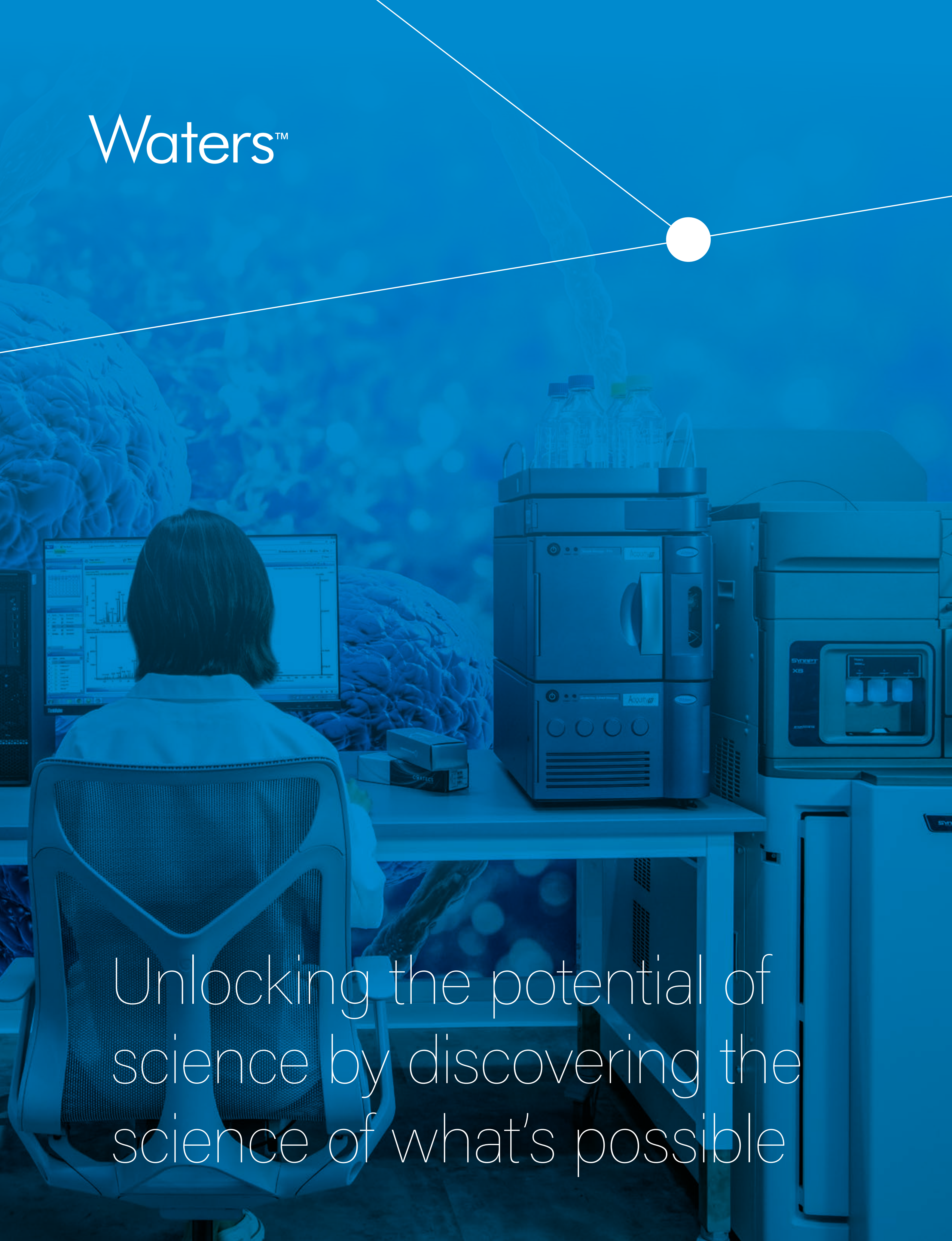
Waters™

ANNUAL REPORT 2020

Waters™



Unlocking the potential of science by discovering the science of what's possible

Dear Shareholders, Customers, and Employees,

I must begin by thanking our employees around the globe for their hard work and dedication throughout 2020. During an extraordinarily difficult year that brought significant change and sacrifice, the Waters team responded with drive, determination, and an indomitable spirit. I am extremely thankful for the warm welcome into the organization and for our team's unwavering commitment to our customers and to each other.

When I joined Waters on September 1, 2020, we were right in the middle of the pandemic. As a former research engineer, I have always admired Waters' scientific expertise and its mission to meaningfully impact healthcare and the world. We turned this scientific understanding toward three objectives:

1. **Ensure the safety and well-being of our employees and their families.**
2. **Do our part to help mitigate the public health crisis.**
3. **Maintain business continuity.**

Keeping our employees safe has been – and continues to be – a top priority. We implemented numerous safety measures, including increased sanitation procedures, in-depth reviews of air flow and filtration systems across our facilities, as well as testing and contact tracing.

We activated an Innovation Response Team, consisting of our top research scientists and engineers to lend our technology and expertise to help end this public health crisis.

Our columns and instruments are used to characterize the very mRNA molecules that have become vaccines. Our differential scanning calorimetry (DSC) instruments are used to characterize the proteins that have become COVID-19 therapeutics and our BioAccord™ System is helping customers accelerate COVID-19 therapeutic research and development. The generics industry called upon us with a critical need to rapidly scale up production of anti-viral drugs. Waters is also supporting the UK government by providing an LC-MS alternative to PCR testing. In early studies by Waters scientists, we demonstrated that our LC-MS method can be a highly accurate testing option for COVID-19, while also unlocking the potential for similar LC-MS diagnostic testing methods to be used to detect future infectious pathogens.

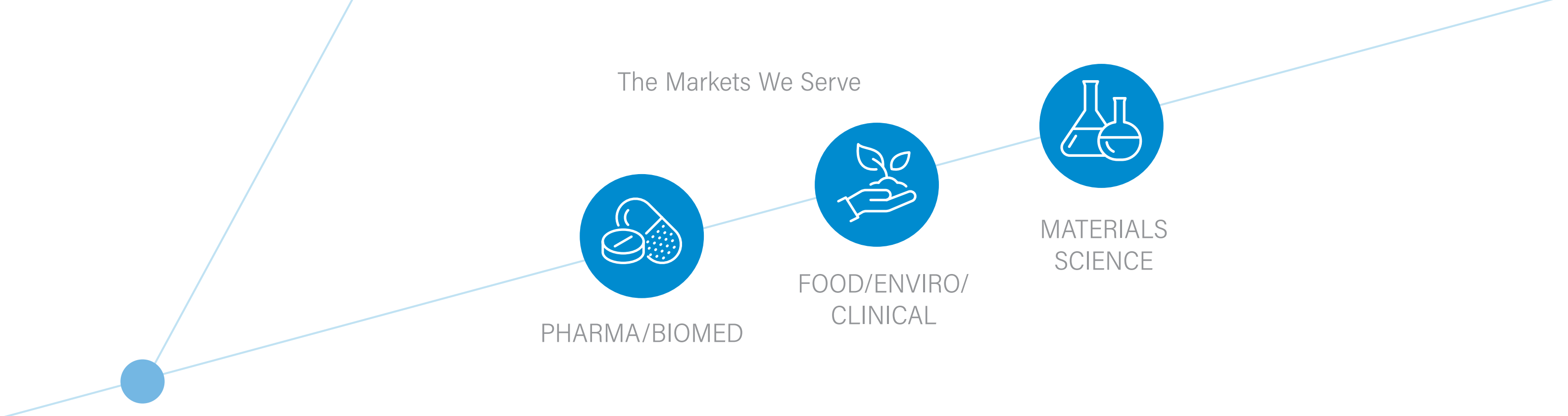
Additionally, we continue to focus on the effective business continuity planning that enabled Waters to remain open for business globally through the pandemic, with uninterrupted delivery of products and expertise to our customers. We know they depend on us and trust that we will continue to deliver the service levels and uninterrupted supply chain on which they rely.

EMPLOYEE SAFETY AND WELL-BEING

MITIGATE PUBLIC HEALTH CRISIS

BUSINESS CONTINUITY

Unless otherwise noted, revenue growth percentages are presented on a constant currency basis. Adjusted operating margin percentages, adjusted earnings per diluted share (EPS) percentages, adjusted free cash flow, and average return on invested capital (ROIC) are presented on a Non-GAAP basis. Please see waters.com for GAAP to Non-GAAP reconciliations.



Return to Growth: The Indomitable Spirit of Waters

We operate in attractive markets where demand is driven by the need for better healthcare and quality of life.

The pharmaceutical, biomedical research, and clinical markets are growing mid-to high-single-digits and this market growth is being driven by the increasing demand for medicines, arrival of novel modalities such as cell and gene therapy and mRNA medicines, increasing outsourcing from large pharmaceutical companies, government funding and the rise of diagnostic testing. Our food and environmental markets are growing mid-single-digits driven by increasing demand for safer food, rising food and environmental sustainability concerns and growing populations. Finally, the materials science market we compete in is quite diverse and growing low-single-digits on the heels of capital spending in the chemicals sector as well as growth in microelectronics.

Waters has established a highly differentiated leadership position in these attractive markets through our unique mix of high-value technologies, a culture steeped in science and expertise and deep customer relationships. From a product line portfolio perspective, we have a significant installed base of instruments around the world, totaling well over 100,000 units across liquid chromatography (LC), mass spectrometry (MS), and thermal and mechanical analysis systems. In addition, over 50% of our revenue comes from recurring streams including chemistry consumables, informatics maintenance, and services.

From a customer end market perspective, a significant portion of our revenues are coming from markets that are expected to grow in the mid-to high-single-digits in the long term, as such we believe we are well-positioned to return to market growth. Our pharmaceutical and biomedical markets are the largest at 64% of total sales, materials science being close to 16%, and food, environmental, and clinical markets are approximately 20% of the business. From a geographical perspective, we have established a diversified global footprint, which lends to the resilience of the Company.

Sales in Asia, the Americas, and Europe represent approximately 38%, 34%, and 28% of total sales, respectively, with sales in China representing approximately 17%.

That being said, we have lost sales momentum over the last few years as sales growth has sequentially declined year-over-year, from growth of approximately 6% in 2017 to sales declines of approximately 2% in 2020 which was primarily due to the disruption of business activities caused by the COVID-19 pandemic.

Since joining Waters, I have spent much of my time listening and learning to gain a deeper understanding of why we lost momentum. I have met with many analysts and shareholders, talked with and visited customers across all of our markets, and traveled virtually around the world meeting employees across Asia, Europe, and the Americas. The transformation process has been rigorous and intense with several deep dives with the executive team and top leaders across the Company. We gathered the facts, came to a common understanding, and committed to an action plan.

We have developed a three-phase transformation program through which we will:

1. **Regain our commercial momentum.**
2. **Strengthen our performance management.**
3. **Align our portfolio with growth areas.**

The first step is to regain commercial momentum. We are acting on a set of initiatives aimed at driving near-term growth, including:

- Replace aging hardware, especially in our LC and MS portfolios;
- Increase attachment rates for recurring revenues across services, consumables, and informatics maintenance;
- Strengthen and expand coverage in contract research, contract manufacturing, and contract testing organizations;
- Focus on e-commerce; and
- Drive product launch excellence.

Waters has built a very solid base with a culture steeped in science and with deep customer relationships.

As we closed out 2020, we have already realized progress against many of these initiatives. As it relates to our instrument replacement initiative, in the fourth quarter, LC instrument sales delivered high-single-digit sales growth, better than any other quarter in recent years. We also made important progress on our contract lab expansion initiative. In addition, we have contacted a significant number of customers globally, particularly in China, and have strengthened our value proposition with expanded alternative revenue and service offerings, which have been well-received by this segment. It is still early, but we're pleased with the initial progress.

In the fourth quarter, **waters.com** traffic increased by double-digits, driven by search engine optimization and paid search. While there isn't a one-to-one relationship between traffic and revenue, increased traffic is an important first step in driving revenue growth through the e-commerce channel. In tandem with our e-commerce actions, we've also enhanced our e-procurement platform on which we have expanded our coverage of customers, leveraging this channel.

