

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2022

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.)

1633 Broadway

New York, New York

(Address of principal executive offices)

10019

(Zip Code)

(212) 418-0100

(Registrant's telephone number, including area code)

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

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

None

(Title of class)

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. Yes No

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

Indicate by check mark whether the registrant has submitted electronically 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
(Do not check if a smaller reporting company) Emerging growth company

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

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements.

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b).

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

Class of Stock	Shares Outstanding as of February 17, 2023
Class A common stock, par value \$0.00001 per share	97,877,807
Class C common stock, par value \$0.00001 per share	8,856,531
Class D common stock, par value \$0.00001 per share	60,091,740

The aggregate market value of voting and non-voting common stock held by non-affiliates of the registrant as of June 30, 2022 was approximately \$4,051 million, based on the closing price of \$23.41 per share as reported by Nasdaq on such date.

Portions of Part III of this Form 10-K are incorporated by reference from the Registrant's definitive proxy statement (the "2023 Proxy Statement") for its 2023 annual meeting of shareholders to be filed with the Securities and Exchange Commission no later than 120 days after the end of the Registrant's fiscal year.

VIRTU FINANCIAL, INC. AND SUBSIDIARIES
INDEX TO FORM 10-K
FOR THE YEAR ENDED DECEMBER 31, 2022

PAGE
NUMBER

<u>PART I</u>		
<u>ITEM 1.</u>	<u>BUSINESS</u>	<u>5</u>
<u>ITEM 1A.</u>	<u>RISK FACTORS</u>	<u>17</u>
<u>ITEM 1B.</u>	<u>UNRESOLVED STAFF COMMENTS</u>	<u>42</u>
<u>ITEM 2.</u>	<u>PROPERTIES</u>	<u>43</u>
<u>ITEM 3.</u>	<u>LEGAL PROCEEDINGS</u>	<u>43</u>
<u>ITEM 4.</u>	<u>MINE SAFETY DISCLOSURES</u>	<u>43</u>
<u>PART II</u>		
<u>ITEM 5.</u>	<u>MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED SHAREHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES</u>	<u>45</u>
<u>ITEM 6.</u>	<u>RESERVED</u>	<u>48</u>
<u>ITEM 7.</u>	<u>MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS</u>	<u>49</u>
<u>ITEM 7A.</u>	<u>QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK</u>	<u>74</u>
<u>ITEM 8.</u>	<u>FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA</u>	<u>76</u>
<u>ITEM 9.</u>	<u>CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE</u>	<u>135</u>
<u>ITEM 9A.</u>	<u>CONTROLS AND PROCEDURES</u>	<u>135</u>
<u>ITEM 9B.</u>	<u>OTHER INFORMATION</u>	<u>137</u>
<u>ITEM 9C.</u>	<u>DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS</u>	<u>138</u>
<u>PART III</u>		
<u>ITEM 10.</u>	<u>DIRECTORS, EXECUTIVE OFFICERS, AND CORPORATE GOVERNANCE</u>	<u>140</u>
<u>ITEM 11.</u>	<u>EXECUTIVE COMPENSATION</u>	<u>141</u>
<u>ITEM 12.</u>	<u>SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS</u>	<u>142</u>
<u>ITEM 13.</u>	<u>CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE</u>	<u>143</u>
<u>ITEM 14.</u>	<u>PRINCIPAL ACCOUNTANT FEES AND SERVICES</u>	<u>144</u>
<u>PART IV</u>		
<u>ITEM 15.</u>	<u>EXHIBITS AND FINANCIAL STATEMENT SCHEDULES</u>	<u>145</u>
	<u>SIGNATURES</u>	<u>150</u>

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

CAUTIONARY NOTE REGARDING FORWARD LOOKING STATEMENTS

This Annual Report on Form 10-K 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 Annual Report on Form 10-K, 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 Annual Report on Form 10-K. By their nature, forward-looking statements involve known and unknown risks and uncertainties, including those described under the heading “Risk Factors” in this Annual Report on Form 10-K, 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 Annual Report on Form 10-K are based on reasonable assumptions, you should be aware that many factors, including those described under the heading “Risk Factors” in this Annual Report on 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:

- the continuing impacts of COVID-19 and the governmental and other responses thereto, including but not limited to the risk of employees and executives contracting COVID-19 and the deployment of our business continuity plan pursuant to which a significant number of our employees may work remotely and our return to office plan, each of which may increase operational risk, as well as increases in market, counterparty and other forms of operational risk;
- volatility in 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;
- recent SEC rule proposals focused on equity markets may, if adopted, materially change U.S. equity market structure, including reducing overall trading volumes, reducing off-exchange trading and market making opportunities, requiring additional tools, platforms and services to register as an alternative trading system (“ATS”) or exchange, and generally increasing the implicit and explicit cost as well as the complexity of the U.S. equities eco-system for all participants, all of which could have an adverse effect on our business;
- additionally, enhanced regulatory and media scrutiny, including attention to electronic trading, wholesale market making and off-exchange trading, payment for order flow, and other market structure topics and both the impact of additional potential changes in regulation or law as well as the potential impact upon public perception of us or of companies in our industry could also have an adverse effect on our business;
- 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, including but not limited to risks related to funding and liquidity;
- obligations to comply with applicable regulatory capital requirements;
- litigation or other legal and regulatory-based liabilities;
- changes in laws, rules or regulations, including proposed legislation that would impose taxes on certain financial transactions in the European Union, the U.S. (and certain states therein) and other jurisdictions and other potential changes which could increase our corporate or other tax obligations in one or more jurisdictions;
- obligations to comply with laws and regulations applicable to our operations in the U.S. and abroad;

- need to maintain and continue developing proprietary technologies;
- 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, monetary payment demands 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, increased inflation, monetary conditions and foreign currency and continued or exasperated 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), political conditions (such as military actions and terrorist activities), and other global events such as fires, natural disasters, pandemics or extreme weather;
- 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;
- risks associated with new and emerging asset classes and eco-systems in which we may participate, including digital assets, including risks related to volatility in the underlying assets, regulatory uncertainty, evolving industry practices and standards around custody, clearing and settlement, and other risks inherent in a new and evolving asset class;
- 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.

We undertake no obligation to publicly update or revise any forward-looking statements to reflect events or circumstances that may arise after the date of this Annual Report on Form 10-K.

ITEM 1. BUSINESS

Overview

We are a leading financial 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 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, Exchange Traded Funds ("ETFs"), options, foreign exchange, futures, fixed income, cryptocurrencies, 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 providing 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 market making and order routing 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 institutional agency activities in an efficient manner that enables 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 like Virtu serve an important role in maintaining and improving the overall health and efficiency of the global capital markets by providing market participants with an efficient means to

transfer risk and analyze the quality of execution. We believe that 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 designed to be 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.

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.

We primarily conduct our Americas equities business through our SEC registered broker-dealer, Virtu Americas, LLC ("VAL"). We are registered with the Central Bank of Ireland ("CBI") and the Financial Conduct Authority ("FCA") in the UK for our European trading, the Investment Industry Regulatory Organization of Canada ("IIROC") and the Ontario Securities Commission for our Canadian trading, and the Monetary Authority of Singapore ("MAS"), Securities and Futures Commission of Hong Kong ("SFC"), and Australian Securities and Investments Commission ("ASIC") for our Asia-Pacific ("APAC") trading. We are registered as a market maker or liquidity provider and/or enter into direct obligations to provide liquidity on nearly every exchange or venue that offers such programs. We engage regularly with regulators around the world on issues affecting electronic trading and other matters that may affect our business and the operation of the financial markets and advocate for increased transparency. In the U.S., we conduct our business from our headquarters in New York, New York and our offices in Boston, Massachusetts, Austin, Texas, Chicago, Illinois, Short Hills, New Jersey, and Palm Beach Gardens, Florida. Abroad, we conduct our business through trading centers located in London, England, Dublin, Ireland, Paris, France, Singapore, Hong Kong, Toronto, Canada, and Sydney, Australia.

Market Making

Our Market Making segment principally consists of market making in the cash, futures, and options markets across global equities, fixed income, currencies, cryptocurrencies, and commodities. As a leading, low-cost market maker dedicated to improving efficiency and providing liquidity across multiple asset classes and geographies, we aim to provide critical market functionality and robust price competition in the securities and other financial instruments in which we provide liquidity. The scale and diversity of our market making activities provide added liquidity and transparency to the financial markets, which we believe are necessary and valuable components to the efficient functioning of markets and benefit all market participants. We support transparent and efficient, technologically advanced marketplaces, and advocate for legislation and regulation that promotes fair and transparent access to the financial markets.

As a market maker, we commit capital on a principal basis by offering to buy securities from, or sell securities to, broker dealers, banks and institutions. We engage in principal trading in the Market Making segment direct to clients as well as in a supplemental capacity on exchanges, ATSs and other market centers. As a complement to electronic market making, our cash trading business handles specialized orders and transacts on the OTC Link ATS operated by OTC Markets Group Inc.

We make markets in a number of different asset classes, which are discussed in more detail below. We register as market makers and liquidity providers where available and support affirmative market making obligations.

We provide competitive and deep liquidity that helps to create more efficient markets around the world. We stand ready, at any time, to buy or sell a broad range of securities and other financial instruments, and we generate revenue by buying and selling large volumes of securities and other financial instruments while earning small bid/ask spreads.

We believe the overall level of volumes and realized volatility as well as the attractiveness of the order flow we interact with and the level of retail participation in the various markets we serve have the greatest impact on our businesses. Increases in market volatility can cause bid/ask spreads to temporarily widen as market participants are more willing to transact immediately and as a result market makers' capture rate per notional amount transacted increases.

Technology is at the core of our business. Our team of in-house software engineers develops our software and applications, and we utilize optimized infrastructure to integrate directly with the exchanges and other trading venues on which we provide liquidity. Our focus on technology and our ability to leverage our technology enables us to be one of the lowest cost providers of liquidity to the global electronic trading marketplace.

Leveraging the scalability and low costs of our platform, we are able to test and rapidly deploy new liquidity provisioning strategies, expand to new securities, asset classes and geographies and increase transaction volumes at little incremental cost. These efficiencies are central to our ability to deliver consistently positive Adjusted Net Trading Income (as defined below) as our profitability per trade and per instrument is not significant, particularly in U.S. equities.

Our transaction processing is automated over the full life cycle of a trade. Our market making platform generates and disseminates continuous bid and offer quotes. At the moment when a trade is executed, our systems capture and deliver this information back to the source, in most cases within a fraction of a second, and the trade record is written into our clearing system, where it flows through a chain of control accounts that allow us to automatically and efficiently reconcile trades, positions and payments until the final settlement occurs.

We have built and continuously refine our automated and integrated, real time systems for global trading, risk management, clearing and cash management, among other purposes. We have also assembled a proprietary connectivity network between us and exchanges around the world. Efficiency and speed in performing prescribed functions are always crucial requirements for our systems, and generally we focus on opportunities in markets that are sufficiently advanced to allow the seamless deployment of our automated strategies, risk management system and core technology.

Our core operations team across our offices in North America, APAC and Europe monitors our systems 24 hours a day, five days a week. This function provides coverage for our full technology platform, including our market data, order routing, transaction processing, and risk management technology modules.

Clients and Products

We offer direct-to-client market making services across multiple asset classes primarily to sell-side clients including global, national and regional broker dealers and banks as well as buy-side clients comprising, among others, mutual funds, pension plans, plan sponsors, hedge funds, trusts and endowments in North America, Europe and Asia.

We generally compete based on execution quality, market coverage, and client service. In direct-to-client electronic market making in U.S. equities, execution quality is generally measured based on factors that include speed of execution, fulfillment rates, opportunity and amounts of price improvement, using metrics defined in SEC Rule 605. In other asset classes, metrics for execution quality are not prescribed by applicable regulation, and in many cases, are client defined.

We continually work to provide clients with high quality, low-cost trade executions that enable them to satisfy their fiduciary obligation to seek the best execution on behalf of their customer. We continually refine our automated order routing models so that we may remain competitive.

Global Equities

We trade over 25,000 listed and over-the-counter ("OTC") securities including, among others, equity related futures and exchange traded products ("ETPs"), on sixteen U.S. Securities and Exchange Commission ("SEC") registered exchanges and other market centers around the world, including the New York Stock Exchange ("NYSE"), the Nasdaq, NYSE Arca, Cboe BATS, Chicago Stock Exchange, the Member's Exchange ("MEMX"), the TSX in Canada, Bovespa in Brazil and BMV in Mexico, as well as other ATSS and more than 20 private liquidity pools.

Our strategy globally is to utilize high speed, efficient connections to all of the registered exchanges and market centers, including the London Stock Exchange, Cboe Europe Equities, Euronext, Six Swiss Exchange, Australian Securities Exchange, Tokyo Stock Exchange and Singapore Exchange, as well as other trading venues and additional pools of liquidity to which we can gain access either directly or through a broker.

As ETPs and other similar products have proliferated both domestically and internationally, demand has increased for trading the underlying assets or hedging such funds. Our technology has enabled us to expand into providing liquidity to this growing area by making markets across these assets in a variety of trading venues globally. We are authorized participants, and can create and/or redeem ETPs.

Global Fixed Income, Currencies and Commodities ("FICC"), Options, and Other

Our Fixed Income market making includes our activity in U.S. Treasury securities and other sovereign debt, corporate bonds, and other debt instruments. We trade these products on a variety of specialized exchanges, direct to counterparties, and other trading venues, including BrokerTec, eSpeed, DealerWeb, Bloomberg, Tradeweb, MarketAxess, and BGC's Fenics UTS.

Our Currencies market making, including spot, futures and forwards, comprises our activity in over 80 currencies, including deliverable, non-deliverable, fiat, and digital currencies, across dozens of venues and direct to counterparties. We are a leading participant in the major foreign exchange venues, including LSEG, Currenex, Cboe FX and CME.

Our Commodities market making takes place on the CME, ICE, and Nasdaq Futures in crude oil, natural gas, heating oil, and gasoline futures. We trade approximately 100 energy products and futures on the ICE, CME, and TOCOM. We also actively trade precious metals, including gold, silver, platinum and palladium, as well as base metals such as aluminum and copper.

Our Options and Other market making includes our activity on all of the U.S. options exchanges of which we are a member (i.e., Cboe, ISE and NYSE Arca) and on the U.S. futures exchanges, as well as our activity in cryptocurrencies. Our cryptocurrency market making includes spot, perpetuals, futures, and ETFs and takes place across 55 venues and exchanges.

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. Within the Execution Services segment, we offer the following categories of products and services:

- Agency-based, execution-only trading, done through a variety of access points including:
 - algorithmic trading and order routing;
 - institutional sales traders who offer portfolio trading and single stock sales trading providing execution expertise for program, block and riskless principal trades in global equities and ETFs; and
 - matching of client conditional orders via POSIT Alert and in our ATSS, including Virtu MatchIt and POSIT.
- 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
- Trading Analytics, including
 - tools enabling portfolio managers and traders to improve pre-trade and real-time execution performance and post-trade analysis;
 - portfolio construction and optimization decisions; and
 - securities valuation.

Clients and Products

We offer agency execution services across multiple asset classes to buy-side clients including mutual funds, pension plans, plan sponsors, hedge funds, trusts and endowments and sell-side clients including global, national and regional broker dealers and banks in North America, Europe and Asia. In 2022, our Execution Services segment did not have any client that accounted for more than 10% of our total commissions earned.

Clients may access a broad range of products and services that includes electronic execution services in global equities via algorithmic trading, order routing and an execution management system (“EMS”) as well as internal crossing through our registered ATSS. Our ATSS provide clients with important sources of non-displayed liquidity. We also offer clients voice access to global markets including sales and trading for equities, ETFs and options. Certain broker-dealer affiliates also engage in foreign exchange trading to facilitate equity trades by clients in different currencies as well as other client foreign exchange trades unrelated to equity trades. We handle large complex trades, accessing liquidity from our order flow and other sources. We provide soft dollar and commission recapture programs.

In this segment, we generally compete on trading technology, execution performance, costs, client service, market coverage, liquidity, platform capabilities and anonymity. We draw on in-house developed trading technologies to meet client criteria for execution quality and for managing trading costs. As a result, we are able to attract a diverse array of clients in terms of strategy, size and style. We also provide algorithmic trading and order routing that combine technology, access to our differentiated liquidity and support from experienced professionals to help clients execute trades. The segment also includes the results of our capital markets business, in which we act as an agent for issuers in connection with at-the-market offerings and buyback programs.

Agency-based, Execution-only Trading

Our clients may access a broad range of products and services that includes electronic execution services in global equities via algorithmic trading, order routing and an EMS as well as internal crossing through our registered ATSS. Our algorithms and order routers help portfolio managers and traders to trade orders quickly, comprehensively and cost-efficiently from our EMS or our Order Management System (“OMS”) and most third-party trading platforms. Our institutional sales traders offer portfolio trading and single stock sales trading which provides execution expertise for program, block and riskless principal trades in global equities and ETFs.

We provide matching of client orders in our ATSS, including Virtu MatchIt, POSIT ATS, and POSIT MTF. MatchIt provides two crossing sessions, a Main Session and a Conditional Session. The Main Session provides continuous crossing with price/time priority and is available to our subsidiaries and external subscribers. The Conditional Session accepts conditional orders with price/size priority, and is only available to our subsidiaries. POSIT provides continuous crossing of non-displayed (or dark) equity orders and price improvement opportunities within the published best bid and offer price. POSIT Alert is a block crossing mechanism within POSIT. POSIT Alert unites liquidity sourced directly from trader OMSs with conditional orders from electronic participants for matching using a conditional order process. In addition, POSIT MTF Auction provides frequent batch auctions which display indicative size/price prior to trade execution.

Workflow Technology

Our workflow technology tools are designed to meet the needs of a broad range of trading styles. As an example, Triton Valor, the most recent release of our multi-asset and broker-neutral Triton EMS, helps to bring integrated execution and analytical tools to the user’s desktop, including the Algo Wheel, an algorithmic way for a portfolio manager to intelligently allocate volume between different providers. Triton supports global list-based and single-stock trading, as well as futures and options capabilities and includes ITG Net, a fully integrated and supported financial services communications network. Triton also provides traders with access to scalable, low-latency, multi-asset trading opportunities. Our OMS combines portfolio management, compliance functionality, and a fully integrated and supported financial services communications network (ITG Net) with a consolidated, outsourced service for global trade matching and settlement that provides connectivity to the industry’s post-trade utilities, as well as support for multiple, flexible settlement communication methods and a real-time process monitor.

ITG Net is our global financial communications network that provides reliable and fully-supported connectivity between buy-side and sell-side firms for multi-asset order routing and indication-of-interest messages with Virtu and third-party trading platforms. ITG Net supports approximately 9,000 global billable connections to more than 600 unique execution destinations worldwide. ITG Net also integrates the trading products of third-party brokers and ATSS into our OMS and EMS platforms.

RFQ-hub, a multi-asset platform for global listed and over-the-counter (“OTC”) financial instruments, connects buy-side trading desks and portfolio managers with a large network of sell-side market makers in Europe, North America and the APAC region, allowing these trading desks to place requests-for-quotes (“RFQ”) in negotiated equities, futures, options, swaps, convertible bonds, structured products and commodities. RFQ-hub is available as a stand-alone platform and is also integrated with Triton. In May 2022, we formed a consortium of strategic partners and investors to own and support the growth of the RFQ-hub business. Through a series of related transactions, we sold a substantial minority interest in the business to multiple strategic partners and have maintained a majority ownership interest.

We offer administration and consolidation of client commission arrangements across a wide range of our clients’ preferred brokerage and research providers through Commission Manager, a robust, multi-asset, web-based commission management portal, and Budget Tracker, which enables asset managers to set research allocations and create and track budgets for their end clients. We also offer a comprehensive research payment account solution, enabling clients to unbundle research and execution payments to comply with the European Markets in Financial Instruments Directive (“MiFID”) II regulations.

Analytics

Our trading analytics suite helps enable portfolio managers and traders to analyze execution performance before the trade happens (pre-trade) and during trading (real-time) by providing trading analytics and risk models that help them perform predictive analysis, manage risk, change strategy and reduce trading costs. Trading costs are affected by multiple factors, such as execution strategies, time horizon, volatility, spread, volume and order size. Our trading analytics suite is designed to gauge the effects of these factors and aid in the understanding of the trade-off between market impact and opportunity cost. For example, our transaction cost analysis (“TCA”) offers measurement and reporting capabilities to analyze costs and performance across the trading continuum. TCA assesses trading performance and implicit costs under various market conditions so users can adjust strategies and potentially reduce costs and boost investment performance. TCA is also available for foreign exchange transactions (FX TCA) and for corporate and sovereign bond trading (FI TCA).

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 operating segments.

Risk Management

We are acutely focused on risk management. Our market making activities involve taking on risk positions and our execution services business involves providing trading, clearing and related services on behalf of customers and clients. These activities expose us to market, counterparty, operational, and regulatory risk. We aim to mitigate these risks through prudent risk management practices.

We have senior risk personnel who report independently into the Board Risk Committee. We also have a Risk Advisory Committee, which includes key personnel from each of our regions globally and is comprised of our senior risk personnel, members of our senior management team, senior technologists and traders, and certain other senior officers. Our Risk Advisory Committee provides advice to our senior management team in connection with our key risk management policies, procedures and risk limits. Our Board of Directors, through the Board Risk Committee, is periodically apprised of risk events, risk profiles, trends and the activities of our Risk Advisory Committee, including our risk management policies, procedures and controls.

Our approach to managing risk includes the following practices:

- *Pre-Trade Risk Controls.* Messages that leave our trading environment must first pass through a series of preset risk controls, which are intended to minimize the likelihood of unintended activities by our algorithms. Certain risk controls, when triggered, result in a strategy lockdown, which requires a manual reset in order to restart the strategy.
- *Model Restrictions.* Trading models have limits in place which restrict individual position sizes, sector exposures and imbalanced portfolios with significant directional risks. Trading strategies are designed to automatically reduce exposures when limits are reached. The models are monitored continuously by the trading team and the risk managers.
- *Aggregate Exposure Monitoring.* Pursuant to our risk management policies, our automated management information systems monitor in real-time and generate reports on daily and periodic bases. Exposures monitored include:
 - Risk Profiles
 - Statistical Risk Measures including Value at Risk (“VaR”), and Equity Betas
 - Stress and Scenario analysis
 - Concentration measures
 - Profit and Loss analysis
 - Trading performance reports
- Our trading assets and liabilities are marked-to-market daily for financial reporting purposes by reference to official exchange prices, and they are re-valued continuously throughout the trading day for risk management and asset/liability management purposes.
- *Operational Controls.* We have a series of automated controls over our business. Key automated controls include:

- Our technical operations system continuously monitors our network and the proper functioning of each of our trading centers around the world;
- Our market making system continuously evaluates the listed securities and other financial products in which we provide bid and offer quotes and changes its bids and offers to reflect changes in market conditions. The latency of communicating with exchanges and market centers is reduced through continuous software and network engineering innovation, allowing us to achieve real-time controls over market exposure. We connect to exchanges and other electronic venues through a network of co-location facilities around the world that are monitored 24 hours a day, five days a week, by our staff of experienced network professionals;
- Our clearing system captures trades in real-time and performs automated reconciliations of trades and positions, corporate action processing, options exercises, securities lending and inventory management, allowing us to effectively manage operational risk; and
- Software developed to support our market making systems performs daily profit and loss and position reconciliations.

Additionally, we conduct after event reviews where operational issues are evaluated and risk mitigations are identified and subsequently implemented.

- *Credit Controls.* Trading notional limits are applied to customers and counterparts. These are monitored throughout the day by trading support and risk professionals.
- *Liquidity Controls.* We seek to minimize liquidity risk by focusing in highly active and liquid instruments. Less liquid instruments are identified and restrictions are in place as to the size of positions we hold in such instruments.

Our approach to risk mitigation can in some cases limit our overall opportunities, including by adding a degree of latency to our trading infrastructure which can, for example, prevent us from earning outsized returns in times of extreme market volatility. We believe that these trade-offs are necessary to properly limit risk.

We rely on technology and automation to perform many functions within Virtu. Cyber threats are a risk that we are exposed to as a result of our heavy reliance on technology. These threats could include the introduction of malicious code or unauthorized access, and could result in data loss or destruction, business interruption, financial loss, and the unavailability of service and other risks. We have taken steps to mitigate the various cyber threats, and we devote resources to maintain and regularly upgrade our systems and networks and review the ever-changing threat landscape. Cybersecurity risk is managed as part of our overall information technology risk framework under the direction of our Chief Information Security Officer. We periodically review policies and procedures to seek to ensure they are effective in mitigating current cyber and other information security threats. In addition to the policy reviews, we continue to look to implement technology solutions that enhance preventive and detection capabilities. We also maintain insurance coverage that may, subject to policy terms and conditions, cover certain aspects of cyber risks. However, such insurance may be insufficient to cover all losses or may not provide any coverage.

Competition

The financial services industry generally, and the institutional securities brokerage business in which we operate, are extremely competitive, and we expect them to remain so for the foreseeable future. Our full suite of products does not directly compete with any particular firm; however, individual products compete with various firms and consortia.

Within the market making segment, our competition has been registered market making firms ranging from sole proprietors with very limited resources to large, integrated broker-dealers. Today, a range of market participants may compete with us for revenues generated by market making activities across one or more asset classes and geographies, including market participants, such as Citadel Securities, Susquehanna International Group LLP, Two Sigma, Jane Street, DRW Holdings, IMC, and Optiver.

In the execution services segment, our algorithmic and smart routing products, as well as our high-touch agency execution and portfolio trading internalizers services, compete with agency-only and other sell-side firms. Our trading and portfolio analytics compete with offerings from several sell-side-affiliated and independent companies. POSIT and MatchIt compete with various national and regional securities exchanges, ATSS, Electronic Communication Networks, MTFs and systematic internalizers for trade execution services. Our EMS, OMS, connectivity and RFQ services compete with offerings from independent vendors, agency-only firms and other sell-side firms.

Some of our competitors in market making and execution services are larger than we are and have more captive order flow in certain assets. Technology and software innovation is a primary focus for us, rather than relying solely on the speed of our network. We believe that our scalable technology allows us to access new markets and increase volumes with limited incremental costs.

Intellectual Property and Other Proprietary Rights

We rely on federal, state and international laws that govern trade secrets, trademarks, domain names, patents, copyright and contract law to protect our intellectual property and proprietary technology. We enter into confidentiality, intellectual property invention assignment and/or non-competition and non-solicitation agreements or restrictions with our employees, independent contractors and business partners, and we control access to, and distribution of, our intellectual property.

Human Capital Resources

As of February 3, 2023, we had approximately 993 employees, located in nine countries around the world, all of whom were employed on a full-time basis and in good standing. The approximate regional representation of our workforce is as follows: 71% Americas, 19% EMEA and 10% APAC. None of our employees are covered by collective bargaining agreements. We believe that our employee relations are good.

In shaping our culture, we aim to combine a high standard of excellence, technological innovation and agility and operational and financial discipline. We believe that our flat and transparent structure and our collaborative and collegial approach enable our employees to grow, develop and maximize their impact on our organization. To attract and retain top talent in our highly competitive industry, we have designed our compensation and benefits programs to promote the retention and growth of our employees along with their health, well-being and financial security. Our short- and long-term incentive programs are aligned with key business objectives and are intended to motivate strong performance. Our employees are eligible for medical, dental and vision insurance, a savings/retirement plan, life and disability insurance, and various wellness programs and we review the competitiveness of our compensation and benefits periodically. As an equal opportunity employer, all qualified applicants receive consideration without regard to race, national origin, gender, gender identity, sexual orientation, protected veteran status, disability, age or any other legally protected status.

We seek to create an inclusive, equitable, culturally competent, and supportive environment where our management and employees model behavior that enriches our workplace. In 2020, we formed a Diversity and Inclusion Committee (now known as the Diversity, Equity and Inclusion Committee, the "DE&I Committee") to help further these goals and objectives. The DE&I Committee has focused on broadening recruitment efforts, increasing awareness of diversity and inclusiveness related issues through internal trainings and communications, and internal and external mentorship, including mentorships with New York City high school students. Additionally, we have hosted an annual Women's Internship program since 2019, which provides a week-long internship program aimed at introducing sophomore-level female college students to a career path in financial services and features instructors across the firm from various business lines and disciplines.

Regulation

We conduct our U.S. equities and options market making and provide execution services through VAL, our SEC-registered broker-dealer. VAL is regulated by the SEC and its designated examining authority is the Financial Industry Regulatory Authority, Inc. ("FINRA"). VAL is also registered as a floor trader firm with the Commodity Futures Trading Commission ("CFTC").

We are a full clearing member of the National Securities Clearing Corporation ("NSCC") and the Depository Trust & Clearing Corporation ("DTCC"). Our activities in U.S. equities are both self-cleared and rely on fully-disclosed clearing arrangements with third-party clearing firms. We use the services of prime brokers, primarily in other asset classes, who provide us direct market access to markets and often cross-margining and margin financing in return for execution and clearing fees. We continually monitor the credit quality of our prime brokers and rely on large multinational banks for most of our execution and clearing needs globally.

Our energy, commodities and currency market making and trading activities are primarily conducted through Virtu Financial Global Markets LLC.

We conduct our European, Middle Eastern and African ("EMEA") market making activities from Dublin and through our subsidiary Virtu Financial Ireland Limited ("VFIL"), which is authorized as an "Investment Firm" with the CBI. VFIL

maintains a branch office in London. We conduct our EMEA execution services trading activity from Dublin, London, and Paris through our subsidiary Virtu ITG Europe Limited ("VIEL"). VIEL is authorized and regulated by the CBI as an "Investment Firm" and maintains branch offices in London and Paris. The London branch offices of VFIL and VIEL currently utilize the U.K. FCA's Temporary Permissions Regime and are therefore deemed to be authorized and regulated by the FCA. VIEL's Paris branch is registered with the Banque de France. VIEL also operates a multi-lateral trading facility ("MTF") in Ireland and Virtu ITG UK Limited ("VIUK"), a U.K. investment firm, operates a MTF in the U.K. VIUK is an investment firm which is authorized and regulated by the FCA.

We conduct our APAC market making, including most of our cryptocurrency market making activity from Singapore and through our Singapore subsidiary, Virtu Financial Singapore Pte. Ltd. Virtu Financial Singapore Pte. Ltd. is registered with the MAS for an investment incentive arrangement. We conduct our APAC execution services trading activity from Singapore, Hong Kong, and Australia through our subsidiaries Virtu ITG Singapore Pte. Limited, Virtu ITG Hong Kong Limited, and Virtu ITG Australia Limited. Virtu ITG Singapore Pte. Limited is a holder of a Capital Markets Services License from the MAS, which is its principal regulator. Virtu ITG Hong Kong Limited is a participating organization of the Hong Kong Stock Exchange and a holder of a securities dealer's license issued by the SFC, which is its principal regulator. Virtu ITG Australia Limited is a market participant of the Australian Securities Exchange ("ASX") and Chi-X Australia Limited, and is also a holder of an Australian Financial Services License issued by the ASIC. Virtu ITG Australia Limited's principal regulators are the ASX and ASIC.

Our Canadian market making activities and our Canadian execution services trading activities are conducted through our subsidiary Virtu Canada Corp (f/k/a Virtu ITG Canada Corp.). Virtu Canada Corp. is a Canadian broker-dealer registered as an investment dealer with IIROC, Ontario Securities Commission ("OSC"), the Autorité Des Marchés Financiers in Quebec, Alberta Securities Commission ("ASC"), British Columbia Securities Commission, Manitoba Securities Commission, New Brunswick Securities Commission, Nova Scotia Securities Commission and Saskatchewan Financial Services Commission. Virtu Canada Corp. is also registered as a Futures Commission Merchant in Ontario and Manitoba and Derivatives Dealer in Quebec.

Most aspects of our business are subject to regulation under federal, state and foreign laws and regulations, as well as the rules of the various self-regulatory organization ("SROs") of which our broker-dealer subsidiaries are members. The SEC, FINRA, CFTC, NFA, U.S. state securities regulators, the European Securities and Markets Authority ("ESMA") in the European Union, the CBI in Ireland, FCA in the U.K., Banque de France in France, MAS in Singapore, SFC in Hong Kong, ASX and ASIC in Australia, IIROC and OSC in Canada, other SROs and other U.S. and foreign governmental regulatory bodies promulgate numerous rules and regulations that may impact our business. As a matter of public policy, regulatory bodies are charged with safeguarding the integrity of the securities and other financial markets and with protecting the interests of investors in those markets, including, but not limited to, trading practices, order handling, best execution practices, anti-money laundering and financial crimes, handling of material non-public information, safeguarding data, compliance with exchange and clearinghouse rules, capital adequacy, customer protection, reporting, record retention, market access and the conduct of officers, employees and other associated persons.

Rulemaking by these and other regulators (foreign and domestic), including resulting market structure changes, has had an impact on our regulated subsidiaries by directly affecting our method of operation and, at times, our profitability. Legislation can impose, and has imposed, significant obligations on broker-dealers, including our regulated subsidiaries. These increased obligations require the implementation and maintenance of internal practices, procedures and controls, and the need for additional employee resources, and have increased our costs, and may subject us to government and regulatory inquiries, claims or penalties. Changes in market structure can also necessitate restructuring our operations for compliance in certain jurisdictions which has cost implications.

Failure to comply with any laws, rules or regulations could result in administrative or court proceedings, censures, fines, penalties, judgments, disgorgement, restitution and censures, suspension or expulsion from a certain jurisdiction, SRO or market, the revocation or limitation of licenses and/or business activities, the issuance of cease-and-desist orders or injunctions or the suspension or disqualification of the entity and/or its officers, employees or other associated persons. From time to time, we are the subject of requests for information and documents from the SEC, FINRA and other regulators which could lead to administrative or court proceedings. It is our practice to cooperate and comply with the requests for information and documents. Regulatory inquiries can require substantial expenditures of time and money and can have an adverse impact on our reputation, customer relationship and profitability.

The regulatory environment in which we operate is subject to constant change. Our business, financial condition and operating results may also be adversely affected as a result of new or revised legislation or regulations imposed by the U.S. Congress, foreign legislative bodies, state securities regulators, U.S. and foreign governmental regulatory bodies and SROs.

Additional regulations, changes in existing laws and rules, or changes in interpretations or enforcement of existing laws and rules often directly affect the method of operation and profitability of regulated broker-dealers. We cannot predict what effect, if any, future legislative or regulatory changes might have. However, there have been in the past, and could be in the future, significant technological, operational and compliance costs associated with the obligations which derive from compliance with such regulations. Regulators may propose market structure changes particularly considering the continued regulatory, congressional and media scrutiny of U.S. equities market structure, the retail trading environment in the U.S., wholesale market making and the relationships between retail broker-dealers and market making firms, including but not limited to payment for order flow arrangements, other remuneration arrangements such as profit-sharing relationships and exchange fee and rebate structures, ATSS and off-exchange trading more generally, high frequency trading, short selling, market fragmentation, colocation, and access to market data feeds.

The SEC and other SROs have enacted and are actively considering rules that may affect our operations and profitability. Specifically, in 2022 the SEC has proposed several rule changes focused on equity market structure reform. These proposals include, but are not limited to, (i) Proposed Rule 615 of Regulation NMS, which proposes to dramatically change the U.S. equities market structure, the routing, handling and potentially the amount, character, and cost of retail order flow, (ii) Regulation Best Execution, which would impose best execution requirements on broker-dealers which would be distinct from, but overlapping with, FINRA's existing best execution rule (Rule 5310), (iii) proposed rule amendments to minimum pricing increments under Rule 612 or Regulation NMS, access fee caps under Rule 610 of Regulation NMS, acceleration of implementation of certain Market Data Infrastructure Rules, and amendment to the odd-lot information definition adopted under the MDI rules (collectively referred to as the "tick size, access fees and infostructure rule proposals"), and (iv) amendments to Rule 605 of Regulation NMS, along with a series of amendments to the definition of Exchange and Alternative Trading Systems (ATS), which would expand the scope of exchange and ATS registration and compliance requirements. If adopted, these or other potential rule changes may alter the market structure for NMS securities in ways that would disfavor the current competing market center model and lessen the amount of volume executed off-exchange in favor of a central limit order book model or other centralized model for order interaction. Proposed revisions to SEC Rule 3b-16, Regulation ATS, and Regulation SCI would increase the number of technology platforms that meet the definition of an exchange and would then be required to register as an exchange or alternatively operate as an ATS, and/or operate under the more complex and costly Regulation SCI regime. Proposed changes to Regulation ATS would revise the format of Form ATS required to be filed and would impose additional disclosures and costs to rewrite and refile those forms. These changes and others may impose additional technological, operational and compliance costs on us and creates uncertainty with regard to their effects.

On July 21, 2010, the Dodd-Frank Act was enacted in the U.S. Implementation of the Dodd-Frank Act has been accomplished through extensive rulemaking by the SEC, the CFTC and other governmental agencies. The Dodd-Frank Act includes the "Volcker Rule," which significantly limits the ability of banks and their affiliates to engage in proprietary trading, and Title VII, which provides a framework for the regulation of the swap markets. One of our subsidiaries is registered with the CFTC as a floor trader, and is exempt from registration as a swap dealer based on its current activity. Registration as a swap dealer would subject our subsidiary to various requirements, including those related to capital, conduct, and reporting.

We have foreign subsidiaries and plan to continue to expand our international presence. The market making and execution services industry in many foreign countries is heavily regulated, much like in the U.S. The varying compliance requirements of these different regulatory jurisdictions and other factors may limit our ability to conduct business or expand internationally. MiFID II represented significant change in the operation of European capital markets and became effective on January 3, 2018. MiFID II introduced requirements for increased pre- and post-trade transparency, technological and organizational requirements for firms deploying algorithmic trading techniques, restrictions on dark trading, and the roll out of a new bi-lateral OTC equity trading regime called the Systematic Internaliser regime. MiFID II contains detailed rules as to the types of platform upon which European equities trading can be conducted, including Regulated Markets, MTFs, Organized Trading Facilities, Systematic Internalisers or equivalent third country venues. MiFID II also requires market makers, such as VFIL, to post firm quotes at competitive prices and contains supplemental requirements with regards to investment firms' pre-trade risk controls relating to the safe operation of electronic systems. MiFID II also imposed additional requirements on trading platforms, such as additional technological requirements, clock synchronization, microsecond processing granularity, pre-trade risk controls, transaction reporting requirements and limits on the ratio of unexecuted orders to trades. The MiFID II regime is currently under review, with European Union authorities proposing to make further changes to the regime. Various consultation papers have been published on different aspects of the MiFID II regime, including, on February 4, 2020, an ESMA Consultation Paper entitled "MiFID II/MiFIR Review Report on the Transparency Regime for Equity and Equity-like Instruments, the Double Volume Cap Mechanism and the Trading Obligations for Shares", on December 18, 2020 an ESMA Consultation Paper entitled "MiFID II/MiFIR Review Report on Algorithmic Trading" and on January 28, 2022 an ESMA Consultation Paper "on ESMA's Opinion on the trading venue perimeter." In its communication on "The European economic and financial system: fostering openness, strength and resilience" of January 19, 2021, the European Commission confirmed its intention to propose to make changes with a view to improving simplifying and further harmonizing capital markets' transparency as part of the review of the MiFID II and MiFIR framework. On December 21, 2022, the Council of the European Union published the texts of its general approach on the proposed regulation to amend MiFIR "as regards enhancing market

data transparency, removing obstacles to the emergence of a consolidated tape, optimizing the trading obligations and amending Regulation (EU) No 575/2013 on prudential requirements for credit institutions and amending Regulation (EU) No 648/2012” and on the proposed directive “amending Directive 2014/65/EU on markets in financial instruments and amending Directive 2013/36/EU on access of the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC”, each dated December 16, 2022; as well as publishing an “I” item note, also dated December 16, 2022, inviting the Council’s Permanent Representatives Committee to agree the text of the mandate for negotiations with European Parliament on the basis of the published general approaches, with a view to reaching agreement at first reading. Further, in light of the U.K.’s withdrawal of its membership from the E.U., which is commonly referred to as “Brexit”, the passporting regime under MiFID II, which enables firms to provide services to countries across the E.U., no longer encompasses the U.K. VFIL and VIEL continue to service U.K. clients by means of their London branches, however, in light of Brexit, these branches operate in the U.K. not on the basis of MiFID II passporting rights, but on the basis of the U.K. FCA’s Temporary Permissions Regime, pursuant to which the London branches of VFIL and VIEL are deemed to be authorized and regulated by the FCA. The U.K. FCA’s Temporary Permissions Regime is due to come to an end at the end of 2023. VIEL and VFIL have submitted applications for full third country branch authorization to ensure the long-term operational footprint of Virtu’s branches in the U.K. These authorization processes are ongoing.

Each of these legislative and regulatory requirements imposes additional technological, operational and compliance costs on us. New laws, rules or regulations as well as any regulatory or legal actions or proceedings, changes in legislation or regulation and changes in market customs and practices could have a material adverse effect on our business, financial condition, results of operations, and cash flows.

Certain of our subsidiaries are subject to regulatory capital rules of the SEC, FINRA, other SROs and foreign regulators. These rules, which specify minimum capital requirements for our regulated subsidiaries, are designed to measure the general financial integrity and liquidity of a broker-dealer and require that at least a minimum part of its assets be kept in relatively liquid form. Failure to maintain required minimum capital may subject a regulated subsidiary to a fine, requirement to cease conducting business, suspension, revocation of registration or expulsion by applicable regulatory authorities, and ultimately could require the relevant entity’s liquidation. See “Item 1A. Risk Factors - Risks Related to Our Business - Non-compliance with applicable laws or regulatory requirements could subject us to sanctions and could negatively impact our reputation, prospects, revenues and earnings.”

Corporate History

We and our predecessors have been in the electronic trading and market making business for more than 20 years. We conduct our business through Virtu Financial LLC (“Virtu Financial”) and its subsidiaries. We completed our initial public offering (“IPO”) in April 2015, after which shares of our Class A common stock, par value \$0.00001 per share (the “Class A Common Stock”) began trading on Nasdaq under the ticker symbol “VIRT.”

Prior to our IPO, we completed a series of reorganization transactions (the “Reorganization Transactions”) pursuant to which, among other things, we acquired equity interests in Virtu Financial as a result of certain mergers involving wholly owned subsidiaries of ours, an affiliate of Silver Lake Partners and Temasek Holdings (Private) Limited (“Temasek”), and an affiliate of Temasek (the “Temasek Pre-IPO Member”) (the “Mergers”), and in exchange we issued to an affiliate of Silver Lake Partners (such affiliate, the “Silver Lake Post-IPO Stockholder”) and an affiliate of Temasek (such affiliate, the “Temasek Post-IPO Stockholder”, and together with the Silver Lake Post-IPO Stockholder, the “Investor Post-IPO Stockholders”), shares of our Class A Common Stock and rights to receive payments under a tax receivable agreement described below, we became the sole managing member of Virtu Financial, all of the existing equity interests in Virtu Financial were reclassified into non-voting common interest units (“Virtu Financial Units”), our certificate of incorporation was amended and restated to authorize the issuance of four classes of common stock: Class A Common Stock, Class B Common Stock (as defined below), Class C Common Stock (as defined below) and Class D Common Stock (as defined below), and the holders of Virtu Financial Units other than us subscribed for shares of Class C common stock, par value \$0.00001 per share (the “Class C Common Stock”) or Class D common stock, par value \$0.00001 per share (the “Class D Common Stock”) (in the case of the Founder Post-IPO Member, as defined below) in an amount equal to the number of Virtu Financial Units held by such member.

The Class A Common Stock and Class C Common Stock each provide holders with one vote on all matters submitted to a vote of stockholders, and the Class B Common Stock, par value \$0.00001 per share (the “Class B Common Stock”) and Class D Common Stock each provide holders with 10 votes on all matters submitted to a vote of stockholders. The holders of Class C Common Stock and Class D Common Stock do not have any of the economic rights (including rights to dividends and distributions upon liquidation) provided to holders of Class A Common Stock and Class B Common Stock. Shares of our common stock generally vote together as a single class on all matters submitted to a vote of our stockholders.

As a result of the completion of the IPO, the Reorganization Transactions, the July 2017 Private Placement (as defined below), and certain other secondary offerings and permitted exchanges by current and former employees of Virtu Financial Units for shares of the Company’s Class A Common Stock, the Company holds an approximately 59.7% interest in Virtu Financial at December 31, 2022. The remaining issued and outstanding Virtu Financial Units are held by an affiliate of Mr. Vincent Viola (the “Founder Post-IPO Member”), two entities whose equity holders include certain members of the management of Virtu Financial, and certain other current and former members of management of Virtu Financial (collectively, the “Virtu Post-IPO Members”). The Founder Post-IPO Member controls approximately 85.2% of the combined voting power of our outstanding common stock as of December 31, 2022. As a result, the Founder Post-IPO Member controls any actions requiring the general approval of our stockholders, including the election of our Board of Directors, the adoption of amendments to our certificate of incorporation and bylaws and the approval of any merger or sale of substantially all of our assets. The Founder Post-IPO Member is controlled by family members of Mr. Viola, our Founder and Chairman Emeritus.

We have completed two significant acquisitions that have expanded and complemented Virtu Financial's original electronic trading and market making business. On July 20, 2017 (the “KCG Closing Date”), the Company completed the all-cash acquisition (the “Acquisition of KCG”) of KCG Holdings, Inc. (“KCG”).

On March 1, 2019 (the “ITG Closing Date”), we completed our acquisition of Investment Technology Group, Inc. (“ITG”) in an all-cash transaction (the “ITG Acquisition”). As described in “Acquisition of Investment Technology Group, Inc.” below, 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 and investors to reduce the end-to-end cost of implementing investment decisions via liquidity, execution, analytics and workflow technology solutions.

Available Information

Our website address is www.virtu.com. The information on our website is not, and shall not be deemed to be, a part of this Annual Report on Form 10-K or incorporated into any other filings we make with the SEC. Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”) are available free of charge on our website as soon as possible after we electronically file them with, or furnish them to, the SEC.

Our Investor Relations Department can be contacted at Virtu Financial, Inc., 1633 Broadway, New York, NY, 10019, Attn: Investor Relations, e-mail: investor_relations@virtu.com.

From time to time, we use our website, public conference calls, and social media channels, including our Twitter account (twitter.com/virtufinancial), our LinkedIn account (linkedin.com/company/virtu-financial), and our Instagram account (instagram.com/virtu.financial), as additional means of disclosing public information to investors, the media and others interested in us. It is possible that certain information we post on our website and on social media could be deemed to be material information, and we encourage investors, the media and others interested in us to review the business and financial information we post on our website and on the social media channels identified above. The information on our website and our social media channels is not incorporated by reference into this Annual Report on Form 10-K.

ITEM 1A. RISK FACTORS

Risk Factors Summary

The summary of risks below provides an overview of the principal risks we are exposed to in the normal course of our business activities. This summary does not contain all of the information that may be important to you, and you should read the more detailed discussion of risks that follows this summary.

Business and Operations

- Our revenues and profitability depend on trading volume, volatility, retail participation and other characteristics in the markets in which we operate and the order flow with which we interact and therefore are subject to factors beyond our control, are prone to significant fluctuations and are difficult to predict.
- We are dependent upon our trading counterparties and clearing houses to perform their obligations to us.
- We may incur losses in our market making activities and our execution services businesses due to failures of our customized trading platform, due to market risk or from a lack of perfect information.
- The valuation of the securities we hold at any particular time may result in large and occasionally anomalous swings in the value of our positions and in our earnings in any period.
- We face substantial competition and other competitive dynamics which could harm our financial performance.
- Our market making business is concentrated in U.S. equities; accordingly, our operating results may be negatively impacted by changes that affect the U.S. equity markets.
- We could lose significant sources of revenues if we lose any of our larger clients or sources of order flow or lose access to an important exchange or other trading venue or if we fail to adapt to proposed new regulations, should they become final rules.
- We are subject to liquidity risk in our operations.
- Self-clearing and other elements of our trade processing expose us to operational, financial and liquidity risks.
- We have a substantial amount of indebtedness, which could negatively impact our business and financial condition, and may limit our flexibility in operating our business.
- We depend on our technology and our results may be negatively impacted if we cannot remain competitive.
- Our reliance on our computer systems and software could expose us to material financial and reputational harm if any of our computer systems or software were subject to any material disruption or corruption.
- We could be the target of a significant cyber-attack, threat or incident that impairs internal systems, results in adverse consequences to information our system process, store or transmit or causes reputation or monetary damages as a consequence.
- Our business may be harmed by computer and communication systems malfunctions, human error, failures and delays.
- Failure or poor performance of third-party software, infrastructure or systems could adversely affect our business.
- The use of open source software may expose us to additional risks.
- We may not be able to protect our intellectual property rights or may be prevented from using intellectual property necessary for our business.
- Fluctuations in currency exchange rates could negatively impact our earnings.
- We may incur material losses on foreign exchange transactions entered into on behalf of clients and be exposed to material liquidity risk due to counterparty defaults or errors.
- We may experience risks associated with future growth or expansion of our operations or acquisitions, strategic investments or dispositions of businesses, and we may never realize the anticipated benefits of such activities.
- Our future efforts to sell shares of our common stock or raise additional capital may be inhibited by regulations.

- We are dependent on the continued service of certain key executives, the loss or diminished performance of whom could have a material adverse effect on our business and our success depends, in part, on our ability to identify, recruit and retain skilled management and technical personnel.
- The COVID-19 pandemic could adversely affect our business, results of operations and financial condition.
- We may incur losses as a result of unforeseen or catastrophic events, including the emergence of another pandemic, social unrest, terrorist attacks, extreme weather events or other natural disasters.
- We may be subject to increased risks or business disruption, incur losses or suffer reputational harm in relation to or as a result of climate change.
- Cryptocurrency is an emerging asset class that carries unique risk, including the risk of financial loss.

Legal and Regulatory

- Regulatory and legal uncertainties could harm our business.
- Pending, proposed and other potential changes in laws and rules may adversely impact our business.
- Non-compliance with applicable laws or regulatory requirements could subject us to sanctions and could negatively impact our reputation, prospects, revenues and earnings.
- We are subject to risks relating to litigation and potential securities law liability.
- Proposed legislation in the European Union, the U.S. and other jurisdictions that would impose taxes on certain financial transactions could have a material adverse effect on our business and financial results.
- We are exposed to risks associated with our international operations and expansion and failure to comply with laws and regulations applicable to such operations may increase costs, reduce profits, limit growth or subject us to liability.
- Brexit continues to pose a risk of negatively impacting the global economy, financial markets and our business.
- In connection with our historical acquisitions, the Company is subject to potential liabilities that could materially and adversely affect our business.

Organization and Structure

- We are a holding company and our principal asset is our 59.7% of equity interest in Virtu Financial, and we are accordingly dependent upon distributions from Virtu Financial to pay dividends, if any, taxes and other expenses.
- We are controlled by the Founder Post-IPO Member, whose interests in our business may be different than yours, and certain statutory provisions afforded to stockholders are not applicable to us.
- We may be unable to remain in compliance with the covenants contained in our Credit Agreement and our obligation to comply with these covenants may adversely affect our ability to operate our business.
- We are exempt from certain corporate governance requirements since we are a “controlled company” within the meaning of the Nasdaq rules, and as a result our stockholders do not have the protections afforded by these corporate governance requirements.
- We are required to pay the Virtu Post-IPO Members and the Investor Post-IPO Stockholders for certain tax benefits we may claim, and the amounts we may pay could be significant.

Class A Common Stock

- Substantial future sales of shares of our Class A common stock in the public market could cause our stock price to fall.
- Failure to establish and maintain effective internal control over financial reporting could have a material adverse effect on our business, financial condition, results of operations and cash flows, and stock price.
- We intend to pay regular dividends to our stockholders, but our ability to do so may be limited by our holding company structure, contractual restrictions and regulatory requirements.
- Provisions in our charter documents and certain rules imposed by regulatory authorities may delay or prevent our acquisition by a third party.

General

- Our stock price may be volatile.
- We incur increased costs as a result of being a public company.
- Our stock price and trading volume could decline as a result of inaccurate or unfavorable research, or the cessation of research coverage, about us or our business published by securities or industry analysts.
- Our reported financial results depend on management’s selection of accounting methods and certain assumptions and estimates.

Risks Related to Our Business and Operations

Our revenues and profitability depend on trading volume, volatility, retail participation and other characteristics of the markets in which we operate and the order flow with which we interact, and therefore are subject to factors beyond our control, are prone to significant fluctuations and are difficult to predict.

Our revenues and profitability depend in part on the level of trading activity of securities, derivatives and other financial products on exchanges and in other trading venues in the U.S. and abroad, which are directly affected by factors beyond our control, including economic and political conditions, regulatory changes, emergencies and pandemics, broad trends in business and finance and changes in the markets in which such transactions occur. Weaknesses in the markets in which we operate, including economic slowdowns in recent years, have historically resulted in reduced trading volumes for us. Declines in trading volumes generally result in lower revenues from market making and transaction execution activities. Lower levels of volatility generally have the same directional impact. Declines in market values of securities or other financial instruments can also result in illiquid markets, which can also result in lower revenues and profitability from market making and transaction execution activities. Lower price levels of securities and other financial instruments, as well as compressed bid/ask spreads, which often follow lower pricing, decreases in retail participation levels and other changes in market and/or order flow characteristics can further diminish the opportunities across markets we serve and order flow with which we interact, resulting in reduced revenues and profitability. These factors can also increase the potential for losses on securities or other financial instruments held in inventory and failures of buyers and sellers to fulfill their obligations and settle their trades, as well as claims and litigation. Declines in the trading activity of institutional or “buy-side” market participants may result in lower revenue and/or diminished opportunities for us to earn commissions from execution activities. Any of the foregoing factors could have a material adverse effect on our business, financial condition, results of operations and cash flows. In the past, our revenues and operating results have varied significantly from period to period due primarily to movements and trends in the underlying markets and to fluctuations in trading volumes and volatility levels. As a result, period to period comparisons of our revenues and operating results may not be meaningful, and future revenues and profitability may be subject to significant fluctuations or declines.

We are dependent upon our trading counterparties and clearing houses to perform their obligations to us.

