CME GROUP INC.
Form 10-K
February 28, 2019

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

FORM 10-K

(Mark One)
ý ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the Fiscal Year Ended December 31, 2018
OR
¨ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
Commission File Number 001-31553
CME GROUP INC.
(Exact name of registrant as specified in its charter)

Delaware	36-4459170
(State or Other Jurisdiction of Incorporation or Organization)	(IRS Employer Identification No.)
20 South Wacker Drive, Chicago, Illinois	60606
(Address of Principal Executive Offices)	(Zip Code)

Registrant’s telephone number, including area code: (312) 930-1000
Securities registered pursuant to Section 12(b) of the Act:

Title Of Each Class	Name Of Each Exchange On Which Registered
Class A Common Stock $0.01 par value	NASDAQ GLOBAL SELECT MARKET

Securities registered pursuant to Section 12(g) of the Act: Class B common stock, Class B-1, $0.01 par value; Class B common stock, Class B-2, $0.01 par value; Class B common stock, Class B-3, $0.01 par value; and Class B common stock, Class B-4, $0.01 par value.
Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ý No ¨
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ¨ No ý
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 ý 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 ý No ¨
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant’s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ý
Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or emerging growth company. See 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	x	Accelerated filer	o
Non-accelerated filer	o	Smaller reporting company Emerging growth company	o o

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

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

The aggregate market value of the voting stock held by non-affiliates of the registrant as of June 30, 2018, was approximately $55.4 billion (based on the closing price per share of CME Group Inc. Class A common stock on the NASDAQ Global Select Market (NASDAQ) on such date). The number of shares outstanding of each of the registrant's classes of common stock as of February 6, 2019 was as follows: 357,792,873 shares of Class A common stock, $0.01 par value; 625 shares of Class B common stock, Class B-1, $0.01 par value; 813 shares of Class B common stock, Class B-2, $0.01 par value; 1,287 shares of Class B common stock, Class B-3, $0.01 par value; and 413 shares of Class B common stock, Class B-4, $0.01 par value.

DOCUMENTS INCORPORATED BY REFERENCE:

Documents	Form 10-K Reference
Portions of the CME Group Inc.'s Proxy Statement for the 2019 Annual Meeting of Shareholders	Part III

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PART I

Certain Terms

All references to "options" or "options contracts" in the text of this document refer to options on futures contracts. Further information about CME Group and its products can be found at http://www.cmegroup.com. Information made available on our website does not constitute a part of this Annual Report on Form 10-K.

Information about Contract Volume and Average Rate per Contract

All amounts regarding contract volume and average rate per contract exclude our interest rate swaps and credit default swaps as well as volume data for NEX unless otherwise noted. In March 2018, we exited the credit default swaps business.

Trademark Information

CME Group, the Globe logo, CME, Chicago Mercantile Exchange, Globex, and E-mini are trademarks of Chicago Mercantile Exchange Inc. CBOT and Chicago Board of Trade are trademarks of Board of Trade of the City of Chicago, Inc. NYMEX, New York Mercantile Exchange and ClearPort are trademarks of New York Mercantile Exchange, Inc. COMEX is a trademark of Commodity Exchange, Inc. NEX, BrokerTec, EBS, TriOptima, and Traiana are trademarks of various entities that were under NEX Group plc (NEX), all of which are now owned by CME Group. Dow Jones, Dow Jones Industrial Average, S&P 500 and S&P are service and/or trademarks of Dow Jones Trademark Holdings LLC, Standard & Poor's Financial Services LLC and S&P/Dow Jones Indices LLC, as the case may be, and have been licensed for use by Chicago Mercantile Exchange Inc. All other trademarks are the property of their respective owners.

FORWARD-LOOKING STATEMENTS

From time to time, in this Annual Report on Form 10-K as well as in other written reports and verbal statements, we discuss our expectations regarding future performance. These forward-looking statements are identified by their use of terms and phrases such as "believe," "anticipate," "could," "estimate," "intend," "may," "plan," "expect" and similar expressions, including references to assumptions. These forward-looking statements are based on currently available competitive, financial and economic data, current expectations, estimates, forecasts and projections about the industries in which we operate and management's beliefs and assumptions. These statements are not guarantees of future performance and involve risks, uncertainties and assumptions that are difficult to predict. Therefore, actual outcomes and results may differ materially from what is expressed or implied in any forward-looking statements. We want to caution you not to place undue reliance on any forward-looking statements. We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise.

Among the factors that might affect our performance are:

- increasing competition by foreign and domestic entities, including increased competition from new entrants into our markets and consolidation of existing entities;
- our ability to keep pace with rapid technological developments, including our ability to complete the development, implementation and maintenance of the enhanced functionality required by our customers while maintaining reliability and ensuring that such technology is not vulnerable to security risks;
- our ability to continue introducing competitive new products and services on a timely, cost-effective basis, including through our electronic trading capabilities, and our ability to maintain the competitiveness of our existing products and services, including our ability to provide effective services to the swaps market;
- our ability to adjust our fixed costs and expenses if our revenues decline;
- our ability to maintain existing customers, develop strategic relationships and attract new customers;
- our ability to expand and globally offer our products and services;
- changes in regulations, including the impact of any changes in laws or government policy with respect to our products or services or our industry, such as any changes to regulations and policies that require increased financial and operational resources from us or our customers;
- the costs associated with protecting our intellectual property rights and our ability to operate our business without violating the intellectual property rights of others;
- decreases in revenue from our market data as a result of decreased demand or changes to regulations in various jurisdictions;

- changes in our rate per contract due to shifts in the mix of the products traded, the trading venue and the mix of customers (whether the customer receives member or non-member fees or participates in one of our various incentive programs) and the impact of our tiered pricing structure;

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- the ability of our credit and liquidity risk management practices to adequately protect us from the credit risks of clearing members and other counterparties, and to satisfy the margin and liquidity requirements associated with the BrokerTec matched principal business;
- the ability of our compliance and risk management methods to effectively monitor and manage our risks, including our ability to prevent errors and misconduct and protect our infrastructure against security breaches and misappropriation of our intellectual property assets;
- volatility in commodity, equity and fixed income prices, and price volatility of financial benchmarks and instruments such as interest rates, credit spreads, equity indices, fixed income instruments and foreign exchange rates;
- economic, political and market conditions, including the volatility of the capital and credit markets and the impact of economic conditions on the trading activity of our current and potential customers;
- our ability to accommodate increases in contract volume and order transaction traffic and to implement enhancements without failure or degradation of the performance of our trading and clearing systems;
- our ability to execute our growth strategy and maintain our growth effectively;
- our ability to manage the risks, control the costs and achieve the synergies associated with our strategy for acquisitions, investments and alliances, including those associated with the acquisition of NEX;
- our ability to continue to generate funds and/or manage our indebtedness to allow us to continue to invest in our business;
- industry and customer consolidation;
- decreases in trading and clearing activity;
- the imposition of a transaction tax or user fee on futures and options on futures transactions and/or repeal of the 60/40 tax treatment of such transactions;
- our ability to maintain our reputation; and
- the unfavorable resolution of material legal proceedings.

For a detailed discussion of these and other factors that might affect our performance, see Item 1A. of this Report beginning on page 13.

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ITEM 1. BUSINESS

CME Group enables clients to trade futures, options, cash and over-the-counter (OTC) markets, optimize portfolios, and analyze data — empowering market participants worldwide to efficiently manage risk and capture opportunities.

GENERAL DEVELOPMENT OF BUSINESS

CME was founded in 1898 as a not-for-profit corporation. CME demutualized in 2000, and in 2002 its parent company completed its initial public offering of its Class A common stock (NASDAQ: CME). Our acquisitions include our merger with CBOT Holdings, Inc. in 2007, our acquisition of NYMEX and COMEX in 2008 and our acquisition of NEX Group plc (NEX) in November 2018. Our combination with NEX creates a leading, client-centric, global markets company, generating significant efficiencies across futures, cash and OTC products for market participants seeking to lower their cost of trading and better manage risk. It also will improve our offerings to customers through the complementary combination of CME Group's exchange-traded derivative products and NEX's cash and OTC products. It also expands our international footprint and global client base.

Our principal executive offices are located at 20 South Wacker Drive, Chicago, Illinois 60606, and our telephone number is 312-930-1000.

NARRATIVE DESCRIPTION OF BUSINESS

CME Group exchanges offer the widest range of global benchmark products across all major asset classes based on interest rates, equity indexes, foreign exchange (FX), energy, agricultural commodities and metals. The company offers futures and options on futures trading across asset classes through the CME Globex platform, fixed income trading via BrokerTec and FX trading on the EBS platform. In addition, it operates one of the world's leading central counterparty clearing providers, CME Clearing. With a range of pre- and post-trade products and services underpinning the entire lifecycle of a trade, CME Group also offers optimization, reconciliation and processing services through TriOptima and Traiana.

