cash available to us to invest in the growth of our business or as measures of cash that will be available to us to meet our obligations. We compensate for these limitations by using Adjusted Net Trading Income, EBITDA, Adjusted EBITDA, Normalized Adjusted Net Income, Normalized Adjusted Net Income before income taxes, Normalized provision for income taxes, Normalized Adjusted EPS, and Operating Margins along with other comparative tools, together with U.S. GAAP measurements, to assist in the evaluation of operating performance. These U.S. GAAP measurements include operating Net Income, cash flows from operations and cash flow data. See below a reconciliation of each non-GAAP financial measure to the most directly comparable U.S. GAAP measure.

The following tables reconcile the condensed consolidated statements of comprehensive income to arrive at Adjusted Net Trading Income, EBITDA, Adjusted EBITDA, and Operating Margins for the three and nine months ended September 30, 2019 and 2018.

(in thousands)	For the Three Months Ended September 30,		For the Nine Months Ended September 30,	
	2019	2018	2019	2018
Reconciliation of Trading income, net to Adjusted Net Trading Income				
Trading income, net	\$ 220,148	\$ 235,699	\$ 683,611	\$ 900,454
Interest and dividends income	23,352	21,451	76,645	61,337
Commissions, net and technology services	139,627	40,252	359,894	140,661
Brokerage, exchange and clearance fees, net	(74,315)	(68,638)	(214,219)	(229,779)
Payments for order flow	(24,474)	(18,283)	(71,671)	(50,381)
Interest and dividends expense	(34,546)	(32,566)	(116,739)	(101,199)
Adjusted Net Trading Income	\$ 249,792	\$ 177,915	\$ 717,521	\$ 721,093
Reconciliation of Net Income to EBITDA and Adjusted EBITDA				
Net income (loss)	\$ (5,184)	\$ 15,610	\$ (74,288)	\$ 472,255
Financing interest expense on long-term borrowings	34,191	17,709	91,669	55,536
Debt issue cost related to debt refinancing and prepayment	—	3,347	7,894	11,727
Depreciation and amortization	17,598	16,012	48,859	47,558
Amortization of purchased intangibles and acquired capitalized software	18,908	6,367	50,436	20,042
Provision for (benefit from) income taxes	(644)	13,815	(14,322)	75,330
EBITDA	\$ 64,869	\$ 72,860	\$ 110,248	\$ 682,448
Severance	13,403	1,291	74,627	7,625
Transaction advisory fees and expenses	7,163	(261)	24,074	8,985
Termination of office leases	1,278	1,440	66,490	23,300
Connectivity early termination	—	—	—	7,062
Gain on sale of business	—	2,339	—	(335,210)
Other, net	787	(60)	2,278	(641)
Write-down of assets	—	542	—	3,239
Share based compensation	16,374	7,091	39,564	20,213
Charges related to share based compensation at IPO, Amended and Restated 2015 Management Incentive Plan	—	1,425	—	4,356
Charges related to share based compensation awards at IPO	—	—	—	24
Adjusted EBITDA	\$ 103,874	\$ 88,287	\$ 317,281	\$ 423,421
Selected Operating Margins				
Net Income Margin (1)	(2.1)%	8.8%	(10.4)%	65.5%
EBITDA Margin (2)	26.0 %	41.0%	15.4 %	94.6%
Adjusted EBITDA Margin (3)	41.6 %	49.6%	44.2 %	58.7%

- (1) Calculated by dividing net income by Adjusted Net Trading Income.
- (2) Calculated by dividing EBITDA by Adjusted Net Trading Income.
- (3) Calculated by dividing Adjusted EBITDA by Adjusted Net Trading Income.

The following tables reconcile Net Income to arrive at Normalized Adjusted Net Income before income taxes, Normalized provision for income taxes, Normalized Adjusted Net Income and Normalized Adjusted EPS.

(in thousands, except share and per share data)	For the Three Months Ended September 30,		For the Nine Months Ended September 30,	
	2019	2018	2019	2018
Reconciliation of Net Income to Normalized Adjusted Net Income				
Net income (loss)	\$ (5,184)	\$ 15,610	\$ (74,288)	\$ 472,255
Provision for (benefit from) income taxes	(644)	13,815	(14,322)	75,330
Income (loss) before income taxes	(5,828)	29,425	(88,610)	547,585
Amortization of purchased intangibles and acquired capitalized software	18,908	6,367	50,436	20,042
Debt issue cost related to debt refinancing	—	3,347	7,894	11,727
Severance	13,403	1,291	74,627	7,625
Transaction advisory fees and expenses	7,163	(261)	24,074	8,985
Termination of office leases	1,278	1,440	66,490	23,300
Connectivity early termination	—	—	—	7,062
Gain on sale of business	—	2,339	—	(335,210)
Write-down of assets	—	542	—	3,239
Other, net	787	(60)	2,278	(641)
Share based compensation	16,374	7,091	39,564	20,213
Charges related to share based compensation at IPO, 2015 Management Incentive Plan	—	1,425	—	4,356
Charges related to share based compensation awards at IPO	—	—	—	24
Normalized Adjusted Net Income before income taxes	52,085	54,566	176,753	320,327
Normalized provision for income taxes (1)	12,500	12,550	42,421	73,671
Normalized Adjusted Net Income	\$ 39,585	\$ 42,016	\$ 134,332	\$ 246,656
Weighted Average Adjusted shares outstanding (2)	192,618,019	191,989,323	192,959,477	190,886,342
Normalized Adjusted EPS	\$ 0.21	\$ 0.22	\$ 0.70	\$ 1.29

(1) Reflects U.S. federal, state, and local income tax rate applicable to corporations of approximately 24% for 2019 and 23% for 2018.

(2) Assumes that (1) holders of all vested and unvested non-vesting Virtu Financial Units (together with corresponding shares of the Company's Class C common stock, par value \$0.00001 per share (the "Class C Common Stock"), have exercised their right to exchange such Virtu Financial Units for shares of Class A Common Stock on a one-for-one basis, (2) holders of all Virtu Financial Units (together with corresponding shares of the Company's Class D common stock, par value \$0.00001 per share (the "Class D Common Stock") have exercised their right to exchange such Virtu Financial Units for shares of the Company's Class B common stock, par value \$0.00001 per share (the "Class B Common Stock") on a one-for-one basis, and subsequently exercised their right to convert the shares of Class B Common Stock into shares of Class A Common Stock on a one-for-one basis. Includes additional shares from dilutive impact of options and restricted stock units outstanding under the Amended and Restated 2015 Management Incentive Plan and the Amended and Restated ITG 2007 Equity Plan during the three and nine months ended September 30, 2018.

The following tables reconcile trading income, net to Adjusted Net Trading Income by segment for the three and nine months ended September 30, 2019 and 2018:

(in thousands)	Three Months Ended September 30, 2019			
	Market Making	Execution Services	Corporate	Total
Trading income, net	\$ 219,535	\$ 613	\$ —	\$ 220,148
Commissions, net and technology services	7,252	132,375	—	139,627
Interest and dividends income	22,617	735	—	23,352
Brokerage, exchange and clearance fees, net	(49,009)	(25,306)	—	(74,315)
Payments for order flow	(24,454)	(20)	—	(24,474)
Interest and dividends expense	(34,222)	(324)	—	(34,546)
Adjusted Net Trading Income	\$ 141,719	\$ 108,073	\$ —	\$ 249,792

(in thousands)	Three Months Ended September 30, 2018			
	Market Making	Execution Services	Corporate	Total
Trading income, net	\$ 235,564	\$ 135	\$ —	\$ 235,699
Commissions, net and technology services	6,587	33,665	—	40,252
Interest and dividends income	21,320	110	21	21,451
Brokerage, exchange and clearance fees, net	(54,305)	(14,333)	—	(68,638)
Payments for order flow	(18,261)	(22)	—	(18,283)
Interest and dividends expense	(32,048)	(518)	—	(32,566)
Adjusted Net Trading Income	\$ 158,857	\$ 19,037	\$ 21	\$ 177,915

	Nine Months Ended September 30, 2019			
	Market Making	Execution Services	Corporate	Total
Trading income, net	\$ 680,224	\$ 3,387	\$ —	\$ 683,611
Commissions, net and technology services	17,213	342,681	—	359,894
Interest and dividends income	64,404	12,241	—	76,645
Brokerage, exchange and clearance fees, net	(132,049)	(82,170)	—	(214,219)
Payments for order flow	(71,611)	(60)	—	(71,671)
Interest and dividends expense	(104,877)	(11,862)	—	(116,739)
Adjusted Net Trading Income	\$ 453,304	\$ 264,217	\$ —	\$ 717,521

	Nine Months Ended September 30, 2018			
	Market Making	Execution Services	Corporate	Total
Trading income, net	\$ 899,902	\$ 552	\$ —	\$ 900,454
Commissions, net and technology services	21,886	118,775	—	140,661
Interest and dividends income	60,681	600	56	61,337
Brokerage, exchange and clearance fees, net	(183,171)	(46,608)	—	(229,779)
Payments for order flow	(50,284)	(97)	—	(50,381)
Interest and dividends expense	(100,002)	(1,197)	—	(101,199)
Adjusted Net Trading Income	\$ 649,012	\$ 72,025	\$ 56	\$ 721,093

The following tables reconcile our Market Making segment trading income, net to Adjusted Net Trading Income by category for the three and nine months ended September 30, 2019 and 2018:

(in thousands)	Three Months Ended September 30, 2019			
	Global Equities	Global FICC, Options and Other	Unallocated	Total Market Making
Trading income, net	\$ 166,031	\$ 52,126	\$ 1,378	\$ 219,535
Commissions, net and technology services	7,252	—	—	7,252
Brokerage, exchange and clearance fees, net	(37,449)	(10,024)	(1,536)	(49,009)
Payments for order flow	(24,454)	—	—	(24,454)
Interest and dividends, net	(8,889)	(2,754)	38	(11,605)
Adjusted Net Trading Income	\$ 102,491	\$ 39,348	\$ (120)	\$ 141,719

(in thousands)	Three Months Ended September 30, 2018			
	Global Equities	Global FICC, Options and Other	Unallocated	Total Market Making
Trading income, net	\$ 180,800	\$ 58,134	\$ (3,370)	\$ 235,564
Commissions, net and technology services	6,469	118	—	6,587
Brokerage, exchange and clearance fees, net	(39,143)	(14,905)	(257)	(54,305)
Payments for order flow	(18,261)	—	—	(18,261)
Interest and dividends, net	(7,830)	(2,517)	(381)	(10,728)
Adjusted Net Trading Income	\$ 122,035	\$ 40,830	\$ (4,008)	\$ 158,857

(in thousands)	Nine Months Ended September 30, 2019			
	Global Equities	Global FICC, Options and Other	Unallocated	Total Market Making
Trading income, net	\$ 537,708	\$ 143,042	\$ (526)	\$ 680,224
Commissions, net and technology services	17,241	(28)	—	17,213
Brokerage, exchange and clearance fees, net	(101,883)	(30,736)	570	(132,049)
Payments for order flow	(71,611)	—	—	(71,611)
Interest and dividends, net	(31,816)	(8,497)	(160)	(40,473)
Adjusted Net Trading Income	\$ 349,639	\$ 103,781	\$ (116)	\$ 453,304

(in thousands)	Nine Months Ended September 30, 2018			
	Global Equities	Global FICC, Options and Other	Unallocated	Total Market Making
Trading income, net	\$ 704,086	\$ 195,959	\$ (143)	\$ 899,902
Commissions, net and technology services	21,700	186	—	21,886
Brokerage, exchange and clearance fees, net	(136,864)	(43,755)	(2,552)	(183,171)
Payments for order flow	(50,284)	—	—	(50,284)
Interest and dividends, net	(28,147)	(9,014)	(2,160)	(39,321)
Adjusted Net Trading Income	\$ 510,491	\$ 143,376	\$ (4,855)	\$ 649,012

The following table shows our Adjusted Net Trading Income and average daily Adjusted Net Trading Income and percentage of Adjusted Net Trading Income by asset class for the three and nine months ended September 30, 2019 and 2018:

Adjusted Net Trading Income by Category:	Three Months Ended September 30,		
	2019	2018	% Change
Market Making:			
Global Equities	\$ 102,491	\$ 122,035	(16.0)%
Global FICC, Options and Other	39,348	40,830	(3.6)%
Unallocated(1)	(120)	(4,008)	NM
Total Market Making	141,719	158,857	(10.8)%
Execution Services	108,073	19,037	467.7%
Corporate	—	21	NM
Adjusted Net Trading Income	\$ 249,792	\$ 177,915	40.4%

Average Daily Adjusted Net Trading Income by Category:	Three Months Ended September 30,		
	2019	2018	% Change
Market Making:			
Global Equities	\$ 1,601	\$ 1,937	(17.3)%
Global FICC, Options and Other	615	648	(5.1)%
Unallocated(1)	(2)	(64)	NM
Total Market Making	2,214	2,521	(12.2)%
Execution Services	1,689	303	457.4%
Corporate	—	—	NM
Average Daily Adjusted Net Trading Income	\$ 3,903	\$ 2,824	38.2%

Adjusted Net Trading Income by Category:	Nine Months Ended September 30,		
	2019	2018	% Change
Market Making:			
Global Equities	\$ 349,639	\$ 510,491	(31.5)%
Global FICC, Options and Other	103,781	143,376	(27.6)%
Unallocated(1)	(116)	(4,855)	NM
Total Market Making	453,304	649,012	(30.2)%
Execution Services	264,217	72,025	266.8%
Corporate	—	56	NM
Adjusted Net Trading Income	\$ 717,521	\$ 721,093	(0.5)%

Average Daily Adjusted Net Trading Income by Category:	Nine Months Ended September 30,		
	2019	2018	% Change
Market Making:			
Global Equities	\$ 1,850	\$ 2,715	(31.9)%
Global FICC, Options and Other	549	763	(28.0)%
Unallocated(1)	(1)	(26)	NM
Total Market Making	2,398	3,452	(30.5)%
Execution Services	1,398	383	265.0%
Corporate	—	—	NM
Average Daily Adjusted Net Trading Income	\$ 3,796	\$ 3,835	(1.0)%

(1) Under our methodology for recording “trading income, net” in our condensed consolidated statements of comprehensive income from Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q, we recognize revenues based on the exit price of assets and liabilities in accordance with applicable U.S. GAAP rules, and when we calculate Adjusted Net Trading Income for corresponding reporting periods, we start with trading income, net, so calculated. By contrast, when we calculate Adjusted Net Trading Income by category, we do so on a daily basis, and as a result prices used in recognizing revenues may differ. Because we provide liquidity on a global basis, across asset classes and time zones, the timing of any particular Adjusted Net Trading Income calculation may defer or accelerate the amount in a particular category from one day to another, and, at the end of a reporting period, from one reporting period to another. The purpose of the Unallocated category is to ensure that Adjusted Net Trading Income by category sums to total Adjusted Net Trading Income, which can be reconciled to Trading Income, Net, calculated in accordance with U.S. GAAP. We do not allocate any resulting differences based on the timing of revenue recognition.

Three Months Ended September 30, 2019 Compared to Three Months Ended September 30, 2018

Total Revenues

Our total revenues increased \$90.2 million, or 30.6%, to \$385.4 million for the three months ended September 30, 2019, compared to \$295.1 million for the three months ended September 30, 2018. We had an increase in Commissions, net and technology services of \$99.4 million for the three months ended September 30, 2019 as compared to the prior-year period, which was primarily attributable to the results of ITG Acquisition for the three months ended September 30, 2019. We also had an increase in Other, net of \$4.5 million. The increase was primarily attributable to the recognition of sublease rental income, which was recorded under Operations and administrative prior to the adaptation of ASU 2016-02, Leases (Topic 842), see Note 2 “Summary of Significant Accounting Policies” and Note 16 “Leases” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q.

The following table shows total revenues by segment for the three months ended September 30, 2019 and 2018.

(in thousands, except for percentage)	Three Months Ended September 30,		
	2019	2018	% Change
Market Making			
Trading income, net	\$ 219,535	\$ 235,564	(6.8)%
Interest and dividends income	22,617	21,320	6.1%
Commissions, net and technology services	7,252	6,587	10.1%
Other, net	1,393	899	54.9%
Total revenues from Market Making	250,797	264,370	(5.1)%
Execution Services			
Trading income, net	613	135	354.1%
Interest and dividends income	735	110	568.2%
Commissions, net and technology services	132,375	33,665	293.2%
Other, net	646	296	118.2%
Total revenues from Execution Services	134,369	34,206	292.8%
Corporate			
Trading income, net	—	—	NM
Interest and dividends income	—	21	NM
Commissions, net and technology services	—	—	NM
Other, net	198	(3,474)	NM
Total revenues from Corporate	198	(3,453)	NM
Consolidated			
Trading income, net	220,148	235,699	(6.6)%
Interest and dividends income	23,352	21,451	8.9%
Commissions, net and technology services	139,627	40,252	246.9%
Other, net	2,237	(2,279)	NM
Total revenues	\$ 385,364	\$ 295,123	30.6%

Trading income, net. Trading income, net was primarily earned by our Market Making segment. Trading income, net decreased \$15.6 million, or 6.6%, to \$220.1 million for the three months ended September 30, 2019, compared to \$235.7 million for the three months ended September 30, 2018. The decrease was primarily attributable to the lack of volatility and low trading volume across major asset categories during the three months ended September 30, 2019 compared to the prior period. Rather than analyzing trading income, net, in isolation, we evaluate it in the broader context of our Adjusted Net Trading Income, together with Interest and dividends income, Interest and dividends expense, Commissions, net and technology services, Payments for order flow, and Brokerage, exchange and clearance fees, net, each of which is described below.

Interest and dividends income. Interest and dividends income was primarily earned by our Market Making segment. Interest and dividends income increased \$1.9 million, or 8.9%, to \$23.4 million for the three months ended September 30, 2019, compared to \$21.5 million for the three months ended September 30, 2018. This increase was primarily attributable to the higher interest income earned on cash collateral posted as part of securities loaned transactions. As indicated above, rather than analyzing interest and dividends income in isolation, we evaluate it in the broader context of our Adjusted Net Trading Income.

Commissions, net and technology services. Commissions, net and technology services revenues were primarily earned by our Execution Services segment. Commissions, net and technology services revenues increased \$99.4 million, or 246.9%, to \$139.6 million for the three months ended September 30, 2019, compared to \$40.3 million for the three months ended September 30, 2018. The increase was primarily attributable to the ITG Acquisition, as ITG's entire business is included in our Execution Services segment. The ITG Acquisition also brought recurring revenues generated from workflow technology and subscription revenues from analytics services to Commissions, net and technology services during the three months ended September 30, 2019.

Other, net. Other, net was \$2.2 million for the three months ended September 30, 2019, compared to a loss of \$2.3 million for the three months ended September 30, 2018. The increase was primarily due to rental income from sublease rental income that was recognized within Other, net in 2019 as a result of the adoption of ASU 2016-02, Leases (Topic 842) (see Note 2 “Summary of Significant Accounting Policies” and Note 16 “Leases” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q), compared to a loss on a sale of assets during the prior period.

Adjusted Net Trading Income

Adjusted Net Trading Income increased \$71.9 million, or 40.4%, to \$249.8 million for the three months ended September 30, 2019, compared to \$177.9 million for the three months ended September 30, 2018. This increase was primarily attributable to higher Commissions, net and technology services as a result of the ITG Acquisition, which was partially offset by lower Trading income, net, driven by the lack of volatility and low trading volume across major asset categories during the three months ended September 30, 2019 compared to the prior period. There were decreases in Global Equities of \$19.5 million, or 16.0%, and Global FICC, Options and Other of \$1.5 million, or 3.6%, from the Market Making segment for the three months ended September 30, 2019. These decreases were offset by an increase of \$89.0 million, or 467.7%, from the Execution Services segment. Adjusted Net Trading Income per day increased \$1.1 million, or 38.2%, to \$3.9 million for the three months ended September 30, 2019, compared to \$2.8 million for the three months ended September 30, 2018. There were 64 trading days for both the three months ended September 30, 2019 and 2018. Adjusted Net Trading Income is a non-GAAP measure. For a full description of Adjusted Net Trading Income and a reconciliation of Adjusted Net Trading Income to trading income, net, see “Non-GAAP Financial Measures and Other Items” in this Item 2. “Management’s Discussion and Analysis of Financial Condition and Results of Operations”.

Operating Expenses

Our operating expenses increased \$125.5 million, or 47.2%, to \$391.2 million for the three months ended September 30, 2019, compared to \$265.7 million for the three months ended September 30, 2018. The increase in operating expenses is primarily due to the ITG Acquisition, which caused an overall increase in expenses in multiple expense categories as described in more detail below.

Brokerage, exchange and clearance fees, net. Brokerage exchange and clearance fees, net, increased \$5.7 million, or 8.3%, to \$74.3 million for the three months ended September 30, 2019, compared to \$68.6 million for the three months ended September 30, 2018. This increase was primarily attributable to the ITG Acquisition, and was partially offset by a decrease in volume we traded in Global Equities instruments and other asset categories. As indicated above, rather than analyzing brokerage, exchange and clearance fees, net, in isolation, we evaluate it in the broader context of our Adjusted Net Trading Income.

Communication and data processing. Communication and data processing expense increased \$20.3 million, or 51.2%, to \$59.8 million for the three months ended September 30, 2019, compared to \$39.5 million for the three months ended September 30, 2018. This increase was primarily due to the additional connectivity and market data service subscriptions acquired as part of the ITG Acquisition. The increase was partially offset by reductions in connectivity connections as a result of an on-going effort to consolidate various communication and data processing subscriptions.

Employee compensation and payroll taxes. Employee compensation and payroll taxes increased \$45.8 million, or 102.1%, to \$90.6 million for the three months ended September 30, 2019, compared to \$44.8 million for the three months ended September 30, 2018. The increase in compensation levels was primarily attributable to the increases in headcount subsequent to the ITG Acquisition as well as an increase in severance expense of \$12.1 million compared to the prior period. Incentive compensation is recorded at management’s discretion and is generally accrued in connection with the overall level of profitability. We have capitalized and therefore excluded employee compensation and benefits related to software development of \$8.6 million and \$6.2 million for the three months ended September 30, 2019, and 2018, respectively.

Payments for order flow. Payments for order flow increased \$6.2 million, or 33.9%, to \$24.5 million for the three months ended September 30, 2019, compared to \$18.3 million for the three months ended September 30, 2018. The increase was primarily attributable to the increase in volumes from our broker-dealer clients eligible for payments for order flow, including new counterparties onboarded during 2019. Payments for order flow also fluctuate based on U.S. equity share and option volumes, our profitability and the mix of market orders, limit orders, and customer mix. As indicated above, rather than analyzing payments for order flow, in isolation, we evaluate it in the broader context of our Adjusted Net Trading Income.

Interest and dividends expense. Interest and dividends expense increased \$2.0 million, or 6.1%, to \$34.5 million for the three months ended September 30, 2019, compared to \$32.6 million for the three months ended September 30, 2018. This

increase was primarily attributable to higher interest expense incurred on cash collateral received as part of securities lending transactions, as well as increased interest expense resulting from the ITG Acquisition. As indicated above, rather than analyzing interest and dividends expense in isolation, we evaluate it in the broader context of our Adjusted Net Trading Income.

Operations and administrative. Operations and administrative expense increased \$11.1 million, or 64.4%, to \$28.4 million for the three months ended September 30, 2019, compared to \$17.3 million for the three months ended September 30, 2018. This increase was primarily attributable to the additional occupancy, professional and consulting expenses resulting from the ITG Acquisition, offset by on-going efforts to consolidate office premises and professional services.

Depreciation and amortization. Depreciation and amortization increased \$1.6 million, or 9.9%, to \$17.6 million for the three months ended September 30, 2019, compared to \$16.0 million for the three months ended September 30, 2018. This increase was primarily attributable to depreciation and amortization of additional assets resulting from the ITG Acquisition. The overall increase was partially offset by the decrease in depreciation and amortization as a result of certain assets being fully depreciated or amortized.

Amortization of purchased intangibles and acquired capitalized software. Amortization of purchased intangibles and acquired capitalized software increased \$12.5 million, or 197.0%, to \$18.9 million for the three months ended September 30, 2019, compared to \$6.4 million for the three months ended September 30, 2018. This increase was due to the amortization of intangible assets acquired in connection with the ITG Acquisition.

Termination of office leases. Termination of office leases decreased \$0.2 million, or 11.3%, to \$1.3 million for the three months ended September 30, 2019, compared to \$1.4 million for the three months ended September 30, 2018. The termination of office leases is due to the impairment of operating lease right-of-use assets and leasehold improvements and fixed assets for certain abandoned office space as part of the effort to integrate and consolidate office space in connection with the ITG Acquisition.

Debt issue cost related to debt refinancing and prepayment. There was no debt refinancing or prepayments made during the three months ended September 30, 2019; as such, debt issue costs incurred related to debt refinancing or prepayment were zero for the three months ended September 30, 2019. Debt issue costs related to debt refinancing and prepayment were \$3.3 million for the three months ended September 30, 2018, driven by prepayments of long term borrowings made during the period.

Transaction advisory fees and expenses. Transaction advisory fees and expenses were \$7.2 million for the three months ended September 30, 2019, while we did not incur such expense during the three months ended September 30, 2018. The expenses for the three months ended September 30, 2019 represent professional fees incurred as a result of the ITG Acquisition.

Financing interest expense on long-term borrowings. Financing interest expense on long-term borrowings increased \$16.5 million, or 93.1%, to \$34.2 million for the three months ended September 30, 2019, compared to \$17.7 million for the three months ended September 30, 2018. This increase was primarily attributable to the increase in outstanding principal as a result of the First Lien Term Loan Facility, as discussed in Note 10 “Borrowings” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q.

Provision for (benefit from) income taxes

We incur corporate tax at the U.S. federal income tax rate on our taxable income, as adjusted for noncontrolling interest in Virtu Financial. Our income tax expense reflects such U.S. federal income tax as well as taxes payable by certain of our non-U.S. subsidiaries. Our provision for (benefit from) income taxes was \$(0.6) million for the three months ended September 30, 2019, compared to \$13.8 million for the three months ended September 30, 2018. The change was primarily due to a loss before income taxes and noncontrolling interest for the three months ended September 30, 2019.

Nine Months Ended September 30, 2019 Compared to Nine Months Ended September 30, 2018

Total Revenues

Our total revenues decreased \$311.5 million, or 21.7%, to \$1,126.8 million for the nine months ended September 30, 2019, compared to \$1,438.3 million for the nine months ended September 30, 2018. This decrease was primarily attributable to a decrease in Trading income, net, of \$216.8 million, which was primarily attributable to the lack of volatility and low trading

volume. A decrease in Other, net, of \$329.2 million primarily due to gain on the sale of BondPoint to ICE of \$337.6 million recognized in January 2018. These decreases were partially offset by an increase in Commissions, net and technology services of \$219.2 million which was primarily attributable to the results of ITG from the ITG Closing Date through September 30, 2019.

The following table shows the total revenues by segment for the nine months ended September 30, 2019 and 2018.

(in thousands, except for percentage)	Nine Months Ended September 30,		
	2019	2018	% Change
Market Making			
Trading income, net	\$ 680,224	\$ 899,902	(24.4)%
Interest and dividends income	64,404	60,681	6.1%
Commissions, net and technology services	17,213	21,886	(21.4)%
Other, net	3,181	2,132	49.2%
Total revenues from Market Making	<u>765,022</u>	<u>984,601</u>	(22.3)%
Execution Services			
Trading income, net	3,387	552	513.6%
Interest and dividends income	12,241	600	NM
Commissions, net and technology services	342,681	118,775	188.5%
Other, net	1,602	338,832	(100)%
Total revenues from Execution Services	<u>359,911</u>	<u>458,759</u>	(21.5)%
Corporate			
Trading income, net	—	—	NM
Interest and dividends income	—	56	NM
Commissions, net and technology services	—	—	NM
Other, net	1,879	(5,113)	NM
Total revenues from Corporate	<u>1,879</u>	<u>(5,057)</u>	NM
Consolidated			
Trading income, net	683,611	900,454	(24.1)%
Interest and dividends income	76,645	61,337	25.0%
Commissions, net and technology services	359,894	140,661	155.9%
Other, net	6,662	335,851	(98.0)%
Total revenues	<u>\$ 1,126,812</u>	<u>\$ 1,438,303</u>	(21.7)%

Trading income, net. Trading income, net was primarily earned by our Market Making segment. Trading income, net, decreased \$216.8 million, or 24.1%, to \$683.6 million for the nine months ended September 30, 2019, compared to \$900.5 million for the nine months ended September 30, 2018. The decrease was primarily attributable to the lack of volatility and low trading volume across major asset categories during the nine months ended September 30, 2019 compared to the prior period. Rather than analyzing trading income, net, in isolation, we evaluate it in the broader context of our Adjusted Net Trading Income, together with Interest and dividends income, Interest and dividends expense, Commissions, net and technology services, Payments for order flow, and Brokerage, exchange and clearance fees, net, each of which are described below.