Our business consists of providing consistent two-sided liquidity to market participants across numerous geographies and asset classes. In the event of a systemic market event, resulting from large price movements or otherwise, certain market participants may not be able to meet their obligations to their trading counterparties, who, in turn, may not be able to meet their obligations to their other trading counterparties, which could lead to major defaults by one or more market participants. Further, one or more counterparties may suffer liquidity or solvency challenges as a result of internal or other idiosyncratic events, and this may prevent these counterparties, and potentially their counterparties, from meeting their obligations to us. Following the implementation of certain mandates under the Dodd-Frank Act in the U.S. and similar legislation worldwide, many trades in the securities and futures markets, though not all, and an increasing number of trades in the over-the-counter derivatives markets, are cleared through central counterparties. These central counterparties assume, and specialize in managing, counterparty performance risk relating to such trades. However, even when trades are cleared in this manner, there can be no assurance that a clearing house’s risk management methodology will be adequate to manage one or more defaults. Given the concentration of counterparty performance risk that is concentrated in central clearing parties, any failure by a clearing house to properly manage a default could lead to a systemic market failure. If our trading counterparties do not meet their obligations to us, or if any central clearing parties fail to properly manage defaults by market participants, we could suffer a material adverse effect on our business, financial condition, results of operations and cash flows.

We may incur losses in our market making activities and our execution services businesses due to failures of our customized trading platform, due to market risk or from a lack of perfect information.

The success of our business is substantially dependent on the accuracy and performance of our customized trading platform, which evaluates and monitors the risks inherent in our market making strategies and execution services business, assimilates market data and reevaluates our outstanding quotes and positions continuously throughout the trading day. Our strategies are designed to automatically rebalance our positions throughout the trading day to manage risk exposures on our positions. Flaws in our strategies, order management system, risk management processes, latencies or inaccuracies in the market data that we use to generate our quotes, or human error in managing risk parameters or other strategy inputs, may lead to unexpected and unprofitable trades, which may result in material trading losses and could have a material adverse effect on our business, financial condition, results of operations and cash flows.

A significant portion of our revenues are derived from our trading as principal in our role as a formal or registered market maker and liquidity provider on various exchanges and markets, as well as direct to customer market making. We may incur trading losses relating to these activities since each primarily involves the purchase, sale or short sale of securities, futures and other financial instruments for our own account. In any period, we may incur significant trading losses for a variety of reasons, including price changes, performance, size and volatility of portfolios we may hold in connection with our customer market making activities, lack of liquidity in instruments in which we have positions and the required performance of our market making obligations. Furthermore, we may from time to time develop large position concentrations in securities or other financial instruments of a single issuer or issuers engaged in a specific industry, or alternatively a single future or other financial instrument, which would result in the risk of higher trading losses than if our concentration were lower.

These risks may limit or restrict, for example, our ability to either resell securities we have purchased or to repurchase securities we have sold. In addition, we may experience difficulty borrowing securities to make delivery to purchasers to whom we have sold securities short or lenders from whom we have borrowed securities.

In our role as a market maker, we attempt to derive a profit from bid/ask spreads. However, competitive forces often require us to match or improve upon the quotes that other market makers display, thereby narrowing bid/ask spreads, and to hold long or short positions in securities, futures or other financial instruments. We may at times trade with others who have information that may be more accurate or complete than the information we have, and as a result we may accumulate unfavorable positions preceding large price movements in a given instrument. We cannot assure you that we will be able to manage these risks successfully or that we will not experience significant losses from such activities, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our risk management activities related to our on exchange market making strategies utilize a four-pronged approach, consisting of strategy lockdowns, centralized strategy monitoring, aggregate exposure monitoring and operational controls. In particular, messages that leave our trading environment first must pass through a series of preset risk controls or “lockdowns” that are intended to minimize the likelihood of unintended activities. In certain cases, this layer of risk management, which adds a layer of latency to our process, may limit our ability to profit from acute volatility in the markets. This would be the case, for example, where a particular strategy being utilized by one of our traders is temporarily locked down for generating revenue in excess of the preset risk limit. Even if we are able to quickly and correctly identify the reasons for a lockdown and quickly resume the trading strategy, we may limit our potential upside as a result of our risk management policies.

The valuation of the securities we hold at any particular time may result in large and occasionally anomalous swings in the value of our positions and in our earnings in any period.

The market prices of our long and short positions are reflected on our books at closing prices, which are typically the last trade prices before the official close of the primary exchange on which each such security trades. Given that we manage a globally integrated portfolio, we may have large and substantially offsetting positions in securities that trade on different exchanges that close at different times of the trading day and may be denominated in different currencies. Further, there may be large and occasionally anomalous swings in the value of our positions on any particular day and in our earnings in any period. Such swings may be especially pronounced on the last business day of each calendar quarter, as the discrepancy in official closing prices resulting from the asynchronous closing times may cause us to recognize a gain or loss in one quarter which would be substantially offset by a corresponding loss or gain in the following quarter.

We face substantial competition and other competitive dynamics which could harm our financial performance.

Revenues from our market making activities depend on our ability to offer to buy and sell financial instruments at prices that are attractive and represent the best bid and/or offer in a given instrument at a given time. To attract order flow, we compete with other firms not only on our ability to provide liquidity at competitive prices, but also on other factors such as order execution speed and technology. Similarly, revenues from our technology services and agency execution services depend on our ability to offer cutting edge technology and risk management solutions. Across our businesses, our relationships with clients, customers and other counterparties could be adversely impacted by competitive dynamics across the industry, including but not limited to consolidation in the retail brokerage industry or asset management industry.

Our competitors include other registered market makers, as well as unregulated or lesser-regulated trading and technology firms that also compete to provide liquidity and execution services. Our competitors range from sole proprietors with very limited resources to highly sophisticated groups, hedge funds, well-capitalized broker-dealers and proprietary trading firms or other market makers that have substantially greater financial and other resources than we do. These larger and better capitalized competitors may be better able to respond to changes in the market making industry, to compete for skilled professionals, to finance acquisitions, to fund internal growth, to manage costs and expenses and to compete for market share

generally. Trading firms that are not registered as broker-dealers or broker-dealers not registered as market makers may in some instances have certain advantages over more regulated firms, including our subsidiaries that may allow them to bypass regulatory restrictions and trade more cheaply than more regulated participants on some markets or exchanges. In addition, we may in the future face enhanced competition from new market participants that may also have substantially greater financial and other resources than we do, which may result in compressed bid/ask spreads in the marketplace that may negatively impact our financial performance. Moreover, current and potential competitors may establish cooperative relationships among themselves or with third parties or may consolidate to enhance their services and products. The trend toward increased competition in our business is expected to continue, and it is possible that our competitors may acquire increased market share. Increased competition or consolidation in the marketplace could reduce the bid/ask spreads on which our business and profitability depend, and may also reduce commissions paid by institutional clients for execution services, negatively impacting our financial performance. As a result, there can be no assurance that we will be able to compete effectively with current or future competitors, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our market making business is concentrated in U.S. equities; accordingly, our operating results may be negatively impacted by changes that affect the U.S. equity markets.

The majority of our market making revenue for 2022 was derived from our market making in U.S. equities. The level of activity in the U.S. equity markets is directly affected by factors beyond our control, including U.S. economic and political conditions, broad trends in business and finance, legislative and regulatory changes and changes in volume and price levels of U.S. equity transactions. As a result, to the extent these or other factors reduce trading volume or volatility or result in a downturn in the U.S. equity markets, we may experience a material adverse effect on our business, financial condition and operating results.

We could lose significant sources of revenues if we lose any of our larger clients or sources of order flow or lose access to an important exchange or other trading venue or if we fail to adapt to proposed new regulations, should they become final rules.

At times, a limited number of clients could account for a significant portion of our order flow, revenues and profitability, and we expect a large portion of the future demand for, and profitability from, our trade execution services to remain concentrated within a limited number of clients. The loss of one or more larger clients could have an adverse effect on our revenues and profitability in the future. None of these clients is currently contractually obligated to utilize us for trade execution services and, accordingly, these clients may direct their trade execution activities to other execution providers or market centers at any time. Some of these clients have grown organically or acquired market makers and specialist firms to internalize order flow or have entered into strategic relationships with competitors. There can be no assurance that we will be able to retain these significant clients or that such clients will maintain or increase their demand for our trade execution services. Further, the continued integration of legacy systems and the development of new systems could result in disruptions to our ongoing businesses and relationships or cause issues with standards, controls, procedures and policies that adversely affect our ability to maintain relationships with customers, or to solicit new customers. Further, changes in applicable laws, regulations or rules could adversely impact our relationship with any such client or opportunities to interact with order flows from such clients. The loss, or a significant reduction, of demand for our services from any of these clients could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Similarly, changes in applicable laws, regulations or rules promulgated by exchanges could conceivably prevent us from providing liquidity directly to clients or counterparties or other trading venue where we provide liquidity today. Following recent regulatory attention on U.S. equities market structure, including the practice of wholesale market making and other forms of off exchange trading, the SEC has proposed the adoption of new Rule 615, which would dramatically change U.S. equities market structure, the routing, handling and potentially the amount, character and cost of retail order flow, and therefore may substantially diminish the volume of our transactions with retail client orders. This and other potential legal and regulatory changes are discussed in further detail in “Item 1A. Risk Factors—Legal and Regulatory Risks. Though our revenues are diversified across exchanges and other trading venues, asset classes and geographies, the loss of access to or reduction in opportunities to transact with one or more significant clients or counterparties, exchanges or other trading venues for any reason could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We are subject to liquidity risk in our operations.

We require liquidity to fund various ongoing obligations, including operating expenses, margin requirements, capital expenditures, debt service and dividend payments. Our main sources of liquidity are cash flow from the operations of our subsidiaries, our broker-dealer revolving credit facilities (described under “Item 7. Management’s Discussion and Analysis of

Financial Condition and Results of Operations - Liquidity and Capital Resources - Long-Term Borrowings”), margin financing provided by our prime brokers and cash on hand. Our liquidity could be materially impaired by a number of factors, including increased funding requirements for margin or settlement with central clearinghouses, prime brokers or counterparties, reduced business activity due to a market downturn, adverse regulatory action or a downgrade of our credit rating. If our business activities decrease or we are unable to borrow additional funds in the future on terms that are acceptable to us, or at all, we could suffer a material adverse effect on our business, financial condition, results of operations and cash flows.

Self-clearing and other elements of our trade processing operations expose us to significant operational, financial and liquidity risks.

We currently self-clear a substantial portion of our domestic equity trades and may expand our self-clearing operations internationally and across product offerings and asset classes in the future. Self-clearing exposes our business to operational risks, including business disruption, operational inefficiencies, liquidity, financing risks, counterparty performance risk and potentially increased expenses and lost revenue opportunities. While our clearing platform, operational processes, risk methodologies, enhanced infrastructure and current and future financing arrangements have been carefully designed, we may nevertheless encounter difficulties that may lead to operating inefficiencies, including delays in implementation, disruption in the infrastructure that supports the business, inadequate liquidity and financial loss. Any such delay, disruption or failure could negatively impact our ability to effect transactions and manage our exposure to risk and could have a material adverse effect on our business, financial condition, results of operations cash flows.

In connection with our operation of our client execution services business, we are required to finance certain of our clients’ unsettled positions from time to time and we could be held responsible for the defaults of our clients. Default by our clients may also give rise to our incurring penalties imposed by execution venues, regulatory authorities and clearing and settlement organizations. Although we regularly review our credit exposure, default risk may arise from events or circumstances that may be difficult to detect or foresee. In addition, concerns about, or a default by, one institution could lead to significant liquidity problems, losses or defaults by other institutions that could in turn adversely affect us.

Additionally, elevated levels of volume and volatility, which have and may continue to result in material increases in our trading activities both in our market making segment and in our execution services segment, have previously and may in the future result in significantly increased margin requirements with the National Securities Clearing Corporation (“NSCC”), the Options Clearing Corporation (“OCC”), as well as certain prime brokers, clearing brokers, and other counterparties. In order to manage these increased daily funding obligations, we have taken and may continue to have to take measures to increase available short-term liquidity and to reduce our short-term funding requirements, which may require us to depend on additional sources of liquidity and upon the availability of third parties for services such as trade clearing, and have required and may continue to require us to limit certain of our activities in certain asset classes or products. If such sources of short-term liquidity or third-party services are not available, or if we encounter challenges obtaining such short-term liquidity or third-party services on terms favorable to us or at all, then our business, financial condition and results of operations may be adversely impacted.

We have a substantial amount of indebtedness, which could negatively impact our business and financial condition, and may limit our flexibility in operating our business.

As of December 31, 2022, we had an aggregate of \$1,826.7 million outstanding indebtedness under our long-term borrowings, which includes to \$1.8 billion of debt incurred in connection with a refinancing transaction entered into on January 13, 2022 which is discussed in further detail in Note 9 "Borrowings" of Part II Item 8 “Financial Statements and Supplementary Data” of this Annual Report on Form 10-K. If we cannot generate sufficient cash flow from operations to service our debt, we may need to refinance our debt, dispose of assets or issue equity to obtain necessary funds. We do not know whether we will be able to take any of such actions on a timely basis, on terms satisfactory to us or at all.

Additionally, we are party to an uncommitted facility (the “Uncommitted Facility”), subject to a maximum borrowing limit of \$400.0 million, under which we had no borrowings outstanding as of December 31, 2022. We are also a party to a \$650.0 million broker-dealer revolving credit facility (the “Committed Facility”) under which we had no borrowings outstanding as of December 31, 2022. Also, certain of our non-guarantor subsidiaries are party to various short-term credit facilities with various prime brokers and other financial institutions in an aggregate amount of \$591.0 million under which we had \$212.9 million in borrowings outstanding at December 31, 2022.

The credit agreement entered into on March 1, 2019 by and among Virtu Financial, VFH Parent LLC, a Delaware limited liability company and a subsidiary of Virtu Financial (“VFH”), Impala Borrower LLC (the “Acquisition Borrower”), a subsidiary of the Company, the lenders party thereto and Jefferies Finance LLC, as administrative agent (as amended on October 9, 2019 and as further amended from time to time, the “Acquisition Credit Agreement”) contained, and the refinancing

credit agreement entered into on January 13, 2022 by and among VFH, the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent (the “Credit Agreement”), and any other existing or future indebtedness of ours may contain, a number of covenants that impose significant operating and financial restrictions on us, including restrictions on our and our restricted subsidiaries’ ability to, among other things:

- incur additional debt, guarantee indebtedness or issue certain preferred equity interests;
- pay dividends on or make distributions in respect of, or repurchase or redeem, our equity interests or make other restricted payments;
- prepay, redeem or repurchase certain debt;
- make loans or certain investments;
- sell certain assets;
- create liens on our assets;
- consolidate, merge or sell or otherwise dispose of all or substantially all of our assets;
- enter into certain transactions with our affiliates;
- enter into agreements restricting our subsidiaries’ ability to pay dividends; and
- designate our subsidiaries as unrestricted subsidiaries.

As a result of these covenants, we are limited in the manner in which we conduct our business, and we may be unable to successfully execute our strategy, engage in favorable business activities or finance future operations or capital needs. In addition, the revolving credit facility under the Credit Agreement is subject to a springing financial covenant which, if in effect, may require us to take action to reduce our debt or to act in a manner contrary to our business objectives.

We may be unable to remain in compliance with covenants contained in the Credit Agreement, and our obligation to comply with these covenants may adversely affect our ability to operate our business. A failure to comply with the covenants under the Credit Agreement or any of our other future indebtedness could result in an event of default, which, if not cured or waived, could have a material adverse effect on our business, financial condition, results of operations and cash flows. If any such event of default has occurred and is continuing, the lenders under our Credit Agreement, among other things:

- will not be required to lend any additional amounts to us; or
- could elect to declare all borrowings outstanding, together with accrued and unpaid interest and fees, to be immediately due and payable and terminate all commitments to extend further credit;

any of which could result in cross defaults under our other indebtedness. If we default on our indebtedness, our business, financial condition and results of operation could suffer a material adverse effect.

We pledge substantially all of our and our guarantor subsidiaries’ assets as collateral under the Credit Agreement. If we were unable to repay such indebtedness, the lenders under the Credit Agreement could proceed to exercise remedies against the collateral granted to them to secure that indebtedness. If any of our outstanding indebtedness under the Credit Agreement or our other indebtedness were to be accelerated, there can be no assurance that our assets would be sufficient to repay such indebtedness in full. We do not have sufficient working capital to satisfy our debt obligations in the event of an acceleration of all or a significant part of our outstanding indebtedness.

Despite our substantial indebtedness, we may still be able to incur significantly more debt, which could intensify the risks associated with our substantial indebtedness.

Borrowings under the Credit Agreement, the Uncommitted Facility and the Committed Facility are at variable rates of interest and expose us to interest rate risk. If interest rates increase, our debt service obligations on certain of our variable rate indebtedness will increase even though the amount borrowed remained the same, and our net income and cash flows, including cash available for servicing our indebtedness, will correspondingly decrease. We have entered into, and may enter into additional, interest rate swaps that involve the exchange of floating for fixed rate interest payments in order to reduce interest rate volatility. However, we may not maintain interest rate swaps with respect to all of our variable rate indebtedness, and any swaps we enter into may not fully mitigate our interest rate risk, may prove disadvantageous or may create additional risks. Rising interest rates could also limit our ability to refinance existing debt when it matures or cause us to pay higher interest rates upon refinancing.

We depend on our technology, and our future results may be negatively impacted if we cannot remain technologically competitive.

We believe that our success in the past has largely been attributable to our technology, which has taken many years to develop. If technology equivalent to ours becomes more widely available for any reason, our operating results may be negatively impacted. Additionally, adoption or development of similar or more advanced technologies by our competitors may require that we devote substantial resources to the development of more advanced technology to remain competitive. Regulators and exchanges may also introduce risk control and other technological requirements on our business that could result in increased costs of compliance and divert our technological resources away from their primary strategy development and maintenance duties. The markets in which we compete are characterized by rapidly changing technology, evolving industry standards and changing trading systems, practices and techniques. The widespread adoption of new internet, networking or telecommunications technologies or other technological changes could require us to incur substantial expenditures to modify or adapt our services or infrastructure. We may not be able to anticipate or respond adequately or in a cost-efficient and competitive manner to technological advancements (including advancements related to low-latency technologies, execution and messaging speeds) or changing industry standards. If any of these risks materialize, it could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our reliance on our computer systems and software could expose us to material financial and reputational harm if any of our computer systems or software were subject to any material disruption or corruption.

We rely significantly on our computer systems and software to receive and properly process internal and external data and utilize such data to generate orders and other messages. A disruption or corruption of the proper functioning of our computer systems or software could cause us to make erroneous trades or result in other negative circumstances, which could result in material losses or reputational harm. We cannot guarantee that our efforts to maintain competitive computer systems and software will be successful. Our computer systems and software may fail or be subject to bugs or other errors, including human error, resulting in service interruptions or other unintended consequences. If any of these risks materialize, they could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We could be the target of a significant cyber-attack, threat or incident that impairs internal systems, results in adverse consequences to information our system process, store or transmit or causes reputation or monetary damages as a consequence.

Our business relies on technology and automation to perform significant functions within our firm. Because of our reliance on technology, we may be susceptible to various forms of cyber-attacks by third parties or insiders. Like other financial services firms, we and our third-party service providers have been the target of cyber-attacks. Though we take steps to mitigate the various cyber threats and devote significant resources to maintain and update our systems and networks, we may be unable to anticipate attacks or to implement adequate preventative measures. We are not aware of any material losses we have incurred relating to cyber-attacks or other information security breaches. Our cybersecurity measures may not detect or prevent all attempts to compromise our systems, including denial-of-service attacks, viruses, malicious software, ransomware, break-ins, phishing attacks, social engineering, security breaches or other attacks and similar disruptions that may jeopardize the security of information stored in and transmitted by our systems or that we otherwise maintain or otherwise result in financial losses or damages to our firm. Furthermore, we may have little or no oversight with respect to security measures employed by third-party service providers, which may ultimately prove to be ineffective at countering threats and therefore could result in adverse impacts to our business, operations, or confidential information, depending upon our relationship with and exposure to a given services provider and the nature of the services provided. Although we maintain insurance coverage that may, subject to policy terms and conditions, cover certain aspects of cyber risks, such insurance coverage may be insufficient to cover all losses or may not cover any losses. Breaches of our cybersecurity measures or those of our third-party service providers could result in any of the following: unauthorized access to our systems; unauthorized access to and misappropriation of information or data, including confidential or proprietary information about ourselves, third parties with whom we do business or our proprietary systems; viruses, worms, spyware, ransomware, or other malware being placed in our systems and intellectual property; deletion or modification of client information; or a denial-of-service or other interruptions to our business operations. Any actual or perceived breach of our cybersecurity could damage our reputation, expose us to a risk of loss or litigation and possible liability, require us to expend significant capital and other resources to alleviate problems caused by such breaches and otherwise have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our business may be harmed by computer and communication systems malfunctions, human error, failures and delays.

Our business activities are heavily dependent on the integrity and performance of the computer and communications systems supporting them. Our systems and operations are vulnerable to damage or interruption from human error, software bugs and errors, electronic and physical security breaches, natural disasters, economic or political developments, pandemics,

weather events, power loss, utility or internet outages, computer viruses, intentional acts of vandalism, war, terrorism and other similar events. Extraordinary trading volumes or other events could cause our computer systems to operate in ways that we did not intend, at an unacceptably low speed or even fail. While we have invested significant amounts of capital to upgrade the capacity, reliability and scalability of our systems, there can be no assurance that our systems will always operate properly or be sufficient to handle such extraordinary trading volumes. Any disruption for any reason in the proper functioning or any corruption of our software or erroneous or corrupted data may cause us to make erroneous trades or suspend our services and could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Although our systems and infrastructure are generally designed to accommodate additional growth without redesign or replacement, we may need to make significant investments in additional hardware and software to accommodate growth. Failure to make necessary expansions and upgrades to our systems and infrastructure could not only limit our growth and business prospects but could also cause substantial losses and have a material adverse effect on our business, financial condition, results of operations and cash flows.

Since the timing and impact of disasters and disruptions are unpredictable, we may not be able to respond to actual events as they occur. Business disruptions can vary in their scope and significance and can affect one or more of our facilities. These disruptions may occur as a result of events that affect only our buildings or systems or those of such third parties, or as a result of events with a broader impact globally, regionally or in the cities where those buildings or systems are located, including, but not limited to, natural disasters, economic or political developments, pandemics, weather events, war, terrorism and other similar events.

Further, the severity of the disruption can also vary from minimal to severe. Although we have employed efforts to develop, implement and maintain reasonable disaster recovery and business continuity plans, we cannot guarantee that our systems will fully recover after a significant business disruption in a timely fashion or at all. Our ability to conduct business may be adversely impacted by a disruption in the infrastructure that supports our businesses and the communities in which we are located. This may include a disruption involving electrical, satellite, undersea cable or other communications, internet, transportation or other services facilities used by us, our employees or third parties with which we conduct business. If we are prevented from using any of our current trading operations, or if our business continuity operations do not work effectively, we may not have complete business continuity, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Failure or poor performance of third-party software, infrastructure or systems on which we rely could adversely affect our business.

We depend on third parties to provide and maintain certain infrastructure that is critical to our business. For example, we rely on third parties to provide software, data center services and dedicated fiber optic, microwave, wireline and wireless communication infrastructure. This infrastructure may malfunction or fail due to events outside of our control, which could disrupt our operations and have a material adverse effect on our business, financial condition, results of operations and cash flows. Any failure to maintain and renew our relationships with these third parties on commercially favorable terms, or to enter into similar relationships in the future, could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We also rely on certain third-party software, third-party computer systems and third-party service providers, including clearing systems, exchange systems, alternate trading systems, order routing systems, internet service providers, communications facilities and other facilities. Any interruption in these third-party services or software, deterioration in their performance, or other improper operation could interfere with our trading activities, cause losses due to erroneous or delayed responses, or otherwise be disruptive to our business. If our arrangements with any third party are terminated, we may not be able to find an alternative source of software or systems support on a timely basis or on commercially reasonable terms. This could also have a material adverse effect on our business, financial condition, results of operations and cash flows.

The use of open source software may expose us to additional risks.

We use software development tools covered by open source licenses and may incorporate such open source software into our proprietary software from time to time. "Open source software" refers to any code, shareware or other software that is made generally available to the public without requiring payment of fees or royalties and/or that may require disclosure or licensing of any software that incorporates such source code, shareware or other software. Given the nature of open source software, third parties might assert contractual or copyright and other intellectual property-related claims against us based on our use of such tools and software programs or might seek to compel the disclosure of the source code of our software or other proprietary information. If any such claims materialize, we could be required to (i) seek licenses from third parties in order to

continue to use such tools and software or to continue to operate certain elements of our technology, (ii) release certain proprietary software code comprising our modifications to such open source software, (iii) make our software available under the terms of an open source license, (iv) re-engineer all, or a portion of, that software, any of which could materially and adversely affect our business, financial condition, results of operations and cash flows or (v) be required to pay significant damages as a result of substantiated unauthorized use. While we monitor the use of all open source software in our solutions, processes and technology and try to ensure that no open source software is used (i) in such a way as to require us to disclose the source code to the related solution when we do not wish to do so nor (ii) in connection with critical or fundamental elements of our software or technology, such use may have inadvertently occurred in deploying our proprietary solutions. If a third-party software provider has incorporated certain types of open source software into software we license from such third party for our products and solutions, we could, under certain circumstances, be required to disclose the source code to our solutions. In addition to risks related to license requirements, usage of open software can lead to greater risks than use of third-party commercial software because open source licensors generally do not provide warranties or controls on the origin of the software. Many of the risks associated with usage of open source software cannot be eliminated and could potentially have a material adverse effect on our business, financial condition, results of operations and cash flows.

We may not be able to protect our intellectual property rights or may be prevented from using intellectual property necessary for our business.

We rely on federal and state law, trade secrets, trademarks, domain names, copyrights and contract law to protect our intellectual property and proprietary technology. It is possible that third parties may copy or otherwise obtain and use our intellectual property or proprietary technology without authorization or otherwise infringe on our rights. For example, while we have a policy of entering into confidentiality, intellectual property invention assignment and/or non-competition and non-solicitation agreements or restrictions with our employees, independent contractors and business partners, such agreements may not provide adequate protection or may be breached, or our proprietary technology may otherwise become available to or be independently developed by our competitors. The promulgation of laws or rules which require the maintenance of source code or other intellectual property in a repository subject to certain requirements and/or which enhance or facilitate access to such source code by regulatory authorities could inhibit our ability to protect against unauthorized dissemination or use of our intellectual property. Third parties have alleged and may in the future allege that we are infringing, misappropriating or otherwise violating their intellectual property rights. Third parties may initiate litigation against us without warning, or may send us letters or other communications that make allegations without initiating litigation. We may elect not to respond to these letters or other communications if we believe they are without merit, or we may attempt to resolve these disputes out of court by negotiating a license, but in either case it is possible that such disputes will ultimately result in litigation. Any such claims could interfere with our ability to use technology or intellectual property that is material to the operation of our business. Such claims may be made by competitors seeking to obtain a competitive advantage or by other parties, such as entities that purchase intellectual property assets for the purpose of bringing infringement claims. We also periodically employ individuals who were previously employed by our competitors or potential competitors, and we may therefore be subject to claims that such employees have used or disclosed the alleged trade secrets or other proprietary information of their former employers.

At times we rely on litigation to enforce our intellectual property rights, protect our trade secrets, determine the validity and scope of the proprietary rights of others or defend against claims of infringement or invalidity. Any such litigation, whether successful or unsuccessful, could result in substantial costs and the diversion of resources and the attention of management. If unsuccessful, such litigation could result in the loss of important intellectual property rights, require us to pay substantial damages, subject us to injunctions that prevent us from using certain intellectual property, require us to make admissions that affect our reputation in the marketplace and require us to enter into license agreements that may not be available on favorable terms or at all. Finally, even if we prevail in any litigation, the remedy may not be commercially meaningful or fully compensate us for the harm we suffer or the costs we incur. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Fluctuations in currency exchange rates could negatively impact our earnings.

A significant portion of our international business is conducted in currencies other than the U.S. dollar, and therefore changes in foreign exchange rates relative to the U.S. dollar have in the past and can in the future affect the value of our non-U.S. dollar net assets, revenues and expenses. Although we closely monitor potential exposures as a result of these fluctuations in currencies, and where cost-justified we adopt strategies that are designed to reduce the impact of these fluctuations on our financial performance, including the financing of non-U.S. dollar assets with borrowings in the same currency and the use of various hedging transactions related to net assets, revenues, expenses or cash flows, there can be no assurance that we will be successful in managing our foreign exchange risk. Our exposure to currency exchange rate fluctuations will grow if the relative contribution of our operations outside the U.S. increases. Any material fluctuations in currencies could have a material effect on our financial condition, results of operations and cash flows.

We may incur material losses on foreign exchange transactions entered into on behalf of clients and be exposed to material liquidity risk due to counterparty defaults or errors.

We enable clients to settle cross-border equity transactions in their local currency through the use of foreign exchange contracts. These arrangements typically involve the delivery of securities or cash to a counterparty that is not processed through a central clearing facility in exchange for a simultaneous receipt of cash or securities. We may operate as either a principal or agent in these transactions. As a result, a default by one of our counterparties prior to the settlement of their obligation could materially impact our liquidity and have a material adverse effect on our financial condition and results of operations.

In addition, we are exposed to operational risk. Employee and technological errors in executing, recording or reporting foreign exchange transactions may result in material losses due to the large size of such transactions and the underlying market risk in correcting such errors.

We may experience risks associated with future growth or expansion of our operations or acquisitions, strategic investments or dispositions of businesses, and we may never realize the anticipated benefits of such activities.

As a part of our business strategy, we may make acquisitions or significant investments in and/or disposals of businesses. Any such future acquisitions, investments and/or dispositions would be accompanied by risks such as assessment of values for acquired businesses, intangible assets and technologies, difficulties in assimilating the operations and personnel of acquired companies or businesses, diversion of our management's attention from ongoing business concerns, our potential inability to maximize our financial and strategic position through the successful incorporation or disposition of operations, maintenance of uniform standards, controls, procedures and policies and the impairment of existing relationships with employees, contractors, suppliers and customers as a result of the integration of new management personnel and cost-saving initiatives. We cannot guarantee that we will be able to successfully integrate any company or business that we might acquire in the future, and our failure to do so could harm our current business.

In addition, we may not realize the anticipated benefits of any such transactions, and there may be other unanticipated or unidentified effects. While we would seek protection, for example, through warranties and indemnities in the case of acquisitions, significant liabilities may not be identified in due diligence or come to light after the expiration of warranty or indemnity periods. Additionally, while we would seek to limit our ongoing exposure, for example, through liability caps and period limits on warranties and indemnities in the case of disposals, some warranties and indemnities may give rise to unexpected and significant liabilities. If we fail to realize any such anticipated benefits, or if we experience any such unanticipated or unidentified effects in connection with any future acquisitions, investments or dispositions, we could suffer a material adverse effect on our business, financial condition, results of operations and cash flows. Finally, strategic investments may involve additional risks associated with holding a minority or noncontrolling position in an illiquid business or asset, including losses on investment along with failures to realize anticipated strategic benefits associated with an investment.

Our future efforts to sell shares of our common stock or raise additional capital may be inhibited by regulations.

As certain of our subsidiaries are members of FINRA and other SROs, we are subject to certain regulations regarding changes in ownership or control and material changes in operations. For example, FINRA Rule 1017 generally provides that FINRA approval must be obtained in connection with certain change of ownership or control transactions, such as a transaction that results in a single entity or person owning 25% or more our equity. Similarly, VFIL, VIEL and VIUK, our regulated subsidiaries in Ireland and the U.K., are subject to change in control regulations promulgated by the CBI and/or the FCA, and other registered or regulated foreign subsidiaries may be subject to similar regulations in applicable jurisdictions. As a result of these regulations, our future efforts to sell shares of our common stock or raise additional capital may be delayed or prohibited. We may be subject to similar restrictions in other jurisdictions in which we operate.

We are dependent on the continued service of certain key executives, the loss or diminished performance of whom could have a material adverse effect on our business, and our success depends in part on our ability to identify, recruit and retain skilled management and technical personnel.

Our performance is substantially dependent on the performance of our senior management, including Douglas Cifu, our Chief Executive Officer, Joseph Molluso, our Co-President and Co-Chief Operating Officer, Brett Fairclough, our Co-President and Co-Chief Operating Officer, Sean Galvin, our Chief Financial Officer and Stephen Cavoli, our Executive Vice President, Markets. In connection with and subsequent to the IPO, we have entered into employment and other related agreements with certain members of our senior management team that restrict their ability to compete with us should they decide to leave our Company. Even though we have entered into these agreements, we cannot be sure that any member of our senior management will remain with us or that they will not compete with us in the future. The loss of any member of our

senior management team could impair our ability to execute our business plan and growth strategy and have a negative impact on our revenues, in addition to potentially causing employee morale problems and/or the loss of key employees. In particular, Mr. Cifu invests in other businesses and spends time on such matters, which could divert their attention from us. Our employment agreement with Mr. Cifu specifically permits his participation in and attention to certain other business activities, including but not necessarily limited to his role as the Vice Chairman and Alternate Governor of the Florida Panthers, a National Hockey League franchise. We cannot guarantee that these or other permitted outside activities will not impact his performance as Chief Executive Officer.

Our future success depends, in part, upon our continued ability to identify, attract, hire and retain highly qualified personnel, including skilled technical, management, product and technology, trading, sales and marketing personnel, all of whom are in high demand and are often subject to competing offers. Competition for qualified personnel in the financial services industry is intense and we cannot assure you that we will be able to hire or retain a sufficient number of qualified personnel to meet our requirements, or that we will be able to do so at salary, benefit and other compensation costs that are acceptable to us or that would allow us to achieve operating results consistent with our historical results. A loss of qualified employees, or an inability to attract, retain and motivate additional highly skilled employees in the future, could have a material adverse effect on our business.

The COVID-19 pandemic could adversely affect our business, results of operations and financial condition.

The ongoing coronavirus (COVID-19) pandemic has caused significant disruption in the international and United States economies and financial markets, and has caused, among other matters, illness, death, quarantines, cancellation of events and travel, business and school shutdowns, reduction in business activity, travel, and financial transactions, labor shortages, supply chain interruptions and product shortages and overall economic and financial market instability. The full impact this virus may have on the global financial markets and the overall economy is not currently known. Impacts to our business could be widespread and global, and material impacts may be possible, including the following:

- Employees, including our senior executives, contracting COVID-19;
- Reductions in our operating effectiveness or efficiency or increases in risk as a result of the implementation of our business continuity plan, and potential disruptions or adverse impacts relating to our return to office policy;
- Unprecedented volatility in global financial markets, which may increase the risk or potential magnitude of operational errors;
- Increases in liquidity needs, including but not limited to margin funding requirements with clearinghouses or prime brokers, for our business and challenges obtaining sufficient liquidity sources to meet such needs or requirements;
- Potential decreases in demand for our products and services, which would negatively impact our liquidity position and our results;
- Adverse impacts on our clients, counterparties, vendors and other business partners on whom we rely for order flow, funding, and critical technological or operational services and the potential increase in risk of counterparty default or insolvency event;
- Closures of our offices or the offices of our clients; and
- Travel restrictions limiting our ability to collaborate internally and engage with current and potential clients and counterparties externally.

We continue to monitor COVID-19 and take designed precautions to protect the safety and well-being of our employees, customers and business partners. However, we cannot be certain that the steps we have taken or will take will be deemed to be adequate or appropriate, nor can we predict the level of disruption which will occur to our employee's ability to perform their functions.

The further spread of the COVID-19 outbreak, including potential new variants, may materially disrupt financial activity generally and in the areas in which we operate. Any one or more of these developments could have a material adverse effect on our and our consolidated subsidiaries' business, operations, consolidated financial condition, and consolidated results of operations.

We may incur losses as a result of unforeseen or catastrophic events, including the emergence of another pandemic, terrorist attacks, extreme weather events or other natural disasters.

The occurrence of unforeseen or catastrophic events, including the emergence of a pandemic, such as the Ebola or Zika viruses, COVID-19, or other widespread health emergency (or concerns over the possibility of such an emergency), terrorist attacks, extreme terrestrial or solar weather events or other natural disasters, could create economic and financial

disruptions, and could lead to operational difficulties (including travel limitations) that could impair our ability to manage our businesses.

Although we have employed efforts to develop, implement and maintain reasonable disaster recovery and business continuity plans, we cannot guarantee that our systems will fully recover after a significant business disruption in a timely fashion or at all. Our ability to conduct business may be adversely impacted by a disruption in the infrastructure that supports our businesses and the communities in which we are located. This may include a disruption involving electrical, satellite, undersea cable or other communications, internet, transportation or other services facilities used by us, our employees or third parties with which we conduct business. If we are prevented from using any of our current trading operations, or if our business continuity operations do not work effectively, we may not have complete business continuity, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We may be subject to increased risks or business disruption, incur losses or suffer reputational harm in relation to or as a result of climate change.

Climate change could manifest as a financial risk to us either through changes in the physical climate or from the process of transitioning to a low-carbon economy, including changes in climate policy or in the regulation of financial institutions with respect to risks posed by climate change. Potential events or disruptions of this nature include significant rainfall, flooding, increased frequency or intensity of wildfires, prolonged drought, rising sea levels and rising heat index. Additionally, our reputation and client relationships may be damaged as a result of our involvement, or our clients' involvement, in certain industries or projects associated with causing or exacerbating climate change, as well as any decisions we make to continue to conduct or change our activities in response to considerations relating to climate change. New regulations or guidance relating to climate change, as well as the perspectives of shareholders, employees and other stakeholders regarding climate change, may affect whether and on what terms and conditions we engage in certain activities or offer certain products.

Cryptocurrency is an emerging asset class that carries unique risk, including the risk of financial loss.

The value of cryptocurrencies is based in part on market adoption and future expectations, which may or may not be realized. As a result, the prices of cryptocurrencies are highly speculative. Due to this highly volatile nature, prices of cryptocurrencies have been subject to dramatic fluctuations which may impact our balance sheet. For example, if the price of the cryptocurrencies we hold in inventory drops below the price we paid to acquire this inventory, we could incur a loss. Moreover, if our systems fail at managing our inventory or customer orders, we could be left with excess inventory that increases our exposure to the volatility of the price of cryptocurrencies.

Further, because cryptocurrency is a new and emerging asset class with unique electronic exposure, there is a high degree of fraud, theft, cyberattacks and other forms of risk in the cryptocurrency space, and legal, regulatory and market standards around market conduct, transparency, custody, segregation of client assets, clearing and settlement are all evolving or unsettled, which can increase risks for us and other market participants. While the Company employs a variety of controls to mitigate risk of loss and theft in the cryptocurrency positions we maintain, it is possible, for example, for electronic wallet keys to become lost or stolen, for blockchains to experience detrimental changes, such as forks, or for our cryptocurrency exchange and custodian partners to experience cybersecurity incidents. In the event of such events, we could experience financial loss, we could lose customers and clients as a result of reputational damage, and we may face regulatory or legal consequences. Although we maintain insurance, there can be no assurance that liabilities or losses we may incur will be covered under such policies or that the amount of insurance will be adequate.

Legal and Regulatory Risks

Regulatory and legal uncertainties could harm our business.

Securities and derivatives businesses are heavily regulated. Firms in the financial services industry have been subject to an increasingly regulated environment over recent years, and penalties and fines sought by regulatory authorities have increased considerably. In addition, following recent news congressional, regulatory and news media attention to U.S. equities market structure, the regulatory and enforcement environment has created uncertainty with respect to various types of transactions that historically had been entered into by financial services firms and that were generally believed to be permissible and appropriate. The retail trading environment in the U.S., relationships between broker-dealers and market making firms, short selling and "high frequency" and other forms of low latency or electronic trading strategies continue to be the focus of extensive regulatory scrutiny by federal, state and foreign regulators and SROs, and such scrutiny is likely to continue. Our market making and trading activities are characterized by substantial volumes, an emphasis on technology and certain other

characteristics that are also commonly associated with high frequency trading and we engage in direct-to-client market making services across multiple asset classes primarily to sell-side clients including global, national and regional broker-dealers and banks and in the context of our market making and trading activities, we are party to various remuneration and rebate arrangements, including payment for order flow, profit-sharing relationships, and exchange fee and rebate structures.

Additionally, the regulatory and legal status and classification of various cryptocurrencies and other digital assets is subject to substantial uncertainty. For example, a given digital asset could be considered a security, a commodity or currency, or some combination thereof, and therefore may be subject to rules and regulations promulgated by federal regulators, including but not limited to the SEC, the CFTC, the Department of Treasury, in addition to state regulators. While our participation in this asset class has been limited thus far, changes in this regulatory environment, including changing interpretations and the implementation of new or varying regulatory requirements by the government, may significantly affect or change the manner in which we currently conduct some aspects of our business or may significantly impact or limit our ability to increase our participation.

In addition, the financial services industry is heavily regulated in many foreign countries. The varying compliance requirements of these different regulatory jurisdictions and other factors may limit our ability to conduct business or expand internationally. For example, MiFID, which was implemented in November 2007, has been replaced by MiFID II/Markets in Financial Investments Regulation (“MiFIR”), which was adopted by the European Parliament on April 15, 2014 and by the Council on May 13, 2014, entered into force on July 2, 2014, and became effective on January 3, 2018. MiFID II requires certain types of firms, including VFIL, to post firm quotes at competitive prices and supplements previous requirements with regard to investment firms’ risk controls related to the safe operation of electronic systems. MiFID II also imposes additional requirements on market structure, such as the introduction of a harmonized tick size regime, the introduction of new trading venues known as Organized Trading Facilities, and the promulgation of a new bilateral trading arrangement called the Systematic Internaliser regime, new open access provisions, market making requirements and various other pre- and post-trade risk management requirements. The MiFID II regime is currently under review, with European Union authorities proposing to make further changes to the regime. Various consultation papers have been published on different aspects of the MiFID II regime, on February 4, 2020, an ESMA Consultation Paper entitled “MiFID II/MiFIR Review Report on the Transparency Regime for Equity and Equity-like Instruments, the Double Volume Cap Mechanism and the Trading Obligations for Shares”, on December 18, 2020 an ESMA Consultation Paper entitled “MiFID II/MiFIR Review Report on Algorithmic Trading” and on January 28, 2022 an ESMA Consultation Paper “on ESMA’s Opinion on the trading venue perimeter”. In its communication on “The European economic and financial system: fostering openness, strength and resilience” of January 19, 2021, the European Commission confirmed its intention to propose to make changes with a view to improving simplifying and further harmonizing capital markets’ transparency as part of the review of the MiFID II and MiFIR framework. On December 21, 2022, the Council of the European Union published the texts of its general approach on the proposed regulation to amend MiFIR “as regards enhancing market data transparency, removing obstacles to the emergence of a consolidated tape, optimizing the trading obligations and amending Regulation (EU) No 575/2013 on prudential requirements for credit institutions and amending Regulation (EU) No 648/2012” and on the proposed directive “amending Directive 2014/65/EU on markets in financial instruments and amending Directive 2013/36/EU on access of the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC”, each dated December 16, 2022; as well as publishing an “I” item note, also dated December 16, 2022, inviting the Council’s Permanent Representatives Committee to agree the text of the mandate for negotiations with European Parliament on the basis of the published general approaches, with a view to reaching agreement at first reading. Each of these and other proposals may impose technological and compliance costs on us. Any of these laws, rules or regulations, as well as changes in legislation or regulation and changes in market customs and practices could have a material adverse effect on our business, financial condition, results of operations and cash flows. These risks may be enhanced by recent scrutiny of electronic trading and market structure from regulators, lawmakers and the financial news media.

In addition, we maintain borrowing facilities with banks, prime brokers and Futures Commission Merchants (“FCMs”), and we obtain uncommitted margin financing from our prime brokers and FCMs, which are in many cases affiliated with banks. In response to the 2008 financial crisis, the Basel Committee on Banking Supervision issued a new, more stringent capital and liquidity framework known as Basel III, which national banking regulators have been implementing in the various jurisdictions in which our lenders may be incorporated. In the E.U., on December 24, 2019, a Regulation on the prudential requirements for Investment Firms (“IFR”) and a Directive on the prudential supervision of Investments Firms (“IFD”) entered into force. The IFR and IFD introduce new prudential requirements for investment firms, classifying them into different categories depending on the firm’s balance-sheet size and types of activity. The main provisions of the IFR and IFD were applicable from the end of June 2021. Certain Level 2 texts are still outstanding which are required to provide clarity on certain provisions in the IFR/IFD. As these rules are implemented and in certain cases impose more stringent capital and liquidity requirements, certain of our lenders may revise the terms of our borrowing facilities or margin financing arrangements, reduce the amount of financing they provide, or cease providing us financing, each of which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Pending, proposed and other potential changes in laws and rules may adversely impact our business.

Certain market participants, SROs, government officials and regulators have requested that the U.S. Congress, the SEC, and the CFTC propose and adopt additional laws and rules, including rules relating to payment for order flow, off-exchange trading, additional registration requirements, restrictions on co-location, order-to-execution ratios, minimum quote life for orders, incremental messaging fees to be imposed by exchanges for “excessive” order placements and/or cancellations, further transaction taxes, tick sizes, changes to maker/taker rebates programs, and other market structure proposals. For example, the Committee on Financial Services of the U.S. House of Representatives held hearings on the events surrounding the January 2021 market volatility and disruptions surrounding Gamestop and other “meme” stocks at which various members of Congress expressed their concerns about various market practices, including payment for order flow and short-selling. The SEC has recently proposed several rule changes focused on equity market structure reform. These proposals include, but are not limited to, (i) Proposed Rule 615 of Regulation NMS, which proposes to dramatically change U.S. equities market structure, the routing, handling and potentially the amount, character and cost of retail order flow, (ii) Regulation Best Execution, which would impose best execution requirements on broker-dealers which would be distinct from, but overlapping with, FINRA’s existing best execution rule (Rule 5310), (iii) proposed rule amendments to minimum pricing increments under Rule 612 or Regulation NMS, access fee caps under Rule 610 of Regulation NMS, acceleration of implementation of certain Market Data Infrastructure Rules, and amendment to the odd-lot information definition adopted under the MDI rules (collectively referred to as the “tick size, access fees and infostructure rule proposals”), and (iv) amendments to Rule 605 of Regulation NMS, along with a series of amendments to the definition of Exchange and Alternative Trading Systems (ATS), which would expand the scope of exchange and ATS registration and compliance requirements. Regulators may propose other market structure changes, particularly considering the continued regulatory, congressional and media scrutiny of U.S. equities market structure, the retail trading environment in the U.S., wholesale market making and the relationships between retail broker-dealers and market making firms, including but not limited to payment for order flow arrangements, other remuneration arrangements such as profit-sharing relationships and exchange fee and rebate structures, ATSs and off-exchange trading more generally, high frequency trading, short selling, market fragmentation, colocation, and access to market data feeds.

Any or all of these proposals or additional proposals may be adopted by the SEC, CFTC or other U.S. or foreign legislative or regulatory bodies, and news media attention to electronic trading and market structure could increase the likelihood of adoption. These potential market structure and regulatory changes could cause a change in the manner in which we make markets, limit, restrict or otherwise adversely affect our ability to interact with certain order flow, impose additional costs and expenses on our business or otherwise have a material adverse effect on our business, financial condition, results of operations and cash flows.

Non-compliance with applicable laws or regulatory requirements could subject us to sanctions and could negatively impact our reputation, prospects, revenues and earnings.

Our subsidiaries are subject to regulations in the U.S., and our foreign subsidiaries are subject to regulations abroad, in each case covering all aspects of their business. Regulatory bodies that exercise or may exercise authority over us include, without limitation, in the U.S., the SEC, FINRA, the Chicago Mercantile Exchange, the Intercontinental Exchange, the CFTC, the NFA Exchanges and the various state securities regulators; in the European Union, the European Securities and Markets Authority (“ESMA”); in Ireland, the CBI; in Switzerland, the Swiss Financial Market Supervisory Authority; in France, the Autorité des Marchés Financiers (“AMF”); in the United Kingdom, the FCA; in Hong Kong, the SFC; in Australia, the ASIC; in Canada, the IIROC and various Canadian provincial securities commissions; in Singapore, the MAS and the Singapore Exchange; and in Japan, the Financial Services Agency and the Japan Securities Dealers Association. Our mode of operation and profitability may be directly affected by additional legislation and changes in rules promulgated by various domestic and foreign government agencies and SROs that oversee our businesses, as well as by changes in the interpretation or enforcement of existing laws and rules, including the potential imposition of additional capital and margin requirements and/or transaction taxes. While we endeavor to deliver required annual filings in all jurisdictions in a timely manner, we cannot guarantee that we will meet every applicable filing deadline globally. Noncompliance with applicable laws or regulations could result in sanctions being levied against us, including fines, penalties, judgments, disgorgement, restitution and censures, suspension or expulsion from a certain jurisdiction, SRO or market or the revocation or limitation of licenses. Noncompliance with applicable laws or regulations could also negatively impact our reputation, prospects, revenues and earnings. In addition, changes in current laws or regulations or in governmental policies could negatively impact our operations, revenues and earnings.

Domestic and foreign stock exchanges, other SROs and state and foreign securities commissions can censure, fine, impose undertakings, issue cease-and-desist orders and suspend or expel a broker-dealer or other market participant or any of its officers or employees. Our ability to comply with all applicable laws and rules is largely dependent on our internal systems to ensure compliance, as well as our ability to attract and retain qualified compliance personnel. We could be subject to disciplinary or other actions in the future due to claimed noncompliance, which could have a material adverse effect on our business, financial condition, results of operations and cash flows. We have been, are currently, and may in the future be, the

subject of one or more regulatory or SRO enforcement actions, including but not limited to targeted and routine regulatory inquiries and investigations involving Best Execution, Regulation NMS, Regulation SHO, Regulation SCI, market access rules, capital requirements and other domestic and foreign securities rules and regulations. We and other broker-dealers and trading firms have also been the subject of requests for information and documents from the SEC and other regulators. We have cooperated and complied with these requests for information and documents. Our business or reputation could be negatively impacted if it were determined that disciplinary or other enforcement actions were required. To continue to operate and to expand our services internationally, we will have to comply with the regulatory controls of each country in which we conduct or intend to conduct business, the requirements of which may not be clearly defined. The varying compliance requirements of these different regulatory jurisdictions, which are often unclear, may limit our ability to continue existing international operations and further expand internationally.

Certain of our subsidiaries are subject to regulatory capital rules of the SEC, FINRA, other SROs and foreign regulators. These rules, which specify minimum capital requirements for our regulated subsidiaries, are designed to measure the general financial integrity and liquidity of a broker-dealer and require that at least a minimum part of its assets be kept in relatively liquid form. In general, net capital is defined as net worth (assets minus liabilities), plus qualifying subordinated borrowings, less certain mandatory deductions that result from, among other things, excluding assets that are not readily convertible into cash and from valuing conservatively certain other assets. Among these deductions are adjustments, commonly called haircuts, which reflect the possibility of a decline in the market value of an asset before disposition, and non-allowable assets.

Failure to maintain the required minimum capital may subject our regulated subsidiaries to a fine, requirement to cease conducting business, suspension, revocation of registration or expulsion by the applicable regulatory authorities, reputational harm and ultimately could require the relevant entity's liquidation. Events relating to capital adequacy could give rise to regulatory actions that could limit business expansion or require business reduction. SEC and SRO net capital rules prohibit payments of dividends, redemptions of stock, prepayments of subordinated indebtedness and the making of any unsecured advances or loans to a stockholder, employee or affiliate, in certain circumstances, including if such payment would reduce the firm's net capital below required levels. Similar issues and risks arise in connection with the capital adequacy requirements of foreign regulators.

A change in the net capital rules, the imposition of new rules or any unusually large charges against net capital could limit our operations that require the intensive use of capital and also could restrict our ability to withdraw capital from our broker-dealer subsidiaries. A significant operating loss or any unusually large charge against net capital could negatively impact our ability to expand or even maintain our present levels of business. Similar issues and risks arise in connection with the capital adequacy requirements of foreign regulators. Any of these results could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We are subject to risks relating to litigation and potential securities law liability.

We are exposed to substantial risks of liability under federal and state securities laws and other federal and state laws and court decisions, as well as rules and regulations promulgated by the SEC, the CFTC, state securities regulators, SROs and foreign regulatory agencies. These risks may be enhanced by recent scrutiny of electronic trading and market structure from regulators, lawmakers and the financial news media. We are also subject to the risk of litigation and claims that may be without merit. At present and from time to time, we, our past and present officers, directors and employees are and may be named in legal actions, regulatory investigations and proceedings, arbitrations and administrative claims and may be subject to claims alleging the violations of laws, rules and regulations, some of which may ultimately result in the payment of fines, awards, judgments and settlements. We could incur significant legal expenses in defending ourselves against and resolving lawsuits or claims even if we believe them to be meritless. An adverse resolution of any current or future lawsuits or claims against us could result in a negative perception of our Company and cause the market price of our common stock to decline or otherwise have a material adverse effect on our business, financial condition, results of operations and cash flows.

Proposed legislation in the European Union, the U.S. and other jurisdictions that would impose taxes on certain financial transactions could have a material adverse effect on our business and financial results.

On September 28, 2011, the former president of the European Commission officially presented a plan to create a new financial transactions tax which in February 2013 was formally presented for consideration by the European Commission under an enhanced cooperation procedure among 11 European Union Member States (Belgium, Germany, Estonia, Greece, Spain, France, Italy, Austria, Portugal, Slovenia and Slovakia) for the purposes of a financial transaction tax among those Member States (the "EU Financial Transaction Tax"). The EU Financial Transaction Tax was initially intended to be implemented within those 11 European Union Member States in January 2014. In 2016, Estonia, one of the original members, withdrew its

support for the proposal. As of December 31, 2021 such tax has not yet been implemented. On October 15, 2020, the Spanish Government published Law 5/2020 on the Spanish Financial Transaction Tax (“Spanish FTT”). The Spanish FTT constitutes a new tax to be applied to acquisitions of equity shares in Spanish companies having a market capitalization greater than EUR1bn (as of 1st December the previous year), that are admitted to trading on a Spanish market or a market based in another E.U. member state. The Spanish FTT was applied to transactions from trade date of January 14, 2020, although it does contain certain exemptions, including in relation to market making activity.