Lastly, as we aim to drive product launch excellence, we are happy to report that our BioAccord System sales exceeded expectations in the fourth quarter as our market development efforts and our specialist sales model have started to take effect, particularly in the U.S. and Europe. BioAccord is a SmartMS™-Enabled LC-MS system used in the development and quality control of new biologics.

As we work to regain our commercial momentum, we are also putting more focus, urgency, and investment in our performance management process. As we execute and return to sustained growth, we will be well-positioned to make additional strategic investments in the business.

INSTRUMENT REPLACEMENT INITIATIVE

CONTRACT LAB EXPANSION

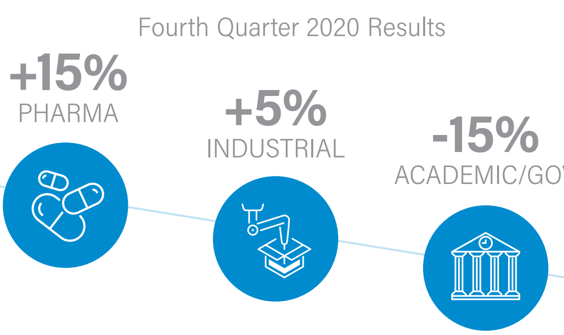
DRIVE PRODUCT LAUNCH EXCELLENCE

E-COMMERCE FOCUS

Strong Finish to 2020

As we finished 2020, we saw clear signs of improving customer activity, positive growth trends in our recurring revenues, and evidence of stabilization in LC instrument demand. In the fourth quarter of 2020, sales grew 10% as reported and 7% on a constant currency basis, and our non-GAAP adjusted earnings per diluted share grew 14%. This strong finish to the end of a challenging year was driven by the pharmaceutical market improvement, capital spending recovery in the second half of the year, strong execution and early contributions from our near-term growth initiatives.

From a market category perspective, in the fourth quarter of 2020 our pharmaceutical market was the primary growth driver with sales growth of 15%. Sales into our industrial market grew 5% while sales into our academic and governmental markets declined 15%. From a geographical perspective, sales in Asia grew 12% with China growing 19%, sales in the Americas grew 3% with the U.S. growing 4% and sales in Europe grew 6%. From a product line perspective, in the fourth quarter of 2020 Waters branded instrument system sales grew 5%, while Waters branded recurring revenue grew 12% with service sales growing 10% and chemistry sales growing 14% driven largely by global pharmaceutical strength, including sales of our recently launched ACQUITY™ PREMIER Columns which performed exceedingly well in their first quarter on the market. In the fourth quarter of 2020, our TA instrument system sales declined 4%, while TA service sales grew 4%.



Overall, our full year 2020 sales declined 2% as reported and on a constant currency basis and our non-GAAP adjusted earnings per diluted share grew 1%. From a market category perspective, 2020 sales into our pharmaceutical market grew 1%, as the disruption of business activities caused by the COVID-19 pandemic negatively impacted sales, despite the improving demand from our small and large molecule customers and increased contract lab activity in the second half of the year. In 2020, sales into our industrial and academic and governmental markets declined 3% and 16%, respectively, as a result of constrained capital spending and the disruptions and uncertainties caused by the COVID-19 pandemic.

From a geographical perspective, our 2020 sales in Asia declined 4% with China sales declining 8%, sales in the Americas declined 4% with sales in the U.S. declining 2%, while sales in Europe grew 2%. Notably, all of our major geographies grew in the second half of the year, with sales growth of 4% in the U.S. and 6% in Europe, following first-half declines of 9% and 3%, respectively. Sales in China grew 11% in the second half of the year, reversing much of its sharp 31% decline in the first half, with continuing acceleration in the pharmaceutical market along with strong environmental market growth.

As a company we have continued to sustain industry-leading margins, outpacing our peers with an adjusted operating margin of 29.6% in 2020. We remain financially strong with a five-year average return on invested capital of 27%, and adjusted free cash flow of $726 million in 2020. This has only been possible due to a strong brand that has been built on the basis of innovative platforms and deep customer relationships. Our capital deployment priorities remain consistent: to maintain balance sheet strength and flexibility, to invest for growth, and to return capital to our shareholders.

We saw clear signs of improving customer activity, positive growth trends in our recurring revenues, and evidence of stabilization in LC instrument demand.

In my short time as president and CEO of Waters, I am struck by the indomitable spirit of our employees. "Indomitable", meaning impossible to subdue or defeat, is at the core of Mahatma Gandhi's belief that "Strength comes not from the physical capacity, but from an indomitable spirit." While 2020 brought many challenges to all of us, I remain confident in the spirit and resilience of our employees and the early results of our transformation program to return Waters to sustained growth for years to come.

We continued to redefine the standard of performance for chromatographic analyses.

Continued Product and Innovation Leadership in 2020

Throughout 2020, Waters continued to build on its heritage of innovation in analytical instruments to solve critical problems for our customers.

We launched the Arc™ High Performance Liquid Chromatography (HPLC) System, an innovation designed for labs ready to modernize their LC without changing their methods. Arc HPLC allows labs to transfer existing methods from any HPLC system while ensuring data quality.

We continued to redefine the standard of performance for chromatographic analyses with the state-of-the-art ACQUITY PREMIER Solution. The ACQUITY PREMIER System and column chemistries work together to eliminate the unpredictability of analyte losses due to metal interactions. We are confident it will help our customers solve their most complex chromatographic challenges, while enhancing analytical data quality and providing greater confidence in separation results.

Within mass spectrometry, we extended the capability and power of our High-Resolution Mass Spectrometers for biomedical, biopharmaceutical, and food research. We introduced Electron Capture Dissociation for our high-performance SELECT SERIES™ Cyclic IMS™ System to enable scientists to probe the structure of proteins, peptides, glycans, and other biomolecules. And for the first time, the new DESI™ XS source, a new fragmentation technique and imaging option, was made available on the Waters SELECT SERIES Cyclic IMS, SYNAPT™ XS, and Xevo™ G2-XS QTof.

In January 2021, we announced that our Xevo TQ-XS atmospheric pressure gas chromatography (APGC) MS platform was accepted as an alternative for the identification and quantification of dioxins and furans in environmental samples by the United States Environmental Protection Agency's (USEPA) Office of Water. Dioxins are a byproduct of human industrial activity and their effects on human health are well documented.

Through our acquisition of Andrew Alliance, an innovator in specialty laboratory automation, our instruments and chemistries work with next-generation automation technology, including robots and cloud native software for liquid handling.

Within materials sciences, we have new products to streamline laboratory operations. The Discovery™ X3 Differential Scanning Calorimeter (DSC) delivers industry-leading performance for up to three samples simultaneously and the Discovery Hybrid Rheometer offers superior sensitivity and ease of use.

We capped off the year with the establishment of Immerse Cambridge, a new Waters research and innovation laboratory in Cambridge, Massachusetts. This has quickly become a destination where our scientists partner with leading biotechnology firms, academic institutions and customers to innovate, collaborate, and interrogate biology in new ways. For example, Boston University and Waters researchers are collaborating on a cornerstone project studying virus mutation in order to co-develop more effective Influenza A virus vaccines.

COLLABORATION
DESTINATION

Environmental, Social, and Governance

Our commitment to sustainability is centered on advancing scientific progress to enhance human health and well-being. To accelerate progress on our sustainability journey, Waters has committed to 2025 Sustainability Goals focused on innovation, the environment, sustainable supply chain, employee development and engagement, and health, safety, and well-being.

As noted in our **2020 Sustainability Report**, we have made important progress toward our goals, including:

- Driving reductions in waste through increased use of recyclable materials in, and the elimination of foam from, legacy packaging for many of our spare parts and consumable products.
- Committing to a 35% reduction in our Scope 1 and 2 greenhouse gas emissions from a 2016 baseline, a goal consistent with science-based targets (SBTs) outlined in the Paris Agreement. We are also sourcing 27% of our electricity from renewable or low-carbon sources, and have reduced energy use intensity by more than 7% since 2016. In addition, we are sending zero waste from our corporate headquarters to landfill and have undertaken efforts to drive increased quantification of our Scope 3 greenhouse gas emissions.
- Enhancing our diversity and inclusion efforts with the addition of three new employee circles: Veterans, Pride, and Multicultural to foster a culture of inclusion. These are in addition to our existing Gender Diversity circle.
- Additional investments were made in employee development and training with a new digital global learning platform, iLearn.
- Leveraging our global philanthropic initiatives to continue providing greater access to STEM education, especially for inner city children through the Ron Burton Training Village and in partnership with Junior Achievement (JA). The global job shadow program through JA offered hands-on learning to approximately 200 students in six countries, including China, Ireland, Romania, Singapore, the United Kingdom, and the United States.
- Strengthening our supplier code of conduct to drive greater resilience, sub-tier visibility, and foster responsible behavior in our global supply chain.

committing to a
35%
reduction in greenhouse gases

sourcing
27%
electricity from renewable energy

0%
headquarters waste to landfills

Our efforts have not gone unnoticed. Waters was recognized on the *Newsweek* list of America's Most Responsible Companies 2021, Barron's 2021 list of the 100 Most Sustainable Companies, and our company also received a score of 95 out of 100 on the 2021 Corporate Equality Index (CEI), the Human Rights Campaign Foundation's annual scorecard for LGBTQ workplace equality.

In addition, the Drucker Institute recognized Waters on its 2021 list of the 250 most effectively managed U.S. companies.

We also continue to strengthen our Board composition, cadence, and committee work. In 2020, we separated the role of Chairman of the Board of Directors and Chief Executive Officer with Dr. Flemming Ornskov, M.D., M.P.H. assuming the role of Chairman. Additionally, the Board appointed Dr. Pearl S. Huang, Ph.D., President and CEO of Cygnal Therapeutics and Venture Partner at Flagship Pioneering, to serve as a new Board member effective January 1, 2021. Women continue to make up 30% of our Board composition.

Looking Ahead to 2021: A Transformation Underway

In my short time at Waters, I have seen and experienced the indomitable spirit of our employees which gives me great confidence in our future. As we enter 2021 there is tremendous opportunity in that spirit to not just change the trajectory of our business from lagging to leading, but to leverage the very best of ourselves to bring positive transformation to our customers within the industries we touch; to the communities in which we live and work; and to the possibilities that science can unlock for the benefit of our planet and humanity.

Sincerely,

Dr. Udit Batra, Ph.D.

President and Chief Executive Officer

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

Form 10-K

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

For the fiscal year ended December 31, 2020

or

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

Commission File Number: 01-14010

Waters Corporation
(Exact name of registrant as specified in its charter)

Delaware	**13-3668640**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*

34 Maple Street
Milford, Massachusetts 01757
(Address, including zip code, of principal executive offices)
(508) 478-2000
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.01 per share	**WAT**	**New York Stock Exchange, Inc.**

Securities registered pursuant to Section 12(g) of the Act: None

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

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

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

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

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

Large accelerated filer ☑ Accelerated filer ☐ Non-accelerated filer ☐ Smaller reporting company ☐
Emerging growth company ☐

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

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

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

State the aggregate market value of the registrant's common stock held by non-affiliates of the registrant as of 6/27/2020: $10,820,434,917.

Indicate the number of shares outstanding of the registrant's common stock as of February 19, 2021: 62,185,690

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement that will be filed for the 2021 Annual Meeting of Stockholders are incorporated by reference in Part III.

WATERS CORPORATION AND SUBSIDIARIES

ANNUAL REPORT ON FORM 10-K

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PART I

Item 1: *Business*

General

Waters Corporation (the "Company," "we," "our," or "us") is a specialty measurement company that operates with a fundamental underlying purpose to advance the science that enables our customers to enhance human health and well-being. Waters™ has pioneered analytical workflow solutions involving liquid chromatography, mass spectrometry and thermal analysis innovations serving the life, materials and food sciences for more than 60 years. The Company primarily designs, manufactures, sells and services high performance liquid chromatography ("HPLC"), ultra-performance liquid chromatography ("UPLC™" and together with HPLC, referred to as "LC") and mass spectrometry ("MS") technology systems and support products, including chromatography columns, other consumable products and comprehensive post-warranty service plans. These systems are complementary products that are frequently employed together ("LC-MS") and sold as integrated instrument systems using common software platforms. In addition, the Company designs, manufactures, sells and services thermal analysis, rheometry and calorimetry instruments through its TA™ product line. The Company is also a developer and supplier of advanced software-based products that interface with the Company's instruments, as well as other manufacturers' instruments.