Interest and dividends income. Interest and dividends income was primarily earned by our Market Making segment. Interest and dividends income increased \$15.3 million, or 25.0%, to \$76.6 million for the nine months ended September 30, 2019, compared to \$61.3 million for the nine months ended September 30, 2018. This increase was primarily attributable to the higher interest income earned on cash collateral posted as part of securities loaned transactions. As indicated above, rather than analyzing interest and dividends income in isolation, we evaluate it in the broader context of our Adjusted Net Trading Income.

Commissions, net and technology services. Commissions, net and technology services revenues were primarily earned by our Execution Services segment. Commissions, net and technology services revenues increased \$219.2 million, or 155.9%, to \$359.9 million for the nine months ended September 30, 2019, compared to \$140.7 million for the nine months

ended September 30, 2018. The increase was primarily attributable to the ITG Acquisition, as ITG's entire business is included in our Execution Services segment. The ITG Acquisition also brought recurring connectivity revenues generated from workflow technology and subscription revenues from analytics services to Commissions, net and technology services during the period from the ITG Closing Date through September 30, 2019.

Other, net. Other, net decreased \$329.2 million, or 98.0%, to \$6.7 million for the nine months ended September 30, 2019, compared to \$335.9 million for the nine months ended September 30, 2018. The decrease was primarily due to the one-time transaction gain of \$337.6 million on the sale of BondPoint to ICE in January 2018.

Adjusted Net Trading Income

Adjusted Net Trading Income decreased \$3.6 million, or 0.5%, to \$717.5 million for the nine months ended September 30, 2019, compared to \$721.1 million for the nine months ended September 30, 2018. This decrease was primarily attributable to lower Trading income, net, driven by the lack of volatility and low trading volume across major asset categories during the nine months ended September 30, 2019 compared to the prior period. The decrease in Trading income, net was partially offset by an increase in Commissions, net and technology services as a result of the ITG Acquisition. There were decreases in Trading income, net in Global Equities of \$160.9 million, and in Global FICC, Options and Other of \$39.6 million, from the Market Making segment. These decreases were partially offset by an increase of \$192.2 million, or 266.8%, in the Execution Services segment. Adjusted Net Trading Income per day decreased \$39 thousand, or 1.0%, to \$3.8 million for the nine months ended September 30, 2019, compared to \$3.8 million for the nine months ended September 30, 2018. The number of trading days was 189 for both the nine months ended September 30, 2019, and 2018. Adjusted Net Trading Income is a non-GAAP measure. For a full description of Adjusted Net Trading Income and a reconciliation of Adjusted Net Trading Income to trading income, net, see "Non-GAAP Financial Measures and Other Items" in this "Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations".

Operating Expenses

Our operating expenses increased \$324.7 million, or 36.5%, to \$1,215.4 million for the nine months ended September 30, 2019, compared to \$890.7 million for the nine months ended September 30, 2018. The increase in operating expenses was primarily due to the ITG Acquisition, which caused an overall increase in expenses in multiple expense categories as described in more detail below.

Brokerage, exchange and clearance fees, net. Brokerage exchange and clearance fees, net, decreased \$15.6 million, or 6.8%, to \$214.2 million for the nine months ended September 30, 2019, compared to \$229.8 million for the nine months ended September 30, 2018. This decrease was primarily attributable to a decrease in volume we traded in Global Equities instruments and other asset categories, partially offset by increases due to the ITG Acquisition. As indicated above, rather than analyzing brokerage, exchange and clearance fees, net, in isolation, we evaluate it in the broader context of our Adjusted Net Trading Income.

Communication and data processing. Communication and data processing expense increased \$18.2 million, or 13.2%, to \$156.0 million for the nine months ended September 30, 2019, compared to \$137.8 million for the nine months ended September 30, 2018. This increase was primarily due to the additional connectivity and market data service subscriptions acquired as part of the ITG Acquisition. The increase was partially offset by reductions in connectivity connections as a result of an on-going effort to consolidate various communication and data processing subscriptions.

Employee compensation and payroll taxes. Employee compensation and payroll taxes increased \$131.4 million, or 87.2%, to \$282.1 million for the nine months ended September 30, 2019, compared to \$150.7 million for the nine months ended September 30, 2018. The increase in compensation levels was primarily attributable to the increases in headcount subsequent to the ITG Acquisition as well as an increase in severance expense of \$67.0 million. Incentive compensation is recorded at management's discretion and is generally accrued in connection with the overall level of profitability. We have capitalized and therefore excluded employee compensation and benefits related to software development of \$25.3 million and \$20.3 million for the nine months ended September 30, 2019 and 2018, respectively.

Payments for order flow. Payments for order flow increased \$21.3 million, or 42.3%, to \$71.7 million for the nine months ended September 30, 2019, compared to \$50.4 million for the nine months ended September 30, 2018. The increase was primarily attributable to the increase in volumes from our broker-dealer clients eligible for payments for order flow, including new counterparties onboarded during 2019. Payments for order flow also fluctuate based on U.S. equity share and option volumes, our profitability and the mix of market orders, limit orders, and customer mix. As indicated above, rather than analyzing payments for order flow in isolation, we evaluate it in the broader context of our Adjusted Net Trading Income.

Interest and dividends expense. Interest and dividends expense increased \$15.5 million, or 15.4%, to \$116.7 million for the nine months ended September 30, 2019, compared to \$101.2 million for the nine months ended September 30, 2018. This increase was primarily attributable to higher interest expense incurred on cash collateral received as part of securities lending transactions, as well as increased interest expense resulting from the ITG Acquisition. As indicated above, rather than analyzing interest and dividends expense in isolation, we generally evaluate it in the broader context of our Adjusted Net Trading Income.

Operations and administrative. Operations and administrative expense increased \$31.6 million, or 58.8%, to \$85.2 million for the nine months ended September 30, 2019, compared to \$53.7 million for the nine months ended September 30, 2018. The increase was primarily attributable to the additional occupancy, professional and consulting expenses resulting from the ITG Acquisition, offset by on-going efforts to consolidate office premises and professional services.

Depreciation and amortization. Depreciation and amortization increased \$1.3 million, or 2.7%, to \$48.9 million for the nine months ended September 30, 2019, compared to \$47.6 million for the nine months ended September 30, 2018. This increase was primarily attributable to depreciation and amortization of additional assets resulting from the ITG Acquisition. The overall increase was partially offset by the decrease in depreciation and amortization as a result of certain assets being fully depreciated or amortized.

Amortization of purchased intangibles and acquired capitalized software. Amortization of purchased intangibles and acquired capitalized software increased \$30.4 million, or 151.7%, to \$50.4 million for the nine months ended September 30, 2019, compared to \$20.0 million for the nine months ended September 30, 2018. This increase was due to the amortization of intangible assets acquired in connection with the ITG Acquisition.

Termination of office leases. Termination of office leases increased \$43.2 million, or 185.4%, to \$66.5 million for the nine months ended September 30, 2019, compared to \$23.3 million nine months ended September 30, 2018. The increase in termination of office leases is due to the impairment of operating lease right-of-use assets and leasehold improvements and fixed assets for certain abandoned office space as part of the effort to integrate and consolidate office space in connection with the ITG Acquisition.

Debt issue costs related to debt refinancing and prepayment. Expense from debt issue costs related to debt refinancing and prepayment decreased \$3.8 million, or 32.7%, to \$7.9 million for the nine months ended September 30, 2019, compared to \$11.7 million for the nine months ended September 30, 2018. The amount for the nine months ended September 30, 2019 mainly reflects costs incurred related to the termination of the Senior Secured Term Loan Facility (as defined below) in the first quarter of 2019, while the amount for the nine months ended September 30, 2018 reflects the accelerated amortization of debt issuance costs due to prepayments of \$384.8 million on long term borrowings in the nine months ended September 30, 2018.

Transaction advisory fees and expenses. Transaction advisory fees and expenses increased \$15.1 million, or 167.9%, to \$24.1 million for the nine months ended September 30, 2019, compared to \$9.0 million for the nine months ended September 30, 2018. The increase was primarily attributable to the ITG Acquisition, for which we incurred significantly higher transaction advisory fees than those incurred in connection with the sale of BondPoint in January 2018.

Charges related to share based compensation at IPO. There were no charges related to share-based compensation at IPO for the nine months ended September 30, 2019, due to the fact that certain Virtu Class B Interests and East MIP Class B Interests became fully vested. Such charges were \$24 thousand for the nine months ended September 30, 2018.

Financing interest expense on long term borrowings. Financing interest expense on long-term borrowings increased \$36.1 million, or 65.1%, to \$91.7 million for the nine months ended September 30, 2019, compared to \$55.5 million for the nine months ended September 30, 2018. This increase was primarily attributable to the increase in outstanding principal as a result of the First Lien Term Loan Facility, as discussed in Note 10 “Borrowings” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q.

Provision for (benefit from) income taxes

We incur corporate tax at the U.S. federal income tax rate on our taxable income, as adjusted for noncontrolling interest in Virtu Financial. Our income tax expense reflects such U.S. federal income tax as well as taxes payable by certain of our non-U.S. subsidiaries. Our provision for (benefit from) income taxes was \$(14.3) million for the nine months ended

September 30, 2019, compared to \$75.3 million for the nine months ended September 30, 2018. The change was primarily due to a loss before income taxes and noncontrolling interest for the nine months ended September 30, 2019.

Liquidity and Capital Resources

General

As of September 30, 2019, we had \$372.7 million in Cash and cash equivalents. This balance is maintained primarily to support operating activities for capital expenditures and for short-term access to liquidity, and for other general corporate purposes. As of September 30, 2019, we had borrowings under our short-term credit facilities of approximately \$133.4 million, borrowing under broker dealer facilities of \$37.0 million, short-term bank overdrafts of \$62.4 million, and long-term debt outstanding in an aggregate principal amount of approximately \$1,982.4 million. As of September 30, 2019, our regulatory capital requirements for domestic U.S. broker-dealer subsidiaries were \$5.8 million, in aggregate.

The majority of our trading assets consist of exchange-listed marketable securities, which are marked-to-market daily, and collateralized receivables from broker-dealers and clearing organizations arising from proprietary securities transactions. Collateralized receivables consist primarily of securities borrowed, receivables from clearing houses for settlement of securities transactions and, to a lesser extent, securities purchased under agreements to resell. We actively manage our liquidity, and we maintain significant borrowing facilities through the securities lending markets and with banks and prime brokers. We have continually received the benefit of uncommitted margin financing from our prime brokers globally. These margin facilities are secured by securities in accounts held at the prime broker. For purposes of providing additional liquidity, we maintain an uncommitted credit facility and a revolving credit facility for three of our wholly-owned broker-dealer subsidiaries, as discussed in Note 10 “Borrowings” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q.

Based on our current level of operations, we believe our cash flows from operations, available cash and cash equivalents, and available borrowings under our broker-dealer credit facilities will be adequate to meet our future liquidity needs for more than the next twelve months. We anticipate that our primary upcoming cash and liquidity needs will be increased margin requirements from increased trading activities in markets where we currently provide liquidity and in new markets into which we expand. We manage and monitor our margin and liquidity needs on a real-time basis and can adjust our requirements both intra-day and inter-day, as required.

We expect our principal sources of future liquidity to come from cash flows provided by operating activities and financing activities. Certain of our cash balances are insured by the Federal Deposit Insurance Corporation, generally up to \$250,000 per account but without a cap under certain conditions. From time to time these cash balances may exceed insured limits, but we select financial institutions deemed highly credit worthy to minimize risk. We consider highly liquid investments with original maturities of less than three months when acquired to be cash equivalents.

Tax Receivable Agreements

Generally, we are required under the tax receivable agreements entered into in connection with our IPO to make payments to certain direct or indirect equityholders of Virtu Financial that are generally equal to 85% of the applicable cash tax savings, if any, that we actually realize as a result of favorable tax attributes that will be available to us as a result of certain reorganization transactions consummated in connection with the IPO (the “Reorganization Transactions”), for exchanges of membership interests for Class A Common Stock or Class B Common Stock and payments made under the tax receivable agreements. We will retain the remaining 15% of any such cash tax savings. We expect that future payments to certain direct or indirect equityholders of Virtu Financial described in Note 6 “Tax Receivable Agreements” to the condensed consolidated financial statements included in Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q are expected to range from approximately \$2.6 million to \$19.9 million per year over the next 15 years. Such payments will occur only after we have filed our U.S. federal and state income tax returns and realized the cash tax savings from the favorable tax attributes. We made our first payment of \$7.0 million in February 2017 and our second payment of \$12.4 million in September 2018. Future payments under the tax receivable agreements in respect of subsequent exchanges would be in addition to these amounts. We currently expect to fund these payments from realized cash tax savings from the favorable tax attributes.

Under the tax receivable agreements, as a result of certain types of transactions and other factors, including a transaction resulting in a change of control, we may also be required to make payments to certain direct or indirect equityholders of Virtu Financial in amounts equal to the present value of future payments we are obligated to make under the tax receivable agreements. We would expect any acceleration of these payments to be funded from the realized favorable tax attributes. However, if the payments under the tax receivable agreements are accelerated, we may be required to raise additional

debt or equity to fund such payments. To the extent that we are unable to make payments under the tax receivable agreements for any reason (including because our Credit Agreement or the indenture governing our Notes (as defined below) restricts the ability of our subsidiaries to make distributions to us) such payments will be deferred and will accrue interest until paid.

Regulatory Capital Requirements

Certain of our operating subsidiaries are subject to separate regulation and capital requirements in the United States and other jurisdictions. Virtu Americas LLC, Virtu Financial BD LLC, Virtu Financial Capital Markets LLC, Virtu ITG LLC, and Virtu Alternet Securities LLC, the latter two of which became our subsidiaries following the ITG Acquisition, are registered U.S. broker-dealers, and their primary regulators include the SEC, the Chicago Stock Exchange and the Financial Industry Regulatory Authority (“FINRA”).

The SEC and FINRA impose rules that require notification when regulatory capital falls below certain pre-defined criteria. These rules also dictate the ratio of debt-to-equity in the regulatory capital composition of a broker-dealer and constrain the ability of a broker-dealer to expand its business under certain circumstances. If a firm fails to maintain the required regulatory capital, it may be subject to suspension or revocation of registration by the applicable regulatory agency, and suspension or expulsion by these regulators could ultimately lead to the firm’s liquidation. Additionally, certain applicable rules impose requirements that may have the effect of prohibiting a broker-dealer from distributing or withdrawing capital and requiring prior notice to and/or approval from the SEC, the Chicago Stock Exchange and FINRA for certain capital withdrawals. Virtu Americas LLC is also subject to rules set forth by NYSE and is required to maintain a certain level of capital in connection with the operation of its designated market maker business.

Our Canadian subsidiaries, Virtu ITG Canada Corp, TriAct Canada Marketplace LP, and Virtu Financial Canada ULC, are subject to regulatory capital requirements and periodic requirements to report their regulatory capital and submit other regulatory reports set forth by the Investment Industry Regulatory Organization of Canada. Virtu Financial Ireland Limited and Virtu ITG Europe Limited are regulated by the Central Bank of Ireland as Investment Firms and in accordance with European Union law are required to maintain a minimum amount of regulatory capital based upon their positions, financial conditions, and other factors. In addition to periodic requirements to report their regulatory capital and submit other regulatory reports, Virtu Financial Ireland Limited and Virtu ITG Europe Limited are required to obtain consent prior to receiving capital contributions or making capital distributions from their regulatory capital. Failure to comply with their regulatory capital requirements could result in regulatory sanction or revocation of their regulatory license. Virtu ITG UK Limited is regulated by the Financial Conduct Authority in the United Kingdom and is subject to similar prudential capital requirements. Virtu ITG Australia Limited, Virtu ITG Hong Kong Limited, and Virtu ITG Singapore Pte Limited are also subject to local regulatory capital requirements and are regulated by the Australian Securities Exchange, the Securities and Futures Commission, and the Monetary Authority of Singapore, respectively.

See Note 20 “Regulatory Requirement” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q for a discussion of regulatory capital requirements of our regulated subsidiaries.

Short-Term Borrowings

We maintain various broker-dealer facilities and short-term credit facilities as part of our daily trading operations. See Note 10 “Borrowings” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q for details on our various credit facilities. As of September 30, 2019, the outstanding principal balance on our broker-dealer facilities was \$37.0 million, and the outstanding aggregate short-term credit facilities with various prime brokers and other financial institutions from which the Company receives execution or clearing services was approximately \$133.4 million, which was netted within Receivables from broker-dealers and clearing organizations on the condensed consolidated statement of financial condition of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q.

Credit Agreement

In connection with the ITG Acquisition, Virtu Financial, VFH and the Acquisition Borrower entered into the Credit Agreement, with the lenders party thereto, Jefferies Finance LLC, as administrative agent and Jefferies Finance LLC and RBC Capital Markets, as joint lead arrangers and joint bookrunners.

The Credit Agreement provides (i) a senior secured first lien term loan in an aggregate principal amount of \$1.5 billion, drawn in its entirety on the ITG Closing Date, with approximately \$404.5 million borrowed by VFH to repay all amounts outstanding under the Company’s Fourth Amended and Restated Credit Agreement and the remaining approximately \$1,095 million borrowed by the Acquisition Borrower to finance the consideration and fees and expenses paid in connection

with the ITG Acquisition, and (ii) a \$50.0 million senior secured first lien revolving facility to VFH, with a \$5.0 million letter of credit subfacility and a \$5.0 million swingline subfacility. After the ITG Closing Date, VFH assumed the obligations of the Acquisition Borrower in respect of the acquisition term loans. During the three months ended June 30, 2019, \$50.0 million was repaid under the First Lien Term Loan Facility. As of September 30, 2019, \$1,450 million was outstanding under the First Lien Term Loan Facility.

The term loan borrowings and revolver borrowings under the Credit Agreement will bear interest at a per annum rate equal to, at our election, either (i) the greatest of (a) the prime rate in effect, (b) the greater of (i) the federal funds effective rate and (ii) the overnight bank funding rate, in each case plus 0.5%, (c) an adjusted LIBOR rate for a Eurodollar borrowing with an interest period of one month plus 1% and (d) 1.00%, plus, in each case, 2.50%, with a stepdown to 2.25% based on VFH's first lien leverage ratio, or (ii) the greater of (x) an adjusted LIBOR rate for the interest period in effect and (y) 0%, plus, in each case, 3.50%, with a stepdown to 3.25% based on VFH's first lien leverage ratio. In addition, a commitment fee accrues at a rate of 0.50% per annum on the average daily unused amount of the First Lien Revolving Facility, with stepdowns to 0.375% and 0.25% per annum based on VFH's first lien leverage ratio, and is payable quarterly in arrears.

The First Lien Revolving Facility under the Credit Agreement is subject to a springing net first lien leverage ratio which may spring into effect as of the last day of a fiscal quarter based on the usage of the aggregate revolving commitments as of such date. VFH is also subject to contingent principal prepayments based on excess cash flow and certain other triggering events. Borrowings under the Credit Agreement are guaranteed by Virtu Financial and VFH's material non-regulated restricted subsidiaries and secured by substantially all of the assets of VFH and the guarantors, in each case, subject to certain exceptions.

Under the Credit Agreement, term loans will mature on March 1, 2026; provided that unless at least \$400.0 million of VFH's existing 6.750% second lien notes due 2022 have been repaid or refinanced (the "repayment requirement") prior to the date that is 91 days prior to the maturity of the second lien notes (the "term springing maturity date"), the term loans will mature on the term springing maturity date. The term loans amortize in annual installments equal to 1.0% of the original aggregate principal amount of the term loans. The revolving commitments will terminate on March 1, 2022; provided that unless the repayment requirement is satisfied on or prior to the date that is 182 days prior to the maturity of the second lien notes (the "revolving springing maturity date"), the revolving commitments will terminate on the revolving springing maturity date. As described below, on October 9, 2019 VFH repaid the second lien notes in full and, as a result, the term loans will mature on March 1, 2026 and the revolving commitments will terminate on March 1, 2022.

The Credit Agreement contains certain customary covenants and certain customary events of default, including relating to a change of control. If an event of default occurs and is continuing, the lenders under the Credit Agreement will be entitled to take various actions, including the acceleration of amounts outstanding under the Credit Agreement and all actions permitted to be taken by a secured creditor in respect of the collateral securing the obligations under the Credit Agreement.

On October 9, 2019 (the "Closing Date"), VFH entered into Amendment No. 1 ("Amendment No. 1"), which amended the Credit Agreement (as amended by Amendment No. 1, the "Amended Credit Agreement") to, among other things, provide for \$525.0 million in aggregate principal amount of incremental term loans (the "Incremental Term Loans"), and amend the related collateral agreement. On the Closing Date, VFH borrowed the Incremental Term Loans and used the proceeds together with available cash to redeem all of the \$500.0 million aggregate principal amount of the outstanding 6.750% Senior Secured Second Lien Notes due 2022 issued by VFH and Orchestra Co Issuer, Inc., a Delaware corporation and indirect subsidiary of the Company, and pay related fees and expenses. The terms, conditions and covenants applicable to the Incremental Term Loans are the same as the terms, conditions and covenants applicable to the existing term loans under the Credit Agreement, including a maturity date of March 1, 2026. The Company also entered into a five-year \$525 million floating to fixed interest rate swap agreement that effectively fixes interest payment obligations on the Incremental Term Loans at 4.8% through September 2024.

To finance the Acquisition of KCG, on June 30, 2017, Virtu Financial and VFH previously entered into the Fourth Amended and Restated Credit Agreement with the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent, sole lead arranger and bookrunner, which amended and restated in its entirety the existing credit agreement, and upon the closing of the Acquisition of KCG, provided for an aggregate \$1.15 billion of first lien secured term loans (the "Senior Secured Term Loan Facility"). As described above, the Senior Secured Term Loan Facility was fully terminated following its repayment in full with the proceeds of the First Lien Term Loan Facility.

We were in compliance with all applicable covenants under the Credit Agreement as of September 30, 2019.

Senior Secured Second Lien Notes

On June 16, 2017, Orchestra Borrower LLC (the “Escrow Issuer”), a wholly-owned subsidiary of Virtu Financial, and Orchestra Co-Issuer, Inc. (the “Co-Issuer”) completed the offering of \$500 million aggregate principal amount of 6.750% Senior Secured Second Lien Notes due 2022 (the “Notes”). The Notes were issued under an Indenture, dated as of June 16, 2017 (the “Indenture”), among the Escrow Issuer, the Co-Issuer and U.S. Bank National Association, as the trustee and collateral agent. The Notes mature on June 15, 2022. Interest on the Notes accrues at 6.750% per annum, payable every six months through maturity on each June 15th and December 15th, beginning on December 15, 2017.

On July 20, 2017, VFH assumed all of the obligations of the Escrow Issuer under the Indenture and the Notes. The Notes are guaranteed by Virtu Financial and each of Virtu Financial’s wholly-owned domestic restricted subsidiaries that guarantee the Credit Agreement. We refer to VFH and the Co-Issuer together as, the “Issuers”.

As described above, the Credit Agreement was amended as of October 9, 2019 and VFH used the proceeds of the Incremental Term Loans together with cash on hand to redeem the Notes and the Indenture was fully terminated following such redemption.

Cash Flows

Our main sources of liquidity are cash flow from the operations of our subsidiaries, our broker-dealer credit facilities (as described above), margin financing provided by our prime brokers and cash on hand.

The table below summarizes our primary sources and uses of cash for the nine months ended September 30, 2019 and 2018.

Net cash provided by (used in):	Nine Months Ended September 30,	
	2019	2018
Operating activities	\$ (346,222)	\$ 313,511
Investing activities	(882,820)	363,646
Financing activities	897,810	(790,398)
Effect of exchange rate changes on cash and cash equivalents	(9,996)	(3,713)
Net increase (decrease) in cash and cash equivalents	\$ (341,228)	\$ (116,954)

Operating Activities

Net cash used in operating activities was \$346.2 million for the nine months ended September 30, 2019, compared to net cash provided by operating activities of \$313.5 million for the nine months ended September 30, 2018. The change in net cash used in/provided by operating activities was primarily attributable to a net loss for the nine months ended September 30, 2019 compared to net income during the prior period.

Investing Activities

Net cash used in investing activities was \$882.8 million for the nine months ended September 30, 2019, compared to net cash provided by investing activities of \$363.6 million for the nine months ended September 30, 2018. The cash used in investing activities for the nine months ended September 30, 2019 was primarily attributable to the \$835.6 million cash used for the ITG Acquisition on the ITG Closing Date, while the cash provided by investing activities for the nine months ended September 30, 2018 was primarily due to the \$400.2 million proceeds received from the sale of BondPoint in January 2018. See Note 3 “ITG Acquisition” and Note 4 “Sale of BondPoint” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q.

Financing Activities

Net cash provided by financing activities was \$897.8 million for the nine months ended September 30, 2019, while net cash used in financing activities was \$790.4 million for the nine months ended September 30, 2018. The cash provided by financing activities for the nine months ended September 30, 2019 was primarily attributable to \$1,500.0 million of proceeds from long term borrowings, offset by \$400.0 million of repayments on the Senior Secured Term Loan Facility and \$50.0 million of prepayments on the First Lien Term Loan Facility. In addition, cash provided by short-term borrowings was approximately \$63.7 million, primarily attributable to the increase in short-term bank loans in the form of overdrafts. The cash used in financing activities for the nine months ended September 30, 2018 was primarily attributable to repayments of long term borrowings of \$500.0 million, distributions from Virtu Financial to non-controlling interests of \$196.1 million, and purchases of treasury stock of \$58.2 million.

Share Repurchase Program

On February 8, 2018, the Company's board of directors authorized a share repurchase program of up to \$50.0 million in Class A Common Stock and Virtu Financial Units, which was expanded to \$100.0 million on July 27, 2018. Since the inception of the program, the Company repurchased approximately 2.6 million shares of Class A Common Stock and Virtu Financial Units for approximately \$65.9 million. At September 30, 2019, the Company had approximately \$34.1 million remaining capacity for future purchases of shares of Class A Common Stock and Virtu Financial Units under the program. The share repurchase program expired on September 30, 2019.

Secondary Offerings

In May 2018, the Company and certain selling stockholders completed a public offering (the "May 2018 Secondary Offering") of 17,250,000 shares of Class A Common Stock by the Company and certain selling stockholders at a purchase price per share of \$27.16 (the offering price to the public of \$28.00 per share minus the underwriters' discount), which included the exercise in full by the underwriters of their option to purchase additional shares in the May 2018 Secondary Offering. The Company sold 10,518,750 shares of Class A Common Stock in the offering, the net proceeds of which were used to purchase an equivalent number of Virtu Financial Units and corresponding shares of Class D Common Stock from TJMT Holdings LLC pursuant to that certain Member Purchase Agreement, entered into on May 15, 2018 by and between the Company and TJMT Holdings LLC. The selling stockholders sold 6,731,250 shares of Class A Common Stock in the May 2018 Secondary Offering, including 2,081,250 shares of Class A Common Stock issued by the Company upon the exercise of vested stock options.

In connection with the May 2018 Secondary Offering, the Company, TJMT Holdings LLC, North Island Holdings I, LP (the "North Island Stockholder"), Havelock Fund Investments Pte. Ltd. ("Havelock") and Aranda Investments Pte. Ltd. ("Aranda") entered into that certain Amendment No. 1 to the Amended and Restated Registration Rights Agreement dated April 20, 2017, by and among the Company, TJMT Holdings LLC, the North Island Stockholder, Havelock, Aranda and certain direct or indirect equityholders of the Company (the "Amended and Restated Registration Rights Agreement") to add Mr. Vincent Viola and Mr. Michael Viola, directors of the Company, and to confirm that certain other persons (including the Company's CEO) remain parties to the Amended and Restated Registration Rights Agreement.