Derivatives Exchange Business: Through our derivatives exchanges and clearing house, we offer the widest range of global benchmark products across all major asset classes. We believe our customers choose to trade on our centralized market due to its liquidity, price transparency and technological capabilities. Market liquidity — or the ability of a market to absorb the execution of large purchases or sales quickly and efficiently, whereby the market recovers quickly following the execution of large orders — is key to attracting customers and contributing to a market's success.

Our CME Group products provide a means for hedging, speculation and asset allocation relating to the risks associated with, among other things, interest rate sensitive instruments, equity ownership, changes in the value of foreign currency and changes in the prices of agricultural, energy and metal commodities.

- CME's product slate includes agricultural, equities, FX and interest rate products, including contracts for Eurodollars and contracts based on the S&P, NASDAQ-100 and FTSE Russell Indexes.
- CBOT's product slate consists of agricultural, equities, energy and interest rate products, including contracts for U.S. Treasury futures, corn and other grains and contracts based on the Dow Jones Industrial Index.
- NYMEX's product slate consists of energy and metals products, including contracts for crude oil, natural gas, heating oil and gasoline.
- COMEX's product slate consists of metals products, including contracts for gold, silver and copper.

We believe the breadth and diversity of our product lines and the variety of their underlying contracts are beneficial to our overall performance. Our asset classes contain products designed to address differing risk management needs, and customers are able to achieve operational and capital efficiencies by accessing our diverse products through our platforms and our clearing house.

Our CME Group products are traded primarily through CME Globex and other electronic trading platforms, by open outcry auction market in Chicago, and through privately negotiated transactions. We strive to provide the most flexible and scalable platforms to support the operational and capacity needs of the business along with the delivery of innovative technology solutions to the marketplace. Our CME Globex electronic platform is the trading engine for our central limit order book markets and is available on a global basis nearly 24 hours a day throughout the trading week. The CME Globex platform is accessible through a wide variety of vendor-provided and custom-built trading systems that benefit from our open application programming interface approach. For privately negotiated markets, we offer brokers and customers the CME Direct platform for arranging, executing, recording and risk-managing trades. CME Direct includes CME One for mobile access, CME Messenger for instant-message capabilities and CME Straight-Through Processing. CME Straight-Through Processing enables direct connectivity for trade information directly with customer order management and risk management systems and is designed to reduce errors and improve efficiency.

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Together, our platforms offer:

- certainty of execution;
- vast capabilities to facilitate complex and demanding trading;
- direct market access;
- fairness, price transparency and anonymity;
- convenience and efficiency;
- connectivity through highly secure, resilient and low-latency network options; and
- global distribution, including connectivity through high-speed international telecommunications hubs in key financial centers or order routing to our global partner exchanges.

We maintain comprehensive business continuity and disaster recovery plans and facilities to provide nearly continuous availability of our markets in the event of a business disruption or disaster. We also maintain incident and crisis management plans that address responses to disruptive events.

The customer base of our derivatives exchanges includes professional traders, financial institutions, institutional and individual investors, major corporations, manufacturers, producers, governments and central banks. Customers may be members of one or more of our exchanges. Rights to directly access our derivatives markets will depend upon the nature of the customer, such as whether the entity or individual is a member of one of our exchanges or has executed an agreement with us for direct access.

U.S. trading rights and privileges are exchange-specific. Open outcry trading is conducted exclusively by our members. Membership on one of our derivatives exchanges also enables a customer to trade specific products at reduced rates and lower fees. Under the terms of the organizational documents of our exchanges, our members have certain rights that relate primarily to trading right protections, certain trading fee protections and certain membership benefit protections. In 2018, 84% of our contract volume was from trades by our members.

CME Clearing Business: Through our clearing house, CME Clearing, which is a division of CME, we provide clearing services for all of our exchange-traded contracts, for certain cleared-only products and for certain contracts traded on other exchanges. Our integrated clearing function is designed to ensure the safety and the soundness of our exchange markets by serving as the counterparty to every trade, becoming the buyer to each seller and the seller to each buyer, and limiting counterparty credit risk. The clearing house is responsible for settling trading accounts, clearing trades, collecting and maintaining performance bond funds, regulating delivery and reporting trading data.

CME Clearing marks open positions to market at least twice a day, requires payment from clearing firms whose positions have lost value and makes payments to clearing firms whose positions have gained value. For select cleared-only markets, positions are marked-to-market daily, with the capacity to mark-to-market more frequently as market conditions warrant. The CME ClearPort front-end system provides access to our flexible clearing services for block transactions and swaps. Certain BrokerTec and EBS contracts are cleared at third-party clearing houses.

The majority of clearing and transaction fees received from clearing firms represents charges for trades executed and cleared on behalf of their customers. One firm represented 10% of our clearing and transaction fees revenue for 2018. In the event a clearing firm were to withdraw, our experience indicates that the customer portion of the firm's trading activity would likely transfer to one or more other clearing firms of the exchange.

Cash Markets Business: Our cash markets business is comprised of the BrokerTec and EBS sub-brands, which were acquired as part of NEX in November 2018.

- BrokerTec is a global electronic platform for the trading of fixed income products, with a leading position in cash U.S. Treasuries, as well as activity in European government bonds and E.U. and U.S. repo fixed income instruments. It facilitates trading principally for banks and non-bank professional trading firms.
- EBS is a global electronic platform for the trading of FX products. It is a reliable and trusted source of executable firm liquidity across major and emerging market currencies. EBS offers anonymous and disclosed trading venues, which give clients multiple execution and distribution options and the benefit of an established and far-reaching distribution network of liquidity providers and consumers. It also offers execution of non-deliverable forwards through a CFTC-registered Swap Execution Facility.

Optimization Business: Our optimization services, which include the Traiana and TriOptima sub-brands acquired as part of NEX, deliver transaction lifecycle management services to help our clients simplify their workflow, optimize their capital and resources, mitigate their risk, increase efficiency and reduce their operational costs and streamline complex processes.

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- Trade and portfolio management comprises portfolio and margin reconciliation, monitoring pre-trade risk and automating post-trade processing of financial transactions.
- Financial resource optimization comprises portfolio compression, basis risk mitigation, portfolio balancing and derivative pricing and risk analytics.
- Analytics delivers data, analytics and workflow tools that enable hedge funds and asset managers to manage their relationships with prime brokers more effectively. These tools provide a complete view of an individual hedge fund's relationships across multiple counterparties, delivering insights on counterparty credit risk, collateral management, portfolio financing and treasury.
- Regulatory reporting comprises trade and position reporting (including licensed MiFID agent reporting to national regulators and the public), end-to-end multi-regime regulatory reporting, data normalization, enrichment, reconciliation, validation and cross-jurisdictional matching.

Market Data Business: We offer a variety of market data services for the futures, equities, OTC, cash and the cleared swaps markets. Our market data platforms provide real-time and historical market data related to CME Group exchanges and our cash markets business. We also deliver independent market intelligence and pricing information for cash and OTC data to financial market participants using intelligence from our businesses and third parties.

Our Strategic Initiatives

The following is a description of our strategic initiatives:

Maximize Futures and Options on Futures Growth Globally — We continue to focus on driving growth and new customer acquisition, growing, innovating and scaling our core offerings, and increasing participation from non-U.S. customers. We do this by cross-selling our products, expanding the strength of our existing benchmark products, launching new products and services and deepening open interest in our core futures and options on futures offerings. During this decade, our key product launches have included the Ultra U.S. Treasury Bond futures and options and most recently the Ultra 10-Year Treasury futures, short-dated options across asset classes, new base metal products, expanded crude oil grades, Basis Trade at Index Close (BTIC) transactions, S&P Dividend futures, E-mini Russell 1000 and 2000 futures, and a cash-settled bitcoin futures contract. We continued to build traction in key product launches in 2018, including our Secured Overnight Financing Rate (SOFR) futures contracts, Sterling Overnight Index Average (SONIA) futures contracts, CME FX Link, CME Eris Interest Rate Swap Futures and Physical WTI Houston Crude Oil contracts. During 2018, we experienced overall record average daily volume of 19.2 million contracts, along with multiple volume records across our core product portfolio, including interest rates, FX, agricultural commodities and metals. We also had record volume in overall options, with electronic options representing 66% of total options volume in 2018. We continued to deepen liquidity and add diverse participation as evidenced by the growth in large open interest holders with records achieved across several product lines in 2018.

We also continued to expand and diversify our customer base worldwide and offer customers around the world the most broadly diversified portfolio of benchmark products. We believe we have significant opportunity to expand the participation of our non-U.S. customer base in our markets. We are focused on core growth in global markets because we believe that Australia, Asia, Latin America, and other emerging markets will experience significant growth and development of their financial markets. In addition, we continue to expand our presence in major global financial centers (including Europe), grow our business outside the United States and penetrate emerging markets, such as China, South Korea, Brazil and Mexico. In 2018, approximately 25% of our electronic futures and options on futures volume was from transactions reported as outside the United States and approximately 50% of our market data revenue was derived from outside the United States. We also achieved 42% growth in trading volume during Asian trading hours and 29% growth during European trading hours in 2018 compared to the 2017.