In 2013, U.S. Representative Peter DeFazio and former Senator Thomas Harkin introduced proposed legislation, a bill entitled the “Wall Street Trading and Speculators Tax Act,” which would have, subject to certain exceptions, imposed an excise tax on the purchase of a security, including equities, bonds, debentures, other debt and interests in derivative financial instruments, if the purchase occurred or was cleared on a trading facility in the U.S. and the purchaser or seller is a U.S. person. More recently, in late 2018 and 2019 U.S. legislators, including U.S. Senators Kirsten Gillibrand and Brian Schatz, have announced proposals or plans that include a financial transaction fee. President Biden's win in the 2020 U.S. Presidential election and the Democratic majority in the Senate may lead to additional proposals or plans. At the state level recently, the state of New Jersey has considered a bill in the state legislature providing for a financial transaction tax on trades processed on any server located in New Jersey, with other states, including New York, discussing similar measures. Discussions in New York have included a proposed bill which would reestablish a stock transfer tax by repealing a rebate previously implemented and applied to such tax since 1981.

These proposed transaction taxes would apply to certain aspects of our business and transactions in which we are involved. Any such tax would increase our cost of doing business to the extent that (i) the tax is regularly applicable to transactions in the markets in which we operate, (ii) the tax does not include exceptions for market makers or market making activities that is broad enough to cover our activities or (iii) we are unable to widen our bid/ask spreads in the markets in which such a tax would be applicable to compensate for its imposition. Furthermore, the proposed taxes may reduce or negatively impact trading volume and transactions on which we are dependent for revenues. While it is difficult to assess the impact the proposed taxes could have on us, if either transaction tax is implemented or any similar tax is implemented in any other jurisdiction in which we operate, our business, financial condition, results of operations and cash flows could suffer a material adverse effect, and could be impacted to a greater degree than other market participants.

We are exposed to risks associated with our international operations and expansion and failure to comply with laws and regulations applicable to our international operations may increase costs, reduce profits, limit growth or subject us to liability.

We are exposed to risks and uncertainties inherent in doing business in international markets, particularly in the heavily regulated broker-dealer industry. Such risks and uncertainties include political, economic and financial instability, unexpected changes in regulatory requirements, tariffs and other trade barriers, exchange rate fluctuations, applicable currency controls, the imposition of restrictions on currency conversion or the transfer of funds, limitations on our ability to repatriate non-U.S. earnings in a tax efficient manner and difficulties in staffing and managing foreign operations, including reliance on local experts. Such restrictions generally include those by imposed by the Foreign Corrupt Practices Act (the “FCPA”) and trade sanctions administered by the Office of Foreign Assets Control (“OFAC”). The FCPA is intended to prohibit bribery of foreign officials and requires companies whose securities are listed in the U.S. to keep books and records that accurately and fairly reflect those companies’ transactions and to devise and maintain an adequate system of internal accounting controls. OFAC administers and enforces economic and trade sanctions based on U.S. foreign policy and national security goals against designated foreign states, organizations and individuals. Though we have policies in place designed to comply with applicable OFAC sanctions, rules and regulations as well as the FCPA and equivalent laws and rules of other jurisdictions, if we fail to comply with these laws and regulations, we could be exposed to claims for damages, financial penalties, reputational harm, incarceration of employees and restrictions on our operations and cash flows.

In addition, the varying compliance requirements of these different regulatory jurisdictions and other factors may limit our ability to successfully conduct or expand our business internationally and may increase our costs of investment. Expansion into international locations involves substantial operational and execution risk. We may not be able to manage these costs or risks effectively.

Brexit continues to pose a risk of negatively impacting the global economy, financial markets and our business.

In June 2016, UK voters approved a referendum to withdraw the UK's membership from the EU, which is commonly referred to as “Brexit”. In March 2017, the UK government initiated the exit process under Article 50 of the Treaty of the European Union, commencing a period of up to two years for the UK and the other EU member states to negotiate the terms of the withdrawal, such period ending on March 29, 2019 unless extended. Following extensions to that period, a Withdrawal

Agreement and Political Declaration were reached between the U.K. and the E.U. On January 23, 2020, the European Union (Withdrawal Agreement) Act 2020 received Royal Assent in the U.K., and on January 31, 2020 the U.K. left the E.U. pursuant to the terms of the Withdrawal Agreement. The U.K. and E.U. then entered into a transition period during which rules on trade, travel, and business for the U.K. and E.U. continued to apply. The transition period came to an end as of January 1, 2021, at which point U.K. investment firms which had previously used passporting permissions under MiFID II to provide services to clients in the E.U., ceased to be subject to the E.U.'s MiFID II regime. Virtu accesses the E.U. markets primarily through our Irish regulated subsidiaries via MiFID II passporting permissions and accesses the U.K. market primarily via a combination of U.K. based subsidiaries and branch offices. The U.K. branch offices of VIEL and VFIL currently utilize the U.K. FCA's Temporary Permission Regime and are therefore deemed to be authorized and regulated by the FCA. The Temporary Permissions Regime is due to come to an end at the end of 2023. VIEL and VFIL have submitted applications for full third country branch authorization to the FCA to ensure the long-term operational footprint of Virtu's branches in the U.K. These authorization processes are ongoing. The U.K. subsidiary, VIUK, is an investment firm authorized and regulated by the FCA with permission to operate a U.K. MTF. Poor future relations between the U.K. and E.U., however, could adversely affect European or worldwide political, fiscal, regulatory, economic or market conditions and could contribute to instability in global political institutions, regulatory agencies and financial markets. Disruptions and uncertainty caused by these events may also cause our clients to closely monitor their costs and reduce their spending budget on our services. Any of these effects of the U.K.'s departure from the E.U., and others we cannot anticipate or that may evolve over time, could adversely affect our business, results of operations and financial condition.

In connection with our historical acquisitions, the Company is subject to potential liabilities that could materially and adversely affect our business.

In connection with the Acquisition of KCG and the ITG Acquisition, we assumed potential liabilities, indemnification obligations, and other risks relating to KCG's and ITG's business, including but not limited to those liabilities and risks arising from or related to pending, threatened or potential litigation or regulatory matters. In some instances, these matters may ultimately result in a disciplinary action and/or a civil or administrative action, penalties, fines, judgments, censures and settlements. To the extent we have not identified such liabilities or miscalculated their potential financial impact, these liabilities could have a material adverse effect on our business, prospects, results of operations, financial condition and/or cash flows.

Risks Related to Our Organization and Structure

We are a holding company and our principal asset is our 59.7% of equity interest in Virtu Financial, and we are accordingly dependent upon distributions from Virtu Financial to pay dividends, if any, taxes and other expenses.

We are a holding company and our principal asset is our direct and indirect ownership of 59.7% of the Virtu Financial Units as of December 31, 2022. We have no independent means of generating revenue. As the sole managing member of Virtu Financial, we cause Virtu Financial to make distributions to its equity holders, including the Founder Post-IPO Member, Virtu Employee Holdco, certain current and former members of management of the Company and their affiliates (the "Management Members") and us, in amounts sufficient to fund dividends to our stockholders in accordance with our dividend policy and, as further described below, to cover all applicable taxes payable by us and any payments we are obligated to make under the tax receivable agreements we entered into as part of the Reorganization Transactions, but we are limited in our ability to cause Virtu Financial to make these and other distributions to us (including for purposes of paying corporate and other overhead expenses and dividends) under our Credit Agreement governing our First Lien Term Loan Facility (as defined below). In addition, certain laws and regulations may result in restrictions on Virtu Financial's ability to make distributions to its equity holders (including us), or the ability of its subsidiaries to make distributions to it. These include:

- the SEC Uniform Net Capital Rule (Rule 15c3-1), which requires Virtu Financial's registered broker-dealer subsidiary to maintain specified levels of net capital;
- FINRA Rule 4110, which imposes a requirement of prior FINRA approval for any distribution by Virtu Financial's FINRA member registered broker-dealer subsidiary in excess of 10% of its excess net capital; and
- the requirement for prior approval from the CBI before Virtu Financial's regulated Irish subsidiary completes any distribution or dividend.

To the extent that we need funds and Virtu Financial is restricted from making such distributions to us, under applicable law or regulation, as a result of covenants in our Credit Agreement, we may not be able to obtain such funds on terms acceptable to us or at all and as a result could suffer a material adverse effect on our liquidity and financial condition.

Under the Third Amended and Restated Limited Liability Company Agreement of Virtu Financial (as amended, the "Amended and Restated Virtu Financial LLC Agreement"), Virtu Financial from time to time makes distributions in cash to its

equity holders, including the Founder Post-IPO Member, the trust that holds equity interests in Virtu Financial on behalf of certain employees of ours based outside the United States, which we refer to as the “Employee Trust”, Virtu Employee Holdco and us, in amounts sufficient to cover the taxes on their allocable share of the taxable income of Virtu Financial. These distributions are treated as advances and may be computed based on Virtu Financial’s estimate of the net taxable income of Virtu Financial allocable to each holder of Virtu Financial Units multiplied by an assumed tax rate equal to the highest effective marginal combined U.S. federal, state and local income tax rate prescribed for an individual or corporate resident in New York, New York (taking into account the non-deductibility of certain expenses and the character of our income), or another rate as determined by the Company in its discretion for one or more holders. As a result of (i) potential differences in the amount of net taxable income allocable to us and to Virtu Financial’s other equity holders, (ii) the lower tax rate applicable to corporations than individuals, (iii) the favorable tax benefits that we anticipate from (a) the exchange of Virtu Financial Units and corresponding shares of Class C Common Stock or Class D Common Stock, (b) payments under the tax receivable agreements and (c) future deductions attributable to the prior acquisition of interests in Virtu Financial by certain affiliates of Silver Lake Partners and Temasek, and (vi) additional distributions of profits which may be generated by Virtu Financial and its subsidiaries to equity holders, we expect that the distributions we receive may exceed our tax liabilities, regular dividend and other obligations. Our Board of Directors will determine the appropriate uses for any excess cash so accumulated, which may include, among other uses, the payment of obligations under the tax receivable agreements, the payment of other expenses or the repurchase of shares of common stock or Virtu Financial Units. We will have no obligation to distribute such cash (or other available cash) to our shareholders. No adjustments to the exchange ratio for Virtu Financial Units and corresponding shares of common stock will be made as a result of any cash distribution by us or any retention of cash by us, and in any event the ratio will remain one-to-one.

We are controlled by the Founder Post-IPO Member, whose interests in our business may be different than yours, and certain statutory provisions afforded to stockholders are not applicable to us.

The Founder Post-IPO Member controls approximately 85.2% of the combined voting power of our common stock as a result of its ownership of our Class C and Class D Common Stock, each share of which is entitled to 1 vote and 10 votes, respectively, on all matters submitted to a vote of our stockholders.

The Founder Post-IPO Member has the ability to substantially control our Company, including the ability to control any action requiring the general approval of our stockholders, including the election of our Board of Directors, the adoption of amendments to our certificate of incorporation and by-laws and the approval of any merger or sale of substantially all of our assets. This concentration of ownership and voting power may also delay, defer or even prevent an acquisition by a third party or other change of control of our Company and may make some transactions more difficult or impossible without the support of the Founder Post-IPO Member, even if such events are in the best interests of minority stockholders. This concentration of voting power with the Founder Post-IPO Member may have a negative impact on the price of our Class A Common Stock. In addition, because shares of our Class B Common Stock and Class D Common Stock each have 10 votes per share on matters submitted to a vote of our stockholders, the Founder Post-IPO Member is able to control our Company as long as it owns at least 25% of our issued and outstanding Common Stock.

The Founder Post-IPO Member’s interests may not be fully aligned with yours, which could lead to actions that are not in your best interest. Because the Founder Post-IPO Member holds part of its economic interest in our business through Virtu Financial, rather than through the public company, it may have conflicting interests with holders of shares of our Class A Common Stock. For example, the Founder Post-IPO Member may have a different tax position from us, which could influence its decisions regarding whether and when we should dispose of assets or incur new or refinance existing indebtedness, especially in light of the existence of the tax receivable agreements that we entered into in connection with the IPO, and whether and when we should undergo certain changes of control within the meaning of the tax receivable agreements or terminate the tax receivable agreements. In addition, the structuring of future transactions may take into consideration these tax or other considerations even where no similar benefit would accrue to us. See “Item 1A. Risk Factors - Risks Related to Our Organizational Structure - We are required to pay the Virtu Post-IPO Members and the Investor Post-IPO Stockholders for certain tax benefits we may claim, and the amounts we may pay could be significant.” In addition, pursuant to an exchange agreement, the holders of Virtu Financial Units and shares of our Class C Common Stock or Class D Common Stock are not required to participate in a proposed sale of our Company that is tax-free for our stockholders unless the transaction is also tax-free for such holders of Virtu Financial Units and shares of our Class C Common Stock or Class D Common Stock. This requirement could limit structural alternatives available to us in any such proposed transaction and could have the effect of discouraging transactions that might benefit you as a holder of shares of our Class A Common Stock. In addition, the Founder Post-IPO Member’s significant ownership in us and resulting ability to effectively control us may discourage someone from making a significant equity investment in us, or could discourage transactions involving a change in control, including transactions in which you as a holder of shares of our Class A Common Stock might otherwise receive a premium for your shares over the then-current market price.

We have opted out of Section 203 of the General Corporation Law of the State of Delaware (the “Delaware General Corporation Law”), which prohibits a publicly held Delaware corporation from engaging in a business combination transaction with an interested stockholder for a period of three years after the interested stockholder became such unless the transaction fits within an applicable exemption, such as board approval of the business combination or the transaction which resulted in such stockholder becoming an interested stockholder. Therefore, the Founder Post-IPO Member is able to transfer control of us to a third party by transferring its shares of our common stock (subject to certain restrictions and limitations), which would not require the approval of our Board of Directors or our other stockholders.

Our amended and restated certificate of incorporation provides that, to the fullest extent permitted by law, the doctrine of “corporate opportunity” does not apply against the Founder Post-IPO Member, Mr. Viola, Temasek, any of our non-employee directors or any of their respective affiliates in a manner that would prohibit them from investing in competing businesses or doing business with our clients or customers. In addition, subject to the restrictions on competitive activities described below, Mr. Cifu is permitted to become engaged in, or provide services to, any other business or activity in which Mr. Viola is currently engaged or permitted to become engaged, to the extent that Mr. Cifu’s level of participation in such businesses or activities is consistent with his current participation in such businesses and activities. The Amended and Restated Virtu Financial LLC Agreement provides that Mr. Viola, in addition to our other executive officers and our employees that are Virtu Post-IPO Members, including Mr. Cifu, may not directly or indirectly engage in certain competitive activities until the third anniversary of the date on which such person ceases to be an officer, director or employee of ours. Temasek and our non-employee directors are not subject to any such restriction. To the extent that the Founder Post-IPO Member, Mr. Viola, Temasek, our non-employee directors or any of their respective affiliates invests in other businesses, they may have differing interests than our other stockholders. Messrs. Viola and Cifu also have business relationships outside of our business.

We may be unable to remain in compliance with the covenants contained in our Credit Agreement and our obligation to comply with these covenants may adversely affect our ability to operate our business.

The covenants in our Credit Agreement may negatively impact our ability to finance future operations or capital needs or to engage in other business activities. Our Credit Agreement restricts our ability to, among other things, incur additional indebtedness, dispose of assets, guarantee debt obligations, repay other indebtedness, pay dividends, pledge assets, make investments, including in certain of our operating subsidiaries, make acquisitions or consummate mergers or consolidations and engage in certain transactions with subsidiaries and affiliates.

A failure to comply with the restrictions contained in our Credit Agreement could lead to an event of default, which could result in an acceleration of our indebtedness. Our future operating results may not be sufficient to enable compliance with the covenants in our Credit Agreement or to remedy such a default. In addition, in the event of an acceleration, we may not have or be able to obtain sufficient funds to refinance our indebtedness or to make any accelerated payments. Even if we were able to obtain new financing, we would not be able to guarantee that the new financing would be on commercially reasonable terms. If we default on our indebtedness, our business, financial condition and results of operation could suffer a material adverse effect.

We are exempt from certain corporate governance requirements since we are a “controlled company” within the meaning of the Nasdaq rules, and as a result our stockholders do not have the protections afforded by these corporate governance requirements.

The Founder Post-IPO Member controls more than 50% of our combined voting power. As a result, we are considered a “controlled company” for purposes of the Nasdaq rules and corporate governance standards, and therefore we are permitted and may elect not to or may have elected not to, comply with certain Nasdaq corporate governance requirements, including those that would otherwise require our Board of Directors to have a majority of independent directors and require that we either establish a Compensation and Nominating and Corporate Governance Committees, each comprised entirely of independent directors, or otherwise ensure that the compensation of our executive officers and nominees for directors are determined or recommended to the Board of Directors by the independent members of the Board of Directors. Accordingly, holders of our Class A Common Stock do not have the same protections afforded to stockholders of companies that are subject to all of the Nasdaq rules and corporate governance standards, and the ability of our independent directors to influence our business policies and affairs may be reduced.

We are required to pay the Virtu Post-IPO Members and the Investor Post-IPO Stockholders for certain tax benefits we may claim, and the amounts we may pay could be significant.

In connection with the Reorganization Transactions, we acquired equity interests in Virtu Financial from an affiliate of Silver Lake Partners (which, following a secondary offering completed in November 2015, no longer holds any equity interest

in us) and the Temasek Pre-IPO Member in the Mergers. In addition, we used a portion of the net proceeds from our IPO and our Secondary Offerings (as defined below) to purchase Virtu Financial Units and corresponding shares of Class C Common Stock from certain Virtu Post-IPO Members, including affiliates of Silver Lake Partners (the “Silver Lake Post-IPO Members”), the Founder Post-IPO Member, and certain employees. These acquisitions of interests in Virtu Financial, along with certain subsequent exchanges of interests in Virtu Financial by current and former employees, resulted in tax basis adjustments to the assets of Virtu Financial that were allocated to us and our subsidiaries. Future acquisitions of interests in Virtu Financial are expected to produce favorable tax attributes. In addition, future exchanges by the Virtu Post-IPO Members of Virtu Financial Units and corresponding shares of Class C Common Stock or Class D Common Stock, as the case may be, for shares of our Class A Common Stock or Class B Common Stock, respectively, are expected to produce favorable tax attributes. These tax attributes would not be available to us in the absence of such transactions. Both the existing and anticipated tax basis adjustments are expected to reduce the amount of tax that we would otherwise be required to pay in the future.

We entered into three tax receivable agreements with the Virtu Post-IPO Members and the Investor Post-IPO Stockholders (one with the Founder Post-IPO Member, the Employee Trust, Virtu Employee Holdco and other post IPO investors, other than affiliates of Silver Lake Partners and affiliates of Temasek, another with the Investor Post-IPO Stockholders and the other with the Silver Lake Post-IPO Members) that provide for the payment by us to the Virtu Post-IPO Members and the Investor Post-IPO Stockholders (or their transferees of Virtu Financial Units or other assignees) of 85% of the amount of actual cash savings, if any, in U.S. federal, state and local income tax or franchise tax that we actually realize as a result of (i) any increase in tax basis in Virtu Financial’s assets resulting from (a) the acquisition of equity interests in Virtu Financial from an affiliate of Silver Lake Partners and Temasek, and the Temasek Pre-IPO Member in the Reorganization Transactions (which represents the unamortized portion of the increase in tax basis in Virtu Financial’s assets resulting from a prior acquisition of interests in Virtu Financial by an affiliate of Silver Lake Partners and Temasek, and the Temasek Pre-IPO Member), (b) the purchases of Virtu Financial Units (along with the corresponding shares of our Class C Common Stock or Class D Common Stock, as applicable) from certain of the Virtu Post-IPO Members using a portion of the net proceeds from the IPO or in any subsequent offering (including, without limitation, the Secondary Offerings), (c) exchanges by the Virtu Post-IPO Members of Virtu Financial Units (along with the corresponding shares of our Class C Common Stock or Class D Common Stock, as applicable) for shares of our Class A Common Stock or Class B Common Stock, as applicable, or (d) payments under the tax receivable agreements, (ii) any net operating losses available to us as a result of the Mergers and (iii) tax benefits related to imputed interest deemed arising as a result of payments made under the tax receivable agreements.

The actual increase in tax basis, as well as the amount and timing of any payments under these tax receivable agreements, will vary depending upon a number of factors, including the timing of exchanges by the Virtu Post-IPO Members, the price of our Class A Common Stock at the time of the exchange, the extent to which such exchanges are taxable, the amount and timing of the taxable income we generate in the future and the tax rate then applicable and the portion of our payments under the tax receivable agreements constituting imputed interest.

The payments we are required to make under the tax receivable agreements, which represent 85% of the amount of actual cash savings, if any, in U.S. federal, state and local income tax or franchise tax that we actually realize, could be substantial. We expect that, as a result of the amount of the increases in the tax basis of the tangible and intangible assets of Virtu Financial, assuming no material changes in the relevant tax law and that we earn sufficient taxable income to realize in full the potential tax benefits described above, future payments to the Virtu Post-IPO Members and the Investor Post-IPO Stockholders in respect of the purchases, the exchanges and the Mergers in connection with the IPO, the purchases and exchanges completed in connection with our subsequent public offerings, the Secondary Offerings, and exchanges by employees and other Virtu Post-IPO Members will range from approximately \$36.4 thousand to \$22.0 million per year over the next 15 years. Future payments under the tax receivable agreements in respect of subsequent exchanges would be in addition to these amounts. The payments under the tax receivable agreements are not conditioned upon the Virtu Post-IPO Members’ or the Investor Post-IPO Stockholders’ continued ownership of us.

In addition, although we are not aware of any issue that would cause the Internal Revenue Service (the “IRS”) to challenge the tax basis increases or other benefits arising under the tax receivable agreements, the Virtu Post-IPO Members and the Investor Post-IPO Stockholders (or their transferees or other assignees) will not reimburse us for any payments previously made if such tax basis increases or other tax benefits are subsequently disallowed, except that any excess payments made to the Virtu Post-IPO Members and the Investor Post-IPO Stockholders will be netted against future payments otherwise to be made under the tax receivable agreements, if any, after our determination of such excess. As a result, in such circumstances we could make payments to the Virtu Post-IPO Members and the Investor Post-IPO Stockholders under the tax receivable agreements that are greater than our actual cash tax savings and may not be able to recoup those payments, which could negatively impact our liquidity.

In addition, the tax receivable agreements provide that, upon certain mergers, asset sales or other forms of business combination, or certain other changes of control, our or our successor's obligations with respect to tax benefits would be based on certain assumptions, including that we or our successor would have sufficient taxable income to fully utilize the increased tax deductions and tax basis and other benefits covered by the tax receivable agreements. As a result, upon a change of control, we could be required to make payments under a tax receivable agreement that are greater than the specified percentage of our actual cash tax savings, which could negatively impact our liquidity.

In addition, the tax receivable agreements provide that in the case of a change in control of the Company, the Virtu Post-IPO Members and the Investor Post-IPO Stockholders have the option to terminate the applicable tax receivable agreement, and we are required to make a payment to such electing party in an amount equal to the present value of future payments (calculated using a discount rate equal to the lesser of 6.5% or LIBOR plus 100 basis points, which may differ from our, or a potential acquirer's, then-current cost of capital) under the tax receivable agreement, which payment would be based on certain assumptions, including those relating to our future taxable income. In these situations, our obligations under the tax receivable agreements could have a substantial negative impact on our, or a potential acquirer's, liquidity and could have the effect of delaying, deferring, modifying or preventing certain mergers, asset sales, other forms of business combinations or other changes of control. These provisions of the tax receivable agreements may result in situations where the Virtu Post-IPO Members and the Investor Post-IPO Stockholders have interests that differ from or are in addition to those of our other shareholders. In addition, we could be required to make payments under the tax receivable agreements that are substantial and in excess of our, or a potential acquirer's, actual cash savings in income tax.

Finally, because we are a holding company with no operations of our own, our ability to make payments under the tax receivable agreements are dependent on the ability of our subsidiaries to make distributions to us. Our Credit Agreement restricts the ability of our subsidiaries to make distributions to us, which could affect our ability to make payments under the tax receivable agreements. To the extent that we are unable to make payments under the tax receivable agreements for any reason, such payments will be deferred and will accrue interest until paid, which could negatively impact our results of operations and cash flows and could also affect our liquidity in periods in which such payments are made.

Risks Related to Our Class A Common Stock

Substantial future sales of shares of our Class A common stock in the public market could cause our stock price to fall.

As of December 31, 2022, we had 98,549,464 shares of Class A Common Stock outstanding and 4,029,833 shares of Class A Common Stock issuable pursuant to the Amended and Restated 2015 Management Incentive Plan (as defined below) upon the vesting of granted but unvested restricted stock units, excluding 7,614,260 shares of Class A Common Stock issuable pursuant to the Amended and Restated 2015 Management Incentive Plan but not yet granted, and 69,121,806 shares of Class A Common Stock issuable upon potential exchanges and/or conversions. Of these shares, 95,549,464 shares sold in the IPO and the Secondary Offerings are freely tradable without further restriction under the Securities Act. The remaining balance of 76,151,639 shares of Class A Common Stock outstanding as of December 31, 2022 (including shares issuable upon exchange and/or conversion, or vesting) are "restricted securities," as that term is defined under Rule 144 of the Securities Act. The holders of these 76,151,639 shares of our Class A Common Stock, including shares issuable upon exchange, conversion or vesting as described above, are entitled to dispose of their shares pursuant to (i) the applicable holding period, volume and other restrictions of Rule 144 or (ii) another exemption from registration under the Securities Act. Additional sales of a substantial number of our shares of Class A Common Stock in the public market, or the perception that sales could occur, could have a material adverse effect on the price of our Class A Common Stock.

We have filed a registration statement under the Securities Act registering 26,000,000 shares of our Class A Common Stock reserved for issuance under our Amended and Restated 2015 Management Incentive Plan, 7,614,260 of which are issuable, and we entered into the Registration Rights Agreement (as defined below) pursuant to which we granted demand and piggyback registration rights to the Founder Post-IPO Member, Temasek, another former stockholder, and piggyback registration rights to certain of the other Virtu Post-IPO Members.

Failure to establish and maintain effective internal control over financial reporting could have a material adverse effect on our business, financial condition, results of operations and cash flows, and stock price.

Maintaining effective internal control over financial reporting is necessary for us to produce reliable financial reports and is important in helping to prevent financial fraud. If we are unable to maintain adequate internal controls over financial reporting, our business and operating results could be harmed. Under applicable SEC rules we must maintain internal controls over financial reporting to satisfy the requirements of Section 404 of the Sarbanes-Oxley Act of 2002 ("Sarbanes-Oxley") and the related rules of the SEC, which require, among other things, our management to assess annually the effectiveness of our

internal control over financial reporting and our independent registered public accounting firm to issue a report on the effectiveness of internal control over financial reporting with our Annual Report on Form 10-K. The internal control assessment required by Section 404 of Sarbanes-Oxley may divert internal resources and we may experience higher operating expenses, higher independent auditor and consulting fees during the implementation of these changes. Any material weaknesses or any failure to implement required new or improved controls or difficulties encountered in their implementation could cause us to fail to meet our reporting obligations or result in material misstatements in our consolidated financial statements. If our management or our independent registered public accounting firm were to conclude in their reports that our internal control over financial reporting was not effective, investors could lose confidence in our reported financial information, and the trading price of our Class A Common Stock could drop significantly. Failure to comply with Section 404 of Sarbanes-Oxley could potentially subject us to sanctions or investigations by the SEC, FINRA or other regulatory authorities, as well as increase the risk of liability arising from litigation based on securities law.

We intend to pay regular dividends to our stockholders, but our ability to do so may be limited by our holding company structure, contractual restrictions and regulatory requirements.

We intend to pay cash dividends on a quarterly basis. See Item 5, “Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.” However, we are a holding company, with our principal asset being our direct and indirect equity interests in Virtu Financial, and we will have no independent means of generating revenue. Accordingly, as the sole managing member of Virtu Financial, we intend to cause, and will rely on, Virtu Financial to make distributions to its equity holders, including the Founder Post-IPO Member, the Employee Trust, Virtu Employee Holdco and us, to fund our dividends. When Virtu Financial makes such distributions, the other equity holders of Virtu Financial will be entitled to receive equivalent distributions pro rata based on their economic interests in Virtu Financial. In order for Virtu Financial to make distributions, it may need to receive distributions from its subsidiaries. Certain of these subsidiaries are or may in the future be subject to regulatory capital requirements that limit the size or frequency of distributions. See “Item 1A. Risk Factors - Risks Related to Our Business - Non-compliance with applicable laws or regulatory requirements could subject us to sanctions and could negatively impact our reputation, prospects, revenues and earnings.” If Virtu Financial is unable to cause these subsidiaries to make distributions, we may not receive adequate distributions from Virtu Financial in order to fund our dividends.

Our Board of Directors will periodically review the cash generated from our business and the capital expenditures required to finance our global growth plans and determine whether to modify the amount of regular dividends and/or declare periodic special dividends to our stockholders. Our Board of Directors will take into account general economic and business conditions, including our financial condition, results of operations and cash flows, capital requirements, contractual restrictions, including restrictions contained in our Credit Agreement, business prospects and other factors that our Board of Directors considers relevant. There can be no assurance that our Board of Directors will not reduce the amount of regular cash dividends or cause us to cease paying dividends altogether. In addition, our Credit Agreement limits the amount of distributions our subsidiaries, including Virtu Financial, can make to us and the purposes for which distributions could be made. Accordingly, we may not be able to pay dividends even if our Board of Directors would otherwise deem it appropriate. See “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations - Liquidity and Capital Resources.”

Provisions in our charter documents and certain rules imposed by regulatory authorities may delay or prevent our acquisition by a third party.

Our amended and restated certificate of incorporation and by-laws contain several provisions that may make it more difficult or expensive for a third party to acquire control of us without the approval of our Board of Directors. These provisions, which may delay, prevent or deter a merger, acquisition, tender offer, proxy contest or other transaction that stockholders may consider favorable, include the following, some of which may only become effective when the Founder Post-IPO Member or any of its affiliates or permitted transferees no longer beneficially own shares representing 25% of our issued and outstanding common stock (the “Triggering Event”):

- the 10 vote per share feature of our Class B Common Stock and Class D Common Stock;
- the division of our Board of Directors into three classes and the election of each class for three-year terms;
- the sole ability of the Board of Directors to fill a vacancy created by the expansion of the Board of Directors;
- advance notice requirements for stockholder proposals and director nominations;
- after the Triggering Event, provisions limiting stockholders' ability to call special meetings of stockholders, to require special meetings of stockholders to be called and to take action by written consent;
- after the Triggering Event, in certain cases, the approval of holders of at least 75% of the shares entitled to vote generally on the making, alteration, amendment or repeal of our certificate of incorporation or by-laws will be

- required to adopt, amend or repeal our by-laws, or amend or repeal certain provisions of our certificate of incorporation;
- after the Triggering Event, the required approval of holders of at least 75% of the shares entitled to vote at an election of the directors to remove directors, which removal may only be for cause; and
- the ability of our Board of Directors to designate the terms of and issue new series of preferred stock without stockholder approval, which could be used, among other things, to institute a rights plan that would have the effect of significantly diluting the stock ownership of a potential hostile acquirer, likely preventing acquisitions that have not been approved by our Board of Directors.

These provisions of our amended and restated certificate of incorporation and by-laws could discourage potential takeover attempts and reduce the price that investors might be willing to pay for shares of our Class A Common Stock in the future, which could reduce the market price of our Class A Common Stock.

In addition, a third party attempting to acquire us or a substantial position in our Class A Common Stock may be delayed or ultimately prevented from doing so by change in ownership or control regulations to which certain of our regulated subsidiaries are subject. FINRA Rule 1017 generally provides that FINRA approval must be obtained in connection with any transaction resulting in a single person or entity owning, directly or indirectly, 25% or more of a member firm's equity and would include a change in control of a parent company. Similarly, VFIL, VIEL and VIUK are subject to change in control regulations promulgated by the CBI and/or the FCA. We may also be subject to similar restrictions in other jurisdictions in which we operate. These regulations could discourage potential takeover attempts and reduce the price that investors might be willing to pay for shares of our Class A Common Stock in the future, which could reduce the market price of our Class A Common Stock.

General Risks

Our stock price may be volatile.

The market price of our Class A Common Stock is subject to significant fluctuations in response to, among other factors, variations in our operating results and market conditions specific to our business. Furthermore, in recent years the stock market has experienced significant price and volume fluctuations. This volatility has had a significant impact on the market price of securities issued by many companies, including companies in our industry. The changes frequently appear to occur without regard to the operating performance of the affected companies. As such, the price of our Class A Common Stock could fluctuate based upon factors that have little or nothing to do with us, and these fluctuations could materially reduce the price of our Class A Common Stock and materially affect the value of your investment.

We incur increased costs as a result of being a public company.

As a public company, we incur significant levels of legal, accounting and other expenses. Sarbanes-Oxley and related rules of the SEC, together with the listing requirements of Nasdaq, impose significant requirements relating to disclosure controls and procedures and internal control over financial reporting. We have incurred increased costs as a result of compliance with these public company requirements, which require additional resources and make some activities more time consuming than they have been in the past when we were privately owned. We may experience higher than anticipated operating expenses as well as higher independent auditor and consulting fees during the implementation of these changes and thereafter and we may need to hire additional qualified personnel in order to continue to satisfy these public company requirements. We are required to expend considerable time and resources complying with public company regulations. In addition, these laws and regulations may make it more difficult or costly for us to obtain certain types of insurance, including director and officer liability insurance, and we may be forced to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. In addition, these laws and regulations could make it more difficult for us to attract and retain qualified persons to serve on our Board of Directors or as executive officers and may divert management's attention. Furthermore, if we are unable to satisfy our obligations as a public company, we could be subject to delisting of our Class A Common Stock, fines, sanctions and other regulatory action.

Our stock price and trading volume could decline as a result of inaccurate or unfavorable research, or the cessation of research cover, about our business published by securities or industry analysts.

The trading market for our Class A Common Stock may be affected by the research and reports that securities or industry analysts publish about us or our business. If one or more of the analysts who covers us downgrades our Class A Common Stock or publishes inaccurate or unfavorable research about our business, our stock price could decline. In addition, the analysts' projections may have little or no relationship to the results we actually achieve and could cause our stock price to

decline if we fail to meet their projections. If one or more of these analysts ceases coverage of us or fails to publish reports on us regularly, our stock price or trading volume could decline.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our headquarters are located in leased office space at 1633 Broadway, New York, NY 10019. We also lease space for our offices in the U.S., Canada, Europe, Asia and Australia. We believe that our existing facilities are adequate to meet our current requirements.

ITEM 3. 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 Consolidated Financial Statements included in Part II Item 8 "Financial Statements and Supplementary Data", which is incorporated by reference herein.

ITEM 4. MINE SAFETY DISCLOSURES

None.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Market Information

The Class A Common Stock trade on Nasdaq under the ticker symbol "VIRT". There is no established public trading market for Class B Common Stock, Class C Common Stock or Class D Common Stock.

Holders

Based on information made available to us by the transfer agent, as of February 13, 2023, there are thirty-three stockholders of record of our Class A Common Stock, one of which was Cede & Co., a nominee for The Depository Trust Company, zero stockholders of record of our Class B Common Stock, six stockholders of record of our Class C Common Stock and one stockholder of record of our Class D Common Stock. All of our Class A Common Stock held by brokerage firms, banks and other financial institutions as nominees for beneficial owners is considered to be held of record by Cede & Co., who is considered to be one stockholder of record. A substantially greater number of holders of our Class A Common Stock are "street name" or beneficial holders, whose shares of Class A Common Stock are held of record by banks, brokers and other financial institutions. Because such shares of Class A Common Stock are held on behalf of stockholders, and not by the stockholders directly, and because a stockholder can have multiple positions with different brokerage firms, banks and other financial institutions, we are unable to determine the total number of stockholders we have.

Dividend and Capital Return Policy

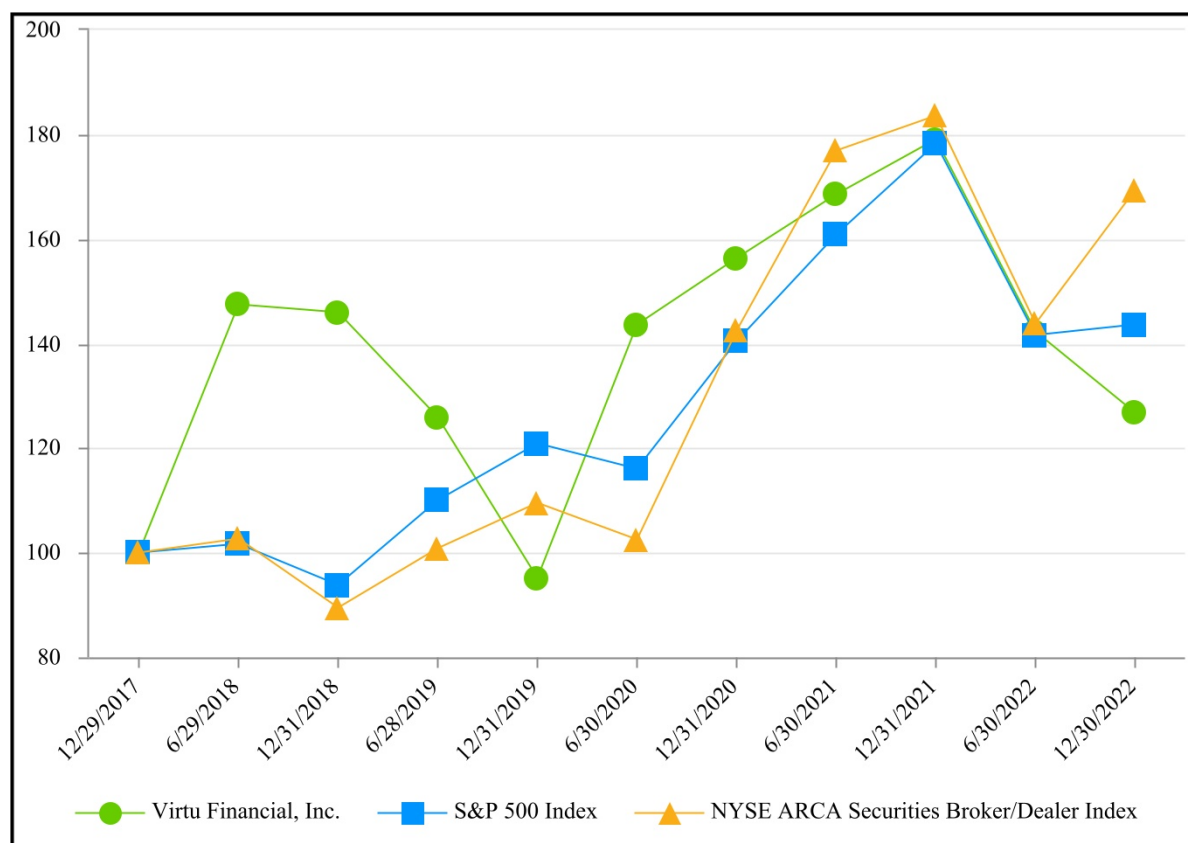
Our Board of Directors has adopted a policy of returning excess cash to our stockholders. The Board of Directors declared and we paid quarterly cash dividends of \$0.24 during the years ended December 31, 2022, 2021 and 2020. The Company intends to continue paying regular quarterly dividends to holders of our Class A Common Stock and Class B Common Stock and to holders of RSUs and RSAs (each as defined below); however, the payment of dividends will be subject to general economic and business conditions, including the Company's financial condition, results of operations and cash flows, capital requirements, contractual restrictions, including restrictions contained in our Credit Agreement, regulatory restrictions, business prospects and other factors that the Company's Board of Directors considers relevant. The terms of the Credit Agreement contain a number of covenants, including a restriction on our and our restricted subsidiaries' ability to pay dividends on, or make distributions in respect of, our equity interests. See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations - Liquidity and Capital Resources - Long-Term Borrowings".

Stock Performance

The following performance graph and related information shall not be deemed "soliciting material" or to be "filed" with the Securities and Exchange Commission, nor shall such information be incorporated by reference into any future filing under the Securities Act or the Exchange Act except to the extent we specifically incorporate it by reference into such filing. Our stock price performance shown in the graph below is not indicative of future stock price performance.

The stock performance graph below compares the performance of an investment in our Class A Common Stock, from December 31, 2017 through December 31, 2022, with the S&P 500 Index and the NYSE ARCA Securities Broker/Dealer Index. The graph assumes \$100 was invested in our Class A Common Stock, the S&P 500 Index and the NYSE Arca Securities

Broker/Dealer Index. It assumes that dividends were reinvested on the date of payment without payment of any commissions or consideration of income taxes.



Index	12/29/2017	6/29/2018	12/31/2018	6/28/2019	12/31/2019	6/30/2020	12/31/2020	6/30/2021	12/31/2021	06/30/2022	12/30/2022
Virtu Financial Inc.	100.00	147.40	145.96	125.92	95.07	143.63	156.31	168.52	179.04	142.31	126.75
S&P 500	100.00	101.67	93.76	110.03	120.84	115.96	140.49	160.74	178.27	141.58	143.61
NYSE Arca Securities Broker/Dealer	100.00	102.71	89.48	100.73	109.48	102.50	142.36	176.87	183.55	143.75	169.33

Stock and Common Units Repurchases

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 November 6, 2020, the Company's Board of Directors authorized a new share repurchase program of up to \$100.0 million in Class A common stock and Virtu Financial Units by December 31, 2021. On February 11, 2021, the Company's Board of Directors authorized the expansion of the program to \$170 million. On May 4, 2021 the Company's Board of directors authorized the expansion of the program, increasing the total authorized to \$470 million and extending the duration of the program through May 4, 2022. Additionally, on November 3, 2021 the Company's Board of Directors authorized the expansion of the program by an additional \$750 million to \$1,220 million total and extending the duration of the program through November 3, 2023. 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. From the inception of the program through December 31, 2022, the Company has repurchased approximately 32.3 million shares of Class A Common Stock and Virtu Financial Units for approximately \$899.6 million. The Company has approximately \$320.4 million of remaining capacity for future purchases of shares of Class A Common Stock and Virtu Financial Units under the program.

The following table contains information about the Company's purchases of its Class A Common Stock and Class C Common Stock during the three months ended December 31, 2022:

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
October 1, 2022 - October 31, 2022				
Class A Common Stock / Virtu Financial Units repurchases	833,650	\$ 21.66	802,695	\$ 348,251,323
November 1, 2022 - November 30, 2022				
Class A Common Stock / Virtu Financial Units repurchases	637,671	22.41	635,349	334,016,541
December 1, 2022 - December 31, 2022				
Class A Common Stock / Virtu Financial Units repurchases	649,873	21.12	646,270	320,369,079
Total Common Stock / Virtu Financial Unit repurchases	<u>2,121,194</u>	<u>\$ 21.72</u>	<u>2,084,314</u>	<u>\$ 320,369,079</u>

(1) Includes the repurchase of 36,880 shares from employees in order to satisfy statutory tax withholding requirements upon the net settlement of equity awards for the three months ended December 31, 2022

During the year ended December 31, 2022, pursuant to the Exchange Agreement, certain current and former employees elected to exchange 92,930 units 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. The shares of our Class A Common Stock were issued in reliance on the registration exemption contained in Section 4(a)(2) of the Securities Act, on the basis that the transaction did not involve a public offering. No underwriters were involved in the transaction.

Equity Compensation Plan Information

The following table provides information about shares of common stock available for future awards under all of the Company's equity compensation plans as of December 31, 2022:

	Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted-average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in first column)
Equity compensation plans approved by security holders	Amended and Restated 2015 Management Incentive Plan	1,521,776	\$ 19.00	7,614,260
Equity compensation plans not approved by security holders	None	—	—	—
Total		<u>1,521,776</u>	<u>\$ 19.00</u>	<u>7,614,260</u>

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following management's discussion and analysis covers the years ended December 31, 2022, and 2021 should be read in conjunction with the audited Consolidated Financial Statements and accompanying notes for the year ended December 31, 2022, which are included in Item 8, of the this Annual Report on Form 10-K. 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.

For discussion around our results of operations for the year ended December 31, 2020 and for a comparison of our results of operations for the year ended December 31, 2021 and year ended December 31, 2020, see Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations, of our Annual Report on Form 10-K for fiscal year ended December 31, 2021, filed with the SEC on February 18, 2022.

Forward-Looking Statements

This Annual Report on Form 10-K 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 Annual Report on Form 10-K, 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 Annual Report on Form 10-K. By their nature, forward-looking statements involve known and unknown risks and uncertainties, including those described under the heading "Risk Factors" in this Annual Report on Form 10-K, 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 Annual Report on Form 10-K are based on reasonable assumptions, you should be aware that many factors, including those described under the heading "Risk Factors" in this Annual Report on 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:

- the continuing impacts of COVID-19 and the governmental and other responses thereto, including but not limited to the risk of employees and executives contracting COVID-19 and the deployment of our business continuity plan pursuant to which a significant number of our employees may work remotely and our return to office plan, each of which may increase operational risk, as well as increases in market, counterparty and other forms of operational risk;
- volatility in 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;
- recent SEC proposals focused on equity markets may, if adopted, materially change U.S. equity market structure, including by reducing overall trading volumes, reducing off-exchange trading and market making opportunities, requiring additional tools, platforms and services to register as an ATS or exchange, and generally increasing the implicit and explicit cost as well as the complexity of the U.S. equities eco-system for all participants, all of which have an adverse effect on our business;
- additionally, enhanced regulatory, congressional, and media scrutiny, including attention to electronic trading, wholesale market making and off-exchange trading, payment for order flow, and other market structure topics may result in additional potential changes in regulation or law which could have an adverse effect on our business as well as adversely impact the public perception of us or of companies in our industry;
- 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, including but limited to risks related to funding and liquidity;
- obligations to comply with applicable regulatory capital requirements;
- litigation or other legal and regulatory-based liabilities;
- changes in laws, rules or regulations, including proposed legislation that would impose taxes on certain financial transactions in the European Union, the U.S. (and certain states therein) and other jurisdictions and other potential changes which could increase our corporate or other tax obligations in one or more jurisdictions;
- obligations to comply with laws and regulations applicable to our operations in the U.S. and abroad;
- need to maintain and continue developing proprietary technologies;
- 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, monetary payment demands 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, increased inflation, monetary conditions and foreign currency and continued or exacerbated 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), political conditions (such as military actions and terrorist activities), and other global events such as fires, geopolitical conflicts, natural disasters, pandemics or extreme weather;
- risks associated with potential growth and associated corporate actions;
- risks associated with new and emerging asset classes and eco-systems in which we may participate, including digital assets, including risks related to volatility in the underlying assets, regulatory uncertainty, evolving industry practices and standards around custody, clearing and settlement, and other risks inherent in a new and evolving asset class;
- 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 Annual Report on Form 10-K. 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 Annual Report on Form 10-K.

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.

Basis of Preparation

Our Consolidated Financial Statements for the years ended December 31, 2022 and 2021 reflect our operations and those of our consolidated subsidiaries.

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 with 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, options, foreign exchange, futures, fixed income, cryptocurrencies and 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 providing 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 invest, transfer risk and analyze the quality of executions. We believe that 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 designed to be 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.

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 other financial instruments, and we generate profits 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 as well as the attractiveness of the order flow we interact with and the level of retail participation in the various markets we serve have the greatest impact on the financial performance of 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 may increase.

Execution Services

We offer client 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. Client-based, execution-only trading within this segment is done 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 ATSS, including Virtu MatchIt and POSIT. 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. The segment also includes the results of our capital markets business, in which we act as an agent for issuers in connection with at-the-market offerings and buyback programs.

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 ITG

On March 1, 2019, the "ITG Closing Date", we announced the completed acquisition of Investment Technology Group, Inc. and its subsidiaries ("ITG") in an all-cash transaction (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, 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 "Acquisition Credit Agreement"). The Acquisition Credit Agreement provided (i) a senior secured first lien term loan (together with the Acquisition Incremental Term Loans, as defined below; the "Acquisition First Lien Term Loan Facility") in an aggregate principal amount of \$1,500.0 million, drawn in its entirety on the ITG Closing Date, of which approximately \$404.5 million was borrowed by VFH to repay all amounts outstanding under a previous term loan facility and the remaining approximately \$1,095.0 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 "Acquisition 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. On October 9, 2019, VFH entered into an amendment ("Amendment No. 1"), which amended the Acquisition Credit Agreement dated as of March 1, 2019, to, among other things, provide for \$525.0 million in aggregate principal amount of incremental term loans (the "Acquisition Incremental Term Loans"), and amend the related collateral agreement. On March 2, 2020, VFH entered into a second amendment ("Amendment No. 2"), which further amended the Acquisition Credit Agreement to, among other things, reduce the interest rate spread over adjusted LIBOR or the alternate base rate by 0.50% per annum and eliminated any step-down in the spread based on VFH's first lien leverage ratio.

On January 13, 2022 (the "Credit Agreement Closing Date"), VFH and Virtu Financial entered into a credit agreement, with the lenders party thereto, JPMorgan Chase Bank, N.A. as administrative agent and JPMorgan Chase bank, N.A., Goldman Sachs Bank USA, RBC Capital Markets, Barclays Bank plc, Jefferies Finance LLC, BMO Capital Markets Corp., and CIBC World Markets Corp., as joint lead arrangers and bookrunners (the "Credit Agreement"). The Credit Agreement provides (i) a senior secured first lien term loan in an aggregate principal amount of \$1,800.0 million, drawn in its entirety on the Credit Agreement Closing Date, the proceeds of which were used by VFH to repay all amounts outstanding under the Acquisition Credit Agreement, to pay fees and expenses in connection therewith, to fund share repurchases under the Company's repurchase program and for general corporate purposes, and (ii) a \$250.0 million senior secured first lien revolving facility to VFH, with a \$20.0 million letter of credit subfacility and a \$20.0 million swingline subfacility.

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 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. On April 23, 2020, the Company's Board of Directors adopted an amendment to the Company's Amended and Restated 2015 Management Incentive Plan in order to increase the number of shares of the Company's Class A Common Stock reserved for issuance, and in respect of which awards may be granted under the Amended and Restated 2015 Plan from 16,000,000 to an aggregate of 21,000,000 shares of Class A Common Stock. On April 22, 2022, the Company's Board of Directors adopted another amendment to the Company's Amended and Restated 2015 Management Incentive Plan to increase the number of shares to an aggregate of 26,000,000 shares of Class A Common Stock and the amendment was approved by the Company's shareholders at the Company's annual meeting of shareholders on June 2, 2022.

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 vested in equal annual installments over a period of four years from the grant date and expire not later than 10 years from the grant date. Subsequent to the IPO and through December 31, 2022, options to purchase 1,633,750 shares in the aggregate were forfeited and 6,072,474 options were exercised. The fair value of the stock option grants was determined through the application of the Black-Scholes-Merton model and was 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.

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 years ended December 31, 2022, 2021, and 2020:

(in thousands)	Years Ended December 31,		
	2022	2021	2020
Market Making			
Total revenue	\$ 1,812,839	\$ 2,203,046	\$ 2,593,342
Total operating expenses	1,332,280	1,277,078	1,352,029
Income before income taxes and noncontrolling interest	480,559	925,968	1,241,313
Execution Services			
Total revenue	514,241	600,215	650,143
Total operating expenses	472,899	530,196	475,526
Income before income taxes and noncontrolling interest	41,342	70,019	174,617
Corporate			
Total revenue	37,732	8,224	(4,154)
Total operating expenses	2,835	7,307	28,939
Income before income taxes and noncontrolling interest	34,897	917	(33,093)
Consolidated			
Total revenue	2,364,812	2,811,485	3,239,331
Total operating expenses	1,808,014	1,814,581	1,856,494
Income before income taxes and noncontrolling interest	\$ 556,798	\$ 996,904	\$ 1,382,837

The following table shows our results of operations for the years ended December 31, 2022, 2021, and 2020:

(in thousands)	Years Ended December 31,		
	2022	2021	2020
Revenues:			
Trading income, net	\$ 1,628,898	\$ 2,105,194	\$ 2,493,248
Interest and dividends income	159,120	75,384	62,119
Commissions, net and technology services	529,845	614,489	600,510
Other, net	46,949	16,418	83,454
Total revenue	2,364,812	2,811,485	3,239,331
Operating Expenses:			
Brokerage, exchange, clearance fees and payments for order flow, net	619,168	745,434	758,843
Communication and data processing	219,505	211,988	213,750
Employee compensation and payroll taxes	390,947	376,282	393,536
Interest and dividends expense	231,060	139,704	125,649
Operations and administrative	86,069	88,149	94,558
Depreciation and amortization	66,377	67,816	66,741
Amortization of purchased intangibles and acquired capitalized software	64,837	69,668	74,254
Termination of office leases	6,982	28,138	9,608
Debt issue cost related to debt refinancing, prepayment and commitment fees	29,910	6,590	28,879
Transaction advisory fees and expenses	1,124	843	2,941
Financing interest expense on long-term borrowings	92,035	79,969	87,735
Total operating expenses	1,808,014	1,814,581	1,856,494
Income before income taxes and noncontrolling interest	556,798	996,904	1,382,837
Provision for income taxes	88,466	169,670	261,924
Net income	\$ 468,332	\$ 827,234	\$ 1,120,913

Total Revenues

Revenues are generated through market making activities, commissions and fees on execution services activities, which include recurring subscriptions on workflow technology and analytic products. The majority of our revenues are generated through market making activities, which are recorded as Trading income, net and Interest and dividends income. Commissions and fees are derived from commissions charged for trade executions in client execution services. We earn commissions and commission equivalents, 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 our control.

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 are 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, and bid/ask spreads in the asset classes we serve. Our trading income is highly diversified by asset class and geography and comprises small amounts earned on millions of trades on various exchanges. Our trading income, net, results from gains and losses associated with trading strategies, which are designed to capture small bid/ask spreads, while hedging risks. Trading income, net, accounted for 69% and 75% of our total revenues for the years ended December 31, 2022 and 2021, 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. Client commission fees are charged for client trades executed by us on behalf of third-party broker-dealers 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 being 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 from 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.

We have a noncontrolling investment (the “JNX Investment”) in Japannext Co., Ltd. (“JNX”), a proprietary trading system based in Tokyo. In connection with the investment, we issued bonds to certain affiliates of JNX 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.

Other, net can also include gains on sales of strategic investments and businesses, as well as revenues from service agreements related to the sale of businesses.

Operating Expenses

Brokerage, exchange, clearance fees and payments for order flow, net. Brokerage, exchange, clearance fees and payments for order flow 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, clearance fees and payments for order flow 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 our trading activity. Execution fees are paid primarily to exchanges and venues where we trade. Clearance fees are paid to clearing houses and clearing agents. 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. Rebates based on volume discounts, credits or payments received from exchanges or other marketplaces are netted against brokerage, exchange, clearance fees and payments for order flow.