In May 2019, the Company completed a public offering (the "May 2019 Secondary Offering") of 9,000,000 shares of Class A Common Stock at a purchase price per share paid by the underwriters of \$22.00, the net proceeds of which were used to purchase an equivalent number of Virtu Financial Units and corresponding shares of Class D Common Stock from TJMT Holdings LLC pursuant to that certain Member Purchase Agreement, entered into on May 14, 2019 by and between the Company and TJMT Holdings LLC.

Off-Balance Sheet Arrangements

As of September 30, 2019, we did not have any off-balance sheet arrangements, as defined in Item 303(a)(4)(ii) of Regulation S-K, that have or are reasonably likely to have current or future effects on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that are material to investors.

Inflation

We believe inflation has not had a material effect on our financial condition as of September 30, 2019, and December 31, 2018, or on our results of operations and cash flows for the three and nine months ended September 30, 2019 and 2018.

Critical Accounting Policies and Estimates

The preparation of financial statements in conformity with U.S. 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 condensed consolidated financial statements, as well as the reported amounts of revenue and expenses during the applicable reporting period. Critical accounting policies are those that are the most important portrayal of our financial condition, results of operations and cash flows, and that require our most difficult, subjective and complex judgments as a result of the need to make estimates about the effect of matters that are inherently uncertain. While our significant accounting policies are described in more detail in the notes to our condensed consolidated financial statements, our most critical accounting policies are discussed below. In applying such policies, we must use some amounts that are based upon our informed judgments and best estimates. Estimates, by their nature, are based upon judgments and available information. The estimates that we make are based upon historical factors, current circumstances and the experience and judgment of management. We evaluate our assumptions and estimates on an ongoing basis. Our actual results may differ from these estimates under different assumptions or conditions.

Valuation of Financial Instruments

Due to the nature of our operations, substantially all of our financial instrument assets, comprised of financial instruments owned, securities purchased under agreements to resell, and receivables from brokers, dealers and clearing organizations are carried at fair value based on published market prices and are marked to market daily, or are assets which are short-term in nature and are reflected at amounts approximating fair value. Similarly, all of our financial instrument liabilities that arise from financial instruments sold but not yet purchased, securities sold under agreements to repurchase, securities loaned, and payables to brokers, dealers and clearing organizations are short-term in nature and are reported at quoted market prices or at amounts approximating fair value.

Fair value is defined as the price that would be received to sell an asset or would be paid to transfer a liability (i.e., the exit price) in an orderly transaction between market participants at the measurement date. Financial instruments measured and reported at fair value are classified and disclosed in one of the following categories based on inputs:

Level 1 — Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities;

Level 2 — Quoted prices in markets that are not active and financial instruments for which all significant inputs are observable, either directly or indirectly; or

Level 3 — Prices or valuations that require inputs that are both significant to the fair value measurement and unobservable

The fair values for substantially all of our financial instruments owned and financial instruments sold but not yet purchased are based on observable prices and inputs and are classified in levels 1 and 2 of the fair value hierarchy. Instruments categorized within level 3 of the fair value hierarchy are those which require one or more significant inputs that are not observable. Estimating the fair value of level 3 financial instruments requires judgments to be made. See Note 11 “Financial Assets and Liabilities” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q for further information about fair value measurements.

Revenue Recognition

Trading Income, Net

Trading income, net, consists of trading gains and losses that are recorded on a trade date basis and reported on a net basis. Trading income, net, is comprised of changes in fair value of financial instruments owned and financial instruments sold, not yet purchased assets and liabilities (i.e., unrealized gains and losses) and realized gains and losses on equities, fixed income securities, currencies and commodities.

Interest and Dividends Income/Interest and Dividends Expense

Interest income and interest expense are accrued in accordance with contractual rates. Interest income consists of income earned on collateralized financing arrangements and on cash held by brokers. Interest expense includes interest expense from collateralized transactions, margin and related short-term lending facilities. Dividends are recorded on the ex-dividend date, and interest is recognized on an accrual basis.

Commissions, net and Technology Services

Commissions, net, which primarily comprise commissions and commission equivalents earned on institutional client orders, are recorded on a trade date basis, which is the point at which the performance obligation to the customer is satisfied. Under a commission management program, we allow institutional clients to allocate a portion of their gross commissions to pay for research and other services provided by third parties. As we act as an agent in these transactions, we record such expenses on a net basis within Commissions, net and technology services in the condensed consolidated statements of comprehensive income. The Company recognizes the related revenue when the third-party research services are rendered and payments are made.

Technology services revenues consist of fees paid by third parties for licensing of our proprietary risk management and trading infrastructure technology and provision of associated management and hosting services. These fees include both upfront and annual recurring fees, as well as, in certain cases, contingent fees based on client revenues, which represents variable consideration. The services offered under these contracts have the same pattern of transfer; accordingly, they are being measured and recognized as a single performance obligation. The performance obligation is satisfied over time, and accordingly, revenue is recognized as time passes. Variable consideration has not been included in the transaction price as the amount of consideration is contingent on factors outside the Company's control and thus it is not probable that a significant reversal of cumulative revenue recognized will not occur. Recurring fees, which exclude variable consideration, are billed and collected on a monthly basis.

Workflow technology revenues consist of order and trade execution management and order routing services we provide through our front-end workflow solutions and network capabilities.

We provide trade order routing from our execution management system ("EMS") to our execution services offerings, with each trade order routed through the EMS representing a separate performance obligation that is satisfied at a point in time. A portion of the commissions earned on the trade is then allocated to Workflow Technology based on the stand-alone selling price paid by third-party brokers for order routing. The remaining commission is allocated to commissions, net using a residual allocation approach. Commissions earned are fixed and revenue is recognized on the trade date.

We participate in commission share arrangements, where trade orders are routed to third-party brokers from our EMS and our order management system ("OMS"). Commission share revenues from third-party brokers are generally fixed and revenue is recognized at a point in time on the trade date.

We also provide OMS and related software products and connectivity services to customers and recognize license fee revenues and monthly connectivity fees. License fee revenues, generated for the use of our OMS and other software products, are fixed and recognized at the point in time at which the customer is able to use and benefit from the license. Connectivity revenue is variable in nature, based on the number of live connections, and is recognized over time on a monthly basis using a time-based measure of progress.

Analytics revenues are earned from providing customers with analytics products and services, including trading and portfolio analytics tools. We provide analytics products and services to customers and recognize subscription fees, which are fixed for the contract term, based on when the products and services are delivered. Analytics services can be delivered either over time (when customers are provided with distinct ongoing access to analytics data) or at a point in time (when reports are

only delivered to the customer on a periodic basis). Over time performance obligations are recognized using a time-based measure of progress on a monthly basis, since the analytics products and services are continually provided to the client. Point in time performance obligations are recognized when the analytics reports are delivered to the client.

Analytics products and services can also be paid for through variable bundled arrangements with trade execution services. Customers agree to pay for analytics products and services with commissions generated from trade execution services, and commissions are allocated to the analytics performance obligation(s) using:

- (i) the commission value for each customer for the products and services it receives, which is priced using the value for similar stand-alone subscription arrangements; and
- (ii) a calculated ratio of the commission value for the products and services relative to the total amount of commissions generated from the customer.

For these bundled commission arrangements, the allocated commissions to each analytics performance obligation are then recognized as revenue when the analytics product is delivered, either over time or at a point in time. These allocated commissions may be deferred if the allocated amount exceeds the amount recognizable based on delivery.

Share-Based Compensation

We account for share-based compensation transactions with employees under the provisions of the Financial Accounting Standards Board's Accounting Standards Codification ("ASC") 718, Compensation: Stock Compensation. Share-based compensation transactions with employees are measured based on the fair value of equity instruments issued.

The fair value of awards issued for compensation prior to the Reorganization Transactions and the IPO was determined by management, with the assistance of an independent third party valuation firm, using a projected annual forfeiture rate, where applicable, on the date of grant.

Share-based awards issued for compensation in connection with or subsequent to the Reorganization Transactions and the IPO pursuant to our Amended and Restated 2015 Management Incentive Plan, and pursuant to the Amended and Restated ITG 2007 Equity Plan, were in the form of stock options, Class A Common Stock and restricted stock units. The fair value of the stock option grants is determined through the application of the Black-Scholes-Merton model. The fair value of the Class A Common Stock and restricted stock units is determined based on the volume weighted average price for the three days preceding the grant, and with respect to the restricted stock units, a projected annual forfeiture rate. The fair value of share-based awards granted to employees is expensed based on the vesting conditions and is recognized on a straight-line basis over the vesting period. We record as treasury stock shares repurchased from employees for the purpose of settling tax liabilities incurred upon the issuance of common stock, the vesting of restricted stock units or the exercise of stock options.

Income Taxes

We conduct our business globally through a number of separate legal entities. Consequently, our effective tax rate is dependent upon the geographic distribution of our earnings or losses and the tax laws and regulations of each legal jurisdiction in which we operate.

Certain of our wholly owned subsidiaries are subject to income taxes in foreign jurisdictions. The provision for income tax is comprised of current tax and deferred tax. Current tax represents the tax on current year tax returns, using tax rates enacted at the balance sheet date. A deferred tax asset is recognized only to the extent that it is probable that future taxable income will be available against which the asset can be utilized.

We are currently subject to audit in various jurisdictions, and these jurisdictions may assess additional income tax liabilities against us. Developments in an audit, litigation, or the relevant laws, regulations, administrative practices, principles, and interpretations could have a material effect on our operating results or cash flows in the period or periods for which that development occurs, as well as for prior and subsequent periods. We recognize the tax benefit from an uncertain tax position in accordance with ASC 740, Income Taxes, only if it is more likely than not that the tax position will be sustained on examination by the applicable taxing authority, including resolution of the appeals or litigation processes, based on the technical merits of the position. The tax benefits recognized in the condensed consolidated financial statements from such a position are measured based on the largest benefit for each such position that has a greater than fifty percent likelihood of being realized upon ultimate resolution. Many factors are considered when evaluating and estimating the tax positions and tax benefits. Such estimates involve interpretations of regulations, rulings, case law, etc. and are inherently complex. Our estimates

may require periodic adjustments and may not accurately anticipate actual outcomes as resolution of income tax treatments in individual jurisdictions typically would not be known for several years after completion of any fiscal year.

Goodwill and Intangible Assets

Goodwill represents the excess of the purchase price over the underlying net tangible and intangible assets of our acquisitions. Goodwill is not amortized but is assessed for impairment on an annual basis and between annual assessments whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. Goodwill is assessed at the reporting unit level, which is defined as an operating segment or one level below the operating segment.

When assessing impairment, an entity may perform an initial qualitative assessment, under which it assesses qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount, including goodwill. In evaluating whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount, an entity shall assess relevant events and circumstances, including the following:

- general economic conditions;
- limitations on accessing capital;
- fluctuations in foreign exchange rates or other developments in equity and credit markets;
- industry and market considerations such as a deterioration in the environment in which an entity operates, an increased competitive environment, a decline in market-dependent multiples or metrics (considered in both absolute terms and relative to peers), a change in the market for an entity's products or services, or a regulatory or political development,
 - cost factors such as increases in raw materials, labor, or other costs that have a negative effect on earnings and cash flows;
 - overall financial performance such as negative or declining cash flows or a decline in actual or planned revenue or earnings compared with actual and projected results of relevant prior periods;
 - other relevant entity-specific events such as changes in management, key personnel, strategy, or customers, contemplation of bankruptcy, or litigation.

If, after assessing the totality of such events or circumstances, an entity determines that it is not more likely than not that the fair value of a reporting unit is less than its carrying amount, then no further goodwill impairment testing is necessary.

If further testing is necessary, the fair value of the reporting unit is compared to its carrying value; if the fair value of the reporting unit is less than its carrying value, a goodwill impairment loss is recorded, equal to the excess of the reporting unit's carrying amount over its fair value (not to exceed the total goodwill allocated to that reporting unit).

We assess goodwill for impairment on an annual basis as of July 1st and on an interim basis when certain events or circumstances exist. In the impairment assessment as of July 1, 2018, we performed a qualitative assessment as described above for each reporting unit. No impairment of goodwill was identified.

We amortize finite-lived intangible assets over their estimated useful lives. We test finite-lived intangible assets for impairment when impairment indicators are present, and if impaired, they are written down to fair value.

Recent Accounting Pronouncements

For a discussion of recently issued accounting developments and their impact or potential impact on our condensed consolidated financial statements, see Note 2 "Summary of Significant Accounting Policies" of Part I Item 1 "Financial Statements" of this quarterly report on Form 10-Q.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Market Risk

We are exposed to various market risks in the ordinary course of business. The risks primarily relate to changes in the value of financial instruments due to factors such as market prices, interest rates, and currency rates.

Our on-exchange market making activities are not dependent on the direction of any particular market and are designed to minimize capital at risk at any given time by limiting the notional size of our positions. Our on-exchange market making strategies involve continuously quoting two-sided markets in various financial instruments with the intention of profiting by capturing the spread between the bid and offer price. If another market participant executes against the strategy's bid or offer by crossing the spread, the strategy will attempt to lock in a return by either exiting the position or hedging in one or more different correlated instruments that represent economically equivalent value to the primary instrument. Such primary or hedging instruments include but are not limited to securities and derivatives such as: common shares, exchange traded products, American Depositary Receipts ("ADRs"), options, bonds, futures, spot currencies and commodities. Substantially all of the financial instruments we trade are liquid and can be liquidated within a short time frame at low cost.

The market making activities, where we interact with customers, involve taking on position risks. The risks at any point in time are limited by the notional size of positions as well as other factors. The overall portfolio risks are quantified using internal risk models and monitored by the Company's Chief Risk Officer, the independent risk group and senior management.

We use various proprietary risk management tools in managing our market risk on a continuous basis (including intraday). In order to minimize the likelihood of unintended activities by our market making strategies, if our risk management system detects a trading strategy generating revenues outside of our preset limits, it will freeze, or "lockdown", that strategy and alert risk management personnel and management.

For working capital purposes, we invest in money market funds and maintain interest and non-interest bearing balances at banks and in our trading accounts with clearing brokers, which are classified as Cash and cash equivalents and Receivables from broker-dealers and clearing organizations, respectively, on the condensed consolidated statements of financial condition. These financial instruments do not have maturity dates; the balances are short term, which helps to mitigate our market risks. We also invest our working capital in short-term U.S. government securities, which are included in Financial instruments owned on the condensed consolidated statements of financial condition. Our cash and cash equivalents held in foreign currencies are subject to the exposure of foreign currency fluctuations. These balances are monitored daily and are hedged or reduced when appropriate and therefore not material to our overall cash position.

In the normal course of business, we maintain inventories of exchange-listed and other equity securities, and to a lesser extent, fixed income securities and listed equity options. The fair value of these financial instruments at September 30, 2019 and December 31, 2018 was \$2.7 billion and \$2.6 billion, respectively, in long positions and \$2.2 billion and \$2.5 billion, respectively, in short positions. We also enter into futures contracts, which are recorded on our condensed consolidated statements of financial condition within Receivable from brokers, dealers and clearing organizations or Payable to brokers, dealers and clearing organizations as applicable.

We calculate daily the potential losses that might arise from a series of different stress events. These include both single factor and multi factor shocks to asset prices based off both historical events and hypothetical scenarios. The stress calculations include a full recalculation of any option positions, non-linear positions and leverage. Senior management and the independent risk group carefully monitor the highest stress scenarios to help mitigate the risk of exposure to extreme events.

The purchase and sale of futures contracts requires margin deposits with a Futures Commission Merchant ("FCM"). The Commodity Exchange Act requires an FCM to segregate all customer transactions and assets from the FCM's proprietary activities. A customer's cash and other equity deposited with an FCM are considered commingled with all other customer funds subject to the FCM's segregation requirements. In the event of an FCM's insolvency, recovery may be limited to the Company's pro rata share of segregated customer funds available. It is possible that the recovery amount could be less than the total cash and other equity deposited.

Interest Rate Risk, Derivative Instruments

In the normal course of business, we utilize derivative financial instruments in connection with our proprietary trading activities. We do not designate our derivative financial instruments as hedging instruments under ASC 815 Derivatives and Hedging, other than derivatives used to reduce the impact of fluctuations in foreign exchange rates on our net investment in certain non-U.S. operations as discussed in Note 12 “Derivative Instruments” of Part I Item 1 “Financial Statements” of this quarterly report on Form 10-Q. Instead, we carry our derivative instruments at fair value with gains and losses included in trading income, net, in the accompanying condensed consolidated statements of comprehensive income. Fair value of derivatives that are freely tradable and listed on a national exchange is determined at their last sale price as of the last business day of the period. Since gains and losses are included in earnings, we have elected not to separately disclose gains and losses on derivative instruments, but instead to disclose gains and losses within trading revenue for both derivative and non-derivative instruments.

Futures Contracts. As part of our proprietary market making trading strategies, we use futures contracts to gain exposure to changes in values of various indices, commodities, interest rates or foreign currencies. A futures contract represents a commitment for the future purchase or sale of an asset at a specified price on a specified date. Upon entering into a futures contract, we are required to pledge to the broker an amount of cash, U.S. government securities or other assets equal to a certain percentage of the contract amount. Subsequent payments, known as variation margin, are made or received by us each day, depending on the daily fluctuations in the fair values of the underlying securities. We recognize a gain or loss equal to the daily variation margin.

Due from Broker-Dealers and Clearing Organizations. Management periodically evaluates our counterparty credit exposures to various brokers and clearing organizations with a view to limiting potential losses resulting from counterparty insolvency.

Foreign Currency Risk

As a result of our international market making and execution services activities and accumulated earnings in our foreign subsidiaries, our income and net worth are subject to fluctuation in foreign exchange rates. While we generate revenues in several currencies, the majority of our operating expenses are denominated in U.S. dollars. Therefore, depreciation in these other currencies against the U.S. dollar would negatively impact revenue upon translation to the U.S. dollar. The impact of any translation of our foreign denominated earnings to the U.S. dollar is mitigated, however, through the impact of daily hedging practices that are employed by the company.

Approximately 27.1% and 16.8% of our revenues for the three months ended September 30, 2019 and 2018, respectively, and approximately 24.9% and 12.0% for the nine months ended September 30, 2019 and 2018, respectively, were denominated in non-U.S. Dollar currencies. We estimate that a hypothetical 10% adverse change in the above-mentioned foreign exchange rates would have resulted in decreases in revenues of \$10.4 million and \$4.9 million for the three months ended September 30, 2019 and 2018, respectively, and \$28.1 million and \$17.2 million for the nine months ended September 30, 2019 and 2018, respectively.

Assets and liabilities of subsidiaries with non-U.S. dollar functional currencies are translated into U.S. dollars at period-end exchange rates. Income, expense and cash flow items are translated at average exchange rates prevailing during the period. The resulting currency translation adjustments are recorded as foreign exchange translation adjustment in our condensed consolidated statements of comprehensive income and changes in equity. Our primary currency translation exposures historically relate to net investments in subsidiaries having functional currencies denominated in the Euro and Pound Sterling.

Financial Instruments with Off Balance Sheet Risk

We enter into various transactions involving derivatives and other off-balance sheet financial instruments. These financial instruments include futures, forward contracts, and exchange-traded options. These derivative financial instruments are used to conduct trading activities and manage market risks and are, therefore, subject to varying degrees of market and credit risk. Derivative transactions are entered into for trading purposes or to economically hedge other positions or transactions.

Futures and forward contracts provide for delayed delivery of the underlying instrument. In situations where we write listed options, we receive a premium in exchange for giving the buyer the right to buy or sell the security at a future date at a contracted price. The contractual or notional amounts related to these financial instruments reflect the volume and activity and

do not necessarily reflect the amounts at risk. Futures contracts are executed on an exchange, and cash settlement is made on a daily basis for market movements, typically with a central clearing house as the counterparty. Accordingly, futures contracts generally do not have credit risk. The credit risk for forward contracts, options, and swaps is limited to the unrealized market valuation gains recorded in the statements of financial condition. Market risk is substantially dependent upon the value of the underlying financial instruments and is affected by market forces, such as volatility and changes in interest and foreign exchange rates.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, management has evaluated the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) or 15d-15(e) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”)) as of September 30, 2019. Based upon that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of September 30, 2019, our disclosure controls and procedures were effective to ensure information required to be disclosed by us in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the periods specified in the SEC’s rules and forms and is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

Our management, including our Chief Executive Officer and Chief Financial Officer, does not expect that our disclosure controls and procedures will prevent all errors and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, with the Company have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty and that breakdowns can occur because of simple error and mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people or by management override of controls.

The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Over time, a control may become inadequate because of changes in conditions or because the degree of compliance with the policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and may not be detected.

Changes to Internal Control over Financial Reporting

No change in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) occurred during the three months ended September 30, 2019 that has or is reasonably likely to materially affect, our internal control over financial reporting.

PART II - OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

The information required by this item is set forth in the “Legal Proceedings” section in Note 15 “Commitments, Contingencies and Guarantees” to the Company’s condensed consolidated financial statements included in Part I “Financial Information”, which is incorporated by reference herein.

ITEM 1A. RISK FACTORS

There have been no material changes to the Risk Factors described in Part I Item 1A. “Risk Factors” in our 2018 Form 10-K.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

Pursuant to the exchange agreement (the “Exchange Agreement”) entered into on April 15, 2015 by and among the Company, Virtu Financial and holders of Virtu Financial Units, Virtu Financial Units (along with the corresponding shares of our Class C Common Stock or Class D Common Stock, as applicable) may be exchanged at any time for shares of our Class A Common Stock or Class B Common Stock, as applicable, on a one-for-one basis, subject to customary conversion rate adjustments for stock splits, stock dividends and reclassifications.

On February 8, 2018, the Company’s board of directors authorized a new share repurchase program of up to \$50.0 million in Class A Common Stock and Virtu Financial Units by March 31, 2019. On July 27, 2018, the Company’s board of directors authorized the expansion of the Company’s share repurchase program, increasing the total authorized amount by \$50.0 million to \$100.0 million and extending the duration of the program through September 30, 2019. Since the inception of the program in February 2018, the Company has repurchased approximately 2.6 million shares of Class A Common Stock and Virtu Financial Units for approximately \$65.9 million. At September 30, 2019, the Company had approximately \$34.1 million remaining capacity for future purchases of shares of Class A Common Stock and Virtu Financial Units under the program. The share repurchase program expired on September 30, 2019. Pursuant to the program, the Company may repurchase shares from time to time in open market transactions, privately negotiated transactions or by other means. Repurchases may also be made under Rule 10b5-1 plans. The timing and amount of repurchase transactions will be determined by the Company’s management based on its evaluation of market conditions, share price, legal requirements and other factors. The program may be suspended, modified or discontinued at any time without prior notice. There are no assurances that any further repurchases will actually occur. The Company had no repurchases of its Class A Common Stock under the Company’s share repurchase program during the nine months ended September 30, 2019. Total share repurchases for the nine months ended September 30, 2019 were as follows:

Period	Total Number of Shares Purchased (1)	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
January 1, 2019 - January 31, 2019				
Class A Common Stock / Virtu Financial Units repurchases	208,610	\$ 26.43	—	\$ 34,138,832
February 1, 2019 - February 28, 2019				
Class A Common Stock / Virtu Financial Units repurchases	4,653	25.15	—	34,138,832
March 1, 2019 - March 31, 2019				
Class A Common Stock / Virtu Financial Units repurchases	111,932	24.72	—	34,138,832
April 1, 2019 - April 30, 2019				
Class A Common Stock / Virtu Financial Units repurchases	21,413	24.58	—	34,138,832
Class C Common Stock/ Virtu Financial Units repurchases	3,584	26.66	—	
May 1, 2019 - May 31, 2019				
Class A Common Stock / Virtu Financial Units repurchases	27,814	23	—	34,138,832
June 1, 2019 - June 30, 2019				
Class A Common Stock / Virtu Financial Units repurchases	41,625	22.02	—	34,138,832
July 1, 2019 - July 31, 2019				
Class A Common Stock / Virtu Financial Units repurchases	30,943	21.64	—	34,138,832
August 1, 2019 - August 31, 2019				
Class A Common Stock / Virtu Financial Units repurchases	26,710	18.63	—	34,138,832
September 1, 2019 - September 30, 2019				
Class A Common Stock / Virtu Financial Units repurchases	237	16	—	34,138,832
Total Common Stock / Virtu Financial Unit repurchases	477,521	\$ 23.21	—	\$ 34,138,832

(1) Includes the repurchase of 477,521 shares from employees in order to satisfy statutory tax withholding requirements upon the net settlement of equity awards for the nine months ended September 30, 2019.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None.

ITEM 4. MINE SAFETY DISCLOSURES

None.

ITEM 5. OTHER INFORMATION

None.

ITEM 6. EXHIBITS

Exhibit Number	Description
10.1	Amendment No. 1 dated October 9, 2019 to Credit Agreement, dated March 1, 2019, among Virtu Financial LLC, as Holdings, Impala Borrower LLC, as Acquisition Borrower, VFH Parent LLC, as Refinancing Borrower, the Lenders, Issuing Banks and Swingline Lender Party Hereto, and Jefferies Finance LLC, as Administrative Agent, and Jefferies Finance LLC and RBC Capital Markets, as Joint Lead Arrangers and Joint Bookrunners (incorporated herein by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 001-37352), filed on November 7, 2019).
10.2*†	Employment Agreement, dated as of April 17, 2019, by and between Virtu Financial Operating LLC and Brett Fairclough.
10.3*†	Letter agreements dated April 17, 2019, July 3, 2019 and September 3, 2019 between Virtu Financial Operating LLC and Brett Fairclough.
10.4*†	Employment Agreement, dated as of August 31, 2019, by and between Virtu Financial Operating LLC and Alex Ioffe.
10.5*†	Employment Agreement, dated as of March 25, 2011, by and between Virtu Financial Operating LLC and Hyungtaek (Henry) Kim.
10.6*†	Letter Agreement, dated as of August 15, 2019, between Virtu Financial Operating LLC and Hyungtaek (Henry) Kim.
10.7*†	Virtu Financial, Inc. 2015 Management Incentive Plan Employee Restricted Stock Unit and Common Stock Award Agreement, dated as of December 31, 2016, by and between Virtu Financial, Inc. and Brett Fairclough.
10.8*†	Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit and Common Stock Award Agreement, dated as of January 23, 2018, by and between Virtu Financial, Inc. and Brett Fairclough.
10.9*†	Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit and Common Stock Award Agreement, dated as of January 23, 2019, by and between Virtu Financial, Inc. and Brett Fairclough.
10.10*†	Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit Agreement, dated as of October 2, 2019, by and between Virtu Financial, Inc. and Alex Ioffe.
10.11*†	Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit and Common Stock Award Agreement, dated as of December 31, 2016, by and between Virtu Financial, Inc. and Hyungtaek (Henry) Kim.
10.12*†	Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit Agreement, dated as of April 22, 2019, by and between Virtu Financial, Inc. and Hyungtaek (Henry) Kim.
31.1*	Certification of Chief Executive Officer required by Rule 13a-14(a)/15d-14(a) under the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2*	Certification of Chief Financial Officer required by Rule 13a-14(a)/15d-14(a) under the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certification of 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 of 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*	XBRL Instance Document
101.SCH*	XBRL Taxonomy Extension Schema
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase
101.LAB*	XBRL Taxonomy Extension Label Linkbase
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase
101.DEF*	XBRL Taxonomy Extension Definition Document
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

* Filed herewith.

† Management contract or compensatory plan or arrangement.

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.

Virtu Financial, Inc.

DATE: November 8, 2019 By: /s/ Douglas A. Cifu
Douglas A. Cifu
Chief Executive Officer

DATE: November 8, 2019 By: /s/ Alex Ioffe
Alex Ioffe
Chief Financial Officer

Brett Fairclough
bfairclough@virtu.com

April 17, 2019

Dear Brett:

Virtu Financial Operating LLC, a Delaware limited liability company (together with all parents, affiliates and subsidiaries as the "Company"), is pleased to welcome you back to the United States in the New York Office reporting to Doug Cifu with a start date of April 1st, 2019, or such other date as is agreed between you and the Company. This letter is intended to describe the terms and conditions of our employment agreement, effective your repatriate date, and to welcome you to back.