The Company's products are used by pharmaceutical, biochemical, industrial, nutritional safety, environmental, academic and governmental customers working in research and development, quality assurance and other laboratory applications. LC is a standard technique and is utilized in a broad range of industries to detect, identify, monitor and measure the chemical, physical and biological composition of materials, and to purify a full range of compounds. MS technology, principally in conjunction with chromatography, is employed in drug discovery and development, including clinical trial testing, the analysis of proteins in disease processes (known as "proteomics"), nutritional safety analysis and environmental testing. LC-MS instruments combine a liquid phase sample introduction and separation system with mass spectrometric compound identification and quantification. The Company's thermal analysis, rheometry and calorimetry instruments are used in predicting the suitability and stability of fine chemicals, pharmaceuticals, water, polymers, metals and viscous liquids for various industrial, consumer goods and healthcare products, as well as for life science research.

Waters Corporation, organized as a Delaware corporation in 1991, is a holding company that owns all of the outstanding common stock of Waters Technologies Corporation, its operating subsidiary. Waters Corporation became a publicly-traded company with its initial public offering ("IPO") in November 1995. Since the IPO, the Company has added two significant and complementary technologies to its range of products with the acquisitions of TA Instruments in May 1996 and Micromass Limited in September 1997.

Business Segments

The Company's business activities, for which discrete financial information is available, are regularly reviewed and evaluated by the chief operating decision maker. As a result of this evaluation, the Company determined that it has two operating segments: Waters and TA. The Waters operating segment is primarily in the business of designing, manufacturing, selling and servicing LC and MS instrument systems, columns and other precision chemistry consumables that can be integrated and used along with other analytical instruments. The TA operating segment is primarily in the business of designing, manufacturing, selling and servicing thermal analysis, rheometry and calorimetry instruments. The Company's two operating segments have similar economic characteristics; product processes; products and services; types and classes of customers; methods of distribution; and regulatory environments. Because of these similarities, the two segments have been aggregated into one reporting segment for financial statement purposes.

Information concerning revenues and long-lived assets attributable to each of the Company's products, services and geographic areas is set forth in Note 18 in the Notes to the Consolidated Financial Statements, which is incorporated herein by reference.

Waters Products and Markets

High Performance and Ultra Performance Liquid Chromatography

HPLC is a standard technique used to identify and analyze the constituent components of a variety of chemicals and other materials. The Company believes that HPLC's performance capabilities enable it to separate, identify and quantify a high proportion of all known chemicals. As a result, HPLC is used to analyze substances in a wide variety of industries for research and development purposes, quality control and process engineering applications.

The most significant end-use markets for HPLC are those served by the pharmaceutical and life science industries. In these markets, HPLC is used extensively to understand diseases, identify new drugs, develop manufacturing methods and assure the potency and purity of new pharmaceuticals. HPLC is also used in a variety of other applications, such as analyses of foods and beverages for nutritional labeling and compliance with safety regulations and the testing of water and air purity within the environmental testing industry, as well as applications in other industries, such as chemical and consumer products. Waters also has in vitro diagnostic (IVD) labelled products that are used as general-purpose instruments for clinical diagnostic applications, such as newborn screening and therapeutic drug management, in countries where these products are registered. HPLC is also used by universities, research institutions and governmental agencies, such as the United States Food and Drug Administration ("FDA") and the United States Environmental Protection Agency ("EPA") and their foreign counterparts that mandate safety and efficacy testing.

In 2004, Waters introduced a novel technology that the Company describes as ultra performance liquid chromatography that utilizes a packing material with small, uniform diameter particles and a specialized instrument, the ACQUITY UPLC™, to accommodate the increased pressure and narrower chromatographic bands that are generated by these small and tightly packed particles. By using the ACQUITY UPLC, researchers and analysts are able to achieve more comprehensive chemical separations and faster analysis times in comparison with many analyses previously performed by HPLC. In addition, in using the ACQUITY UPLC, researchers have the potential to extend the range of applications beyond that of HPLC, enabling them to uncover more levels of scientific information. While offering significant performance advantages, the ACQUITY UPLC is also compatible with the Company's software products and the general operating protocols of HPLC. For these reasons, the Company's customers and field sales and support organizations are well positioned to utilize this innovative technology and instrument. In 2018, the Company introduced the ACQUITY ARC™ Bio System, a versatile, iron-free, bio-inert, quaternary liquid chromatograph specifically engineered to improve bioseparation analytical methods. The Company also introduced the ACQUITY UPLC PLUS series in 2018, consisting of the H-Class PLUS, H-Class PLUS Bio and I-Class PLUS systems, which incorporate foundational enhancements into the legacy systems. In 2019, the Company introduced the ACQUITY™ Advanced Polymer Chromatography™ System, which is the first fully solvent-compatible UPLC system to perform size exclusion, gradient polymer elution and solvent compatible reversed-phase liquid chromatographic separations on a single platform. The all-in-one system gives research scientists greater analytical versatility and speed when conducting research on next-generation polymers. In 2020, the Company introduced the Waters Arc™ HPLC System, a new HPLC system for routine testing in the pharmaceutical, food, academic and materials markets. A key target application is quality control in laboratories performing batch release tests on small molecule pharmaceuticals.

Waters manufactures LC instruments that are offered in configurations that allow for varying degrees of automation, from component configured systems for academic teaching and research applications to fully automated systems for regulated and high sample throughput testing, and that have a variety of detection technologies, from optical-based ultra-violet ("UV") absorbance, refractive index and fluorescence detectors to a suite of MS-based detectors, optimized for certain analyses.

The primary consumable products for LC are chromatography columns. These columns are packed with separation media used in the LC testing process and are typically replaced at regular intervals. The chromatography column contains one of several types of packing material, typically stationary phase particles made from silica or polymeric resins. As a pressurized sample is introduced to the column inlet and permeates through the packed column, it is separated into its constituent components.

Waters HPLC columns can be used on Waters-branded and competitors' LC systems. The Company believes that it is one of a few suppliers in the world that manufactures silica and polymeric resins, packs columns and distributes its own products. In doing so, the Company believes it can better ensure product consistency, a key attribute for its customers in quality control laboratories, and can react quickly to new customer requirements. The Company believes that its ACQUITY UPLC lines of columns are used primarily on its ACQUITY UPLC instrument systems and, furthermore, that its ACQUITY UPLC instruments primarily use ACQUITY UPLC columns. In 2018, the Company introduced the BioResolve™ RP mAb Polyphenyl columns, which improve the consistency and reliability of the overly complex separations of monoclonal antibodies and antibody-drug conjugates. In 2019, the Company introduced the BioResolv SCX mAb Columns and VanGuard™ FIT Cartridge technologies. These new cation exchange column lines with specialized consumables are designed to simplify and improve the characterization and monitoring of monoclonal antibody (mAb) therapeutics, as well as enable mAb charge-variant analyses as required by the World Health Organization, the FDA and the International Conference on Harmonization for confirming the efficacy and safety of biologics and biosimilars with discovery, development and manufacturing applications. In 2020, Waters introduced ACQUITY™ PREMIER Columns, a new family of premium sub-2-micron columns featuring MaxPeak™ high-performance surface technology. The columns are for use with any brand of UPLC system and can measurably improve data quality by mitigating the loss of sample analytes due to analyte-to-surface interactions.

The Company's precision chemistry consumable products also include environmental and nutritional safety testing products, including Certified Reference Materials ("CRM"s) and Proficiency Testing ("PT") products. Laboratories around the world and across multiple industries use these products for quality control and proficiency testing and also purchase product support services required to help with their federal and state mandated accreditation requirements or with quality control over critical pharmaceutical analysis. In 2018, the Company introduced the VICAM™ BPATest™, which provides a sensitive, precise determination of Bisphenol A in as little as ten minutes. VICAM also introduced a user-friendly lateral flow zearalenone strip test, the Zearala-V™ AQUA™ in 2018.

In 2020, the Company acquired all of the outstanding stock of Andrew Alliance, S.A. and its two operating subsidiaries, Andrew Alliance USA, Inc. and Andrew Alliance France, SASU (collectively, "Andrew Alliance"), for $80 million, net of cash acquired. Andrew Alliance offers lab workflow automation solutions with the combination of its software platform and smart, connected laboratory equipment and accessories. The Company expects the acquisition to positively impact our customers' workflows by improving the repeatability, performance and speed of laboratory operations and chemistry workflows.

Mass Spectrometry and Liquid Chromatography-Mass Spectrometry

MS is a powerful analytical technology that is used to identify unknown compounds, to quantify known materials and to elucidate the structural and chemical properties of molecules by measuring the masses of molecules that have been converted into ions.

The Company is a technology and market leader in the development, manufacture, sale and service of MS instruments and components. These instruments are typically integrated and used along with other complementary analytical instruments and systems, such as LC, chemical electrophoresis and gas chromatography. A wide variety of instrumental designs fall within the overall category of MS instrumentation, including devices that incorporate quadrupole, ion trap, time-of-flight ("Tof"), magnetic sector and ion mobility technologies. Furthermore, these technologies are often used in tandem (MS-MS) to maximize the speed and/or efficacy of certain experiments.

Currently, the Company offers a wide range of MS instrument systems utilizing various combinations of quadrupole, Tof and ion mobility designs. These instrument systems are used in drug discovery and development, as well as for environmental, clinical and nutritional safety testing. The overwhelming majority of mass spectrometers sold by the Company are designed to utilize an LC system and a liquid compatible interface (such as an electrospray ionization source) as the sample introduction device. These products supply a diverse market with a strong emphasis on the pharmaceutical, biomedical, clinical, food and beverage and environmental market segments worldwide.

MS is an increasingly important detection technology for LC. The Company's smaller-sized mass spectrometers, such as the single quadrupole detector ("SQD") and the tandem quadrupole detector ("TQD"), are often referred to as LC "detectors" and are typically sold as part of an LC system or as an LC system upgrade. Larger quadrupole systems, such as the Xevo™ TQ and Xevo TQ-S instruments, are used primarily for experiments performed for late-stage drug development, including clinical trial testing. Quadrupole time-of-flight ("Q-Tof") instruments, such as the Company's SYNAPT™ G2-S, are often used to analyze the role of proteins in disease processes, an application sometimes referred to as "proteomics". In 2018, the Company introduced the DART QDa™ system with LiveID™, a direct-from-sample analytical system that verifies sample authenticity or adulteration, specifically for food applications. The Company also introduced the Xevo TQ-GC mass spectrometer in 2018, which allows laboratories to meet and exceed low part-per-billion limits of detection when quantifying pesticide residues and other contaminants in food using GC-MS/MS methods set forth by worldwide regulatory agencies/authorities. In addition, the Company introduced the RenataDX™ screening system, a flow-injection tandem mass spectrometry system for rapid high-throughput analysis of extracted dried blood spots and other human biological matrices. In 2019, the Company introduced the BioAccord™ system, a liquid chromatography-mass spectrometry solution that expands access to high-resolution time-of-flight mass spectrometry capabilities. The system provides new levels of user experience with automated setup and self-diagnosis delivered through an intuitive user interface. Also in 2019, the Company introduced the Cyclic IMS system, which seamlessly integrates cyclic ion mobility technology into a high-performance research-grade time-of-flight mass spectrometer. In addition, the Company introduced the SYNAPT XS, a new highly flexible, high-resolution mass spectrometer for research and development labs focused on discovery applications. The Company also reinforced its tandem quadrupole mass spectrometry portfolio during the current year with upgrades to the Xevo TQ-S micro and the introduction of the new Xevo TQ-S cronos. The Xevo TQ-S micro features new performance enhancements that bring the quantitation of highly polar, ionic compounds in food to a higher level. The Xevo TQ-S cronos is a new, tandem quadrupole mass spectrometer purposely-built for routine quantitation of large numbers of small-molecule organic compounds over a wide concentration range. The Xevo TQ-S micro and the Xevo TQ-S cronos are also well suited to meet regulatory requirements for pesticide residue analysis, the monitoring for contaminants in processed foods, identifying drugs of abuse, and performing impurity profiling of pharmaceuticals. In 2020, the Company introduced the new RADIAN™ ASAP™ System, a novel direct mass detector engineered for non-mass spectrometry experts to conduct fast and accurate analyses of solids and liquids with minimal sample prep. Also in 2020, the Company introduced enhancements for the Waters Xevo G2-XS QTof SYNAPT XS and SELECT SERIES Cyclic IMS, including a new fragmentation technique and imaging option.