We continue to target cross-asset sales across client segments, driving international sales and generating new client participation across all regions. We have a long history of providing customer value and responsiveness and believe our products and services well position us to help our customers adapt and comply with new regulations, while enabling them to efficiently manage their risks. We have a broad distribution network comprised of a combination of internal and external channels and front-end capabilities.

Diversify our Business and Revenues — Our acquisition of NEX strengthens our role in the global market infrastructure, adding complementary cash and OTC businesses and scale to our listed interest rate and FX products, while enabling new efficiencies for the derivatives marketplace. The transaction positions CME Group to take direct advantage of growth in treasury issuance, liquid treasury holdings and the trading of treasury instruments, as well as growing repo activity across geographies. The transaction significantly expands CME Group’s position in the large, and highly fragmented, $5 trillion plus per trading day global FX marketplace, offering both order book trading and relationship trading solutions for customers. The acquisition adds strength in underlying customer marketplaces, especially around regional bank customers and other market participants outside of North America. The acquisition also expands our post-trade services and market data solutions beyond futures and options on futures into cash and OTC offerings.

Our joint venture with S&P Global, Inc., S&P/DJI Indices LLC, combines the world class capabilities of S&P Indices and Dow Jones Indices, and is a significant player in the passive investing including the exchange-traded fund (ETF) industry value chain. As part of the joint venture, we acquired a long-term, ownership-linked, exclusive license to list futures and options on futures based on the S&P 500 Index and certain other S&P indices.

Deliver Unparalleled Capital and Cost Efficiency Solutions — With changing regulatory capital requirements for many of our customers and the need for greater efficiencies, we have added tools to enable customers to build and manage trading and clearing positions in our markets in an efficient manner, including through our acquisition of NEX. With the ongoing implementation of regulatory reform in the United States and in Europe, along with global implementation of Basel III capital requirements on financial institutions, we expect capital efficiencies and centralized clearing to continue to be important for our global client base.

We provide a comprehensive multi-asset class clearing solution to the market for maximum operational ease and the capital efficiency that comes with connecting to our clearing house. Our clearing services offer the ability to optimize collateral and capital efficiencies across portfolios within the clearing house while meeting the heightened regulatory requirements on derivatives. The majority of our clearing volumes and activities are related to our listed futures and options on futures, which also represents the majority of our open interest and collateral held against these positions. We also offer clearing services for interest rate, FX and commodity swaps. In March 2018, we extended block trading to agricultural commodity products through CME ClearPort. Also, in 2018, we extended our OTC clearing solutions to include clearing for the Chilean and Columbian Peso interest rate swaps.

CME Group continues to introduce tools and services to assist customers with portfolio margining. As of December 31, 2018, 45 unique marketplace participants utilized CME Group’s portfolio margining services. In the past few years, we have introduced compression via coupon blending as well as CME CORE, an interactive margin calculator that enables clients to optimize their capital by providing insights on margin requirements prior to trading. We also offer multilateral compression for our cleared swap customers through TriOptima, and we provide trade reporting services in the United States, Europe, Canada and Australia. In 2018, we also introduced a multilateral compression service for our listed equity options.

Patents, Trademarks and Licenses

We own the rights to a large number of trademarks, service marks, domain names and trade names in the United States, Europe and other parts of the world. We have registered many of our most important trademarks in the United States and other countries. We hold the rights to a number of patents and have made a number of patent applications. Our patents cover match engine, trader user interface, trading floor support, market data, general technology and clearing house functionalities. We also own the copyright to a variety of materials. Those copyrights, some of which are registered, include printed and on-line publications, websites, advertisements, educational material, graphic presentations and other literature, both textual and electronic. We attempt to protect our intellectual property rights by relying on trademarks, patents, copyrights, database rights, trade secrets, restrictions on disclosure and other methods.

We offer equity index futures and options on key benchmarks, including S&P, NASDAQ, Dow Jones and the FTSE Russell indexes. These products are listed by us subject to license agreements with the applicable owners of the indexes, some of which are exclusive. In connection with our joint venture with S&P Global, Inc., we entered into a new license agreement (S&P License Agreement), which superseded our prior licensing arrangements and was assigned to the joint venture. CME’s license for the S&P 500 Index will be exclusive for futures and options on futures until one year prior to the termination of the S&P License Agreement, and non-exclusive for the last year. The license for the other S&P stock indexes is generally exclusive for futures and options on futures. The term of the S&P License Agreement will continue until the date that is one year after the date that CME Group ceases to own at least five percent (accounting for dilution) of the outstanding joint venture interests. Upon the occurrence of certain events, including certain terminations of the joint venture, the term may be extended up to an additional ten years. CBOT has an exclusive license agreement (Dow Jones License Agreement) with CME Group Index Services LLC (CME

Indexes) for certain Dow Jones indexes, which has also been assigned to the joint venture. The initial term of the agreement is through June 30, 2026. Following the initial term, the Dow Jones License Agreement shall automatically renew for renewal terms of five years thereafter so long as there is open interest in any of CBOT's or its affiliates' products based on one or more of the Dow Jones licensed indexes. In the event there is no open interest in any such products, then CME Indexes has the ability to terminate the agreement. We also have an exclusive license agreement for certain NASDAQ indexes, which was extended for an additional ten years in 2018 through 2029. In 2015, we entered into an exclusive license agreement with FTSE Russell and launched the E-mini Russell 2000 futures in 2017. We pay the applicable third party per trade fees based on contract volume under the terms of these licensing agreements. A copy of the S&P license arrangement has been filed as a material contract.

We also have a long-term, non-exclusive licensing arrangement with ICE Benchmark Administration for the use of LIBOR to settle several of our interest rate products, including our Eurodollar contract.

We cannot assure you that we will be able to maintain the exclusivity of our licensing agreements with S&P, Dow Jones, NASDAQ and FTSE Russell or be able to maintain our other existing licensing arrangements beyond the term of the current agreements. In addition, we cannot assure you that others will not succeed in creating stock index futures based on information similar to that which we have obtained by license, or that market participants will not increasingly use other instruments, including securities and options based on the S&P, Dow Jones, NASDAQ or Russell indexes, to manage or speculate on U.S. stock risks. Parties also may succeed in offering indexed products that are similar to our licensed products without being required to obtain a license, or in countries that are beyond our jurisdictional reach and/or our licensors.

Competition

The industry in which we operate is highly competitive and we expect competition to continue to intensify and become more global, especially in light of changes in the financial services industry driven by regulatory reforms such as the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank), European Market Infrastructure Regulation (EMIR), Markets in Financial Instruments Directive II (MiFID II), Capital Requirements Directive IV (CRD IV), Market Abuse Regulation, Benchmarks Regulation, Basel III, and various other laws and regulations. Please also refer to the discussion below and in the “Risk Factors” section beginning on page 13 for a description of competitive risks and uncertainties.

Competition in our Derivatives Exchange Business

We believe competition in the derivatives business is based on a number of factors, including, among others:

- brand and reputation;
- efficient and secure settlement, clearing and support services;
- depth and liquidity of markets;
- diversity of product offerings and frequency and quality of new product development and innovative services;
- ability to position and expand upon existing products to address changing market needs;
- efficient and seamless customer experience;
- transparency, reliability, anonymity and security in transaction processing;
- regulatory environment;
- connectivity, accessibility, flexibility in execution methods, and distribution;
- technological capability and innovation; and
- overall transaction costs.

We believe that we compete favorably with respect to these factors. Our deep, liquid markets; diverse and complementary product offerings; frequency and quality of new product development, and efficient, secure settlement, clearing and support services, distinguish us from others in the industry. We believe that in order to maintain our competitive position, we must continue to expand globally; develop new and innovative products; enhance our technology infrastructure, including its reliability and functionality; maintain liquidity and low transaction costs; continue to strengthen our risk management capabilities and solutions, and implement customer protections designed to ensure the integrity of our market and the confidence of our customers.

We compete in a large financial services trading, clearing and settlement marketplace globally. Our competitors include, among other entities, exchanges such as Intercontinental Exchange, Inc. (ICE), the Hong Kong Exchanges and Clearing Limited, and Deutsche Börse AG. It also includes alternative means of developing exposures through alternative instruments, such as cash, OTC, ETFs, options, warrants, contracts for differences, structured products, and other offerings. New emerging competitors have targeted different segments of our industry, and new technologies may offer alternative products in the future. Competition in our industry continues to be dynamic and recent developments and alliances may result in a growing number of well-capitalized trading service providers that compete with all or a portion of our business.

Competition in our CME Clearing Business

In the past few years, there has been increased competition in the provision of clearing services and we expect competition to continue to increase in connection with compliance with Dodd-Frank, Basel III, MiFID II and other various laws and regulations.

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Our competitors in the clearing services space include, among others, companies such as ICE, LCH.Group, the Options Clearing Corporation, Depository Trust & Clearing Corporation and Deutsche Börse AG. In light of the implementation of regulatory requirements and other reforms of the financial services industry, we believe that other exchanges and infrastructure providers also may undertake to provide clearing and other related post-trade services. We believe competition in clearing services is based on, among other things, the value of providing customers with capital and margin efficiencies; quality and reliability of the services; creditworthiness of the clearing house; timely delivery of the services; reputation; diversity of the service offerings; confidentiality of positions and information security protective measures, and the fees charged for the services provided.