This is a full-time regular position, and you agree to devote all of your business time and attention to the business of the Company and, where appropriate, its affiliates. Your starting salary will be the semi-monthly equivalent of \$160,452 per year, payable in accordance with our normal payroll procedures. For the avoidance of doubt, the position is exempt from any and all overtime laws.

In addition, after any applicable waiting period, you will be eligible for all employee benefits offered by the Company to employees in similar positions. The Company retains the right to modify or change its benefits and compensation policy from time to time, as it deems necessary. The Company also retains the right to assign your employment agreement, or second you to a Company affiliate or require that your employment be based in any office of the Company or its affiliates.

At-Will Employment Agreement

Either Virtu or I may terminate my employment at any time for any reason, or for no reason, by giving at least 15 days prior notice to the other, except for immediate termination by Virtu for Cause (defined below), as specified below. During that 15-day period, Virtu may require me to assist in a transition of my duties to others, or to be on paid leave or not to report to work at Virtu or perform any work duties, or be paid in lieu. My employment may be terminated by Virtu for Cause immediately upon written notice to me.

This at-will employment relationship cannot be modified by any express or implied contract, either orally or in writing, except as described below. The at-will relationship also cannot be modified by any Company policies, procedures or practices, nor by any subsequent promotions, increases in compensation, performance evaluations, or changes in job duties. The at-will employment relationship will apply to each position you hold with the Company and can only be amended by an express written agreement signed by an authorized Company officer explicitly stating that your employment is no longer at-will.

“Cause” means that any of the following occurs:

- (i) I am convicted of, or plead guilty or *nolo contendere* to, any criminal charge; or in the Company’s judgment, I commit any fraudulent, dishonest, immoral or unethical act with regard to the Company or its employees, independent contractors, officers, members, managers or any others;
- (ii) I am intoxicated or under the influence of illegal substances while performing my employment duties;
- (iii) I do not have any necessary license or qualification, or become subject to a decree or order, that prevents me from working for the Company;
- (iv) In the Company’s judgment, I violate (A) any regulatory or trading policy, procedure, requirement, rule or regulation of the Company, any exchange, regulatory agency or self-regulatory body with authority to govern or regulate me or the Company, (B) any material obligation in this Agreement or any other written agreement between me and the Company, or (C) any written company policy as stated in the Company’s employee policy manual (as amended or revised by the Company from time to time) or the Company’s Code of Conduct and Ethics;
- (v) I intentionally and wrongfully damage material assets of the Company;
- (vi) I intentionally and wrongfully disclose material confidential information of the Company; or
- (vii) I intentionally and wrongfully engage in any competitive activity which constitutes a breach of this Agreement and/or a breach of my duty of loyalty.

Company Policies and Agreements

As an employee of the Company, you will be expected to abide by the Company's rules, regulations, policies and practices as implemented or modified by the Company from time to time. You represent to the Company that you are fully qualified and have (or will promptly obtain) all required licenses, permits and authorizations to perform your duties, and that you are not subject to any employment agreement, non-competition covenant, or other restriction that prohibits or limits employee from performing your duties to the Company or restricts information you can provide to the Company. You will not perform any duties that require licensing, permits or authorizations until you have obtained the necessary licenses, permits or authorizations.

In addition, as a condition of your employment, we will ask you to sign a Proprietary Invention Assignment, Noncompetition and Confidentiality Agreement which requires, among other provisions, the assignment of patent rights to any invention made during your employment at the Company. Further, you will also be required to submit satisfactory documentation regarding your identification and right to work in the United States no later than three days after your employment begins.

Mutual Arbitration

You and the Company both knowingly and voluntarily agree to a pre-dispute arbitration clause so that should any controversy or dispute arise in connection with your employment, the cessation of your employment or the interpretation of this offer letter, you and the Company agree to the arbitration of any and all such claims at a site in New York, before a neutral panel of the American Arbitration Association or JAMS, as dictated by the underlying facts and circumstances giving rise to your claim(s). Where no such forum is required by regulatory rules or directed by a court of competent jurisdiction, such forum shall be selected at the sole discretion of the Company. In the course of any arbitration pursuant to this offer letter, you and the Company agree: (a) to request that a written award be issued by the panel, and (b) that each side is entitled to receive any and all relief they would be entitled to receive in a court proceeding, except that you agree to waive any claim or right you may have for punitive or other indirect or consequential damages. **YOU AND THE COMPANY KNOWINGLY AND VOLUNTARILY AGREE TO ENTER INTO THIS ARBITRATION CLAUSE AND TO WAIVE ANY RIGHTS THAT MIGHT OTHERWISE EXIST TO REQUEST A JURY TRIAL OR OTHER COURT PROCEEDING, EXCEPT THAT YOU AGREE THAT THE COMPANY MAY SEEK AND OBTAIN FROM A COURT ANY INJUNCTIVE OR EQUITABLE RELIEF NECESSARY TO MAINTAIN (AND/OR TO RESTORE) THE STATUS QUO OR TO PREVENT THE POSSIBILITY OF IRREVERSIBLE OR IRREPARABLE HARM PENDING FINAL RESOLUTION OF MEDIATION, ARBITRATION OR COURT PROCEEDINGS, AS APPLICABLE.** The agreement between you and the Company to arbitrate disputes includes, but is not limited to, any claims of unlawful discrimination and/or unlawful harassment under Title VII of the Civil Rights Act of 1964, the Age Discrimination in Employment Act, the Americans with Disabilities Act, the New York Civil Rights Laws, the New York Executive Law, the New York City Human Rights Law, or any other federal, state or local law relating to discrimination in employment and any claims relating to wage and hour claims and any other statutory or common law claims. If you are deemed an associated person under FINRA's rules, this agreement does not prohibit or restrict you from filing an arbitration claim in the FINRA arbitration forum as specified in FINRA rules.

Verification of Resume and Job Application

You hereby certify that the information contained in your resume and on any documents or in any statements that you have provided to the Company is true and correct to the best of your knowledge. You further authorize the Company to have such information verified and to contact individuals concerning your previous employment and any other pertinent information that they may have. Further, you release all parties and persons from any and all liability for any damages that may result from furnishing such information to the Company as well as from any use or disclosure of such information by the Company or any of its agents, employees, or representatives. You understand that any misinterpretation, falsification, or material omission of information on this application may result in your failure to receive an offer or, if you are hired, your immediate dismissal from employment, and that this offer is subject to revocation in the event that you have provided fraudulent information during the hiring process, or we discover adverse information in the course of our background check.

You also understand that all offers of employment are conditioned on the Company's receipt of satisfactory responses to reference requests, the provision of satisfactory proof of your identity and legal authority to work in the United States, and completion of a satisfactory background check.

You agree to keep confidential any non-public information regarding the Company, its members, officers, directors, employees or independent contractors and that you will not disclose any confidential proprietary information or trade secrets acquired during your employment with the Company and that this obligation shall continue after your employment with the Company ends. You also agree that you will perform your job duties to the best of your abilities at all times.

This letter and the Proprietary Invention Assignment, Noncompetition and Confidentiality Agreement, incorporated by reference herein, set forth the terms of your employment with the Company and supersede any and all prior and contemporaneous negotiations, representations, understandings and agreements, express or implied, whether written or oral. This letter may not be modified or amended, except by a written agreement signed by you and a Company officer.

If you have any questions regarding your employment here at Virtu Financial Operating LLC, please feel free to call me at (212) 418-0100.

Brett, we are excited about you coming home. We all look forward to seeing you soon!

Very truly yours,

/s/ Justin Waldie
Justin Waldie
SVP & General Counsel

AGREED TO AND ACCEPTED:

Signature: /s/ Brett Fairclough

Print Name: Brett Fairclough

Date: May 20, 2019

April 17, 2019

Brett Fairclough

bfairclough@virtu.com

Dear Brett:

We are pleased to confirm your permeant relocation from Singapore to New York on April 1st, 2019. The terms of your relocation including benefits and relocation support are outlined in this letter.

1. Immigration

Virtu will cover all costs associated with obtaining appropriate work, entry or residency authorization for you. This immigration support will be provided through a professional firm retained by Virtu. Out-of-pocket costs, such as passport photos, application fees, renewal fees, will be covered by Virtu. Specifically, the cost of the IR21 and the assessment of the untaxed wages, outstanding taxes from last year, all shares/options awarded (even unvested and unexercised), etc. will be paid upfront by Virtu. However; the total amount of SGD \$28,107.50 (your Singapore tax due of SGD \$59,857.23 less monies withheld of SGD \$31,749.73 from your March Singapore payroll) will be paid back by you to the company.

2. Tax Assistance

You will be responsible for reporting and payment of all taxes regarding your compensation. For the tax year of 2019, you will be provided with tax assistance in preparation of your returns through a Company-designated tax consultant. You will be required to submit on a timely basis all information required to complete your tax return(s). Failure to provide requested information to the tax consultant on a timely basis may result in late fees or penalties, which shall be for your account and will not be reimbursable by the Company.

3. Shipment/Storage of Household Goods

Virtu will provide assistance in the shipment or storage of personal items from Singapore to New York. Any reasonable excess baggage fees will be paid by Virtu, via the T&E Policy in place at the time the expense was incurred.

4. Temporary Living

The Company will cover temporary accommodation in New York for a maximum of 3 months from the date of your arrival in New York.

5. Travel

For your relocation to New York, the Company will cover the cost of one-way airfare from Singapore to New York using the most cost effective route. This trip will follow the Company's Travel Policy in effect at the time of the travel.

6. Time Off/Leave Entitlements

In addition to United States public holidays, you will follow the US time off/leave policy. In the event your move is mid-year, you will accrue vacation days based on the respective months spent in the two locations. Any carry forward will be calculated according to the global vacation policy in force at that time.

7. Payback Agreement

In the event of a voluntary resignation by the Employee, Virtu reserves the right to request reimbursement from Employee of all relocation expenses according to the following schedule, which you agree to repay within 30 days of Virtu's demand:

Length of service from effective date of transfer	Maximum percentage of relocation expense reimbursement obligation from Employee
Within 0-12 months	100%
Within 13-18 months	60%
Within 19-24 months	30%

In the event of a voluntary termination by you or a termination by the Company for Cause (as defined in your Employment Agreement or any other agreement with the Company or Company policy) any cost associated with return to Home City, such as airfare and shipping of goods, shall be borne by you. All relocation benefits will cease immediately upon the separation date as agreed by you and Virtu, unless specified otherwise.

Kindly indicate your acknowledgment of the above terms and conditions by signing and returning this letter.

Yours sincerely, Brett Fairclough

/s/ Thomas Merritt /s/ Brett Fairclough

Thomas Merritt
Chief Human Resources Officer

July 3, 2019

Brett Fairclough
bfairclough@virtu.com

ADDENDUM TO PRIL 2019 RELOCATION LETTER

Dear Brett:

As part of your relocation package to the New York Office, an additional benefit of a housing allowance has been added

Housing Allowance

The Company covered the costs of your temporary accommodation in New York for the month of April 2019. You then secured your own accommodations which triggered your agreed upon housing allowance. Virtu will provide housing assistance in the amount of \$10,000 per month for one full year (May 2019 – April 2020). This allowance will be paid through regular payroll schedule.

In the event of a voluntary termination by you or a termination by the Company for Cause (as defined in your Employment Agreement or any other agreement with the Company or Company policy) all relocation benefits will cease immediately upon the separation date as agreed by you and Virtu, unless specified otherwise.

Kindly indicate your acknowledgment of the above terms and conditions by signing and returning this letter.

Yours sincerely,

Brett Fairclough

Signature: /s/ Thomas M. Merritt

Signature: /s/ Brett Fairclough

Email: tmerritt@virtu.com

Email: bfairclough@virtu.com

Thomas Merritt
Chief Human Resources

Brett Fairclough
c/o Virtu Financial
One Liberty Plaza
165 Broadway
New York, NY 10006

September 3, 2019

Re: Singapore Relocation Letter Dated April 17, 2019 – Tax Equalization

Dear Brett:

We refer to the relocation letter (the "Relocation Letter") previously provided to you dated April 17, 2019 pursuant to which certain terms of your relocation were agreed between you and Virtu Financial Operating LLC and its subsidiaries (collectively, the "Company"). This letter supplements and clarifies certain provisions of the Relocation Letter with respect to certain tax arrangements agreed between you and the Company.

Notwithstanding anything to the contrary set forth in the Relocation Letter, the Company has agreed to pay the excess of the higher Singapore income tax due to the Inland Revenue Authority of Singapore over what the US-only tax would have been (the "Hypothetical US Taxes") with respect to the applicable period prior to your relocation. The settlement of such tax obligations shall be made on a gross basis, with the

Company paying the full amount of the non-US taxes on their due dates on your behalf, and you paying the Company the full amount of the Hypothetical US Taxes once they are calculable and would be due, or in such other manner as agreed between the parties in order to achieve the equivalent economic result.

VIRTU FINANCIAL OPERATING LLC

/s/ Justin Waldie
Justin Waldie
SVP & General Counsel

Acknowledged and agreed:

/s/ Brett Fairclough
Brett Fairclough

August 28, 2019

Alexander M. Ioffe
At the address on file

Dear Alex:

Virtu Financial Operating LLC, a Delaware limited liability company (together with all parents, affiliates and subsidiaries as the "Company"), is pleased to offer you the position of Chief Financial Officer, reporting to the Company's CEO, with a start date that is anticipated to be September 30, 2019, but no later than December 31, 2019 (the "Start Date"). This agreement is intended to describe the terms and conditions of our employment agreement, effective your Start Date, and to welcome you to the Company.

This is a full-time regular position, and you agree to devote substantially all of your business time and attention to the business of the Company and, where appropriate, its affiliates; provided, that, to the extent such activities do not significantly interfere with the performance of your duties, you shall be permitted to (i) manage your personal, financial and legal affairs and (ii) serve on civic or charitable boards and committees of such boards; provided, further, that you shall be permitted to continue to be engaged in, or provide services to, the businesses and activities set forth on Exhibit A in a manner consistent with your current time and attention commitment to such activities.

Your starting salary will be the semi-monthly equivalent of \$500,000 per year, payable in accordance with our normal payroll procedures and may be increased (but not decreased) on an annual basis as determined by the CEO together with the Compensation Committee (as defined below) in its sole discretion (such salary, as may be increased, the "Annual Salary"). For the avoidance of doubt, the position is exempt from any and all overtime laws.

Subject to the following paragraph, you will also be eligible for discretionary bonuses, in the sole and absolute discretion of the Company. You understand that, except as set forth below, all bonuses are discretionary and are not considered earned until final approval by the Company, and you must be an employee of the Company or one of its affiliates on the date that bonuses are paid by the Company for such year in order to be eligible for any bonus for such period.

You will be eligible to receive a \$1,500,000 guaranteed bonus for the 2019 performance year (your start date to December 31), which will be paid to you on December 31, 2019 (the "2019 Bonus") 50% in cash and 50% in shares of Class A common stock of Virtu ("Stock"). With respect to the years ended December 31, 2020, December 31, 2021 and December 31, 2022, you will be eligible to receive an annual bonus with a target amount and a maximum amount, based on the achievement of annual performance targets established in the sole and absolute discretion of the Compensation Committee (the "Compensation Committee") of the Board of Directors of Virtu Financial, Inc. ("Virtu") together with the Company's CEO, in each case provided you are in Virtu's employment on the date such bonus is paid and that no notice to terminate your employment has been given or received by that date. The target and maximum amounts with respect to the year ended December 31, 2020 shall be \$1,750,000 and \$2,500,000, respectively, and the target and maximum amounts with respect to the years ended December 31, 2021 and December 31, 2022 shall be \$1,500,000 and \$2,500,000, respectively. Thereafter, you will be eligible for discretionary performance bonuses. Any discretionary bonus payable (other than for 2019, which will be paid as described above) may be paid in a combination of cash and long-term equity, and the proportion between cash and long-term equity will be entirely within the discretion of the Company but is expected to be paid 40% in cash and 60% in stock and restricted stock units in Virtu, which shall be subject to the terms and conditions of the Amended and Restated 2015 Virtu Financial, Inc. Management Incentive Plan (as the same may be amended or amended and restated from time to time, the "Plan") and a separate award agreement. Any performance bonus will be paid at a time such that it qualifies as a "short-term deferral" under Section 409A.

In addition, commencing with calendar year 2020, you shall be eligible to receive an equity award at the beginning of each calendar year during your employment (each such grant, an "Annual Equity Award") as determined by the Compensation Committee together with the Company's CEO. It is the current intention of the Board that such Annual Equity Award will be in the form of restricted shares of Stock; 50% of such shares shall vest on the last day of the calendar year to which such award relates and the remaining 50% shall vest on the last day of the subsequent calendar year, subject in all cases to your continued employment through the applicable vesting date.

Shortly following the commencement of your employment with the Company, you will be granted restricted stock units of Virtu in an amount equal to \$3,000,000 divided by the per share issue price (as defined in the applicable award agreement) on the Start Date which is granted in recognition of equity forfeited in connection with your departure from your prior employer and is vesting in three equal annual installments on each of the first three anniversaries of the Start Date (the "Sign On RSU"). The Sign On RSU will be issued pursuant to the Plan and will be subject to the terms and conditions of the Plan and a separate award agreement attached hereto as Exhibit B, which shall include the approval of the Compensation Committee, and which shall also provide that in the event of your termination other than for Cause or resignation for Good Reason (x) the next scheduled vesting installment prorated for the number of days elapsed during the applicable vesting period, plus (y) the full next installment of RSUs scheduled for vesting, if any, shall together be deemed vested immediately upon such termination (the "Sign On RSU Acceleration").

In addition, after any applicable waiting period, you will be eligible for all employee benefits offered by the Company to employees in similar positions, provided that your paid time off shall be five weeks per year per annum. The Company retains the right to modify or change its benefits and compensation policy from time to time, as it deems necessary, other than those provided for you in this employment agreement. The Company also retains the right to assign your employment agreement to a Company affiliate, subject to the terms and conditions of this Agreement. Within 30 days of your Start Date, the Company will reimburse you for legal fees incurred in connection with your commencement of employment including the negotiation and drafting of this Agreement and advice with respect thereto and the related Exhibits up to a maximum of Twenty Thousand Dollars (\$20,000), which amounts may be reimbursed to you or paid directly to the service provider, in each case upon presentation of invoices.

At-Will Employment Agreement

Either Virtu or you may terminate your employment at any time for any reason, or for no reason, by giving at least 60 days' prior notice to the other, except for immediate termination by Virtu for Cause (defined below), as specified below, or your resignation for Good Reason under the rules provided below for such resignation. During that 60-day period, Virtu may require you to assist in a transition of your duties to others, or to be on

paid leave or not to report to work at Virtu or perform any work duties, or be paid in lieu. Your employment may be terminated by Virtu for Cause immediately upon written notice to you, subject to the cure provisions below.

This at-will employment relationship cannot be modified by any express or implied contract, either orally or in writing, except as described below. The at-will relationship also cannot be modified by any Company policies, procedures or practices, nor by any subsequent promotions, increases in compensation, performance evaluations, or changes in job duties. The at-will employment relationship will apply to each position you hold with the Company and can only be amended by an express written agreement signed by an authorized Company officer explicitly stating that your employment is no longer at-will.

Compensation When Employment Ends.

When your employment ends, irrespective of the reason, the Company shall pay you: (i) unpaid salary earned through the date of termination; (ii) compensation at the rate of the salary for any vacation time earned but not used as of the date your employment terminates in accordance with Company policies as then in effect; (iii) reimbursement, in accordance with the Company's policies and procedures, for business expenses incurred by you but not yet paid to you as of the date your employment terminates; (iv) without duplication the and (iv) all other payments, benefits or fringe benefits to which you are entitled under the terms of the applicable arrangements and/or applicable law (all of the foregoing clauses (i)-(iv) collectively, the "Accrued Obligations").

Termination of Employment Without Cause or for Good Reason; Death.

If (1) the Company terminates your employment without Cause, or (2) you resign for Good Reason, then you shall also receive the following termination payments and benefits on or beginning with the first payroll whose cutoff date follows the date your employment ends or according to such timing as otherwise set forth below (collectively, the "Severance Benefits"):

(i) an amount equal to the sum of twelve (12) months' Annual Salary, at the rate in effect immediately prior to termination (or, if higher, the highest rate in effect within the preceding six months) and any then unpaid guaranteed bonuses in accordance with the terms of this Agreement, payable in a single lump sum on the next payroll date whose cutoff follows the day the Release (as defined below) becomes irrevocable (or, if earlier, within five business days following irrevocability), except where payment is delayed according to the timing relating to the Release Period as set forth below or pursuant to Section 409A (as defined below) (such date, the "Severance Payment Date");

(ii) in addition to the Accrued Obligations, any bonus that the Company had definitively determined to pay to you and which was authorized and approved in accordance with the Company's policies and procedures but which had not yet been paid to you as of the date of your termination, payable in a lump sum at the same date as provided under clause (i) above;

(iii) the Sign On RSU Acceleration; and

(iv) the employer portion of COBRA continuation coverage for you and any covered dependents will continue to be paid in accordance with the Company's regular payroll practices, so long as you have not become actually covered by the medical plan of a subsequent employer during any such month and are otherwise entitled to COBRA continuation coverage, with such payments for up to a maximum of twelve (12) months following the date of termination. After such period, you are responsible for paying the full cost for any additional COBRA continuation coverage to which you are then entitled.

If such termination without Cause or resignation for Good Reason is upon or within 12 months following a Change in Control (as defined in the Plan as of the date hereof) or such termination is in anticipation of a Change in Control towards which material steps have been taken at the time of such termination and such Change in Control actually occurs, you will also receive a pro-rated bonus at target in cash for the year of termination (based on days of employment elapsed in such year) and a further bonus component in cash (the "Change in Control Bonus") consisting of the highest of (w) the target bonus for the year of termination (and if no target bonus has been established for such year, the most recent year for which a target bonus was established), (x) the prior year's actual discretionary bonus, or (y) the average of the two prior year's actual discretionary bonuses. For the avoidance of doubt, the discretionary bonus shall include amounts whether paid in cash, stock, restricted stock units or other consideration. All payments under this paragraph will be paid in a single lump sum on the Severance Payment Date except for those described in clause (B), which shall continue to be paid in accordance with the Company's regular payroll practice.

If your employment ends as a result of death or disability (under the applicable long-term disability plan), your estate or designated beneficiaries will receive the target bonus for the year of death, in addition to the Accrued Obligations, the Sign On RSU and the 2019 Bonus (to the extent not already paid).

Notwithstanding anything else herein to the contrary, the Company's obligation to pay the Severance Benefits and the Change in Control Bonus shall be conditioned on the receipt of a customary release and waiver of all claims (the "Release") in a form substantially consistent with the Company's form separation agreement. Such release and waiver must be executed and become irrevocable within sixty (60) days following the date your employment ends (the "Release Period"). If such Release Period ends in the calendar year subsequent to the calendar year in which your employment ends and any Severance Benefits or the Change in Control Bonus is subject to Section 409A, payment of such covered amounts will not be made earlier than the first business day of that subsequent year.

For purposes of this agreement, "Cause" means that any of the following occurs:

- (i) You are convicted of, or plead guilty or *nolo contendere* to, any felony or you commit any fraudulent or illegal act with regard to the Company or its employees, independent contractors, officers, members or managers;
- (ii) You are repeatedly intoxicated or under the influence of illegal substances while performing your employment duties;
- (iii) You do not have any necessary license or regulatorily required qualification, or become subject to a decree or order, in each case, from a regulatory agency, in each case, that prevents you from working for the Company;
- (iv) You (A) violate any material regulatory or trading policy, procedure, requirement, rule or regulation of the Company, any

exchange, regulatory agency or self-regulatory body with authority to govern or regulate you or the Company, (B) violate any material obligation or are in breach of any representation in this Agreement (including for the avoidance of doubt any exhibit hereto), or (C) violate any material written company policy as stated in the Company's employee policy manual (as amended or revised by the Company from time to time) or the Company's Code of Conduct and Ethics; provided, that any act, or failure to act, based upon the instructions of the Board or the Chief Executive Officer or reasonably based upon the written advice of counsel for the Company shall not be considered a violation under clauses (A) or (C) herein;

- (v) You intentionally and wrongfully damage material assets of the Company;
- (vi) You intentionally and wrongfully disclose material confidential information of the Company; or
- (vii) You intentionally and wrongfully engage in any competitive activity which constitutes a material breach of this Agreement, the Proprietary Invention Assignment, Noncompetition and Confidentiality Agreement, and/or a breach of your duty of loyalty;

provided that Cause shall not apply to any act or omission described above unless the Company provides written notice of the act or omission (which, except in the case of an allegation of Cause that is subject to cure, may be provided at the time of termination) and, with respect to clauses (iii), (iv), or (vi), if curable, the act or omission is cured within 10 days after receipt of such notice and does not recur within 180 days after the initial act or omission.

For purposes of this agreement, "*Good Reason*" means:

- (i) that you, without your express, written consent, have incurred an adverse change in your title or reporting relationship such that you no longer report to the Chief Executive Officer of the ultimate parent company of Virtu or a material reduction in authority, duties or responsibilities at the Company or a successor employer relative to your authority, duties or responsibilities as of your Start Date (with respect to a termination in connection with a Change in Control, relative to your authority, title, duties or responsibilities immediately prior to the Change in Control) or are being required to report other than to the CEO or the Board or a material reduction in your Annual Salary;
- (ii) that you, without your express, written consent, have suffered a material breach of this Agreement by the Company or a successor employer; or
- (iii) that you, without your express, written consent, have been required to relocate or perform your primary services (other than through routine and reasonable travel) more than thirty (30) miles from your then current place of employment in order to continue to perform the duties and responsibilities of your position.

Your termination of employment will not be for Good Reason unless (1) you notify the Company in writing of the existence of the condition that you believe constitutes Good Reason within 30 days of the initial existence of such condition (which notice specifically identifies such condition), (2) the Company fails to remedy such condition within thirty (30) days after the date on which it receives such notice (the "Remedial Period"), and (3) so long as the Company acknowledges in writing the existence of Good Reason, you actually terminate employment within 30 days following the expiration of the Remedial Period and before the Company remedies such condition. If the Company does not acknowledge in writing the existence of Good Reason, you shall only be required to resign for Good Reason within two years of the end of the Remedial Period.

To the extent (i) any payments to which you become entitled under this agreement, or any agreement or plan referenced herein, in connection with your termination of employment with the Company, constitute deferred compensation subject to Section 409A of the Internal Revenue Code ("Section 409A") and (ii) you are deemed at the time of such termination of employment to be a "specified" employee under Section 409A, then such payment or payments shall not be made or commence until the earlier of (i) the expiration of the 6-month period measured from the date of your "separation from service" (as such term is at the time defined in regulations under Section 409A) with the Company and (ii) the date of your death following such separation from service, provided, however, that such deferral shall be effected only to the extent required to avoid adverse tax treatment to you, including (without limitation) the additional twenty-percent (20%) tax for which you would otherwise be liable under Section 409A(a)(1)(B) in the absence of such deferral. Upon the expiration of the applicable deferral period, any payments which would have otherwise been made during that period (whether in a single sum or in installments) in the absence of this paragraph shall be paid to you or your beneficiary in one lump sum (without interest). To the extent that any provision of this Agreement is ambiguous as to its exemption or compliance with Section 409A, the provision will be read in such a manner so that (i) all payments hereunder are exempt from Section 409A to the maximum permissible extent and, (ii) for any payments where such construction is not tenable, so that those payments comply with Section 409A to the maximum permissible extent. Payments pursuant to this Agreement (or referenced in this Agreement), and each installment thereof, are intended to constitute separate payments for purposes of Section 1.409A-2(b)(2) of the regulations under Section 409A. All references to termination of employment or similar terms shall be deemed to mean separation from service within the meaning of Section 409A. Notwithstanding anything to the contrary herein, except to the extent any expense, reimbursement or in-kind benefit provided pursuant to this Agreement does not constitute a "deferral of compensation" within the meaning of Section 409A: (x) the amount of expenses eligible for reimbursement or in-kind benefits provided to you during any calendar year will not affect the amount of expenses eligible for reimbursement or in-kind benefits provided to you in any other calendar year, (y) the Company will reimburse you for expenses for which you are entitled to be reimbursed on or before the last day of the calendar year following the calendar year in which the applicable expense is incurred or, if earlier, within 30 days after you have substantiated the expense, and (z) the right to payment or reimbursement or in-kind benefits hereunder may not be liquidated or exchanged for any other benefit.