LC and MS are typically embodied within an analytical system tailored for either a dedicated class of analyses or as a general purpose analytical device. An increasing percentage of the Company's customers are purchasing LC and MS components simultaneously and it has become common for LC and MS instrumentation to be used within the same laboratory and operated by the same user. The descriptions of LC and MS above reflect the historical segmentation of these analytical technologies and the historical categorization of their respective practitioners. Increasingly in today's instrument market, this segmentation and categorization is becoming obsolete as a high percentage of instruments used in the laboratory embody both LC and MS technologies as part of a single device. In response to this development and to further promote the high utilization of these hybrid instruments, the Company has organized its Waters operating segment to develop, manufacture, sell and service integrated LC-MS systems.

Based upon reports from independent marketing research firms and publicly-disclosed sales figures from competitors, the Company believes that it is one of the world's largest manufacturers and distributors of LC and LC-MS instrument systems, chromatography columns and other consumables and related services.

The Company has been a developer and supplier of software-based products that interface with the Company's instruments, as well as other suppliers' instruments. The Company's newest software technology, UNIFI™, is a scientific information system that is the culmination of a multi-year effort to substantially bring all of Waters' preexisting, distinct software systems under one operating system. UNIFI joins Waters' suite of informatics products – Empower™ Chromatography Data Software, MassLynx™ Mass Spectrometry Software and NuGenesis™ Scientific Data Management System, each of which is used to support innovations within world-leading institutions. UNIFI is the industry's first comprehensive software that seamlessly integrates UPLC chromatography, mass spectrometry and informatics data workflows. In 2018, the Company announced new analysis capabilities across a variety of molecules by integrating UNIFI acquired data from the Company's Vion™ IMS QTof or Xevo GS XS mass spectrometers with Molecular Discovery's Mass-MetaSite and WebMetabase processing software. In 2020, Waters announced the availability of Waters Empower BC LAC/E™ with SecureSync, a newly enhanced data back-up and recovery solution purpose-built for organizations with distributed laboratory environments.

On December 15, 2020, the Company acquired all of the outstanding stock of Integrated Software Solutions Pty Limited and its two operating subsidiaries Integrated Software Solutions Limited and Integrated Software Solutions USA, LLC (collectively, "ISS"), for $4 million, net of cash acquired. In addition, the Company may have to pay additional consideration which has an estimated fair value of $1 million as of the close date. The contingent consideration is recorded as a liability and will be paid to the prior shareholders of ISS if certain revenue and customer account conditions are achieved over the next two years after the acquisition date. ISS offers clinical laboratory software systems that will support and further expand product offerings within our clinical business. The net assets acquired primarily relate to ISS' laboratory information system, OMNI-Lab.

Waters Service

Services provided by Waters enable customers to maximize technology productivity, support customer compliance activities and provide transparency into enterprise resource management efficiencies. The customer benefits from improved budget control, data-driven technology adoption and accelerated workflow at a site or on a global perspective. The Company considers its service offerings to be highly differentiated from our competition, as evidenced by a consistent increase in annual service revenues. The Company's principal competitors in the service market include PerkinElmer, Inc., Agilent Technologies, Inc., Thermo Fisher Scientific Inc. and General Electric Company. These competitors can provide certain services on Waters instruments to varying degrees and always present competitive risk.

The servicing and support of instruments, software and accessories is an important source of revenue and represented over 35% of sales for Waters in 2020. These revenues are derived primarily through the sale of support plans, demand services, spare parts, customer performance validation services and customer training. Support plans typically involve scheduled instrument maintenance and an agreement to promptly repair a non-functioning instrument in return for a fee described in a contract that is priced according to the configuration of the instrument.

TA Products and Markets

Thermal Analysis, Rheometry and Calorimetry

Thermal analysis measures the physical or thermodynamic characteristics of materials as a function of temperature. Changes in temperature affect several characteristics of materials, such as their heat flow characteristics, physical state, weight, dimension and mechanical and electrical properties, which may be measured by one or more thermal analysis techniques, including calorimetry. Consequently, thermal analysis techniques are widely used in the development, production and characterization of materials in various industries, such as plastics, chemicals, automobiles, pharmaceuticals and electronics.

Rheometry instruments often complement thermal analyzers in characterizing materials. Rheometry characterizes the flow properties of materials and measures their viscosity, elasticity and deformation under different types of "loading" or other conditions. The information obtained under such conditions provides insight into a material's behavior during processing, packaging, transport, usage and storage.

Thermal analysis, rheometry and calorimetry instruments are heavily used in material testing laboratories and, in many cases, provide information useful in predicting the suitability and stability of industrial polymers, fine chemicals, pharmaceuticals, water, metals and viscous liquids in various industrial, consumer goods and healthcare products, as well as for life science research. As with systems offered by Waters, a range of instrument configurations is available with increasing levels of sample handling and information processing automation. In addition, systems and accompanying software packages can be tailored for specific applications.

In 2019, TA introduced a range of new instruments including the TMA 450, a Rheo-Raman™ capability for the DHR product line, and a High Sensitivity Pressure Cell for the ARES-G2 Rheometer. The Discovery™ TMA 450, precisely measures dimensional changes of materials from (150) to 1,000° C and handles virtually all sample configurations for testing in expansion, compression, flexure and tension modes. The Rheo-Raman capability for the DHR product line combines a Raman spectrometer with the DHR to enable simultaneous collection of rheology and Raman spectroscopy data. This combination allows for direct correlation between flow characteristics and the unique spectroscopic fingerprints of each material including information about its chemical and morphological structure. The High Sensitivity Pressure Cell for the ARES-G2 Rheometer enables scientists to perform sensitive viscoelastic measurements under controlled atmospheric pressure and temperature and gain detailed understanding of complex fluid behavior in complex environments.

Also in 2019, TA introduced the MSF16 Multi-Specimen Fatigue Instrument. The MSF16 extends the capability of accelerated cyclic components and products under repeated loading, significantly accelerating fatigue analysis.

In 2020, TA introduced the new Discovery X3 Differential Scanning Calorimeter, Discovery Hybrid Rheometers and TAM IV Micro XL isothermal microcalorimeter. These products support the development of next-generation, high-performance materials by improving the productivity and efficiency of materials science research.

TA Service

Similar to Waters, the servicing and support of TA's instruments is an important source of revenue and represented more than 25% of sales for TA in 2020. TA operates independently from the Waters operating segment, though many of its overseas offices are situated in Waters' facilities to achieve operational efficiencies. TA has dedicated field sales and service operations. Service sales are primarily derived from the sale of support plans, replacement parts and billed labor fees associated with the repair, maintenance and upgrade of installed systems.

Global Customers

The Company typically has a broad and diversified customer base that includes pharmaceutical accounts, other industrial accounts, universities and governmental agencies. Purchase of the Company's instrument systems is often dependent on its customers' capital spending, or funding as in the cases of academic, governmental and research institutions, which often fluctuate from year to year. The pharmaceutical segment represents the Company's largest sector and includes multinational pharmaceutical companies, generic drug manufacturers, contract research organizations ("CRO"s) and biotechnology companies. The Company's other industrial customers include chemical manufacturers, polymer manufacturers, food and beverage companies and environmental testing laboratories. The Company also sells to universities and governmental agencies worldwide. The Company's technical sales and support staff members work closely with its customers in developing and implementing applications that meet their full range of analytical requirements. During 2020, 59% of the Company's net sales were to pharmaceutical accounts, 30% to other industrial accounts and 11% to academic institutions and governmental agencies.

The Company typically experiences an increase in sales in the fourth quarter, as a result of purchasing habits for capital goods of many customers who tend to exhaust their spending budgets by calendar year end. The Company does not rely on any single customer for a material portion of its sales. During fiscal years 2020, 2019 and 2018, no single customer accounted for more than 2% of the Company's net sales.

Sales and Service

The Company has one of the largest direct sales and service organizations focused exclusively on the analytical workflows offered by the Company. Across these product technologies, using respective specialized sales and service workforces, the Company serves its customer base with 83 sales offices throughout the world as of December 31, 2020 and approximately 4,000, 4,000 and 3,900 field representatives in 2020, 2019 and 2018, respectively. This investment in sales and service personnel serves to maintain and expand the Company's installed base of instruments. The Company's sales representatives have direct responsibility for account relationships, while service representatives work in the field to install instruments, train customers and minimize instrument downtime. In-house and field-based technical support representatives work directly with customers, providing them assistance with applications and procedures on Company products. The Company provides customers with comprehensive information through various corporate and regional internet websites and product literature, and also makes consumable products available through electronic ordering facilities and a dedicated catalog.

Manufacturing and Distribution

The Company provides high product quality by overseeing each stage of the production of its instruments, columns and chemical reagents.

The Company currently assembles a portion of its LC instruments at its facility in Milford, Massachusetts, where it performs machining, assembly and testing. The Milford facility maintains quality management and environmental management systems in accordance with the requirements of ISO 9001:2015, ISO 13485:2016 and ISO 14001:2015, and adheres to applicable regulatory requirements (including the FDA Quality System Regulation and the European In-Vitro Diagnostic Directive). The Company outsources manufacturing of certain electronic components, such as computers, monitors and circuit boards, to outside vendors that meet the Company's quality requirements. In addition, the Company outsources the manufacturing of certain LC instrument systems and components to well-established contract manufacturing firms in Singapore. The Company's Singapore entity is ISO 9001:2015 certified and manages all Asian outsourced manufacturing as well as the distribution of all products from Asia. The Company may pursue outsourcing opportunities as they arise but believes it maintains adequate supply chain and manufacturing capabilities in the event of disruption or natural disasters.

The Company primarily manufactures and distributes its LC columns at its facilities in Taunton, Massachusetts and Wexford, Ireland. In February 2018, the Company's Board of Directors approved expanding its Taunton location and anticipates spending an estimated $215 million to build and equip this new state-of-the-art manufacturing facility. The Company has incurred $151 million of costs on this facility through the end of 2020. The Taunton facility processes, sizes and treats silica and polymeric media that are packed into columns, solid phase extraction cartridges and bulk shipping containers in both Taunton and Wexford. The Wexford facility also manufactures and distributes certain data, instruments and software components for the Company's LC, MS and TA product lines. The Company's Taunton facility is certified to ISO 9001:2015. The Wexford facility is certified to ISO 9001:2015 and ISO 13485:2016/EN ISO 13485:2016. VICAM™ manufactures antibody-linked resins and magnetic beads that are packed into columns and kits in Milford, Massachusetts and Nixa, Missouri. The Company manufactures and distributes its Analytical Standards and Reagents and Environmental Resource Associates ("ERA") product lines at its facility in Golden, Colorado, which is certified to ISO 9001:2015 and accredited to ISO/IEC 17025:2017, ISO/IEC 17034:16 and ISO Guide 34. Some ERA products are also manufactured in the Wexford, Ireland facility, which is also accredited to ISO/IEC 17025:2005, ISO/IEC 17034:2016.

The Company manufactures and distributes its MS products at its facilities in Wilmslow, England and Wexford, Ireland. Certain components or modules of the Company's MS instruments are manufactured at its facility in Solihull, England and by long-standing outside contractors. Each stage of this supply chain is closely monitored by the Company to maintain high quality and performance standards. The instruments, components or modules are then returned to the Company's facilities, where its engineers perform final assembly, calibrations to customer specifications and quality control procedures. The Company's MS facilities are certified to ISO 9001:2015 and ISO 13485:2016/EN ISO 13485:2016 and adhere to applicable regulatory requirements (including the FDA Quality System Regulation and the European In-Vitro Diagnostic Directive).