Competition in our Cash Markets Business

The cash markets businesses operate with significant competition across a wide array of venues. In the FX space, the marketplace is highly fragmented, and there is competition from other electronic communication networks, single dealer platforms, bank owned multi-participant platforms, streaming and request for quote services, trading venues tied to data platforms, voice brokers, other broker enabled platforms, and other venues. There is a growing array of platforms, and they are often owned by many well capitalized financial institutions and intermediaries. In the fixed income space, there are also multiple providers of treasury, European and U.S. repo, and European bond trading, and a multitude of competitors and new entrants offering single dealer liquidity, bank owned multi-participant platforms, streaming and request for quote services, and other broker and exchange-enabled platforms.

Competition in our Optimization Services Business

The optimization services business has significant competition across each of the segments in which CME Group operates. There are multiple providers of compression services, reconciliation services, trade processing, analytics, and regulatory reporting services. In addition, there is considerable innovation going on in this business, with new entrants and new technologies being developed to serve customers.

Competition in our Market Data Business

Technology companies, market data and information vendors and front-end software vendors also represent actual and potential competitors because they have their own substantial market data distribution capabilities that could serve as alternative means for receiving open market data feeds instead of connecting directly to our exchange. Distributors and consumers of our market data may also use our market data as an input into a product that competes against one of our traded or cleared products. Although we may receive license fees for such products, such fees may not offset the impact of any loss in revenue from our comparable product.

Regulatory Matters

Our businesses are either regulated themselves or serving a customer-base that includes regulated institutions or individuals. Developments in the regulatory environment have the potential to significantly affect our businesses. As such, we are subject to extensive regulation primarily in the United States and Europe.

In June 2016, the U.K. held a referendum in which U.K. voters voted in favor of withdrawal from the European Union (Brexit), which continues to create a number of uncertainties for the financial services sector. We intend to establish certain businesses in a European Union jurisdiction, which will allow them to continue to provide services to European Union clients following Brexit. Separately, the European Commission, European Council, and European Parliament are considering legislation, EMIR 2.2, that could make changes to the E.U. equivalence and recognition regime for non-European Union clearing houses, including CME Clearing, as further discussed below.

Please also refer to the discussion below and in the "Risk Factors" section beginning on page 13 for a description of regulatory and legislative risks and uncertainties.

Regulation of our Derivatives Business, CME Clearing and NEX SEF

Our operation of U.S. futures exchanges, CME Clearing and the NEX swap execution facility (SEF) is subject to extensive regulation by the Commodity Futures Trading Commission (CFTC) that requires our regulated subsidiaries to satisfy the requirements of certain core principles relating to the operation and oversight of our markets and our clearing house. The CFTC carries out the regulation of the futures and swaps markets and clearing houses in accordance with the provisions of the Commodity Exchange Act as amended by, among others, the Commodity Futures Modernization Act and Dodd-Frank.

Regulations implementing Dodd-Frank include rules relating to the implementation of mandatory clearing of certain OTC derivatives, swap reporting, operation of a clearing house, anti-manipulation, large trader reporting, product definitions, the definition of an agricultural commodity and certain provisions of the rules applicable to designated contract markets, swap execution facilities and swap data repositories. We continue to believe these regulations provide opportunities for our business, which we continue to explore.

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CME has been designated as a systemically important financial market utility and a systemically important derivatives clearing organization. These designations carry with them additional regulatory oversight of certain of our risk-management standards, clearing and settlement activities by the CFTC and the Federal Reserve Board.

In connection with the global offering of our products and clearing services, this business is also subject to the rules and regulations of the local jurisdictions in which we conduct business, including the European Securities and Markets Authority (ESMA) and the United Kingdom Financial Conduct Authority (FCA).

Regulation of our Cash Markets Business

The operation of our BrokerTec platform subjects us to regulation by the Financial Industry Regulatory Authority (FINRA) and the U.S. Securities and Exchange Commission (SEC) as a broker-dealer and alternative trading system operator. It is also subject to regulation by authorities in the European Union as a multilateral trading facility and regulated market and by the applicable regulators in Singapore and Canada. Our EBS business holds various permissions, approvals and exemptions globally, including those that subject certain of its activities to CFTC and FCA oversight.

Regulation of our Optimization Services Business

Certain of our optimization services, which enable clients to mitigate their risk, reduce operational costs, optimize their capital, and fulfill trade reporting obligations, are subject to the Swedish Financial Supervisory Authority, the FCA, CFTC and the National Futures Association, ESMA and the Australian Securities and Investments Commission.

Regulation of our Market Data Business

Our RepoFunds Rate suite of daily benchmarks for the euro, Italy, Germany, France, Spain, The Netherlands and Belgium are subject to the E.U. Benchmarks Regulations, and as such we are considered an approved Benchmark Administrator under the regulation.

Key Areas of Focus

We actively monitor and participate in the domestic and international rulemaking processes for our industry, including providing government testimony, commenting on proposed rulemakings and educating our regulators on potential impacts to the marketplace.

Our key areas of focus in the regulatory environment are:

- The potential impact of changes to the E.U. equivalence and recognition regime on non-European Union clearing houses and exchanges with customers based in Europe arising from the potential adoption of EMIR 2.2 legislation being considered by the European Commission, European Council, and European Parliament. This legislation, and the implementation of subsidiary regulations once the legislation is adopted, could require us to make changes to how our clearing house operates, subject us to greater regulatory oversight by ESMA and increase costs. A failure of our clearing house to retain its recognition may result in our clearing members and certain customers in Europe being subject to higher capital costs thus creating a disincentive to use our markets. The E.U. equivalence and recognition regime also has the potential to impact the cost and ease or difficulty for certain of NEX's OTC execution platforms to provide access to customers on a global basis.
- The adoption and implementation of position limit rules, which could have a significant impact on our commodities business if federal rules for position limit management differ significantly from current exchange-administered rules.
- Rules respecting capital charges under Basel III with respect to clearing members of central counterparties may have negative implications for the cleared derivatives markets. Additional risks could arise through inconsistent adoption of the Basel III capital charges globally, potentially leading to disparate impacts on our customers.
- The potential for further regulation stemming from industry performance disruptions and residual concerns around electronic trading activity and, in particular, "high frequency trading."
- The potential elimination of the 60/40 tax treatment of certain of our futures and options contracts, which would impose a significant increase in tax rates applicable to certain market participants and could result in a decrease in their trading activity.
- The implementation of a transaction tax or user fee in the United States or European Union, or in the State of Illinois, which could discourage institutions and individuals from using our markets or products or encourage them to trade in another less costly jurisdiction. From time to time, the proposed Presidential budget, including the currently proposed budget, has included a proposal to impose a user fee to fund the CFTC. Legislation to impose a financial transaction

tax has again been proposed in the Illinois General Assembly, as it has in previous sessions of the General Assembly.

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- The implementation of legislation in the European Union impacting how benchmark index prices are formed, including new requirements for price submitters, price aggregators and markets that list contracts that reference index prices.
- Concerns that European legislators will prohibit or restrict exclusive licenses for benchmark indexes, which might impact the profitability of several of our most popular contracts.
- The implementation of rules resulting in negative treatment of the liquidity profile of U.S. Treasury securities, including as qualifying liquidity resources, or any potential limitation on the use of U.S. Treasury securities as collateral could result in increased costs to us and our clearing firms.
- The potential for further regulation and/or industry changes flowing from the continuing review by the official sector and industry participants of the U.S. Treasury “flash rally” of October 15, 2014 and its implications for clearing and settlement in the U.S. Treasury market.

Employees

As of December 31, 2018, we had approximately 4,590 employees. We consider relations with our employees to be good.

Executive Officers

The following are CME Group's executive officers. Ages are as of February 10, 2019.

Terrence A. Duffy, 60. Mr. Duffy has served as our Chairman and Chief Executive Officer since November 2016. Mr. Duffy previously served as our Executive Chairman and President since 2012 and as Executive Chairman from 2006. Mr. Duffy has been a member of our board of directors since 1995. He also served as President of TDA Trading, Inc. from 1981 to 2002 and has been a member of our CME exchange since 1981.

Kathleen M. Cronin, 55. Ms. Cronin has served as our Senior Managing Director, General Counsel and Corporate Secretary since 2003. Prior to joining us, Ms. Cronin was a corporate attorney at Skadden, Arps, Slate, Meagher & Flom LLP from 1989 through 1995 and from 1997 through 2002. Ms. Cronin also serves as a director of Kemper Corporation.

Sunil Cutinho, 47. Mr. Cutinho has served as President of CME Clearing since September 2014. He joined CME Group in 2002 and since then has held various positions of increasing responsibility within the organization and, most recently served as Managing Director, Deputy Head of CME Clearing from April 2014 through September 2014.