Company Policies and Agreements

As an employee of the Company, you will be expected to abide by the Company's rules, regulations, policies and practices as implemented or modified by the Company from time to time. You represent to the Company that you are fully qualified and have (or will promptly obtain) all required licenses and permits to perform your duties. You will not perform any duties that require licensing or permits until you have obtained the necessary licenses or permits.

In addition, as a condition of your employment, we will ask you to sign a Proprietary Invention Assignment, Noncompetition and Confidentiality Agreement attached hereto (the "Proprietary Agreement"), which requires, among other provisions, the assignment of patent rights to any invention made during your employment at the Company. Further, you will also be required to submit satisfactory documentation regarding your identification and right to work in the United States no later than three days after your employment begins.

Mutual Arbitration

You and the Company both knowingly and voluntarily agree to a pre-dispute arbitration clause so that should any controversy or dispute arise in connection with your employment, the cessation of your employment or the interpretation of this agreement, you and the Company agree to the arbitration of any and all such claims at a site in New York, before a neutral panel of the American Arbitration Association or JAMS, as dictated by the underlying facts and circumstances giving rise to your claim(s). In the course of any arbitration pursuant to this agreement, you and the Company agree: (a) to request that a written award be issued by the panel, and (b) that each side is entitled to receive any and all relief they would be entitled to receive in a court proceeding, except that you agree to waive any claim or right you may have for punitive or other indirect or consequential damages. **YOU AND THE COMPANY KNOWINGLY AND VOLUNTARILY AGREE TO ENTER INTO THIS ARBITRATION CLAUSE AND TO WAIVE ANY RIGHTS THAT MIGHT OTHERWISE EXIST TO REQUEST A JURY TRIAL OR OTHER COURT PROCEEDING, EXCEPT THAT YOU AGREE THAT THE COMPANY MAY SEEK AND OBTAIN FROM A COURT ANY INJUNCTIVE OR EQUITABLE RELIEF NECESSARY TO MAINTAIN (AND/OR TO RESTORE) THE STATUS QUO OR TO PREVENT THE POSSIBILITY OF IRREVERSIBLE OR IRREPARABLE HARM PENDING FINAL RESOLUTION OF MEDIATION, ARBITRATION OR COURT PROCEEDINGS, AS APPLICABLE.** The agreement between you and the Company to arbitrate disputes includes, but is not limited to, any claims of unlawful discrimination and/or unlawful harassment under Title VII of the Civil Rights Act of 1964, the Age Discrimination in Employment Act, the Americans with Disabilities Act, the New York Civil Rights Laws, the New York Executive Law, the New York City Human Rights Law, or any other federal, state or local law relating to discrimination in employment and any claims relating to wage and hour claims and any other statutory or common law claims. If you are deemed an associated person under FINRA's rules, this agreement does not prohibit or restrict you from filing an arbitration claim in the FINRA arbitration forum as specified in FINRA rules.

Offset and Mitigation

No payments due you hereunder shall be subject to any offset for obligations owed by you to the Company or its affiliates (except as required by applicable law). In no event shall you be obligated to seek other employment or take any other action by way of mitigation of the amounts payable to you under any of the provisions of this Agreement.

Indemnification

The Company will indemnify you to the fullest extent permitted by law and the Company's articles of incorporation, bylaws and/or other organizational documents.

280G Cutback

(a) Anything in this Agreement to the contrary notwithstanding, in the event that the Accounting Firm shall determine that receipt of all Payments would subject you to tax under Section 4999 of the Code, the Accounting Firm shall determine whether some amount of Agreement Payments meets the definition of "Reduced Amount." If the Accounting Firm determines that there is a Reduced Amount, then the aggregate Agreement Payments shall be reduced to such Reduced Amount.

(b) If the Accounting Firm determines that the aggregate Agreement Payments should be reduced to the Reduced Amount, the Company shall promptly give you notice to that effect and a copy of the detailed calculation thereof, and you may then elect, in your sole discretion, which and how much of the Agreement Payments shall be eliminated or reduced (as long as after such election the Present Value of the aggregate Agreement Payments equals the Reduced Amount). All determinations made by the Accounting Firm under this Paragraph shall be binding upon the Company and you. In connection with making determinations under this Paragraph, the Accounting Firm shall take into account the value of any reasonable compensation for services to be rendered by you before or after the Change in Control, including any non-competition provisions that may apply to you and the Company shall cooperate in the valuation of any such services, including any non-competition provisions.

(c) As a result of the uncertainty in the application of Section 4999 of the Code at the time of the initial determination by the Accounting Firm hereunder, it is possible that amounts will have been paid or distributed by the Company to or for your benefit pursuant to this Agreement which should not have been so paid or distributed (each, an "Overpayment") or that additional amounts which will have not been paid or distributed by the Company to or for your benefit pursuant to this Agreement could have been so paid or distributed (each, an "Underpayment"), in each case, consistent with the calculation of the Reduced Amount hereunder. In the event that the Accounting Firm, based upon the assertion of a deficiency by the Internal Revenue Service against either the Company or you which the Accounting Firm believes has a high probability of success determines that an Overpayment has been made, any such Overpayment paid or distributed by the Company to or for your benefit shall be repaid by you to the Company together with interest at the applicable federal rate provided for in Section 7872(f)(2) of the Code; provided, however, that no such repayment shall be required if and to the extent such deemed repayment would not either reduce the amount on which you are subject to tax under Section 1 and Section 4999 of the Code or generate a refund of such taxes. In the event that the Accounting Firm, based upon controlling precedent or substantial authority, determines that an Underpayment has occurred, any such Underpayment shall be promptly paid by the Company to or for your benefit together with interest at the applicable federal rate provided for in Section 7872(f)(2) of the Code. All fees and expenses of the Accounting Firm in implementing the provisions of this Paragraph shall be borne by the Company.

(d) Definitions. The following terms shall have the following meanings for purposes of this Paragraph. (1) A "Payment" shall mean any payment or distribution in the nature of compensation (within the meaning of Section 280G(b)(2) of the Code) to or for your benefit, whether paid or payable pursuant to this Agreement or otherwise; (2) "Agreement Payment" shall mean a Payment paid or payable pursuant to this Agreement (disregarding this Paragraph); (3) "Net After-Tax Receipt" shall mean the Present Value of a Payment net of all taxes imposed on you with respect thereto under Sections 1 and 4999 of the Code and under applicable state and local laws, determined by applying the highest marginal rate under Section 1 of the Code and under state and local laws which applied to your taxable income for the immediately preceding taxable year, or such other rate(s) as you shall certify, in your sole discretion, as likely to apply to you in the relevant tax year(s); (4) "Accounting Firm" shall mean the Company's regular auditor, unless you object to the use of that auditor, in which event the auditor shall be an independent auditor or other independent professional services organization that is a certified public accounting firm recognized as an expert in determinations and calculations for purposes of Section 280G of the Code selected by the Company and reasonably acceptable to you, which auditor shall not, without your consent, be a firm serving as accountant or auditor for the individual, entity or group effecting the Change in Control (the "Auditor"); (5) "Parachute Value" of a Payment shall mean the present value as of the date of the change of control for purposes of Section 280G of the Code of the portion of such Payment that constitutes a "parachute payment" under Section 280G(b)(2), as determined by the Accounting Firm for purposes of determining whether and to what extent the Excise Tax will apply to such Payment; and (6) "Reduced Amount" shall mean the amount of Agreement Payments that (x) has a Present Value that is less than the Present Value of all Agreement Payments and (y) results in aggregate Net After-Tax Receipts for all Payments that

are greater than the Net After-Tax Receipts for all Payments that would result if the aggregate Present Value of Agreement Payments were any other amount that is less than the Present Value of all Agreement Payments.

Verification of Resume and Job Application

You hereby certify that the information contained in your resume and on any documents or in any statements that you have provided to the Company is true and correct to the best of your knowledge. You further authorize the Company to have such information verified and to contact individuals concerning your previous employment and any other pertinent information that they may have. Further, you release the Company from any and all liability for any damages that may result from receipt of such information to the Company as well as from any use or disclosure of such information by the Company or any of its agents, employees, or representatives. You understand that any falsification or material omission of information on your job application may result in your failure to receive an offer or, if you are hired, your immediate dismissal from employment, and that this offer is subject to revocation in the event that you have provided fraudulent information during the hiring process, or we discover adverse information in the course of our background check.

You also understand that all offers of employment are conditioned on the Company's receipt of satisfactory responses to reference requests, the provision of satisfactory proof of your identity and legal authority to work in the United States, and completion of a satisfactory background check.

To the extent set forth in the attached Proprietary Invention Assignment, Noncompetition and Confidentiality Agreement, you agree to keep confidential any non-public information regarding the Company, its members, officers, directors, employees or independent contractors and that you will not disclose any confidential proprietary information or trade secrets acquired during your employment with the Company and that this obligation shall continue after your employment with the Company ends.

This agreement and the Proprietary Invention Assignment, Noncompetition and Confidentiality Agreement, incorporated by reference herein, set forth the terms of your employment with the Company and supersede any and all prior and contemporaneous negotiations, representations, understandings and agreements, express or implied, whether written or oral. This agreement may not be modified or amended, except by a written agreement signed by you and a Company officer.

If you have any questions regarding your employment here at the Company, please feel free to call me at (212) 418-0111.

Alex, we are excited about you joining our team. We all look forward to working with you!

Very truly yours,

/s/ Douglas A. Cifu
Douglas A. Cifu
Chief Executive Officer

AGREED TO AND ACCEPTED:

Signature: /s/ Alexander Ioffe

Print Name: Alexander Ioffe

Date: August 31, 2019

March 25, 2011

Mr. Hyungtaek (Henry) Kim
c/o The Execu/Search Group
675 Third Avenue - 5th Floor
New York, NY 10017-5731

Dear Henry:

Virtu Financial, LLC (the "Firm") is pleased to offer you employment with the Firm as a Financial Operations Analyst on the following terms and conditions:

1. Description

You will be responsible for administering and monitoring the financial system in order to ensure that the finances are maintained in an accurate and timely manner; overseeing the accounts payable and accounts receivable systems in order to ensure complete and accurate records of all moneys; managing employee files and records in order to ensure accurate payment of benefits and allowances; managing the bi-weekly payroll in order to ensure that employees are paid in an accurate and timely manner; provide efficient and effective office management. Other job duties may be added based on an evaluation of your performance. The position reports to Anthony Manganiello, Chief Financial Officer.

2. Probationary Status

Your continued employment with the Company will be reviewed and evaluated at the end of your six (6) month anniversary with the Company.

3. Compensation

You will receive an annual salary of \$75,000.00 less any applicable deductions and withholdings, payable on a bi-weekly basis.

Provided that you are an Employee in Good Standing on the date bonus payday for fiscal year 2011, you will receive a pro-rated fiscal year-end bonus based on an evaluation of performance.

For all fiscal years thereafter, provided that you are an Employee in Good Standing on each fiscal year bonus payday, you may receive discretionary bonus compensation based on the Firm's overall performance and your performance. The award of a bonus in year one does not guarantee or imply the award of a bonus in any future years. For the avoidance of doubt, all discretionary bonus arrangements as set out above are conditional upon your being an Employee in Good Standing on the relevant bonus pay days and no entitlement to bonus accrues pro rata.

4. Benefits

You shall receive standard benefits for employees with commensurate responsibilities and three (3) weeks of paid vacation annually.

5. Agreement Not to Recruit

In consideration for the above offer of employment and the financial package, you agree for the duration of your employment and for a period of 18 months thereafter, you will not directly or indirectly, solicit any person who is employed by Virtu Financial or its affiliates to (a) terminate his or her employment with the Firm, (b) accept employment with anyone other than Virtu Financial, or (c) in any manner interfere with the business of Virtu Financial. You also agree that for the duration of your employment and for a period of 18 months thereafter, you will not directly or indirectly hire away any Virtu Financial employee.

As a condition to your Employment, you agree to abide by the terms of the Firm's standard Non-Compete, Non-Solicitation, Confidentiality and Proprietary Inventions Assignment Agreement (the "Inventions Agreement"), that is attached hereto.

6. Employment at Will

Nothing contained herein shall destroy your **employee at-will** status at Virtu Financial. At all times, you will be considered an employee-at-will and your employment may be terminated at any time by the Firm with or without notice, with or without cause or for no reason at all. Notwithstanding your at-will status, the terms of this offer letter will govern as to the matters addressed herein.

7. Compliance With Firm Policies

While you are employed by the Firm, you will be entitled to the benefit of, and your employment will be subject to, all of the Firm's then current policies, rules, regulations and practices. You are expected to review the Firm's policy and compliance manual(s) currently in effect or implemented hereafter, and you are expected to conduct yourself in accordance with these policies.

8. Commencement

Your employment with Virtu Financial will commence on [to be determined]. You have represented to us that your acceptance of this offer does not, and will not, cause you to violate any current contract or commitment, and it is a condition of your employment that there are no constraints on your ability to perform the duties of the position offered.

9. Arbitration

You and the Firm both knowingly and voluntarily agree to a pre-dispute arbitration clause so that should any controversy or dispute arise in connection with your employment, the cessation of your employment or the interpretation of this offer letter, you and the Firm agree to arbitration any and all such claims at a site in New York, before a neutral panel of the American Arbitration Association or JAMS, as dictated by the underlying facts and circumstances giving rise to your claim(s). Where no such forum is required by regulatory rules or directed by a court of competent jurisdiction, such forum shall be selected at the sole discretion of the Firm. In the course of any arbitration pursuant to this offer letter, you and the Firm agree: (a) to request that a written award be issued by the panel, and (b) that each side is entitled to receive any and all relief they would be entitled to receive in a court proceeding. You and the Firm knowingly and voluntarily agree to enter into this arbitration clause and to waive any rights that might otherwise exist to request a jury trial or other court proceeding, except that you agree that Virtu Financial has the right to seek injunctive or other equitable relief from a court to enforce Section 4 of this offer letter. The Parties' agreement to arbitrate disputes includes, but is not limited to, any claims of unlawful discrimination and/or unlawful harassment under Title VII of the Civil Rights Act of 1964, the Age Discrimination in Employment Act, the Americans with Disabilities Act, the New York Civil Rights Laws, the New York Executive Law, the New York City Human Rights Law, or any other federal, state or local law relating to discrimination in employment and any claims relating to wage and hour claims and any other statutory or common law claims.

10. Miscellaneous

You agree to transfer all securities registrations and to become registered in such capacities as the Firm may require from time to time for the performance of your job duties.

You represent that there has not been, nor is there pending any complaint or regulatory, self regulatory, administrative, civil or criminal inquiry, proceeding or other matter relating to your prior employment or other activity.

Any employment with the Firm is subject to completion of a customary post-offer background check to be completed by a third party. The results of any such background check can be made available to you as provided under applicable state and federal law.

This agreement shall be governed and interpreted under the laws of the State of New York.

Please indicate your agreement to accept employment by Virtu Financial on the above terms by signing the enclosed copy of this letter and returning it to my attention. If you have any questions, please do not hesitate to call me. I look forward to having you join our organization.

Very truly yours,

/s/ Christopher Concannon

Christopher Concannon
Partner

Read, accepted and agreed to:

Hyungtaek (Henry) Kim

Date

August 15, 2019

Henry Kim
13c Riverview Cir
North Bergen, NJ 07047

Dear Henry,

This amendment (the "August 2019 Amendment") will modify certain aspects of your employment from your current offer letter, dated March 25, 2011 (the "Offer") between you and Virtu Americas LLC and collectively with Virtu Financial, Inc. and its subsidiaries referred to as "Virtu" or the "Company". This August 2019 Amendment supersedes all previous discussions and agreements, written or verbal, in the Offer and constitutes the entire agreement between you and the Company solely with respect to the subject matter set forth herein. All other terms in the Offer between you and the Company not described herein shall remain in full force and effect.

Annual Salary Rate **\$175,000**

Your annual salary will continue at a rate of \$175,000. Salary payments are currently made 2 times per month.

2019 Guaranteed Total Bonus **\$500,000**

You will be eligible to receive a \$500,000 guaranteed bonus for the 2019 performance year (January 1 to December 31), provided you are in Virtu's employment on the date such bonus is paid and that no notice to terminate your employment has been given or received by that date. Your guaranteed bonus may be paid in the form of cash, deferred cash and/or in long-term equity or a combination of all three, and the proportion between cash, deferred cash and/or long-term equity will be entirely within the discretion of Virtu. The bonus shall be paid in line with the Company's year-end bonus payment schedule.

If your employment is terminated by Virtu without Cause (as defined below), prior to the date on which your 2019 bonus is paid, conditioned on your providing Virtu with a release in a form acceptable to Virtu, you will receive the guaranteed bonus in a cash lump sum, no later than 60 days after your employment is terminated, subject to Internal Revenue Code Section 409A. If your employment is terminated for Cause or (1) if you resign your employment; or (2) provide notice that you are resigning your employment prior to the date such guaranteed bonus is paid, you shall not be entitled to any guaranteed bonus.

All amounts paid pursuant to this August 2019 Amendment shall be less any taxes that are required to be withheld under any law, rule or regulation. You understand and agree that your employment with Virtu will continue to be "at will", meaning that you or Virtu may terminate your employment at any time, with or without Cause.

"Cause" means that any of the following occurs:

- (i) You are convicted of, or plead guilty or nolo contendere to, any criminal charge; or in the Company's judgment, you commit any fraudulent, dishonest, immoral or unethical act with regard to the Company or its employees, independent contractors, officers, members, managers or any others;
- (ii) You are intoxicated or under the influence of illegal substances while performing your employment duties;
- (iii) You do not have any necessary license or qualification, or become subject to a decree or order, that prevents you from working for the Company;
- (iv) In the Company's judgment, you violate (A) any regulatory or trading policy, procedure, requirement, rule or regulation of the Company, any exchange, regulatory agency or self-regulatory body with authority to govern or regulate me or the Company, (B) any material obligation in this Agreement or any other written agreement between me and the Company, or (C) any written company policy as stated in the Company's employee policy manual (as amended or revised by the Company from time to time) or the Company's Code of Conduct and Ethics;
- (v) You intentionally and wrongfully damage material assets of the Company;
- (vi) You intentionally and wrongfully disclose material confidential information of the Company; or
- (vii) You intentionally and wrongfully engage in any competitive activity which constitutes a breach of this Agreement, the Proprietary Invention Assignment, Noncompetition and Confidentiality Agreement, and/or a breach of your duty of loyalty.

Thank you for all of your efforts to date, and we look forward to your continued successes.

Sincerely yours,
VIRTU FINANCIAL INC.

I acknowledge and accept the terms of this August 2019 Amendment.

/s/ Thomas Merritt_____

/s/ Henry Kim_____

By: Thomas M. Merritt Henry Kim
Chief Human Resources Officer

VIRTU FINANCIAL, INC.
2015 MANAGEMENT INCENTIVE PLAN
EMPLOYEE
RESTRICTED STOCK UNIT AND COMMON STOCK AWARD AGREEMENT

THIS RESTRICTED STOCK UNIT AND COMMON STOCK AWARD AGREEMENT (the "Agreement"), is entered into as of December 31, 2016 (the "Date of Grant"), by and between Virtu Financial, Inc., a Delaware corporation (the "Company"), and Brett Fairclough (the "Participant").

WHEREAS, the Company has adopted the Virtu Financial, Inc. 2015 Management Incentive Plan (the "Plan"), pursuant to which shares of Class A Common Stock and Restricted Stock Units ("RSUs") may be granted; and

WHEREAS, the Compensation Committee of the Board of Directors of the Company has determined that it is in the best interests of the Company and its stockholders to grant the shares of Class A Common Stock in recognition of Participant's service to the Company and its Affiliates from January 1, 2016 through December 31, 2016, and RSUs provided for herein to the Participant subject to the terms set forth herein.

NOW, THEREFORE, for and in consideration of the premises and the covenants of the parties contained in this Agreement, and for other good and valuable consideration, the receipt of which is hereby acknowledged, the parties hereto, for themselves, their successors and assigns, hereby agree as follows:

1. Grant of Common Stock and Restricted Stock Units.

(a) Grant. The Company hereby grants to the Participant a total number of shares of Class A Common Stock equal to \$100,000.00 divided by the Issue Price (the "Shares"), and a total number of RSUs equal to \$150,000.00 divided by the Issue Price, in each case on the terms and conditions set forth in this Agreement and as otherwise provided in the Plan. The RSUs shall be credited to a separate book-entry account maintained for the Participant on the books of the Company, which may be maintained by a third party. The "Issue Price" shall mean the volume weighted average price of shares of the Company's Class A Common Stock traded during the three days preceding the Date of Grant, as determined by the Company.

(b) Incorporation by Reference. The provisions of the Plan are incorporated herein by reference. Except as otherwise expressly set forth herein, this Agreement shall be construed in accordance with the provisions of the Plan and any interpretations, amendments, rules and regulations promulgated by the Committee from time to time pursuant to the Plan. Any capitalized terms not otherwise defined in this Agreement shall have the definitions set forth in the Plan. The Committee shall have final authority to interpret and construe the Plan and this Agreement and to make any and all determinations under them, and its decision shall be binding and conclusive upon the Participant and his legal representative in respect of any questions arising under the Plan or this Agreement. The Participant acknowledges that he has received a copy of the Plan and has had an opportunity to review the Plan and agrees to be bound by all the terms and provisions of the Plan.

2. Vesting; Settlement of Restricted Stock Units.

(a) The Shares shall be one hundred percent (100%) vested as of the Date of Grant.

(b) Except as may otherwise be provided herein, subject to the Participant's continued employment or service with the Company or an Affiliate, the RSUs shall vest in equal installments on each of the first three (3) anniversaries of the Date of Grant (each such date, a "Vesting Date"). Upon each Vesting Date, such portion of the RSUs that vest on such date shall no longer be subject to the transfer restrictions pursuant to Section 9(a) hereof or cancellation pursuant to Section 4 hereof. Any fractional RSUs resulting from the application of the vesting schedule shall be aggregated and the RSUs resulting from such aggregation shall vest on the final Vesting Date.

(c) Vested RSUs shall be settled within ten (10) days following the Vesting Date for such RSUs in shares of Class A Common Stock, or cash, as determined by the Committee in its sole discretion.

3. Dividend Equivalents. In the event of any issuance of a cash dividend on the shares of Class A Common Stock (a "Dividend"), the Participant shall be entitled to receive, with respect to each RSU granted pursuant to this Agreement and outstanding as of the record date for such Dividend, payment of an amount equal to the Dividend at the same time as the Dividend is paid to holders of shares of Class A Common Stock generally.

4. Termination of Employment or Service. If the Participant's employment or service with the Company and its Affiliates terminates for any reason, all unvested RSUs shall be cancelled immediately and the Participant shall not be entitled to receive any payments with respect thereto.

5. Rights as a Stockholder. The Participant shall not be deemed for any purpose to be the owner of any shares of Class A Common Stock constituting the Shares or underlying the RSUs unless, until and to the extent that (i) the Company shall have issued and delivered to the Participant the shares of Class A Common Stock constituting the Shares or underlying the RSUs and (ii) the Participant's name shall have been entered as a stockholder of record with respect to such shares of Class A Common Stock on the books of the Company. The Company shall cause the actions described in clauses (i) and (ii) of the preceding sentence to occur promptly following settlement as contemplated by this Agreement, subject to compliance with applicable laws.

6. Compliance with Legal Requirements.

(a) Generally. The granting of the Shares and the granting and settlement of the RSUs, and any other obligations of the Company under this Agreement, shall be subject to all applicable U.S. federal, state and local laws, rules and regulations, all applicable non-U.S. laws, rules and regulations and to such approvals by any regulatory or governmental agency as may be required. The Participant agrees to take all

steps the Committee or the Company determines are reasonably necessary to comply with all applicable provisions of U.S. federal and state securities law and non-U.S. securities law in exercising his rights under this Agreement.

(b) **Taxes and Withholding.** The grant of the Shares and the vesting and settlement of the RSUs shall be subject to the Participant satisfying any applicable U.S. federal, state and local tax withholding obligations and non-U.S. tax withholding obligations. The Participant shall be required to pay to the Company, and the Company shall have the right and is hereby authorized to withhold any cash, shares of Class A Common Stock, other securities or other property or from any compensation or other amounts owing to the Participant, the amount (in cash, Class A Common Stock, other securities or other property) of any required withholding taxes in respect of the Shares or in respect of the RSUs, settlement of the RSUs or any payment or transfer of the RSUs, and to take any such other action as the Committee or the Company deem necessary to satisfy all obligations for the payment of such withholding taxes. In its sole discretion, the Company may permit the Participant to satisfy, in whole or in part, the tax obligations by (A) withholding shares of Class A Common Stock from the Shares having a Fair Market Value equal to such withholding liability and (B) withholding shares of Class A Common Stock that would otherwise be deliverable to the Participant upon settlement of the RSUs with a Fair Market Value equal to such withholding liability.

7. Clawback. Notwithstanding anything to the contrary contained herein, the Committee may cancel the Shares and RSU award if the Participant, without the consent of the Company, has engaged in or engages in activity that is in conflict with or adverse to the interest of the Company or any Affiliate while employed by or providing services to the Company or any Affiliate, including fraud or conduct contributing to any financial restatements or irregularities, or violates a non-competition, non-solicitation, non-disparagement or non-disclosure covenant or agreement with the Company or any Affiliate, including for the avoidance of doubt Exhibit A to this Agreement, as determined by the Committee. In such event, the Participant will forfeit any compensation, gain or other value realized thereafter on the vesting or settlement of the RSUs, the sale or other transfer of the Shares and the RSUs, or the sale of shares of Class A Common Stock acquired in respect of the RSUs, and must promptly repay such amounts to the Company. If the Participant receives any amount in excess of what the Participant should have received with respect to the Shares or under the terms of the RSUs for any reason (including without limitation by reason of a financial restatement, mistake in calculations or other administrative error), all as determined by the Committee, then the Participant shall be required to promptly repay any such excess amount to the Company. To the extent required by applicable law and/or the rules and regulations of NASDAQ or any other securities exchange or inter-dealer quotation system on which the Class A Common Stock is listed or quoted, or if so required pursuant to a written policy adopted by the Company, the Shares and the RSUs shall be subject (including on a retroactive basis) to clawback, forfeiture or similar requirements (and such requirements shall be deemed incorporated by reference into this Agreement).

8. Restrictive Covenants.

(a) The Participant shall be subject to the confidentiality and restrictive covenants set forth on Exhibit A attached hereto.

(b) In the event that the Participant violates any of the restrictive covenants referred to in this Section 8, in addition to any other remedy which may be available at law or in equity, the RSUs shall be automatically forfeited effective as of the date on which such violation first occurs. The foregoing rights and remedies are in addition to any other rights and remedies that may be available to the Company and shall not prevent (and the Participant shall not assert that they shall prevent) the Company from bringing one or more actions in any applicable jurisdiction to recover damages as a result of the Participant's breach of such restrictive covenants.

9. Miscellaneous.

(a) **Transferability.** The RSUs may not be assigned, alienated, pledged, attached, sold or otherwise transferred or encumbered (a "Transfer") by the Participant other than by will or by the laws of descent and distribution, pursuant to a qualified domestic relations order or as otherwise permitted under Section 15(b) of the Plan. Any attempted Transfer of the RSUs contrary to the provisions hereof, and the levy of any execution, attachment or similar process upon the RSUs, shall be null and void and without effect.

(b) **Waiver.** Any right of the Company contained in this Agreement may be waived in writing by the Committee. No waiver of any right hereunder by any party shall operate as a waiver of any other right, or as a waiver of the same right with respect to any subsequent occasion for its exercise, or as a waiver of any right to damages. No waiver by any party of any breach of this Agreement shall be held to constitute a waiver of any other breach or a waiver of the continuation of the same breach.