TA's thermal analysis, rheometry and calorimetry products are manufactured and distributed at the Company's New Castle, Delaware, Wakefield, Massachusetts, Eden Prairie, Minnesota, Lindon, Utah and Huellhorst, Germany facilities. Similar to MS, elements of TA's products are manufactured by outside contractors and are then returned to the Company's facilities for final assembly, calibration and quality control. The Company's New Castle facility is certified to ISO 9001:2015 and ISO 17025:2005 standards and the Eden Prairie facility is certified to both ISO 9001:2015 and ISO/IEC 17025:2017 standards.

Raw Materials

The Company purchases a variety of raw materials, primarily consisting of high temperature alloy sheet metal and castings, forgings, pre-plated metals and electrical components from various vendors. The materials used by the Company's operations are generally available from a number of sources and in sufficient quantities to meet current requirements subject to normal lead times.

The Company is subject to rules of the Securities and Exchange Commission ("SEC") under the Dodd-Frank Wall Street Reform and Consumer Protection Act, requiring disclosure as to whether certain materials (tantalum, tin, gold and tungsten), known as conflict minerals, which may be contained in the Company's products, are mined from the Democratic Republic of the Congo and adjoining countries. In 2019, the Company was not able to determine with certainty the country of origin of some of the conflict minerals in its manufactured products. However, the Company does not have knowledge that any of its conflict minerals originated from the Democratic Republic of the Congo or adjoining countries. The Company is in the process of evaluating its 2020 supply chain, and the Company plans to file its 2020 Form SD with the SEC in May 2021. The results of this and future evaluations may impose additional costs and may introduce new risks related to the Company's ability to verify the origin of any conflict minerals contained in its products.

In addition, the Company continues to monitor environmental health and safety regulations in countries in which it operates throughout the world, in particular, European Union and China Restrictions on the use of certain Hazardous Substances in electrical and electronic equipment (RoHS) and European Union Waste Electrical and Electronic Equipment directives. Further information regarding these regulations is available on the Company's website, www.waters.com, under the caption "About Waters / Corporate Governance".

Research and Development

The Company maintains an active research and development program focused on the development and commercialization of products that extend, complement and update its existing product offering. The Company's research and development expenditures for 2020, 2019 and 2018 were $141 million, $143 million and $143 million, respectively. In addition, the Company is party to an existing licensing arrangement for certain intellectual property relating to mass spectrometry technologies yet to be commercialized and for which there was no future alternative use as of the acquisition date. This licensing arrangement is significantly related to new, biologically-focused applications, as well as other applications, and requires the Company to make additional future payments of up to $7 million if certain milestones are achieved, as well as royalties on future net sales.

Nearly all of the Company's LC products have been developed at the Company's main research and development center located in Milford, Massachusetts, with input and feedback from the Company's extensive field organizations and customers. The majority of the Company's MS products are developed at facilities in England and most of the Company's current materials characterization products are developed at the Company's research and development center in New Castle, Delaware. At December 31, 2020, 2019 and 2018, there were 1,112, 1,089 and 1,011 employees, respectively, involved in the Company's research and development efforts.

The Company has increased research and development expenses from its continued commitment to invest significantly in new product development and existing product enhancements, and as a result of acquisitions. Despite the Company's active research and development programs, there can be no assurance that the Company's product development and commercialization efforts will be successful or that the products developed by the Company will be accepted by the marketplace.

In 2020, the Company opened a new research laboratory in Cambridge, MA, which will serve as a strategic, collaborative space in the community, where Waters can partner with academia, research and industry to accelerate the next generation of scientific advancements.

Human Capital

We believe that our people differentiate our business and are vital to our continued success. As a result, we have made important investments in our workforce through initiatives and programs that support talent development and inclusion and enhance our Total Rewards programs.

Employees

The Company employed approximately 7,400, 7,500 and 7,200 employees at December 31, 2020, December 31, 2019 and 2018, respectively, with approximately 38% of the Company's employees located in the United States. The Company believes its employee relations are generally good. The Company's employees are not unionized or affiliated with any internal or external labor organizations.

Talent Development

We believe that our future success depends in a significant part on our continued ability to attract and retain highly skilled employees and then contribute to the growth and development of these employees.

We further the growth and development of our employees by investing in various programs, digital platforms and workshops that build professional and technical skills.

Inclusion & Diversity

We believe inclusion is a core tenet of organizational success and that fostering a sense of inclusivity allows our employees to maximize their performance contribution to our business. We celebrate difference and diversity in our Employee Circles, which are composed of employees from throughout the company, which provide a forum in which to promote topics related to diversity and inclusion focusing on gender, Multicultural, Veterans and LGBTQ+ employees and allies. All employees are encouraged to participate in these Employee Circles at the local and global levels.

Waters has focused on expanding diversity in our recruitment processes. We have developed hiring partnerships with agencies such as the National Society of Black Engineers, Recruit Military, Out in Tech and Power to Fly to expand the pipeline of strong candidates. We have also rolled out training to all employees to support an inclusive culture that values diverse perspectives.

Health and Safety

The health and safety of our employees is our highest priority. Through online and in-person training programs, we believe that we foster a safe workplace and ensure that all employees are empowered to prevent accidents and injuries.

We manufacture products deemed essential to critical infrastructure, including health and safety, food and agriculture, and energy, and as a result, the majority of our production sites continued operating during the COVID-19 pandemic.

During the pandemic, we invested in maintaining safe work environments for our employees. We responded to the COVID-19 pandemic by, among other things:

- Adding work from home flexibility;
- Adjusting attendance policies to encourage those who are sick to stay home;
- Increasing cleaning protocols across all work locations;
- Initiating regular communication regarding impacts of the COVID-19 pandemic, including health and safety protocols and procedures;
- Establishing new physical distancing and safety procedures for employees who need to be onsite;
- Modifying workspaces as appropriate; and
- Implementing protocols to address actual and suspected COVID-19 cases and potential exposure.

Competition

The analytical instrument systems, supplies and services market is highly competitive. The Company encounters competition from several worldwide suppliers and other companies in both domestic and foreign markets for each of its three primary technologies. The Company competes in its markets primarily on the basis of product performance, reliability, service and, to a lesser extent, price. Competitors continuously introduce new products and have instrument businesses that are generally more diversified than the Company's business. Some competitors have greater financial resources and broader distribution than the Company's.

In the markets served by Waters, the Company's principal competitors include: Agilent Technologies, Inc., Shimadzu Corporation, Bruker Corporation, Danaher Corporation and Thermo Fisher Scientific Inc. In the markets served by TA, the Company's principal competitors include: PerkinElmer, Inc., Mettler-Toledo International Inc., NETZSCH-Geraetebau GmbH, Thermo Fisher Scientific Inc., Malvern PANalytical Ltd., a subsidiary of Spectris plc, and Anton-Paar GmbH.

The market for consumable LC products, including separation columns, is highly competitive and generally more fragmented than the analytical instruments market. The Company encounters competition in the consumable columns market from chemical companies that produce column sorbents and small specialized companies that primarily pack purchased sorbents into columns and subsequently package and distribute columns. The Company believes that it is one of the few suppliers that processes silica and polymeric resins, packs columns and distributes its own products. The Company competes in this market on the basis of performance, reproducibility, reputation and, to a lesser extent, price. In recent years, the Company's principal competitors for consumable products have included: Danaher Corporation; Merck KGaA; Agilent Technologies, Inc.; General Electric Company and Thermo Fisher Scientific Inc. The ACQUITY UPLC instrument is designed to offer a predictable level of performance when used with ACQUITY UPLC columns and the Company believes that the expansion of the ACQUITY UPLC instrument base will enhance its chromatographic column business because of the high level of synergy between ACQUITY UPLC columns and the ACQUITY UPLC instruments.

Patents, Trademarks and Licenses

The Company owns a number of United States and foreign patents and has patent applications pending in the United States and abroad. Certain technology and software has been acquired or is licensed from third parties. The Company also owns a number of trademarks. The Company's patents, trademarks and licenses are viewed as valuable assets to its operations. However, the Company believes that no one patent or group of patents, trademark or license is, in and of itself, essential to the Company such that its loss would materially affect the Company's business as a whole.

Environmental Matters and Climate Change

The Company is subject to foreign and U.S. federal, state and local laws, regulations and ordinances that (i) govern activities or operations that may have adverse environmental effects, such as discharges to air and water as well as handling and disposal practices for solid and hazardous wastes, and (ii) impose liability for the costs of cleaning up and certain damages resulting from sites of past spills, disposals or other releases of hazardous substances. The Company believes that it currently conducts its operations and has operated its business in the past in substantial compliance with applicable environmental laws. From time to time, Company operations have resulted or may result in noncompliance with environmental laws or liability for cleanup pursuant to environmental laws. The Company does not currently anticipate any material adverse effect on its operations, financial condition or competitive position as a result of its efforts to comply with environmental laws.

The Company is sensitive to the growing global debate with respect to climate change. An internal sustainability working group develops increasingly robust data with respect to the Company's utilization of carbon producing substances in an effort to continuously reduce the Company's carbon footprint. In 2019, the Company published a sustainability report identifying the various actions and behaviors the Company adopted in 2018 concerning its commitment to both the environment and the broader topic of social responsibility. See Item 1A, Risk Factors – *The effects of climate change could harm the Company's business*, for more information on the potential significance of climate change legislation. See also Note 18 in the Notes to the Consolidated Financial Statements for financial information about geographic areas.

Available Information

The Company files or furnishes all required reports with the SEC. The Company is an electronic filer and the SEC maintains a website that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC. The address of the SEC electronic filing website is http://www.sec.gov. The Company also makes available, free of charge on its website, its annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to those reports as soon as reasonably practicable after such material is electronically filed with or furnished to the SEC. The website address for Waters Corporation is http://www.waters.com and SEC filings can be found under the caption "Investors".

Forward-Looking Statements

Certain of the statements in this Form 10-K, including the information incorporated by reference herein, may contain forward-looking statements with respect to future results and events, including any statements regarding, among other items, anticipated trends or growth in the Company's business, including, but not limited to, the impact of the ongoing COVID-19 pandemic; the impact of new or proposed tariff or trade regulations or changes in the interpretation or enforcement of existing regulations; the impact of foreign currency translation on financial results; development of products by acquired businesses; the growth rate of sales and research and development expenses; the impact of costs associated with developing new technologies and bringing these new technologies to market; the impact of new product launches and the associated costs, such as the amortization expense related to software platforms; geographic sales mix of business; development of products by acquired businesses and the amount of contingent payments to the sellers of an acquired business; anticipated expenses, including interest expense, capitalized software costs and effective tax rates; the impact of the Tax Cuts and Jobs Act (the "2017 Tax Act") in the U.S.; the impact and outcome of the Company's various ongoing tax audit examinations; the achievement of contractual milestones to preserve foreign tax rates; the impact and outcome of litigation matters; the impact of the loss of intellectual property protection; the impact of new accounting standards and pronouncements; the adequacy of the Company's supply chain and manufacturing capabilities and facilities; the impact of regulatory compliance; the Company's expected cash flow, borrowing capacity, debt repayment and refinancing; the Company's ability to fund working capital, capital expenditures, service debt, repay outstanding lines of credit, make authorized share repurchases, fund potential acquisitions and pay any adverse litigation or tax audit liabilities, particularly in the U.S.; future impairment charges; the Company's contributions to defined benefit plans; the Company's expectations regarding changes to its financial position; compliance with applicable environmental laws; and the impact of recent acquisitions on sales and earnings.

Many of these statements appear, in particular, in Part II, Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations of this Form 10-K. Statements that are not statements of historical fact may be deemed forward-looking statements. You can identify these forward-looking statements by the use of the words "feels", "believes", "anticipates", "plans", "expects", "may", "will", "would", "intends", "suggests", "appears", "estimates", "projects", "should" and similar expressions, whether in the negative or affirmative. These statements are subject to various risks and uncertainties, many of which are outside the control of the Company, including, and without limitation:

- Risks related to the effects of the COVID-19 pandemic on our business, including: portions of our global workforce being unable to work fully and/or effectively due to working remotely, illness, quarantines, government actions, facility closures or other reasons related to the pandemic, increased risks of cyber-attacks resulting from our temporary remote working model, disruptions in our manufacturing capabilities or to our supply chain, volatility and uncertainty in global capital markets limiting our ability to access capital, customers being unable to make timely payment for purchases and volatility in demand for our products.