Communication and data processing. Communication and data processing represent primarily fixed expenses for data center 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 restricted stock units and restricted stock awards pursuant to the Amended and Restated 2015 Management Incentive Plan and Class A Common Stock underlying certain awards assumed 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 and leased equipment, 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 3 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 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. 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 cost related to debt refinancing, prepayment and commitment fees. As a result of the refinancing or early termination of our long-term borrowings, we accelerate the capitalized debt issue cost and the discount on the term loan that would otherwise be amortized or accreted over the life of the term loan. Premium paid in connection with retiring outstanding bonds, and commitment fees paid for lines of credit are also included in this category.

Transaction advisory fees and expenses. Transaction advisory fees and expenses primarily reflect professional fees incurred by us in connection with one or more acquisitions or dispositions.

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

Provision for 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 non-U.S. operations are also subject to foreign income tax at the applicable corporate rates.

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. Our effective tax rate may also be impacted by changes in the portion of income that is attributable to the noncontrolling interest.

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 II Item 8 "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K for additional information.

Non-GAAP Financial Measures and Other Items

To supplement our 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, clearance fees and payments for order flow, net, and Interest and dividends expense. We also disclose Adjusted Net Trading Income by segment, including daily averages. Management believes that Adjusted Net Trading Income 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 core business 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, prepayment, and commitment fees, 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, transaction advisory fees and expenses, termination of office leases, charges related to share-based compensation and other expenses, which includes reserves for legal matters, COVID-19 one-time costs and donations and Other, net, which includes gains and losses from strategic investments and the sales of businesses.
- “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, and other non-cash items, assuming that all vested and unvested Virtu Financial Units have been exchanged for Class A Common Stock, and applying an effective tax rate, which was approximately 24%.
- 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 (collectively, the “Company’s Non-GAAP Measures”) are non-GAAP financial measures used by management in evaluating operating performance and in making strategic decisions. In addition, the Company’s Non-GAAP 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 the Company’s Non-GAAP Measures provides 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. The Company’s Non-GAAP Measures 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 the Company’s Non-GAAP Measures may not be directly comparable to those of other companies. Although we use the Company’s 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.

The Company’s Non-GAAP Measures 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 the Company’s Non-GAAP Measures should not be construed as an indication that our future results will be unaffected by unusual or nonrecurring items. The Company’s Non-GAAP 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 consolidated 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, the Company's Non-GAAP Measures 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 the Company's Non-GAAP Measures 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 of the Company's Non-GAAP Measures to the most directly comparable U.S. GAAP measure.

The following table reconciles the Consolidated Statements of Comprehensive Income to arrive at Adjusted Net Trading Income, EBITDA, Adjusted EBITDA, and Operating Margins for the years ended December 31, 2022, 2021, and 2020.

(in thousands)	Years Ended December 31,		
	2022	2021	2020
Reconciliation of Trading income, net to Adjusted Net Trading Income			
Trading income, net	\$ 1,628,898	\$ 2,105,194	\$ 2,493,248
Interest and dividends income	159,120	75,384	62,119
Commissions, net and technology services	529,845	614,489	600,510
Brokerage, exchange, clearance fees and payments for order flow, net	(619,168)	(745,434)	(758,843)
Interest and dividends expense	(231,060)	(139,704)	(125,649)
Adjusted Net Trading Income	\$ 1,467,635	\$ 1,909,929	\$ 2,271,385
Reconciliation of Net Income to EBITDA and Adjusted EBITDA			
Net income	\$ 468,332	\$ 827,234	\$ 1,120,913
Financing interest expense on long-term borrowings	92,035	79,969	87,735
Debt issue cost related to debt refinancing, prepayment, and commitment fees	29,910	6,590	28,879
Depreciation and amortization	66,377	67,816	66,741
Amortization of purchased intangibles and acquired capitalized software	64,837	69,668	74,254
Provision for income taxes	88,466	169,670	261,924
EBITDA	\$ 809,957	\$ 1,220,947	\$ 1,640,446
Severance	8,070	6,112	10,286
Transaction advisory fees and expenses	1,124	843	2,941
Termination of office leases	6,982	28,138	9,608
Gain on sale of MATCHNow	—	—	(58,652)
Other	(34,229)	(10,558)	(16,418)
Share based compensation	67,219	55,751	59,838
Adjusted EBITDA	\$ 859,123	\$ 1,301,233	\$ 1,648,049
Selected Operating Margins			
Net Income Margin (1)	31.9 %	43.3 %	49.3 %
EBITDA Margin (2)	55.2 %	63.9 %	72.2 %
Adjusted EBITDA Margin (3)	58.5 %	68.1 %	72.6 %

(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 table reconciles 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 for the years ended December 31, 2022, 2021, and 2020:

(in thousands, except share and per share data)	Years Ended December 31,		
	2022	2021	2020
Reconciliation of Net Income to Normalized Adjusted Net Income			
Net income	\$ 468,332	\$ 827,234	\$ 1,120,913
Provision for income taxes	88,466	169,670	261,924
Income before income taxes	556,798	996,904	1,382,837
Amortization of purchased intangibles and acquired capitalized software	64,837	69,668	74,254
Debt issue cost related to debt refinancing, prepayment, and commitment fees	29,910	6,590	28,879
Severance	8,070	6,112	10,286
Transaction advisory fees and expenses	1,124	843	2,941
Termination of office leases	6,982	28,138	9,608
Gain on sale of MATCHNow	—	—	(58,652)
Other	(34,229)	(10,558)	(16,418)
Share based compensation	67,219	55,751	59,838
Normalized Adjusted Net Income before income taxes	700,711	1,153,448	1,493,573
Normalized provision for income taxes (1)	168,171	276,827	358,458
Normalized Adjusted Net Income	\$ 532,540	\$ 876,621	\$ 1,135,115
Weighted Average Adjusted shares outstanding (2)	177,688,188	191,958,870	196,929,673
Normalized Adjusted EPS	\$ 3.00	\$ 4.57	\$ 5.76

(1) Reflects U.S. federal, state, and local income tax rate applicable to corporations of approximately 24% for all periods presented.

(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, restricted stock units and restricted stock awards outstanding under the Amended and Restated 2015 Management Incentive Plan and the Amended and Restated ITG 2007 Equity Plan during the years ended December 31, 2022, 2021 and 2020 as well as warrants issued in connection with the Founder Member Loan during the year ended December 31, 2020.

The following tables reconcile Trading income, net to Adjusted Net Trading Income by segment for the years ended December 31, 2022, 2021, and 2020:

Year Ended December 31, 2022				
(in thousands)	Market Making	Execution Services	Corporate	Total
Trading income, net	\$ 1,607,819	\$ 21,079	\$ —	\$ 1,628,898
Commissions, net and technology services	42,180	487,665	—	529,845
Interest and dividends income	158,664	456	—	159,120
Brokerage, exchange, clearance fees and payments for order flow, net	(524,762)	(94,406)	—	(619,168)
Interest and dividends expense	(225,427)	(5,633)	—	(231,060)
Adjusted Net Trading Income	\$ 1,058,474	\$ 409,161	\$ —	\$ 1,467,635

Year Ended December 31, 2021				
(in thousands)	Market Making	Execution Services	Corporate	Total
Trading income, net	\$ 2,079,653	\$ 25,541	\$ —	\$ 2,105,194
Commissions, net and technology services	40,955	573,534	—	614,489
Interest and dividends income	75,311	73	—	75,384
Brokerage, exchange, clearance fees and payments for order flow, net	(634,783)	(110,651)	—	(745,434)
Interest and dividends expense	(133,584)	(6,120)	—	(139,704)
Adjusted Net Trading Income	\$ 1,427,552	\$ 482,377	\$ —	\$ 1,909,929

Year Ended December 31, 2020				
(in thousands)	Market Making	Execution Services	Corporate	Total
Trading income, net	\$ 2,455,182	\$ 38,066	\$ —	\$ 2,493,248
Commissions, net and technology services	52,453	548,057	—	600,510
Interest and dividends income	61,485	634	—	62,119
Brokerage, exchange, clearance fees and payments for order flow, net	(662,994)	(95,849)	—	(758,843)
Interest and dividends expense	(123,715)	(1,934)	—	(125,649)
Adjusted Net Trading Income	\$ 1,782,411	\$ 488,974	\$ —	\$ 2,271,385

The following table shows our Adjusted Net Trading Income and average daily Adjusted Net Trading Income by segment for the years ended December 31, 2022, 2021, and 2020:

(in thousands, except %)	2022			2021			2020		
	Total	Average Daily	%	Total	Average Daily	%	Total	Average Daily	%
Adjusted Net Trading Income by Segment:									
Market Making:									
Market Making	\$ 1,058,474	\$ 4,217	72.1 %	\$ 1,427,552	\$ 5,665	74.7 %	\$ 1,782,411	\$ 7,045	78.5 %
Execution Services	409,161	1,630	27.9 %	482,377	1,914	25.3 %	488,974	1,933	21.5 %
Adjusted Net Trading Income	\$ 1,467,635	\$ 5,847	100.0 %	\$ 1,909,929	\$ 7,579	100.0 %	\$ 2,271,385	\$ 8,978	100.0 %

Year Ended December 31, 2022 Compared to Year Ended December 31, 2021

Total Revenues

Our total revenues decreased \$446.7 million, or 15.9%, to \$2,364.8 million for the year ended December 31, 2022, compared to \$2,811.5 million for the year ended December 31, 2021. This decrease was primarily attributable to a decrease of

\$476.3 million in Trading income, net, during the year ended December 31, 2022 compared to the prior period. This decrease was offset, in part, by an increase of \$30.5 million in Other, net, which was driven by gains recorded on sales of various strategic investments in 2022, as well as an increase of \$83.7 million in Interest and dividends income which is largely driven by the level of trading assets held over periods when dividends are paid, and the levels of stock borrowing and trading asset financing during the year ended December 31, 2022 compared to the same period in 2021.

The following table shows the total revenues by segment for the years ended December 31, 2022 and 2021.

(in thousands, except for percentage)	Years Ended December 31,		
	2022	2021	% Change
Market Making			
Trading income, net	\$ 1,607,819	\$ 2,079,653	(22.7)%
Interest and dividends income	158,664	75,311	110.7%
Commissions, net and technology services	42,180	40,955	3.0%
Other, net	4,176	7,127	(41.4)%
Total revenues from Market Making	\$ 1,812,839	\$ 2,203,046	(17.7)%
Execution Services			
Trading income, net	\$ 21,079	\$ 25,541	(17.5)
Interest and dividends income	456	73	524.7%
Commissions, net and technology services	487,665	573,534	(15.0)%
Other, net	5,041	1,067	372%
Total revenues from Execution Services	\$ 514,241	\$ 600,215	(14.3)%
Corporate			
Other, net	\$ 37,732	\$ 8,224	358.8%
Total revenues from Corporate	\$ 37,732	\$ 8,224	358.8%
Consolidated			
Trading income, net	\$ 1,628,898	\$ 2,105,194	(22.6)%
Interest and dividends income	159,120	75,384	111.1%
Commissions, net and technology services	529,845	614,489	(13.8)%
Other, net	46,949	16,418	186.0%
Total revenues	\$ 2,364,812	\$ 2,811,485	(15.9)%

Trading income, net. Trading income, net was primarily earned by our Market Making segment. Trading income, net, decreased \$476.3 million, or 22.6%, to \$1,628.9 million for the year ended December 31, 2022, compared to \$2,105.2 million for the year ended December 31, 2021. The decrease was largely a result of the decreased opportunity in our customer market making trading as a result of lower spread opportunity and decreased quality of the order flow with which we interact. 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 and Brokerage, exchange, clearance fees and payments for order flow, 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 \$83.7 million, or 111.1%, to \$159.1 million for the year ended December 31, 2022, compared to \$75.4 million for the year ended December 31, 2021. This increase was primarily attributable to higher dividends earned on market making trading assets held over periods when dividends are paid, along with an increase in interest income earned on cash collateral posted as part of securities borrowed transactions, both of which benefited from higher interest rates for the period compared to the prior period. 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 decreased \$84.6 million, or 13.8%, to \$529.8 million for the year ended December 31, 2022, compared to \$614.5 million for the year ended December 31, 2021. This decrease was driven by the reduction of institutional investors commissions available, and declining institutional engagement,

both of which result in lower commission income. As indicated above, rather than analyzing commission income in isolation, we evaluate it in the broader context of our Adjusted Net Trading Income.

Other, net. Other, net increased \$30.5 million, or 186.0%, to \$46.9 million for the year ended December 31, 2022, compared to \$16.4 million for the year ended December 31, 2021. The increase was primarily due to gains recognized during the 2022 period from sales of investments in our strategic investments portfolio.

Adjusted Net Trading Income

Adjusted Net Trading Income, which is a non-GAAP measure, decreased \$442.3 million, or 23.2%, to \$1,467.6 million for the year ended December 31, 2022, compared to \$1,909.9 million for the year ended December 31, 2021. This decrease was primarily attributable to lower Trading Income, net as noted above, partially offset by lower Brokerage, exchange, clearance fees and payments for order flow, net as described below, incurred by Market Making. Adjusted Net Trading Income per day decreased \$1.8 million, or 23.7%, to \$5.8 million for the year ended December 31, 2022, compared to \$7.6 million for the year ended December 31, 2021. The number of trading days was 251 days for both the year ended December 31, 2022 and December 31, 2021. 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 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations”.

Operating Expenses

Our operating expenses decreased \$6.6 million, or 0.4%, to \$1,808.0 million for the year ended December 31, 2022, compared to \$1,814.6 million for the year ended December 31, 2021. The decrease was primarily driven by lower Brokerage, exchange, clearance fees and payments for order flow, net, and lower Termination of office leases, partially offset by an increase in Interest and dividends expense, Employee compensation and payroll taxes, and Financing interest expense on long term borrowings.

Brokerage, exchange, clearance fees and payments for order flow, net. Brokerage, exchange, clearance fees and payments for order flow, net, decreased \$126.3 million, or 16.9%, to \$619.2 million for the year ended December 31, 2022, compared to \$745.4 million for the year ended December 31, 2021. These costs vary period to period based upon the level and composition of our trading activities. We evaluate this category, representing direct costs associated with transacting our business, in the broader context of our Adjusted Net Trading Income.

Communication and data processing. Communication and data processing expense increased \$7.5 million, or 3.5%, to \$219.5 million for the year ended December 31, 2022, compared to \$212.0 million for the year ended December 31, 2021. This increase was primarily attributable to increased connectivity spending on subscriber connections and trading membership fees.

Employee compensation and payroll taxes. Employee compensation and payroll taxes increased \$14.7 million, or 3.9%, to \$390.9 million for the year ended December 31, 2022, compared to \$376.3 million for the year ended December 31, 2021. The increase in compensation levels was primarily attributable to an increase in salaries, and share-based compensation related to prior year incentive awards.

We have capitalized and therefore excluded employee compensation and benefits related to software development of \$35.5 million and \$35.8 million for the years ended December 31, 2022 and 2021, respectively.

Interest and dividends expense. Interest and dividends expense increased \$91.4 million, or 65.4%, to \$231.1 million for the year ended December 31, 2022, compared to \$139.7 million for the year ended December 31, 2021. This increase was primarily attributable to higher dividend expense with respect to securities sold, not yet purchased and higher interest expense incurred on cash collateral received driven by higher interest rates, as well as an increase in securities lending transactions for the period compared to the same period during the prior year. 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 decreased \$2.1 million, or 2.4%, to \$86.1 million for the year ended December 31, 2022, compared to \$88.1 million for the year ended December 31, 2021. The decrease was primarily driven by the beneficial effect of a strong U.S. dollar on foreign exchange translation gains during the year ended December 31, 2022, offset in part by higher professional fees and regulatory costs, and increases in travel and entertainment expenses as COVID-19 restrictions eased.

Depreciation and amortization. Depreciation and amortization decreased \$1.4 million, or 2.1%, to \$66.4 million for the year ended December 31, 2022, compared to \$67.8 million for the year ended December 31, 2021. This decrease was primarily attributable to a decrease in capital expenditures on telecommunication, networking, and other assets.

Amortization of purchased intangibles and acquired capitalized software. Amortization of purchased intangibles and acquired capitalized software decreased \$4.8 million, or 6.9%, to \$64.8 million for the year ended December 31, 2022, compared to \$69.7 million for the year ended December 31, 2021. This decrease was primarily attributable to certain intangible assets being fully amortized in 2021 and early 2022.

Termination of office leases. Termination of office leases was \$7.0 million for the year ended December 31, 2022, compared to \$28.1 million for the year ended December 31, 2021. These expenses are related to the impairment of lease right-of-use assets, leasehold improvements and fixed assets for certain abandoned or vacated office space.

Debt issue cost related to debt refinancing, prepayment and commitment fees. Expense from debt issue cost related to debt refinancing, prepayment and commitment fees increased \$23.3 million, or 353.9%, to \$29.9 million for the year ended December 31, 2022, compared to \$6.6 million for the year ended December 31, 2021. The increase was primarily driven by the acceleration of deferred debt issuance costs as a result of refinancing our long-term debt transaction in January 2022. See Note 9 "Borrowings" of Part II Item 8 "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K for additional details.

Transaction advisory fees and expenses. Transaction advisory fees and expenses were \$1.1 million for the year ended December 31, 2022, compared to \$0.8 million for the year ended December 31, 2021. These expenses were primarily incurred in relation to our strategic investment portfolio.

Financing interest expense on long term borrowings. Financing interest expense on long-term borrowings increased \$12.1 million, or 15.1%, to \$92.0 million for the year ended December 31, 2022, compared to \$80.0 million for the year ended December 31, 2021. This increase was attributable to the increase in outstanding principal as a result of refinancing our long-term debt in January 2022, as described in further detail below, and the effect of higher interest rates.

Provision for 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 income taxes and effective tax rate was \$88.5 million and 15.9% for the year ended December 31, 2022, compared to a provision for income taxes and effective tax rate of \$169.7 million and 17.0% for the year ended December 31, 2021.

Liquidity and Capital Resources

General

As of December 31, 2022, we had \$981.6 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 December 31, 2022, we had borrowings under our prime brokerage credit facilities of approximately \$212.9 million, no borrowings under our broker dealer facilities, short-term bank overdrafts of \$3.9 million, and long-term debt outstanding in an aggregate principal amount of approximately \$1,826.7 million.

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 brokers. For purposes of providing additional liquidity, we maintain a committed credit facility and an uncommitted credit facility for our wholly-owned U.S. broker-dealer subsidiary, as discussed in Note 9 "Borrowings" of Part II Item 8 "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K.

Short-term Liquidity and Capital Resources

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 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 plan to 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.

Long-term Liquidity and Capital Resources

Our principal demand for funds beyond the next twelve months will be payments on our long-term debt, operating lease payments, common stock repurchases under our share repurchase program, and dividend payments. Based on our current level of operations, we believe our cash flow from operations, and ability to raise funding, will be sufficient to fund capital demands.

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 equity holders of Virtu Financial that are generally equal to 85% of the applicable cash tax savings, if any, that we realize as a result of favorable tax attributes that are available to us as a result of 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 equity holders of Virtu Financial described in Note 5 "Tax Receivable Agreements" of Part II Item 8 "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K are expected to range from approximately \$36.4 thousand to \$22.0 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 subsequent payments of \$12.4 million in September 2018, \$13.3 million in March 2020, \$16.5 million in April 2021, and \$21.3 million in March 2022. 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 equity holders 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 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

Our principal U.S. subsidiary, Virtu Americas LLC ("VAL") is subject to separate regulation and capital requirements in the U.S. and other jurisdictions. VAL is a registered U.S. broker-dealer, and its primary regulators include the SEC 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 and FINRA for certain capital withdrawals. VAL 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 Canada Corp (f/k/a Virtu ITG Canada Corp.) 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. Our Irish subsidiaries, Virtu Financial Ireland Limited ("VFIL") and Virtu ITG Europe Limited ("VIEL") 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, VFIL and VIEL 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, and Virtu ITG Hong Kong Limited are also subject to local regulatory capital requirements and are regulated by the Australian Securities and Investments Commission, the Securities and Futures Commission of Hong Kong, respectively. Similarly, Virtu ITG Singapore Pte. Limited and Virtu Financial Singapore Pte. Ltd. have similar regulatory requirements and are regulated by the Monetary Authority of Singapore.

See Note 21 "Regulatory Requirement" of Part II Item 8 "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K for a discussion of regulatory capital requirements of our regulated subsidiaries.

Broker Dealer Credit Facilities, Short-Term Bank Loans, and Prime Brokerage Credit Facilities

We maintain various broker-dealer facilities and short-term credit facilities as part of our daily trading operations. See Note 9 "Borrowings" of Part II Item 8 "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K for details on our various credit facilities. As of December 31, 2022, there was no outstanding principal balance on our broker-dealer facilities 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 \$212.9 million, which was netted within Receivables from broker-dealers and clearing organizations on the Consolidated Statements of Financial Condition of Part II Item 8 "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K.

On March 20, 2020, a broker-dealer subsidiary of the Company entered into a loan agreement (the "Founder Member Loan Facility") with TJMT Holdings LLC (the "Founder Member"), as lender and administrative agent, providing for unsecured term loans from time to time (the "Founder Member Loans") in an aggregate original principal amount not to exceed \$300 million. The Founder Member Loans were available to be borrowed in one or more borrowings on or after March 20, 2020 and prior to September 20, 2020, though no borrowings were made. The Founder Member is an affiliate of Mr. Vincent Viola, the Company's founder and Chairman Emeritus. Upon the execution of and in consideration for the Lender's commitments under the Founder Member Loan Facility, the Company delivered to the Founder Member a warrant to purchase shares of the Company's Class A Common Stock, as described below.

On March 20, 2020, in connection with and in consideration of the Founder Member's commitments under the Founder Member Loan Facility, the Company delivered to the Founder Member a warrant (the "Warrant") to purchase shares of the Company's Class A Common Stock. Pursuant to the Warrant, the Founder Member was entitled to purchase up to 3,000,000 shares of Class A Common Stock on or after May 22, 2020 and up to and including January 15, 2022 at a price of \$22.98. The Warrant was exercised on December 17, 2021 for the full 3,000,000 shares of the Company's Class A Common Stock. The Warrant and Class A Common Stock issued pursuant to the Warrant were offered, issued and sold, in reliance on the exemption from the registration requirements of the Securities Act, set forth under Section 4(a)(2) of the Securities Act relating to sales by an issuer not involving any public offering.

Credit Agreement

On January 13, 2022 (the “Credit Agreement Closing Date”), Virtu Financial, VFH Parent LLC, a Delaware limited liability company and a subsidiary of Virtu Financial (“VFH”), entered into the Credit Agreement, with the lenders party thereto, JPMorgan Chase Bank, N.A. as administrative agent and JPMorgan Chase bank, N.A., Goldman Sachs Bank USA, RBC Capital Markets, Barclays Bank plc, Jefferies Finance LLC, BMO Capital Markets Corp., and CIBC World Markets Corp., as joint lead arrangers and bookrunners (the “Credit Agreement”). On the Credit Agreement Closing Date, VFH and Virtu Financial entered into the Credit Agreement. The Credit Agreement provides (i) a senior secured first lien term loan in an aggregate principal amount of \$1,800.0 million, drawn in its entirety on the Credit Agreement Closing Date, the proceeds of which were used by VFH to repay all amounts outstanding under the Acquisition Credit Agreement, to pay fees and expenses in connection therewith, to fund share repurchases under the Company’s repurchase program and for general corporate purposes, and (ii) a \$250.0 million senior secured first lien revolving facility to VFH, with a \$20.0 million letter of credit subfacility and a \$20.0 million swingline subfacility.

The term loan borrowings and revolver borrowings under the Credit Agreement 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 0.50%, (c) an adjusted term SOFR rate with an interest period of one month plus 1.00% and (d)(1) in the case of term loan borrowings, 1.50% and (2) in the case of revolver borrowings, 1.00%, plus, (x) in the case of term loan borrowings, 2.00% and (y) in the case of revolver borrowings, 1.50% or (ii) the greater of (a) an adjusted term SOFR rate for the interest period in effect and (b) (1) in the case of term loan borrowings, 0.50% and (2) in the case of revolver borrowings, 0.00%, plus, (x) in the case of term loan borrowings, 3.00% and (y) in the case of revolver borrowings, 2.50%. In addition, a commitment fee accrues at a rate of 0.50% per annum on the average daily unused amount of the revolving facility, with step-downs to 0.375% and 0.25% per annum based on VFH’s first lien leverage ratio, and is payable quarterly in arrears.

The 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 if usage of the aggregate revolving commitments exceeds a specified level 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 domestic restricted subsidiaries and secured by substantially all of the assets of VFH and the guarantors, in each case, subject to certain exceptions.

The Credit Agreement contains certain customary covenants and 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.

Under the Credit Agreement, the term loans will mature on January 13, 2029. 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 January 13, 2025. As of December 31, 2022, \$1,800.0 million was outstanding under the term loans. We were in compliance with all applicable covenants under the Credit Agreement as of December 31, 2022.

In October 2019, the Company entered into a five-year \$525.0 million floating-to-fixed interest rate swap agreement. In January 2020, the Company entered into a five-year \$1,000.0 million floating-to-fixed interest rate swap agreement. These two interest rate swaps met the criteria to be considered and were designated as qualifying cash flow hedges under ASC 815 in the first quarter of 2020, and they effectively fixed interest payment obligations on \$525.0 million and \$1,000.0 million of principal under the Acquisition First Lien Term Loan Facility at rates of 4.3% and 4.4% through September 2024 and January 2025, respectively, based on the interest rates set forth in the Acquisition Credit Agreement. In April 2021, each of the swap agreements described above was novated to another counterparty and amended in connection with such novation. The amendments included certain changes to collateral posting obligations and also had the effect of increasing the effective fixed interest payment obligations to rates of 4.5%, with respect to the earlier maturing swap arrangement, and 4.6% with respect to the later maturing swap arrangement. In January 2022, in order to align the swap agreements with the Credit Agreement, the Company amended each of the swap agreements to align the floating rate term of such swap agreements to SOFR. The effective fixed interest payment obligations remained at 4.5%, with respect to the earlier maturing swap arrangement, and 4.6% with respect to the later maturing swap arrangement.

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 years ended December 31, 2022, 2021, and 2020.

Net cash provided by (used in):	Years Ended December 31,		
	2022	2021	2020
Operating activities	\$ 706,803	\$ 1,171,626	\$ 1,060,884
Investing activities	(29,530)	(87,349)	(2,559)
Financing activities	(735,745)	(957,859)	(839,918)
Effect of exchange rate changes on cash and cash equivalents	(24,239)	(12,470)	15,318
Net increase (decrease) in cash and cash equivalents	\$ (82,711)	\$ 113,948	\$ 233,725

Operating Activities

Net cash provided by operating activities was \$706.8 million for the year ended December 31, 2022, compared to net cash provided by operating activities of \$1,171.6 million for the year ended December 31, 2021. The decrease in net cash provided by operating activities was primarily attributable to lower net income, as well as increases in operating assets, net of operating liabilities, related to our trading activities for the year ended December 31, 2022 compared to the prior period.

Investing Activities

Net cash used in investing activities was \$29.5 million for the year ended December 31, 2022, compared to net cash used in investing activities of \$87.3 million for the year ended December 31, 2021. The net decrease in cash used in investing activities for the year ended December 31, 2022 was primarily attributable to sales of strategic investments during the year ended December 31, 2022 as compared to the prior period, offset by cash used for the acquisition of property and equipment, and capitalized software for both periods.

Financing Activities

Net cash used in financing activities was \$735.7 million for the year ended December 31, 2022, compared to \$957.9 million for the year ended December 31, 2021. The cash used in financing activities for the year ended December 31, 2022 was primarily attributable to \$375.3 million in dividends to stockholders and distributions made to noncontrolling interests and \$480.5 million in purchases of treasury stock, partially offset by the net proceeds of \$200.2 million from the issuance of the new term loan and repayment of the existing term loan in January 2022. The cash used in financing activities of \$957.9 million during the same period of 2021 primarily reflects \$548.0 million net dividends to stockholders and distributions to noncontrolling interests, and \$427.5 million purchase of treasury stock, partially offset by an increase of \$2.0 million in short-term borrowings.

Share Repurchase Program

On November 6, 2020, the Company's Board of Directors authorized a new share repurchase program of up to \$100.0 million in Class A common stock and Virtu Financial Units by December 31, 2021.

On February 11, 2021, the Company's Board of Directors authorized the expansion of the Company's share repurchase program, increasing the total authorized amount by \$70.0 million to \$170.0 million in Class A Common Stock and Virtu Financial Units up to December 31, 2021.

On May 4, 2021, the Company's Board of Directors authorized the expansion of the Company's share repurchase program, increasing the total authorized amount by \$300 million to \$470 million in Class A Common Stock and Virtu Financial Units and extending the duration of the program through May 4, 2022.

On November 3, 2021, the Company's Board of Directors authorized the expansion of the Company's current share repurchase program, increasing the total authorized amount by \$750 million to \$1,220 million and extended the duration through November 3, 2023.

The share repurchase program authorizes the Company to repurchase shares from time to time in open market transactions, privately negotiated transactions or by other means. Repurchases are also permitted to be made under Rule 10b5-1 plans. The timing and amount of repurchase transactions are determined by the Company's management based on its evaluation of market conditions, share price, cash sources, legal requirements and other factors. From the inception of the program through December 31, 2022, the Company repurchased approximately 32.3 million shares of Class A Common Stock and Virtu Financial Units for approximately \$899.6 million. As of December 31, 2022, the Company has approximately of \$320.4 million remaining capacity for future purchases of shares of Class A Common Stock and Virtu Financial Units under the program.

Contractual Obligations

Our expected material cash requirements include the following contractual obligations:

Debt

As of December 31, 2022, we had \$1,800.0 million of outstanding principal on our First Lien Term Loan Facility. Each year, we are required to repay \$18.0 million of this balance, with the remaining principal due in 2029. Additionally, \$26.7 million of our long-term debt related to the SBI bonds is due in 2026. See Note 9 "Borrowings" in Part II Item 8 "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K for more details.

Leases

We have lease arrangements, primarily for office space and technology and equipment. As of December 31, 2022, we had \$71.2 million of operating lease payments and \$7.1 million of finance lease payments due within twelve months, and \$213.2 million of operating lease payments and \$9.4 million of finance leases payments due after twelve months.

Tax Receivable Agreement

The ultimate amounts owed under the tax receivable agreement and timing of the amounts due are not presently known. As of December 31, 2022, a total of \$238.8 million has been recorded for amounts due pursuant to tax receivable agreements in the Consolidated Financial Statements representing management's best estimate of the amounts currently expected to be owed under the tax receivable agreement, as savings are realized as a result of favorable tax attributes.

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 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 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. Due to the relative immateriality of our financial instruments classified as level 3, we do not believe that a significant change to the inputs underlying the fair value of our level 3 financial instruments would have a material impact on our Consolidated Financial Statements. See Note 10 "Financial Assets and Liabilities" of Part II Item 8 "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K 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 Consolidated Statements of Comprehensive Income.

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.

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 assumed pursuant to the Amended and Restated ITG 2007 Equity Plan, were in the form of stock options, Class A Common Stock, restricted stock awards (“RSAs”) and restricted stock units (“RSUs”). 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 is determined based on the volume weighted average price for the three days preceding the grant. With respect to the RSUs, we account for forfeitures as they occur. The fair value of RSAs is determined based on the closing price as of the date of grant. 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, or, in the case of RSAs subject to performance conditions, from the date that achievement becomes probable through the remainder of the vesting period. The assessment of the performance condition becomes certain within the year of grant. At year end there is no future assessment that would affect grants with a performance condition. 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 RSUs 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 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. We believe the judgments and estimates discussed above are reasonable. However, if actual results are not consistent with our estimates or assumptions, we may be exposed to losses or gains that could be material.

Tax Receivable Agreements

We are required under the tax receivable agreements entered into in connection with our IPO to make payments to certain direct or indirect equity holders of Virtu Financial that are generally equal to 85% of the applicable cash tax savings, if any, that we realize as a result of favorable tax attributes that are available to us as a result of 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. An exchange of membership interests by the Virtu Members for Class A Common Stock or Class B Common Stock (an "Exchange") during the year will give rise to favorable tax attributes that may generate cash tax savings specific to the Exchange, to be realized over a specific period of time (generally 15 years). At each Exchange, we estimate the cumulative tax receivable agreement obligations to be reported on the consolidated financial statements. The tax attributes are computed as the difference between our basis in the partnership interest ("outside basis") as compared to our share of the adjusted tax basis of partnership property ("inside basis"), at the time of each Exchange. The computation of inside basis requires judgments in estimating the components included in the inside basis as of the date of the Exchange (such as, cash received on hypothetical sale of assets, allocation of gain/loss at the time of the Exchange taking into account complex partnership tax rules). In addition, we estimate the period of time that may generate cash tax savings of such tax attributes and the realizability of the tax attributes.

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). Our estimate of goodwill impairment, if indicated based on results of the qualitative assessment, is highly dependent on our estimate of a reporting unit's fair value.

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, 2022, we performed a qualitative assessment as described above for each reporting unit. No impairment of goodwill was identified.

Valuation of intangible assets involves the use of significant estimates and assumptions with respect to the timing and amounts of revenue growth rates, customer attrition rates, future tax rates, royalty rates, contributory asset charges, discount rate and the resulting cash flows. We amortize finite-lived intangible assets over their estimated useful lives. Our largest finite-lived intangible asset is customer relationships, which is being amortized over an estimated useful life of ten years. Had we used a shorter estimated useful life of seven years, the Company would have recorded an additional \$16.5 million of amortization expense for the years ended December 31, 2022, 2021, and 2020 respectively. 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 consolidated financial statements, see Note 2 "Summary of Significant Accounting Policies" of Part II Item 8 "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K.

ITEM 7A. 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.

Our customer market making activities involve the taking of 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 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 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 December 31, 2022 and December 31, 2021 was \$4.6 billion and \$4.3 billion, respectively, in long positions and \$4.2 billion and \$3.5 billion, respectively, in short positions. We also enter into futures contracts, which are recorded on our 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 carry our trading derivative instruments at fair value with gains and losses included in Trading income, net, in the accompanying 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.

We also use derivative instruments for risk management purposes, including cash flow hedges used to manage interest rate risk on long-term borrowings and net investment hedges used to manage foreign exchange risk. We have entered into floating-to-fixed interest rate swap agreements in order to manage interest rate risk associated with our long-term debt obligations. Additionally, we may seek to reduce the impact of fluctuations in foreign exchange rates on our net investment in certain non-U.S. operations through the use of foreign currency forward contracts. For interest rate swap agreements and foreign currency forward contracts designated as hedges, we assess our 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 interest rate swaps or forward contracts. For instruments that meet the criteria to be considered hedging instruments under ASC 815, any gains or losses, to the extent effective, are included in Accumulated other comprehensive income on the Consolidated Statements of Financial Condition and Other comprehensive income on the Consolidated Statements of Comprehensive Income. The ineffective portion, if any, is recorded in Other, net on the Consolidated Statements of Comprehensive Income.

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 19.1% and 19.6% of our total revenues for the years ended December 31, 2022 and 2021, respectively, were denominated in non-U.S. dollar currencies. We estimate that a hypothetical 10% adverse change in the value of the U.S. dollar relative to our foreign denominated earnings would have resulted in decreases in total revenues of \$45.1 million and \$55.1 million for the years ended December 31, 2022 and 2021, 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 Consolidated Statements of Comprehensive Income and Consolidated Statements of Changes in Equity. Our primary currency translation exposures historically relate to net investments in subsidiaries having functional currencies denominated in the Euro, Pound Sterling, and Canadian dollar.

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, swaps, 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 Consolidated 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 1. FINANCIAL STATEMENTS

Index to Consolidated Financial Statements

	<u>PAGE NUMBER</u>
Report of Independent Registered Public Accounting Firm (PCAOB ID 238)	77
Consolidated Statements of Financial Condition	79
Consolidated Statements of Comprehensive Income	81
Consolidated Statements of Changes in Equity	82
Consolidated Statements of Cash Flows	84
Notes to Consolidated Financial Statements	86

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of Virtu Financial, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying Consolidated Statements of Financial Condition of Virtu Financial, Inc. and its subsidiaries (the “Company”) as of December 31, 2022 and 2021, and the related Consolidated Statements of Comprehensive Income, of Changes in Equity and of Cash Flows for each of the three years in the period ended December 31, 2022, including the related notes (collectively referred to as the “consolidated financial statements”). We also have audited the Company’s internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

Basis for Opinions

The Company’s management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management’s Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company’s internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Trading Income, net (“Trading Income”)

As described in Note 2 to the consolidated financial statements, \$1.629 billion of the Company’s Trading Income for the year ended December 31, 2022 is composed 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 Consolidated Statements of Comprehensive Income.

The principal considerations for our determination that performing procedures relating to Trading Income is a critical audit matter are the significant audit effort in performing procedures and evaluating audit evidence related to the transactions which comprise the trading income.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management’s calculation of Trading Income, including controls over the completeness, accuracy, existence, and valuation of trading assets and trading liabilities. These procedures also included, among others, testing of the inputs used by management in their trading income calculations and independently recalculating trading income. The procedures performed over testing of the inputs include (i) confirming a sample of trading assets, trading liabilities and cash (collectively the “equity value”) within each trading portfolio at the balance sheet date with external third parties; (ii) developing independent prices for a sample of trading assets and liabilities at the balance sheet date and comparing management’s prices to the independently developed prices; (iii) testing a sample of purchases and sales throughout the year by agreeing the quantity and price to settlement documentation, and (iv) testing the equity value of a sample of trading portfolios throughout the year by comparing the amounts to third party clearing statements.

/s/ PricewaterhouseCoopers LLP
New York, New York
February 17, 2023

We have served as the Company’s auditor since 2018.

Virtu Financial, Inc. and Subsidiaries
Consolidated Statements of Financial Condition

(in thousands, except share data)	December 31, 2022	December 31, 2021
Assets		
Cash and cash equivalents	\$ 981,580	\$ 1,071,463
Cash restricted or segregated under regulations and other	56,662	49,490
Securities borrowed	1,187,674	1,349,322
Securities purchased under agreements to resell	336,999	119,453
Receivables from broker-dealers and clearing organizations	1,115,185	1,026,807
Trading assets, at fair value:		
Financial instruments owned	3,667,481	3,238,995
Financial instruments owned and pledged	963,071	1,017,960
Receivables from customers	80,830	146,476
Property, equipment and capitalized software (net of accumulated depreciation of \$460,763 and \$472,155 as of December 31, 2022 and December 31, 2021, respectively)	85,194	89,595
Operating lease right-of-use assets	187,442	225,328
Goodwill	1,148,926	1,148,926
Intangibles (net of accumulated amortization of \$318,013 and \$253,161 as of December 31, 2022 and December 31, 2021, respectively)	321,480	386,332
Deferred tax assets	146,801	158,518
Other assets (\$78,965 and \$84,378, at fair value, as of December 31, 2022 and December 31, 2021, respectively)	303,916	291,307
Total assets	<u>\$ 10,583,241</u>	<u>\$ 10,319,971</u>
Liabilities and equity		
Liabilities		
Short-term borrowings	\$ 3,944	\$ 61,510
Securities loaned	1,060,432	1,142,048
Securities sold under agreements to repurchase	627,549	514,325
Payables to broker-dealers and clearing organizations	273,843	571,526
Payables to customers	46,525	54,999
Trading liabilities, at fair value:		
Financial instruments sold, not yet purchased	4,196,974	3,510,779
Tax receivable agreement obligations	238,758	259,282
Deferred tax liabilities	343	65
Accounts payable, accrued expenses and other liabilities	448,292	457,942
Operating lease liabilities	239,202	278,745
Long-term borrowings	1,795,952	1,605,132
Total liabilities	<u>8,931,814</u>	<u>8,456,353</u>
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 — 133,071,754 and 131,497,645 shares, Outstanding — 98,549,464 and 113,170,782 shares at December 31, 2022 and December 31, 2021, 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 December 31, 2022 and December 31, 2021, respectively	—	—
Class C common stock (par value \$0.00001), Authorized — 90,000,000 and 90,000,000 shares, Issued and Outstanding — 9,030,066 and 9,359,065 shares at December 31, 2022 and December 31, 2021, 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 60,091,740 shares at December 31, 2022 and December 31, 2021, respectively	1	1
Treasury stock, at cost, 34,522,290 and 18,326,863 shares at December 31, 2022 and December 31, 2021, respectively	(954,637)	(494,075)
Additional paid-in capital	1,292,613	1,223,119
Retained earnings (accumulated deficit)	972,317	830,538
Accumulated other comprehensive income (loss)	31,604	(10,196)
Total Virtu Financial Inc. stockholders' equity	<u>1,341,899</u>	<u>1,549,388</u>

Virtu Financial, Inc. and Subsidiaries
Consolidated Statements of Financial Condition

(in thousands, except share data)	December 31, 2022	December 31, 2021
Noncontrolling interest	309,528	314,230
Total equity	1,651,427	1,863,618
Total liabilities and equity	<u>\$ 10,583,241</u>	<u>\$ 10,319,971</u>

See accompanying Notes to the Consolidated Financial Statements.

Virtu Financial, Inc. and Subsidiaries
Consolidated Statements of Comprehensive Income

(in thousands, except share and per share data)	Years Ended December 31,		
	2022	2021	2020
Revenues:			
Trading income, net	\$ 1,628,898	\$ 2,105,194	\$ 2,493,248
Interest and dividends income	159,120	75,384	62,119
Commissions, net and technology services	529,845	614,489	600,510
Other, net	46,949	16,418	83,454
Total revenue	2,364,812	2,811,485	3,239,331
Operating Expenses:			
Brokerage, exchange, clearance fees and payments for order flow, net	619,168	745,434	758,843
Communication and data processing	219,505	211,988	213,750
Employee compensation and payroll taxes	390,947	376,282	393,536
Interest and dividends expense	231,060	139,704	125,649
Operations and administrative	86,069	88,149	94,558
Depreciation and amortization	66,377	67,816	66,741
Amortization of purchased intangibles and acquired capitalized software	64,837	69,668	74,254
Termination of office leases	6,982	28,138	9,608
Debt issue cost related to debt refinancing, prepayment and commitment fees	29,910	6,590	28,879
Transaction advisory fees and expenses	1,124	843	2,941
Financing interest expense on long-term borrowings	92,035	79,969	87,735
Total operating expenses	1,808,014	1,814,581	1,856,494
Income before income taxes and noncontrolling interest	556,798	996,904	1,382,837
Provision for income taxes	88,466	169,670	261,924
Net income	468,332	827,234	1,120,913
Noncontrolling interest	(203,306)	(350,356)	(471,716)
Net income available for common stockholders	\$ 265,026	\$ 476,878	\$ 649,197
Earnings per share			
Basic	\$ 2.45	\$ 3.95	\$ 5.19
Diluted	\$ 2.44	\$ 3.91	\$ 5.16
Weighted average common shares outstanding			
Basic	103,997,767	117,339,539	121,692,443
Diluted	104,422,443	118,423,928	122,332,190
Net income	\$ 468,332	\$ 827,234	\$ 1,120,913
Other comprehensive income			
Foreign exchange translation adjustment, net of taxes	(24,254)	(12,470)	15,318
Net change in unrealized cash flow hedges gain (loss), net of taxes	90,865	37,794	(59,019)
Comprehensive income	534,943	852,558	1,077,212
Less: Comprehensive income attributable to noncontrolling interest	(228,117)	(360,389)	(452,855)
Comprehensive income attributable to common stockholders	\$ 306,826	\$ 492,169	\$ 624,357

See accompanying Notes to the Consolidated Financial Statements.

Virtu Financial, Inc. and Subsidiaries
Consolidated Statements of Changes in Equity
Years Ended December 31, 2022, 2021, and 2020

(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	Noncontrolling Interest	Total Equity
	Shares	Amounts	Shares	Amounts	Shares	Amounts	Shares	Amounts	Amounts					
Balance at December 31, 2019	120,435,912	\$ 1	12,887,178	\$ —	60,091,740	\$ 1	(2,178,771)	\$ (55,005)	\$ 1,077,398	\$ (90,374)	\$ (647)	\$ 931,374	\$ 297,562	\$ 1,228,936
Share based compensation	2,489,483	—	—	—	—	—	—	—	56,629	—	—	56,629	—	56,629
Treasury stock purchases	(867,984)	—	—	—	—	—	(1,436,326)	(33,918)	—	(15,946)	—	(49,864)	—	(49,864)
Stock option exercised	909,627	—	—	—	—	—	—	—	16,440	—	—	16,440	—	16,440
Warrants issued	—	—	—	—	—	—	—	—	11,488	—	—	11,488	—	11,488
Net Income	—	—	—	—	—	—	—	—	—	649,197	—	649,197	471,716	1,120,913
Foreign exchange translation adjustment	—	—	—	—	—	—	—	—	—	—	8,604	8,604	6,714	15,318
Net change in unrealized cash flow hedges gains (losses)	—	—	—	—	—	—	—	—	—	—	(33,444)	(33,444)	(25,575)	(59,019)
Dividends (\$0.24 per share of Class A common stock and participating Restricted Stock Unit and Restricted Stock Award) and distributions from Virtu Financial to non-controlling interest	—	—	—	—	—	—	—	—	—	(120,496)	—	(120,496)	(363,919)	(484,415)
Issuance of common stock in connection with employee exchanges	2,660,239	—	—	—	—	—	—	—	—	—	—	—	—	—
Repurchase of Virtu Financial Units and corresponding number of Class C common stock in connection with employee exchanges	—	—	(2,660,239)	—	—	—	—	—	—	—	—	—	—	—
Issuance of tax receivable agreements in connection with employee exchange	—	—	—	—	—	—	—	—	(1,388)	—	—	(1,388)	—	(1,388)
Balance at December 31, 2020	125,627,277	\$ 1	10,226,939	\$ —	60,091,740	\$ 1	(3,615,097)	\$ (88,923)	\$ 1,160,567	\$ 422,381	\$ (25,487)	\$ 1,468,540	\$ 386,498	\$ 1,855,038
Share based compensation	2,434,251	—	—	—	—	—	—	—	55,654	—	—	55,654	—	55,654
Repurchase of Class C common stock	—	—	(120,025)	—	—	—	—	—	(3,455)	—	—	(3,455)	—	(3,455)
Treasury stock purchases	(840,229)	—	—	—	—	—	(14,711,766)	(405,152)	—	(22,301)	—	(427,453)	—	(427,453)
Stock option exercised	528,497	—	—	—	—	—	—	—	10,042	—	—	10,042	—	10,042
Net Income	—	—	—	—	—	—	—	—	—	476,878	—	476,878	350,356	827,234
Foreign exchange translation adjustment	—	—	—	—	—	—	—	—	—	—	(7,673)	(7,673)	(4,797)	(12,470)
Warrants exercised	3,000,000	—	—	—	—	—	—	—	—	68,940	—	68,940	—	68,940
Net change in unrealized cash flow hedges gains	—	—	—	—	—	—	—	—	—	—	22,964	22,964	14,830	37,794
Dividends (\$0.24 per share of Class A common stock and participating Restricted Stock Unit and Restricted Stock Award) and distributions from Virtu Financial to non-controlling interest	—	—	—	—	—	—	—	—	—	(115,360)	—	(115,360)	(432,657)	(548,017)
Issuance of Common Stock in connection with employee exchanges	747,849	—	—	—	—	—	—	—	—	—	—	—	—	—
Repurchase of Virtu Financial Units and corresponding number of Class C common stock in connection with employee exchanges	—	—	(747,849)	—	—	—	—	—	—	—	—	—	—	—
Issuance of tax receivable agreements in connection with employee exchange	—	—	—	—	—	—	—	—	311	—	—	311	—	311
Balance at December 31, 2021	131,497,645	1	9,359,065	—	60,091,740	1	(18,326,863)	(494,075)	\$ 1,223,119	\$ 830,538	\$ (10,196)	\$ 1,549,388	\$ 314,230	\$ 1,863,618
Share based compensation	1,897,030	—	—	—	—	—	—	—	71,597	—	—	71,597	—	71,597
Repurchase of Class C common stock	—	—	(236,069)	—	—	—	—	—	(8,256)	—	—	(8,256)	—	(8,256)
Treasury stock purchases	(684,730)	—	—	—	—	—	(16,195,427)	(460,562)	—	(19,982)	—	(480,544)	—	(480,544)
Stock option exercised	268,879	—	—	—	—	—	—	—	5,109	—	—	5,109	—	5,109
Net Income	—	—	—	—	—	—	—	—	—	265,026	—	265,026	203,306	468,332
Foreign exchange translation adjustment	—	—	—	—	—	—	—	—	—	—	(13,605)	(13,605)	(10,649)	(24,254)

Virtu Financial, Inc. and Subsidiaries
Consolidated Statements of Changes in Equity
Years Ended December 31, 2022, 2021, and 2020

(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	Noncontrolling Interest	Total Equity
	Shares	Amounts	Shares	Amounts	Shares	Amounts	Shares	Amounts	Amounts					
Net change in unrealized cash flow hedges gains	—	—	—	—	—	—	—	—	—	—	55,405	55,405	35,460	90,865
Dividends (\$0.24 per share of Class A common stock and participating Restricted Stock Unit and Restricted Stock Award) and distributions from Virtu Financial to noncontrolling interest	—	—	—	—	—	—	—	—	\$ —	\$ (103,265)	\$ —	\$ (103,265)	\$ (272,019)	\$ (375,284)
Issuance of Common Stock in connection with employee exchanges	92,930	—	—	—	—	—	—	—	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —
Repurchase of Virtu Financial Units and corresponding number of Class C common stock in connection with employee exchanges	—	—	(92,930)	—	—	—	—	—	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —
Contributions from noncontrolling interests	—	—	—	—	—	—	—	—	\$ —	\$ —	\$ —	\$ —	\$ 39,200	\$ 39,200
Issuance of tax receivable agreements in connection with employee exchange	—	—	—	—	—	—	—	—	\$ 1,044	\$ —	\$ —	\$ 1,044	\$ —	\$ 1,044
Balance at December 31, 2022	133,071,754	1	9,030,066	—	60,091,740	1	(34,522,290)	(954,637)	\$ 1,292,613	\$ 972,317	\$ 31,604	\$ 1,341,899	\$ 309,528	\$ 1,651,427

See accompanying Notes to the Consolidated Financial Statements.

Virtu Financial, Inc. and Subsidiaries
Consolidated Statements of Cash Flows

(in thousands)	Years Ended December 31,		
	2022	2021	2020
Cash flows from operating activities			
Net income	\$ 468,332	\$ 827,234	\$ 1,120,913
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	66,377	67,816	66,741
Amortization of purchased intangibles and acquired capitalized software	64,837	69,668	74,254
Debt issue cost related to debt refinancing and prepayment	24,316	649	7,555
Amortization of debt issuance costs and deferred financing fees	6,919	6,939	26,148
Termination of office leases	4,707	28,138	9,608
Share-based compensation	67,219	55,751	59,838
Deferred taxes	(3,468)	34,617	21,601
Gain on sale of MATCHNow	—	—	(58,652)
Other	11,392	(5,556)	(1,926)
Changes in operating assets and liabilities:			
Securities borrowed	161,648	75,694	503,747
Securities purchased under agreements to resell	(217,546)	(96,587)	120,166
Receivables from broker-dealers and clearing organizations	(1,110)	657,199	(365,422)
Trading assets, at fair value	(373,597)	(1,141,224)	(350,041)
Receivables from customers	65,646	68,002	(110,947)
Operating lease right-of-use assets	28,670	33,930	39,659
Other assets	(62,799)	59,209	(48,472)
Securities loaned	(81,616)	193,792	(651,843)
Securities sold under agreements to repurchase	113,224	53,090	120,493
Payables to broker-dealers and clearing organizations	(276,646)	(267,126)	(9,323)
Payables to customers	(8,474)	(63,827)	29,107
Trading liabilities, at fair value	686,195	587,071	425,750
Operating lease liabilities	(33,322)	(36,595)	(50,024)
Accounts payable, accrued expenses and other liabilities	(4,101)	(36,258)	81,954
Net cash provided by operating activities	706,803	1,171,626	1,060,884
Cash flows from investing activities			
Development of capitalized software	(37,658)	(35,508)	(31,471)
Acquisition of property and equipment	(27,201)	(24,562)	(28,888)
Proceeds from sale of investments	—	—	7,620
Proceeds from sale of MATCHNow	—	—	60,592
Other investing activities	35,329	(27,279)	(10,412)
Net cash used in investing activities	(29,530)	(87,349)	(2,559)
Cash flows from financing activities			
Dividends to stockholders and distributions from Virtu Financial to noncontrolling interest	(375,284)	(548,017)	(484,415)
Repurchase of Class C common stock	(8,256)	(3,454)	—
Purchase of treasury stock	(480,544)	(427,453)	(49,864)
Stock options exercised	5,109	10,042	16,440
Short-term borrowings, net	(59,112)	(2,017)	(10,514)
Proceeds from long-term borrowings	1,800,000	—	—
Repayment of long term borrowings	(1,599,774)	(36,737)	(288,500)
Tax receivable agreement obligations	(21,343)	(16,505)	(13,286)
Debt issuance costs	(35,741)	(2,658)	(9,779)
Warrants exercised	—	68,940	—
Contributions from noncontrolling interests	39,200	—	—
Net cash used in financing activities	(735,745)	(957,859)	(839,918)
Effect of exchange rate changes on cash and cash equivalents	(24,239)	(12,470)	15,318
Net decrease in cash and cash equivalents	(82,711)	113,948	233,725

Virtu Financial, Inc. and Subsidiaries
Consolidated Statements of Cash Flows

(in thousands)	Years Ended December 31,		
	2022	2021	2020
Cash, cash equivalents, and restricted or segregated cash, beginning of period	1,120,953	1,007,005	773,280
Cash, cash equivalents, and restricted or segregated cash, end of period	\$ 1,038,242	\$ 1,120,953	\$ 1,007,005
Supplementary disclosure of cash flow information			
Cash paid for interest	\$ 246,985	\$ 159,864	\$ 173,645
Cash paid for taxes	103,965	134,878	248,532
Non-cash investing activities			
Share-based and accrued incentive compensation to developers relating to capitalized software	17,356	17,239	14,773
Non-cash financing activities			
Tax receivable agreement described in Note 5	1,044	311	(1,388)

See accompanying Notes to the Consolidated Financial Statements.