(c) **Section 409A.** The RSUs are intended to be exempt from, or compliant with, Section 409A of the Code. Notwithstanding the foregoing or any provision of the Plan or this Agreement, if any provision of the Plan or this Agreement contravenes Section 409A of the Code or could cause the Participant to incur any tax, interest or penalties under Section 409A of the Code, the Committee may, in its sole discretion and without the Participant's consent, modify such provision to (i) comply with, or avoid being subject to, Section 409A of the Code, or to avoid the incurrence of taxes, interest and penalties under Section 409A of the Code, and/or (ii) maintain, to the maximum extent practicable, the original intent and economic benefit to the Participant of the applicable provision without materially increasing the cost to the Company or contravening the provisions of Section 409A of the Code. This Section 9(c) does not create an obligation on the part of the Company to modify the Plan or this Agreement and does not guarantee that the RSUs will not be subject to interest and penalties under Section 409A.

(d) **General Assets.** All amounts credited in respect of the RSUs to the book-entry account under this Agreement shall continue for all purposes to be part of the general assets of the Company. The Participant's interest in such account shall make the Participant only a general, unsecured creditor of the Company.

(e) **Notices.** Any notices provided for in this Agreement or the Plan shall be in writing and shall be deemed sufficiently given if either hand delivered or if sent by fax, pdf/email or overnight courier, or by postage paid first class mail. Notices sent by mail shall be deemed received three business days after mailing but in no event later than the date of actual receipt. Notices shall be directed, if to the Participant, at the Participant's address indicated by the Company's records, or if to the Company, to the attention of the General Counsel at the Company's principal executive office.

(f) **Severability.** The invalidity or unenforceability of any provision of this Agreement shall not affect the validity or enforceability of any other provision of this Agreement, and each other provision of this Agreement shall be severable and enforceable to the extent permitted by

law.

(g) No Rights to Employment or Service. Nothing contained in this Agreement shall be construed as giving the Participant any right to be retained, in any position, as an employee, consultant or director of the Company or its Affiliates or shall interfere with or restrict in any way the rights of the Company or its Affiliates, which are hereby expressly reserved, to remove, terminate or discharge the Participant at any time for any reason whatsoever.

(h) Fractional Shares. In lieu of issuing a fraction of a share of Class A Common Stock resulting from adjustment of the Shares or the RSUs pursuant to Section 12 of the Plan or otherwise, the Company shall be entitled to pay to the Participant an amount in cash equal to the Fair Market Value of such fractional share.

(i) Beneficiary. The Participant may file with the Committee a written designation of a beneficiary on such form as may be prescribed by the Committee and may, from time to time, amend or revoke such designation.

(j) Successors. The terms of this Agreement shall be binding upon and inure to the benefit of the Company and its successors and assigns, and of the Participant and the beneficiaries, executors, administrators, heirs and successors of the Participant.

(k) Entire Agreement. This Agreement and the Plan contain the entire agreement and understanding of the parties hereto with respect to the subject matter contained herein and supersede all prior communications, representations and negotiations in respect thereto. No change, modification or waiver of any provision of this Agreement shall be valid unless the same be in writing and signed by the parties hereto, except for any changes permitted without consent under Section 12 or 14 of the Plan.

(l) Governing Law and Venue. This Agreement shall be construed and interpreted in accordance with the laws of the State of Delaware, without regard to principles of conflicts of laws thereof, or principles of conflicts of laws of any other jurisdiction which could cause the application of the laws of any jurisdiction other than the State of Delaware.

(i) Dispute Resolution; Consent to Jurisdiction. All disputes between or among any Persons arising out of or in any way connected with the Plan, this Agreement, the Shares or the RSUs shall be solely and finally settled by the Committee, acting in good faith, the determination of which shall be final. Any matters not covered by the preceding sentence shall be solely and finally settled in accordance with the Plan, and the Participant and the Company consent to the personal jurisdiction of the United States Federal and state courts sitting in Wilmington, Delaware as the exclusive jurisdiction with respect to matters arising out of or related to the enforcement of the Committee's determinations and resolution of matters, if any, related to the Plan or this Agreement not required to be resolved by the Committee. Each such Person hereby irrevocably consents to the service of process of any of the aforementioned courts in any such suit, action or proceeding by the mailing of copies thereof by registered or certified mail, postage prepaid, to the last known address of such Person, such service to become effective ten (10) days after such mailing.

(ii) Waiver of Jury Trial. Each party hereto hereby waives, to the fullest extent permitted by applicable law, any right it may have to a trial by jury in any legal proceeding directly or indirectly arising out of or relating to this Agreement or the transactions contemplated (whether based on contract, tort or any other theory). Each party hereto (A) certifies that no representative, agent or attorney of any other party has represented, expressly or otherwise, that such other party would not, in the event of litigation, seek to enforce the foregoing waiver and (B) acknowledges that it and the other parties hereto have been induced to enter into this Agreement by, among other things, the mutual waivers and certifications in this section.

(m) Headings; Gender. The headings of the Sections hereof are provided for convenience only and are not to serve as a basis for interpretation or construction, and shall not constitute a part, of this Agreement. Masculine pronouns and other words of masculine gender shall refer to both men and women as appropriate.

(n) Counterparts. This Agreement may be executed in one or more counterparts (including via facsimile and electronic image scan (pdf)), each of which shall be deemed to be an original, but all of which together shall constitute one and the same instrument and shall become effective when one or more counterparts have been signed by each of the parties and delivered to the other parties.

(o) Electronic Signature and Delivery. This Agreement may be accepted by return signature or by electronic confirmation. By accepting this Agreement, the Participant consents to the electronic delivery of prospectuses, annual reports and other information required to be delivered by U.S. Securities and Exchange Commission rules (which consent may be revoked in writing by the Participant at any time upon three business days' notice to the Company, in which case subsequent prospectuses, annual reports and other information will be delivered in hard copy to the Participant).

(p) Electronic Participation in Plan. The Company may, in its sole discretion, decide to deliver any documents related to current or future participation in the Plan by electronic means. The Participant hereby consents to receive such documents by electronic delivery and agrees to participate in the Plan through an on-line or electronic system established and maintained by the Company or a third party designated by the Company.

IN WITNESS WHEREOF, this Agreement has been executed by the Company and the Participant as of the day first written above.

VIRTU FINANCIAL, INC.

By: /s/ Douglas A. Cifu
Name: Douglas A. Cifu
Title: Chief Executive Officer

/s/ Brett Fairclough
Brett Fairclough

Doc#: US1:10994647v1

VIRTU FINANCIAL, INC.
2015 MANAGEMENT INCENTIVE PLAN
EMPLOYEE
RESTRICTED STOCK UNIT AND COMMON STOCK AWARD AGREEMENT

THIS RESTRICTED STOCK UNIT AND COMMON STOCK AWARD AGREEMENT (the "Agreement"), is entered into as of January 23, 2018 (the "Date of Grant"), by and between Virtu Financial, Inc., a Delaware corporation (the "Company"), and Brett Fairclough (the "Participant").

WHEREAS, the Company has adopted the Virtu Financial, Inc. 2015 Amended and Restated Management Incentive Plan (the "Plan"), pursuant to which shares of Class A Common Stock and Restricted Stock Units ("RSUs") may be granted; and

WHEREAS, the Compensation Committee of the Board of Directors of the Company has determined that it is in the best interests of the Company and its stockholders to grant the shares of Class A Common Stock in recognition of Participant's service to the Company and its Affiliates from January 1, 2017 through December 31, 2017, and RSUs provided for herein to the Participant subject to the terms set forth herein.

NOW, THEREFORE, for and in consideration of the premises and the covenants of the parties contained in this Agreement, and for other good and valuable consideration, the receipt of which is hereby acknowledged, the parties hereto, for themselves, their successors and assigns, hereby agree as follows:

1. Grant of Common Stock and Restricted Stock Units.

(a) Grant. The Company hereby grants to the Participant a total number of shares of Class A Common Stock equal to approximately \$ 113,322.00 divided by the Issue Price (the "Shares"), and a total number of RSUs equal to approximately \$ 169,983.00 divided by the Issue Price, in each case on the terms and conditions set forth in this Agreement and as otherwise provided in the Plan. The RSUs shall be credited to a separate book-entry account maintained for the Participant on the books of the Company, which may be maintained by a third party. The "Issue Price" shall mean the volume weighted average price of shares of the Company's Class A Common Stock traded during the three days preceding the Date of Grant, as determined by the Company.

(b) Incorporation by Reference. The provisions of the Plan are incorporated herein by reference. Except as otherwise expressly set forth herein, this Agreement shall be construed in accordance with the provisions of the Plan and any interpretations, amendments, rules and regulations promulgated by the Committee from time to time pursuant to the Plan. Any capitalized terms not otherwise defined in this Agreement shall have the definitions set forth in the Plan. The Committee shall have final authority to interpret and construe the Plan and this Agreement and to make any and all determinations under them, and its decision shall be binding and conclusive upon the Participant and his legal representative in respect of any questions arising under the Plan or this Agreement. The Participant acknowledges that he has received a copy of the Plan and has had an opportunity to review the Plan and agrees to be bound by all the terms and provisions of the Plan.

2. Vesting and Settlement.

(a) The Shares shall be one hundred percent (100%) vested as of the Date of Grant.

(b) Except as may otherwise be provided herein, subject to the Participant's continued employment or service with the Company or an Affiliate, the RSUs shall vest in equal installments on each of the first three (3) anniversaries of the Date of Grant (each such date, a "Vesting Date"). Upon each Vesting Date, such portion of the RSUs that vest on such date shall no longer be subject to the transfer restrictions pursuant to Section 9(a) hereof or cancellation pursuant to Section 4 hereof. Any fractional RSUs resulting from the application of the vesting schedule shall be aggregated and the RSUs resulting from such aggregation shall vest on the final Vesting Date.

(c) Vested RSUs shall be settled within ten (10) days following the Vesting Date for such RSUs in shares of Class A Common Stock, or cash, as determined by the Committee in its sole discretion.

3. Dividend Equivalents. In the event of any issuance of a cash dividend on the shares of Class A Common Stock (a "Dividend"), the Participant shall be entitled to receive, with respect to each RSU granted pursuant to this Agreement and outstanding as of the record date for such Dividend, payment of an amount equal to the Dividend at the same time as the Dividend is paid to holders of shares of Class A Common Stock generally.

4. Termination of Employment or Service. If the Participant's employment or service with the Company and its Affiliates terminates for any reason, all unvested RSUs shall be cancelled immediately and the Participant shall not be entitled to receive any payments with respect thereto.

5. Rights as a Stockholder. The Participant shall not be deemed for any purpose to be the owner of any shares of Class A Common Stock constituting the Shares or underlying the RSUs unless, until and to the extent that (i) the Company shall have issued and delivered to the Participant the shares of Class A Common Stock constituting the Shares or underlying the RSUs and (ii) the Participant's name shall have been entered as a stockholder of record with respect to such shares of Class A Common Stock on the books of the Company. The Company shall cause the actions described in clauses (i) and (ii) of the preceding sentence to occur promptly following settlement as contemplated by this Agreement, subject to compliance with applicable laws.

6. Compliance with Legal Requirements.

(a) Generally. The granting of the Shares and the granting and settlement of the RSUs, and any other obligations of the Company under this Agreement, shall be subject to all applicable U.S. federal, state and local laws, rules and regulations, all applicable non-U.S. laws, rules and regulations and to such approvals by any regulatory or governmental agency as may be required. The Participant agrees to take all

steps the Committee or the Company determines are reasonably necessary to comply with all applicable provisions of U.S. federal and state securities law and non-U.S. securities law in exercising his rights under this Agreement.

(b) **Taxes and Withholding.** The grant of the Shares and the vesting and settlement of the RSUs shall be subject to the Participant satisfying any applicable U.S. federal, state and local tax withholding obligations and non-U.S. tax withholding obligations. The Participant shall be required to pay to the Company, and the Company shall have the right and is hereby authorized to withhold any cash, shares of Class A Common Stock, other securities or other property or from any compensation or other amounts owing to the Participant, the amount (in cash, Class A Common Stock, other securities or other property) of any required withholding taxes in respect of the Shares or in respect of the RSUs, settlement of the RSUs or any payment or transfer of the RSUs, and to take any such other action as the Committee or the Company deem necessary to satisfy all obligations for the payment of such withholding taxes. In its sole discretion, the Company may permit the Participant to satisfy, in whole or in part, the tax obligations by (A) withholding shares of Class A Common Stock from the Shares having a Fair Market Value equal to such withholding liability and (B) withholding shares of Class A Common Stock that would otherwise be deliverable to the Participant upon settlement of the RSUs with a Fair Market Value equal to such withholding liability.

7. Clawback. Notwithstanding anything to the contrary contained herein, the Committee may cancel the Shares and RSU award if the Participant, without the consent of the Company, has engaged in or engages in activity that is in conflict with or adverse to the interest of the Company or any Affiliate while employed by or providing services to the Company or any Affiliate, including fraud or conduct contributing to any financial restatements or irregularities, or violates a non-competition, non-solicitation, non-disparagement, non-disclosure or confidentiality covenant or agreement with the Company or any Affiliate, as determined by the Committee. In such event, the Participant will forfeit any compensation, gain or other value realized thereafter on the vesting or settlement of the RSUs, the sale or other transfer of the Shares and the RSUs, or the sale of shares of Class A Common Stock acquired in respect of the RSUs, and must promptly repay such amounts to the Company. If the Participant receives any amount in excess of what the Participant should have received with respect to the Shares or under the terms of the RSUs for any reason (including without limitation by reason of a financial restatement, mistake in calculations or other administrative error), all as determined by the Committee, then the Participant shall be required to promptly repay any such excess amount to the Company. To the extent required by applicable law and/or the rules and regulations of NASDAQ or any other securities exchange or inter-dealer quotation system on which the Class A Common Stock is listed or quoted, or if so required pursuant to a written policy adopted by the Company, the Shares and the RSUs shall be subject (including on a retroactive basis) to clawback, forfeiture or similar requirements (and such requirements shall be deemed incorporated by reference into this Agreement).

8. Contractual Obligations.

(a) Nothing in this Agreement shall supersede, modify, replace or cancel any existing contractual obligations, including but not limited to restrictive covenants, applicable to you in any employment agreement, offer letter, prior equity award agreement or any other agreement or contract with the Company or its Affiliates.

(b) In the event that the Participant violates any of the contractual obligations referred to in this Section 8, in addition to any other remedy which may be available at law or in equity, the RSUs shall be automatically forfeited effective as of the date on which such violation first occurs. The foregoing rights and remedies are in addition to any other rights and remedies that may be available to the Company and shall not prevent (and the Participant shall not assert that they shall prevent) the Company from bringing one or more actions in any applicable jurisdiction to recover damages as a result of the Participant's breach of such restrictive covenants.

9. Miscellaneous.

(a) **Transferability.** The RSUs may not be assigned, alienated, pledged, attached, sold or otherwise transferred or encumbered (a "Transfer") by the Participant other than by will or by the laws of descent and distribution, pursuant to a qualified domestic relations order or as otherwise permitted under Section 15(b) of the Plan. Any attempted Transfer of the RSUs contrary to the provisions hereof, and the levy of any execution, attachment or similar process upon the RSUs, shall be null and void and without effect.

(b) **Waiver.** Any right of the Company contained in this Agreement may be waived in writing by the Committee. No waiver of any right hereunder by any party shall operate as a waiver of any other right, or as a waiver of the same right with respect to any subsequent occasion for its exercise, or as a waiver of any right to damages. No waiver by any party of any breach of this Agreement shall be held to constitute a waiver of any other breach or a waiver of the continuation of the same breach.

(c) **Section 409A.** The RSUs are intended to be exempt from, or compliant with, Section 409A of the Internal Revenue Code ("Code"). Notwithstanding the foregoing or any provision of the Plan or this Agreement, if any provision of the Plan or this Agreement contravenes Section 409A of the Code or could cause the Participant to incur any tax, interest or penalties under Section 409A of the Code, the Committee may, in its sole discretion and without the Participant's consent, modify such provision to (i) comply with, or avoid being subject to, Section 409A of the Code, or to avoid the incurrence of taxes, interest and penalties under Section 409A of the Code, and/or (ii) maintain, to the maximum extent practicable, the original intent and economic benefit to the Participant of the applicable provision without materially increasing the cost to the Company or contravening the provisions of Section 409A of the Code. This Section 9(c) does not create an obligation on the part of the Company to modify the Plan or this Agreement and does not guarantee that the RSUs will not be subject to interest and penalties under Section 409A.

(d) **General Assets.** All amounts credited in respect of the RSUs to the book-entry account under this Agreement shall continue for all purposes to be part of the general assets of the Company. The Participant's interest in such account shall make the Participant only a general, unsecured creditor of the Company.

(e) **Notices.** Any notices provided for in this Agreement or the Plan shall be in writing and shall be deemed sufficiently given if either hand delivered or if sent by fax, pdf/email or overnight courier, or by postage paid first class mail. Notices sent by mail shall be deemed received three business days after mailing but in no event later than the date of actual receipt. Notices shall be directed, if to the Participant, at the Participant's address indicated by the Company's records, or if to the Company, to the attention of the General Counsel at the Company's principal executive office.

(f) Severability. The invalidity or unenforceability of any provision of this Agreement shall not affect the validity or enforceability of any other provision of this Agreement, and each other provision of this Agreement shall be severable and enforceable to the extent permitted by law.

(g) No Rights to Employment or Service. Nothing contained in this Agreement shall be construed as giving the Participant any right to be retained, in any position, as an employee, consultant or director of the Company or its Affiliates or shall interfere with or restrict in any way the rights of the Company or its Affiliates, which are hereby expressly reserved, to remove, terminate or discharge the Participant at any time for any reason whatsoever.

(h) Fractional Shares. In lieu of issuing a fraction of a share of Class A Common Stock resulting from adjustment of the Shares or the RSUs pursuant to Section 12 of the Plan or otherwise, the Company shall be entitled to pay to the Participant an amount in cash equal to the Fair Market Value of such fractional share.

(i) Beneficiary. The Participant may file with the Committee a written designation of a beneficiary on such form as may be prescribed by the Committee and may, from time to time, amend or revoke such designation.

(j) Successors. The terms of this Agreement shall be binding upon and inure to the benefit of the Company and its successors and assigns, and of the Participant and the beneficiaries, executors, administrators, heirs and successors of the Participant.

(k) Entire Agreement. This Agreement and the Plan contain the entire agreement and understanding of the parties hereto with respect to the subject matter contained herein and supersede all prior communications, representations and negotiations in respect thereto, except as set forth in Section 8 hereof. No change, modification or waiver of any provision of this Agreement shall be valid unless the same be in writing and signed by the parties hereto, except for any changes permitted without consent under Section 12 or 14 of the Plan.

(l) Governing Law and Venue. This Agreement shall be construed and interpreted in accordance with the laws of the State of Delaware, without regard to principles of conflicts of laws thereof, or principles of conflicts of laws of any other jurisdiction which could cause the application of the laws of any jurisdiction other than the State of Delaware.

(i) Dispute Resolution; Consent to Jurisdiction. All disputes between or among any Persons arising out of or in any way connected with the Plan, this Agreement, the Shares or the RSUs shall be solely and finally settled by the Committee, acting in good faith, the determination of which shall be final. Any matters not covered by the preceding sentence shall be solely and finally settled in accordance with the Plan, and the Participant and the Company consent to the personal jurisdiction of the United States Federal and state courts sitting in Wilmington, Delaware as the exclusive jurisdiction with respect to matters arising out of or related to the enforcement of the Committee's determinations and resolution of matters, if any, related to the Plan or this Agreement not required to be resolved by the Committee. Each such Person hereby irrevocably consents to the service of process of any of the aforementioned courts in any such suit, action or proceeding by the mailing of copies thereof by registered or certified mail, postage prepaid, to the last known address of such Person, such service to become effective ten (10) days after such mailing.

(ii) Waiver of Jury Trial. Each party hereto hereby waives, to the fullest extent permitted by applicable law, any right it may have to a trial by jury in any legal proceeding directly or indirectly arising out of or relating to this Agreement or the transactions contemplated (whether based on contract, tort or any other theory). Each party hereto (A) certifies that no representative, agent or attorney of any other party has represented, expressly or otherwise, that such other party would not, in the event of litigation, seek to enforce the foregoing waiver and (B) acknowledges that it and the other parties hereto have been induced to enter into this Agreement by, among other things, the mutual waivers and certifications in this section.

(m) Headings; Gender. The headings of the Sections hereof are provided for convenience only and are not to serve as a basis for interpretation or construction, and shall not constitute a part, of this Agreement. Masculine pronouns and other words of masculine gender shall refer to both men and women as appropriate.

(n) Counterparts. This Agreement may be executed in one or more counterparts (including via facsimile and electronic image scan (pdf)), each of which shall be deemed to be an original, but all of which together shall constitute one and the same instrument and shall become effective when one or more counterparts have been signed by each of the parties and delivered to the other parties.

(o) Electronic Signature and Delivery. This Agreement may be accepted by return signature or by electronic confirmation. By accepting this Agreement, the Participant consents to the electronic delivery of prospectuses, annual reports and other information required to be delivered by U.S. Securities and Exchange Commission rules (which consent may be revoked in writing by the Participant at any time upon three business days' notice to the Company, in which case subsequent prospectuses, annual reports and other information will be delivered in hard copy to the Participant).

(p) Electronic Participation in Plan. The Company may, in its sole discretion, decide to deliver any documents related to current or future participation in the Plan by electronic means. The Participant hereby consents to receive such documents by electronic delivery and agrees to participate in the Plan through an on-line or electronic system established and maintained by the Company or a third party designated by the Company.

[Remainder of page intentionally left blank]

IN WITNESS WHEREOF, this Agreement has been executed by the Company and the Participant as of the day first written above.

VIRTU FINANCIAL, INC.

By: /s/ Douglas A. Cifu
Name: Douglas A. Cifu
Title: Chief Executive Officer

/s/ Brett Fairclough
Brett Fairclough

VIRTU FINANCIAL, INC.
AMENDED AND RESTATED
2015 MANAGEMENT INCENTIVE PLAN
RESTRICTED STOCK UNIT AND COMMON STOCK AWARD AGREEMENT

THIS RESTRICTED STOCK UNIT AND COMMON STOCK AWARD AGREEMENT (the “Agreement”), is entered into as of January 24, 2019 (the “Date of Grant”), by and between Virtu Financial, Inc., a Delaware corporation (the “Company”), and Brett Fairclough (the “Participant”).

WHEREAS, the Company has adopted the Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan (the “Plan”), pursuant to which shares of Class A Common Stock and Restricted Stock Units (“RSUs”) may be granted; and

WHEREAS, the Compensation Committee of the Board of Directors of the Company has determined that it is in the best interests of the Company and its stockholders to grant the shares of Class A Common Stock in recognition of Participant’s service to the Company and its Affiliates from January 1, 2018 through December 31, 2018, and RSUs provided for herein to the Participant subject to the terms set forth herein.

NOW, THEREFORE, for and in consideration of the premises and the covenants of the parties contained in this Agreement, and for other good and valuable consideration, the receipt of which is hereby acknowledged, the parties hereto, for themselves, their successors and assigns, hereby agree as follows:

1. Grant of Common Stock and Restricted Stock Units.

(a) Grant. The Company hereby grants to the Participant a total number of shares of Class A Common Stock equal to approximately **\$152,000** divided by the Issue Price (the “Shares”), and a total number of RSUs equal to approximately **\$228,000** divided by the Issue Price, in each case on the terms and conditions set forth in this Agreement and as otherwise provided in the Plan. The RSUs shall be credited to a separate book-entry account maintained for the Participant on the books of the Company, which may be maintained by a third party. The “Issue Price” shall mean the volume weighted average price of shares of the Company’s Class A Common Stock traded during the three days preceding the Date of Grant, as determined by the Company.

(b) Incorporation by Reference. The provisions of the Plan are incorporated herein by reference. Except as otherwise expressly set forth herein, this Agreement shall be construed in accordance with the provisions of the Plan and any interpretations, amendments, rules and regulations promulgated by the Committee from time to time pursuant to the Plan. Any capitalized terms not otherwise defined in this Agreement shall have the definitions set forth in the Plan. The Committee shall have final authority to interpret and construe the Plan and this Agreement and to make any and all determinations under them, and its decision shall be binding and conclusive upon the Participant and his legal representative in respect of any questions arising under the Plan or this Agreement. The Participant acknowledges that he has received a copy of the Plan and has had an opportunity to review the Plan and agrees to be bound by all the terms and provisions of the Plan.

2. Vesting and Settlement.

(a) The Shares shall be one hundred percent (100%) vested as of the Date of Grant.

(b) Except as may otherwise be provided herein, subject to the Participant’s continued employment or service with the Company or an Affiliate, the RSUs shall vest in equal installments on each of the first three (3) anniversaries of the Date of Grant (each such date, a “Vesting Date”). Upon each Vesting Date, such portion of the RSUs that vest on such date shall no longer be subject to the transfer restrictions pursuant to Section 9(a) hereof or cancellation pursuant to Section 4 hereof. Any fractional RSUs resulting from the application of the vesting schedule shall be aggregated and the RSUs resulting from such aggregation shall vest on the final Vesting Date.

(c) Vested RSUs shall be settled within ten (10) days following the Vesting Date for such RSUs in shares of Class A Common Stock, or cash, as determined by the Committee in its sole discretion.

3. Dividend Equivalents. In the event of any issuance of a cash dividend on the shares of Class A Common Stock (a “Dividend”), the Participant shall be entitled to receive, with respect to each RSU granted pursuant to this Agreement and outstanding as of the record date for such Dividend, payment of an amount equal to the Dividend at the same time as the Dividend is paid to holders of shares of Class A Common Stock generally.

4. Termination of Employment or Service. If the Participant’s employment or service with the Company and its Affiliates terminates for any reason, all unvested RSUs shall be cancelled immediately and the Participant shall not be entitled to receive any payments with respect thereto.

5. Rights as a Stockholder. The Participant shall not be deemed for any purpose to be the owner of any shares of Class A Common Stock constituting the Shares or underlying the RSUs unless, until and to the extent that (i) the Company shall have issued and delivered to the Participant the shares of Class A Common Stock constituting the Shares or underlying the RSUs and (ii) the Participant’s name shall have been entered as a stockholder of record with respect to such shares of Class A Common Stock on the books of the Company. The Company shall cause the actions described in clauses (i) and (ii) of the preceding sentence to occur promptly following settlement as contemplated by this Agreement, subject to compliance with applicable laws.

6. Compliance with Legal Requirements.

(a) Generally. The granting of the Shares and the granting and settlement of the RSUs, and any other obligations of the Company under this Agreement, shall be subject to all applicable U.S. federal, state and local laws, rules and regulations, all applicable non-U.S. laws,

rules and regulations and to such approvals by any regulatory or governmental agency as may be required. The Participant agrees to take all steps the Committee or the Company determines are reasonably necessary to comply with all applicable provisions of U.S. federal and state securities law and non-U.S. securities law in exercising his rights under this Agreement.

(b) **Taxes and Withholding.** The grant of the Shares and the vesting and settlement of the RSUs shall be subject to the Participant satisfying any applicable U.S. federal, state and local tax withholding obligations and non-U.S. tax withholding obligations. The Participant shall be required to pay to the Company, and the Company shall have the right and is hereby authorized to withhold any cash, shares of Class A Common Stock, other securities or other property or from any compensation or other amounts owing to the Participant, the amount (in cash, Class A Common Stock, other securities or other property) of any required withholding taxes in respect of the Shares or in respect of the RSUs, settlement of the RSUs or any payment or transfer of the RSUs, and to take any such other action as the Committee or the Company deem necessary to satisfy all obligations for the payment of such withholding taxes. In its sole discretion, the Company may permit the Participant to satisfy, in whole or in part, the tax obligations by (A) withholding shares of Class A Common Stock from the Shares having a Fair Market Value equal to such withholding liability and (B) withholding shares of Class A Common Stock that would otherwise be deliverable to the Participant upon settlement of the RSUs with a Fair Market Value equal to such withholding liability.