Bryan T. Durkin, 58. Mr. Durkin has served as President since November 2016. Mr. Durkin previously served as Senior Managing Director, Chief Commercial Officer since 2014 and as our Chief Operating Officer since 2007, and also held the title of Managing Director, Products and Services from 2010 to July 2012. Mr. Durkin joined us in connection with the CBOT merger and he previously held a variety of leadership roles with CBOT from 1982 to 2007, most recently as Executive Vice President and Chief Operating Officer.

Julie Holzrichter, 50. Ms. Holzrichter has served as our Senior Managing Director, Chief Operating Officer since September 2014. She previously served as our Senior Managing Director, Global Operations from 2007. Ms. Holzrichter rejoined us in 2006 as our Managing Director, CME Globex Services and Technology Integration. Ms. Holzrichter previously held positions of increasing responsibility in our organization from 1986 to 2003 in trading operations.

Kevin Kometer, 54. Mr. Kometer has served as Senior Managing Director and Chief Information Officer since 2008. He previously served as Managing Director and Deputy Chief Information Officer from 2007 to 2008. Since joining the company most recently in 1998, he has held senior leadership positions in the Technology Division, including Managing Director, Trading Execution Systems and Director, Advanced Technology. Mr. Kometer was also with the company from 1994 to 1996.

Hilda Harris Piell, 51. Ms. Piell has served as Senior Managing Director and Chief Human Resources Officer since 2007. Previously she served as Managing Director and Senior Associate General Counsel, as Director and Associate General Counsel and as Associate Director and Assistant General Counsel since joining us in 2000.

John W. Pietrowicz, 54. Mr. Pietrowicz has served as our Chief Financial Officer since December 2014. Previously, Mr. Pietrowicz served as our Senior Managing Director, Business Development and Corporate Finance since 2010. Mr. Pietrowicz joined us in 2003 and since then has held various positions of increasing responsibility, including Managing Director and Deputy Chief Financial Officer from 2009 to 2010 and Managing Director, Corporate Finance

and Treasury from 2006 to 2009. Mr. Pietrowicz also serves as a director of S&P/Dow Jones Indices LLC.
Derek Sammann, 50. Mr. Sammann has served as our Senior Managing Director, Commodities and Options Products since September 2014. He previously served as our Senior Managing Director, Financial Products and Services since 2009 and Global Head of Foreign Exchange Products since joining us in 2006. Prior to joining us, Mr. Sammann served as Managing Director, Global Head of FX Options and Structured Products at Calyon Corporate and Investment Bank in London from 1997 to 2006.

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Jack Tobin, 55. Mr. Tobin has served as our Chief Accounting Officer since February 2015. Mr. Tobin most recently served as our Managing Director, Corporate Finance since 2007. Prior to our merger with CBOT Holdings, Mr. Tobin served as the Director, Corporate Finance for CBOT Holdings, Inc. and CBOT from 2002 to 2007. Prior to joining CBOT, Mr. Tobin served as a principal consultant with PricewaterhouseCoopers from 1997 to 2002. Mr. Tobin is a registered certified public accountant.

Sean Tully, 55. Mr. Tully has served as Senior Managing Director, Financial and OTC Products of CME Group since September 2014. He previously served as Senior Managing Director, Interest Rates and OTC Products since February 2014. Previously, he served as Managing Director, Interest Rate and OTC Products since October 2013 and as our Managing Director, Interest Products since joining us in 2011. Before joining the company, Mr. Tully most recently served as Managing Director, Global Head of Fixed Income Trading at WestLB in London.

Julie Winkler, 44. Ms. Winkler has served as our Senior Managing Director, Chief Commercial Officer since December 2016. She previously served as Senior Managing Director, Research and Product Development and Index Services of CME Group since 2014 and as Managing Director, Research and Product Development since 2007. Prior to our merger with CBOT Holdings, Ms. Winkler held positions of increasing responsibility for CBOT Holdings since 1996. Ms. Winkler also serves as a director of S&P/Dow Jones Indices LLC.

AVAILABLE INFORMATION

Our website is www.cmegroup.com. Information made available on our website does not constitute part of this document. We make available on our website our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports as soon as reasonably practicable after we electronically file or furnish such materials to the U.S. Securities and Exchange Commission (SEC). Our corporate governance materials, including our Corporate Governance Principles, Director Conflict of Interest Policy, Board of Directors Code of Ethics, Categorical Independence Standards, Employee Code of Conduct and the charters for all the standing committees of our board, also may be found on our website. Copies of these materials also are available to shareholders free of charge upon written request to Shareholder Relations, Attention Ms. Beth Hausoul, CME Group Inc., 20 South Wacker Drive, Chicago, Illinois 60606.

ITEM 1A. RISK FACTORS

In addition to the other information contained in this Annual Report on Form 10-K, you should carefully consider the factors discussed below, which are the risks we believe are material at this time. These risks could materially and adversely affect our business, financial condition and results of operations. These risks and uncertainties are not the only ones facing us. Additional risks and uncertainties not presently known to us or that we currently believe to be immaterial may also adversely affect our business.

RISKS RELATING TO OUR INDUSTRY

Our business is subject to the impact of domestic and international market, economic and political conditions that are beyond our control and that could significantly impact our business and make our financial results more volatile.

Our revenue is substantially derived from fees for transactions executed and cleared in our markets. The trading volumes in our markets are directly affected by domestic and international factors that are beyond our control, including:

- economic, political and geopolitical market conditions;
- legislative and regulatory changes, including any direct or indirect restrictions on or increased costs associated with trading in our markets;
- broad trends in the industry and financial markets;
- changes in price levels, trading volumes and volatility in the derivatives, cash and OTC markets and in underlying equity, foreign exchange, interest rate and commodity markets;
- shifts in global or regional demand or supply in commodities underlying our products;
- competition;
- changes in government monetary policies, especially central bank decisions related to quantitative easing;
- availability of capital to our market participants and their appetite for risk-taking;
- levels of assets under management;

- volatile weather patterns, droughts, natural disasters and other catastrophes;
- pandemics affecting our customer base or our ability to operate our markets; and
- consolidation or expansion in our customer base and within our industry.

Any one or more of these factors may contribute to reduced activity in our markets. Historically, periods of heightened uncertainty have tended to increase our trading volume due to increased hedging activity and the increased need to manage the risks associated with, or speculate on, volatility in the U.S. equity markets, fluctuations in interest rates and price changes in the foreign exchange, commodity and other markets. However, as evidenced by our past performance, in the period after a material market disturbance, there may persist extreme uncertainties, which may lead to decreased volume due to factors such as reduced risk exposure, lower interest rates, central bank asset purchase programs and lack of available capital. The shifts in market trading patterns we experienced as a result of the financial crisis of 2008 may or may not recur in the future, and our business will be affected by future economic uncertainties, which may result in decreased trading volume and a more difficult business environment for us. A reduction in overall trading volume or in certain products could render our markets less attractive to market participants as a source of liquidity, which could result in further loss of trading volume and associated transaction-based revenue. Material decreases in trading volume would have a material adverse effect on our financial condition and operating results.

We operate in a heavily regulated environment that imposes significant costs and competitive burdens on our business.

We are primarily subject to the jurisdiction of the regulatory agencies in the United States and Europe. As a result of our global operations, we are also subject to the rules and regulations of the local jurisdictions in which we conduct business and offer our products and services.

Due to the global financial crisis that began in 2008, the United States and numerous other governments have undertaken reviews of the legal framework governing financial markets and have either passed new laws and regulations, or are in the process of debating or enacting new laws and regulations that will impact our business. We have incurred and expect to continue to incur significant additional costs to comply with the extensive regulations that apply to our business. Additionally, regulation imposed on financial institutions or market participants generally, such as enhanced capital requirements, may adversely impact their trading activity in our markets. Also, as noted above, EMIR 2.2, the legislation being considered by the European Commission, European Council, and European Parliament, and the implementation of the regulations under this legislation, have the potential to increase our regulatory costs and/or create a disincentive for certain clients to use our products. The EU equivalence and recognition regime also has the potential to impact the cost and ease or difficulty for certain of NEX’s OTC execution platforms to provide access to customers on a global basis.

To the extent the regulatory environment is less beneficial for us or our customers, our business, financial condition and operating results could be negatively affected.

If we fail to comply with applicable laws, rules or regulations, we may be subject to censure, fines, cease-and-desist orders, suspension of our business, removal of personnel or other sanctions, including revocation of our designations as a contract market, derivatives clearing organization, swap execution facility or broker-dealer.

Legislation may be proposed, both domestically and internationally, that could add a transaction tax on our products or change the way that our market participants are taxed on the products they trade on our markets. If such proposals were to become law, they could have a negative impact on our industry and on us by making transactions more costly to market participants, which may reduce trading and could make our markets less competitive.

Please see "Item 1 – Business – Regulatory Matters" beginning on page 10 for additional information on our areas of regulatory focus.

We face intense competition from other companies. If we are not able to successfully compete, our business, financial condition and operating results will be materially harmed.