- Foreign currency exchange rate fluctuations that could adversely affect translation of the Company's future sales, financial operating results and the condition of its non-U.S. operations, especially when a currency weakens against the U.S. dollar.

- Current global economic, sovereign and political conditions and uncertainties, particularly regarding the effect of new or proposed tariff or trade regulations; the United Kingdom's exit from the European Union, as well as the Chinese government's ongoing tightening of restrictions on procurement by government-funded customers; the Company's ability to access capital and maintain liquidity in volatile market conditions; changes in timing and demand for the Company's products among the Company's customers and various market sectors, particularly if they should reduce capital expenditures or are unable to obtain funding, as in the cases of academic, governmental and research institutions; the effect of mergers and acquisitions on customer demand for the Company's products; and the Company's ability to sustain and enhance service.

- Negative industry trends; changes in the competitive landscape as a result of changes in ownership, mergers and continued consolidation among the Company's competitors; introduction of competing products by other companies and loss of market share; pressures on prices from customers or resulting from competition; regulatory, economic and competitive obstacles to new product introductions; lack of acceptance of new products; expansion of our business in developing markets; spending by certain end-markets; ability to obtain alternative sources for components and modules; and the possibility that future sales of new products related to acquisitions, which trigger contingent purchase payments, may exceed the Company's expectations.

- Increased regulatory burdens as the Company's business evolves, especially with respect to the FDA and EPA, among others, as well as regulatory, environmental and logistical obstacles affecting the distribution of the Company's products, including the impact, if any, of the coronavirus in China or elsewhere; completion of purchase order documentation by our customers; and the customers' ability to obtain letters of credit or other financing alternatives.

- Risks associated with lawsuits, particularly involving claims for infringement of patents and other intellectual property rights.

- The impact and costs incurred from changes in accounting principles and practices; the impact and costs of changes in statutory or contractual tax rates in jurisdictions in which the Company operates, specifically as it relates to the 2017 Tax Act in the U.S.; shifts in taxable income among jurisdictions with different effective tax rates; and the outcome of and costs associated with ongoing and future tax audit examinations or changes in respective country legislation affecting the Company's effective rates.

Certain of these and other factors are further described below in Item 1A, Risk Factors, of this Form 10-K. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements, whether because of these factors or for other reasons. All forward-looking statements speak only as of the date of this annual report on Form 10-K and are expressly qualified in their entirety by the cautionary statements included in this report. Except as required by law, the Company does not assume any obligation to update any forward-looking statements.

Item 1A: *Risk Factors*

The Company is subject to risks and uncertainties, including, but not limited to, the following:

RISKS RELATED TO THE CORONAVIRUS (COVID-19) PANDEMIC

The Company's business has been and may continue to be negatively affected by outbreaks of disease, such as epidemics or pandemics, including the ongoing COVID-19 pandemic.

Outbreaks of disease, such as epidemics or pandemics, have and could continue to negatively affect the Company's business. Both the Company's domestic and international operations have been and continue to be adversely affected by the ongoing global COVID-19 pandemic and the resulting volatility and uncertainty it has caused in the U.S. and international markets. Since being declared a pandemic in March 2020 by the World Health, COVID-19 has continued to spread throughout the U.S. and globally. The COVID-19 pandemic has caused significant volatility and uncertainty in U.S. and international markets, which has disrupted and is expected to continue to disrupt the Company's business and could result in a prolonged economic downturn. The Company operates in over 35 countries, including those in the regions most impacted by the COVID-19 pandemic. Many countries, including the U.S., have implemented measures such as quarantine, shelter-in-place, curfew and similar isolation measures, including government orders and other restrictions on the conduct of business operations. Such measures have had and are expected to continue to have adverse impacts on the U.S. and foreign economies of uncertain severity and duration and have had and may continue to have a negative impact on the Company's operations, including the Company's sales, supply chain and cash flow. Certain jurisdictions have experienced increased numbers of COVID-19 infections following the re-openings of their economies and easing of restrictions, which, in some cases, has required closings of certain business activity and the imposition of other restrictions in response. It is unclear whether the increases in the number of infections will continue and amplify or whether any so-called "second waves" of COVID-19 infections will be experienced in the United States or elsewhere and, if so, what the impact of that would be on human health and safety, the economy and our business. Although the FDA has approved certain therapies and two vaccines for emergency use and distribution, the initial rollout of vaccine distribution has encountered significant delays and there remains uncertainties about the amount of vaccine available for distribution, the logistics of implementing a national vaccine program and the overall efficacy of the vaccines once widely administered, especially as new strains of COVID-19 have been discovered, and the level of resistance these new strains have to the existing vaccines remains unknown. Additionally, the widespread pandemic has caused and is expected to continue to cause significant disruption of global financial markets, which may reduce the Company's ability to access capital.

The COVID-19 pandemic also has the potential to significantly impact our supply chain if our manufacturing facilities or those of third parties to whom we outsource certain manufacturing processes, the distribution centers where our inventory is managed or the operations of our logistics and other service providers are disrupted, temporarily closed or experience worker shortages. We may also see disruptions or delays in shipments of certain materials or components of our products.

As a result of the ongoing COVID-19 pandemic, the Company has transitioned the majority of its workforce to a temporary remote working model, which may result in the Company experiencing lower workforce efficiency and productivity, which in turn may adversely affect the Company's business, results of operations and financial condition. As company employees work from home and access the Company's system remotely, the Company may be subject to heightened security risks, including the risks of cyber-attacks. Additionally, if any of the Company's key management employees are unable to perform their duties for a period of time, including as the result of illness, the Company's business, results of operations and financial condition could be adversely affected.

The Company cannot reasonably estimate the length or severity of the COVID-19 pandemic or the related response, or the extent to which the disruption may continue to impact the Company's business, financial position, results of operations and cash flows. Ultimately, the COVID-19 pandemic could have a material adverse impact on the Company's business, financial positions, results of operations and cash flows.

RISKS RELATED TO MACROECONOMIC CONDITIONS

The Company's international operations may be negatively affected by political events, wars or terrorism and regulatory changes, related to either a specific country or a larger region. These potential political, currency and economic disruptions, as well as foreign currency exchange rate fluctuations, could have a material adverse effect on the Company's results of operations or financial condition.

Approximately 71% of the Company's net sales in both 2020 and 2019 were outside of the United States and were primarily denominated in foreign currencies. In addition, the Company has considerable manufacturing operations in Ireland and the U.K., as well as significant subcontractors located in Singapore. As a result, a significant portion of the Company's sales and operations are subject to certain risks, including adverse developments in the political, regulatory and economic environment, in particular, uncertainty regarding possible changes to foreign and domestic trade policy; the effect of the U.K.'s exit from the European Union as well as the financial difficulties and debt burden experienced by a number of European countries; the instability and potential impact of war or terrorism; the instability and possible dissolution of the Euro as a single currency; sudden movements in a country's foreign exchange rates due to a change in a country's sovereign risk profile or foreign exchange regulatory practices; tariffs and other trade barriers; the impact of public health epidemics, such as the coronavirus currently impacting China and elsewhere; difficulties in staffing and managing foreign operations; and associated adverse operational, contractual and tax consequences.

Additionally, the U.S. dollar value of the Company's net sales, cost of sales, operating expenses, interest, taxes and net income varies with foreign currency exchange rate fluctuations. Significant increases or decreases in the value of the U.S. dollar relative to certain foreign currencies, particularly the Euro, Japanese yen and British pound, could have a material adverse effect or benefit on the Company's results of operations or financial condition.

Global economic conditions may decrease demand for the Company's products and harm the Company's financial results.

The Company is a global business that may be adversely affected by changes in global economic conditions. These changes in global economic conditions, both inside and outside the U.S., may affect the demand for the Company's products and services. This may result in a decline in sales in the future, increased rate of order cancellations or delays, increased risk of excess or obsolete inventories, longer sales cycles and potential difficulty in collecting sales proceeds. There can be no assurance regarding demand for the Company's products and services in the future.

Disruption in worldwide financial markets could adversely impact the Company's access to capital and financial condition.

Financial markets in the U.S., Europe and Asia have experienced times of extreme disruption, including, among other things, sharp increases in the cost of new capital, credit rating downgrades and bailouts, severely diminished capital availability and severely reduced liquidity in money markets. Financial and banking institutions have also experienced disruptions, resulting in large asset write-downs, higher costs of capital, rating downgrades and reduced desire to lend money. There can be no assurance that there will not be future deterioration or prolonged disruption in financial markets or financial institutions. Any future deterioration or prolonged disruption in financial markets or financial institutions in which the Company participates may impair the Company's ability to access its existing cash, utilize its existing syndicated bank credit facility funded by such financial institutions, and impair its ability to access sources of new capital. The cost to the Company of any new capital raised and interest expense would increase if this were to occur.

RISKS RELATED TO OUR BUSINESS

The Company's financial results are subject to changes in customer demand, which may decrease for a number of reasons, many beyond the Company's control.

The demand for the Company's products is dependent upon the size of the markets for its LC, LC-MS, thermal analysis, rheometry and calorimetry products; the timing and level of capital spending and expenditures of the Company's customers; changes in governmental regulations, particularly affecting drug, food and drinking water testing; funding available to academic, governmental and research institutions; general economic conditions and the rate of economic growth in the Company's major markets; and competitive considerations. The Company typically experiences an increase in sales in its fourth quarter as a result of purchasing habits for capital goods by customers that tend to exhaust their spending budgets by calendar year end. However, there can be no assurance that the Company will effectively forecast customer demand and appropriately allocated research and development expenditures to products with high growth and high margin prospects. Additionally, there can be no assurance that the Company's results of operations or financial condition will not be adversely impacted by a change in any of the factors listed above or the continuation of uncertain global economic conditions.

Additionally, the analytical instrument market may, from time to time, experience low sales growth. Approximately 59% and 57% of the Company's net sales in 2020 and 2019, respectively, were to worldwide pharmaceutical and biotechnology companies, which may be periodically subject to unfavorable market conditions and consolidations. Unfavorable industry conditions could have a material adverse effect on the Company's results of operations or financial condition.

Competitors may introduce more effective or less expensive products than the Company's, which could result in decreased sales. The competitive landscape may transform as a result of potential changes in ownership, mergers and continued consolidations among the Company's competitors, which could harm the Company's business.

The analytical instrument market and, in particular, the portion related to the Company's HPLC, UPLC, LC-MS, thermal analysis, rheometry and calorimetry product lines, is highly competitive and subject to rapid changes in technology. The Company encounters competition from several international instrument suppliers and other companies in both domestic and foreign markets. Some competitors have instrument businesses that are generally more diversified than the Company's business, but are typically less focused on the Company's chosen markets. Over the years, some competitors have merged with other competitors for various reasons, including increasing product line offerings, improving market share and reducing costs. There can be no assurance that the Company's competitors will not introduce more effective and less costly products than those of the Company or that the Company will be able to increase its sales and profitability from new product introductions. There can be no assurance that the Company's sales and marketing forces will compete successfully against the Company's competitors in the future.

Strategies for organic growth require developing new technologies and bringing these new technologies to market, which could negatively impact the Company's financial results.

The Company's corporate strategy is fundamentally based on winning through organic innovation and deep application expertise. The Company is in the process of developing new products with recently acquired technologies. The future development of these new products will require a significant amount of spending over the next few years before significant, robust sales will be realized. Furthermore, these new products will be sold into both the non-clinical and clinical markets, and any new products requiring FDA clearance may take longer to bring to market. There can be no assurance given as to the timing of these new product launches and the ultimate realization of sales and profitability in the future.

The Company's software or hardware may contain coding or manufacturing errors that could impact their function, performance and security, and result in other negative consequences.
Despite testing prior to the release and throughout the lifecycle of a product or service, the detection and correction of any errors in released software or hardware can be time consuming and costly. This could delay the development or release of new products or services, or new versions of products or services, create security vulnerabilities in the Company's products or services, and adversely affect market acceptance of products or services. If the Company experiences errors or delays in releasing its software or hardware, or new versions thereof, its sales could be affected and revenues could decline. Errors in software or hardware could expose the Company to product liability, performance and warranty claims as well as harm to brand and reputation, which could impact future sales.