7. Clawback. Notwithstanding anything to the contrary contained herein, the Committee may cancel the Shares and RSU award if the Participant, without the consent of the Company, has engaged in or engages in activity that is in conflict with or adverse to the interest of the Company or any Affiliate while employed by or providing services to the Company or any Affiliate, including fraud or conduct contributing to any financial restatements or irregularities, or violates a non-competition, non-solicitation, non-disparagement, non-disclosure or confidentiality covenant or agreement with the Company or any Affiliate, as determined by the Committee. In such event, the Participant will forfeit any compensation, gain or other value realized previously or thereafter on the vesting or settlement of the RSUs, the sale or other transfer of the Shares and the RSUs, or the sale of shares of Class A Common Stock acquired in respect of the RSUs, and must promptly repay such amounts to the Company. If the Participant receives any amount in excess of what the Participant should have received with respect to the Shares or under the terms of the RSUs for any reason (including without limitation by reason of a financial restatement, mistake in calculations or other administrative error), all as determined by the Committee, then the Participant shall be required to promptly repay any such excess amount to the Company. To the extent required by applicable law and/or the rules and regulations of NASDAQ or any other securities exchange or inter-dealer quotation system on which the Class A Common Stock is listed or quoted, or if so required pursuant to a written policy adopted by the Company, the Shares and the RSUs shall be subject (including on a retroactive basis) to clawback, forfeiture or similar requirements (and such requirements shall be deemed incorporated by reference into this Agreement).

8. Contractual Obligations.

(a) Nothing in this Agreement shall supersede, modify, replace or cancel any existing contractual obligations, including but not limited to restrictive covenants, applicable to you in any employment agreement, offer letter, prior equity award agreement or any other agreement or contract with the Company or its Affiliates.

(b) In the event that the Participant violates any of the contractual obligations referred to in this Section 8, in addition to any other remedy which may be available at law or in equity, the RSUs shall be automatically forfeited effective as of the date on which such violation first occurs. The foregoing rights and remedies are in addition to any other rights and remedies that may be available to the Company and shall not prevent (and the Participant shall not assert that they shall prevent) the Company from bringing one or more actions in any applicable jurisdiction to recover damages as a result of the Participant's breach of such restrictive covenants.

9. Miscellaneous.

(a) **Transferability.** The RSUs may not be assigned, alienated, pledged, attached, sold or otherwise transferred or encumbered (a "Transfer") by the Participant other than by will or by the laws of descent and distribution, pursuant to a qualified domestic relations order or as otherwise permitted under Section 15(b) of the Plan. Any attempted Transfer of the RSUs contrary to the provisions hereof, and the levy of any execution, attachment or similar process upon the RSUs, shall be null and void and without effect.

(b) **Waiver.** Any right of the Company contained in this Agreement may be waived in writing by the Committee. No waiver of any right hereunder by any party shall operate as a waiver of any other right, or as a waiver of the same right with respect to any subsequent occasion for its exercise, or as a waiver of any right to damages. No waiver by any party of any breach of this Agreement shall be held to constitute a waiver of any other breach or a waiver of the continuation of the same breach.

(c) **Section 409A.** The RSUs are intended to be exempt from, or compliant with, Section 409A of the Internal Revenue Code ("Code"). Notwithstanding the foregoing or any provision of the Plan or this Agreement, if any provision of the Plan or this Agreement contravenes Section 409A of the Code or could cause the Participant to incur any tax, interest or penalties under Section 409A of the Code, the Committee may, in its sole discretion and without the Participant's consent, modify such provision to (i) comply with, or avoid being subject to, Section 409A of the Code, or to avoid the incurrence of taxes, interest and penalties under Section 409A of the Code, and/or (ii) maintain, to the maximum extent practicable, the original intent and economic benefit to the Participant of the applicable provision without materially increasing the cost to the Company or contravening the provisions of Section 409A of the Code. This Section 9(c) does not create an obligation on the part of the Company to modify the Plan or this Agreement and does not guarantee that the RSUs will not be subject to interest and penalties under Section 409A.

(d) **General Assets.** All amounts credited in respect of the RSUs to the book-entry account under this Agreement shall continue for all purposes to be part of the general assets of the Company. The Participant's interest in such account shall make the Participant only a general, unsecured creditor of the Company.

(e) **Notices.** Any notices provided for in this Agreement or the Plan shall be in writing and shall be deemed sufficiently given if either hand delivered or if sent by fax, pdf/email or overnight courier, or by postage paid first class mail. Notices sent by mail shall be deemed received three business days after mailing but in no event later than the date of actual receipt. Notices shall be directed, if to the Participant, at

the Participant's address indicated by the Company's records, or if to the Company, to the attention of the General Counsel at the Company's principal executive office.

(f) Severability. The invalidity or unenforceability of any provision of this Agreement shall not affect the validity or enforceability of any other provision of this Agreement, and each other provision of this Agreement shall be severable and enforceable to the extent permitted by law.

(g) No Rights to Employment or Service. Nothing contained in this Agreement shall be construed as giving the Participant any right to be retained, in any position, as an employee, consultant or director of the Company or its Affiliates or shall interfere with or restrict in any way the rights of the Company or its Affiliates, which are hereby expressly reserved, to remove, terminate or discharge the Participant at any time for any reason whatsoever.

(h) Fractional Shares. In lieu of issuing a fraction of a share of Class A Common Stock resulting from adjustment of the Shares or the RSUs pursuant to Section 12 of the Plan or otherwise, the Company shall be entitled to pay to the Participant an amount in cash equal to the Fair Market Value of such fractional share.

(i) Beneficiary. The Participant may file with the Committee a written designation of a beneficiary on such form as may be prescribed by the Committee and may, from time to time, amend or revoke such designation.

(j) Successors. The terms of this Agreement shall be binding upon and inure to the benefit of the Company and its successors and assigns, and of the Participant and the beneficiaries, executors, administrators, heirs and successors of the Participant.

(k) Entire Agreement. This Agreement and the Plan contain the entire agreement and understanding of the parties hereto with respect to the subject matter contained herein and supersede all prior communications, representations and negotiations in respect thereto, except as set forth in Section 8 hereof. No change, modification or waiver of any provision of this Agreement shall be valid unless the same be in writing and signed by the parties hereto, except for any changes permitted without consent under Section 12 or 14 of the Plan.

(l) Governing Law and Venue. This Agreement shall be construed and interpreted in accordance with the laws of the State of Delaware, without regard to principles of conflicts of laws thereof, or principles of conflicts of laws of any other jurisdiction which could cause the application of the laws of any jurisdiction other than the State of Delaware.

(i) Dispute Resolution; Consent to Jurisdiction. All disputes between or among any Persons arising out of or in any way connected with the Plan, this Agreement, the Shares or the RSUs shall be solely and finally settled by the Committee, acting in good faith, the determination of which shall be final. Any matters not covered by the preceding sentence shall be solely and finally settled in accordance with the Plan, and the Participant and the Company consent to the personal jurisdiction of the United States Federal and state courts sitting in Wilmington, Delaware as the exclusive jurisdiction with respect to matters arising out of or related to the enforcement of the Committee's determinations and resolution of matters, if any, related to the Plan or this Agreement not required to be resolved by the Committee. Each such Person hereby irrevocably consents to the service of process of any of the aforementioned courts in any such suit, action or proceeding by the mailing of copies thereof by registered or certified mail, postage prepaid, to the last known address of such Person, such service to become effective ten (10) days after such mailing.

(ii) Waiver of Jury Trial. Each party hereto hereby waives, to the fullest extent permitted by applicable law, any right it may have to a trial by jury in any legal proceeding directly or indirectly arising out of or relating to this Agreement or the transactions contemplated (whether based on contract, tort or any other theory). Each party hereto (A) certifies that no representative, agent or attorney of any other party has represented, expressly or otherwise, that such other party would not, in the event of litigation, seek to enforce the foregoing waiver and (B) acknowledges that it and the other parties hereto have been induced to enter into this Agreement by, among other things, the mutual waivers and certifications in this section.

(m) Headings; Gender. The headings of the Sections hereof are provided for convenience only and are not to serve as a basis for interpretation or construction, and shall not constitute a part, of this Agreement. Masculine pronouns and other words of masculine gender shall refer to both men and women as appropriate.

(n) Counterparts. This Agreement may be executed in one or more counterparts (including via facsimile and electronic image scan (pdf)), each of which shall be deemed to be an original, but all of which together shall constitute one and the same instrument and shall become effective when one or more counterparts have been signed by each of the parties and delivered to the other parties.

(o) Electronic Signature and Delivery. This Agreement may be accepted by return signature or by electronic confirmation. By accepting this Agreement, the Participant consents to the electronic delivery of prospectuses, annual reports and other information required to be delivered by U.S. Securities and Exchange Commission rules (which consent may be revoked in writing by the Participant at any time upon three business days' notice to the Company, in which case subsequent prospectuses, annual reports and other information will be delivered in hard copy to the Participant).

(p) Electronic Participation in Plan. The Company may, in its sole discretion, decide to deliver any documents related to current or future participation in the Plan by electronic means. The Participant hereby consents to receive such documents by electronic delivery and agrees to participate in the Plan through an on-line or electronic system established and maintained by the Company or a third party designated by the Company.

[Remainder of page intentionally left blank]

IN WITNESS WHEREOF, this Agreement has been executed by the Company and the Participant as of the day first written above.

VIRTU FINANCIAL, INC.

By: /s/ Douglas A. Cifu
Name: Douglas A. Cifu
Title: Chief Executive Officer

/s/ Brett Fairclough
Brett Fairclough

VIRTU FINANCIAL, INC.
AMENDED AND RESTATED 2015
MANAGEMENT INCENTIVE PLAN
EMPLOYEE
RESTRICTED STOCK UNIT AWARD AGREEMENT

THIS RESTRICTED STOCK UNIT AWARD AGREEMENT (the “Agreement”), is entered into as of October 2, 2019 (the “Date of Grant”), by and between Virtu Financial, Inc., a Delaware corporation (the “Company”), and Alex Ioffe (the “Participant”).

WHEREAS, the Company has adopted the Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan (the “Plan”), pursuant to which Restricted Stock Units (“RSUs”) may be granted; and

WHEREAS, the Compensation Committee of the Board of Directors of the Company has determined that it is in the best interests of the Company and its stockholders to grant the RSUs provided for herein to the Participant subject to the terms set forth herein.

NOW, THEREFORE, for and in consideration of the premises and the covenants of the parties contained in this Agreement, and for other good and valuable consideration, the receipt of which is hereby acknowledged, the parties hereto, for themselves, their successors and assigns, hereby agree as follows:

1. Grant of Restricted Stock Units.

(a) Grant. The Company hereby grants to the Participant a total number of RSUs equal to \$3,000,000.00 divided by the Issue Price on the terms and conditions set forth in this Agreement and as otherwise provided in the Plan. The RSUs shall be credited to a separate book-entry account maintained for the Participant on the books of the Company, which may be maintained by a third party. The “Issue Price” shall mean the volume weighted average price of shares of the Company’s Class A Common Stock traded on the Participant’s employment start date (the “Start Date”), as determined by the Company.

(b) Incorporation by Reference. The provisions of the Plan are incorporated herein by reference. Except as otherwise expressly set forth herein, this Agreement shall be construed in accordance with the provisions of the Plan and any interpretations, amendments, rules and regulations promulgated by the Committee from time to time pursuant to the Plan. Any capitalized terms not otherwise defined in this Agreement shall have the definitions set forth in the Plan. The Committee shall have final authority to interpret and construe the Plan and this Agreement and to make any and all determinations under them, and its decision shall be binding and conclusive upon the Participant and his legal representative in respect of any questions arising under the Plan or this Agreement. The Participant acknowledges that he has received a copy of the Plan and has had an opportunity to review the Plan and agrees to be bound by all the terms and provisions of the Plan.

2. Vesting and Settlement.

(a) Except as may otherwise be provided herein, subject to the Participant’s continued employment or service with the Company or an Affiliate, the RSUs shall vest in three equal installments on each of the first three (3) anniversaries of the Start Date (each such date, a “Vesting Date”). Upon each Vesting Date, such portion of the RSUs that vest on such date shall no longer be subject to the transfer restrictions pursuant to Section 9(a) hereof or cancellation pursuant to Section 4 hereof. Any fractional RSUs resulting from the application of the vesting schedule shall be aggregated and the RSUs resulting from such aggregation shall vest on the final Vesting Date.

(b) Vested RSUs shall be settled within ten (10) days following the Vesting Date for such RSUs in shares of Class A Common Stock, or cash, as determined by the Committee in its sole discretion.

3. Dividend Equivalents. In the event of any issuance of a cash dividend on the shares of Class A Common Stock (a “Dividend”), the Participant shall be entitled to receive, with respect to each RSU granted pursuant to this Agreement and outstanding as of the record date for such Dividend, payment of an amount equal to the Dividend at the same time as the Dividend is paid to holders of shares of Class A Common Stock generally.

4. Termination of Employment or Service. If the Participant’s employment or service with the Company and its Affiliates is terminated at any time prior to the third and final Vesting Date by the Company without Cause or a resignation for Good Reason, a number of RSUs equal to (a) the number of RSUs scheduled to vest on the next Vesting Date multiplied by a fraction, the numerator of which is the number of calendar days the Participant was employed since the later of (x) the Date of Grant or (y) the most recent anniversary of the Date of Grant, and the denominator of which is 365, plus (b) in the event that such termination occurs prior the third Vesting Date, the number of RSUs otherwise scheduled to vest on the next Vesting Date, shall be deemed vested immediately. Except as otherwise provided in this Section 4, upon the Participant’s termination of employment or service with the Company and its Affiliates, all unvested RSUs shall be cancelled immediately and the Participant shall not be entitled to receive any payments with respect thereto.

5. Rights as a Stockholder. The Participant shall not be deemed for any purpose to be the owner of any shares of Class A Common Stock underlying the RSUs unless, until and to the extent that (i) the Company shall have issued and delivered to the Participant the shares of Class A Common Stock underlying the RSUs and (ii) the Participant’s name shall have been entered as a stockholder of record with respect to such shares of Class A Common Stock on the books of the Company. The Company shall cause the actions described in clauses (i) and (ii) of the preceding sentence to occur promptly following settlement as contemplated by this Agreement, subject to compliance with applicable laws.

6. Compliance with Legal Requirements.

(a) Generally. The granting and settlement of the RSUs, and any other obligations of the Company under this Agreement, shall be subject to all applicable U.S. federal, state and local laws, rules and regulations, all applicable non-U.S. laws, rules and regulations and to such approvals by any regulatory or governmental agency as may be required. The Participant agrees to take all steps the Committee or the

Company determines are reasonably necessary to comply with all applicable provisions of U.S. federal and state securities law and non-U.S. securities law in exercising his rights under this Agreement.

(b) **Taxes and Withholding.** The vesting and settlement of the RSUs shall be subject to the Participant satisfying any applicable U.S. federal, state and local tax withholding obligations and non-U.S. tax withholding obligations. The Participant shall be required to pay to the Company, and the Company shall have the right and is hereby authorized to withhold any cash, shares of Class A Common Stock, other securities or other property or from any compensation or other amounts owing to the Participant, the amount (in cash, Class A Common Stock, other securities or other property) of any required withholding taxes in respect of the RSUs, settlement of the RSUs or any payment or transfer of the RSUs, and to take any such other action as the Committee or the Company deem necessary to satisfy all obligations for the payment of such withholding taxes. In its sole discretion, the Company may permit the Participant to satisfy, in whole or in part, the tax obligations by withholding shares of Class A Common Stock that would otherwise be deliverable to the Participant upon settlement of the RSUs with a Fair Market Value equal to such withholding liability.

7. Clawback. Notwithstanding anything to the contrary contained herein, the Committee may cancel the RSU award if the Participant, without the consent of the Company, has engaged in or engages in activity that is in conflict with or adverse to the interest of the Company or any Affiliate while employed by or providing services to the Company or any Affiliate, including fraud or conduct contributing to any financial restatements or irregularities, or violates a non-competition, non-solicitation, non-disparagement, non-disclosure or confidentiality covenant or agreement with the Company or any Affiliate, as determined by the Committee. In such event, the Participant will forfeit any compensation, gain or other value realized previously or thereafter on the vesting or settlement of the RSUs, the sale or other transfer of the RSUs, or the sale of shares of Class A Common Stock acquired in respect of the RSUs, and must promptly repay such amounts to the Company. If the Participant receives any amount in excess of what the Participant should have received under the terms of the RSUs for any reason (including without limitation by reason of a financial restatement, mistake in calculations or other administrative error), all as determined by the Committee, then the Participant shall be required to promptly repay any such excess amount to the Company. To the extent required by applicable law and/or the rules and regulations of NASDAQ or any other securities exchange or inter-dealer quotation system on which the Class A Common Stock is listed or quoted, or if so required pursuant to a written policy adopted by the Company, the RSUs shall be subject (including on a retroactive basis) to clawback, forfeiture or similar requirements (and such requirements shall be deemed incorporated by reference into this Agreement).

8. Contractual Obligations.

(a) Nothing in this Agreement shall supersede, modify, replace or cancel any existing contractual obligations, including but not limited to restrictive covenants, applicable to you in any employment agreement, offer letter, prior equity award agreement or any other agreement or contract with the Company or its Affiliates.

(b) In the event that the Participant violates any of the contractual obligations referred to in this Section 8, in addition to any other remedy which may be available at law or in equity, the RSUs shall be automatically forfeited effective as of the date on which such violation first occurs. The foregoing rights and remedies are in addition to any other rights and remedies that may be available to the Company and shall not prevent (and the Participant shall not assert that they shall prevent) the Company from bringing one or more actions in any applicable jurisdiction to recover damages as a result of the Participant's breach of such restrictive covenants.

9. Miscellaneous.

(a) **Transferability.** The RSUs may not be assigned, alienated, pledged, attached, sold or otherwise transferred or encumbered (a "Transfer") by the Participant other than by will or by the laws of descent and distribution, pursuant to a qualified domestic relations order or as otherwise permitted under Section 15(b) of the Plan. Any attempted Transfer of the RSUs contrary to the provisions hereof, and the levy of any execution, attachment or similar process upon the RSUs, shall be null and void and without effect.

(b) **Waiver.** Any right of the Company contained in this Agreement may be waived in writing by the Committee. No waiver of any right hereunder by any party shall operate as a waiver of any other right, or as a waiver of the same right with respect to any subsequent occasion for its exercise, or as a waiver of any right to damages. No waiver by any party of any breach of this Agreement shall be held to constitute a waiver of any other breach or a waiver of the continuation of the same breach.

(c) **Section 409A.** The RSUs are intended to be exempt from, or compliant with, Section 409A of the Internal Revenue Code ("Code"). Notwithstanding the foregoing or any provision of the Plan or this Agreement, if any provision of the Plan or this Agreement contravenes Section 409A of the Code or could cause the Participant to incur any tax, interest or penalties under Section 409A of the Code, the Committee may, in its sole discretion and without the Participant's consent, modify such provision to (i) comply with, or avoid being subject to, Section 409A of the Code, or to avoid the incurrence of taxes, interest and penalties under Section 409A of the Code, and/or (ii) maintain, to the maximum extent practicable, the original intent and economic benefit to the Participant of the applicable provision without materially increasing the cost to the Company or contravening the provisions of Section 409A of the Code. This Section 9(c) does not create an obligation on the part of the Company to modify the Plan or this Agreement and does not guarantee that the RSUs will not be subject to interest and penalties under Section 409A.

(d) **General Assets.** All amounts credited in respect of the RSUs to the book-entry account under this Agreement shall continue for all purposes to be part of the general assets of the Company. The Participant's interest in such account shall make the Participant only a general, unsecured creditor of the Company.

(e) **Notices.** Any notices provided for in this Agreement or the Plan shall be in writing and shall be deemed sufficiently given if either hand delivered or if sent by fax, pdf/email or overnight courier, or by postage paid first class mail. Notices sent by mail shall be deemed received three business days after mailing but in no event later than the date of actual receipt. Notices shall be directed, if to the Participant, at the Participant's address indicated by the Company's records, or if to the Company, to the attention of the General Counsel at the Company's principal executive office.

(f) Severability. The invalidity or unenforceability of any provision of this Agreement shall not affect the validity or enforceability of any other provision of this Agreement, and each other provision of this Agreement shall be severable and enforceable to the extent permitted by law.

(g) No Rights to Employment or Service. Nothing contained in this Agreement shall be construed as giving the Participant any right to be retained, in any position, as an employee, consultant or director of the Company or its Affiliates or shall interfere with or restrict in any way the rights of the Company or its Affiliates, which are hereby expressly reserved, to remove, terminate or discharge the Participant at any time for any reason whatsoever.

(h) Fractional Shares. In lieu of issuing a fraction of a share of Class A Common Stock resulting from adjustment of the RSUs pursuant to Section 12 of the Plan or otherwise, the Company shall be entitled to pay to the Participant an amount in cash equal to the Fair Market Value of such fractional share.

(i) Beneficiary. The Participant may file with the Committee a written designation of a beneficiary on such form as may be prescribed by the Committee and may, from time to time, amend or revoke such designation.

(j) Successors. The terms of this Agreement shall be binding upon and inure to the benefit of the Company and its successors and assigns, and of the Participant and the beneficiaries, executors, administrators, heirs and successors of the Participant.

(k) Entire Agreement. This Agreement and the Plan contain the entire agreement and understanding of the parties hereto with respect to the subject matter contained herein and supersede all prior communications, representations and negotiations in respect thereto, except as set forth in Section 8 hereof. No change, modification or waiver of any provision of this Agreement shall be valid unless the same be in writing and signed by the parties hereto, except for any changes permitted without consent under Section 12 or 14 of the Plan.

(l) Governing Law and Venue. This Agreement shall be construed and interpreted in accordance with the laws of the State of Delaware, without regard to principles of conflicts of laws thereof, or principles of conflicts of laws of any other jurisdiction which could cause the application of the laws of any jurisdiction other than the State of Delaware.

(i) Dispute Resolution; Consent to Jurisdiction. All disputes between or among any Persons arising out of or in any way connected with the Plan, this Agreement or the RSUs shall be solely and finally settled by the Committee, acting in good faith, the determination of which shall be final. Any matters not covered by the preceding sentence shall be solely and finally settled in accordance with the Plan, and the Participant and the Company consent to the personal jurisdiction of the United States Federal and state courts sitting in Wilmington, Delaware as the exclusive jurisdiction with respect to matters arising out of or related to the enforcement of the Committee's determinations and resolution of matters, if any, related to the Plan or this Agreement not required to be resolved by the Committee. Each such Person hereby irrevocably consents to the service of process of any of the aforementioned courts in any such suit, action or proceeding by the mailing of copies thereof by registered or certified mail, postage prepaid, to the last known address of such Person, such service to become effective ten (10) days after such mailing.

(ii) Waiver of Jury Trial. Each party hereto hereby waives, to the fullest extent permitted by applicable law, any right it may have to a trial by jury in any legal proceeding directly or indirectly arising out of or relating to this Agreement or the transactions contemplated (whether based on contract, tort or any other theory). Each party hereto (A) certifies that no representative, agent or attorney of any other party has represented, expressly or otherwise, that such other party would not, in the event of litigation, seek to enforce the foregoing waiver and (B) acknowledges that it and the other parties hereto have been induced to enter into this Agreement by, among other things, the mutual waivers and certifications in this section.

(m) Headings; Gender. The headings of the Sections hereof are provided for convenience only and are not to serve as a basis for interpretation or construction, and shall not constitute a part, of this Agreement. Masculine pronouns and other words of masculine gender shall refer to both men and women as appropriate.

(n) Counterparts. This Agreement may be executed in one or more counterparts (including via facsimile and electronic image scan (pdf)), each of which shall be deemed to be an original, but all of which together shall constitute one and the same instrument and shall become effective when one or more counterparts have been signed by each of the parties and delivered to the other parties.

(o) Electronic Signature and Delivery. This Agreement may be accepted by return signature or by electronic confirmation. By accepting this Agreement, the Participant consents to the electronic delivery of prospectuses, annual reports and other information required to be delivered by U.S. Securities and Exchange Commission rules (which consent may be revoked in writing by the Participant at any time upon three business days' notice to the Company, in which case subsequent prospectuses, annual reports and other information will be delivered in hard copy to the Participant).

(p) Electronic Participation in Plan. The Company may, in its sole discretion, decide to deliver any documents related to current or future participation in the Plan by electronic means. The Participant hereby consents to receive such documents by electronic delivery and agrees to participate in the Plan through an on-line or electronic system established and maintained by the Company or a third party designated by the Company.

[Remainder of page intentionally left blank]

IN WITNESS WHEREOF, this Agreement has been executed by the Company and the Participant as of the day first written above.

VIRTU FINANCIAL, INC.

By: /s/ Douglas A. Cifu
Name: Douglas A. Cifu
Title: Chief Executive Officer

/s/ Alex Ioffe
Alex Ioffe

VIRTU FINANCIAL, INC.
2015 MANAGEMENT INCENTIVE PLAN
EMPLOYEE
RESTRICTED STOCK UNIT AND COMMON STOCK AWARD AGREEMENT

THIS RESTRICTED STOCK UNIT AND COMMON STOCK AWARD AGREEMENT (the "Agreement"), is entered into as of December 31, 2016 (the "Date of Grant"), by and between Virtu Financial, Inc., a Delaware corporation (the "Company"), and Henry Kim (the "Participant").

WHEREAS, the Company has adopted the Virtu Financial, Inc. 2015 Management Incentive Plan (the "Plan"), pursuant to which shares of Class A Common Stock and Restricted Stock Units ("RSUs") may be granted; and

WHEREAS, the Compensation Committee of the Board of Directors of the Company has determined that it is in the best interests of the Company and its stockholders to grant the shares of Class A Common Stock in recognition of Participant's service to the Company and its Affiliates from January 1, 2016 through December 31, 2016, and RSUs provided for herein to the Participant subject to the terms set forth herein.

NOW, THEREFORE, for and in consideration of the premises and the covenants of the parties contained in this Agreement, and for other good and valuable consideration, the receipt of which is hereby acknowledged, the parties hereto, for themselves, their successors and assigns, hereby agree as follows:

1. Grant of Common Stock and Restricted Stock Units.

(a) Grant. The Company hereby grants to the Participant a total number of shares of Class A Common Stock equal to \$48,000.00 divided by the Issue Price (the "Shares"), and a total number of RSUs equal to \$72,000.00 divided by the Issue Price, in each case on the terms and conditions set forth in this Agreement and as otherwise provided in the Plan. The RSUs shall be credited to a separate book-entry account maintained for the Participant on the books of the Company, which may be maintained by a third party. The "Issue Price" shall mean the volume weighted average price of shares of the Company's Class A Common Stock traded during the three days preceding the Date of Grant, as determined by the Company.

(b) Incorporation by Reference. The provisions of the Plan are incorporated herein by reference. Except as otherwise expressly set forth herein, this Agreement shall be construed in accordance with the provisions of the Plan and any interpretations, amendments, rules and regulations promulgated by the Committee from time to time pursuant to the Plan. Any capitalized terms not otherwise defined in this Agreement shall have the definitions set forth in the Plan. The Committee shall have final authority to interpret and construe the Plan and this Agreement and to make any and all determinations under them, and its decision shall be binding and conclusive upon the Participant and his legal representative in respect of any questions arising under the Plan or this Agreement. The Participant acknowledges that he has received a copy of the Plan and has had an opportunity to review the Plan and agrees to be bound by all the terms and provisions of the Plan.

2. Vesting; Settlement of Restricted Stock Units.

(a) The Shares shall be one hundred percent (100%) vested as of the Date of Grant.

(b) Except as may otherwise be provided herein, subject to the Participant's continued employment or service with the Company or an Affiliate, the RSUs shall vest in equal installments on each of the first three (3) anniversaries of the Date of Grant (each such date, a "Vesting Date"). Upon each Vesting Date, such portion of the RSUs that vest on such date shall no longer be subject to the transfer restrictions pursuant to Section 9(a) hereof or cancellation pursuant to Section 4 hereof. Any fractional RSUs resulting from the application of the vesting schedule shall be aggregated and the RSUs resulting from such aggregation shall vest on the final Vesting Date.

(c) Vested RSUs shall be settled within ten (10) days following the Vesting Date for such RSUs in shares of Class A Common Stock, or cash, as determined by the Committee in its sole discretion.