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

1. Organization and Basis of Presentation

Organization

The accompanying 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 December 31, 2022, VFI owned approximately 59.7% 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, on 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 with 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 in over 50 countries and across multiple asset classes, including global equities, Exchange-Traded Funds ("ETFs"), options, foreign exchange, futures, fixed income, cryptocurrencies, and 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.

The Company has completed two significant acquisitions that have expanded and complemented Virtu Financial's original electronic trading and marking making business. On July 20, 2017, 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 (the "ITG Acquisition").

Virtu Financial's principal United States ("U.S.") subsidiary is Virtu Americas LLC ("VAL"), which is a U.S. broker-dealer. 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 ("VFIL") and Virtu ITG Europe Limited ("VIEL"), each formed in Ireland; Virtu ITG UK Limited ("VIUK"), formed in the United Kingdom; Virtu Canada Corp (f/k/a Virtu ITG Canada Corp.), 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 22 "Geographic Information and Business Segments" for a further discussion of the Company's segments.

Basis of Consolidation and Form of Presentation

These 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-K 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. The Consolidated Financial Statements of the Company include its equity interests in Virtu Financial and its 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.

Certain reclassifications have been made to the prior periods' Consolidated Financial Statements in order to conform to the current period presentation. Such reclassifications are immaterial, individually and in the aggregate, to both current and all

previously issued financial statements taken as a whole and have no effect on previously reported consolidated net income available to common stockholders.

Effective for the quarter ended March 31, 2021, the Company changed the presentation of its Consolidated Statements of Changes in Equity and Consolidated Statements of Cash Flows. Specifically, the Company combined \$120.5 million of Dividends to stockholders and \$363.9 million of Distribution from Virtu Financial to noncontrolling interest, into Dividends to stockholders and distribution from Virtu Financial to noncontrolling interest for the year ended December 31, 2020. Dividends to stockholders and distributions from Virtu Financial to noncontrolling interest both represent cash payments by the Company to its equity owners which reduce Total equity.

2. Summary of Significant Accounting Policies

Use of Estimates

The Company's 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, allowance for doubtful accounts, goodwill and intangibles, compensation accruals, capitalized software, income tax, tax receivable agreements, 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 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.

The Company grants restricted stock awards ("RSAs") and restricted stock units ("RSUs"), certain of which entitle recipients to receive non-forfeitable dividends during the vesting period on a basis equivalent to the dividends paid to holders of common stock. As a result, the unvested RSAs and participating 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 in accordance with Rule 15c3-3 of the Securities Exchange Act of 1934, as amended ("Customer Protection Rule"), and special reserve accounts for the exclusive benefit of 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 securities 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 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 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 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 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 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, Financial instruments owned and pledged, 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 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.

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 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 - Trading

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. The Company does not apply hedge accounting as defined in ASC 815, Derivatives and Hedging, and accordingly gains or losses on these derivative instruments are recognized currently within Trading income, net in the Consolidated Statements 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 trading 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 Consolidated Statements of Cash Flows.

Derivative Instruments - Hedging

The Company may use derivative instruments for risk management purposes, including cash flow hedges used to manage interest rate risk on long-term borrowings. The Company has entered into floating-to-fixed interest rate swap agreements in order to manage interest rate risk associated with its long-term debt obligations.

For interest rate swap agreements 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 interest rate swaps. For instruments that meet the criteria to be considered hedging instruments under ASC 815, any gains or losses, to the extent effective, are included in Accumulated other comprehensive income on the Consolidated Statements of Financial Condition and Other comprehensive income on the Consolidated Statements of Comprehensive Income. The ineffective portion, if any, is recorded in Other, net on the Consolidated Statements of Comprehensive Income.

The Company presents its hedging derivatives balances on a net-by-counterparty basis when the criteria for offsetting are met. Balances associated with hedging derivatives are recorded within Receivables from/Payables to broker-dealers and clearing organizations on the Consolidated Statements of Financial Condition. Cash flows associated with such derivative activities are included in cash flows from operating activities on the Consolidated Statements of Cash Flows.

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 date of acquisition. 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. 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 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 the inception of the arrangement. Operating leases are included in Operating lease right-of-use ("ROU") assets and Operating lease liabilities on the Consolidated Statements of Financial Condition. Operating lease 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 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 of the lease, 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. Lease expense related to the leasing of corporate office space is recorded in Operations and Administrative expenses on the Consolidated Statements of Comprehensive Income. Lease expense related to the leasing of data centers and other technology is recorded in Communication and Data Processing on the Consolidated Statements of Comprehensive Income. 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. The Company nets its sublease income against corresponding lease expenses within Operations and Administrative expenses on the Consolidated Statements of Comprehensive Income.

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, 2022, 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 stock includes shares that entitle the Company to certain trading privileges.

Trading Income, net

Trading income, net is composed 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 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. 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 Consolidated Statements of Comprehensive Income.

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, Clearance Fees and Payments for Order Flow, Net

Brokerage, exchange, clearance fees and payments for order flow, net, comprise the costs of executing and clearing trades and are accrued on a trade date basis in the Consolidated Statements of Comprehensive Income. These costs are net of rebates, which consist of volume discounts, credits or payments received from exchanges or other marketplaces related to the placement and/or removal of liquidity from the order flow in the marketplace. Rebates are recorded on an accrual basis. 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.

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 comprises current tax and deferred tax. Current tax represents the tax on current year tax returns, using tax rates enacted at the balance sheet date. 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 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

Comprehensive income consists of two components: net income and other comprehensive income (“OCI”). The Company’s OCI comprises foreign currency translation adjustments, net of taxes and mark-to-market gains and losses on the Company's derivative instruments designated as hedging instruments under ASC 815, net of taxes.

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 OCI, a component of stockholders' equity. While certain of the Company's foreign subsidiaries 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, and subsidiaries domiciled in Canada, which utilize the Canadian dollar as the functional currency.

The Company may use derivative instruments for risk management purposes, including cash flow hedges used to manage interest rate risk on long-term borrowings and net investment hedges used to manage foreign exchange risk. For instruments that meet the criteria to be considered hedging instruments under ASC 815, any gains or losses are initially included in Accumulated OCI on the Consolidated Statements of Financial Condition and OCI on the Consolidated Statements of Comprehensive Income, as the hedged item affects earnings.

Share-Based Compensation

Share-based awards issued for compensation in connection with or subsequent 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") 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"), are in the form of stock options, Class A common stock, par value \$0.00001 per share (the "Class A Common Stock"), RSAs and RSUs, as applicable. The fair values of the Class A Common Stock and RSUs are determined based on the volume weighted average price for the three days preceding the grant. With respect to the RSUs, forfeitures are accounted for as they occur. The fair value of RSAs is determined based on the closing price as of the grant date. 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, or, in the case of RSAs subject to performance conditions, from the date that achievement of the performance target becomes probable through the remainder of 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.

Accounting Pronouncements, Recently Adopted

Convertible Instruments - In August 2020, the FASB issued ASU 2020-06, *Debt - Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging - Contracts in Entity's Own Equity (Subtopic 815-40)*. The ASU simplifies accounting for certain financial instruments with characteristics of liabilities and equity, including convertible instruments and contracts in an entity's own equity and updates selected EPS guidance. The ASU is effective for periods beginning after December 15, 2021. The Company adopted this ASU on January 1, 2022 and it did not have a material impact on its Consolidated Financial Statements and related disclosures.

Reference Rate Reform - In March 2020, the FASB issued ASU 2020-04, *Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting*, and in January 2021, the FASB issued ASU 2021-01 —Reference Rate Reform (Topic 848): Scope, both of which are designed to ease the potential burden in accounting for the transition away from LIBOR. The ASUs apply to contracts, hedging relationships, and other transactions that reference LIBOR or another reference rate expected to be discontinued and replaced with alternative reference rates as a result of reference rate reform. The ASUs provide optional expedients and exceptions for applying U.S. GAAP to contracts, hedging relationships, and other transactions affected by reference rate reform if certain criteria are met. The transition period for adopting these ASUs is March 12, 2020 through December 31, 2022. The Company adopted this ASU on April 1, 2022 and it did not have a material impact on its Consolidated Financial Statements and related disclosures.

Financial Instruments - Credit Losses - In March 2022, the FASB issued ASU 2022-02, *Financial Instruments - Credit Losses (Topic 326)*. The ASU eliminates the accounting guidance for troubled debt restructurings by creditors in Subtopic 310-40, and enhances the disclosure requirements for modifications of loans to borrowers experiencing financial difficulty. Additionally, the ASU requires disclosure of gross writeoffs of receivables by year of origination for receivables within the scope of Subtopic 326-20, *Financial Instruments - Credit Losses - Measured at Amortized Cost*. This ASU is effective for periods beginning after December 15, 2022. The Company adopted this ASU on April 1, 2022 and it did not have a material impact on its Consolidated Financial Statements and related disclosures.

Accounting Pronouncements, Not Yet Adopted as of December 31, 2022

Derivatives and Hedging - In March 2022, the FASB issued ASU 2022-01, *Derivatives and Hedging - Fair Value Hedging - Portfolio Layer Method (Topic 815)*. The ASU expands the scope of permissible hedging, and permits the use of different derivative structures as hedging instruments. The ASU also clarifies the certain terms for partial-term fair value hedges of interest rate risk. This ASU is effective for periods beginning after December 15, 2022. The Company is currently evaluating the impact of this ASU but does not expect it to have a material impact on its Consolidated Financial Statements and related disclosures.

Fair Value Measurement - In June 2022, the FASB issued ASU 2022-03, *Fair Value Measurement of Equity Securities Subject to Contractual Sale Restrictions (Topic 326)*. The ASU clarifies the impact of contractual sale restrictions on the fair value of an equity security. Additionally, this ASU requires disclosure of the nature and remaining duration of the sale restriction. This ASU is effective for periods beginning after December 15, 2023. The Company is currently evaluating the impact of this ASU but does not expect it to have a material impact on its Consolidated Financial Statements and related disclosures.

Liabilities - Supplier Finance Programs - In September 2022, the FASB issued ASU 2022 -03, *Liabilities—Supplier Finance Programs (Subtopic 405-50)*. This ASU requires new quantitative and qualitative disclosure requirements for a buyer who enters into supplier financing programs. This ASU is effective for periods beginning after December 15, 2023. The Company is currently evaluating the impact of this ASU but does not expect it to have a material impact on its Consolidated Financial Statements and related disclosures.

3. Sale of MATCHNow

In May 2020, the Company entered into a Securities Purchase Agreement ("SPA") with Cboe Global Markets, Inc. ("Cboe") pursuant to which the Company agreed to sell 100% of the outstanding interests in TriAct Canada Marketplace LP and TCM Corp., which operate an equities alternative trading system ("MATCHNow") in Canada. Pursuant to the terms of the SPA, the Company also agreed to enter into a licensing agreement for the licensing of certain software and intellectual property used in support of MATCHNow.

On August 4, 2020 (the "MATCHNow Closing Date"), the Company completed the sale of MATCHNow to Cboe for total gross proceeds of \$60.6 million in cash, with additional contingent consideration of up to approximately \$23.0 million.

The Company incurred one-time transaction costs including professional fees related to the sale of \$2.5 million, which were recorded in Transaction advisory fees and expenses on the Consolidated Statements of Comprehensive Income. The Company recognized a gain on sale of \$58.7 million, which was recorded in Other, net on the Consolidated Statements of Comprehensive Income for the year ended December 31, 2020.

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

(in thousands)	
Total sale proceeds received	\$ 60,592
Total carrying value of MATCHNow as of MATCHNow Closing Date	(1,940)
Gain on sale of MATCHNow	58,652
Transaction costs	(2,453)
Gain on sale of MATCHNow, net of transaction costs	<u>\$ 56,199</u>

Contingent consideration was eligible to be earned based on the future performance of MATCHNow following the MATCHNow Closing Date. Deferred payments were assessed quarterly until December 31, 2022 and recorded in Other, net on the Consolidated Statements of Comprehensive Income when the contingency is resolved and payments become payable by Cboe. For the year ended December 31, 2022, the Company received \$3.9 million related to the contingent consideration, which is recorded in Other, net on the Consolidated Statements of Comprehensive Income for the year ended December 31, 2022. No payments were made regarding the contingent consideration in prior years.

In addition, the Company entered into a Transition Services Agreement ("TSA") with Cboe, pursuant to which the Company agreed to provide certain telecom and general and administrative services for a defined period. Income from performing services under the TSA are recorded in Other, net on the Consolidated Statements of Comprehensive Income.

With the licensing of certain software and intellectual property associated with MATCHNow, the Company performed an assessment of impairment of long-lived intangible assets acquired in connection with the ITG acquisition, of which MATCHNow technology was a component. No impairment was recognized for the year ended December 31, 2020.

4. Earnings per Share

The below table contains a reconciliation of Net income before income taxes and noncontrolling interest to Net income available for common stockholders:

(in thousands)	Years Ended December 31,		
	2022	2021	2020
Income before income taxes and noncontrolling interest	\$ 556,798	\$ 996,904	\$ 1,382,837
Provision for income taxes	88,466	169,670	261,924
Net income	468,332	827,234	1,120,913
Noncontrolling interest	(203,306)	(350,356)	(471,716)
Net income available for common stockholders	<u>\$ 265,026</u>	<u>\$ 476,878</u>	<u>\$ 649,197</u>

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

(in thousands, except for share or per share data)	Years Ended December 31,		
	2022	2021	2020
Basic earnings per share:			
Net income available for common stockholders	\$ 265,026	\$ 476,878	\$ 649,197
Less: Dividends and undistributed earnings allocated to participating securities	(9,811)	(13,674)	(17,383)
Net income available for common stockholders, net of dividends and undistributed earnings allocated to participating securities	255,215	463,204	631,814
Weighted average shares of common stock outstanding:			
Class A	103,997,767	117,339,539	121,692,443
Basic earnings per share	\$ 2.45	\$ 3.95	\$ 5.19
Diluted earnings per share:			
(in thousands, except for share or per share data)			
Diluted earnings per share:			
Net income available for common stockholders, net of dividends and undistributed earnings allocated to participating securities	\$ 255,215	\$ 463,204	\$ 631,814
Weighted average shares of common stock outstanding:			
Class A			
Issued and outstanding	103,997,767	117,339,539	121,692,443
Issuable pursuant to Amended and Restated 2015 Management Incentive Plan, Amended and Restated Investment Technology Group, Inc. 2007 Omnibus Equity Compensation Plan, and Warrants issued in connection with the Founder Member Loan	424,676	1,084,389	639,747
	104,422,443	118,423,928	122,332,190
Diluted earnings per share	\$ 2.44	\$ 3.91	\$ 5.16

5. Tax Receivable Agreements

In connection with the IPO and the Reorganization Transactions, the Company entered into tax receivable agreements ("TRA") to make payments to certain pre-IPO equity holders ("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"), (an "Exchange"), and payments made under the tax receivable agreements. An Exchange during the year will give rise to favorable tax attributes that may generate cash tax savings specific to the Exchange to be realized over a specific period of time (generally 15 years). At each Exchange, management estimates the Company's cumulative TRA obligations to be reported on the Consolidated Statements of Financial Condition, which amounted to \$238.8 million and \$259.3 million as of December 31, 2022 and December 31, 2021, respectively. The tax attributes are computed as the difference between the Company's basis in the partnership interest ("outside basis") as compared to the Company's share of the adjusted tax basis of partnership property ("inside basis") at the time of each Exchange. The computation of inside basis requires management to make judgments in estimating the components included in the inside basis as of the date of the Exchange (i.e., cash received by the Company on hypothetical sale of assets, allocation of gain/loss to the Company at the time of the Exchange taking into account complex partnership tax rules). In addition, management estimates the period of time that may generate cash tax savings of such tax attributes and the realizability of the tax attributes. 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 subsequent payments of \$12.4 million in September 2018, \$13.3 million in March 2020, its \$16.5 million in April 2021, and \$21.3 million in March 2022.

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”) in connection with 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 \$36.4 thousand to \$22.0 million per year over the next 15 years.

At December 31, 2022 and December 31, 2021, the Company’s remaining deferred tax assets that relate to the matters described above were approximately \$162.1 million and \$180.4 million, respectively, and the Company’s liabilities over the next 15 years pursuant to the tax receivable agreements were approximately \$238.8 million and \$259.3 million, respectively. The amounts recorded as of December 31, 2022 and December 31, 2021 are based on best estimates available at the respective dates and may be subject to change after the filing of the Company’s federal and state income tax returns for the years in which tax savings are realized.

For the purposes of 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 Consolidated Statements of Comprehensive Income.

6. Goodwill and Intangible Assets

The Company has two operating segments: (i) Market Making; and (ii) Execution Services; and one non-operating segment: Corporate. As of December 31, 2022 and December 31, 2021, the Company’s total amount of goodwill recorded was \$1,148.9 million. No goodwill impairment was recognized during the years ended December 31, 2022 and 2021.

The following table presents the details of goodwill by segment as of December 31, 2022 and December 31, 2021:

(in thousands)	Market Making	Execution Services	Corporate	Total
Balance as of period-end	\$ 755,292	\$ 393,634	\$ —	\$ 1,148,926

As of December 31, 2022 and December 31, 2021, the Company’s total amount of intangible assets recorded was \$321.5 million and \$386.3 million, respectively. Acquired intangible assets consisted of the following as of December 31, 2022 and December 31, 2021:

(in thousands)	As of December 31, 2022			
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Useful Lives (Years)
Customer relationships	\$ 486,600	\$ (189,986)	\$ 296,614	10 to 12
Technology	136,000	(118,119)	17,881	1 to 6
Favorable occupancy leases	5,895	(4,408)	1,487	3 to 15
Exchange memberships	3,998	—	3,998	Indefinite
Trade name	3,600	(3,600)	—	3
ETF issuer relationships	950	(950)	—	9
ETF buyer relationships	950	(950)	—	9
Other	\$ 1,500	\$ —	\$ 1,500	Indefinite
	<u>\$ 639,493</u>	<u>\$ (318,013)</u>	<u>\$ 321,480</u>	

(in thousands)	As of December 31, 2021			
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Useful Lives (Years)
Customer relationships	\$ 486,600	\$ (142,142)	\$ 344,458	10 to 12
Technology	136,000	(102,088)	33,912	1 to 6
Favorable occupancy leases	5,895	(3,631)	2,264	3 to 15
Exchange memberships	3,998	—	3,998	Indefinite
Trade name	3,600	(3,400)	200	3
ETF issuer relationships	950	(950)	—	9
ETF buyer relationships	950	(950)	—	9
Other	\$ 1,500	\$ —	\$ 1,500	Indefinite
	<u>\$ 639,493</u>	<u>\$ (253,161)</u>	<u>\$ 386,332</u>	

Amortization expense relating to finite-lived intangible assets was approximately \$64.8 million, \$69.7 million and \$74.3 million for the years ended December 31, 2022, 2021, and 2020, respectively. This is included in Amortization of purchased intangibles and acquired capitalized software in the accompanying Consolidated Statements of Comprehensive Income.

The Company expects to record amortization expense as follows over the next five subsequent years:

(in thousands)	
2023	63,960
2024	50,845
2025	47,879
2026	47,879
2027	47,879

7. 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 December 31, 2022 and December 31, 2021:

(in thousands)	December 31, 2022	December 31, 2021
Assets		
Due from prime brokers	\$ 560,111	\$ 287,991
Deposits with clearing organizations	146,927	161,928
Net equity with futures commission merchants	137,312	98,302
Unsettled trades with clearing organizations	87,145	164,195
Securities failed to deliver	149,747	290,207
Commissions and fees	33,943	24,184
Total receivables from broker-dealers and clearing organizations	<u>\$ 1,115,185</u>	<u>\$ 1,026,807</u>
Liabilities		
Due to prime brokers	\$ 229,424	\$ 497,972
Net equity with futures commission merchants (1)	(32,381)	(57,226)
Unsettled trades with clearing organizations	38	828
Securities failed to receive	70,576	128,392
Commissions and fees	6,186	1,560
Total payables to broker-dealers and clearing organizations	<u>\$ 273,843</u>	<u>\$ 571,526</u>

(1) 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.

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 prime brokerage credit facilities (described in Note 9 “Borrowings”) of approximately \$212.9 million and \$177.1 million as of December 31, 2022 and December 31, 2021, 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.

8. 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 December 31, 2022 and December 31, 2021, substantially all of the securities received as collateral have been repledged.

The fair value of the collateralized transactions at December 31, 2022 and December 31, 2021 are summarized as follows:

(in thousands)	December 31, 2022	December 31, 2021
Securities received as collateral:		
Securities borrowed	\$ 1,148,238	\$ 1,299,270
Securities purchased under agreements to resell	336,849	119,453
	<u>\$ 1,485,087</u>	<u>\$ 1,418,723</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 December 31, 2022 and December 31, 2021 consisted of the following:

(in thousands)	December 31, 2022	December 31, 2021
Equities	\$ 957,443	\$ 1,012,569
Exchange traded notes	5,628	5,391
	<u>\$ 963,071</u>	<u>\$ 1,017,960</u>

9. Borrowings

Short-term Borrowings, net

The following summarizes the Company's short-term borrowing balances outstanding, net of related debt issuance costs, with each described in further detail below.

(in thousands)	December 31, 2022		
	Borrowing Outstanding	Deferred Debt Issuance Cost	Short-term Borrowings, net
Short-term bank loans	3,944	—	3,944
	<u>\$ 3,944</u>	<u>\$ —</u>	<u>\$ 3,944</u>
(in thousands)	December 31, 2021		
	Borrowing Outstanding	Deferred Debt Issuance Cost	Short-term Borrowings, net
Broker-dealer credit facilities	\$ 58,000	\$ (1,546)	\$ 56,454
Short-term bank loans	5,056	—	5,056
	<u>\$ 63,056</u>	<u>\$ (1,546)</u>	<u>\$ 61,510</u>

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 \$400 million, and is collateralized by VAL's trading and deposit account maintained at the financial institution. The second credit facility (the "Committed Facility") with the same financial institution has a borrowing limit of \$650 million. 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. Borrowing Base A Loans are available up to \$650 million and bear interest at the adjusted SOFR or base rate plus 1.25% per annum. Borrowing Base B Loans are subject to a sublimit of \$200 million and bear interest at the adjusted SOFR 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.

On May 25, 2022, Virtu Financial Singapore Pte. Ltd. entered into a revolving credit facility with a financial institution (the "Overdraft Facility") to provide a source of short-term financing. The facility has an aggregate borrowing limit of \$10 million, and bears interest at the adjusted SOFR or base rate plus 3.5% per annum.

On March 20, 2020, VAL entered into a Loan Agreement (the "Founder Member Loan Facility") with TJMT Holdings LLC (the "Founder Member"), as lender and administrative agent, providing for unsecured term loans from time to time (the "Founder Member Loans") in an aggregate original principal amount not to exceed \$300 million. The Founder Member Loans were available to be borrowed in one or more borrowings on or after March 20, 2020 and prior to September 20, 2020 (the "Founder Member Loan Term"). The Founder Member Loan Facility Term expired as of September 20, 2020 without VAL having borrowed any Founder Member Loans at any time. The Founder Member is an affiliate of Mr. Vincent Viola, the Company's founder and Chairman Emeritus. Upon the execution of and in consideration for the Lender's (as defined in the Founder Member Loan Facility) commitments under the Founder Member Loan Facility, the Company delivered to the Founder Member a warrant to purchase shares of the Company's Class A Common Stock. Terms of the warrant are set forth in further detail in Note 18 "Capital Structure".

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 Consolidated Statements of Financial Condition.

At December 31, 2022					
(in thousands)	Interest Rate	Financing Available	Borrowing Outstanding	Deferred Debt Issuance Cost	Outstanding Borrowings, net
Broker-dealer credit facilities:					
Uncommitted facility (1)	5.50%	\$ 400,000	\$ —	\$ —	\$ —
Committed facility	7.67%	650,000	—	—	—
Overdraft facility	7.80%	10,000	—	—	—
		<u>\$ 1,060,000</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ —</u>

(1) \$0.2 million of deferred debt issuance costs are included within Other assets on the Consolidated Statement of Financial Condition

At December 31, 2021					
(in thousands)	Interest Rate	Financing Available	Borrowing Outstanding	Deferred Debt Issuance Cost	Outstanding Borrowings, net
Broker-dealer credit facilities:					
Uncommitted facility	1.25%	\$ 400,000	\$ 58,000	\$ (1,546)	\$ 56,454
Committed facility	3.78%	600,000	—	—	—
		<u>\$ 1,000,000</u>	<u>\$ 58,000</u>	<u>\$ (1,546)</u>	<u>\$ 56,454</u>

The following summarizes interest expense for the broker-dealer facilities. Interest expense is included within Interest and dividends expense in the accompanying Consolidated Statements of Comprehensive Income.

(in thousands)	Years Ended December 31,		
	2022	2021	2020
Broker-dealer credit facilities:			
Uncommitted facility	\$ 4,247	\$ 2,327	\$ 1,337
Committed facility	112	82	447
Demand Loan	—	—	211
	<u>\$ 4,359</u>	<u>\$ 2,409</u>	<u>\$ 1,995</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 December 31, 2022, there was \$3.9 million associated with international settlement activities outstanding under these facilities at a weighted average interest rate of approximately 3.8%. At December 31, 2021, there was \$5.1 million associated with international settlement activities outstanding under these facilities at a weighted average interest rate of approximately 4.2%. These short-term bank loan balances are included within Short-term borrowings on the Consolidated Statements of Financial Condition.

Prime Brokerage 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 December 31, 2022		
(in thousands)	Weighted Average Interest Rate	Financing Available	Borrowing Outstanding			
Prime Brokerage Credit Facilities:						
Prime brokerage credit facilities (1)	7.42%	\$ 591,000	\$ 212,912			
		\$ 591,000	\$ 212,912			

				At December 31, 2021		
(in thousands)	Weighted Average Interest Rate	Financing Available	Borrowing Outstanding			
Prime Brokerage Credit Facilities:						
Prime brokerage credit facilities (1)	2.91%	\$ 616,000	\$ 177,080			
		\$ 616,000	\$ 177,080			

(1) Outstanding borrowings are included with Receivables from/Payables to broker-dealers and clearing organizations within the Consolidated Statements of Financial Condition.

Interest expense in relation to the facilities was \$9.3 million, \$4.6 million, and \$4.8 million and for the years ended December 31, 2022, 2021, and 2020, respectively.

Long-Term Borrowings

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

							At December 31, 2022			
(in thousands)	Maturity Date	Interest Rate	Outstanding Principal	Discount	Deferred Debt Issuance Cost	Outstanding Borrowings, net				
Long-term borrowings:										
First Lien Term Loan Facility	January 2029	7.42%	\$ 1,800,000	\$ (3,881)	\$ (26,858)	\$ 1,769,261				
SBI bonds	January 2026	5.00%	26,693	—	(2)	26,691				
			\$ 1,826,693	\$ (3,881)	\$ (26,860)	\$ 1,795,952				

							At December 31, 2021			
(in thousands)	Maturity Date	Interest Rate	Outstanding Principal	Discount	Deferred Debt Issuance Cost	Outstanding Borrowings, net				
Long-term borrowings:										
First Lien Term Loan Facility	March 2026	3.10%	\$ 1,599,774	\$ (3,723)	\$ (21,620)	\$ 1,574,431				
SBI bonds	January 2023	5.00%	30,722	—	(21)	30,701				
			\$ 1,630,496	\$ (3,723)	\$ (21,641)	\$ 1,605,132				

Credit Agreements

In connection with the ITG Acquisition, Virtu Financial, VFH, and Impala Borrower LLC (the "Acquisition Borrower") entered into a 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 "Acquisition Credit Agreement").

The Acquisition Credit Agreement provided (i) a senior secured first lien term loan (together with the Acquisition Incremental Term Loans, as defined below; the “Acquisition First Lien Term Loan Facility”) in an aggregate principal amount of \$1,500 million, drawn in its entirety on the ITG Closing Date, of which amount approximately \$404.5 million was borrowed by VFH to repay all amounts outstanding under a previous term loan facility and the remaining approximately \$1,095 million was 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. On October 9, 2019, VFH entered into an amendment, which amended the Acquisition Credit Agreement dated as of March 1, 2019 to, among other things, provide for \$525.0 million in aggregate principal amount of incremental term loans (the “Acquisition Incremental Term Loans”), and amend the related collateral agreement. On March 2, 2020, VFH entered into a second amendment, which further amended the Acquisition Credit Agreement to, among other things, reduce the interest rate spread over adjusted LIBOR or the alternate base rate by 0.50% per annum and eliminated any step-down in the spread based on VFH’s first lien leverage ratio.

On January 13, 2022 (the “Credit Agreement Closing Date”), Virtu Financial, VFH Parent LLC, a Delaware limited liability company and a subsidiary of Virtu Financial (“VFH”), entered into the Credit Agreement, with the lenders party thereto, JPMorgan Chase Bank, N.A. as administrative agent and JPMorgan Chase Bank, N.A., Goldman Sachs Bank USA, RBC Capital Markets, Barclays Bank plc, Jefferies Finance LLC, BMO Capital Markets Corp., and CIBC World Markets Corp., as joint lead arrangers and bookrunners (the “Credit Agreement”). The Credit Agreement provides (i) a senior secured first lien term loan in an aggregate principal amount of \$1,800.0 million, drawn in its entirety on the Credit Agreement Closing Date, the proceeds of which were used by VFH to repay all amounts outstanding under the Acquisition Credit Agreement, to pay fees and expenses in connection therewith, to fund share repurchases under the Company’s repurchase program and for general corporate purposes, and (ii) a \$250.0 million senior secured first lien revolving facility to VFH, with a \$20.0 million letter of credit subfacility and a \$20.0 million swingline subfacility.

The term loan borrowings and revolver borrowings under the Credit Agreement 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 0.50%, (c) an adjusted term SOFR rate with an interest period of one month plus 1.00% and (d)(1) in the case of term loan borrowings, 1.50% and (2) in the case of revolver borrowings, 1.00%, plus, (x) in the case of term loan borrowings, 2.00% and (y) in the case of revolver borrowings, 1.50%, or (ii) the greater of (a) an adjusted term SOFR rate for the interest period in effect and (b) (1) in the case of term loan borrowings, 0.50% and (2) in the case of revolver borrowings, 0.00%, plus, (x) in the case of term loan borrowings, 3.00% and (y) in the case of revolver borrowings, 2.50%. In addition, a commitment fee accrues at a rate of 0.50% per annum on the average daily unused amount of the revolving facility, with step-downs to 0.375% and 0.25% per annum based on VFH’s first lien leverage ratio, and is payable quarterly in arrears.

The revolving facility under the Credit Agreement is subject to a springing net first lien leverage ratio test which may spring into effect as of the last day of a fiscal quarter if usage of the aggregate revolving commitments exceeds a specified level 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 domestic restricted subsidiaries and secured by substantially all of the assets of VFH and the guarantors, in each case, subject to certain exceptions.

The Credit Agreement contains certain customary covenants and 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.

Under the Credit Agreement, the term loans will mature on January 13, 2029. 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 January 13, 2025. As of December 31, 2022, \$1,800 million was outstanding under the term loans, and there were no amounts outstanding under the first lien revolving facility.

In October 2019, the Company entered into a five-year \$525 million floating-to-fixed interest rate swap agreement. In January 2020, the Company also entered into a five-year \$1,000 million floating-to-fixed interest rate swap agreement. These two interest rate swaps met the criteria to be considered and were designated qualifying cash flow hedges under ASC 815 in the first quarter of 2020, and they effectively fixed interest payment obligations on \$525.0 million and \$1,000 million of principal under the Acquisition First Lien Term Loan Facility at rates of 4.3% and 4.4% through September 2024 and January 2025, respectively, based on the interest rates set forth in the Acquisition Credit Agreement. In April 2021, each of the swap agreements described above was novated to another counterparty and amended in connection with such novation. The

amendments included certain changes to collateral posting obligations, and also had the effect of increasing the effective fixed interest payment obligations to rates of 4.5%, with respect to the earlier maturing swap arrangement, and 4.6% with respect to the later maturing swap arrangement. In January 2022, in order to align the swap agreements with the Credit Agreement, the Company amended each of the swap agreements to align the floating rate term of such swap agreements to SOFR. The effective fixed interest payment obligations remained at 4.5%, with respect to the earlier maturing swap arrangement, and 4.6% with respect to the later maturing swap arrangement.

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 Japannext Co., Ltd. (as described in Note 10 "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 Consolidated Statements of Comprehensive Income. In December 2022, the maturity of the SBI Bonds was extended to 2026. The principal balance was ¥3.5 billion (\$26.7 million) as of December 31, 2022 and ¥3.5 billion (\$30.7 million) as of December 31, 2021. The Company had a gain of \$4.0 million, a gain of \$3.2 million, and a loss of \$1.7 million during the years ended December 31, 2022, 2021, and 2020 respectively, due to changes in foreign currency rates.

As of December 31, 2022, aggregate future required minimum principal payments based on the terms of the long-term borrowings were as follows:

(in thousands)	December 31, 2022
2023	18,000
2024	18,000
2025	18,000
2026	44,693
2027	18,000
Thereafter	1,710,000
Total principal of long-term borrowings	\$ 1,826,693

10. 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.

Fair value measurements for those items measured on a recurring basis are summarized below as of December 31, 2022:

(in thousands)	December 31, 2022				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	\$ 461,487	\$ 1,545,116	\$ —	\$ —	\$ 2,006,603
U.S. and Non-U.S. government obligations	251,708	575,946	—	—	827,654
Corporate Bonds	—	803,880	—	—	803,880
Exchange traded notes	51	16,777	—	—	16,828
Currency forwards	—	500,553	—	(493,237)	7,316
Options	5,200	—	—	—	5,200
	<u>\$ 718,446</u>	<u>\$ 3,442,272</u>	<u>\$ —</u>	<u>\$ (493,237)</u>	<u>\$ 3,667,481</u>
Financial instruments owned, pledged as collateral:					
Equity securities	\$ 552,641	\$ 404,802	\$ —	\$ —	\$ 957,443
Exchange traded notes	6	5,622	—	—	5,628
	<u>\$ 552,647</u>	<u>\$ 410,424</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 963,071</u>
Other Assets					
Equity investment	\$ —	\$ —	\$ 76,613	\$ —	\$ 76,613
Exchange stock	2,352	—	—	—	2,352
	<u>\$ 2,352</u>	<u>\$ —</u>	<u>\$ 76,613</u>	<u>\$ —</u>	<u>\$ 78,965</u>
Receivables from broker dealers and clearing organizations:					
Interest rate swap	\$ —	\$ 87,268	\$ —	\$ —	\$ 87,268
	<u>\$ —</u>	<u>\$ 87,268</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 87,268</u>
Liabilities					
Financial instruments sold, not yet purchased, at fair value:					
Equity securities	\$ 1,146,701	\$ 1,016,893	\$ —	\$ —	\$ 2,163,594
U.S. and Non-U.S. government obligations	147,418	690,480	—	—	837,898
Corporate Bonds	—	1,183,394	—	—	1,183,394
Exchange traded notes	—	8,199	—	—	8,199
Currency forwards	—	497,799	—	(497,799)	—
Options	3,889	—	—	—	3,889
	<u>\$ 1,298,008</u>	<u>\$ 3,396,765</u>	<u>\$ —</u>	<u>\$ (497,799)</u>	<u>\$ 4,196,974</u>

Fair value measurements for those items measured on a recurring basis are summarized below as of December 31, 2021:

(in thousands)	December 31, 2021				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	\$ 572,567	\$ 1,700,470	\$ —	\$ —	\$ 2,273,037
U.S. and Non-U.S. government obligations	337,350	18,519	—	—	355,869
Corporate Bonds	—	598,944	—	—	598,944
Exchange traded notes	10	2,459	—	—	2,469
Currency forwards	—	206,258	—	(206,125)	133
Options	8,543	—	—	—	8,543
	<u>\$ 918,470</u>	<u>\$ 2,526,650</u>	<u>\$ —</u>	<u>\$ (206,125)</u>	<u>\$ 3,238,995</u>
Financial instruments owned, pledged as collateral:					
Equity securities	\$ 670,277	\$ 342,292	\$ —	\$ —	\$ 1,012,569
Exchange traded notes	—	5,391	—	—	5,391
	<u>\$ 670,277</u>	<u>\$ 347,683</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 1,017,960</u>
Other Assets					
Equity investment	\$ —	\$ —	\$ 81,358	\$ —	\$ 81,358
Exchange stock	3,020	—	—	—	3,020
	<u>\$ 3,020</u>	<u>\$ —</u>	<u>\$ 81,358</u>	<u>\$ —</u>	<u>\$ 84,378</u>
Liabilities					
Financial instruments sold, not yet purchased, at fair value:					
Equity securities	\$ 1,482,386	\$ 807,631	\$ —	\$ —	\$ 2,290,017
U.S. and Non-U.S. government obligations	330,765	9,955	—	—	340,720
Corporate Bonds	—	851,871	—	—	851,871
Exchange traded notes	—	22,962	—	—	22,962
Currency forwards	—	208,357	—	(208,356)	1
Options	5,208	—	—	—	5,208
	<u>\$ 1,818,359</u>	<u>\$ 1,900,776</u>	<u>\$ —</u>	<u>\$ (208,356)</u>	<u>\$ 3,510,779</u>
Payables to broker dealers and clearing organizations:					
Interest rate swap	\$ —	\$ 21,037	\$ —	\$ —	\$ 21,037

JNX Investment

The Company has a minority investment (the “JNX Investment”) in Japannext Co., Ltd. (“JNX”), formerly known as SBI Japannext Co., Ltd., a proprietary trading system based in Tokyo. In connection with the JNX Investment, the Company issued the SBI Bonds (as described in Note 9 "Borrowings") and used the proceeds to partially finance the transaction. The JNX Investment is included within Level 3 of the fair value hierarchy. As of December 31, 2022 and December 31, 2021, the fair value of the JNX Investment was determined using a weighted average of valuations using 1) the discounted cash flow method, an income approach; 2) a market approach based on average enterprise value/EBITDA ratios of comparable companies; and to a lesser extent 3) a transaction approach based on transaction values of comparable companies. 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 enterprise value/EBITDA multiples would result in a significantly lower (higher) fair value measurement.

The table below presents information on the valuation techniques, significant unobservable inputs and their ranges for the JNX Investment:

December 31, 2022						
(in thousands)	Fair Value	Valuation Technique	Significant Unobservable Input	Range	Weighted Average	
Equity investment	\$ 76,613	Discounted cash flow	Estimated revenue growth	(5.7)% - 5.0%	3.1 %	
			Discount rate	15.5% - 15.5%	15.5 %	
		Market	Future enterprise value/EBIDTA ratio	(1.2)x - 18.1x	12.2x	

December 31, 2021						
(in thousands)	Fair Value	Valuation Technique	Significant Unobservable Input	Range	Weighted Average	
Equity investment	\$ 81,358	Discounted cash flow	Estimated revenue growth	2.5% - 32.6%	10.6 %	
			Discount rate	14.4% - 14.4%	14.4 %	
		Market	Future enterprise value/EBIDTA ratio	8.7x - 21.1x	14.0x	

Changes in the fair value of the JNX Investment are included within Other, net in the Consolidated Statements of Comprehensive Income.

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

Year Ended December 31, 2022							
(in thousands)	Balance at December 31, 2021	Purchases	Total Realized and Unrealized Gains / (Losses) (1)	Net Transfers into (out of) Level 3	Settlement	Balance at December 31, 2022	Change in Net Unrealized Gains / (Losses) on Investments still held at December 31, 2022
Assets							
Other assets:							
Equity investment	\$ 81,358	\$ —	\$ (4,745)	\$ —	\$ —	\$ 76,613	\$ (4,745)
Total	\$ 81,358	\$ —	\$ (4,745)	\$ —	\$ —	\$ 76,613	\$ (4,745)

(1) Total realized and unrealized gains/(losses) includes gains and losses due to fluctuations in currency rates as well as gains and losses recognized on changes in the fair value of the JNX Investment.

Year Ended December 31, 2021							
(in thousands)	Balance at December 31, 2020	Purchases	Total Realized and Unrealized Gains / (Losses) (1)	Net Transfers into (out of) Level 3	Settlement	Balance at December 31, 2021	Change in Net Unrealized Gains / (Losses) on Investments still held at December 31, 2021
Assets							
Other assets:							
Equity investment	\$ 66,030	\$ —	\$ 15,328	\$ —	\$ —	\$ 81,358	\$ 15,328
Total	\$ 66,030	\$ —	\$ 15,328	\$ —	\$ —	\$ 81,358	\$ 15,328

(1) Total realized and unrealized gains/(losses) includes gains and losses due to fluctuations in currency rates as well as gains and losses recognized on changes in the fair value of the JNX Investment.

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 Consolidated Statements 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 December 31, 2022:

December 31, 2022					
(in thousands)	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	\$ 981,580	\$ 981,580	\$ 981,580	\$ —	\$ —
Cash restricted or segregated under regulations and other	56,662	56,662	56,662	—	—
Securities borrowed	1,187,674	1,187,674	—	1,187,674	—
Securities purchased under agreements to resell	336,999	336,999	—	336,999	—
Receivables from broker-dealers and clearing organizations	1,027,917	1,027,917	—	1,027,917	—
Receivables from customers	80,830	80,830	—	80,830	—
Other assets (1)	30,579	30,579	—	30,579	—
Total Assets	\$ 3,702,241	\$ 3,702,241	\$ 1,038,242	\$ 2,663,999	\$ —
Liabilities					
Short-term borrowings	\$ 3,944	\$ 3,944	\$ —	\$ 3,944	\$ —
Long-term borrowings	1,795,952	1,783,943	—	1,783,943	—
Securities loaned	1,060,432	1,060,432	—	1,060,432	—
Securities sold under agreements to repurchase	627,549	627,549	—	627,549	—
Payables to broker-dealers and clearing organizations	273,843	273,843	—	273,843	—
Payables to customers	46,525	46,525	—	46,525	—
Other liabilities (2)	23,776	23,776	—	23,776	—
Total Liabilities	\$ 3,832,021	\$ 3,820,012	\$ —	\$ 3,820,012	\$ —

(1) Includes cash collateral and deposits, and interest and dividends receivables.

(2) Includes deposits, interest and dividends payable.

The table below summarizes financial assets and liabilities not carried at fair value on a recurring basis as of December 31, 2021:

December 31, 2021					
(in thousands)	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	\$ 1,071,463	\$ 1,071,463	\$ 1,071,463	\$ —	\$ —
Cash restricted or segregated under regulations and other	49,490	49,490	49,490	—	—
Securities borrowed	1,349,322	1,349,322	—	1,349,322	—
Securities purchased under agreements to resell	119,453	119,453	—	119,453	—
Receivables from broker-dealers and clearing organizations	1,026,807	1,026,807	(24,037)	1,050,844	—
Receivables from customers	146,476	146,476	—	146,476	—
Other assets (1)	20,266	20,266	—	20,266	—
Total Assets	\$ 3,783,277	\$ 3,783,277	\$ 1,096,916	\$ 2,686,361	\$ —
Liabilities					
Short-term borrowings	61,510	63,046	—	63,046	—
Long-term borrowings	1,605,132	1,628,497	—	1,628,497	—
Securities loaned	1,142,048	1,142,048	—	1,142,048	—
Securities sold under agreements to repurchase	514,325	514,325	—	514,325	—
Payables to broker dealer and clearing organizations (2)	571,526	571,526	235	571,291	—
Payables to customers	54,999	54,999	—	54,999	—
Other liabilities (3)	9,414	9,414	—	9,414	—
Total Liabilities	\$ 3,958,954	\$ 3,983,855	\$ 235	\$ 3,983,620	\$ —

(1) Includes cash collateral and deposits, and interest and dividends receivables.

(2) Payables to broker-dealers and clearing organizations include interest rate swaps carried at fair value.

(3) Includes deposits, interest and dividends payable.

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 Consolidated Statements of Financial Condition. In the tables below, the amounts of financial instruments owned that are not offset in the 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 December 31, 2022 and December 31, 2021:

December 31, 2022

(in thousands)	Gross Amounts of Recognized Assets	Amounts Offset in the Consolidated Statements of Financial Condition	Net Amounts of Assets Presented in the Consolidated Statements of Financial Condition	Amounts Not Offset in the Consolidated Statements of Financial Condition		Net Amount
				Financial Instrument Collateral	Counterparty Netting/ Cash Collateral	
Offsetting of Financial Assets:						
Securities borrowed	\$ 1,187,674	\$ —	\$ 1,187,674	\$ (1,148,238)	\$ (5,138)	\$ 34,298
Securities purchased under agreements to resell	336,999	—	336,999	(336,849)	—	150
Receivables from broker-dealers and clearing organizations:						
Interest rate swaps	87,268	—	87,268	—	—	87,268
Trading assets, at fair value:						
Currency forwards	500,553	(493,237)	7,316	—	—	7,316
Options	5,200	—	5,200	—	(3,889)	1,311
Total	\$ 2,117,694	\$ (493,237)	\$ 1,624,457	\$ (1,485,087)	\$ (9,027)	\$ 130,343

(in thousands)	Gross Amounts of Recognized Liabilities	Amounts Offset in the Consolidated Statements of Financial Condition	Net Amounts of Liabilities Presented in the Consolidated Statement of Financial Condition	Amounts Not Offset in the Consolidated Statements of Financial Condition		Net Amount
				Financial Instruments	Counterparty Netting/ Cash Collateral	
Offsetting of Financial Liabilities:						
Securities loaned	\$ 1,060,432	\$ —	\$ 1,060,432	\$ (1,027,062)	\$ (9,100)	\$ 24,270
Securities sold under agreements to repurchase	627,549	—	627,549	(627,388)	—	161
Trading liabilities, at fair value:						
Currency forwards	497,799	(497,799)	—	—	—	—
Options	3,889	—	3,889	—	(3,889)	—
Total	\$ 2,189,669	\$ (497,799)	\$ 1,691,870	\$ (1,654,450)	\$ (12,989)	\$ 24,431

December 31, 2021

(in thousands)	Gross Amounts of Recognized Assets	Amounts Offset in the Consolidated Statements of Financial Condition	Net Amounts of Assets Presented in the Consolidated Statements of Financial Condition	Amounts Not Offset in the Consolidated Statements of Financial Condition		Net Amount
				Financial Instrument Collateral	Counterparty Netting/ Cash Collateral	
Offsetting of Financial Assets:						
Securities borrowed	\$ 1,349,322	\$ —	\$ 1,349,322	\$ (1,299,270)	\$ (5,054)	\$ 44,998
Securities purchased under agreements to resell	119,453	—	119,453	(119,453)	—	—
Trading assets, at fair value:						
Currency forwards	206,258	(206,125)	133	—	—	133
Options	8,543	—	8,543	—	(5,208)	3,335
Total	\$ 1,683,576	\$ (206,125)	\$ 1,477,451	\$ (1,418,723)	\$ (10,262)	\$ 48,466

(in thousands)	Gross Amounts of Recognized Assets	Amounts Offset in the Consolidated Statements of Financial Condition	Net Amounts of Assets Presented in the Consolidated Statements of Financial Condition	Amounts Not Offset in the Consolidated Statements of Financial Condition		Net Amount
				Financial Instrument Collateral	Counterparty Netting/ Cash Collateral	
Offsetting of Financial Liabilities:						
Securities loaned	\$ 1,142,048	\$ —	\$ 1,142,048	\$ (1,107,688)	\$ (17,272)	\$ 17,088
Securities sold under agreements to repurchase	514,325	—	514,325	(514,325)	—	—
Interest rate swaps	21,037	—	21,037	—	—	21,037
Trading liabilities, at fair value:						
Currency forwards	208,357	(208,356)	1	—	—	1
Options	5,208	—	5,208	—	(5,208)	—
Total	\$ 1,890,975	\$ (208,356)	\$ 1,682,619	\$ (1,622,013)	\$ (22,480)	\$ 38,126

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)	December 31, 2022					
	Remaining Contractual Maturity					
	Overnight and Continuous	Less than 30 days	30 - 60 days	61 - 90 Days	Greater than 90 days	Total
Securities sold under agreements to repurchase:						
Equity securities	\$ —	\$ 250,000	\$ 100,000	\$ 50,000	\$ —	\$ 400,000
U.S. and Non-U.S. government obligations	227,549	—	—	—	—	227,549
Total	\$ 227,549	\$ 250,000	\$ 100,000	\$ 50,000	\$ —	\$ 627,549
Securities loaned:						
Equity securities	\$ 1,060,432	\$ —	\$ —	\$ —	\$ —	\$ 1,060,432
Total	\$ 1,060,432	\$ —	\$ —	\$ —	\$ —	\$ 1,060,432

(in thousands)	December 31, 2021					
	Remaining Contractual Maturity					
	Overnight and Continuous	Less than 30 days	30 - 60 days	61 - 90 Days	Greater than 90 days	Total
Securities sold under agreements to repurchase:						
Equity securities	\$ —	\$ 140,000	\$ 50,000	\$ 210,000	\$ —	\$ 400,000
U.S. and Non-U.S. government obligations	114,325	—	—	—	—	114,325
Total	\$ 114,325	\$ 140,000	\$ 50,000	\$ 210,000	\$ —	\$ 514,325
Securities loaned:						
Equity securities	1,142,048	—	—	—	—	1,142,048
Total	\$ 1,142,048	\$ —	\$ —	\$ —	\$ —	\$ 1,142,048

11. Derivative Instruments

The fair value of the Company's derivative instruments on a gross basis consisted of the following at December 31, 2022 and December 31, 2021:

(in thousands)		December 31, 2022		December 31, 2021	
Derivatives Assets	Financial Statement Location	Fair Value	Notional	Fair Value	Notional
Derivative instruments not designated as hedging instruments:					
Equities futures	Receivables from broker-dealers and clearing organizations	\$ (575)	\$ 663,110	\$ 1,619	\$ 406,420
Commodity futures	Receivables from broker-dealers and clearing organizations	(31,007)	7,597,057	(24,405)	5,285,216
Currency futures	Receivables from broker-dealers and clearing organizations	(24,023)	7,460,531	(8,205)	4,760,173
Fixed income futures	Receivables from broker-dealers and clearing organizations	(360)	30,292	147	8,489
Options	Financial instruments owned	5,200	691,737	8,543	1,063,686
Currency forwards	Financial instruments owned	500,553	30,286,330	206,258	21,445,374
Derivative instruments designated as hedging instruments:					
Interest rate swap	Receivables from broker-dealers and clearing organizations	87,268	1,525,000	—	—
Derivatives Liabilities					
Derivatives Liabilities	Financial Statement Location	Fair Value	Notional	Fair Value	Notional
Derivative instruments not designated as hedging instruments:					
Equities futures	Payables to broker-dealers and clearing organizations	\$ 1,819	\$ 3,238,651	\$ 791	\$ 1,362,684
Commodity futures	Payables to broker-dealers and clearing organizations	597	39,046	(49)	27,224
Currency futures	Payables to broker-dealers and clearing organizations	8	6,386	1,671	725,162
Fixed income futures	Payables to broker-dealers and clearing organizations	(264)	123,043	(161)	120,212
Options	Financial instruments sold, not yet purchased	3,889	742,531	5,208	1,066,801
Currency forwards	Financial instruments sold, not yet purchased	497,799	30,284,952	208,357	21,446,422
Derivative instruments designated as hedging instruments:					
Interest rate swaps	Payables to broker-dealers and clearing organizations	—	—	21,037	1,525,000

Amounts included in receivables from and payables to broker-dealers and clearing organizations represent net variation margin on long and short futures contracts as well as amounts receivable or payable on interest rate swaps.

The following table summarizes the net gain (loss) from derivative instruments not designated as hedging instruments under ASC 815, which are recorded in total revenues, and from those designated as hedging instruments under ASC 815, which are initially recorded in other comprehensive income in the accompanying Consolidated Statements of Comprehensive Income for the years ended December 31, 2022, 2021 and 2020.

(in thousands)	Financial Statements Location	Years Ended December 31,		
		2022	2021	2020
Derivative instruments not designated as hedging instruments:				
Futures	Trading income, net	\$ 257,258	\$ 283,482	\$ (6,217)
Currency forwards	Trading income, net	12,492	1,077	249,856
Options	Trading income, net	30,339	95,828	84,695
Interest rate swap on term loan	Other, net	(1,879)	(1,871)	(1,890)
		<u>\$ 298,210</u>	<u>\$ 378,516</u>	<u>\$ 326,444</u>
Derivative instruments designated as hedging instruments:				
Interest rate swaps (1)	Other comprehensive income	\$ 106,329	\$ 44,541	\$ (69,462)
		<u>\$ 106,329</u>	<u>\$ 44,541</u>	<u>\$ (69,462)</u>

(1) The Company entered into a five-year \$1,000 million floating-to-fixed interest rate swap agreement in the first quarter of 2020 and a five-year \$525 million floating-to-fixed interest rate swap agreement in the fourth quarter of 2019. These two interest rate swaps met the criteria to be considered qualifying cash flow hedges under ASC 815 in the first quarter of 2020, and as such, the mark-to-market gains (losses) on the instruments were deferred within Other comprehensive income on the Consolidated Statements of Comprehensive Income beginning in the first quarter of 2020.

12. 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.

The Company has interests in two joint ventures (“JV”) that 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. As of December 31, 2022, the Company held noncontrolling interests of 11.1% and 50.0%, respectively, in these JVs.

The Company 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 December 31, 2022, the Company held approximately a 9.8% noncontrolling interest in this JV.

The Company has an interest in a JV that operates a member-owned equities exchange with the goal of increasing competition and transparency, while reducing fixed costs and simplifying execution of equity trading in the U.S. As of December 31, 2022, the Company held approximately a 14.9% noncontrolling interest in this JV.

In the second quarter of 2022, the Company invested in a JV that was formed for the purpose of developing and operating a cryptocurrency trading platform with the goal of increasing competition and transparency, while improving trading performance and reducing operational risk. As of December 31, 2022, the Company held approximately a 9.3% noncontrolling interest in this JV.

The Company’s five JVs noted above meet the criteria to be considered VIEs, which it does not consolidate. 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 applicable JVs within Accounts payable, accrued expenses and other liabilities on the 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 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 December 31, 2022:

(in thousands)	Carrying Amount		Maximum Exposure to Loss	VIEs' assets
	Asset	Liability		
Equity investment	\$ 43,589	\$ —	\$ 43,589	\$ 239,682

The following table presents the Company's nonconsolidated VIEs at December 31, 2021:

(in thousands)	Carrying Amount		Maximum Exposure to Loss	VIEs' assets
	Asset	Liability		
Equity investment	\$ 38,319	\$ —	\$ 38,319	\$ 136,378

During the second quarter of 2022, the Company formed a JV to support the growth and expansion of a multi-asset request-for-quote communication platform. As of December 31, 2022, the Company held a 51% controlling interest in this entity. Based on the standard for control set forth above, this JV meets the criteria to be considered a VIE, and the Company consolidates this entity and records the interest that the Company does not own as noncontrolling interest in the Consolidated Financial Statements.