Disruption of operations at the Company's manufacturing facilities could harm the Company's financial condition.
The Company manufactures LC instruments at facilities in Milford, Massachusetts and through a subcontractor in Singapore; precision chemistry separation columns at its facilities in Taunton, Massachusetts and Wexford, Ireland; MS products at its facilities in Wilmslow, England, Solihull, England and Wexford, Ireland; thermal analysis and rheometry products at its facilities in New Castle, Delaware and other instruments and consumables at various other locations as a result of the Company's acquisitions. Any prolonged disruption to the operations at any of these facilities, whether due to labor difficulties, destruction of or damage to any facility or other reasons, could have a material adverse effect on the Company's results of operations or financial condition.

Failure to adequately protect intellectual property could have materially adverse effects on the Company's results of operations or financial condition.
There can be no assurance that any patents held by the Company will not be challenged, invalidated or circumvented or that the rights granted thereunder will provide competitive advantages to the Company. Additionally, there could be successful claims against the Company by third-party patent holders with respect to certain Company products that may infringe the intellectual property rights of such third parties. The Company's patents, including those licensed from others, expire on various dates. If the Company is unable to protect its intellectual property rights, it could have an adverse and material effect on the Company's results of operations or financial condition.

The Company's business would suffer if the Company were unable to acquire adequate sources of supply.
Most of the raw materials, components and supplies purchased by the Company are available from a number of different suppliers; however, a number of items are purchased from limited or single sources of supply and disruption of these sources could have, at a minimum, a temporary adverse effect on shipments and the financial results of the Company. A prolonged inability to obtain certain materials or components could have an adverse effect on the Company's financial condition or results of operations and could result in damage to its relationships with its customers and, accordingly, adversely affect the Company's business.

The Company's sales would deteriorate if the Company's outside contractors fail to provide necessary components or modules.
Certain components or modules of the Company's LC and MS instruments are manufactured by outside contractors, including the manufacturing of LC instrument systems and related components by contract

manufacturing firms in Singapore. Disruptions of service by these outside contractors could have an adverse effect on the supply chain and the financial results of the Company. A prolonged inability to obtain these components or modules could have an adverse effect on the Company's financial condition or results of operations.

The Company's business could be harmed by actions of distributors and other third parties that sell our products.
The Company sells some products through third parties, including distributors and value-added resellers. This exposes us to various risks, including competitive pressure, concentration of sales volumes, credit risks and compliance risks. We may rely on one or a few key distributors for a product or market and the loss of these distributors could reduce our revenue or net earnings. Distributors may also face financial difficulties, including bankruptcy, which could harm our collection of accounts receivable. Violations of the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.K. Bribery Act or similar anti-bribery laws by distributors or other third-party intermediaries could materially impact our business. Risks related to our use of distributors may reduce sales, increase expenses and weaken our competitive position.

The Company's financial results are subject to unexpected shifts in pre-tax income between tax jurisdictions, changing application of tax law and tax audit examinations.
The Company is subject to rates of income tax that range from 0% up to 34% in various jurisdictions in which it conducts business. In addition, the Company typically generates a substantial portion of its income in the fourth quarter of each fiscal year. Geographical shifts in income from previous quarters' projections caused by factors including, but not limited to, changes in volume and product mix and fluctuations in foreign currency translation rates, could therefore have potentially significant favorable or unfavorable effects on the Company's income tax expense, effective tax rate and results of operations.

Governments in the jurisdictions in which the Company operates implement changes to tax laws and regulations from time to time. Any changes in corporate income tax rates or regulations regarding transfer pricing or repatriation of dividends or capital, as well as changes in the interpretation of existing tax laws and regulations, in the jurisdictions in which the Company operates could adversely affect the Company's cash flow and lead to increases in its overall tax burden, which would negatively affect the Company's profitability.

The Company has a tax exemption in Singapore on certain types of income through March 2021, based upon the achievement and continued satisfaction of certain operational and financial milestones, which the Company met as of December 31, 2020 and expects to maintain through March 2021. Currently, the Company has determined that it is more likely than not to realize the tax exemption in Singapore and, accordingly, has not recognized any reserves for unrecognized tax benefits on its balance sheet related to this tax exemption. In the event that any of the milestone targets were not met, the Company would not be entitled to the tax exemption on income earned in Singapore dating back to the start date of the agreement (April 1, 2016), and all the tax benefits previously recognized would be reversed, resulting in the recognition of income tax expense equal to the statutory tax of 17% on income earned during that period. In addition, the Company has a new Development and Expansion Incentive in Singapore that provides a concessionary income tax rate of 5% on certain types of income for the period April 1, 2021 through March 31, 2026.

As a global business, the Company is subject to tax audit examinations in various jurisdictions throughout the world. The Company must manage the cost and disruption of responding to governmental audits, investigation and proceedings. In addition, the impact of the settlement of pending or future tax audit examination could have an unfavorable effect on the Company's income tax expense, effective tax rate and results of operations.

RISKS RELATED TO HUMAN CAPITAL MANAGEMENT

We may not be able to attract and retain qualified employees.

Our future success depends upon the continued service of our executive officers and other key management and technical personnel, and on our ability to continue to identify, attract, retain and motivate them. Implementing our business strategy requires specialized engineering and other talent, as our revenues are highly dependent on technological and product innovations. The market for employees in our industry is extremely competitive, and competitors for talent, particularly engineering talent, increasingly attempt to hire, and to varying degrees have been successful in hiring, our employees. A number of such competitors for talent are significantly larger than us and are able to offer compensation in excess of what we are able to offer. Further, existing immigration laws make it more difficult for us to recruit and retain highly skilled foreign national graduates of universities in the United States, making the pool of available talent even smaller. If we are unable to attract and retain qualified employees, our business may be harmed.

The loss of key members of management and the risks inherent in succession planning could adversely affect the Company's results of operations or financial condition.

The operation of the Company requires managerial and operational expertise. None of the Company's key management employees, with the exception of the President and Chief Executive Officer, have an employment contract with the Company and there can be no assurance that such individuals will remain with the Company. On December 31, 2020, our Senior Vice President and Chief Financial Officer departed from the Company and the Company appointed an interim Chief Financial Officer, effective January 1, 2021. We are currently conducting a search for a new Chief Financial Officer. Competition for experienced talent is intense and our process to search for a successor may be time-consuming and divert the board of directors' and managements' attention away from our business. This search and any eventual transition to a permanent Chief Financial Officer may be disruptive to our operations. Any delay or failure in identifying, attracting or retaining a permanent Chief Financial Officer, and successfully managing this leadership transition could have an adverse effect on our results of operations or financial condition. Additionally, if, for any reason, other key personnel do not continue to be active in management, the Company's results of operations or financial condition could be adversely affected.

RISKS RELATED TO CYBERSECURITY AND DATA PRIVACY

Disruption, cyber-attack or unforeseen problems with the security, maintenance or upgrade of the Company's information and web-based systems could have an adverse effect on the Company's operations and financial condition.

The Company relies on its technology infrastructure and that of its software and banking partners, among other functions, to interact with suppliers, sell products and services, fulfill contract obligations, ship products, collect and make electronic wire and check based payments and otherwise conduct business. The Company's technology infrastructure may be vulnerable to damage or interruption from, but not limited to, natural disasters, power loss, telecommunication failures, terrorist attacks, computer viruses, unauthorized access to customer or employee data, unauthorized access to and funds transfers from Company bank accounts and other attempts to harm the Company's systems. Additionally, we must maintain and periodically upgrade our information and web-based systems, which has caused and will in the future cause temporary interruptions to our technology infrastructure. Any prolonged disruption to the Company's technology infrastructure, at any of its facilities, could have a material adverse effect on the Company's results of operations or financial condition.

If the Company's security measures are compromised or fail to adequately protect its technology infrastructure, research and development efforts or manufacturing operations, the Company's products and services may be perceived as vulnerable or unreliable, the information protected by the Company's controls and processes may be subject to unauthorized access, acquisition or modification, the Company's brand and reputation could be damaged, the services that the Company provides to its customers could be disrupted, and customers may stop using the Company's products and services, all of which could reduce the Company's revenue and earnings, increase its expenses and expose the Company to legal claims and regulatory actions.

The Company is in the business of designing, manufacturing, selling and servicing analytical instruments to life science, pharmaceutical, biochemical, industrial, nutritional safety and environmental, academic and governmental customers working in research and development, quality assurance and other laboratory applications, and the Company is also a developer and supplier of software-based products that support instrument systems. Many of the Company's customers are in highly regulated industries. While the Company has invested time and resources implementing measures designed to protect the integrity and security of its technology infrastructure, research and development processes, manufacturing operations, products and services, and the internal and external data managed by the Company, there is a risk these measures will be defeated or compromised or that they are otherwise insufficient to protect against existing or emerging threats. The Company also has acquired companies, products, services and technologies over time and may face inherent risk when integrating these acquisitions into the Company. In addition, at times, the Company faces attempts by third parties to defeat its security measures or exploit vulnerabilities in its systems. These risks will increase as the Company continues to grow and expand geographically, and its systems, products and services become increasingly digital and sensor- and web-based.

The Company could suffer significant damage to its brand and reputation if a security incident resulted in unauthorized access to, acquisition of, or modification to the Company's technology infrastructure, research and development processes, manufacturing operations, its products and services as well as the internal and external data managed by the Company. Such an incident could disrupt the Company's operations and customers could lose confidence in the Company's ability to deliver quality and reliable products or services. This could negatively impact sales and could increase costs related to fixing and addressing these incidents and any vulnerabilities exposed by them, as well as to lawsuits, regulatory investigations, claims or legal liability including contractual liability, costs and expenses owed to customers and business partners.

RISKS RELATED TO COMPLIANCE, REGULATORY OR LEGAL CHANGES

Compliance failures could harm the Company's business.

The Company is subject to regulation by various federal, state and foreign governments and agencies in areas including, among others, health and safety, import/export, privacy and data protection, FCPA and environmental laws and regulations. A portion of the Company's operations are subject to regulation by the FDA and similar foreign regulatory agencies. These regulations are complex and govern an array of product activities, including design, development, labeling, manufacturing, promotion, sales and distribution. Any failure by the Company to comply with applicable governmental regulations could result in product recalls, the imposition of fines, restrictions on the Company's ability to conduct or expand its operations or the cessation of all or a portion of its operations.

Regulators globally are increasingly imposing greater fines and penalties for privacy and data protection violations, and the European Union has enacted a broad data protection regulation with fines based on a percentage of global revenues. Changes in laws or regulations associated with enhanced protection of certain sensitive types of personal information, such as information related to health, could greatly increase the cost of compliance and the cost of providing the Company's products or services. Any failure, or perceived failure, by the Company to comply with laws and regulations on privacy, data security or consumer protection, or other policies, public perception, standards, self-regulatory requirements or legal obligations, could result in lost or restricted business, proceedings, actions or fines brought against the Company or levied by governmental entities or others, or could otherwise adversely affect the business and harm the Company's reputation.

Some of the Company's operations are subject to domestic and international laws and regulations with respect to the manufacturing, handling, use or sale of toxic or hazardous substances. This requires the Company to devote substantial resources to maintain compliance with those applicable laws and regulations. If the Company fails to comply with such requirements in the manufacturing or distribution of its products, it could face civil and/or criminal penalties and potentially be prohibited from distributing or selling such products until they are compliant.

Some of the Company's products are also subject to the rules of certain industrial standards bodies, such as the International Standards Organization. The Company must comply with these rules, as well as those of other agencies, such as the United States Occupational Safety and Health Administration. Failure to comply with such rules could result in the loss of certification and/or the imposition of fines and penalties, which could have a material adverse effect on the Company's operations.