The industry in which we operate is highly competitive and we expect competition to continue to intensify, especially in light of the implementation of Dodd-Frank and other reforms of the financial services industry. We believe portions of Dodd-Frank and the corresponding regulations with respect to mandatory clearing and organized trading provide opportunities for our business. However, other reforms could negatively impact our business and our ability to compete effectively. We encounter competition in all aspects of our business, including from entities having substantially greater capital and resources, offering a wide range of products and services and in some cases operating under a different and possibly less stringent regulatory regime. We face competition from other futures, securities and securities option exchanges; OTC markets; clearing organizations; consortia formed by our members and large industry participants; swap execution facilities; alternative trade execution facilities; technology firms, including market data distributors and electronic trading system developers, and others. Many of our competitors and potential competitors have greater financial, marketing, technological and personnel resources than we do.

Our competitors may:

- respond more quickly to competitive pressures, including responses based upon their corporate governance structures, which may be more flexible and efficient than our corporate governance structure;
- develop products that are preferred by our customers;

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- develop risk transfer products that compete with our products;
- price their products and services more competitively;
- develop and expand their network infrastructure and service offerings more efficiently;
- utilize better, more user-friendly and more reliable technology;
- take greater advantage of acquisitions, alliances and other opportunities;
- more effectively market, promote and sell their products and services;
- better leverage existing relationships with customers and alliance partners or exploit better recognized brand names to market and sell their services; and
- exploit regulatory disparities between traditional, regulated exchanges and alternative markets that benefit from a reduced regulatory burden and lower-cost business model.

If our products, markets and services are not competitive, our business, financial condition and operating results will be materially harmed. A decline in our fees or loss of customers could lower our revenues, which would adversely affect our profitability.

Please see "Item 1 – Business – Competition" beginning on page 9 for additional information on the competitive environment and its potential impact on our business.

Our trading volume, and consequently our revenues and profits, would be adversely affected if we are unable to retain our current customers or attract new customers.

The success of our business depends, in part, on our ability to maintain and increase our trading volume in our markets. To do so, we must maintain and expand our product offerings, our customer base and our trade execution and clearing facilities. Our success also depends on our ability to offer competitive prices and services in an increasingly price-sensitive business. For example, some of our competitors have engaged in aggressive pricing strategies in the past, such as lowering the fees that they charge for taking liquidity and increasing liquidity payments or rebates. We cannot provide assurances that we will be able to continue to expand our products and services, that we will be able to retain our current customers or attract new customers or that we will not be required to modify our pricing structure to compete effectively. Changes in our pricing structure may result in a decrease in our profit margin. Additionally, from time to time, certain customers may represent a significant portion of the open interest in our individual product lines or contracts. If we fail to maintain our trading volume; expand our product offerings or execution facilities; or lose a substantial number of our current customers, or a subset of customers representing a significant percentage of trading volume in a particular product line; or are unable to attract new customers, our business and revenues will be adversely affected. Furthermore, declines in trading volume due to loss of customers may negatively impact market liquidity, which could lead to further loss of trading volume.

Our role in the global marketplace places us at greater risk than other public companies for a cyber attack and other cyber security risks. Our technology, our people and those of our third-party service providers may be vulnerable to cyber security threats, which could result in wrongful use of our information or cause interruptions in our operations that cause us to lose customers and trading volume, and result in substantial liabilities. We also could be required to incur significant expense to protect our systems and/or investigate any alleged attack.

We regard the secure transmission of confidential information and the ability to continuously transact and clear on our electronic trading platforms as critical elements of our operations. Our technology, our people and those of our third-party service providers and our customers may be vulnerable to targeted attacks, unauthorized access, fraud, computer viruses, denial of service attacks, terrorism, "ransom" attacks, firewall or encryption failures and other security problems. Criminal groups, political activist groups and nation-state actors have targeted the financial services industry and our role in the global marketplace places us at greater risk than other public companies for a cyber attack and other information security threats. While the company has not experienced cyber incidents that are individually, or in the aggregate, material, the company has experienced cyber attacks of varying degrees in the past. The company has designed its cyber defense program to mitigate such attacks by preventative, detective, and responsive measures. Our usage of mobile and cloud technologies may increase our risk for a cyber attack. Our security measures may also be breached due to employee error, malfeasance, system errors or vulnerabilities. Additionally, outside parties may attempt to fraudulently induce employees, users, or customers to disclose sensitive information in order to gain access to our technology systems and data, or our customers' data. Any such breach or unauthorized access could result in significant legal and financial exposure, damage to our reputation, and a loss of confidence in the services we provide that could potentially have an adverse effect on our business, while resulting in regulatory penalties or the imposition of burdensome obligations by regulators. In addition, as the regulatory environment related to information security, data collection and use, and privacy becomes increasingly rigorous, with new and constantly changing requirements applicable to our business, including the European Union General Data Protection Regulation that went into effect in May

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2018, compliance with those requirements could also result in additional costs and may carry significant penalties for non-compliance.

Additionally, the operation of our technology platforms may place us at greater risk for misappropriation of our intellectual property, and persons who circumvent security measures could wrongfully use or steal our information or cause interruptions or malfunctions in our operations. In the past, we have been the victim of trade secret theft by an employee.

As part of our global information security program, we employ resources to monitor and protect our technology infrastructure and employees against such cyber attacks, including the rapid response to zero-day vulnerabilities, and the potential misappropriation of our intellectual property assets. However, our security measures or those of our third-party providers, including any cloud-based technologies, may prove insufficient depending upon the attack or threat posed. Any security attack or breach could result in system failures and delays, loss of customers and lower trading volume, loss of competitive position, damage to our reputation, disruption of our business, legal liability or regulatory fines, significant costs, which in turn, may cause our revenues and earnings to decline. Though we have insurance against some cyber risks and attacks, we may be subject to litigation and financial losses that exceed our policy limits or are not covered under any of our current insurance policies.

As a financial services provider, we are subject to significant litigation risk and potential commodity and securities law liability.

Many aspects of our business involve substantial litigation risks. While our derivatives exchange and clearing activities generally are protected by our rules limiting liability for system failures and certain forms of negligence and by statutory limits on the ability to bring private causes of actions in cases where we have not acted in bad faith, we could be exposed to substantial liability under federal and state laws and court decisions, as well as rules and regulations promulgated and/or direct actions brought by the SEC and the CFTC. These risks include, among others, potential liability from disputes over terms of a trade, the claim that a system failure or delay caused monetary losses to a customer, that we entered into an unauthorized transaction, that we provided materially false or misleading statements in connection with a transaction or that we failed to effectively fulfill our regulatory oversight responsibilities. We may be subject to disputes regarding the quality of trade execution, the settlement of trades or other matters relating to our services. We may become subject to these claims as a result of failures or malfunctions of our systems and services we provide. We could incur significant legal expenses defending claims, even those without merit. In addition, an adverse resolution of any future lawsuit or claim against us could have a material adverse effect on our business and our reputation. To the extent we are found to have failed to fulfill our regulatory obligations, we could lose our authorizations or licenses or become subject to conditions that could make future operations more costly and impair our profitability.

Some of CME Clearing's largest clearing firms have indicated their belief that clearing facilities should not be owned or controlled by exchanges and should be operated as utilities and not for profit. These clearing firms have sought, and may seek in the future, legislative or regulatory changes that would, if adopted, enable them to use alternative clearing services for positions established on our exchanges or to freely move open positions among clearing houses in order to take advantage of our liquidity. Even if they are not successful, these factors may cause them to limit the use of our markets.

Our clearing house seeks to offer customers, intermediaries and clearing firms universal access in order to maximize the efficient use of capital, exercise appropriate oversight of value at risk and maintain operating leverage from clearing activities on our exchanges. Our strategic business plan is to operate an efficient and transparent vertically integrated transaction execution, clearing and settlement business for our futures and options on futures business. Some of our clearing firms have expressed the view that clearing firms should control the governance of clearing houses or that clearing houses should be operated as utilities rather than as part of for-profit enterprises. Some of these firms, along with certain industry associations, have sought, and may seek in the future, legislative or regulatory changes to be adopted that would facilitate mechanisms or policies that allow market participants to transfer positions of futures or options on futures from an exchange-owned clearing house to a clearing house owned and controlled by clearing firms. If these legislative or regulatory changes are adopted, our revenues and profits could be adversely affected.

We may be at greater risk from terrorism than other companies.

We may be more likely than other companies to be a direct target of, or an indirect casualty of, attacks by terrorists or terrorist organizations. It is impossible to accurately predict the likelihood or impact of any terrorist attack on our industry generally or on our business. While we have implemented significant physical security protection measures, business continuity plans and established backup sites, in the event of an attack or a threat of an attack, these security measures and contingency plans may be inadequate to prevent significant disruptions in our business, technology or access to the infrastructure necessary to maintain our business. Such attack may result in the closure of our facilities or render our backup data and recovery systems inoperable. Damage to our facilities due to terrorist attacks may be significantly in excess of any amount of insurance received, or we may not be able to insure against such damage at a reasonable price or at all. The threat of terrorist attacks may also negatively affect our ability to attract and retain employees. Any of these events could have a material adverse effect on our business, financial condition and operating results.

RISKS RELATING TO OUR BUSINESS

Damage to our reputation could damage our business.