13. Revenues from Contracts with Customers

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 received 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 Consolidated Statements of Comprehensive Income.

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 sharing 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 service, by timing of revenue recognition, reconciled to the Company's segments, for the years ended December 31, 2022, 2021, and 2020:

(in thousands)	Year Ended December 31, 2022			
	Market Making	Execution Services	Corporate	Total
Revenues from contracts with customers:				
Commissions, net	\$ 42,180	\$ 356,090	\$ —	\$ 398,270
Workflow technology	—	91,667	—	91,667
Analytics	—	39,908	—	39,908
Total revenue from contracts with customers	42,180	487,665	—	529,845
Other sources of revenue	1,770,659	26,576	37,732	1,834,967
Total revenues	<u>\$ 1,812,839</u>	<u>\$ 514,241</u>	<u>\$ 37,732</u>	<u>\$ 2,364,812</u>
Timing of revenue recognition:				
Services transferred at a point in time	\$ 1,812,839	\$ 444,483	\$ 37,732	\$ 2,295,054
Services transferred over time	—	69,758	—	69,758
Total revenues	<u>\$ 1,812,839</u>	<u>\$ 514,241</u>	<u>\$ 37,732</u>	<u>\$ 2,364,812</u>

(in thousands)	Year Ended December 31, 2021			
	Market Making	Execution Services	Corporate	Total
Revenues from contracts with customers:				
Commissions, net	\$ 40,955	\$ 433,755	\$ —	\$ 474,710
Workflow technology	—	98,486	—	98,486
Analytics	—	41,293	—	41,293
Total revenue from contracts with customers	40,955	573,534	—	614,489
Other sources of revenue	2,162,091	26,681	8,224	2,196,996
Total revenues	\$ 2,203,046	\$ 600,215	\$ 8,224	\$ 2,811,485
Timing of revenue recognition:				
Services transferred at a point in time	\$ 2,203,046	\$ 525,960	\$ 8,224	\$ 2,737,230
Services transferred over time	—	74,255	—	74,255
Total revenues	\$ 2,203,046	\$ 600,215	\$ 8,224	\$ 2,811,485

(in thousands)	Year Ended December 31, 2020			
	Market Making	Execution Services	Corporate	Total
Revenues from contracts with customers:				
Commissions, net	\$ 52,453	\$ 405,698	\$ —	\$ 458,151
Workflow technology	—	101,211	—	101,211
Analytics	—	41,148	—	41,148
Total revenue from contracts with customers	52,453	548,057	—	600,510
Other sources of revenue	2,540,889	102,086	(4,154)	2,638,821
Total revenues	\$ 2,593,342	\$ 650,143	\$ (4,154)	\$ 3,239,331
Timing of revenue recognition:				
Services transferred at a point in time	\$ 2,593,342	\$ 575,846	\$ (4,154)	\$ 3,165,034
Services transferred over time	—	74,297	—	74,297
Total revenues	\$ 2,593,342	\$ 650,143	\$ (4,154)	\$ 3,239,331

Remaining Performance Obligations and Revenue Recognized from Past Performance Obligations

As of December 31, 2022 and 2021, the aggregate amount of the transaction price allocated to the performance obligations relating to workflow technology and analytics revenues that are unsatisfied (or partially unsatisfied) was not material.

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 \$56.1 million and \$51.5 million as of December 31, 2022 and December 31, 2021, respectively. The Company did not identify any contract assets. There were no impairment losses on receivables as of December 31, 2022.

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 \$9.6 million and

\$9.2 million as of December 31, 2022 and December 31, 2021, respectively. The Company recognized the full amount of revenue during the years ended December 31, 2022 and 2021, that had been recorded as deferred revenue in the respective prior year.

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

14. Income Taxes

Income before income taxes and noncontrolling interest is as follows for the years ended December 31, 2022, 2021, and 2020:

	Years Ended December 31,		
	2022	2021	2020
(in thousands)			
U.S. operations	\$ 426,902	\$ 804,358	\$ 1,214,282
Non-U.S. operations	129,896	192,546	168,555
	<u>\$ 556,798</u>	<u>\$ 996,904</u>	<u>\$ 1,382,837</u>

The provision for income taxes consists of the following for the years ended December 31, 2022, 2021, and 2020:

	Years Ended December 31,		
	2022	2021	2020
(in thousands)			
Current provision (benefit)			
Federal	\$ 40,887	\$ 80,203	\$ 148,034
State and Local	17,216	24,282	52,040
Foreign	26,974	29,790	37,474
Deferred provision (benefit)			
Federal	911	30,519	26,255
State and Local	131	4,984	(2,580)
Foreign	2,347	(108)	701
Provision for income taxes	<u>\$ 88,466</u>	<u>\$ 169,670</u>	<u>\$ 261,924</u>

The reconciliation of the tax provision at the U.S. federal statutory rate to the provision for income taxes for the years ended December 31, 2022, 2021, and 2020 is as follows:

	Years Ended December 31,		
	2022	2021	2020
(in thousands, except percentages)			
Tax provision at the U.S. federal statutory rate	21.0 %	21.0 %	21.0 %
Less: rate attributable to noncontrolling interest	(8.3)%	(7.7)%	(7.5)%
State and local taxes, net of federal benefit	2.5 %	3.0 %	3.4 %
Non-deductible expenses, net	0.3 %	0.1 %	0.1 %
Excess tax benefit(deficiency) from share based compensation	(0.3)%	(0.2)%	— %
Foreign taxes	5.1 %	3.0 %	2.8 %
Foreign tax credits	(2.8)%	(1.8)%	(0.9)%
Other, net	(1.6)%	(0.4)%	— %
Effective tax rate	<u>15.9 %</u>	<u>17.0 %</u>	<u>18.9 %</u>

The components of the deferred tax assets and liabilities as of December 31, 2022, and 2021 are as follows:

(in thousands)	December 31,	
	2022	2021
Deferred income tax assets		
Tax Receivable Agreement	\$ 162,098	\$ 180,376
Share-based compensation	18,043	15,934
Intangibles	—	2,061
Fixed assets and other	10,260	12,989
Tax credits and net operating loss carryforwards	57,797	58,801
Less: Valuation allowance on net operating loss carryforwards and tax credits	(57,389)	(58,602)
Total deferred income tax assets	<u>\$ 190,809</u>	<u>\$ 211,559</u>
Deferred income tax liabilities		
Intangibles	\$ 44,008	\$ 53,106
Fixed assets	343	—
Total deferred income tax liabilities	<u>\$ 44,351</u>	<u>\$ 53,106</u>

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 years ended December 31, 2022, 2021 and 2020, the income attributable to these noncontrolling interests is reported in the 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. 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 Consolidated Statements of Financial Condition at December 31, 2022 and December 31, 2021 are current income tax receivables of \$54.1 million and \$37.2 million, respectively. These balances 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 Consolidated Statements of Financial Condition at December 31, 2022 and December 31, 2021 are current tax liabilities of \$13.4 million and \$16.8 million, respectively. These balances 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 5 "Tax Receivable Agreements"), the Acquisition of KCG and the 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. At December 31, 2022, the Company did not have any U.S. federal net operating loss carryforwards and therefore the Company did not record a deferred tax asset related to any federal net operating loss carryforwards. At December 31, 2022, the Company recorded deferred income taxes related to state and local net operating losses of \$0.4 million. These net operating losses will begin to expire in 2039. The Company did not record a valuation allowance against this deferred tax asset.

As a result of the ITG Acquisition, the Company has non-U.S. net operating losses at December 31, 2022, 2021 and of \$64.6 million and \$67.2 million, respectively, and has recorded a related deferred tax asset of \$12.4 million and \$13.4 million, respectively. A valuation allowance of \$12.4 million and \$13.3 million was recorded against this deferred tax asset at December 31, 2022 and 2021, respectively, as it is more likely than not that a portion of this deferred tax asset will not be realized. As a result of the Acquisition of KCG, the Company has non-U.S. net operating losses at December 31, 2022 and 2021 of \$239.3 million and \$239.3 million, respectively, and recorded a related deferred tax asset of \$44.9 million in both years. A full valuation allowance was also recorded against this deferred tax asset at December 31, 2022 and 2021 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 December 31, 2022 and 2021 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 a result of the ITG Acquisition and the Acquisition of KCG, the Company has assumed any ITG and KCG tax exposures. As of December 31, 2022, the Company's tax years for 2015 through 2021 and 2017 through 2021 are subject to examination by U.S. and non-U.S. tax authorities, respectively. In addition, the Company is subject to state and local income tax examinations in various jurisdictions for the tax years 2013 through 2021. The 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 Consolidated Statements of Comprehensive Income.

The Company had \$6.6 million of unrecognized tax benefits as of December 31, 2022, 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 December 31, 2022.

The table below presents the changes in the liability for unrecognized tax benefits. This liability is included in Accounts payable and accrued expenses and other liabilities on the Consolidated Statements of Financial Condition.

(in thousands)		
Balance at December 31, 2019	\$	8,778
Decreases based on tax positions related to prior period		(311)
Increase based on tax positions related to current period		110
Balance at December 31, 2020		8,577
Decreases based on tax positions related to prior period		(2,300)
Increase based on tax positions related to current period		20
Balance at December 31, 2021		6,297
Decreases based on tax positions related to prior period		—
Increase based on tax positions related to current period		317
Balance at December 31, 2022	\$	6,614

15. Commitments, Contingencies and Guarantees

Legal and Regulatory 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, any of which could result in the imposition of fines, penalties or other sanctions against the Company. The Company and its subsidiaries are subject to several of these matters at the present time, including, among others, a matter in which the Company has been responding to requests for information from the U.S. Securities and Exchange Commission in connection with an investigation of aspects of the Company's information access barriers. The Company is cooperating with this civil investigation.

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, and utilizes its judgment in accordance with applicable accounting standards in booking any associated estimated liability. It is not presently possible to determine the ultimate exposure to these matters and it is possible that the resolution of the outstanding matters will significantly exceed any estimated liabilities accrued by the Company. 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 various legal proceedings will not significantly exceed any estimated liability accrued by the Company or 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 coverage for potential claims, including securities actions, against the Company and its respective directors and officers.

On November 30, 2020, the Company was named as a defendant in *In re United States Oil Fund, LP Securities Litigation*, No. 20-cv-4740. The consolidated amended 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 United States Oil Fund, LP, a crude oil ETF. The complaint also names the ETF, its sponsor, and related individuals as defendants. The complaint did not specify the amount of alleged damages. Defendants moved to dismiss the consolidated amended complaint on January 29, 2021; the motion is fully briefed and pending before the court. The Company believes that the claims are without merit and is defending itself vigorously.

On March 7, 2022, the Company was named as a defendant in *Iron Workers Local No. 55 Pension Fund v. Virtu Financial, Inc.*, No. 2022-0211-PAF pending in the Court of Chancery of the State of Delaware. The complaint, filed by a purported stockholder, seeks to compel the inspection of certain Company books and records pursuant to Section 220 of the Delaware General Corporation Law. The complaint alleges that the stockholder seeks Company information to investigate (a) whether wrongdoing or mismanagement occurred in connection with distributions made to the partners of Virtu Financial pursuant to the Company's Up-C corporate structure; (b) the independence and disinterestedness of the Company's directors and/or officers and whether the directors breached their fiduciary duties; and (c) potential damages relating thereto. The Company believes that the claims are without merit and is defending itself vigorously.

On October 17, 2022, the Company's subsidiary, along with several other parties, was named as a defendant in *Mallinckrodt PLC, et al. (Reorganized Debtors); Opioid Master Disbursement Trust II v. Argos Capital Appreciation Master Fund LP et al* No. 20-12522. The complaint alleges that Mallinckrodt PLC engaged in share repurchase program from 2015 through 2018 pursuant to which it repurchased its own shares in various open market transactions, a period during which it was allegedly insolvent. The plaintiff is seeking to unwind the transactions consummated under the program, alleging such transactions constituted fraudulent transfers by the debtor. The Company believes that the claims are without merit and is defending itself vigorously.

On December 1, 2022, the Company's subsidiary, along with several other parties, was named as a defendant in *Northwest Biotherapeutics, Inc. v. Canaccord Genuity LLC, et al* No. 1:22-cv-10185. The complaint alleges that defendants engaged in market manipulation in the plaintiff's stock during a period from 2018 to 2022. The complaint did not specify the amount of alleged damages. The Company believes that the claims are without merit and is defending itself vigorously.

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 increased regulatory, congressional and media scrutiny of U.S. equities market structure, the retail trading environment in the U.S., wholesale market making and the relationships between retail broker-dealers and market making firms including, but not limited to, payment for order flow arrangements, other remuneration arrangements such as profit-sharing relationships and exchange fee and rebate structures, alternative trading systems and off-exchange trading more generally, high frequency trading, short selling, market fragmentation, colocation, and access to market data feeds. Specifically, the SEC has proposed several rule changes focused on equity market structure reform in 2022. These proposals include, but are not limited to, (i) Proposed Rule 615 of Regulation NMS, which proposes to dramatically change U.S. equities market structure, the routing, handling and potentially the amount, character and cost of retail order flow, (ii) Regulation Best Execution, which would impose best execution requirements on broker-dealers which would be distinct from, but overlapping with, FINRA’s existing best execution rule (Rule 5310), (iii) proposed rule amendments to minimum pricing increments under Rule 612 or Regulation NMS, access fee caps under Rule 610 of Regulation NMS, acceleration of implementation of certain Market Data Infrastructure Rules, and amendment to the odd-lot information definition adopted under the MDI rules (collectively referred to as the “tick size, access fees and infrastructure rule proposals”), and (iv) amendments to Rule 605 of Regulation NMS, along with a series of amendments to the definition of Exchange and Alternative Trading Systems (ATS), which would expand the scope of exchange and ATS registration and compliance requirements. If adopted, these or other potential rule changes could adversely affect the Company’s business or the Company’s industry. From time to time, the Company is the subject of requests for information and documents from the SEC, the Financial Industry Regulatory Authority (“FINRA”), state attorneys general, and other regulators and governmental authorities. It is the Company’s practice to cooperate and comply with the requests for information and documents.

As indicated above, the Company is currently the subject of various regulatory reviews and investigations by state, federal and foreign regulators and SROs, including the SEC and FINRA. In some instances, these matters may result in a disciplinary action and/or a civil or administrative action.

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, including indemnification obligations in connection with the Acquisition of KCG and the ITG Acquisition. 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.

Consistent with standard business practices in the normal course of business, the Company enters into contracts that contain a variety of representations and warranties and general indemnifications. The Company has also 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's leases are primarily for corporate office space, datacenters, and technology equipment. The leases have remaining terms of 1 to 10 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 9 years. The Company recognizes amounts received from subleases on a straight-line basis over the term of the sublease within Operations and administrative expense on the Consolidated Statements 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 in determining the present value of lease payments.

During the year ended December 31, 2021, the company ceased use of certain office lease premises as part of efforts to consolidate office space. For the year ended December 31, 2021, the Company recognized \$28.1 million in Termination of office leases on the Consolidated Statement of Comprehensive Income, primarily related to the move of our global headquarters, comprising \$9.6 million impairments of ROU assets, \$17.6 million of write-off of leasehold improvements and fixed assets, and \$1 million of dilapidation charges.

Lease assets and liabilities are summarized as follows:

(in thousands)	Financial Statement Location	December 31, 2022	December 31, 2021
Operating leases			
Operating lease right-of-use assets	Operating lease right-of-use assets	\$ 187,442	\$ 225,328
Operating lease liabilities	Operating lease liabilities	239,202	278,745
Finance leases			
Property and equipment, at cost	Property, equipment, and capitalized software, net	27,908	18,965
Accumulated depreciation	Property, equipment, and capitalized software, net	(12,736)	(12,465)
Finance lease liabilities	Accounts payable, accrued expenses, and other liabilities	15,323	6,612

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

	December 31, 2022	December 31, 2021
Weighted average remaining lease term		
Operating leases	6.21 years	6.68 years
Finance leases	2.84 years	1.62 years
Weighted average discount rate		
Operating leases	5.43 %	5.47 %
Finance leases	3.92 %	2.38 %

The components of lease expense are as follows:

(in thousands)	Years Ended December 31,		
	2022	2021	2020
Operating lease cost:			
Fixed	\$ 72,749	\$ 74,699	\$ 73,624
Variable	6,079	6,247	8,532
Impairment of ROU Asset	5,270	9,606	6,003
Total Operating lease cost	\$ 84,098	\$ 90,552	\$ 88,159
Sublease income	19,679	17,758	16,437
Finance lease cost:			
Amortization of ROU Asset	\$ 7,685	\$ 6,587	\$ 11,536
Interest on lease liabilities	366	230	432
Total Finance lease cost	\$ 8,051	\$ 6,817	\$ 11,968

See Note 2 "Summary of Significant Accounting Policies" in Part II Item 8 "Financial Statements and Supplementary Data" of this Form 10-K for details on the classification of these expenses in the Consolidated Statements of Comprehensive Income.

Future minimum lease payments under operating and finance leases with non-cancelable lease terms, as of December 31, 2022, are as follows:

(in thousands)	Operating Leases	Finance Leases
2023	\$ 71,193	\$ 7,050
2024	43,345	5,440
2025	35,232	1,854
2026	32,174	1,076
2027	25,494	986
2028 and thereafter	76,967	—
Total lease payments	\$ 284,405	\$ 16,406
Less imputed interest	(45,203)	(1,083)
Total lease liability	\$ 239,202	\$ 15,323

17. Cash

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

(in thousands)	December 31, 2022	December 31, 2021
Cash and cash equivalents	\$ 981,580	\$ 1,071,463
Cash restricted or segregated under regulations and other	56,662	49,490
Total cash, cash equivalents and restricted cash shown in the statement of cash flows	\$ 1,038,242	\$ 1,120,953

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. The Founder Member controls approximately 85.2% of the combined voting power of our common stock as a result of its ownership of our Class A, Class C and Class D Common Stock. The Company holds approximately a 59.7% interest in Virtu Financial at December 31, 2022.

During the period prior to the Company's IPO and certain reorganization transactions consummated in connection with the 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 these reorganization transactions, all Class A-2 profits interests and Class B interests were reclassified into Virtu Financial Units. As of December 31, 2022 and December 31, 2021, there were 4,462,840 and 4,791,839 Virtu Financial Units outstanding held by Employee Holdco (as defined below), respectively, and 328,999, 467,874 and 2,660,239 of such Virtu Financial Units and corresponding Class C Common Stock were exchanged into Class A Common Stock, forfeited or repurchased during the years ended December 31, 2022, 2021 and 2020 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, June 5, 2020 and June 2, 2022. 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 26,000,000 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.

On November 13, 2020, the Company amended its form award agreement for the issuance of RSUs to provide for the continued vesting of outstanding RSU awards upon the occurrence of a qualified retirement (the "RSU Amendment"). A qualified retirement generally means a voluntary resignation by the participant (i) after five years of service, (ii) the participant attaining the age of 50 and (iii) the sum of the participant's age and service at the time of termination equaling or exceeding 65. Continued vesting is subject to the participant entering into a 2 year non-compete. The RSU Amendment was authorized and approved by the Compensation Committee of the Company's Board of Directors. As a result of the RSU Amendment, currently issued and outstanding RSUs held by the Company's employees, including its executive officers, shall be deemed to be subject to the amended terms of the form award agreement, and any future RSU awards shall also be governed by such amended terms.

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.

Share Repurchase Program

On November 6, 2020, the Company's Board of Directors authorized a share repurchase program of up to \$100.0 million in Class A common stock and Virtu Financial Units by December 31, 2021. On February 11, 2021, the Company's Board of Directors authorized the expansion of the program by an additional \$70 million in Class A Common Stock and Virtu Financial Units. On May 4, 2021, the Company's Board of Directors authorized the expansion of the Company's share repurchase program, increasing the total authorized amount by an additional \$300 million in Class A Common Stock and Virtu Financial Units and extending the duration of the program through May 4, 2022. On November 3, 2021 the Company's Board of Directors authorized another expansion of the program by an additional \$750 million to \$1,220 million and extending the duration of the program through November 3, 2023. The share repurchase program authorizes the Company to repurchase shares from time to time in open market transactions, privately negotiated transactions or by other means. Repurchases are also permitted to be made under Rule 10b5-1 plans. The timing and amount of repurchase transactions are determined by the Company's management based on its evaluation of market conditions, share price, cash sources, legal requirements and other factors. From the inception of the program through December 31, 2022, the Company repurchased approximately 32.3 million shares of Class A Common Stock and Virtu Financial Units for approximately \$899.6 million. As of December 31, 2022, the

Company has approximately \$320.4 million remaining capacity for future purchases of shares of Class A Common Stock and Virtu Financial Units under the program.

Employee Exchanges

During the years ended December 31, 2022, 2021 and 2020, 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 92,930, 747,849 and 2,660,239 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.

Warrant Issuance

On March 20, 2020, in connection with and in consideration of the Founder Member's commitments under the Founder Member Loan Facility (as described in Note 9 "Borrowings"), the Company delivered to the Founder Member a warrant (the "Warrant") to purchase shares of the Company's Class A Common Stock. Pursuant to the Warrant, the Founder Member was entitled to purchase up to 3,000,000 shares of Class A Common Stock on or after May 22, 2020 up to and including January 15, 2022. The Founder Member Loan Facility Term expired on September 20, 2020 without the Company having borrowed any Founder Member Loans thereunder (as described in Note 9 "Borrowings"). The exercise price per share of the Class A Common Stock issuable pursuant to the Warrant was \$22.98, which in accordance with the terms of the Warrant, is equal to the average of the volume weighted average prices of the Class A Common Stock for the ten (10) trading days following May 7, 2020, the date on which the Company publicly announced its earnings results for the first quarter of 2020. On December 17, 2021, the Founder Member exercised in full the Warrant to purchase 3,000,000 shares of the Company's Class A Common Stock. The Warrant and Class A Common Stock issued pursuant to the Warrant were offered, issued and sold, in reliance on the exemption from the registration requirements of the Securities Act of 1933, as amended (the "Securities Act"), set forth under Section 4(a)(2) of the Securities Act relating to sales by an issuer not involving any public offering.

Upon issuance, the fair value of the Warrant was determined using a Black-Scholes-Merton model, and was recorded as a debt issuance cost within Other assets on the Consolidated Statements of Financial Condition and as an increase to Additional paid-in capital on the Consolidated Statements of Changes in Equity. The balance was amortized on a straight-line basis from March 20, 2020 through September 20, 2020, the date on which the Founder Member Loan Facility expired, and recorded as expense within Debt issue cost related to debt refinancing, prepayment and commitment fees in the Consolidated Statements of Comprehensive Income.

Accumulated Other Comprehensive Income

The following table presents the changes in Other Comprehensive Income for the years ended December 31, 2022, 2021, and 2020:

(in thousands)	Year Ended December 31, 2022			
	AOCI Beginning Balance	Amounts recorded in AOCI	Amounts reclassified from AOCI to income	AOCI Ending Balance
Net change in unrealized cash flow hedges gains (losses) (1)	\$ (10,480)	\$ 55,955	\$ (550)	\$ 44,925
Foreign exchange translation adjustment	284	(13,605)	—	(13,321)
Total	\$ (10,196)	\$ 42,350	\$ (550)	\$ 31,604

(1) Amounts reclassified from AOCI to income are included within Financing interest expense on long-term borrowings on the Consolidated Statements of Comprehensive Income. As of December 31, 2022, the Company expects approximately \$13.6 million to be reclassified from AOCI into earnings over the next 12 months. The timing of the reclassification is based on the interest payment schedule of the long-term borrowings.

(in thousands)	Year Ended December 31, 2021			
	AOCI Beginning Balance	Amounts recorded in AOCI	Amounts reclassified from AOCI to income	AOCI Ending Balance
Net change in unrealized cash flow hedges gains (losses) (1)	\$ (33,444)	\$ 8,374	\$ 14,590	\$ (10,480)
Foreign exchange translation adjustment	7,957	(7,673)	—	284
Total	\$ (25,487)	\$ 701	\$ 14,590	\$ (10,196)

(1) Amounts reclassified from AOCI to income are included within Financing interest expense on long-term borrowings on the Consolidated Statements of Comprehensive Income.

(in thousands)	Year Ended December 31, 2020			
	AOCI Beginning Balance	Amounts recorded in AOCI	Amounts reclassified from AOCI to income	AOCI Ending Balance
Net change in unrealized cash flow hedges gains (losses)	—	(42,636)	9,192	(33,444)
Foreign exchange translation adjustment	\$ (647)	\$ 8,604	\$ —	\$ 7,957
Total	\$ (647)	\$ (34,032)	\$ 9,192	\$ (25,487)

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 years ended December 31, 2022, 2021, and 2020:

	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, 2019	3,233,779	\$ 18.74	5.24	3,248,779	\$ 18.74
Granted	—	—	—	—	—
Exercised	(909,627)	18.07	—	(909,627)	18.07
Forfeited or expired	—	—	—	—	—
At December 31, 2020	2,324,152	\$ 19.00	4.24	2,324,152	\$ 19.00
Granted	—	—	—	—	—
Exercised	(528,497)	19.00	—	(528,497)	19.00
Forfeited or expired	—	—	—	—	—
At December 31, 2021	1,795,655	\$ 19.00	3.24	1,795,655	\$ 19.00
Granted	—	—	—	—	—
Exercised	(268,879)	19.00	—	(268,879)	19.00
Forfeited or expired	(5,000)	—	—	(5,000)	—
At December 31, 2022	1,521,776	\$ 19.00	2.24	1,521,776	\$ 19.00

The expected life was 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.

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.

Class A Common Stock, Restricted Stock Units and Restricted Stock Awards

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, RSUs and RSAs were granted, with RSUs and RSAs 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 the expense is recognized on a straight-line basis over the vesting period. The fair value of the RSAs was determined based on the closing price as of the date of grant and the expense is recognized from the date that achievement of the performance target becomes probable through the remainder of the vesting period. Performance targets are based on the Company's adjusted EBITDA for certain future periods. For the years ended December 31, 2022, 2021, and 2020 respectively, there were 580,710, 633,938 and 967,526 shares of immediately vested Class A Common Stock granted as part of year-end compensation. In addition, the Company accrued compensation expense of \$31.9 million, \$29.4 million and \$25.2 million for the years ended December 31, 2022, 2021, and 2020 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 Consolidated Statements of Comprehensive Income and Accounts payable, accrued expenses and other liabilities on the Consolidated Statements of Financial Condition.

The following table summarizes activity related to RSUs (including the Assumed Awards) and RSAs for the years ended December 31, 2022, 2021 and 2020:

	Number of RSUs and RSAs	Weighted Average Fair Value
At December 31, 2019	2,993,489	\$ 24.10
Granted	3,318,169	17.49
Forfeited	(430,961)	17.45
Vested	(2,487,613)	20.17
At December 31, 2020	3,393,084	\$ 21.35
Granted	2,466,311	27.07
Forfeited	(200,697)	22.95
Vested	(2,434,251)	23.11
At December 31, 2021	3,224,447	\$ 24.30
Granted (1)	3,046,623	29.83
Forfeited	(419,207)	26.01
Vested	(1,897,030)	24.80
At December 31, 2022	3,954,833	\$ 28.13

(1) Excluded in the number of RSUs and RSAs are 75,000 participating RSAs where the grant date has not been achieved because the performance conditions have not been met.

The Company recognized \$36.2 million, \$26.4 million and \$37.4 million for the years ended December 31, 2022, and 2021, respectively, of compensation expense in relation to RSUs. As of December 31, 2022 and December 31, 2021, total unrecognized share-based compensation expense related to unvested RSUs was \$54.6 million and \$41.9 million, respectively, and this amount is to be recognized over a weighted average period of 0.9 years and 0.9 years, respectively. Awards in which the specific performance conditions have not been met are not included in unrecognized share-based compensation expense.

On November 13, 2020, the Company adopted the Virtu Financial, Inc. Deferred Compensation Plan (the "DCP"). The DCP permits eligible executive officers and other employees to defer cash or equity-based compensation beginning in the calendar year ending December 31, 2021, subject to certain limitations and restrictions. Deferrals of cash compensation may

also be directed to notional investments in certain of the employee investment opportunities. The Company had \$10.1 million and \$5.0 million accrued under the DCP as of December 31, 2022 and December 31, 2021, respectively, recorded within Accounts payable, accrued expenses and other liabilities on the Consolidated Statements of Financial Condition.

20. Property, Equipment and Capitalized Software

Property, equipment and capitalized software consisted of the following at December 31, 2022 and December 31, 2021:

(in thousands)	December 31, 2022	December 31, 2021
Capitalized software costs	\$ 242,769	\$ 210,647
Leasehold improvements	18,370	17,773
Furniture and equipment	284,818	333,330
Total	545,957	561,750
Less: Accumulated depreciation and amortization	(460,763)	(472,155)
Total property, equipment and capitalized software, net	\$ 85,194	\$ 89,595

Depreciation expense for property and equipment for the years ended December 31, 2022, 2021, and 2020 was approximately \$26.1 million, \$28.4 million, and \$37.4 million, respectively, and is included within depreciation and amortization expense in the Consolidated Statements of Comprehensive Income.

The Company's capitalized software development costs were approximately \$35.5 million, \$35.8 million, and \$37.0 million for the years ended December 31, 2022, 2021, and 2020, respectively. The related amortization expense was approximately \$40.2 million, \$39.4 million, and \$29.3 million for the years ended December 31, 2022, 2021, and 2020, respectively, and is included within Depreciation and amortization in the Consolidated Statements of Comprehensive Income.

21. Regulatory Requirement

U.S. Subsidiary

The Company's U.S. broker-dealer subsidiary, VAL, is subject to the SEC Uniform Net Capital Rule 15c3-1, which requires the maintenance of minimum net capital as detailed in the table below. Pursuant to New York Stock Exchange ("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 December 31, 2022. 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.

VAL's regulatory capital and regulatory capital requirements as of December 31, 2022 was as follows:

(in thousands)	Regulatory Capital	Regulatory Capital Requirement	Excess Regulatory Capital
Virtu Americas LLC	\$ 554,550	\$ 1,000	\$ 553,550

As of December 31, 2022, VAL had \$50.2 million 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 \$5.8 million 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 Consolidated Statements of Financial Condition.

VAL's regulatory capital and regulatory capital requirements as of December 31, 2021 was as follows:

(in thousands)	Regulatory Capital	Regulatory Capital Requirement	Excess Regulatory Capital
Virtu Americas LLC	\$ 536,647	\$ 1,194	\$ 535,453

As of December 31, 2021, VAL had \$43.0 million 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 \$5.8 million of cash in reserve bank accounts for the benefit of proprietary accounts of brokers.

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 ("CBI"), the Financial Conduct Authority ("FCA") in the United Kingdom, the Australian Securities and Investments Commission ("ASIC"), the Securities and Futures Commission in Hong Kong ("SFC"), and the Monetary Authority of Singapore ("MAS").

The regulatory net capital balances and regulatory capital requirements applicable to the Company's foreign subsidiaries as of December 31, 2022 were as follows:

(in thousands)	Regulatory Capital	Regulatory Capital Requirement	Excess Regulatory Capital
Canada			
Virtu ITG Canada Corp	\$ 14,248	\$ 184	\$ 14,064
Virtu Financial Canada ULC	2,663	184	2,479
Ireland			
Virtu ITG Europe Limited	78,834	28,502	50,332
Virtu Financial Ireland Limited (1)	89,853	39,768	50,085
United Kingdom			
Virtu ITG UK Limited	1,405	906	499
Asia Pacific			
Virtu ITG Australia Limited	30,027	3,115	26,912
Virtu ITG Hong Kong Limited	1,683	497	1,186
Virtu ITG Singapore Pte Limited	1,147	91	1,056
Virtu Financial Singapore Pte. Ltd.	121,166	46,025	75,141

(1) Preliminary

As of December 31, 2022, Virtu ITG Europe Limited and Virtu ITG Canada Corp had \$0.1 million and \$0.4 million, respectively, of segregated 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.

The regulatory net capital balances and regulatory capital requirements applicable to the Company's foreign subsidiaries as of December 31, 2021 were as follows:

(in thousands)	Regulatory Capital	Regulatory Capital Requirement	Excess Regulatory Capital
Canada			
Virtu ITG Canada Corp	\$ 15,482	\$ 198	\$ 15,284
Virtu Financial Canada ULC	200	198	2
Ireland			
Virtu ITG Europe Limited	79,087	39,331	39,756
Virtu Financial Ireland Limited	107,293	47,872	59,421
United Kingdom			
Virtu ITG UK Limited	1,142	830	312
Asia Pacific			
Virtu ITG Australia Limited	32,186	7,164	25,022
Virtu ITG Hong Kong Limited	4,514	529	3,985
Virtu ITG Singapore Pte Limited	897	74	823

As of December 31, 2021, Virtu ITG Europe Limited and Virtu ITG Canada Corp had \$0.1 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.

22. Geographic Information and Business Segments

The Company operates its business in the U.S. and internationally, primarily in Europe, Asia and Canada. 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 years ended December 31, 2022, 2021, and 2020:

(in thousands)	Years Ended December 31,		
	2022	2021	2020
Revenues:			
United States	\$ 1,914,223	\$ 2,260,750	\$ 2,569,147
Ireland	222,178	305,509	323,519
Singapore	134,786	135,779	176,665
Canada	60,551	61,378	116,521
Australia	29,489	40,613	44,552
Others	3,585	7,456	8,927
Total revenues	<u>\$ 2,364,812</u>	<u>\$ 2,811,485</u>	<u>\$ 3,239,331</u>

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, 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, Electronic Communications Networks ("ECNs") and alternative trading systems ("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.

The Execution Services segment comprises client-based trading and trading venues, offering execution services in global equities, options, futures and fixed income on behalf of institutions, banks and broker-dealers. 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. Client-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 client orders in the Company's ATSS, including Virtu MatchIt, and POSIT. 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 segment also includes the results of the Company's capital markets business, in which the Company acts as an agent for issuers in connection with at-the-market offerings and buyback programs.

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 years ended December 31, 2022, 2021, and 2020 and are summarized in the following table:

The Company's Pre-tax earnings by segment for the year ended December 31, 2022, and 2021 are summarized in the following table:

(in thousands)	Market Making	Execution Services	Corporate	Consolidated Total
2022				
Total revenue	\$ 1,812,839	\$ 514,241	\$ 37,732	\$ 2,364,812
Income before income taxes and noncontrolling interest	480,559	41,342	34,897	556,798
2021				
Total revenue	2,203,046	600,215	8,224	2,811,485
Income before income taxes and noncontrolling interest	925,968	70,019	917	996,904
2020				
Total revenue	2,593,342	650,143	(4,154)	3,239,331
Income (loss) before income taxes and noncontrolling interest	1,241,313	174,617	(33,093)	1,382,837

23. Related Party Transactions

The Company incurs expenses and maintains balances with its affiliates in the ordinary course of business. As of December 31, 2022, and December 31, 2021, the Company had a net receivables from its affiliates of \$0.5 million and a net receivables from its affiliates of \$2.2 million, respectively.

The Company has held a minority interest in JNX since 2016 (see Note 10 "Financial Assets and Liabilities"). The Company pays exchange fees to JNX for the trading activities conducted on its proprietary trading system. The Company paid \$13.8 million, \$12.5 million and \$16.7 million for the years ended December 31, 2022, 2021 and 2020, respectively, to JNX 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 Consolidated Statements of Comprehensive Income. The Company made payments of \$27.7 million, \$25.3 million and \$18.7 million to the JVs for the years ended December 31, 2022, 2021 and 2020, respectively.

The Company incurs consulting fees from American Continental Group, an affiliate of a director. The Company paid \$0.1 million to American Continental Group for the years ending December 31, 2022, 2021 and 2020.

The Company has an interest in Members Exchange, a member-owned equities exchange. The Company pays regulatory and transaction fees and receives rebates from trading activities. The Company received \$16.0 million, \$3.6 million, and \$0.6 million for the years ended December 31, 2022, 2021 and 2020.

On August 12, 2021, the Company entered into a Purchase Agreement with Ordinal Holdings I, LP to repurchase 1.5 million shares of the Company's Class A common stock for \$39.2 million in accordance with the Company's previously disclosed share repurchase program. See Note 18 "Capital Structure" for a further discussion of the Company's share repurchase program.

As described in Note 9 "Borrowings" and Note 18 "Capital Structure", on March 20, 2020 a subsidiary of the Company entered into an agreement with the Founder Member to establish the Founder Member Facility and, upon the execution of the Founder Member Facility and in consideration of the Founder Member's commitments thereunder, the Company delivered to the Founder Member the Warrant. The transactions were unanimously approved by the Company's disinterested Directors. The Founder Member Loan Term expired as of September 20, 2020. On December 17, 2021, the Founder Member exercised in full its Warrant to purchase 3,000,000 shares of the Company's Class A Common Stock.

24. Parent Company

VFI is the sole managing member of Virtu Financial, which guarantees the indebtedness of its direct subsidiary under the First Lien Term Loan Facility (see Note 9 "Borrowings"). VFI is limited to its ability to receive distributions (including for purposes of paying corporate and other overhead expenses and dividends) from Virtu Financial under the Credit

Agreement. The following financial statements (the “Parent Company Only Financial Statements”) should be read in conjunction with the Consolidated Financial Statements of the Company and the foregoing.

Virtu Financial, Inc.
(Parent Company Only)
Statements of Financial Condition

(In thousands except interest data)	December 31, 2022	December 31, 2021
Assets		
Cash	\$ 6,264	\$ 129,229
Deferred tax asset	139,139	149,742
Investment in subsidiary	3,119,418	3,221,605
Other assets	52,153	40,183
Total assets	<u>\$ 3,316,974</u>	<u>\$ 3,540,759</u>
Liabilities, redeemable membership interest and equity		
Liabilities		
Payable to affiliate	\$ 1,733,429	\$ 1,729,320
Accounts payable and accrued expenses and other liabilities	888	50
Deferred tax liabilities	2,000	2,719
Tax receivable agreement obligations	238,758	259,282
Total liabilities	<u>1,975,075</u>	<u>1,991,371</u>
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 — 133,071,754 and 131,497,645 shares, Outstanding — 98,549,464 and 113,170,782 shares at December 31, 2022 and December 31, 2021, 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 December 31, 2022 and December 31, 2021, respectively	—	—
Class C common stock (par value \$0.00001), Authorized — 90,000,000 and 90,000,000 shares, Issued and Outstanding — 9,030,066 and 9,359,065 shares at December 31, 2022 and December 31, 2021, 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 60,091,740 shares at December 31, 2022 and December 31, 2021, respectively	1	1
Treasury stock, at cost, 34,522,290 and 18,326,863 shares at December 31, 2022 and December 31, 2021, respectively	(954,637)	(494,075)
Additional paid-in capital	1,292,613	1,223,119
Retained earnings (accumulated deficit)	972,317	830,538
Accumulated other comprehensive income (loss)	31,604	(10,196)
Total Virtu Financial Inc. stockholders' equity	<u>1,341,899</u>	<u>1,549,388</u>
Total liabilities and stockholders' equity	<u>\$ 3,316,974</u>	<u>\$ 3,540,759</u>

Virtu Financial, Inc.
(Parent Company Only)
Statements of Comprehensive Income

(in thousands)	Years Ended December 31,		
	2022	2021	2020
Revenues:			
Other Income	\$ —	\$ —	\$ —
Operating Expenses:			
Operations and administrative	36	734	171
Income (loss) before equity in income of subsidiary	(36)	(734)	(171)
Equity in income (loss) of subsidiary, net of tax	468,368	827,968	1,121,084
Net income (loss)	<u>\$ 468,332</u>	<u>\$ 827,234</u>	<u>\$ 1,120,913</u>
Net income (loss) attributable to common stockholders	\$ 468,332	\$ 827,234	\$ 1,120,913
Other comprehensive income (loss):			
Foreign currency translation adjustment, net of taxes	(13,604)	(7,672)	8,604
Net change in unrealized cash flow hedges gains (losses), net of taxes	55,404	22,964	(33,444)
Comprehensive income (loss)	<u>\$ 510,132</u>	<u>\$ 842,526</u>	<u>\$ 1,096,073</u>

Virtu Financial, Inc.
(Parent Company Only)
Statements of Cash Flows

(in thousands)	Years Ended December 31,		
	2022	2021	2020
Cash flows from operating activities			
Net income	\$ 468,332	\$ 827,234	\$ 1,120,913
Adjustments to reconcile net income to net cash provided by operating activities:			
Equity in income of subsidiary, net of tax	239,807	87,055	(543,992)
Tax receivable agreement obligation reduction	819	4,622	15,169
Deferred taxes	9,884	36,526	14,243
Changes in operating assets and liabilities:	(11,132)	42,086	(48,566)
Net cash provided by operating activities	707,710	997,523	557,767
Cash flows from investing activities			
Investments in subsidiaries, equity basis	71,597	55,654	56,629
Net cash provided by investing activities	71,597	55,654	56,629
Cash flows from financing activities			
Dividends to stockholders and distributions from Virtu Financial to noncontrolling interest	(375,284)	(548,017)	(484,415)
Repurchase of Class C common stock	(8,256)	(3,454)	—
Purchase of treasury stock	(480,544)	(427,454)	(49,864)
Tax receivable agreement obligations	(21,343)	(16,505)	(13,286)
Issuance of common stock in connection with secondary offering, net of offering costs	—	—	—
Net cash used in financing activities	(885,427)	(995,430)	(547,565)
Net increase (decrease) in Cash	(106,120)	57,747	66,831
Cash, beginning of period	129,228	71,481	4,650
Cash, end of period	\$ 23,108	\$ 129,228	\$ 71,481
Supplemental disclosure of cash flow information:			
Taxes paid	\$ 64,775	\$ 78,844	\$ 203,031
Non-cash financing activities			
Tax receivable agreement described in Note 6	1,044	311	(1,388)

25. Subsequent Events

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

On January 26, 2023, 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 and Restricted Stock Award that will be paid on March 15, 2023 to holders of record as of March 1, 2023.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. 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 December 31, 2022. Based upon that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of December 31, 2022, 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.

Management's Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rule 13a-15(f) under the Exchange Act. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Our internal control over financial reporting includes those written policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of assets;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles;
- provide reasonable assurance that receipts and expenditures are being made only in accordance with management and director authorization; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of assets that could have a material effect on the consolidated financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management assessed the effectiveness of our internal control over financial reporting as of December 31, 2022. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control - Integrated Framework (2013)*.

Based on this assessment, management determined that as of December 31, 2022, internal control over financial reporting is effective.

PricewaterhouseCoopers LLP has audited our internal control over financial reporting as of December 31, 2022; their report is included in Item 8 "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K.

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 December 31, 2022 that has or is reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS, AND CORPORATE GOVERNANCE

Information with respect to this Item will be set forth in our 2023 Proxy Statement, which will be filed with the Securities and Exchange Commission no later than 120 days after December 31, 2022. For the limited purpose of providing the information necessary to comply with this Item 10, the 2023 Proxy Statement is incorporated herein by this reference. All references to the 2023 Proxy Statement in this Part III are exclusive of the information set forth under the caption “Audit Committee Report.”

Our Board of Directors has adopted a Code of Business Conduct and Ethics applicable to all officers, directors and employees, which is available on our website (www.virtu.com) under “Corporate Governance.” We intend to satisfy the disclosure requirement under Item 5.05 of Form 8-K regarding amendment to, or waiver from, a provision of our Code of Business Conduct and Ethics by posting such information on our website at the address and location specified above.

ITEM 11. EXECUTIVE COMPENSATION

Information with respect to this Item will be set forth in our 2023 Proxy Statement, which will be filed with the Securities and Exchange Commission no later than 120 days after December 31, 2022. For the limited purpose of providing the information necessary to comply with this Item 11, the 2023 Proxy Statement is incorporated herein by this reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information with respect to this Item will be set forth in our 2023 Proxy Statement, which will be filed with the Securities and Exchange Commission no later than 120 days after December 31, 2022. For the limited purpose of providing the information necessary to comply with this Item 12, the 2023 Proxy Statement is incorporated herein by this reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Information with respect to this Item will be set forth in our 2023 Proxy Statement, which will be filed with the Securities and Exchange Commission no later than 120 days after December 31, 2022. For the limited purpose of providing the information necessary to comply with this Item 13, the 2023 Proxy Statement is incorporated herein by this reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

Information with respect to this Item will be set forth in our 2023 Proxy Statement, which will be filed with the Securities and Exchange Commission no later than 120 days after December 31, 2022. For the limited purpose of providing the information necessary to comply with this Item 14, the 2023 Proxy Statement is incorporated herein by this reference.

PART IV

ITEM 15. EXHIBITS

<u>Exhibit Number</u>	<u>Description</u>
2.1	<u>Reorganization Agreement, dated April 15, 2015, by and among Virtu Financial, Inc., Virtu Financial Merger Sub LLC, Virtu Financial Intermediate Holdings LLC, Virtu Financial Merger Sub II LLC, Virtu Financial Intermediate Holdings II LLC, Virtu Financial LLC, VFH Parent LLC, SLP Virtu Investors, LLC, SLP III EW Feeder I, L.P., SLP III EW Feeder II, L.P., Silver Lake Technology Associates III, L.P., SLP III EW Feeder LLC, Havelock Fund Investments Pte Ltd., Wilbur Investments LLC, VV Investment LLC, Virtu East MIP LLC, Virtu Employee Holdco LLC, TJMT Holdings LLC (f/k/a Virtu Holdings LLC), Virtu Financial Holdings LLC and the Other Class A Members named therein (incorporated herein by reference to Exhibit 2.1 to the Company's Quarterly Report on Form 10-Q, as amended (File No. 001-37352), filed on May 29, 2015).</u>
2.2	<u>Merger Agreement, dated April 15, 2015, by and among Virtu Financial, Inc., Virtu Financial Merger Sub LLC, Virtu Financial Intermediate Holdings LLC, SLP III EW Feeder Corp., SLP III EW Feeder I, L.P. and Havelock Fund Investments Pte Ltd(incorporated herein by reference to Exhibit 2.2 to the Company's quarterly report on Form 10-Q, as amended (File No. 001-37352), filed on May 29, 2015).</u>
2.3	<u>Merger Agreement, dated April 15, 2015, by and among Virtu Financial, Inc., Virtu Financial Merger Sub II LLC, Virtu Financial Intermediate Holdings II LLC and Wilbur Investments LLC (incorporated herein by reference to Exhibit 2.3 to the Company's Quarterly Report on Form 10-Q, as amended (File No. 001-37352), filed on May 29, 2015).</u>
2.4	<u>Agreement and Plan of Merger, dated April 20, 2017, by and among Virtu Financial, Inc., Orchestra Merger Sub, Inc. and KCG Holdings, Inc. (incorporated herein by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K (File No. 001-37352) filed on April 21, 2017).</u>
2.5	<u>Temasek Investment Agreement, dated April 20, 2017, by and between Virtu Financial, Inc. and Aranda Investments Pte. Ltd. (incorporated herein by reference to Exhibit 2.2 to the Company's Quarterly Report on Form 10-Q (File No. 001-37352) filed on May 10, 2017).</u>
2.6	<u>Agreement and Plan of Merger, dated November 6, 2018, by and among Virtu Financial, Inc., Impala Merger Sub, Inc. and Investment Technology Group, Inc. (incorporated herein by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K (File No. 001-37352) filed on November 8, 2018).</u>
3.1	<u>Amended and Restated Certificate of Incorporation of the Registrant (incorporated herein by reference to Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q, as amended (File No. 001-37352), filed on May 29, 2015).</u>
3.2	<u>Amended and Restated By-laws of the Registrant (incorporated herein by reference to Exhibit 3.2 to the Company's Quarterly Report on Form 10-Q, as amended (File No. 001-37352), filed on May 29, 2015).</u>
4.1	<u>Description of the Capital Stock (incorporated herein by reference to Exhibit 4.1 to the Company's Annual Report on Form 10-K (File No. 001-37352) filed on February 28, 2020).</u>
10.1†	<u>Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan (incorporated herein by reference to Exhibit 4.3 to the Company's Registration Statement on Form S-8 (File No. 333-219110) filed on June 30, 2017).</u>
10.2†	<u>Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Form of Restricted Stock Unit and Common Stock Award Agreement (incorporated herein by reference to Exhibit 10.4 to the Company's Annual Report on Form 10-K (File No. 001-37352) filed on February 25, 2021).</u>
10.3†	<u>Form of Indemnification Agreement (incorporated herein by reference to Exhibit 10.2 to the Company's Amendment No. 2 to Form S-1 Registration Statement (File No. 333-194473) filed on February 20, 2015).</u>
10.4†	<u>Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit and Common Stock Award Agreement, dated as of January 24, 2020, by and between Virtu Financial, Inc. and Douglas A. Cifu (incorporated herein by reference to Exhibit 10.5 to the Company's Annual Report on Form 10-K (File No. 001-37352), filed on February 18, 2022).</u>
10.5†	<u>Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit and Common Stock Award Agreement, dated as of January 24, 2020, by and between Virtu Financial, Inc. and Brett Fairclough (incorporated herein by reference to Exhibit 10.6 to the Company's Annual Report on Form 10-K (File No. 001-37352), filed on February 18, 2022).</u>
10.6†	<u>Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit and Common Stock Award Agreement, dated as of January 24, 2020, by and between Virtu Financial, Inc. and Stephen Cavoli (incorporated herein by reference to Exhibit 10.7 to the Company's Annual Report on Form 10-K (File No. 001-37352), filed on February 18, 2022).</u>

- 10.7† [Employment Agreement, dated as of August 7, 2020, by and between Virtu Financial Operating LLC and Sean Galvin \(incorporated herein by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q \(File No. 001-37352\) filed on November 6, 2020.](#)
- 10.8† [Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit and Common Stock Award Agreement, dated as of August 12, 2020, by and between Virtu Financial, Inc. and Sean Galvin \(incorporated herein by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q \(File No. 001-37352\) filed on November 6, 2020.](#)
- 10.9 [Credit Agreement, dated January 13, 2022, among Virtu Financial LLC, as Holdings, VFH Parent LLC, as Borrower, the Lenders, Issuing Banks and Swingline Lender Party Hereto, and JPMorgan Chase Bank, N.A., as Administrative Agent, and Jefferies Finance LLC and RBC Capital Markets, as Joint Lead Arrangers and Joint Bookrunners \(incorporated herein by reference to Exhibit 10.11 to the Company's Annual Report on Form 10-K \(File No. 001-37352\), filed on February 18, 2022\).](#)
- 10.10 [Stockholders Agreement, dated as of April 15, 2015, by and among Virtu Financial, Inc. and the stockholders named therein \(incorporated herein by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q, as amended \(File No. 001-37352\) filed on May 29, 2015\).](#)
- 10.11 [Exchange Agreement, dated as of April 15, 2015, by and among Virtu Financial LLC, Virtu Financial, Inc. and the holders of Common Units and shares of Class C Common Stock or Class D Common Stock \(as each defined therein\) \(incorporated herein by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q, as amended \(File No. 001-37352\) filed on May 29, 2015\).](#)
- 10.12 [Tax Receivable Agreement, dated as of April 15, 2015, by and among Virtu Financial, Inc., TJMT Holdings LLC, Virtu Employee Holdco, the Management Members and other pre-IPO investors \(incorporated herein by reference to Exhibit 10.5 to the Company's Quarterly Report on Form 10-Q, as amended \(File No. 001-37352\) filed on May 29, 2015\).](#)
- 10.13 [Tax Receivable Agreement, dated as of April 15, 2015, by and between Virtu Financial, Inc. and the Investor Post-IPO Stockholders \(incorporated herein by reference to Exhibit 10.6 to the Company's Quarterly Report on Form 10-Q, as amended \(File No. 001-37352\) filed on May 29, 2015\).](#)
- 10.14 [Tax Receivable Agreement, dated as of April 15, 2015, by and among Virtu Financial, Inc. and the Silver Lake Post-IPO Members \(incorporated herein by reference to Exhibit 10.7 to the Company's Quarterly Report on Form 10-Q, as amended \(File No. 001-37352\) filed on May 29, 2015\).](#)
- 10.15 [Third Amended and Restated Limited Liability Company Agreement of Virtu Financial LLC, dated as of April 15, 2015 \(incorporated herein by reference to Exhibit 10.8 to the Company's Quarterly Report on Form 10-Q, as amended \(File No. 001-37352\) filed on May 29, 2015\).](#)
- 10.16 [Amended and Restated Limited Liability Company Agreement of Virtu Employee Holdco LLC, dated as of April 15, 2015 \(incorporated herein by reference to Exhibit 10.9 to the Company's Quarterly Report on Form 10-Q, as amended \(File No. 001-37352\), filed on May 29, 2015\).](#)
- 10.17 [Class C Common Stock Subscription Agreement, dated as of April 15, 2015 \(incorporated herein by reference to Exhibit 10.10 to the Company's Quarterly Report on Form 10-Q, as amended \(File No. 001-37352\) filed on May 29, 2015\).](#)
- 10.18 [Class D Common Stock Subscription Agreement, dated as of April 15, 2015 \(incorporated herein by reference to Exhibit 10.11 to the Company's Quarterly Report on Form 10-Q, as amended \(File No. 001-37352\) filed on May 29, 2015\).](#)
- 10.19 [Stockholders Agreement, dated April 20, 2017, by and among Virtu Financial, Inc., TJMT Holdings LLC, Aranda Investments Pte. Ltd., Havelock Fund Investments Pte Ltd. and North Island Holdings I, LP \(incorporated herein by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q \(File No. 001-37352\) filed on May 10, 2017\).](#)
- 10.20 [Amended and Restated Registration Rights Agreement, dated April 20, 2017, by and among Virtu Financial, Inc., TJMT Holdings LLC, Aranda Investments Pte. Ltd., Havelock Fund Investments Pte Ltd., North Island Holdings I, LP and the additional holders named therein \(incorporated herein by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q \(File No. 001-37352\) filed on May 10, 2017\).](#)
- 10.21 [Second Amendment, dated as of June 2, 2017, to the Third Amended and Restated Limited Liability Company Agreement of Virtu Financial LLC, by and among Virtu Financial LLC, Virtu Financial, Inc. and TJMT Holdings LLC \(incorporated herein by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K \(File No. 001-37352\) filed on June 2, 2017\).](#)
- 10.22 [Amended and Restated Investment Agreement, dated as of June 23, 2017, by and between Virtu Financial, Inc. and North Island Holdings I, LP \(incorporated herein by reference to Exhibit 10.8 to the Company's Quarterly Report on Form 10-Q \(File No. 001-37352\) filed on August 9, 2017\).](#)
- 10.23 [Third Amendment, dated as of January 5, 2018, to the Third Amended and Restated Limited Liability Company Agreement of Virtu Financial LLC, dated as of April 15, 2015 \(incorporated herein by reference to Exhibit 10.30 to the Company's Annual Report on Form 10-K \(File No. 001-37352\), filed on March 13, 2018\).](#)