3. Dividend Equivalents. In the event of any issuance of a cash dividend on the shares of Class A Common Stock (a "Dividend"), the Participant shall be entitled to receive, with respect to each RSU granted pursuant to this Agreement and outstanding as of the record date for such Dividend, payment of an amount equal to the Dividend at the same time as the Dividend is paid to holders of shares of Class A Common Stock generally.

4. Termination of Employment or Service. If the Participant's employment or service with the Company and its Affiliates terminates for any reason, all unvested RSUs shall be cancelled immediately and the Participant shall not be entitled to receive any payments with respect thereto.

5. Rights as a Stockholder. The Participant shall not be deemed for any purpose to be the owner of any shares of Class A Common Stock constituting the Shares or underlying the RSUs unless, until and to the extent that (i) the Company shall have issued and delivered to the Participant the shares of Class A Common Stock constituting the Shares or underlying the RSUs and (ii) the Participant's name shall have been entered as a stockholder of record with respect to such shares of Class A Common Stock on the books of the Company. The Company shall cause the actions described in clauses (i) and (ii) of the preceding sentence to occur promptly following settlement as contemplated by this Agreement, subject to compliance with applicable laws.

6. Compliance with Legal Requirements.

(a) Generally. The granting of the Shares and the granting and settlement of the RSUs, and any other obligations of the Company under this Agreement, shall be subject to all applicable U.S. federal, state and local laws, rules and regulations, all applicable non-U.S. laws, rules and regulations and to such approvals by any regulatory or governmental agency as may be required. The Participant agrees to take all

steps the Committee or the Company determines are reasonably necessary to comply with all applicable provisions of U.S. federal and state securities law and non-U.S. securities law in exercising his rights under this Agreement.

(b) **Taxes and Withholding.** The grant of the Shares and the vesting and settlement of the RSUs shall be subject to the Participant satisfying any applicable U.S. federal, state and local tax withholding obligations and non-U.S. tax withholding obligations. The Participant shall be required to pay to the Company, and the Company shall have the right and is hereby authorized to withhold any cash, shares of Class A Common Stock, other securities or other property or from any compensation or other amounts owing to the Participant, the amount (in cash, Class A Common Stock, other securities or other property) of any required withholding taxes in respect of the Shares or in respect of the RSUs, settlement of the RSUs or any payment or transfer of the RSUs, and to take any such other action as the Committee or the Company deem necessary to satisfy all obligations for the payment of such withholding taxes. In its sole discretion, the Company may permit the Participant to satisfy, in whole or in part, the tax obligations by (A) withholding shares of Class A Common Stock from the Shares having a Fair Market Value equal to such withholding liability and (B) withholding shares of Class A Common Stock that would otherwise be deliverable to the Participant upon settlement of the RSUs with a Fair Market Value equal to such withholding liability.

7. Clawback. Notwithstanding anything to the contrary contained herein, the Committee may cancel the Shares and RSU award if the Participant, without the consent of the Company, has engaged in or engages in activity that is in conflict with or adverse to the interest of the Company or any Affiliate while employed by or providing services to the Company or any Affiliate, including fraud or conduct contributing to any financial restatements or irregularities, or violates a non-competition, non-solicitation, non-disparagement or non-disclosure covenant or agreement with the Company or any Affiliate, including for the avoidance of doubt Exhibit A to this Agreement, as determined by the Committee. In such event, the Participant will forfeit any compensation, gain or other value realized thereafter on the vesting or settlement of the RSUs, the sale or other transfer of the Shares and the RSUs, or the sale of shares of Class A Common Stock acquired in respect of the RSUs, and must promptly repay such amounts to the Company. If the Participant receives any amount in excess of what the Participant should have received with respect to the Shares or under the terms of the RSUs for any reason (including without limitation by reason of a financial restatement, mistake in calculations or other administrative error), all as determined by the Committee, then the Participant shall be required to promptly repay any such excess amount to the Company. To the extent required by applicable law and/or the rules and regulations of NASDAQ or any other securities exchange or inter-dealer quotation system on which the Class A Common Stock is listed or quoted, or if so required pursuant to a written policy adopted by the Company, the Shares and the RSUs shall be subject (including on a retroactive basis) to clawback, forfeiture or similar requirements (and such requirements shall be deemed incorporated by reference into this Agreement).

8. Restrictive Covenants.

(a) The Participant shall be subject to the confidentiality and restrictive covenants set forth on Exhibit A attached hereto.

(b) In the event that the Participant violates any of the restrictive covenants referred to in this Section 8, in addition to any other remedy which may be available at law or in equity, the RSUs shall be automatically forfeited effective as of the date on which such violation first occurs. The foregoing rights and remedies are in addition to any other rights and remedies that may be available to the Company and shall not prevent (and the Participant shall not assert that they shall prevent) the Company from bringing one or more actions in any applicable jurisdiction to recover damages as a result of the Participant's breach of such restrictive covenants.

9. Miscellaneous.

(a) **Transferability.** The RSUs may not be assigned, alienated, pledged, attached, sold or otherwise transferred or encumbered (a "Transfer") by the Participant other than by will or by the laws of descent and distribution, pursuant to a qualified domestic relations order or as otherwise permitted under Section 15(b) of the Plan. Any attempted Transfer of the RSUs contrary to the provisions hereof, and the levy of any execution, attachment or similar process upon the RSUs, shall be null and void and without effect.

(b) **Waiver.** Any right of the Company contained in this Agreement may be waived in writing by the Committee. No waiver of any right hereunder by any party shall operate as a waiver of any other right, or as a waiver of the same right with respect to any subsequent occasion for its exercise, or as a waiver of any right to damages. No waiver by any party of any breach of this Agreement shall be held to constitute a waiver of any other breach or a waiver of the continuation of the same breach.

(c) **Section 409A.** The RSUs are intended to be exempt from, or compliant with, Section 409A of the Code. Notwithstanding the foregoing or any provision of the Plan or this Agreement, if any provision of the Plan or this Agreement contravenes Section 409A of the Code or could cause the Participant to incur any tax, interest or penalties under Section 409A of the Code, the Committee may, in its sole discretion and without the Participant's consent, modify such provision to (i) comply with, or avoid being subject to, Section 409A of the Code, or to avoid the incurrence of taxes, interest and penalties under Section 409A of the Code, and/or (ii) maintain, to the maximum extent practicable, the original intent and economic benefit to the Participant of the applicable provision without materially increasing the cost to the Company or contravening the provisions of Section 409A of the Code. This Section 9(c) does not create an obligation on the part of the Company to modify the Plan or this Agreement and does not guarantee that the RSUs will not be subject to interest and penalties under Section 409A.

(d) **General Assets.** All amounts credited in respect of the RSUs to the book-entry account under this Agreement shall continue for all purposes to be part of the general assets of the Company. The Participant's interest in such account shall make the Participant only a general, unsecured creditor of the Company.

(e) **Notices.** Any notices provided for in this Agreement or the Plan shall be in writing and shall be deemed sufficiently given if either hand delivered or if sent by fax, pdf/email or overnight courier, or by postage paid first class mail. Notices sent by mail shall be deemed received three business days after mailing but in no event later than the date of actual receipt. Notices shall be directed, if to the Participant, at the Participant's address indicated by the Company's records, or if to the Company, to the attention of the General Counsel at the Company's principal executive office.

(f) **Severability.** The invalidity or unenforceability of any provision of this Agreement shall not affect the validity or enforceability of any other provision of this Agreement, and each other provision of this Agreement shall be severable and enforceable to the extent permitted by

law.

(g) No Rights to Employment or Service. Nothing contained in this Agreement shall be construed as giving the Participant any right to be retained, in any position, as an employee, consultant or director of the Company or its Affiliates or shall interfere with or restrict in any way the rights of the Company or its Affiliates, which are hereby expressly reserved, to remove, terminate or discharge the Participant at any time for any reason whatsoever.

(h) Fractional Shares. In lieu of issuing a fraction of a share of Class A Common Stock resulting from adjustment of the Shares or the RSUs pursuant to Section 12 of the Plan or otherwise, the Company shall be entitled to pay to the Participant an amount in cash equal to the Fair Market Value of such fractional share.

(i) Beneficiary. The Participant may file with the Committee a written designation of a beneficiary on such form as may be prescribed by the Committee and may, from time to time, amend or revoke such designation.

(j) Successors. The terms of this Agreement shall be binding upon and inure to the benefit of the Company and its successors and assigns, and of the Participant and the beneficiaries, executors, administrators, heirs and successors of the Participant.

(k) Entire Agreement. This Agreement and the Plan contain the entire agreement and understanding of the parties hereto with respect to the subject matter contained herein and supersede all prior communications, representations and negotiations in respect thereto. No change, modification or waiver of any provision of this Agreement shall be valid unless the same be in writing and signed by the parties hereto, except for any changes permitted without consent under Section 12 or 14 of the Plan.

(l) Governing Law and Venue. This Agreement shall be construed and interpreted in accordance with the laws of the State of Delaware, without regard to principles of conflicts of laws thereof, or principles of conflicts of laws of any other jurisdiction which could cause the application of the laws of any jurisdiction other than the State of Delaware.

(i) Dispute Resolution; Consent to Jurisdiction. All disputes between or among any Persons arising out of or in any way connected with the Plan, this Agreement, the Shares or the RSUs shall be solely and finally settled by the Committee, acting in good faith, the determination of which shall be final. Any matters not covered by the preceding sentence shall be solely and finally settled in accordance with the Plan, and the Participant and the Company consent to the personal jurisdiction of the United States Federal and state courts sitting in Wilmington, Delaware as the exclusive jurisdiction with respect to matters arising out of or related to the enforcement of the Committee's determinations and resolution of matters, if any, related to the Plan or this Agreement not required to be resolved by the Committee. Each such Person hereby irrevocably consents to the service of process of any of the aforementioned courts in any such suit, action or proceeding by the mailing of copies thereof by registered or certified mail, postage prepaid, to the last known address of such Person, such service to become effective ten (10) days after such mailing.

(ii) Waiver of Jury Trial. Each party hereto hereby waives, to the fullest extent permitted by applicable law, any right it may have to a trial by jury in any legal proceeding directly or indirectly arising out of or relating to this Agreement or the transactions contemplated (whether based on contract, tort or any other theory). Each party hereto (A) certifies that no representative, agent or attorney of any other party has represented, expressly or otherwise, that such other party would not, in the event of litigation, seek to enforce the foregoing waiver and (B) acknowledges that it and the other parties hereto have been induced to enter into this Agreement by, among other things, the mutual waivers and certifications in this section.

(m) Headings; Gender. The headings of the Sections hereof are provided for convenience only and are not to serve as a basis for interpretation or construction, and shall not constitute a part, of this Agreement. Masculine pronouns and other words of masculine gender shall refer to both men and women as appropriate.

(n) Counterparts. This Agreement may be executed in one or more counterparts (including via facsimile and electronic image scan (pdf)), each of which shall be deemed to be an original, but all of which together shall constitute one and the same instrument and shall become effective when one or more counterparts have been signed by each of the parties and delivered to the other parties.

(o) Electronic Signature and Delivery. This Agreement may be accepted by return signature or by electronic confirmation. By accepting this Agreement, the Participant consents to the electronic delivery of prospectuses, annual reports and other information required to be delivered by U.S. Securities and Exchange Commission rules (which consent may be revoked in writing by the Participant at any time upon three business days' notice to the Company, in which case subsequent prospectuses, annual reports and other information will be delivered in hard copy to the Participant).

(p) Electronic Participation in Plan. The Company may, in its sole discretion, decide to deliver any documents related to current or future participation in the Plan by electronic means. The Participant hereby consents to receive such documents by electronic delivery and agrees to participate in the Plan through an on-line or electronic system established and maintained by the Company or a third party designated by the Company.

IN WITNESS WHEREOF, this Agreement has been executed by the Company and the Participant as of the day first written above.

VIRTU FINANCIAL, INC.

By: /s/ Douglas A. Cifu
Name: Douglas A. Cifu
Title: Chief Executive Officer

/s/ Henry Kim
Henry Kim

VIRTU FINANCIAL, INC.
AMENDED AND RESTATED 2015
MANAGEMENT INCENTIVE PLAN
EMPLOYEE
RESTRICTED STOCK UNIT AWARD AGREEMENT

THIS RESTRICTED STOCK UNIT AWARD AGREEMENT (the “Agreement”), is entered into as of April 22, 2019 (the “Date of Grant”), by and between Virtu Financial, Inc., a Delaware corporation (the “Company”), and Hyuntaek Henry Kim (the “Participant”).

WHEREAS, the Company has adopted the Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan (the “Plan”), pursuant to which Restricted Stock Units (“RSUs”) may be granted; and

WHEREAS, the Compensation Committee of the Board of Directors of the Company has determined that it is in the best interests of the Company and its stockholders to grant the RSUs provided for herein to the Participant subject to the terms set forth herein.

NOW, THEREFORE, for and in consideration of the premises and the covenants of the parties contained in this Agreement, and for other good and valuable consideration, the receipt of which is hereby acknowledged, the parties hereto, for themselves, their successors and assigns, hereby agree as follows:

1. Grant of Restricted Stock Units.

(a) Grant. The Company hereby grants to the Participant a total number of RSUs equal to \$360,000.00 divided by the Issue Price on the terms and conditions set forth in this Agreement and as otherwise provided in the Plan. The RSUs shall be credited to a separate book-entry account maintained for the Participant on the books of the Company, which may be maintained by a third party. The “Issue Price” shall mean the volume weighted average price of shares of the Company’s Class A Common Stock traded during the three days preceding the Date of Grant, as determined by the Company.

(b) Incorporation by Reference. The provisions of the Plan are incorporated herein by reference. Except as otherwise expressly set forth herein, this Agreement shall be construed in accordance with the provisions of the Plan and any interpretations, amendments, rules and regulations promulgated by the Committee from time to time pursuant to the Plan. Any capitalized terms not otherwise defined in this Agreement shall have the definitions set forth in the Plan. The Committee shall have final authority to interpret and construe the Plan and this Agreement and to make any and all determinations under them, and its decision shall be binding and conclusive upon the Participant and his legal representative in respect of any questions arising under the Plan or this Agreement. The Participant acknowledges that he has received a copy of the Plan and has had an opportunity to review the Plan and agrees to be bound by all the terms and provisions of the Plan.

2. Vesting and Settlement.

(a) Except as may otherwise be provided herein, subject to the Participant’s continued employment or service with the Company or an Affiliate, the RSUs shall vest in equal installments on March 1, 2020, March 1, 2021 and March 1, 2022 (each such date, a “Vesting Date”). Upon each Vesting Date, such portion of the RSUs that vest on such date shall no longer be subject to the transfer restrictions pursuant to Section 9(a) hereof or cancellation pursuant to Section 4 hereof. Any fractional RSUs resulting from the application of the vesting schedule shall be aggregated and the RSUs resulting from such aggregation shall vest on the final Vesting Date.

(b) Vested RSUs shall be settled within ten (10) days following the Vesting Date for such RSUs in shares of Class A Common Stock, or cash, as determined by the Committee in its sole discretion.

3. Dividend Equivalents. In the event of any issuance of a cash dividend on the shares of Class A Common Stock (a “Dividend”), the Participant shall be entitled to receive, with respect to each RSU granted pursuant to this Agreement and outstanding as of the record date for such Dividend, payment of an amount equal to the Dividend at the same time as the Dividend is paid to holders of shares of Class A Common Stock generally.

4. Termination of Employment or Service. If the Participant’s employment or service with the Company and its Affiliates terminates for any reason, all unvested RSUs shall be cancelled immediately and the Participant shall not be entitled to receive any payments with respect thereto.

5. Rights as a Stockholder. The Participant shall not be deemed for any purpose to be the owner of any shares of Class A Common Stock underlying the RSUs unless, until and to the extent that (i) the Company shall have issued and delivered to the Participant the shares of Class A Common Stock underlying the RSUs and (ii) the Participant’s name shall have been entered as a stockholder of record with respect to such shares of Class A Common Stock on the books of the Company. The Company shall cause the actions described in clauses (i) and (ii) of the preceding sentence to occur promptly following settlement as contemplated by this Agreement, subject to compliance with applicable laws.

6. Compliance with Legal Requirements.

(a) Generally. The granting and settlement of the RSUs, and any other obligations of the Company under this Agreement, shall be subject to all applicable U.S. federal, state and local laws, rules and regulations, all applicable non-U.S. laws, rules and regulations and to such approvals by any regulatory or governmental agency as may be required. The Participant agrees to take all steps the Committee or the Company determines are reasonably necessary to comply with all applicable provisions of U.S. federal and state securities law and non-U.S. securities law in exercising his rights under this Agreement.

(b) Taxes and Withholding. The vesting and settlement of the RSUs shall be subject to the Participant satisfying any applicable U.S. federal, state and local tax withholding obligations and non-U.S. tax withholding obligations. The Participant shall be required to pay to the Company, and the Company shall have the right and is hereby authorized to withhold any cash, shares of Class A Common Stock, other

securities or other property or from any compensation or other amounts owing to the Participant, the amount (in cash, Class A Common Stock, other securities or other property) of any required withholding taxes in respect of the RSUs, settlement of the RSUs or any payment or transfer of the RSUs, and to take any such other action as the Committee or the Company deem necessary to satisfy all obligations for the payment of such withholding taxes. In its sole discretion, the Company may permit the Participant to satisfy, in whole or in part, the tax obligations by withholding shares of Class A Common Stock that would otherwise be deliverable to the Participant upon settlement of the RSUs with a Fair Market Value equal to such withholding liability.

7. Clawback. Notwithstanding anything to the contrary contained herein, the Committee may cancel the RSU award if the Participant, without the consent of the Company, has engaged in or engages in activity that is in conflict with or adverse to the interest of the Company or any Affiliate while employed by or providing services to the Company or any Affiliate, including fraud or conduct contributing to any financial restatements or irregularities, or violates a non-competition, non-solicitation, non-disparagement, non-disclosure or confidentiality covenant or agreement with the Company or any Affiliate, as determined by the Committee. In such event, the Participant will forfeit any compensation, gain or other value realized previously or thereafter on the vesting or settlement of the RSUs, the sale or other transfer of the RSUs, or the sale of shares of Class A Common Stock acquired in respect of the RSUs, and must promptly repay such amounts to the Company. If the Participant receives any amount in excess of what the Participant should have received under the terms of the RSUs for any reason (including without limitation by reason of a financial restatement, mistake in calculations or other administrative error), all as determined by the Committee, then the Participant shall be required to promptly repay any such excess amount to the Company. To the extent required by applicable law and/or the rules and regulations of NASDAQ or any other securities exchange or inter-dealer quotation system on which the Class A Common Stock is listed or quoted, or if so required pursuant to a written policy adopted by the Company, the RSUs shall be subject (including on a retroactive basis) to clawback, forfeiture or similar requirements (and such requirements shall be deemed incorporated by reference into this Agreement).

8. Contractual Obligations.

(a) Nothing in this Agreement shall supersede, modify, replace or cancel any existing contractual obligations, including but not limited to restrictive covenants, applicable to you in any employment agreement, offer letter, prior equity award agreement or any other agreement or contract with the Company or its Affiliates.

(b) In the event that the Participant violates any of the contractual obligations referred to in this Section 8, in addition to any other remedy which may be available at law or in equity, the RSUs shall be automatically forfeited effective as of the date on which such violation first occurs. The foregoing rights and remedies are in addition to any other rights and remedies that may be available to the Company and shall not prevent (and the Participant shall not assert that they shall prevent) the Company from bringing one or more actions in any applicable jurisdiction to recover damages as a result of the Participant's breach of such restrictive covenants.

9. Miscellaneous.

(a) Transferability. The RSUs may not be assigned, alienated, pledged, attached, sold or otherwise transferred or encumbered (a "Transfer") by the Participant other than by will or by the laws of descent and distribution, pursuant to a qualified domestic relations order or as otherwise permitted under Section 15(b) of the Plan. Any attempted Transfer of the RSUs contrary to the provisions hereof, and the levy of any execution, attachment or similar process upon the RSUs, shall be null and void and without effect.

(b) Waiver. Any right of the Company contained in this Agreement may be waived in writing by the Committee. No waiver of any right hereunder by any party shall operate as a waiver of any other right, or as a waiver of the same right with respect to any subsequent occasion for its exercise, or as a waiver of any right to damages. No waiver by any party of any breach of this Agreement shall be held to constitute a waiver of any other breach or a waiver of the continuation of the same breach.

(c) Section 409A. The RSUs are intended to be exempt from, or compliant with, Section 409A of the Internal Revenue Code ("Code"). Notwithstanding the foregoing or any provision of the Plan or this Agreement, if any provision of the Plan or this Agreement contravenes Section 409A of the Code or could cause the Participant to incur any tax, interest or penalties under Section 409A of the Code, the Committee may, in its sole discretion and without the Participant's consent, modify such provision to (i) comply with, or avoid being subject to, Section 409A of the Code, or to avoid the incurrence of taxes, interest and penalties under Section 409A of the Code, and/or (ii) maintain, to the maximum extent practicable, the original intent and economic benefit to the Participant of the applicable provision without materially increasing the cost to the Company or contravening the provisions of Section 409A of the Code. This Section 9(c) does not create an obligation on the part of the Company to modify the Plan or this Agreement and does not guarantee that the RSUs will not be subject to interest and penalties under Section 409A.

(d) General Assets. All amounts credited in respect of the RSUs to the book-entry account under this Agreement shall continue for all purposes to be part of the general assets of the Company. The Participant's interest in such account shall make the Participant only a general, unsecured creditor of the Company.

(e) Notices. Any notices provided for in this Agreement or the Plan shall be in writing and shall be deemed sufficiently given if either hand delivered or if sent by fax, pdf/email or overnight courier, or by postage paid first class mail. Notices sent by mail shall be deemed received three business days after mailing but in no event later than the date of actual receipt. Notices shall be directed, if to the Participant, at the Participant's address indicated by the Company's records, or if to the Company, to the attention of the General Counsel at the Company's principal executive office.

(f) Severability. The invalidity or unenforceability of any provision of this Agreement shall not affect the validity or enforceability of any other provision of this Agreement, and each other provision of this Agreement shall be severable and enforceable to the extent permitted by law.

(g) No Rights to Employment or Service. Nothing contained in this Agreement shall be construed as giving the Participant any right to be retained, in any position, as an employee, consultant or director of the Company or its Affiliates or shall interfere with or restrict in any

way the rights of the Company or its Affiliates, which are hereby expressly reserved, to remove, terminate or discharge the Participant at any time for any reason whatsoever.

(h) Fractional Shares. In lieu of issuing a fraction of a share of Class A Common Stock resulting from adjustment of the RSUs pursuant to Section 12 of the Plan or otherwise, the Company shall be entitled to pay to the Participant an amount in cash equal to the Fair Market Value of such fractional share.

(i) Beneficiary. The Participant may file with the Committee a written designation of a beneficiary on such form as may be prescribed by the Committee and may, from time to time, amend or revoke such designation.

(j) Successors. The terms of this Agreement shall be binding upon and inure to the benefit of the Company and its successors and assigns, and of the Participant and the beneficiaries, executors, administrators, heirs and successors of the Participant.

(k) Entire Agreement. This Agreement and the Plan contain the entire agreement and understanding of the parties hereto with respect to the subject matter contained herein and supersede all prior communications, representations and negotiations in respect thereto, except as set forth in Section 8 hereof. No change, modification or waiver of any provision of this Agreement shall be valid unless the same be in writing and signed by the parties hereto, except for any changes permitted without consent under Section 12 or 14 of the Plan.

(l) Governing Law and Venue. This Agreement shall be construed and interpreted in accordance with the laws of the State of Delaware, without regard to principles of conflicts of laws thereof, or principles of conflicts of laws of any other jurisdiction which could cause the application of the laws of any jurisdiction other than the State of Delaware.

(i) Dispute Resolution; Consent to Jurisdiction. All disputes between or among any Persons arising out of or in any way connected with the Plan, this Agreement or the RSUs shall be solely and finally settled by the Committee, acting in good faith, the determination of which shall be final. Any matters not covered by the preceding sentence shall be solely and finally settled in accordance with the Plan, and the Participant and the Company consent to the personal jurisdiction of the United States Federal and state courts sitting in Wilmington, Delaware as the exclusive jurisdiction with respect to matters arising out of or related to the enforcement of the Committee's determinations and resolution of matters, if any, related to the Plan or this Agreement not required to be resolved by the Committee. Each such Person hereby irrevocably consents to the service of process of any of the aforementioned courts in any such suit, action or proceeding by the mailing of copies thereof by registered or certified mail, postage prepaid, to the last known address of such Person, such service to become effective ten (10) days after such mailing.

(ii) Waiver of Jury Trial. Each party hereto hereby waives, to the fullest extent permitted by applicable law, any right it may have to a trial by jury in any legal proceeding directly or indirectly arising out of or relating to this Agreement or the transactions contemplated (whether based on contract, tort or any other theory). Each party hereto (A) certifies that no representative, agent or attorney of any other party has represented, expressly or otherwise, that such other party would not, in the event of litigation, seek to enforce the foregoing waiver and (B) acknowledges that it and the other parties hereto have been induced to enter into this Agreement by, among other things, the mutual waivers and certifications in this section.

(m) Headings; Gender. The headings of the Sections hereof are provided for convenience only and are not to serve as a basis for interpretation or construction, and shall not constitute a part, of this Agreement. Masculine pronouns and other words of masculine gender shall refer to both men and women as appropriate.

(n) Counterparts. This Agreement may be executed in one or more counterparts (including via facsimile and electronic image scan (pdf)), each of which shall be deemed to be an original, but all of which together shall constitute one and the same instrument and shall become effective when one or more counterparts have been signed by each of the parties and delivered to the other parties.

(o) Electronic Signature and Delivery. This Agreement may be accepted by return signature or by electronic confirmation. By accepting this Agreement, the Participant consents to the electronic delivery of prospectuses, annual reports and other information required to be delivered by U.S. Securities and Exchange Commission rules (which consent may be revoked in writing by the Participant at any time upon three business days' notice to the Company, in which case subsequent prospectuses, annual reports and other information will be delivered in hard copy to the Participant).

(p) Electronic Participation in Plan. The Company may, in its sole discretion, decide to deliver any documents related to current or future participation in the Plan by electronic means. The Participant hereby consents to receive such documents by electronic delivery and agrees to participate in the Plan through an on-line or electronic system established and maintained by the Company or a third party designated by the Company.

[Remainder of page intentionally left blank]

IN WITNESS WHEREOF, this Agreement has been executed by the Company and the Participant as of the day first written above.

VIRTU FINANCIAL, INC.

By: /s/ Douglas A. Cifu
Name: Douglas A. Cifu
Title: Chief Executive Officer

/s/ Hyuntaek Henry Kim
Hyuntaek Henry Kim

CEO CERTIFICATION
PURSUANT TO SECTION 302 OF THE
SARBANES — OXLEY ACT OF 2002

I, Douglas A. Cifu, certify that:

1. I have reviewed this quarterly report on Form 10-Q for the period ending September 30, 2019 of Virtu Financial, Inc. (the “registrant”) as filed with the Securities and Exchange Commission on the date hereof;
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.

Date: November 8, 2019 By: /s/ Douglas A. Cifu

Douglas A. Cifu
Chief Executive Officer

CFO CERTIFICATION
PURSUANT TO SECTION 302 OF THE
SARBANES — OXLEY ACT OF 2002

I, Alex Ioffe, certify that:

1. I have reviewed this quarterly report on Form 10-Q for the period ending September 30, 2019 of Virtu Financial, Inc. (the “registrant”) as filed with the Securities and Exchange Commission on the date hereof;
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.

Date: November 8, 2019 By: /s/ Alex Ioffe

Alex Ioffe

Chief Financial Officer

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the quarterly report of Virtu Financial, Inc. (the "Company") on Form 10-Q for the period ended September 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Douglas A. Cifu, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, in my capacity as an officer of the Company that, to my knowledge:

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/ Douglas A. Cifu

Douglas A. Cifu

Chief Executive Officer

Date: November 8, 2019

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the quarterly report of Virtu Financial, Inc. (the "Company") on Form 10-Q for the period ended September 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Alex Ioffe, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, in my capacity as an officer of the Company that, to my knowledge:

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/ Alex Ioffe

Alex Ioffe

Chief Financial Officer

Date: November 8, 2019