Maintaining our reputation and brand is critical to attracting and retaining customers and investors and for maintaining our relationships with our regulators. Negative publicity regarding our company or actual, alleged or perceived issues regarding our products or services could give rise to reputational risk which could significantly harm our business prospects. These issues may include, but are not limited to, any of the risks discussed in this Item 1A, including risks from customer disputes, system failures or intrusions, failures to meet our regulatory obligations, failures of a clearing firm or other counterparty, issues relating to our third-party suppliers, misconduct and ineffective risk management.

The success of our markets depends on our ability to complete development of, successfully implement and maintain the electronic trading systems that have the functionality, performance, reliability and speed required by our customers.

The success of our business depends in large part on our ability to create interactive electronic marketplaces, for a wide range of products, that have the required functionality, performance, capacity, security and speed to attract and retain customers. In 2018, 90% of our overall volume was generated through electronic trading on our CME Globex electronic platform. In connection with the acquisition of NEX, we acquired the BrokerTec and EBS trading platforms, which will eventually be migrated to CME Globex.

We must continue to enhance our electronic trading platforms and other technology offerings to remain competitive. As a result, we will continue to be subject to risks, expenses and uncertainties encountered in the rapidly evolving market for electronic transaction services. These risks include our failure or inability to:

- provide reliable and cost-effective services to our customers;
- develop, in a timely manner, the required functionality to support electronic trading in a manner that is competitive with the functionality supported by other electronic markets;
- maintain the competitiveness of our fee structure;
- attract independent software vendors to write front-end software that will effectively access our electronic trading systems and automated order routing system;
- respond to technological developments or service offerings by competitors; and
- generate sufficient revenue to justify the substantial capital investment we have made and will continue to make to enhance our electronic trading platforms and other technology offerings.

If we do not successfully enhance our electronic trading systems and technology offerings, if we are unable to develop them to include other products and markets or if they do not have the required functionality, performance, capacity, security and speed desired by our customers, our ability to successfully compete and our revenues and profits will be adversely affected.

Additionally, we rely on our customers' ability to have the necessary back office functionality to support our new products and our trading and clearing functionality. To the extent our customers are not prepared and/or lack the resources or infrastructure, the success of our new initiatives may be compromised.

If we experience systems failures or capacity constraints, our ability to conduct our operations and execute our business strategy could be materially harmed and we could be subjected to significant costs and liabilities.

Our business is highly dependent on our ability to process and monitor, on a daily basis, a large number of transactions which occur at high volume and frequencies across multiple systems. We are heavily reliant on the capacity, reliability and security of the computer and communications systems and software supporting our operations. Our systems, or those of our third-party providers, including cloud providers, may fail or be shut down or, due to capacity constraints, may operate slowly, causing one or more of the following to occur:

- unanticipated disruptions in service to our customers;
- slower response times and delays in our customers' trade execution and processing;
- failed settlement of trades;
- incomplete or inaccurate accounting, recording or processing of trades;
- financial losses;

- security breaches;

- litigation or other customer claims;
- loss of customers; and
- regulatory sanctions.

We cannot assure you that we will not experience systems failures from power or telecommunications failure, acts of God, war or terrorism, human error on our part or on the part of our vendors, natural disasters, fire, sabotage, hardware or software malfunctions or defects, computer viruses, cyber attacks, acts of vandalism or similar occurrences. If any of our systems or the systems of our third-party providers do not operate properly, are compromised or are disabled, including as a result of system failure, employee or customer error or misuse of our systems, we could suffer financial loss, liability to customers, regulatory intervention or reputational damage that could affect demand by current and potential users of our market.

From time to time, we have experienced system errors and failures that have resulted in some customers being unable to connect to our electronic trading platforms and technology offerings, or that resulted in erroneous reporting, such as transactions that were not authorized by any customer or reporting of filled orders as canceled. Such errors may result in CME Group being liable or in our voluntary assumption of financial liability. We cannot assure you that if we experience system errors or failures in the future that they will not have a material adverse impact on our business. Any such system failures that cause an interruption in service or decrease our responsiveness could impair our reputation, damage our brand or have a material adverse effect on our business, financial condition and operating results.

Regulations relating to our derivatives exchange and clearing business generally require that our trade execution and communications systems be able to handle anticipated present and future peak trading volume. Similarly, our BrokerTec and EBS trading platforms are expected by our customers to be regularly available and able to handle peak volumes. Heavy use of our computer systems during peak trading times or at times of unusual market volatility could cause our systems to operate slowly or even to fail for periods of time. We constantly monitor system loads and performance, and regularly implement system upgrades to handle estimated increases in contract volume. However, we cannot assure you that our estimates of future trading volume and order messaging traffic will be accurate or that our systems will always be able to accommodate actual trading volume and order messaging traffic without failure or degradation of performance. Increased trading volume and order messaging traffic may result in connectivity problems or erroneous reports that may affect users of our platforms. System failure or degradation could lead our customers to file formal complaints with industry regulatory organizations, to file lawsuits against us or to cease doing business with us, or could lead the CFTC or other regulators to initiate inquiries or proceedings for failure to comply with applicable laws and regulations.

We will need to continue to upgrade, expand and increase the capacity of our systems as our business grows and as we execute our business strategy. Although many of our systems are designed to accommodate additional volume and products and services without redesign or replacement, we will need to continue to make significant investments in additional hardware and software to accommodate the increases in volume of transactions and order transaction traffic and to provide processing services to third parties. If we cannot increase the capacity and capabilities of our systems to accommodate an increasing volume of transactions and to execute our business strategy, our ability to maintain or expand our businesses would be adversely affected.

We, as well as many of our customers, depend on third-party suppliers and service providers for a number of services that are important. An interruption or cessation of an important supply or service by any third party could have a material adverse effect on our business, including revenues derived from our customers' trading activity.

We depend on a number of suppliers, such as banking, clearing and settlement organizations, telephone companies, on-line service providers, data processors, cloud hosting providers, data center providers, and software and hardware vendors, for elements of our trading, clearing and other systems, as well as communications and networking equipment, computer hardware and software and related support and maintenance.

Many of our customers rely on third parties, such as independent software vendors, to provide them with front-end systems to access our trading platforms and other back office systems for their trade processing and risk management needs. While these service providers have undertaken to keep current with our enhancements and changes to our interfaces and functionality, we cannot guarantee that they will continue to make the necessary monetary and time investments to keep up with our changes.

To the extent any of our service providers or the organizations that provide services to our customers in connection with their trading activities cease to provide these services in an efficient, cost-effective manner or fail to adequately expand their services to meet our needs and the needs of our customers, we could experience decreased trading volume, lower revenues and higher costs.

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Certain businesses acquired from NEX subject us to compliance and regulatory risks associated with being a regulated intermediary.

Regulatory oversight of our business has historically been extensive and focused on the adequacy of our self-regulatory oversight of our derivatives exchange and clearing activities and the security and safeguards of our systems. The broker-dealer and multilateral trading facility businesses acquired from NEX (BrokerTec and EBS) are also extensively regulated, but with a focus on their role as intermediaries, which may create compliance and regulatory risks different than those to which we previously have been subject. These regulatory obligations generally include proper licensing and qualification of the firms and individuals, substantive conduct standards, communication and disclosure rules, monitoring and surveillance, training, capital requirements, supervisory obligations, maintenance of an anti-money laundering program, suspicious activity reporting, risk management standards, trade reporting, and ongoing examinations and reviews. The risks from failing to meet these compliance and regulatory obligations include potential liability, disciplinary action against the firm and individuals, monetary penalties, and restrictions on future activities.

Our business exposes us to substantial credit risk of our clearing firms and other counterparties and, consequently, a decrease in their financial resources could adversely affect us.

In our derivatives business, our clearing house operations expose us to counterparties with differing risk profiles. We routinely guarantee transactions submitted by our clearing firms with counterparties in the financial industry, including brokers and dealers, commercial banks, investment banks, mutual and hedge funds, and other institutional customers. We could be adversely impacted by the financial distress or failure of one or more of our clearing firms. Additionally, we are exposed to the risk of loss from the failure of a matched principal counterparty to settle its trades at BrokerTec.

A substantial part of our working capital may be at risk if a clearing firm defaults on its obligations to our clearing house and its margin and guaranty fund deposits are insufficient to meet its obligations. Additionally, BrokerTec is exposed to the potential risk of loss in the event a counterparty fails to meet its obligations. Although we have policies and procedures to help ensure that our clearing firms and other counterparties can satisfy their obligations, these policies and procedures may not succeed in detecting problems or preventing defaults. We also have in place various measures intended to enable us to cure any default and maintain liquidity. However, we cannot assure you that these measures will be sufficient to protect market participants from a default or that we will not be adversely affected in the event of a significant default. In addition, we have established a fund (currently $98.0 million) to provide payments, up to certain maximum levels, to qualified family farmers, ranchers and other agricultural industry participants who use our products and who suffer losses to their segregated account balances if their derivatives clearing firm member becomes insolvent.