- 10.24 [Amendment No. 1 to the Amended and Restated Registration Rights Agreement, dated May 10, 2018, by and among Virtu Financial, Inc., TJMT Holdings LLC, North Island Holdings I, LP, Havelock Fund Investments Pte Ltd and Aranda Investments Pte. Ltd \(incorporated herein by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K \(File No. 001-37352\), filed on May 15, 2018\).](#)
- 10.25† [Virtu Financial, Inc. 2015 Amended and Restated Management Incentive Plan Employee Restricted Stock Award Agreement, dated as of February 27, 2020, by and between Virtu Financial, Inc. and Douglas A. Cifu \(incorporated herein by reference to Exhibit 10.41 to the Company's Annual Report on Form 10-K \(File No. 001-37352\) filed on February 28, 2020\).](#)
- 10.26† [Virtu Financial, Inc. 2015 Amended and Restated Management Incentive Plan Employee Restricted Stock Award Agreement, dated as of February 27, 2020, by and between Virtu Financial, Inc. and Brett Fairclough \(incorporated herein by reference to Exhibit 10.42 to the Company's Annual Report on Form 10-K \(File No. 001-37352\) filed on February 28, 2020\).](#)
- 10.27† [Virtu Financial, Inc. 2015 Amended and Restated Management Incentive Plan Employee Restricted Stock Award Agreement, dated as of February 27, 2020, by and between Virtu Financial, Inc. and Stephen Cavoli \(incorporated herein by reference to Exhibit 10.43 to the Company's Annual Report on Form 10-K \(File No. 001-37352\) filed on February 28, 2020\).](#)
- 10.28† [Investment Technology Group, Inc. 2007 Omnibus Equity Compensation Plan, Amended and Restated Effective June 8, 2017 \(incorporated herein by reference to Exhibit 4.3 to the Company's Registration Statement on Form S-8 \(File No. 333-230012\) filed on March 1, 2019\).](#)
- 10.29† [Virtu Financial, Inc. 2015 Amended and Restated Management Incentive Plan Common Stock Award Agreement, dated as of February 1, 2021, by and between Virtu Financial, Inc. and Douglas A. Cifu \(incorporated herein by reference to Exhibit 10.33 to the Company's Annual Report on Form 10-K \(File No. 001-37352\) filed on February 25, 2021\).](#)
- 10.30† [Virtu Financial, Inc. 2015 Amended and Restated Management Incentive Plan Restricted Stock Unit and Common Stock Award Agreement, dated as of February 1, 2021, by and between Virtu Financial, Inc. and Douglas A. Cifu \(incorporated herein by reference to Exhibit 10.34 to the Company's Annual Report on Form 10-K \(File No. 001-37352\) filed on February 25, 2021\).](#)
- 10.31† [Virtu Financial, Inc. 2015 Amended and Restated Management Incentive Plan Restricted Stock Unit Award Agreement, dated as of June 22, 2020, by and between Virtu Financial, Inc. and Joseph Molluso \(incorporated herein by reference to Exhibit 10.35 to the Company's Annual Report on Form 10-K \(File No. 001-37352\) filed on February 25, 2021\).](#)
- 10.32† [Virtu Financial, Inc. 2015 Amended and Restated Management Incentive Plan Restricted Stock Award Agreement, dated as of June 22, 2020, by and between Virtu Financial, Inc. and Joseph Molluso \(incorporated herein by reference to Exhibit 10.36 to the Company's Annual Report on Form 10-K \(File No. 001-37352\) filed on February 25, 2021\).](#)
- 10.33† [Virtu Financial, Inc. 2015 Amended and Restated Management Incentive Plan Restricted Stock Unit and Common Stock Award Agreement, dated as of February 1, 2021, by and between Virtu Financial, Inc. and Joseph Molluso \(incorporated herein by reference to Exhibit 10.37 to the Company's Annual Report on Form 10-K \(File No. 001-37352\) filed on February 25, 2021\).](#)
- 10.34† [Virtu Financial, Inc. 2015 Amended and Restated Management Incentive Plan Restricted Stock Unit and Common Stock Award Agreement, dated as of February 1, 2021, by and between Virtu Financial, Inc. and Brett Fairclough \(incorporated herein by reference to Exhibit 10.38 to the Company's Annual Report on Form 10-K \(File No. 001-37352\) filed on February 25, 2021\).](#)
- 10.35† [Virtu Financial, Inc. 2015 Amended and Restated Management Incentive Plan Restricted Stock Unit and Common Stock Award Agreement, dated as of February 1, 2021, by and between Virtu Financial, Inc. and Stephen Cavoli \(incorporated herein by reference to Exhibit 10.39 to the Company's Annual Report on Form 10-K \(File No. 001-37352\) filed on February 25, 2021\).](#)
- 10.36† [Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit Award Agreement, dated as of December 24, 2021, by and between Virtu Financial, Inc. and Douglas A. Cifu \(incorporated herein by reference to Exhibit 10.42 to the Company's Annual Report on Form 10-K \(File No. 001-37352\), filed on February 18, 2022\).](#)
- 10.37† [Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit Award Agreement, dated as of February 3, 2022, by and between Virtu Financial, Inc. and Douglas A. Cifu \(incorporated herein by reference to Exhibit 10.43 to the Company's Annual Report on Form 10-K \(File No. 001-37352\), filed on February 18, 2022\).](#)
- 10.38† [Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit Award Agreement, dated as of February 3, 2022, by and between Virtu Financial, Inc. and Joseph Molluso \(incorporated herein by reference to Exhibit 10.44 to the Company's Annual Report on Form 10-K \(File No. 001-37352\), filed on February 18, 2022\).](#)

10.39†	Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit and Common Stock Award Agreement, dated as of February 3, 2022, by and between Virtu Financial, Inc. and Sean Galvin (incorporated herein by reference to Exhibit 10.45 to the Company's Annual Report on Form 10-K (File No. 001-37352), filed on February 18, 2022).
10.40†	Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit Award Agreement, dated as of February 3, 2022, by and between Virtu Financial, Inc. and Sean Galvin (incorporated herein by reference to Exhibit 10.46 to the Company's Annual Report on Form 10-K (File No. 001-37352), filed on February 18, 2022).
10.41†	Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit and Common Stock Award Agreement, dated as of February 3, 2022, by and between Virtu Financial, Inc. and Brett Fairclough (incorporated herein by reference to Exhibit 10.47 to the Company's Annual Report on Form 10-K (File No. 001-37352), filed on February 18, 2022).
10.42†	Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit and Common Stock Award Agreement, dated as of February 3, 2022, by and between Virtu Financial, Inc. and Stephen Cavoli (incorporated herein by reference to Exhibit 10.48 to the Company's Annual Report on Form 10-K (File No. 001-37352), filed on February 18, 2022).
10.43†	Virtu Financial, Inc. Deferred Compensation Plan (incorporated herein by reference to Exhibit 10.40 to the Company's Annual Report on Form 10-K (File No. 001-37352) filed on February 25, 2021).
10.44†	Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan Employee Restricted Stock Unit Award Agreement, dated as of March 1, 2022, by and between Virtu Financial, Inc. (incorporated herein by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-37352) filed on May 3, 2022).
10.45†	Virtu Financial, Inc. Second Amended and Restated Employment Agreement, dated as of April 29, 2022, by and between Virtu Financial, Inc. and Douglas A. Cifu (incorporated herein by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-37352) filed on August 2, 2022).
10.46*†	Virtu Financial, Inc. Amended and Restated Employment Agreement, dated as of December 1, 2022, by and between Virtu Financial Operating LLC and Joseph Molluso.
10.47*†	Virtu Financial, Inc. Amended and Restated Employment Agreement, dated as of December 1, 2022, by and between Virtu Financial Operating LLC and Brett Fairclough.
10.48*†	Virtu Financial, Inc. Amended and Restated Employment Agreement, dated as of December 1, 2022, by and between Virtu Financial Operating LLC and Stephen Cavoli.
10.49*†	Virtu Financial, Inc. 2015 Amended and Restated Management Incentive Plan Amendment No. 1 dated as of December 1, 2022 to Restricted Stock Unit Award Agreement dated as of March 1, 2022, by and between Virtu Financial, Inc. and Douglas A. Cifu.
21.1*	Subsidiaries of Virtu Financial, Inc.
23.1*	Consent of PricewaterhouseCoopers LLP.
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.

ITEM 16. FORM 10-K SUMMARY

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Virtu Financial, Inc.

DATE: February 17, 2023

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

DATE: February 17, 2023

By: /s/ Sean P. Galvin
Sean P. Galvin
Chief Financial Officer

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Douglas A. Cifu and Sean P. Galvin, and each of them, his or her true and lawful attorneys-in-fact and agents, with full power of substitution and re-substitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto and other documents in connection therewith the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully and to all intents and purposes as he or she might or could do in person hereby ratifying and confirming all that said attorneys-in-fact and agents, or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities and Exchange Act of 1934, as amended, the report has been signed below by the following persons on behalf of the Registrant and in the capacities indicated on February 17, 2023.

<u>Signature</u>	<u>Title</u>
<hr/> <i>/s/ Douglas A. Cifu</i> Douglas A. Cifu	Chief Executive Officer (Principal Executive Officer) and Director
<hr/> <i>/s/ Sean P. Galvin</i> Sean P. Galvin	Chief Financial Officer (Principal Financial and Accounting Officer)
<hr/> <i>/s/ Robert Greifeld</i> Robert Greifeld	Chairman of the Board of Directors
<hr/> <i>/s/ Vincent Viola</i> Vincent Viola	Chairman Emeritus and Director
<hr/> <i>/s/ William F. Cruger, Jr.</i> William F. Cruger, Jr.	Director
<hr/> <i>/s/ Virginia Gambale</i> Virginia Gambale	Director
<hr/> <i>/s/ Joseph J. Grano, Jr.</i> Joseph J. Grano, Jr.	Director
<hr/> <i>/s/ Joanne Minieri</i> Joanne Minieri	Director
<hr/> <i>/s/ John D. Nixon</i> John D. Nixon	Director
<hr/> <i>/s/ Christopher Quick</i> Christopher Quick	Director
<hr/> <i>/s/ David Urban</i> David Urban	Director
<hr/> <i>/s/ Michael T. Viola</i> Michael T. Viola	Director

Amended and Restated Employment Agreement (this "Agreement"), dated as of December 1, 2022 (the "Effective Date"), between Virtu Financial Operating LLC, a Delaware limited liability company (together with all parents, affiliates and subsidiaries as the "Company"), and Joseph Molluso ("Executive").

WHEREAS, the Company and Executive are party to an existing Employment Agreement dated April 30, 2020 (the "Existing Agreement") and desire to amend and restate the Existing Agreement as herein provided; and

WHEREAS, Executive's agreement to enter into this Agreement and be bound by the terms hereof, including the restrictive covenants described herein, is a material inducement to the Company's willingness to provide equity-based compensation to Executive as described herein, and the Company would not otherwise grant such equity-based compensation to Executive if Executive did not agree to enter into this Agreement.

NOW, THEREFORE, in consideration of the mutual agreements, provisions and covenants contained herein, and intending to be legally bound hereby, the parties hereto agree as set forth below:

1. Term.

- a. The term of Executive's employment under this Agreement shall continue from the Effective Date until April 30, 2026 (the "Initial Expiration Date"), provided that on the Initial Expiration Date and each subsequent anniversary of the Initial Expiration Date, the term of Executive's employment under this Agreement shall be extended for one (1) additional year unless either party provides written notice to the other party at least ninety (90) days prior to the Initial Expiration Date (or any such anniversary, as applicable) that Executive's employment hereunder shall not be so extended (in which case, Executive's employment under this Agreement shall terminate on the Initial Expiration Date or expiration of the extended term, as applicable); provided, however, that Executive's employment under this Agreement may be terminated at any time pursuant to the provisions of Section 5. The period of time from the Effective Date through the termination of this Agreement and Executive's employment hereunder pursuant to its terms is herein referred to as the "Term"; and the date on which the Term is scheduled to expire (i.e., the Initial Expiration Date or the scheduled expiration of the extended term, if applicable) is herein referred to as the "Expiration Date." Notwithstanding anything contained herein to the contrary, if upon the effective date of a Change in Control, the Expiration Date is less than one (1) year from the date of such Change in Control, the Term shall automatically be renewed so that the Expiration Date is one (1) year from the effective date of such Change in Control.
- b. Executive agrees and acknowledges that the Company has no obligation to extend the Term or to continue Executive's employment following the Expiration Date, and Executive expressly acknowledges that no promises or understandings to the contrary have been made or reached. Executive also agrees and acknowledges that, should Executive and the Company choose to continue Executive's employment for any period of time following the Expiration Date without extending the term of Executive's employment under this Agreement or entering into a new written employment agreement, Executive's employment with the Company shall be "at will," such that the Company may terminate Executive's employment at any time, with or without reason and with or without notice, and Executive may resign at any time, with or without reason and with or without notice (for the sake of clarity, the provisions of this Agreement shall not apply following the expiration of the Term (except as otherwise expressly provided herein)).

2. Definitions. For purposes of this Agreement, the following terms, as used herein, shall have the definitions set forth below.

- a. "Affiliate" means, with respect to any specified Person, any other Person that directly or indirectly, through one or more intermediaries, Controls, is Controlled by, or is under common Control with, such specified Person; provided, that in no event shall any entity Controlled by Vincent Viola but in which the Company does not have a direct or indirect ownership interest be treated as an Affiliate of the Company.
- b. "Cause" means that any of the following occurs:

- i. Executive is convicted of, or pleads guilty or *nolo contendere* to, any felony or commits any fraudulent or illegal acts with regard to the Company or its employees, independent contractors, officers, members or managers;
- ii. Executive is repeatedly intoxicated or under the influence of illegal substances while performing his employment duties;
- iii. Executive does not have any necessary license or regulatorily required qualification, or becomes subject to a decree or order, in each case, from a regulatory agency, in each case, that prevents him from working for the Company;
- iv. Executive (A) violates 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 him or the Company, (B) violates any material obligation or is in breach of any representation in this Agreement (including for the avoidance of doubt any exhibit hereto), or (C) violates 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 ("CEO") 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. Executives intentionally and wrongfully damages material assets of the Company;
- vi. Executive intentionally and wrongfully discloses material confidential information of the Company; or
- vii. Executive intentionally and wrongfully engages 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 his 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 thirty (30) days after receipt of such notice and does not recur within 180 days after the initial act or omission.

- c. "Change in Control" has the meaning set forth in the Plan.
- d. "Control" means (including, with correlative meanings, the terms "Controlled by" and "under common Control with"), as used with respect to any Person, means the direct or indirect possession of the power to direct or cause the direction of the management or policies of such Person, whether through the ownership of voting securities or by contract.
- e. "Disability" means means Executive would be entitled to long-term disability benefits under the Company's long-term disability plan as in effect from time to time, without regard to any waiting or elimination period under such plan and assuming for the purpose of such determination that Executive is actually participating in such plan at such time. If the Company does not maintain a long-term disability plan, "Disability" means Executive's inability to perform Executive's duties and responsibilities hereunder on a full-time basis for a consecutive period of one hundred eighty (180) days in any three hundred sixty-five (365)-day period due to physical or mental illness or incapacity that is determined to be total and permanent by a physician selected by the Company or its insurers and reasonably acceptable to the Executive or his legal representative.
- f. "Good Reason" means the termination of Executive's employment at his initiative after, without Executive's prior written consent, one (1) or more of the following events:
 - i. an adverse change in Executive's title or reporting relationship such that he no longer reports directly 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 the Executive's authority, duties or responsibilities (with respect to a termination in connection

with a Change in Control, relative to Executive's authority, title, duties or responsibilities immediately prior to the Change in Control) or being required to report other than to the CEO or the Board or a material reduction in Base Salary;

ii. a material breach of this Agreement by the Company or a successor employer; or

iii. required relocation or performance of primary services (other than through routine and reasonable travel) by the Executive more than thirty (30) miles from his current place of employment in order to continue to perform the duties and responsibilities of his position.

Notwithstanding the above, Executive's termination of employment will not be for Good Reason unless (1) he notifies the Company in writing of the existence of the condition that he believes 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, the Executive actually terminates employment within thirty (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, Executive shall only be required to resign for Good Reason within two years of the end of the Remedial Period.

g. "Person" means any individual, firm, corporation, partnership, limited liability company, trust, joint venture, association, unincorporated entity or other entity.

h. "Plan" means the Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan.

3. Duties and Responsibilities.

- a. The Company hereby employs Executive, and Executive hereby accepts employment, subject to the terms and conditions contained herein, during the Term, as Co-President and Co-Chief Operating Officer reporting directly to the Company's Chief Executive Officer. During the Term, Executive agrees to be employed by and devote substantially all of Executive's business time and attention to the Company and the promotion of its interests and to use his best efforts to faithfully and diligently serve the Company; provided, however, that, to the extent such activities do not significantly interfere with the performance of his duties, services and responsibilities under this Agreement, Executive shall be permitted to (i) manage his and his immediate family's personal, financial and legal affairs, (ii) serve on civic or charitable boards and committees of such boards and (iii) to the extent approved by the Board pursuant to a duly authorized resolution of the Board, serve on corporate boards and committees of such boards. Executive will perform such lawful duties and responsibilities as are commensurate with Executive's titles and positions and as are generally consistent with those exercised by Executive prior to the Effective Date, and such other duties and responsibilities commensurate with Executive's titles and positions as may be reasonably requested by the Chief Executive Officer from time to time. Executive will have the authority customarily exercised by an individual serving as Co-President and Co-Chief Operating Officer of a corporation of the size and nature of the Company. During the Term, upon request Executive shall serve as a director or an officer of one or more subsidiaries of the Company, or of an Affiliate of the Company. Executive shall not be compensated additionally in Executive's capacity as a member of the Board or as a director or officer of a subsidiary or Affiliate of the Company.
- b. During the Term, Executive's principal place of employment shall be in one of the Company's principal offices, including, but not limited to, the Company's offices in Manhattan, New York, Short Hills, New Jersey and Palm Beach, Florida, or such other location as may otherwise be agreed with the Company. Executive acknowledges that Executive's duties and responsibilities shall require Executive to travel on business to the extent reasonably necessary to fully perform Executive's duties and responsibilities hereunder.

4. Compensation and Related Matters.

- a. Base Salary. As of the Effective Date, Executive shall receive an annual base salary ("Base Salary") of \$600,000 per year, payable in accordance with the Company's normal payroll procedures and may be

increased (but not decreased) by the CEO together with the Compensation Committee (as defined below) in its sole discretion (such salary, as may be increased, the “Base Salary”). For the avoidance of doubt, the position is exempt from any and all overtime laws.

- b. **Annual Bonus.** During the Term, for each calendar year, Executive shall be eligible to receive an annual bonus (“Annual Bonus”) with a target Annual Bonus amount of \$2,000,000 (the “Target Bonus”) and a maximum Annual Bonus amount of \$3,000,000 (the “Maximum Bonus”). Fifty percent (50%) of the Annual Bonus shall be based on the achievement of annual quantitative 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 (the “Quantitative Goals”) and the remaining fifty percent (50%) of the Annual Bonus will be based on annual qualitative targets established in the sole and absolute discretion of the Compensation Committee together with the Company’s CEO (the “Qualitative Goals”). Accordingly, up to \$1,000,000 of the Target Bonus and \$1,500,000 of the Maximum Bonus may be earned based on the achievement of the Quantitative Goals and up to \$1,000,000 of the Target Bonus and \$1,500,000 of the Maximum Bonus may be earned based on the achievement of the Qualitative Goals. The Annual Bonus, if any, shall be paid fifty percent (50%) in cash, thirty percent (30%) in the form of restricted shares or restricted share units (“RSUs”) in respect of Class A common stock of the Company (the “Stock”) that vest in equal annual installments on each of the first three (3) anniversaries of the date of grant, and the remaining twenty percent (20%) shall be paid in the form of fully-vested shares of Stock of fully-vested deferred share units (“DSUs”) in respect of Stock (in each case, in accordance with any applicable timely deferral election made by Executive); provided, that, the form, manner and timing of payment (including vesting of any payment in equity or equity-based awards) with respect to the Annual Bonus is subject to change in the event of (and consistent with) any change to the payout schedule formulations that is made applicable to the senior executives of the Company. The Annual Bonus, if any, shall be payable within the period required by Section 409A of the Code such that it qualifies as a “short-term deferral” pursuant to Section 1.409A-1(b)(4) of the Department of Treasury Regulations (or any successor thereto).
- c. **Equity Awards.** Executive shall be eligible to receive an equity award at the beginning of each calendar year during his employment (each such grant, an “Annual Equity Award”). It is the current intention of the Company’s Board and CEO that such Annual Equity Award will be in the form of 75,000 restricted shares or RSUs in respect of Stock, and that any such award shall be earned and vest in accordance with the terms hereof.
- i. The number of shares earned with respect to each Annual Equity Award shall be determined based on the percentage of the Company’s budgeted EBITDA achieved in the calendar year to which such award relates in accordance with the following table:

Percentage of Budgeted EBITDA Achieved	Number of Shares Earned
65% or more	75,000
Less than 65%	As determined at the sole discretion of the Compensation Committee of the Board, which may be 0

- ii. If the Board determines that the number of shares of Stock subject to the Annual Equity Award will be greater or less than 75,000, then the amounts reflected in the table above shall be adjusted to reflect such number of shares.
- iii. To the extent any shares of Stock are earned with respect to the Initial Equity Award in accordance with 4(c)(i), 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 the Executive’s continued employment through the applicable vesting date.
- d. **Benefits and Perquisites.** Executive 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, other than those provided for Executive

in this employment agreement. The Company also retains the right to assign Executive's employment agreement to an Affiliate, subject to the terms and conditions of this Agreement.

- e. Indemnification. The Company will indemnify Executive to the fullest extent permitted by law and the Company's governing documents.

5. Termination of Employment.

- a. Executive's employment under this Agreement may be terminated by either party at any time and for any reason; provided, however, that Executive shall be required to give the Company at least sixty (60) days' advance written notice of any voluntary resignation of Executive's employment hereunder (other than resignation for Good Reason) (and in such event the Company in its sole discretion may elect to accelerate Executive's date of termination of employment, it being understood that such termination shall still be treated as a voluntary resignation for purposes of this Agreement). Notwithstanding the foregoing, Executive's employment shall automatically terminate upon Executive's death.
- b. Upon termination, irrespective of the reason, the Company shall pay Executive: (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 Executive's 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 Executive but not yet paid as of the date employment terminates; and (iv) all other payments, benefits or fringe benefits to which Executive is entitled under the terms of the applicable arrangements and/or applicable law (all of the foregoing clauses (i)-(iv) collectively, the "Accrued Obligations").
- c. If Executive's employment under this Agreement is terminated (i) by the Company without Cause, (ii) due to Executive's death or Disability, (iii) by Executive for Good Reason, or (iv) due to expiration of the Term on the Expiration Date as a result of the Company delivering a notice of non-renewal as contemplated by Section 1, in addition to the payments and benefits specified in Section 5(b), Executive shall also receive the following termination payments and benefits on or beginning with the first payroll whose cutoff date follows the date Executive's employment ends or according to such timing as otherwise set forth below (collectively, the "Severance Benefits"):
- i. an amount equal to greater of (x) the sum of twelve (12) months' Base Salary, at the rate in effect immediately prior to termination (or, if higher, the highest rate in effect within the preceding six months) and (y) an amount equal to the total amount of Base Salary that Executive would have been entitled to receive had Executive continued to be employed through the Expiration Date (such amount, the "Severance Amount"), payable in a single lump sum within 30 days of 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. any bonus that the Company had definitively determined to pay to Executive and which was authorized and approved in accordance with the Company's policies and procedures but which had not yet been paid to as of the date of termination, payable in a lump sum at the same date as provided under clause (i) above;
 - iii. (A) the Executive shall remain eligible to earn restricted shares of Stock or RSUs under his then-current Annual Equity Award in accordance with the criteria set forth in Section 4(c)(i) and, to the extent earned, the product of such earned shares multiplied by a fraction, the numerator of which is the number of calendar days the Executive was employed in the calendar year of termination, and the denominator of which is 365, shall be deemed vested on the last day of the calendar year to which such award relates, (B) any earned but unvested restricted shares of Stock or RSUs under the Annual Equity Award granted in the calendar year prior to the calendar year of the Executive's termination shall be deemed vested as of the date of termination and (C) the Executive shall receive 75,000 fully-vested shares of Stock or, if Executive has made an applicable and timely deferral election, DSUs (clauses (A), (B) and (C), the "Equity Acceleration"); and

- iv. continued health, dental, vision and life insurance benefits under the terms of the applicable Company benefit plans for (x) twelve (12) months or (y) the period from Executive's termination of employment through the Expiration Date, whichever is longer (the "Benefits Continuation Period"), subject to Executive's payment of the cost of such benefits to the same extent that active employees of the Company are required to pay for such benefits from time to time; provided, however, that such continuation coverage shall end earlier upon Executive's becoming eligible for comparable coverage under another employer's benefit plans; provided, further, that following the expiration of the Benefits Continuation Period (which was not terminated as a result of Executive becoming eligible for comparable coverage under another employer's benefit plans), Executive shall be eligible to continue his health, dental, vision and life insurance benefits for Executive and his spouse and eligible dependents under the terms of the applicable Company benefit plans until the earlier of (X) Executive's dependents reaching the age of 26, (Y) Executive or his spouse become eligible for Medicare, or (Z) Executive becoming eligible for comparable coverage under another employer's benefit plans, subject to Executive's payment of the full cost of such benefits; and provided, further, that to the extent the provision of such continuation coverage is not permitted under the terms of the Company benefit plans or would result in an adverse tax consequence to the Company, the Company may alternatively provide Executive with a cash payment (the "COBRA Cash Payment") in an amount equal to the applicable COBRA premium that Executive would otherwise be required to pay to obtain COBRA continuation coverage for such benefits for such period (minus the cost of such benefits to the same extent that active employees of the Company are required to pay for such benefits from time to time); provided, further, that the Company will use reasonable best efforts to continue coverage under the Company benefit plans to the extent legally possible without suffering any adverse consequences to the Company or other participants in such plans (the COBRA Cash Payment, if applicable, shall be paid in cash in a lump sum on the Severance Payment Date).
- d. Notwithstanding anything herein to the contrary, if at any time within twelve (12) months following a Change in Control (as defined in the Plan as of the date thereof) or in anticipation of a Change of Control towards which material steps have been taken at the time of such termination and such Change of Control actually occurs, Executive's employment under this Agreement is terminated (i) by the Company without Cause, (ii) due to death or Disability, (iii) by Executive for Good Reason, or (iv) due to expiration of the Term on the Expiration Date as a result of the Company delivering a notice of non-renewal as contemplated by Section 1, then in lieu of the Severance Benefits described in Section 5(c) the Executive shall be entitled to receive the following:
- i. An amount equal to two and a half (2.5) times the sum of (x) Executive's Base Salary and (y) the Annual Bonus (including any amounts deferred or satisfied through the grant of equity awards) most recently awarded to Executive for completed fiscal years of the Company (collectively, the "CIC Severance Amount") payable in a single lump sum on the Severance Payment Date;
- ii. any bonus that the Company had definitively determined to pay to Executive and which was authorized and approved in accordance with the Company's policies and procedures but which had not yet been paid to as of the date of termination, payable in a lump sum at the same date as provided under clause (i) above;
- iii. (A) the product of the number of shares of Stock under the Executive's then-current Annual Equity Award multiplied by a fraction, the numerator of which is the number of calendar days the Executive was employed in the calendar year of termination, and the denominator of which is 365, shall be deemed vested as of the date of termination, (B) any earned but unvested restricted shares of Stock or RSUs under the Annual Equity Award granted in the calendar year prior to the calendar year of the Executive's termination, shall be deemed vested as of the date of termination and (C) the Executive shall receive 75,000 fully-vested shares of Stock or, if Executive has made an applicable and timely deferral election, DSUs (clauses (A), (B) and (C), the "CIC Equity Acceleration"; and
- iv. the benefits described in Section 5(c)(iv) above, except that the Benefits Continuation Period shall be extended to (x) twenty-four (24) months or (y) the period from Executive's termination of employment through the Expiration Date, whichever is longer.

- e. For avoidance of doubt, all payments owed to the Executive under Section 5 of this Agreement will be paid in a single lump sum on the Severance Payment Date.
- f. In the event Executive's employment is terminated prior to a Change in Control but material steps have been taken at the time of such termination and such Change of Control actually occurs, in the event that Executive receives the Severance Amount or the Equity Acceleration prior to the occurrence of the Change in Control, then any such amounts paid prior to the Change in Control shall reduce the amount required to be paid pursuant to CIC Severance Amount or the CIC Equity Acceleration, respectively.
- g. Notwithstanding anything else herein to the contrary, the Company's obligation to pay the benefits described herein 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, and which shall not contain any restrictive covenants more onerous than those to which Executive already subject. Such release and waiver must be executed and become irrevocable within sixty (60) days following the date Executive's employment ends (the "Release Period"). If such Release Period ends in the calendar year subsequent to the calendar year in which Executive's 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.
- h. To the extent (i) any payments to which Executive becomes entitled under this agreement, or any agreement or plan referenced herein, in connection with Executive's termination of employment with the Company, constitute deferred compensation subject to Section 409A of the Internal Revenue Code ("Section 409A") and (ii) Executive is 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 Executive's "separation from service" (as such term is at the time defined in regulations under Section 409A) with the Company and (ii) the date of Executive's 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 Executive, including (without limitation) the additional twenty-percent (20%) tax for which Executive 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 Executive or Executive's 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 Executive during any calendar year will not affect the amount of expenses eligible for reimbursement or in-kind benefits provided to Executive in any other calendar year, (y) the Company will reimburse Executive for expenses for which Executive is 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 Executive has 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.

6. **280G Matters.**

- 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 Executive 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 Executive notice to that effect and a copy of the detailed calculation thereof, and Executive may then elect, in his 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 Executive. 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 Executive before or after the Change in Control, including any non-competition provisions that may apply to Executive 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 Executive's 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 Executive's 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 Executive 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 Executive's benefit shall be repaid by Executive 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 Executive is 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 Executive's 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 Executive's 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 Executive 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 Executive's taxable income for the immediately preceding taxable year, or such other rate(s) as Executive shall certify, in Executive's sole discretion, as likely to apply to Executive in the relevant tax year(s); (4) "Accounting Firm" shall mean the Company's regular auditor, unless Executive objects 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 Executive, which auditor shall not, without Executive's 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.
7. **Mutual Arbitration.** Executive 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 Executive's

employment, the cessation of Executive's employment or the interpretation of this agreement, Executive 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 Executive's claim(s). In the course of any arbitration pursuant to this agreement, Executive 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 Executive agrees to waive any claim or right Executive may have for punitive or other indirect or consequential damages. Executive 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 Executive agrees 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 Executive 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 Executive is deemed an associated person under FINRA's rules, this agreement does not prohibit or restrict Executive from filing an arbitration claim in the FINRA arbitration forum as specified in FINRA rules.

8. **Offset and Mitigation.** No payments due Executive hereunder shall be subject to any offset for obligations owed by Executive to the Company or its Affiliates (except as required by applicable law). In no event shall Executive be obligated to seek other employment or take any other action by way of mitigation of the amounts payable to Executive under any of the provisions of this Agreement.
9. **Restrictive Covenants.** Executive acknowledges and agrees that Executive shall continue to be bound by the restrictive covenants to which he is presently bound, including those set forth in the Proprietary Agreement (as defined below) (collectively, the "Restrictive Covenants"), in accordance with the terms and conditions thereof; provided, however, that the Executive shall not be held criminally or civilly liable under any federal or state trade secret law for any disclosure of a trade secret that is made: (A) in confidence to a federal, state or local government official, either directly or indirectly, or to an attorney; and (B) solely for the purpose of reporting or investigating a suspected violation of law; or is made in a complaint or other document that is filed under seal in a lawsuit or other proceeding. If the Executive files a lawsuit for retaliation by the Company for reporting a suspected violation of law, the Executive may disclose the Company's trade secrets to the Executive's attorney and use the trade secret information in the court proceeding if the Executive: (1) files any document containing the trade secret under seal; and (2) does not disclose the trade secret, except pursuant to court order.
10. **Return of Property.** Executive acknowledges that all notes, memoranda, specifications, devices, formulas, records, files, lists, drawings, documents, models, equipment, property, computer, software or intellectual property relating to the businesses of the Company, in whatever form (including electronic), and all copies thereof, that are received or created by Executive while an employee of the Company or its subsidiaries or Affiliates are and shall remain the property of the Company, and Executive shall immediately return such property to the Company upon the termination of Executive's employment and, in any event, at the Company's request and subject to inspection in accordance with applicable Company employee policies generally, except as may otherwise be agreed by Executive and the Company at the time of termination; provided, that Executive shall be permitted to retain a copy of his contacts/rolodex, including in electronic form, as well as copies of documents regarding the terms of his employment and his compensation and benefits.
11. **Remedies and Injunctive Relief.** Executive acknowledges that a violation by Executive of any of the covenants contained in Sections 9 or 10 would cause irreparable damage to the Company in an amount that would be material but not readily ascertainable, and that any remedy at law (including the payment of damages) would be inadequate. Accordingly, Executive agrees that, notwithstanding any provision of this Agreement to the contrary, the Company shall be entitled (without the necessity of showing economic loss or other actual damage) to injunctive relief (including temporary restraining orders, preliminary injunctions and/or permanent injunctions) in any court of competent jurisdiction for any actual or threatened breach of any of the covenants set forth in Sections 9 or 10 in addition to any other legal or equitable remedies it may have. The preceding sentence shall not be construed as a waiver of the rights

that the Company may have for damages under this Agreement or otherwise, and all of the Company's rights shall be unrestricted.

12. Representations of Executive; Advice of Counsel.

- a. Executive represents, warrants and covenants that as of the date hereof: (i) Executive has the full right, authority and capacity to enter into this Agreement and perform Executive's obligations hereunder, (ii) Executive is not bound by any agreement that conflicts with or prevents or restricts the full performance of Executive's duties and obligations to the Company hereunder during or after the Term, and (iii) the execution and delivery of this Agreement shall not result in any breach or violation of, or a default under, any existing obligation, commitment or agreement to which Executive is subject.
- b. Prior to execution of this Agreement, Executive was advised by the Company of Executive's right to seek independent advice from an attorney of Executive's own selection regarding this Agreement. Executive acknowledges that Executive has entered into this Agreement knowingly and voluntarily and with full knowledge and understanding of the provisions of this Agreement after being given the opportunity to consult with counsel. Executive further represents that in entering into this Agreement, Executive is not relying on any statements or representations made by any of the Company's directors, officers, employees or agents which are not expressly set forth herein, and that Executive is relying only upon Executive's own judgment and any advice provided by Executive's attorney.

13. Cooperation. Executive agrees that, upon reasonable notice and without the necessity of the Company obtaining a subpoena or court order, Executive shall provide reasonable cooperation in connection with any suit, action or proceeding (or any appeal from any suit, action or proceeding), and any investigation and/or defense of any claims asserted against the Company or its Affiliates, which relates to events occurring during Executive's employment with the Company and its Affiliates as to which Executive may have relevant information (including but not limited to furnishing relevant information and materials to the Company or its designee and/or providing testimony at depositions and at trial); provided that with respect to such cooperation occurring following termination of employment, the Company shall reimburse Executive for expenses reasonably incurred in connection therewith, and further provided that any such cooperation occurring after the termination of Executive's employment shall be scheduled so as not to unreasonably interfere with Executive's business or personal affairs.

14. Withholding. The Company may deduct and withhold from any amounts payable under this Agreement such Federal, state, local, non-U.S. or other taxes as are required to be withheld pursuant to any applicable law or regulation.

15. Assignment.

- a. This Agreement is personal to Executive and without the prior written consent of the Company shall not be assignable by Executive, except for the assignment by will or the laws of descent and distribution of any accrued pecuniary interest of Executive, and any assignment in violation of this Agreement shall be void. The Company may only assign this Agreement, and its rights and obligations hereunder, in accordance with the terms of Section 15(b).
- b. This Agreement shall be binding on, and shall inure to the benefit of, the parties to it and their respective heirs, legal representatives, successors and permitted assigns (including, without limitation, successors by merger, consolidation, sale or similar transaction, and, in the event of Executive's death or Disability, Executive's estate, successors, heirs and assigns in the case of any payments due to Executive hereunder). The Company will require any successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the business and/or assets of the Company to assume expressly and agree to perform this Agreement in the same manner and to the same extent that the Company would be required to perform it if no such succession had taken place. "Company" means the Company as hereinbefore defined and any successor to its business and/or assets as aforesaid that assumes and agrees to perform this Agreement by operation of law or otherwise. Following a Change in Control, if the Company is not the ultimate parent corporation and the Company's common stock is not publicly traded, the "Board of Directors" or "Board" as used in this Agreement shall refer to the board of directors of the ultimate parent of the Company.

- c. Executive acknowledges and agrees that all of Executive's covenants and obligations to the Company, as well as the rights of the Company hereunder, shall run in favor of and shall be enforceable by the Company and its successors and assigns.
16. **Governing Law; No Construction Against Drafter.** This Agreement shall be deemed to be made in the State of New York, and the validity, interpretation, construction, and performance of this Agreement in all respects shall be governed by the laws of the State of New York without regard to its principles of conflicts of law. No provision of this Agreement or any related document will be construed against or interpreted to the disadvantage of any party hereto by any court or other governmental or judicial authority by reason of such party having or being deemed to have structured or drafted such provision.
17. **Amendment; No Waiver; Severability.**
- a. No provisions of this Agreement may be amended, modified, waived or discharged except by a written document signed by Executive and a duly authorized officer of the Company (other than Executive). The failure of a party to insist upon strict adherence to any term of this Agreement on any occasion shall not be considered a waiver of such party's rights or deprive such party of the right thereafter to insist upon strict adherence to that term or any other term of this Agreement. No failure or delay by either party in exercising any right or power hereunder will operate as a waiver thereof, nor will any single or partial exercise of any such right or power, or any abandonment of any steps to enforce such a right or power, preclude any other or further exercise thereof or the exercise of any other right or power.
- b. If any term or provision of this Agreement is invalid, illegal or incapable of being enforced by any applicable law or public policy, all other conditions and provisions of this Agreement shall nonetheless remain in full force and effect so long as the economic and legal substance of the transactions contemplated by this Agreement is not affected in any manner materially adverse to any party; provided, that in the event that any court of competent jurisdiction shall finally hold in a non-appealable judicial determination that any provision of Section 7, 8 or 9 (whether in whole or in part) is void or constitutes an unreasonable restriction against Executive, such provision shall not be rendered void but shall be deemed to be modified to the minimum extent necessary to make such provision enforceable for the longest duration and the greatest scope as such court may determine constitutes a reasonable restriction under the circumstances. Subject to the foregoing, upon such determination that any term or other provision is invalid, illegal or incapable of being enforced, the parties hereto shall negotiate in good faith to modify this Agreement so as to effect the original intent of the parties as closely as possible in a mutually acceptable manner in order that the transactions contemplated hereby be consummated as originally contemplated to the fullest extent possible.
18. **Entire Agreement.** This Agreement constitutes the entire agreement and understanding between the Company and Executive with respect to the subject matter hereof and supersedes all prior agreements and understandings (whether written or oral), between Executive and the Company, relating to such subject matter, except that the terms of the Proprietary Invention Assignment, Noncompetition and Confidentiality Agreement (the "Proprietary Agreement") dated on or around April 30, 2020, the Separation Agreement dated as of September 3, 2019, and Executive's joinder agreement to the Amended and Restated Limited Liability Company Agreement of Virtu Employee Holdco LLC shall each continue in full force and effect in accordance with their terms, and any award agreements issued pursuant to the Plan shall continue in full force and effect in accordance with their terms, subject to Section 4(c)(iv) herein.
19. **Survival.** The rights and obligations of the parties under the provisions of this Agreement shall survive, and remain binding and enforceable, notwithstanding the expiration of the Term, the termination of this Agreement, the termination of Executive's employment hereunder or any settlement of the financial rights and obligations arising from Executive's employment hereunder, to the extent necessary to preserve the intended benefits of such provisions.
20. **Notices.** All notices or other communications required or permitted to be given hereunder shall be in writing and shall be delivered by hand or sent by facsimile or sent, postage prepaid, by registered, certified or express mail or overnight courier service and shall be deemed given when so delivered by hand or facsimile, or if mailed, three days after mailing (one (1) business day in the case of express mail or overnight courier service) to the parties at the following addresses or facsimiles (or at such other address for a party as shall be specified by like notice):

If to the Company: Virtu Financial
1633 Broadway, 41st Floor
New York, NY 10019
Attn: Legal Department
E-mail: Legal @virtu.com

If to Executive: At the most recent address on file in the
Company's records

Notices delivered by email shall have the same legal effect as if such notice had been delivered in person.

21. **Headings and References.** The headings of this Agreement are inserted for convenience only and neither constitute a part of this Agreement nor affect in any way the meaning or interpretation of this Agreement. When a reference in this Agreement is made to a Section, such reference shall be to a Section of this Agreement unless otherwise indicated.
22. **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.

[Signature Page Follows]

This Agreement has been duly executed by the parties as of the date first written above.

VIRTU FINANCIAL OPERATING LLC



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



By:
Name: Joseph Molluso

Amended and Restated Employment Agreement (this "Agreement"), dated as of December 1, 2022 (the "Effective Date"), between Virtu Financial Operating LLC, a Delaware limited liability company (together with all parents, affiliates and subsidiaries as the "Company"), and Brett Fairclough ("Executive").

WHEREAS, the Company and Executive are party to an existing Amended and Restated Employment Agreement dated February 26, 2020 (the "Existing Agreement") and desire to amend and restate the Existing Agreement as herein provided; and

WHEREAS, Executive's agreement to enter into this Agreement and be bound by the terms hereof, including the restrictive covenants described herein, is a material inducement to the Company's willingness to provide equity-based compensation to Executive as described herein, and the Company would not otherwise grant such equity-based compensation to Executive if Executive did not agree to enter into this Agreement.

NOW, THEREFORE, in consideration of the mutual agreements, provisions and covenants contained herein, and intending to be legally bound hereby, the parties hereto agree as set forth below:

1. Term.

- a. The term of Executive's employment under this Agreement shall continue from the Effective Date until February 26, 2027 (the "Initial Expiration Date"), provided that on the Initial Expiration Date and each subsequent anniversary of the Initial Expiration Date, the term of Executive's employment under this Agreement shall be extended for one (1) additional year unless either party provides written notice to the other party at least ninety (90) days prior to the Initial Expiration Date (or any such anniversary, as applicable) that Executive's employment hereunder shall not be so extended (in which case, Executive's employment under this Agreement shall terminate on the Initial Expiration Date or expiration of the extended term, as applicable); provided, however, that Executive's employment under this Agreement may be terminated at any time pursuant to the provisions of Section 5. The period of time from the Effective Date through the termination of this Agreement and Executive's employment hereunder pursuant to its terms is herein referred to as the "Term"; and the date on which the Term is scheduled to expire (i.e., the Initial Expiration Date or the scheduled expiration of the extended term, if applicable) is herein referred to as the "Expiration Date." Notwithstanding anything contained herein to the contrary, if upon the effective date of a Change in Control, the Expiration Date is less than one (1) year from the date of such Change in Control, the Term shall automatically be renewed so that the Expiration Date is one (1) year from the effective date of such Change in Control.
- b. Executive agrees and acknowledges that the Company has no obligation to extend the Term or to continue Executive's employment following the Expiration Date, and Executive expressly acknowledges that no promises or understandings to the contrary have been made or reached. Executive also agrees and acknowledges that, should Executive and the Company choose to continue Executive's employment for any period of time following the Expiration Date without extending the term of Executive's employment under this Agreement or entering into a new written employment agreement, Executive's employment with the Company shall be "at will," such that the Company may terminate Executive's employment at any time, with or without reason and with or without notice, and Executive may resign at any time, with or without reason and with or without notice (for the sake of clarity, the provisions of this Agreement shall not apply following the expiration of the Term (except as otherwise expressly provided herein)).

2. Definitions. For purposes of this Agreement, the following terms, as used herein, shall have the definitions set forth below.

- a. "Affiliate" means, with respect to any specified Person, any other Person that directly or indirectly, through one or more intermediaries, Controls, is Controlled by, or is under common Control with, such specified Person; provided, that in no event shall any entity Controlled by Vincent Viola but in which the Company does not have a direct or indirect ownership interest be treated as an Affiliate of the Company.
- b. "Cause" means that any of the following occurs:

- i. Executive is convicted of, or pleads guilty or *nolo contendere* to, any felony or commits any fraudulent or illegal acts with regard to the Company or its employees, independent contractors, officers, members or managers;
- ii. Executive is repeatedly intoxicated or under the influence of illegal substances while performing his employment duties;
- iii. Executive does not have any necessary license or regulatorily required qualification, or becomes subject to a decree or order, in each case, from a regulatory agency, in each case, that prevents him from working for the Company;
- iv. Executive (A) violates 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 him or the Company, (B) violates any material obligation or is in breach of any representation in this Agreement (including for the avoidance of doubt any exhibit hereto), or (C) violates 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 ("CEO") 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. Executives intentionally and wrongfully damages material assets of the Company;
- vi. Executive intentionally and wrongfully discloses material confidential information of the Company; or
- vii. Executive intentionally and wrongfully engages 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 his 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.

- c. "Change in Control" has the meaning set forth in the Plan.
- d. "Control" means (including, with correlative meanings, the terms "Controlled by" and "under common Control with"), as used with respect to any Person, means the direct or indirect possession of the power to direct or cause the direction of the management or policies of such Person, whether through the ownership of voting securities or by contract.
- e. "Disability" means means Executive would be entitled to long-term disability benefits under the Company's long-term disability plan as in effect from time to time, without regard to any waiting or elimination period under such plan and assuming for the purpose of such determination that Executive is actually participating in such plan at such time. If the Company does not maintain a long-term disability plan, "Disability" means Executive's inability to perform Executive's duties and responsibilities hereunder on a full-time basis for a consecutive period of one hundred eighty (180) days in any three hundred sixty-five (365)-day period due to physical or mental illness or incapacity that is determined to be total and permanent by a physician selected by the Company or its insurers and reasonably acceptable to the Executive or his legal representative.
- f. "Good Reason" means the termination of Executive's employment at his initiative after, without Executive's prior written consent, one (1) or more of the following events:
 - i. an adverse change in Executive's title or reporting relationship such that he no longer reports 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 the Executive's authority, duties or responsibilities (with respect to a termination in connection with a

Change in Control, relative to Executive's authority, title, duties or responsibilities immediately prior to the Change in Control) or being required to report other than to the CEO or the Board or a material reduction in Base Salary;

- ii. a material breach of this Agreement by the Company or a successor employer; or
- iii. required relocation or performance of primary services (other than through routine and reasonable travel) by the Executive more than thirty (30) miles from his current place of employment in order to continue to perform the duties and responsibilities of his position.

Notwithstanding the above, Executive's termination of employment will not be for Good Reason unless (1) he notifies the Company in writing of the existence of the condition that he believes 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, the Executive actually terminates employment within thirty (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, Executive shall only be required to resign for Good Reason within two years of the end of the Remedial Period.

- g. "Person" means any individual, firm, corporation, partnership, limited liability company, trust, joint venture, association, unincorporated entity or other entity.
- h. "Plan" means the Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan.

3. Duties and Responsibilities.

- a. The Company hereby employs Executive, and Executive hereby accepts employment, subject to the terms and conditions contained herein, during the Term, as Co-Chief Operating Officer & Co-President reporting to the Company's Chief Executive Officer. During the Term, Executive agrees to be employed by and devote substantially all of Executive's business time and attention to the Company and the promotion of its interests and to use his best efforts to faithfully and diligently serve the Company; provided, however, that, to the extent such activities do not significantly interfere with the performance of his duties, services and responsibilities under this Agreement, Executive shall be permitted to (i) manage his personal, financial and legal affairs, (ii) serve on civic or charitable boards and committees of such boards and (iii) to the extent approved by the Board pursuant to a duly authorized resolution of the Board, serve on corporate boards and committees of such boards. Executive will perform such lawful duties and responsibilities as are commensurate with Executive's titles and positions and as are generally consistent with those exercised by Executive prior to the Effective Date, and such other duties and responsibilities commensurate with Executive's titles and positions as may be reasonably requested by the Chief Executive Officer from time to time. Executive will have the authority customarily exercised by an individual serving in such capacity of a corporation of the size and nature of the Company. During the Term, upon request shall serve as a director or an officer of one or more subsidiaries of the Company, or of an Affiliate of the Company. Executive shall not be compensated additionally in Executive's capacity as a member of the Board or as a director or officer of a subsidiary or Affiliate of the Company.
- b. During the Term, Executive's principal place of employment shall be in one of the Company's principal offices, including, but not limited to, the Company's offices in Manhattan, New York, Short Hills, New Jersey and Palm Beach, Florida, or such other location as may otherwise be agreed with the Company. Executive acknowledges that Executive's duties and responsibilities shall require Executive to travel on business to the extent reasonably necessary to fully perform Executive's duties and responsibilities hereunder.

4. Compensation and Related Matters.

- a. Base Salary. As of the Effective Date, Executive shall receive an annual base salary ("Base Salary") of \$600,000 per year, payable in accordance with the Company's normal payroll procedures and may be increased (but not decreased) by the CEO together with the Compensation Committee (as defined

below) in its sole discretion (such salary, as may be increased, the “Base Salary”). For the avoidance of doubt, the position is exempt from any and all overtime laws.

- b. **Annual Bonus.** During the Term, for each calendar year, Executive shall be eligible to receive an annual bonus (“Annual Bonus”) with a target Annual Bonus amount of \$2,000,000 (the “Target Bonus”) and a maximum Annual Bonus amount of \$3,000,000 (the “Maximum Bonus”). Fifty percent (50%) of the Annual Bonus shall be based on the achievement of annual quantitative 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 (the “Quantitative Goals”) and the remaining fifty percent (50%) of the Annual Bonus will be based on annual qualitative targets established in the sole and absolute discretion of the Compensation Committee together with the Company’s CEO (the “Qualitative Goals”). Accordingly, up to \$1,000,000 of the Target Bonus and \$1,500,000 of the Maximum Bonus may be earned based on the achievement of the Quantitative Goals and up to \$1,000,000 of the Target Bonus and \$1,500,000 of the Maximum Bonus may be earned based on the achievement of the Qualitative Goals. The Annual Bonus, if any, shall be paid fifty percent (50%) in cash, thirty percent (30%) in the form of restricted shares or restricted share units (“RSUs”) in respect of Class A common stock of the Company (the “Stock”) that vest in equal annual installments on each of the first three (3) anniversaries of the date of grant, and the remaining twenty percent (20%) shall be paid in the form of fully-vested shares of Stock of fully-vested deferred share units (“DSUs”) in respect of Stock (in each case, in accordance with any applicable timely deferral election made by Executive); provided, that, the form, manner and timing of payment (including vesting of any payment in equity or equity-based awards) with respect to the Annual Bonus is subject to change in the event of (and consistent with) any change to the payout schedule formulations that is made applicable to the senior executives of the Company. The Annual Bonus, if any, shall be payable within the period required by Section 409A of the Code such that it qualifies as a “short-term deferral” pursuant to Section 1.409A-1(b)(4) of the Department of Treasury Regulations (or any successor thereto).
- c. **Equity Awards.** Executive shall be eligible to receive an equity award at the beginning of each calendar year during his employment (each such grant, an “Annual Equity Award”). It is the current intention of the Company’s Board and CEO that such Annual Equity Award will be in the form of 75,000 restricted shares or RSUs in respect of Stock, and that any such award shall be earned and vest in accordance with the terms hereof.
- i. The number of shares earned with respect to each Annual Equity Award shall be determined based on the percentage of the Company’s budgeted EBITDA achieved in the calendar year to which such award relates in accordance with the following table:

Percentage of Budgeted EBITDA Achieved	Number of Shares Earned
65% or more	75,000
Less than 65%	As determined at the sole discretion of the Compensation Committee of the Board, which may be 0

- ii. If the Board determines that the number of shares of Stock subject to the Annual Equity Award will be greater or less than 75,000, then the amounts reflected in the table above shall be adjusted to reflect such number of shares.
- iii. To the extent any shares of Stock are earned with respect to the Initial Equity Award in accordance with 4(c)(i), 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 the Executive’s continued employment through the applicable vesting date.
- d. **Benefits and Perquisites.** Executive 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, other than those provided for Executive

in this employment agreement. The Company also retains the right to assign Executive's employment agreement to an Affiliate, subject to the terms and conditions of this Agreement.

- e. Indemnification. The Company will indemnify Executive to the fullest extent permitted by law and the Company's governing documents.

5. Termination of Employment.

- a. Executive's employment under this Agreement may be terminated by either party at any time and for any reason; provided, however, that Executive shall be required to give the Company at least sixty (60) days' advance written notice of any voluntary resignation of Executive's employment hereunder (other than resignation for Good Reason) (and in such event the Company in its sole discretion may elect to accelerate Executive's date of termination of employment, it being understood that such termination shall still be treated as a voluntary resignation for purposes of this Agreement). Notwithstanding the foregoing, Executive's employment shall automatically terminate upon Executive's death.
- b. Upon termination, irrespective of the reason, the Company shall pay Executive: (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 Executive's 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 Executive but not yet paid as of the date employment terminates; and (iv) all other payments, benefits or fringe benefits to which Executive is entitled under the terms of the applicable arrangements and/or applicable law (all of the foregoing clauses (i)-(iv) collectively, the "Accrued Obligations").
- c. If Executive's employment under this Agreement is terminated (i) by the Company without Cause, (ii) due to Executive's death or Disability, (iii) by Executive for Good Reason, or (iv) due to expiration of the Term on the Expiration Date as a result of the Company delivering a notice of non-renewal as contemplated by Section 1, in addition to the payments and benefits specified in Section 5(b), Executive shall also receive the following termination payments and benefits on or beginning with the first payroll whose cutoff date follows the date Executive's employment ends or according to such timing as otherwise set forth below (collectively, the "Severance Benefits"):
- i. an amount equal to greater of (x) the sum of twelve (12) months' Base Salary, at the rate in effect immediately prior to termination (or, if higher, the highest rate in effect within the preceding six months) and (y) an amount equal to the total amount of Base Salary that Executive would have been entitled to receive had Executive continued to be employed through the Expiration Date (such amount, the "Severance Amount"), payable in a single lump sum within 30 days of 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. any bonus that the Company had definitively determined to pay to Executive and which was authorized and approved in accordance with the Company's policies and procedures but which had not yet been paid to as of the date of termination, payable in a lump sum at the same date as provided under clause (i) above;
 - iii. (A) the Executive shall remain eligible to earn restricted shares of Stock or RSUs under his then-current Annual Equity Award in accordance with the criteria set forth in Section 4(c)(i) and, to the extent earned, the product of such earned shares multiplied by a fraction, the numerator of which is the number of calendar days the Executive was employed in the calendar year of termination, and the denominator of which is 365, shall be deemed vested on the last day of the calendar year to which such award relates, (B) any earned but unvested restricted shares of Stock or RSUs under the Annual Equity Award granted in the calendar year prior to the calendar year of the Executive's termination shall be deemed vested as of the date of termination and (C) the Executive shall receive 75,000 fully-vested shares of Stock or, if Executive has made an applicable and timely deferral election, DSUs (clauses (A), (B) and (C), the "Equity Acceleration"); and

- iv. continued health, dental, vision and life insurance benefits under the terms of the applicable Company benefit plans for (x) twelve (12) months or (y) the period from Executive's termination of employment through the Expiration Date, whichever is longer (the "Benefits Continuation Period"), subject to Executive's payment of the cost of such benefits to the same extent that active employees of the Company are required to pay for such benefits from time to time; provided, however, that such continuation coverage shall end earlier upon Executive's becoming eligible for comparable coverage under another employer's benefit plans; provided, further, that following the expiration of the Benefits Continuation Period (which was not terminated as a result of Executive becoming eligible for comparable coverage under another employer's benefit plans), Executive shall be eligible to continue his health, dental, vision and life insurance benefits for Executive and his spouse and eligible dependents under the terms of the applicable Company benefit plans until the earlier of (X) Executive's dependents reaching the age of 26, (Y) Executive or his spouse become eligible for Medicare, or (Z) Executive becoming eligible for comparable coverage under another employer's benefit plans, subject to Executive's payment of the full cost of such benefits; and provided, further, that to the extent the provision of such continuation coverage is not permitted under the terms of the Company benefit plans or would result in an adverse tax consequence to the Company, the Company may alternatively provide Executive with a cash payment (the "COBRA Cash Payment") in an amount equal to the applicable COBRA premium that Executive would otherwise be required to pay to obtain COBRA continuation coverage for such benefits for such period (minus the cost of such benefits to the same extent that active employees of the Company are required to pay for such benefits from time to time); provided, further, that the Company will use reasonable best efforts to continue coverage under the Company benefit plans to the extent legally possible without suffering any adverse consequences to the Company or other participants in such plans (the COBRA Cash Payment, if applicable, shall be paid in cash in a lump sum on the Severance Payment Date).
- d. Notwithstanding anything herein to the contrary, if at any time within twelve (12) months following a Change in Control (as defined in the Plan as of the date thereof) or in anticipation of a Change of Control towards which material steps have been taken at the time of such termination and such Change of Control actually occurs, Executive's employment under this Agreement is terminated (i) by the Company without Cause, (ii) due to death or Disability, (iii) by Executive for Good Reason, or (iv) due to expiration of the Term on the Expiration Date as a result of the Company delivering a notice of non-renewal as contemplated by Section 1, then in lieu of the Severance Benefits described in Section 5(c) the Executive shall be entitled to receive the following:
- i. An amount equal to two and a half (2.5) times the sum of (x) Executive's Base Salary and (y) the Annual Bonus (including any amounts deferred or satisfied through the grant of equity awards) most recently awarded to Executive for completed fiscal years of the Company (collectively, the "CIC Severance Amount") payable in a single lump sum on the Severance Payment Date;
- ii. any bonus that the Company had definitively determined to pay to Executive and which was authorized and approved in accordance with the Company's policies and procedures but which had not yet been paid to as of the date of termination, payable in a lump sum at the same date as provided under clause (i) above;
- iii. (A) the product of the number of shares of Stock under the Executive's then-current Annual Equity Award multiplied by a fraction, the numerator of which is the number of calendar days the Executive was employed in the calendar year of termination, and the denominator of which is 365, shall be deemed vested as of the date of termination, (B) any earned but unvested restricted shares of Stock or RSUs under the Annual Equity Award granted in the calendar year prior to the calendar year of the Executive's termination, shall be deemed vested as of the date of termination and (C) the Executive shall receive 75,000 fully-vested shares of Stock or, if Executive has made an applicable and timely deferral election, DSUs (clauses (A), (B) and (C), the "CIC Equity Acceleration"; and
- iv. the benefits described in Section 5(c)(iv) above, except that the Benefits Continuation Period shall be extended to (x) twenty-four (24) months or (y) the period from Executive's termination of employment through the Expiration Date, whichever is longer.

- e. For avoidance of doubt, all payments owed to the Executive under Section 5 of this Agreement will be paid in a single lump sum on the Severance Payment Date.
- f. In the event Executive's employment is terminated prior to a Change in Control but material steps have been taken at the time of such termination and such Change of Control actually occurs, in the event that Executive receives the Severance Amount or the Equity Acceleration prior to the occurrence of the Change in Control, then any such amounts paid prior to the Change in Control shall reduce the amount required to be paid pursuant to CIC Severance Amount or the CIC Equity Acceleration, respectively.
- g. Notwithstanding anything else herein to the contrary, the Company's obligation to pay the benefits described herein 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 Executive's employment ends (the "Release Period"). If such Release Period ends in the calendar year subsequent to the calendar year in which Executive's 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.
- h. To the extent (i) any payments to which Executive becomes entitled under this agreement, or any agreement or plan referenced herein, in connection with Executive's termination of employment with the Company, constitute deferred compensation subject to Section 409A of the Internal Revenue Code ("Section 409A") and (ii) Executive is 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 Executive's "separation from service" (as such term is at the time defined in regulations under Section 409A) with the Company and (ii) the date of Executive's 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 Executive, including (without limitation) the additional twenty-percent (20%) tax for which Executive 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 Executive or Executive's 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 Executive during any calendar year will not affect the amount of expenses eligible for reimbursement or in-kind benefits provided to Executive in any other calendar year, (y) the Company will reimburse Executive for expenses for which Executive is 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 Executive has 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.

6. 280G Matters.

- 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 Executive 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 Executive notice to that effect and a copy of the detailed calculation thereof, and Executive may then elect, in his 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 Executive. 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 Executive before or after the Change in Control, including any non-competition provisions that may apply to Executive 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 Executive's 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 Executive's 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 Executive 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 Executive's benefit shall be repaid by Executive 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 Executive is 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 Executive's 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 Executive's 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 Executive 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 Executive's taxable income for the immediately preceding taxable year, or such other rate(s) as Executive shall certify, in Executive's sole discretion, as likely to apply to Executive in the relevant tax year(s); (4) "Accounting Firm" shall mean the Company's regular auditor, unless Executive objects 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 Executive, which auditor shall not, without Executive's 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.
7. **Mutual Arbitration.** Executive 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 Executive's

employment, the cessation of Executive's employment or the interpretation of this agreement, Executive 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 Executive's claim(s). In the course of any arbitration pursuant to this agreement, Executive 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 Executive agrees to waive any claim or right Executive may have for punitive or other indirect or consequential damages. Executive 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 Executive agrees 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 Executive 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 Executive is deemed an associated person under FINRA's rules, this agreement does not prohibit or restrict Executive from filing an arbitration claim in the FINRA arbitration forum as specified in FINRA rules.

8. **Offset and Mitigation.** No payments due Executive hereunder shall be subject to any offset for obligations owed by Executive to the Company or its Affiliates (except as required by applicable law). In no event shall Executive be obligated to seek other employment or take any other action by way of mitigation of the amounts payable to Executive under any of the provisions of this Agreement.
9. **Restrictive Covenants.** Executive acknowledges and agrees that Executive shall continue to be bound by the restrictive covenants to which he is presently bound, including those set forth in the Proprietary Agreement (as defined below) (collectively, the "Restrictive Covenants"), in accordance with the terms and conditions thereof; provided, however, that the Executive shall not be held criminally or civilly liable under any federal or state trade secret law for any disclosure of a trade secret that is made: (A) in confidence to a federal, state or local government official, either directly or indirectly, or to an attorney; and (B) solely for the purpose of reporting or investigating a suspected violation of law; or is made in a complaint or other document that is filed under seal in a lawsuit or other proceeding. If the Executive files a lawsuit for retaliation by the Company for reporting a suspected violation of law, the Executive may disclose the Company's trade secrets to the Executive's attorney and use the trade secret information in the court proceeding if the Executive: (1) files any document containing the trade secret under seal; and (2) does not disclose the trade secret, except pursuant to court order.
10. **Return of Property.** Executive acknowledges that all notes, memoranda, specifications, devices, formulas, records, files, lists, drawings, documents, models, equipment, property, computer, software or intellectual property relating to the businesses of the Company, in whatever form (including electronic), and all copies thereof, that are received or created by Executive while an employee of the Company or its subsidiaries or Affiliates are and shall remain the property of the Company, and Executive shall immediately return such property to the Company upon the termination of Executive's employment and, in any event, at the Company's request and subject to inspection in accordance with applicable Company employee policies generally, except as may otherwise be agreed by Executive and the Company at the time of termination; provided, that Executive shall be permitted to retain a copy of his contacts/rolodex, including in electronic form.
11. **Remedies and Injunctive Relief.** Executive acknowledges that a violation by Executive of any of the covenants contained in Sections 9 or 10 would cause irreparable damage to the Company in an amount that would be material but not readily ascertainable, and that any remedy at law (including the payment of damages) would be inadequate. Accordingly, Executive agrees that, notwithstanding any provision of this Agreement to the contrary, the Company shall be entitled (without the necessity of showing economic loss or other actual damage) to injunctive relief (including temporary restraining orders, preliminary injunctions and/or permanent injunctions) in any court of competent jurisdiction for any actual or threatened breach of any of the covenants set forth in Sections 9 or 10 in addition to any other legal or equitable remedies it may have. The preceding sentence shall not be construed as a waiver of the rights

that the Company may have for damages under this Agreement or otherwise, and all of the Company's rights shall be unrestricted.

12. Representations of Executive; Advice of Counsel.

- a. Executive represents, warrants and covenants that as of the date hereof: (i) Executive has the full right, authority and capacity to enter into this Agreement and perform Executive's obligations hereunder, (ii) Executive is not bound by any agreement that conflicts with or prevents or restricts the full performance of Executive's duties and obligations to the Company hereunder during or after the Term, and (iii) the execution and delivery of this Agreement shall not result in any breach or violation of, or a default under, any existing obligation, commitment or agreement to which Executive is subject.
- b. Prior to execution of this Agreement, Executive was advised by the Company of Executive's right to seek independent advice from an attorney of Executive's own selection regarding this Agreement. Executive acknowledges that Executive has entered into this Agreement knowingly and voluntarily and with full knowledge and understanding of the provisions of this Agreement after being given the opportunity to consult with counsel. Executive further represents that in entering into this Agreement, Executive is not relying on any statements or representations made by any of the Company's directors, officers, employees or agents which are not expressly set forth herein, and that Executive is relying only upon Executive's own judgment and any advice provided by Executive's attorney.

13. Cooperation. Executive agrees that, upon reasonable notice and without the necessity of the Company obtaining a subpoena or court order, Executive shall provide reasonable cooperation in connection with any suit, action or proceeding (or any appeal from any suit, action or proceeding), and any investigation and/or defense of any claims asserted against the Company or its Affiliates, which relates to events occurring during Executive's employment with the Company and its Affiliates as to which Executive may have relevant information (including but not limited to furnishing relevant information and materials to the Company or its designee and/or providing testimony at depositions and at trial); provided that with respect to such cooperation occurring following termination of employment, the Company shall reimburse Executive for expenses reasonably incurred in connection therewith, and further provided that any such cooperation occurring after the termination of Executive's employment shall be scheduled so as not to unreasonably interfere with Executive's business or personal affairs.

14. Withholding. The Company may deduct and withhold from any amounts payable under this Agreement such Federal, state, local, non-U.S. or other taxes as are required to be withheld pursuant to any applicable law or regulation.

15. Assignment.

- a. This Agreement is personal to Executive and without the prior written consent of the Company shall not be assignable by Executive, except for the assignment by will or the laws of descent and distribution of any accrued pecuniary interest of Executive, and any assignment in violation of this Agreement shall be void. The Company may only assign this Agreement, and its rights and obligations hereunder, in accordance with the terms of Section 14(b).
- b. This Agreement shall be binding on, and shall inure to the benefit of, the parties to it and their respective heirs, legal representatives, successors and permitted assigns (including, without limitation, successors by merger, consolidation, sale or similar transaction, and, in the event of Executive's death or Disability, Executive's estate, successors, heirs and assigns in the case of any payments due to Executive hereunder). The Company will require any successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the business and/or assets of the Company to assume expressly and agree to perform this Agreement in the same manner and to the same extent that the Company would be required to perform it if no such succession had taken place. "Company" means the Company as hereinbefore defined and any successor to its business and/or assets as aforesaid that assumes and agrees to perform this Agreement by operation of law or otherwise. Following a Change in Control, if the Company is not the ultimate parent corporation and the Company's common stock is not publicly traded, the "Board of Directors" or "Board" as used in this Agreement shall refer to the board of directors of the ultimate parent of the Company.

- c. Executive acknowledges and agrees that all of Executive's covenants and obligations to the Company, as well as the rights of the Company hereunder, shall run in favor of and shall be enforceable by the Company and its successors and assigns.
16. **Governing Law; No Construction Against Drafter.** This Agreement shall be deemed to be made in the State of New York, and the validity, interpretation, construction, and performance of this Agreement in all respects shall be governed by the laws of the State of New York without regard to its principles of conflicts of law. No provision of this Agreement or any related document will be construed against or interpreted to the disadvantage of any party hereto by any court or other governmental or judicial authority by reason of such party having or being deemed to have structured or drafted such provision.
17. **Amendment; No Waiver; Severability.**
- a. No provisions of this Agreement may be amended, modified, waived or discharged except by a written document signed by Executive and a duly authorized officer of the Company (other than Executive). The failure of a party to insist upon strict adherence to any term of this Agreement on any occasion shall not be considered a waiver of such party's rights or deprive such party of the right thereafter to insist upon strict adherence to that term or any other term of this Agreement. No failure or delay by either party in exercising any right or power hereunder will operate as a waiver thereof, nor will any single or partial exercise of any such right or power, or any abandonment of any steps to enforce such a right or power, preclude any other or further exercise thereof or the exercise of any other right or power.
- b. If any term or provision of this Agreement is invalid, illegal or incapable of being enforced by any applicable law or public policy, all other conditions and provisions of this Agreement shall nonetheless remain in full force and effect so long as the economic and legal substance of the transactions contemplated by this Agreement is not affected in any manner materially adverse to any party; provided, that in the event that any court of competent jurisdiction shall finally hold in a non-appealable judicial determination that any provision of Section 7, 8 or 9 (whether in whole or in part) is void or constitutes an unreasonable restriction against Executive, such provision shall not be rendered void but shall be deemed to be modified to the minimum extent necessary to make such provision enforceable for the longest duration and the greatest scope as such court may determine constitutes a reasonable restriction under the circumstances. Subject to the foregoing, upon such determination that any term or other provision is invalid, illegal or incapable of being enforced, the parties hereto shall negotiate in good faith to modify this Agreement so as to effect the original intent of the parties as closely as possible in a mutually acceptable manner in order that the transactions contemplated hereby be consummated as originally contemplated to the fullest extent possible.
18. **Entire Agreement.** This Agreement constitutes the entire agreement and understanding between the Company and Executive with respect to the subject matter hereof and supersedes all prior agreements and understandings (whether written or oral), between Executive and the Company, relating to such subject matter, except that the terms of the Proprietary Invention Assignment, Noncompetition and Confidentiality Agreement (the "Proprietary Agreement") dated on or around April 17, 2019, the letter agreements dated on April 17, 2019, July 3, 2019 and September 3, 2019, and Executive's joinder agreement to the Amended and Restated Limited Liability Company Agreement of Virtu Employee Holdco LLC shall each continue in full force and effect in accordance with their terms, and any award agreements issued pursuant to the Plan shall continue in full force and effect in accordance with their terms.
19. **Survival.** The rights and obligations of the parties under the provisions of this Agreement shall survive, and remain binding and enforceable, notwithstanding the expiration of the Term, the termination of this Agreement, the termination of Executive's employment hereunder or any settlement of the financial rights and obligations arising from Executive's employment hereunder, to the extent necessary to preserve the intended benefits of such provisions.
20. **Notices.** All notices or other communications required or permitted to be given hereunder shall be in writing and shall be delivered by hand or sent by facsimile or sent, postage prepaid, by registered, certified or express mail or overnight courier service and shall be deemed given when so delivered by hand or facsimile, or if mailed, three days after mailing (one (1) business day in the case of express mail or overnight courier service) to the parties at the following addresses or facsimiles (or at such other address for a party as shall be specified by like notice):

If to the Company: Virtu Financial
1633 Broadway, 41st Floor
New York, NY 10019
Attn: Legal Department
E-mail: Legal @virtu.com

If to Executive: At the most recent address on file in the
Company's records

Notices delivered by email shall have the same legal effect as if such notice had been delivered in person.

21. **Headings and References.** The headings of this Agreement are inserted for convenience only and neither constitute a part of this Agreement nor affect in any way the meaning or interpretation of this Agreement. When a reference in this Agreement is made to a Section, such reference shall be to a Section of this Agreement unless otherwise indicated.
22. **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.

[Signature Page Follows]

This Agreement has been duly executed by the parties as of the date first written above.

VIRTU FINANCIAL OPERATING LLC

A handwritten signature in blue ink, appearing to read "Doug A Cifu".

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

A handwritten signature in blue ink, appearing to read "Brett Fairclough".

By:
Name: Brett Fairclough

Amended and Restated Employment Agreement (this "Agreement"), dated as of December 1, 2022 (the "Effective Date"), between Virtu Financial Operating LLC, a Delaware limited liability company (together with all parents, affiliates and subsidiaries as the "Company"), and Stephen Cavoli ("Executive").

WHEREAS, the Company and Executive are party to an existing Amended and Restated Employment Agreement dated February 26, 2020 (the "Existing Agreement") and desire to amend and restate the Existing Agreement as herein provided; and

WHEREAS, Executive's agreement to enter into this Agreement and be bound by the terms hereof, including the restrictive covenants described herein, is a material inducement to the Company's willingness to provide equity-based compensation to Executive as described herein, and the Company would not otherwise grant such equity-based compensation to Executive if Executive did not agree to enter into this Agreement.

NOW, THEREFORE, in consideration of the mutual agreements, provisions and covenants contained herein, and intending to be legally bound hereby, the parties hereto agree as set forth below:

1. Term.

- a. The term of Executive's employment under this Agreement shall continue from the Effective Date until February 26, 2026 (the "Initial Expiration Date"), provided that on the Initial Expiration Date and each subsequent anniversary of the Initial Expiration Date, the term of Executive's employment under this Agreement shall be extended for one (1) additional year unless either party provides written notice to the other party at least ninety (90) days prior to the Initial Expiration Date (or any such anniversary, as applicable) that Executive's employment hereunder shall not be so extended (in which case, Executive's employment under this Agreement shall terminate on the Initial Expiration Date or expiration of the extended term, as applicable); provided, however, that Executive's employment under this Agreement may be terminated at any time pursuant to the provisions of Section 5. The period of time from the Effective Date through the termination of this Agreement and Executive's employment hereunder pursuant to its terms is herein referred to as the "Term"; and the date on which the Term is scheduled to expire (i.e., the Initial Expiration Date or the scheduled expiration of the extended term, if applicable) is herein referred to as the "Expiration Date." Notwithstanding anything contained herein to the contrary, if upon the effective date of a Change in Control, the Expiration Date is less than one (1) year from the date of such Change in Control, the Term shall automatically be renewed so that the Expiration Date is one (1) year from the effective date of such Change in Control.
- b. Executive agrees and acknowledges that the Company has no obligation to extend the Term or to continue Executive's employment following the Expiration Date, and Executive expressly acknowledges that no promises or understandings to the contrary have been made or reached. Executive also agrees and acknowledges that, should Executive and the Company choose to continue Executive's employment for any period of time following the Expiration Date without extending the term of Executive's employment under this Agreement or entering into a new written employment agreement, Executive's employment with the Company shall be "at will," such that the Company may terminate Executive's employment at any time, with or without reason and with or without notice, and Executive may resign at any time, with or without reason and with or without notice (for the sake of clarity, the provisions of this Agreement shall not apply following the expiration of the Term (except as otherwise expressly provided herein)).

2. Definitions. For purposes of this Agreement, the following terms, as used herein, shall have the definitions set forth below.

- a. "Affiliate" means, with respect to any specified Person, any other Person that directly or indirectly, through one or more intermediaries, Controls, is Controlled by, or is under common Control with, such specified Person; provided, that in no event shall any entity Controlled by Vincent Viola but in which the Company does not have a direct or indirect ownership interest be treated as an Affiliate of the Company.
- b. "Cause" means that any of the following occurs:

- i. Executive is convicted of, or pleads guilty or *nolo contendere* to, any felony or commits any fraudulent or illegal acts with regard to the Company or its employees, independent contractors, officers, members or managers;
- ii. Executive is repeatedly intoxicated or under the influence of illegal substances while performing his employment duties;
- iii. Executive does not have any necessary license or regulatorily required qualification, or becomes subject to a decree or order, in each case, from a regulatory agency, in each case, that prevents him from working for the Company;
- iv. Executive (A) violates 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 him or the Company, (B) violates any material obligation or is in breach of any representation in this Agreement (including for the avoidance of doubt any exhibit hereto), or (C) violates 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 ("CEO") 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. Executives intentionally and wrongfully damages material assets of the Company;
- vi. Executive intentionally and wrongfully discloses material confidential information of the Company; or
- vii. Executive intentionally and wrongfully engages 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 his 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.

- c. "Change in Control" has the meaning set forth in the Plan.
- d. "Control" means (including, with correlative meanings, the terms "Controlled by" and "under common Control with"), as used with respect to any Person, means the direct or indirect possession of the power to direct or cause the direction of the management or policies of such Person, whether through the ownership of voting securities or by contract.
- e. "Disability" means means Executive would be entitled to long-term disability benefits under the Company's long-term disability plan as in effect from time to time, without regard to any waiting or elimination period under such plan and assuming for the purpose of such determination that Executive is actually participating in such plan at such time. If the Company does not maintain a long-term disability plan, "Disability" means Executive's inability to perform Executive's duties and responsibilities hereunder on a full-time basis for a consecutive period of one hundred eighty (180) days in any three hundred sixty-five (365)-day period due to physical or mental illness or incapacity that is determined to be total and permanent by a physician selected by the Company or its insurers and reasonably acceptable to the Executive or his legal representative.
- f. "Good Reason" means the termination of Executive's employment at his initiative after, without Executive's prior written consent, one (1) or more of the following events:
 - i. an adverse change in Executive's title or reporting relationship such that he no longer reports 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 the Executive's authority, duties or responsibilities (with respect to a termination in connection with a

Change in Control, relative to Executive's 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 Base Salary;

ii. a material breach of this Agreement by the Company or a successor employer; or

iii. required relocation or performance of primary services (other than through routine and reasonable travel) by the Executive more than thirty (30) miles from his current place of employment in order to continue to perform the duties and responsibilities of his position.

Notwithstanding the above, Executive's termination of employment will not be for Good Reason unless (1) he notifies the Company in writing of the existence of the condition that he believes 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, the Executive actually terminates employment within thirty (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, Executive shall only be required to resign for Good Reason within two years of the end of the Remedial Period.

g. "Person" means any individual, firm, corporation, partnership, limited liability company, trust, joint venture, association, unincorporated entity or other entity.

h. "Plan" means the Virtu Financial, Inc. Amended and Restated 2015 Management Incentive Plan.

3. Duties and Responsibilities.

- a. The Company hereby employs Executive, and Executive hereby accepts employment, subject to the terms and conditions contained herein, during the Term, as Executive Vice President reporting to the Company's Chief Executive Officer. During the Term, Executive agrees to be employed by and devote substantially all of Executive's business time and attention to the Company and the promotion of its interests and to use his best efforts to faithfully and diligently serve the Company; provided, however, that, to the extent such activities do not significantly interfere with the performance of his duties, services and responsibilities under this Agreement, Executive shall be permitted to (i) manage his personal, financial and legal affairs, (ii) serve on civic or charitable boards and committees of such boards and (iii) to the extent approved by the Board pursuant to a duly authorized resolution of the Board, serve on corporate boards and committees of such boards. Executive will perform such lawful duties and responsibilities as are commensurate with Executive's titles and positions and as are generally consistent with those exercised by Executive prior to the Effective Date, and such other duties and responsibilities commensurate with Executive's titles and positions as may be reasonably requested by the Chief Executive Officer from time to time. Executive will have the authority customarily exercised by an individual serving in such capacity of a corporation of the size and nature of the Company. During the Term, upon request shall serve as a director or an officer of one or more subsidiaries of the Company, or of an Affiliate of the Company. Executive shall not be compensated additionally in Executive's capacity as a member of the Board or as a director or officer of a subsidiary or Affiliate of the Company.
- b. During the Term, Executive's principal place of employment shall be in one of the Company's principal offices, including, but not limited to, the Company's offices in Manhattan, New York, Short Hills, New Jersey and Palm Beach, Florida, or such other location as may otherwise be agreed with the Company. Executive acknowledges that Executive's duties and responsibilities shall require Executive to travel on business to the extent reasonably necessary to fully perform Executive's duties and responsibilities hereunder.

4. Compensation and Related Matters.

- a. Base Salary. As of the Effective Date, Executive shall receive an annual base salary ("Base Salary") of \$600,000 per year, payable in accordance with the Company's normal payroll procedures and may be increased (but not decreased) by the CEO together with the Compensation Committee (as defined)

below) in its sole discretion (such salary, as may be increased, the “Base Salary”). For the avoidance of doubt, the position is exempt from any and all overtime laws.

- b. **Annual Bonus.** During the Term, for each calendar year, Executive shall be eligible to receive an annual bonus (“Annual Bonus”) with a target Annual Bonus amount of \$2,000,000 (the “Target Bonus”) and a maximum Annual Bonus amount of \$3,000,000 (the “Maximum Bonus”). Fifty percent (50%) of the Annual Bonus shall be based on the achievement of annual quantitative 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 (the “Quantitative Goals”) and the remaining fifty percent (50%) of the Annual Bonus will be based on annual qualitative targets established in the sole and absolute discretion of the Compensation Committee together with the Company’s CEO (the “Qualitative Goals”). Accordingly, up to \$1,000,000 of the Target Bonus and \$1,500,000 of the Maximum Bonus may be earned based on the achievement of the Quantitative Goals and up to \$1,000,000 of the Target Bonus and \$1,500,000 of the Maximum Bonus may be earned based on the achievement of the Qualitative Goals. The Annual Bonus, if any, shall be paid fifty percent (50%) in cash, thirty percent (30%) in the form of restricted shares or restricted share units (“RSUs”) in respect of Class A common stock of the Company (the “Stock”) that vest in equal annual installments on each of the first three (3) anniversaries of the date of grant, and the remaining twenty percent (20%) shall be paid in the form of fully-vested shares of Stock of fully-vested deferred share units (“DSUs”) in respect of Stock (in each case, in accordance with any applicable timely deferral election made by Executive); provided, that, the form, manner and timing of payment (including vesting of any payment in equity or equity-based awards) with respect to the Annual Bonus is subject to change in the event of (and consistent with) any change to the payout schedule formulations that is made applicable to the senior executives of the Company. The Annual Bonus, if any, shall be payable within the period required by Section 409A of the Code such that it qualifies as a “short-term deferral” pursuant to Section 1.409A-1(b)(4) of the Department of Treasury Regulations (or any successor thereto).
- c. **Equity Awards.** Executive shall be eligible to receive an equity award at the beginning of each calendar year during his employment (each such grant, an “Annual Equity Award”). It is the current intention of the Company’s Board and CEO that such Annual Equity Award will be in the form of 75,000 restricted shares or RSUs in respect of Stock, and that any such award shall be earned and vest in accordance with the terms hereof.
- i. The number of shares earned with respect to each Annual Equity Award shall be determined based on the percentage of the Company’s budgeted EBITDA achieved in the calendar year to which such award relates in accordance with the following table:

Percentage of Budgeted EBITDA Achieved	Number of Shares Earned
65% or more	75,000
Less than 65%	As determined at the sole discretion of the Compensation Committee of the Board, which may be 0

- ii. If the Board determines that the number of shares of Stock subject to the Annual Equity Award will be greater or less than 75,000, then the amounts reflected in the table above shall be adjusted to reflect such number of shares.
- iii. To the extent any shares of Stock are earned with respect to the Initial Equity Award in accordance with 4(c)(i), 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 the Executive’s continued employment through the applicable vesting date.
- d. **Benefits and Perquisites.** Executive 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, other than those provided for Executive

in this employment agreement. The Company also retains the right to assign Executive's employment agreement to an Affiliate, subject to the terms and conditions of this Agreement.

- e. Indemnification. The Company will indemnify Executive to the fullest extent permitted by law and the Company's governing documents.

5. Termination of Employment.

- a. Executive's employment under this Agreement may be terminated by either party at any time and for any reason; provided, however, that Executive shall be required to give the Company at least sixty (60) days' advance written notice of any voluntary resignation of Executive's employment hereunder (other than resignation for Good Reason) (and in such event the Company in its sole discretion may elect to accelerate Executive's date of termination of employment, it being understood that such termination shall still be treated as a voluntary resignation for purposes of this Agreement). Notwithstanding the foregoing, Executive's employment shall automatically terminate upon Executive's death.
- b. Upon termination, irrespective of the reason, the Company shall pay Executive: (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 Executive's 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 Executive but not yet paid as of the date employment terminates; and (iv) all other payments, benefits or fringe benefits to which Executive is entitled under the terms of the applicable arrangements and/or applicable law (all of the foregoing clauses (i)-(iv) collectively, the "Accrued Obligations").
- c. If Executive's employment under this Agreement is terminated (i) by the Company without Cause, (ii) due to Executive's death or Disability, (iii) by Executive for Good Reason, or (iv) due to expiration of the Term on the Expiration Date as a result of the Company delivering a notice of non-renewal as contemplated by Section 1, in addition to the payments and benefits specified in Section 5(b), Executive shall also receive the following termination payments and benefits on or beginning with the first payroll whose cutoff date follows the date Executive's employment ends or according to such timing as otherwise set forth below (collectively, the "Severance Benefits"):
- i. an amount equal to greater of (x) the sum of twelve (12) months' Base Salary, at the rate in effect immediately prior to termination (or, if higher, the highest rate in effect within the preceding six months) and (y) an amount equal to the total amount of Base Salary that Executive would have been entitled to receive had Executive continued to be employed through the Expiration Date (such amount, the "Severance Amount"), payable in a single lump sum within 30 days of 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. any bonus that the Company had definitively determined to pay to Executive and which was authorized and approved in accordance with the Company's policies and procedures but which had not yet been paid to as of the date of termination, payable in a lump sum at the same date as provided under clause (i) above;
- iii. (A) the Executive shall remain eligible to earn restricted shares of Stock or RSUs under his then-current Annual Equity Award in accordance with the criteria set forth in Section 4(c)(i) and, to the extent earned, the product of such earned shares multiplied by a fraction, the numerator of which is the number of calendar days the Executive was employed in the calendar year of termination, and the denominator of which is 365, shall be deemed vested on the last day of the calendar year to which such award relates, (B) any earned but unvested restricted shares of Stock or RSUs under the Annual Equity Award granted in the calendar year prior to the calendar year of the Executive's termination shall be deemed vested as of the date of termination and (C) the Executive shall receive 75,000 fully-vested shares of Stock or, if Executive has made an applicable and timely deferral election, DSUs (clauses (A), (B) and (C), the "Equity Acceleration"); and

- iv. continued health, dental, vision and life insurance benefits under the terms of the applicable Company benefit plans for (x) twelve (12) months or (y) the period from Executive's termination of employment through the Expiration Date, whichever is longer (the "Benefits Continuation Period"), subject to Executive's payment of the cost of such benefits to the same extent that active employees of the Company are required to pay for such benefits from time to time; provided, however, that such continuation coverage shall end earlier upon Executive's becoming eligible for comparable coverage under another employer's benefit plans; provided, further, that following the expiration of the Benefits Continuation Period (which was not terminated as a result of Executive becoming eligible for comparable coverage under another employer's benefit plans), Executive shall be eligible to continue his health, dental, vision and life insurance benefits for Executive and his spouse and eligible dependents under the terms of the applicable Company benefit plans until the earlier of (X) Executive's dependents reaching the age of 26, (Y) Executive or his spouse become eligible for Medicare, or (Z) Executive becoming eligible for comparable coverage under another employer's benefit plans, subject to Executive's payment of the full cost of such benefits; and provided, further, that to the extent the provision of such continuation coverage is not permitted under the terms of the Company benefit plans or would result in an adverse tax consequence to the Company, the Company may alternatively provide Executive with a cash payment (the "COBRA Cash Payment") in an amount equal to the applicable COBRA premium that Executive would otherwise be required to pay to obtain COBRA continuation coverage for such benefits for such period (minus the cost of such benefits to the same extent that active employees of the Company are required to pay for such benefits from time to time); provided, further, that the Company will use reasonable best efforts to continue coverage under the Company benefit plans to the extent legally possible without suffering any adverse consequences to the Company or other participants in such plans (the COBRA Cash Payment, if applicable, shall be paid in cash in a lump sum on the Severance Payment Date).
- d. Notwithstanding anything herein to the contrary, if at any time within twelve (12) months following a Change in Control (as defined in the Plan as of the date thereof) or in anticipation of a Change of Control towards which material steps have been taken at the time of such termination and such Change of Control actually occurs, Executive's employment under this Agreement is terminated (i) by the Company without Cause, (ii) due to death or Disability, (iii) by Executive for Good Reason, or (iv) due to expiration of the Term on the Expiration Date as a result of the Company delivering a notice of non-renewal as contemplated by Section 1, then in lieu of the Severance Benefits described in Section 5(c) the Executive shall be entitled to receive the following:
- i. An amount equal to two and a half (2.5) times the sum of (x) Executive's Base Salary and (y) the Annual Bonus (including any amounts deferred or satisfied through the grant of equity awards) most recently awarded to Executive for completed fiscal years of the Company (collectively, the "CIC Severance Amount") payable in a single lump sum on the Severance Payment Date;
- ii. any bonus that the Company had definitively determined to pay to Executive and which was authorized and approved in accordance with the Company's policies and procedures but which had not yet been paid to as of the date of termination, payable in a lump sum at the same date as provided under clause (i) above;
- iii. (A) the product of the number of shares of Stock under the Executive's then-current Annual Equity Award multiplied by a fraction, the numerator of which is the number of calendar days the Executive was employed in the calendar year of termination, and the denominator of which is 365, shall be deemed vested as of the date of termination, (B) any earned but unvested restricted shares of Stock or RSUs under the Annual Equity Award granted in the calendar year prior to the calendar year of the Executive's termination, shall be deemed vested as of the date of termination and (C) the Executive shall receive 75,000 fully-vested shares of Stock or, if Executive has made an applicable and timely deferral election, DSUs (clauses (A), (B) and (C), the "CIC Equity Acceleration"; and
- iv. the benefits described in Section 5(c)(iv) above, except that the Benefits Continuation Period shall be extended to (x) twenty-four (24) months or (y) the period from Executive's termination of employment through the Expiration Date, whichever is longer.

- e. For avoidance of doubt, all payments owed to the Executive under Section 5 of this Agreement will be paid in a single lump sum on the Severance Payment Date.
- f. In the event Executive's employment is terminated prior to a Change in Control but material steps have been taken at the time of such termination and such Change of Control actually occurs, in the event that Executive receives the Severance Amount or the Equity Acceleration prior to the occurrence of the Change in Control, then any such amounts paid prior to the Change in Control shall reduce the amount required to be paid pursuant to CIC Severance Amount or the CIC Equity Acceleration, respectively.
- g. Notwithstanding anything else herein to the contrary, the Company's obligation to pay the benefits described herein 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 Executive's employment ends (the "Release Period"). If such Release Period ends in the calendar year subsequent to the calendar year in which Executive's 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.
- h. To the extent (i) any payments to which Executive becomes entitled under this agreement, or any agreement or plan referenced herein, in connection with Executive's termination of employment with the Company, constitute deferred compensation subject to Section 409A of the Internal Revenue Code ("Section 409A") and (ii) Executive is 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 Executive's "separation from service" (as such term is at the time defined in regulations under Section 409A) with the Company and (ii) the date of Executive's 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 Executive, including (without limitation) the additional twenty-percent (20%) tax for which Executive 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 Executive or Executive's 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 Executive during any calendar year will not affect the amount of expenses eligible for reimbursement or in-kind benefits provided to Executive in any other calendar year, (y) the Company will reimburse Executive for expenses for which Executive is 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 Executive has 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.

6. 280G Matters.

- 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 Executive 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 Executive notice to that effect and a copy of the detailed calculation thereof, and Executive may then elect, in his 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 Executive. 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 Executive before or after the Change in Control, including any non-competition provisions that may apply to Executive 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 Executive's 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 Executive's 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 Executive 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 Executive's benefit shall be repaid by Executive 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 Executive is 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 Executive's 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 Executive's 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 Executive 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 Executive's taxable income for the immediately preceding taxable year, or such other rate(s) as Executive shall certify, in Executive's sole discretion, as likely to apply to Executive in the relevant tax year(s); (4) "Accounting Firm" shall mean the Company's regular auditor, unless Executive objects 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 Executive, which auditor shall not, without Executive's 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.
7. **Mutual Arbitration.** Executive 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 Executive's

employment, the cessation of Executive's employment or the interpretation of this agreement, Executive 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 Executive's claim(s). In the course of any arbitration pursuant to this agreement, Executive 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 Executive agrees to waive any claim or right Executive may have for punitive or other indirect or consequential damages. Executive 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 Executive agrees 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 Executive 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 Executive is deemed an associated person under FINRA's rules, this agreement does not prohibit or restrict Executive from filing an arbitration claim in the FINRA arbitration forum as specified in FINRA rules.

8. **Offset and Mitigation.** No payments due Executive hereunder shall be subject to any offset for obligations owed by Executive to the Company or its Affiliates (except as required by applicable law). In no event shall Executive be obligated to seek other employment or take any other action by way of mitigation of the amounts payable to Executive under any of the provisions of this Agreement.
9. **Restrictive Covenants.** Executive acknowledges and agrees that Executive shall continue to be bound by the restrictive covenants to which he is presently bound, including those set forth in the Proprietary Agreement (as defined below) (collectively, the "Restrictive Covenants"), in accordance with the terms and conditions thereof; provided, however, that the Executive shall not be held criminally or civilly liable under any federal or state trade secret law for any disclosure of a trade secret that is made: (A) in confidence to a federal, state or local government official, either directly or indirectly, or to an attorney; and (B) solely for the purpose of reporting or investigating a suspected violation of law; or is made in a complaint or other document that is filed under seal in a lawsuit or other proceeding. If the Executive files a lawsuit for retaliation by the Company for reporting a suspected violation of law, the Executive may disclose the Company's trade secrets to the Executive's attorney and use the trade secret information in the court proceeding if the Executive: (1) files any document containing the trade secret under seal; and (2) does not disclose the trade secret, except pursuant to court order.
10. **Return of Property.** Executive acknowledges that all notes, memoranda, specifications, devices, formulas, records, files, lists, drawings, documents, models, equipment, property, computer, software or intellectual property relating to the businesses of the Company, in whatever form (including electronic), and all copies thereof, that are received or created by Executive while an employee of the Company or its subsidiaries or Affiliates are and shall remain the property of the Company, and Executive shall immediately return such property to the Company upon the termination of Executive's employment and, in any event, at the Company's request and subject to inspection in accordance with applicable Company employee policies generally, except as may otherwise be agreed by Executive and the Company at the time of termination; provided, that Executive shall be permitted to retain a copy of his contacts/rolodex, including in electronic form.
11. **Remedies and Injunctive Relief.** Executive acknowledges that a violation by Executive of any of the covenants contained in Sections 9 or 10 would cause irreparable damage to the Company in an amount that would be material but not readily ascertainable, and that any remedy at law (including the payment of damages) would be inadequate. Accordingly, Executive agrees that, notwithstanding any provision of this Agreement to the contrary, the Company shall be entitled (without the necessity of showing economic loss or other actual damage) to injunctive relief (including temporary restraining orders, preliminary injunctions and/or permanent injunctions) in any court of competent jurisdiction for any actual or threatened breach of any of the covenants set forth in Sections 9 or 10 in addition to any other legal or equitable remedies it may have. The preceding sentence shall not be construed as a waiver of the rights

that the Company may have for damages under this Agreement or otherwise, and all of the Company's rights shall be unrestricted.

12. Representations of Executive; Advice of Counsel.

- a. Executive represents, warrants and covenants that as of the date hereof: (i) Executive has the full right, authority and capacity to enter into this Agreement and perform Executive's obligations hereunder, (ii) Executive is not bound by any agreement that conflicts with or prevents or restricts the full performance of Executive's duties and obligations to the Company hereunder during or after the Term, and (iii) the execution and delivery of this Agreement shall not result in any breach or violation of, or a default under, any existing obligation, commitment or agreement to which Executive is subject.
- b. Prior to execution of this Agreement, Executive was advised by the Company of Executive's right to seek independent advice from an attorney of Executive's own selection regarding this Agreement. Executive acknowledges that Executive has entered into this Agreement knowingly and voluntarily and with full knowledge and understanding of the provisions of this Agreement after being given the opportunity to consult with counsel. Executive further represents that in entering into this Agreement, Executive is not relying on any statements or representations made by any of the Company's directors, officers, employees or agents which are not expressly set forth herein, and that Executive is relying only upon Executive's own judgment and any advice provided by Executive's attorney.

13. Cooperation. Executive agrees that, upon reasonable notice and without the necessity of the Company obtaining a subpoena or court order, Executive shall provide reasonable cooperation in connection with any suit, action or proceeding (or any appeal from any suit, action or proceeding), and any investigation and/or defense of any claims asserted against the Company or its Affiliates, which relates to events occurring during Executive's employment with the Company and its Affiliates as to which Executive may have relevant information (including but not limited to furnishing relevant information and materials to the Company or its designee and/or providing testimony at depositions and at trial); provided that with respect to such cooperation occurring following termination of employment, the Company shall reimburse Executive for expenses reasonably incurred in connection therewith, and further provided that any such cooperation occurring after the termination of Executive's employment shall be scheduled so as not to unreasonably interfere with Executive's business or personal affairs.

14. Withholding. The Company may deduct and withhold from any amounts payable under this Agreement such Federal, state, local, non-U.S. or other taxes as are required to be withheld pursuant to any applicable law or regulation.

15. Assignment.

- a. This Agreement is personal to Executive and without the prior written consent of the Company shall not be assignable by Executive, except for the assignment by will or the laws of descent and distribution of any accrued pecuniary interest of Executive, and any assignment in violation of this Agreement shall be void. The Company may only assign this Agreement, and its rights and obligations hereunder, in accordance with the terms of Section 14(b).
- b. This Agreement shall be binding on, and shall inure to the benefit of, the parties to it and their respective heirs, legal representatives, successors and permitted assigns (including, without limitation, successors by merger, consolidation, sale or similar transaction, and, in the event of Executive's death or Disability, Executive's estate, successors, heirs and assigns in the case of any payments due to Executive hereunder). The Company will require any successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the business and/or assets of the Company to assume expressly and agree to perform this Agreement in the same manner and to the same extent that the Company would be required to perform it if no such succession had taken place. "Company" means the Company as hereinbefore defined and any successor to its business and/or assets as aforesaid that assumes and agrees to perform this Agreement by operation of law or otherwise. Following a Change in Control, if the Company is not the ultimate parent corporation and the Company's common stock is not publicly traded, the "Board of Directors" or "Board" as used in this Agreement shall refer to the board of directors of the ultimate parent of the Company.

- c. Executive acknowledges and agrees that all of Executive's covenants and obligations to the Company, as well as the rights of the Company hereunder, shall run in favor of and shall be enforceable by the Company and its successors and assigns.
16. **Governing Law; No Construction Against Drafter.** This Agreement shall be deemed to be made in the State of New York, and the validity, interpretation, construction, and performance of this Agreement in all respects shall be governed by the laws of the State of New York without regard to its principles of conflicts of law. No provision of this Agreement or any related document will be construed against or interpreted to the disadvantage of any party hereto by any court or other governmental or judicial authority by reason of such party having or being deemed to have structured or drafted such provision.
17. **Amendment; No Waiver; Severability.**
- a. No provisions of this Agreement may be amended, modified, waived or discharged except by a written document signed by Executive and a duly authorized officer of the Company (other than Executive). The failure of a party to insist upon strict adherence to any term of this Agreement on any occasion shall not be considered a waiver of such party's rights or deprive such party of the right thereafter to insist upon strict adherence to that term or any other term of this Agreement. No failure or delay by either party in exercising any right or power hereunder will operate as a waiver thereof, nor will any single or partial exercise of any such right or power, or any abandonment of any steps to enforce such a right or power, preclude any other or further exercise thereof or the exercise of any other right or power.
- b. If any term or provision of this Agreement is invalid, illegal or incapable of being enforced by any applicable law or public policy, all other conditions and provisions of this Agreement shall nonetheless remain in full force and effect so long as the economic and legal substance of the transactions contemplated by this Agreement is not affected in any manner materially adverse to any party; provided, that in the event that any court of competent jurisdiction shall finally hold in a non-appealable judicial determination that any provision of Section 7, 8 or 9 (whether in whole or in part) is void or constitutes an unreasonable restriction against Executive, such provision shall not be rendered void but shall be deemed to be modified to the minimum extent necessary to make such provision enforceable for the longest duration and the greatest scope as such court may determine constitutes a reasonable restriction under the circumstances. Subject to the foregoing, upon such determination that any term or other provision is invalid, illegal or incapable of being enforced, the parties hereto shall negotiate in good faith to modify this Agreement so as to effect the original intent of the parties as closely as possible in a mutually acceptable manner in order that the transactions contemplated hereby be consummated as originally contemplated to the fullest extent possible.
18. **Entire Agreement.** This Agreement constitutes the entire agreement and understanding between the Company and Executive with respect to the subject matter hereof and supersedes all prior agreements and understandings (whether written or oral), between Executive and the Company, relating to such subject matter, except that the terms of the Proprietary Invention Assignment, Noncompetition and Confidentiality Agreement (the "Proprietary Agreement") dated on or around June 24, 2015 shall each continue in full force and effect in accordance with their terms, and any award agreements issued pursuant to the Plan shall continue in full force and effect in accordance with their terms.
19. **Survival.** The rights and obligations of the parties under the provisions of this Agreement shall survive, and remain binding and enforceable, notwithstanding the expiration of the Term, the termination of this Agreement, the termination of Executive's employment hereunder or any settlement of the financial rights and obligations arising from Executive's employment hereunder, to the extent necessary to preserve the intended benefits of such provisions.
20. **Notices.** All notices or other communications required or permitted to be given hereunder shall be in writing and shall be delivered by hand or sent by facsimile or sent, postage prepaid, by registered, certified or express mail or overnight courier service and shall be deemed given when so delivered by hand or facsimile, or if mailed, three days after mailing (one (1) business day in the case of express mail or overnight courier service) to the parties at the following addresses or facsimiles (or at such other address for a party as shall be specified by like notice):

If to the Company: Virtu Financial

1633 Broadway, 41st Floor
New York, NY 10019
Attn: Legal Department
E-mail: Legal @virtu.com

If to Executive: At the most recent address on file in the
Company's records

Notices delivered by email shall have the same legal effect as if such notice had been delivered in person.

21. **Headings and References.** The headings of this Agreement are inserted for convenience only and neither constitute a part of this Agreement nor affect in any way the meaning or interpretation of this Agreement. When a reference in this Agreement is made to a Section, such reference shall be to a Section of this Agreement unless otherwise indicated.
22. **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.

[Signature Page Follows]

This Agreement has been duly executed by the parties as of the date first written above.

VIRTU FINANCIAL OPERATING LLC



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



By:
Name: Stephen Cavoli

VIRTU FINANCIAL, INC.
2015 MANAGEMENT INCENTIVE PLAN
AMENDMENT NO. 1 TO
EMPLOYEE
RESTRICTED STOCK UNIT AWARD AGREEMENT

THIS AMENDMENT NO. 1 TO THE RESTRICTED STOCK UNIT AWARD AGREEMENT (the "Amendment"), is entered into as of December 1, 2022 (the "Amendment Date"), by and between Virtu Financial, Inc., a Delaware corporation (the "Company"), and Douglas A. Cifu (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 (the "RSUs") may be granted;

WHEREAS, the Company and the Participant entered into that certain Amended and Restated Employment Agreement, dated as of November 15, 2017 (the "Employment Agreement"), pursuant to which the Participant is eligible to receive an equity award at the beginning of each calendar year during the Term (as defined in the Employment Agreement);

WHEREAS, the Company has adopted that certain Deferred Compensation Plan, effective November 13, 2020 and as amended from time to time (the "Deferred Compensation Plan") pursuant to which eligible employees may elect to defer certain compensation in accordance with the terms thereof and any other applicable requirements or conditions;

WHEREAS, the Participant made a deferral election in accordance with the Deferred Compensation Plan on or prior to December 31, 2021 pursuant to which the Participant elected to defer all equity compensation awarded in consideration of services rendered in the fiscal year ended December 31, 2022 (the "Cifu 2022 Deferral Election");

WHEREAS, on March 1, 2022 the Company issued to the Participant a Restricted Stock Unit Award for the grant of 150,000 Restricted Stock Units of the Company (the "2022 RSU Award"), subject to certain terms and conditions reflected in such award;

WHEREAS, on April 29, 2022 the Company and the Participant entered into the Amended and Restated Employment Agreement (the "2022 Amended and Restated Employment Agreement") which amended various terms and conditions of Participant's employment arrangement, including certain performance conditions in respect of annual equity awards issued thereunder;

WHEREAS, the Company and the Participant desire to amend certain terms of the 2022 RSU Award in order to reflect the terms of the 2022 Amended and Restated Employment Agreement;

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. Amendments.

Section 2 of the 2022 RSU Award is hereby amended and restated in its entirety in accordance with Section 8(k) thereof to read as follows:

2. Vesting; Settlement of Restricted Stock Units.

(a) Subject to the Participant's continued employment or service with the Company or an Affiliate, except as may otherwise be provided herein or in the Employment Agreement, the number of RSUs earned pursuant to Section 2(b) hereof shall vest in two (2) equal installments on each of December 31, 2022 and December 31, 2023 (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 8(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) The number of RSUs earned under this Agreement shall be determined based on the percentage of the Company's Adjusted EBITDA target as set forth in the Company's approved annual budget ("Budgeted EBITDA") achieved in calendar year 2022 in accordance with the table below.

Percentage of Budgeted EBITDA Achieved	Number of RSUs Earned
65% or more	150,000
<i>Less than 65%</i>	<i>As determined at the sole discretion of the Compensation Committee of the Board, which may be 0</i>

Section 8(k) of the 2022 RSU Award is hereby amended and restated in its entirety in accordance with Section 8(k) thereof to read as follows:

(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 7 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.

2. Miscellaneous.

(a) Amendment. Except as expressly amended herein, the 2022 RSU Award continues in full force and effect.

(b) 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 Amendment. Masculine pronouns and other words of masculine gender shall refer to both men and women as appropriate.

(c) Counterparts. This Amendment 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.

(d) Electronic Signature and Delivery. This Amendment 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).

(e) 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/ Robert Greifeld
Name: Robert Greifeld
Title: Chairman

/s/ Douglas A. Cifu
Douglas A. Cifu

[Signature Page to Restricted Stock Award Agreement]

Subsidiaries of Virtu Financial, Inc.

The following are subsidiaries of Virtu Financial, Inc. as of December 31, 2022 and the jurisdictions in which they are organized. The names of particular subsidiaries have been omitted because, considered in the aggregate as a single subsidiary, they would not constitute, as of December 31, 2022, a "significant subsidiary" as that term is defined in Rule 1-02(w) of regulation S-X under the Securities Exchange Act of 1934.

Name	Jurisdiction of Organization
Virtu Financial LLC	Delaware
VFH Parent LLC	Delaware
Virtu Financial Operating LLC	Delaware
Virtu Financial Global Markets LLC	Delaware
Virtu KCG Holdings LLC	Delaware
Virtu Americas LLC	Delaware

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (No. 333-213157), Form S-3ASR (No. 333-255659), and Forms S-8 (Nos. 333-266473, 333-248537, 333-203478, 333-219110, and 333-230012) of Virtu Financial, Inc. of our report dated February 17, 2023 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP
New York, New York
February 17, 2023

CEO CERTIFICATION
PURSUANT TO SECTION 302 OF THE
SARBANES — OXLEY ACT OF 2002

I, Douglas A. Cifu, certify that:

1. I have reviewed this Annual Report on Form 10-K for the period ending December 31, 2022 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: February 17, 2023

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, Sean Galvin, certify that:

1. I have reviewed this Annual Report on Form 10-K for the period ending December 31, 2022 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: February 17, 2023

By: /s/ Sean P. Galvin
Sean Galvin
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 Annual Report on Form 10-K of Virtu Financial, Inc. (the "Company") for the period ended December 31, 2022 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: February 17, 2023

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 Annual Report on Form 10-K of Virtu Financial, Inc. (the “Company”) for the period ended December 31, 2022 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Sean P. Galvin, 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/ Sean P. Galvin

Sean Galvin
Chief Financial Officer

Date: February 17, 2023