Our BrokerTec matched principal business is highly dependent on our status as a member in good standing of the Fixed Income Clearing Corporation (FICC), and our failure to maintain that status could adversely affect us.

BrokerTec's matched principal platform facilitates anonymous trading in significant volumes from wholesale market participants who are FICC members and understand that BrokerTec is also a FICC member, such that their trades are expected to be novated promptly to FICC, who will be their ultimate counterparty. A failure of BrokerTec to maintain its membership could adversely impact the willingness of such participants to continue trading on the platform. As part of maintaining its membership, BrokerTec is required to timely and fully meet all margin calls and other obligations established by FICC, and as such must maintain ready access to sufficient liquidity to satisfy those obligations. BrokerTec maintains access to liquidity resources that it believes will satisfy these obligations in normal and stressed circumstances, but there can be no guarantee that it will never experience a shortfall.

Our Three-Month Eurodollar futures contracts are based on the three-month U.S. dollar LIBOR underlying rate. To the extent trading in Eurodollar contracts decreases and our alternative contracts are not successful, our revenues would be negatively impacted. Certain of our other businesses could also be negatively affected by changes to LIBOR.

Our Eurodollar futures contracts are based on the three-month U.S. dollar ICE LIBOR (LIBOR) underlying rate. In 2018, average trading volume in our Eurodollar contracts was 4.5 million contracts and open interest was 53.9 million contracts. LIBOR is the subject of recent national and international proposals for reform which advocate for the transition of survey based interbank offered rates to alternative transaction-based reference rates. In particular, on July 27, 2017, the Chief Executive of the FCA, which regulates LIBOR, announced that it intends to stop persuading banks to submit rates for the calibration of LIBOR to the administrator of LIBOR after 2021. The announcement indicates that the continuation of LIBOR on the current basis cannot be guaranteed after 2021. While we are closely engaged with the industry, regulators, and market participants to launch products using alternative reference rates, including our SOFR and SONIA futures contracts launched in 2018, there is no guarantee that a transition to such contracts would be successful and would replace the revenue we derive from our Eurodollar contracts if the trading volume were to decline or discontinue altogether. Additionally, certain of our other businesses, including our Reset offering, could be negatively affected by changes to LIBOR.

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The required capital and posted collateral of our clearing firms may lose value given the volatility of the market.
To become a clearing member at our clearing house, a firm must meet certain minimum capital requirements and must deposit collateral to meet performance bond and guaranty fund requirements. We accept a variety of collateral to satisfy these requirements, including cash, regulated money market mutual funds, U.S. Treasury securities, U.S. Government Agency securities, letters of credit, gold, equities and select ETFs, foreign sovereign debt, Canadian Provincials and corporate bonds, and subject them to established haircuts based on the type of collateral and maturity. There is no guarantee the collateral will maintain its value. To the extent a clearing firm is not compliant with capital, margin or guaranty fund requirements, it would be required to promptly come into compliance by adding capital or collateral, decreasing its proprietary trading activity and/or transferring customer accounts to another clearing firm. These actions could result in a decrease in trading activity in our derivatives products.
Intellectual property rights licensed from third-party price reporting agencies form the basis for many of our products from which we derive a significant portion of our volume and revenue. Regulatory scrutiny into such benchmarks could have a negative impact on our ability to offer such products.
We are significantly dependent on the contract volume of products which are based on intellectual property rights of indexes derived from third-party price reporting agencies. To comply with CFTC core principles, we must be able to demonstrate that our products may not be readily susceptible to manipulation. Our inability to offer products based on these indexes could have a negative impact on our contract volume and revenues.
Our market data revenues may be reduced by decreased demand, poor overall economic conditions, regulatory changes or a significant change in how market participants trade and use market data.
We sell our market data to individuals, trading institutions and other organizations that use our information services to participate in our markets and/or monitor general economic conditions. Revenues from our market data and information services represented 10% and 11% of our total revenues during the years ended December 31, 2018 and 2017 respectively. A decrease in overall trading volume may lead to a decreased demand for our market data. For example, in recent years, we experienced a decrease in the average number of market data connections due to continued economic uncertainty, high unemployment levels in the financial services sector and aggressive cost cutting initiatives at customer firms and the continued impact of legacy incentive programs tied to trading terminals. We could also become subject to regulatory actions, which could have the potential to restrict how we charge for our market data. We also license our market data to be used in the creation of derivative financial products, and changes to regulation, including the impact of any changes in laws or government policy, may impact the demand of our market data for such derivative works.
We may have difficulty executing our growth strategy and maintaining our growth effectively.
We continue to focus on strategic initiatives to grow our business, including our efforts to serve the OTC markets and to distribute our products and services on a global basis. There is no guarantee that our efforts will be successful. Continued growth will require additional investment in personnel, facilities, information technology infrastructure and financial and management systems and controls and may place a significant strain on our management and resources. For example, if we encounter limited resources, we may be required to increase our expenses to obtain the necessary resources, defer existing initiatives or not pursue certain opportunities. We may not be successful in implementing all of the processes that are necessary to support our growth organically or, as described below, through acquisitions, other investments or strategic alliances. Our growth strategy also may subject us to increased legal, compliance and regulatory obligations. Unless our growth results in an increase in our revenues that is proportionate to the increase in our costs associated with our growth, our future profitability could be adversely affected, and we may have to incur significant expenditures to address the additional operational and control requirements as a result of our growth.
We intend to continue to explore acquisitions, other investments and strategic alliances. We may not be successful in identifying opportunities or in integrating the acquired businesses. Any such transaction may not produce the results we anticipate, which could adversely affect our business and our stock price.
We intend to continue to explore and pursue acquisitions and other strategic opportunities to strengthen our business and grow our company. We may make acquisitions or investments or enter into strategic partnerships, joint ventures and other alliances. The market for such transactions is highly competitive, especially in light of historical merger and acquisition activity in our industry. As a result, we may be unable to identify strategic opportunities or we may be

unable to negotiate or finance future transactions on terms favorable to us, which could impact our ability to identify growth opportunities. We may finance future transactions by issuing additional equity and/or debt. The issuance of additional equity in connection with any future transaction could be substantially dilutive to our existing shareholders. The issuance of additional debt could increase our leverage substantially. The process of integration also may produce unforeseen regulatory and operating difficulties and expenditures and may divert the attention of management from the ongoing operation of our business. To the extent we enter into joint ventures and alliances, we may experience difficulties in the development and expansion of the business of any newly

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formed ventures, in the exercise of influence over the activities of any ventures in which we do not have a controlling interest, as well as encounter potential conflicts with our joint venture or alliance partners. We may not realize the anticipated growth and other benefits from our growth initiatives and investments, which may have an adverse impact on our financial condition and operating results. We also may be required to take an impairment charge in our financial statements relating to our acquisitions and/or investments, which could negatively affect our stock price. Our recent acquisition of NEX is subject to many of these risks, including the potential we may not achieve the expected cost savings, synergies and other strategic benefits from the transaction within the anticipated time frames and the integration of NEX with our operations may not be successful or may be delayed or more costly than expected, or that our customers will be negatively affected by these changes.

Expansion of our global operations involves special challenges that we may not be able to meet, which could adversely affect our financial results.

We plan to continue to expand our global operations, including through our acquisition of NEX. We face certain risks inherent in doing business in international markets, particularly in our regulated businesses. These risks include:

- becoming subject to extensive regulations and oversight;
- difficulties in staffing and managing international operations;
- general economic and political conditions in the countries from which our markets are accessed, which may have an adverse effect on our volume from those countries; and
- potentially adverse tax consequences.

We cannot assure you that we will be successful in marketing our products and services in international markets. We also may experience difficulty in managing our international operations because of, among other things, competitive conditions overseas, management of FX risk, established domestic markets, language and cultural differences and economic or political instability. Any of these factors could have a material adverse effect on the success of our international operations and, consequently, on our business, financial condition and operating results.

The ultimate impact of Brexit is contingent upon the terms of withdrawal and the ongoing relationship between the U.K. and the European Union. Brexit may result in legal uncertainty and potentially divergent national laws and regulations as the withdrawal process progresses. Additionally, the establishment of certain of our businesses in a European Union jurisdiction will result in increased legal, compliance and operational costs.

Our compliance and risk management programs might not be effective and may result in outcomes that could adversely affect our reputation, financial condition and operating results.

In the normal course of our business, we discuss matters with our regulators including during regulatory examinations, or we may otherwise become subject to their inquiry and oversight. Our regulators have broad enforcement powers, including the power to censure, fine, issue cease-and-desist orders, prohibit us from engaging in some of our businesses or suspend or revoke our regulatory designations or the registration of any of our officers or employees who violate applicable laws or regulations. Our ability to comply with applicable laws and regulations is largely dependent on our establishment and maintenance of compliance, review and reporting systems, as well as our ability to attract and retain qualified compliance and other risk management personnel. We face the risk of significant intervention by regulatory authorities, including extensive examination and surveillance activity. In the case of alleged non-compliance with applicable laws or regulations, we could be subject to investigations and judicial or administrative proceedings that may result in substantial penalties or civil lawsuits, including by customers, for damages, which