As a publicly-traded company, the Company is subject to the rules of the SEC and the New York Stock Exchange. In addition, the Company must comply with the Sarbanes-Oxley regulations, which require the Company to establish and maintain adequate internal control over financial reporting. The Company's efforts to comply with such laws and regulations are time consuming and costly. While we continue to enhance our controls, we cannot be certain that we will be able to prevent future significant deficiencies or material weaknesses. Failure to comply with such regulations or having inadequate internal controls could have a material adverse effect on the Company's financial condition and operations, which could cause investors to lose confidence in our reported financial information and could have a negative effect on the trading price of our stock and our access to capital.

The Company is subject to the rules of the SEC under the Dodd-Frank Wall Street Reform and Consumer Protection Act, requiring disclosure as to whether certain materials (tantalum, tin, gold and tungsten), known as conflict minerals, which may be contained in the Company's products, are mined from the Democratic Republic of the Congo and adjoining countries. In 2019, the Company was not able to determine with certainty the country of origin of some of the conflict minerals in its manufactured products. However, the Company does not have knowledge that any of its conflict minerals originated from the Democratic Republic of the Congo or adjoining countries. The Company is in the process of evaluating its 2020 supply chain, and the Company plans to file its 2020 Form SD with the SEC in May 2021. The results of this and future evaluations may impose additional costs and may introduce new risks related to the Company's ability to verify the origin of any conflict minerals contained in its products.

The Company may be harmed by improper conduct of any of our employees, agents or business partners.
We cannot provide assurance that our internal controls and compliance systems will always protect the Company from acts committed by employees, agents or business partners that would violate domestic and international laws, including laws governing payments to government officials, bribery, fraud, kickbacks and false claims, pricing, sales and marketing practices, conflicts of interest, competition, export and import compliance, money laundering and data privacy. In particular, the FCPA, the U.K. Bribery Act and similar anti-bribery laws generally prohibit companies and their intermediaries from making improper payments to government officials for the purpose of obtaining or retaining business, and we operate in many parts of the world that have experienced governmental corruption to some degree. Any such improper actions or allegations of such acts could damage our reputation and subject us to civil or criminal investigations in the U.S. and in other jurisdictions and related shareholder lawsuits, could lead to substantial civil and criminal, monetary and non-monetary penalties and could cause us to incur significant legal and investigatory fees. In addition, the government may seek to hold us liable as a successor for violations committed by companies in which we invest or that we acquire. We also rely on our suppliers to adhere to our supplier standards of conduct and material violations of such standards of conduct could occur that could have a material effect on our business, reputation and financial statements.

GENERAL RISK FACTORS

The effects of climate change could harm the Company's business.
The Company's manufacturing processes for certain of its products involve the use of chemicals and other substances that are regulated under various international, federal, state and local laws governing the environment. In the event that any future climate change legislation would require that stricter standards be imposed by domestic or international environmental regulatory authorities with respect to the use and/or levels of possible

emissions from such chemicals and/or other substances, the Company may be required to make certain changes and adaptations to its manufacturing processes. Any such changes could have a material adverse effect on the financial statements of the Company.

Another potential effect of climate change is an increase in the severity of global weather conditions. The Company's manufacturing facilities are located in the U.S., U.K., Ireland and Germany. In addition, the Company manufactures a growing percentage of its HPLC, UPLC and MS products in both Singapore and Ireland. Severe weather and geological conditions or events, including earthquakes, hurricanes and/or tsunamis, could potentially cause significant damage to the Company's manufacturing facilities in each of these countries. The effects of such damage and the resulting disruption of manufacturing operations and the impact of lost sales could have a material adverse impact on the financial results of the Company.

Estimates and assumptions made in accounting for the Company's results from operations are dependent on future results, which involve significant judgments and may be imprecise and may differ materially from actual results.

The preparation of consolidated financial statements in conformity with generally accepted accounting principles requires the Company to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent liabilities at the dates of the financial statements. These estimates and assumptions must be made due to certain information used in preparation of our financial statements which is dependent on future events, cannot be calculated with a high degree of precision from data available or is not capable of being readily calculated based on generally accepted methodologies. The Company believes that the accounting related to revenue recognition, bad debts, inventory valuation, goodwill and intangible assets, income taxes, warranty and installation provisions, litigation, retirement plan obligations, stock-based compensation, business combinations and asset acquisitions, uncertain tax positions and contingencies involves significant judgments and estimates. Actual results for all estimates could differ materially from the estimates and assumptions used, which could have a material adverse effect on our financial condition and results of operations.

The Company's financial condition and results of operations could be adversely affected by changes to the Company's retirement plans or retirement plan assets.

The Company sponsors various retirement plans, both inside and outside the U.S. Any changes in regulations made by governments in countries in which the Company sponsors retirement plans could adversely impact the Company's cash flows or results of operations. In connection with these retirement plans, the Company is exposed to market risks associated with changes in the various capital markets. For example, changes in long-term interest rates affect the discount rate that is used to measure the Company's retirement plan obligations and related expense. In addition, changes in the market value of investments held by the retirement plans could materially impact the funded status of the retirement plans, and affect the related pension expense and level and timing of contributions required under applicable laws.

The Company's financial condition and results of operations could be adversely affected if the Company is unable to maintain a sufficient level of cash flow.

The Company had $1.4 billion in debt and $443 million in cash, cash equivalents and investments as of December 31, 2020. As of December 31, 2020, the Company also had the ability to borrow an additional $1.4 billion from its existing, committed credit facility. All but a small portion of the Company's debt was in the U.S. There is a substantial cash requirement in the U.S. to fund operations and capital expenditures, service debt interest obligations, finance potential U.S. acquisitions and continue authorized stock repurchase programs. As such, the Company's financial condition and results of operations could be adversely impacted if the Company is unable to generate and maintain a sufficient level of cash flow to address these requirements through (1) cash from operations, (2) the Company's ability to access its existing cash and revolving credit facility, (3) the ability to expand the Company's borrowing capacity and (4) other sources of capital obtained at an acceptable cost.

Debt covenants, and the Company's failure to comply with them, could negatively impact the Company's capital and financial results.

The Company's debt is subject to restrictive debt covenants that limit the Company's ability to engage in certain activities that could otherwise benefit the Company. These debt covenants include restrictions on the Company's ability to enter into certain contracts or agreements, which may limit the Company's ability to make dividend or other payments, secure other indebtedness, enter into transactions with affiliates and consolidate, merge or transfer all or substantially all of the Company's assets. The Company is also required to meet specified financial ratios under the terms of the Company's debt agreements. The Company's ability to comply with these financial restrictions and all other covenants is dependent on the Company's future performance, which is subject to, but not limited to, prevailing economic conditions and other factors, including factors that are beyond the Company's control, such as foreign exchange rates, interest rates, changes in technology and changes in the level of competition.

Item 1B: *Unresolved Staff Comments*

None.

Item 2: *Properties*

Waters Corporation operates 20 United States facilities and 71 international facilities, including field offices. The Company believes its facilities are suitable and adequate for its current production level and for reasonable growth over the next several years. The Company's primary facilities are summarized in the table below.

Primary Facility Locations

Location	Function (1)	Owned/Leased
Golden, CO	M, R, S, D, A	Leased
New Castle, DE	M, R, S, D, A	Owned
Franklin, MA	D	Leased
Milford, MA	M, R, S, A	Owned
Taunton, MA	M, R	Owned
Cambridge, MA	R, S	Leased
Eden Prairie, MN	M, R, S, D, A	Leased
Nixa, MO	M, S, D, A	Leased
Lindon, UT	M, R, S, D, A	Leased
Newcastle, England	R, S, D, A	Leased
Solihull, England	M,A	Owned
Wilmslow, England	M, R, S, D, A	Owned
St. Quentin, France	S, A	Leased
Huellhorst, Germany	M, R, S, D, A	Owned
Budapest, Hungary	R	Leased
Wexford, Ireland	M, R, D, A	Owned
Bangalore, India	M, S, D, A	Owned
Etten-Leur, Netherlands	S, D, A	Owned
Brasov, Romania	R, A	Leased
Singapore	R, S, D, A	Leased

(1) M = Manufacturing; R = Research; S = Sales and Service; D = Distribution; A = Administration

The Company operates and maintains 10 field offices in the United States and 59 field offices abroad in addition to sales offices in the primary facilities listed above. The Company's field office locations are listed below.

Field Office Locations (2)

United States	International		
Costa Mesa, CA	Australia	Hungary	Norway
Pleasanton, CA	Austria	India	People's Republic of China
Wood Dale, IL	Belgium	Ireland	Portugal
Carmel, IN	Brazil	Israel	Poland
Columbia, MD	Canada	Italy	Spain
Morrisville, NC	Czech Republic	Japan	Sweden
Parsippany, NJ	Denmark	Korea	Switzerland
Plymouth Meeting, PA	Finland	Malaysia	Taiwan
Bellaire, TX	France	Mexico	United Arab Emirates
Salt Lake City, UT	Germany	Netherlands	United Kingdom

(2) The Company operates more than one field office within certain states and foreign countries.

Item 3: *Legal Proceedings*

From time to time, the Company and its subsidiaries are involved in various litigation matters arising in the ordinary course of business. The Company believes it has meritorious arguments in its current litigation matters and believes any outcome, either individually or in the aggregate, will not be material to the Company's financial position or results of operations.

Item 4: *Mine Safety Disclosures*

Not applicable.

INFORMATION ABOUT OUR EXECUTIVE OFFICERS

Officers of the Company are elected annually by the Board of Directors and hold office at the discretion of the Board of Directors. The following persons serve as executive officers of the Company:

Dr. Udit Batra, 50, was appointed a Director of the Company as well as President and CEO on September 1, 2020. He most recently served as Chief Executive Officer of the Life Science business of Merck KGaA, Darmstadt, Germany, which operates as MilliporeSigma in the United States and Canada, and as a member of its Executive Board, roles he held from 2014 and 2016, respectively, through July 2020. Prior to that, Dr. Batra served as President and Chief Executive Officer of Merck KGaA, Darmstadt, Germany's Consumer Health business. Dr. Batra oversaw the company's Bioethics Advisory Panel and had Board responsibility for the global Information Technology function. Before joining Merck KGaA, Darmstadt, Germany, Dr. Batra held several positions of increasing responsibility at Novartis, including Global Head of Corporate Strategy in Switzerland, Country President for the Pharma Business of Novartis in Australia and New Zealand and the Global Head of Public Health and Market Access in Cambridge, Massachusetts. Dr. Batra also served at the global consultancy McKinsey & Company across the healthcare, consumer and non-profit sectors. Dr. Batra started his career at Merck Research Labs in West Point, Pennsylvania as a research engineer.

Keeley Aleman, 44, was appointed Senior Vice President, General Counsel and Secretary in October of 2019. Ms. Aleman joined Waters Corporation in 2006 as the Assistant General Counsel and held various legal roles focusing on business transactions, commercial strategies, international development, compliance, corporate governance and organizational matters. Prior to joining Waters Corporation she held corporate associate positions at Goodwin Procter, LLP, and Testa, Hurwitz & Thibeault, LLP.

Robert G. Carson, 47, was appointed Senior Vice President, Corporate Development in February 2018. Prior to joining Waters Corporation, he held several positions during his 16 years at Medtronic plc, including Vice President and General Manager, Pacemaker Business from January 2017 to January 2018. In addition, Mr. Carson spent nearly 12 years in Medtronic's spinal implants and biologics business, serving as Vice President and General Manager from July 2016 to January 2017, Vice President of Global Marketing & Strategy from April 2015 to July 2016 and Vice President & Therapy Segment Leader from October 2012 to April 2015. Mr. Carson began his career with Banc of America Securities.

Dr. Michael C. Harrington, 60, was appointed Senior Vice President, Global Markets in February 2016. Dr. Harrington joined Waters Corporation in 1987 and has held several senior positions with Waters Corporation, including Vice President, Europe and Asia Pacific Operations, Senior Director of US Sales Operations, Director of US Chemistry Sales and General Manager of Phase Separations. Prior to joining Waters Corporation, Dr. Harrington held senior sales positions at Celsis, Inc.

Belinda Hyde, 50, was appointed Senior Vice President, Global Human Resources of Waters Corporation in January 2021. She is responsible for all aspects of the Global Human Resources function including talent management, total rewards, HR business partners, HR operations and technology, employee engagement and diversity and inclusion. Prior to joining Waters, Belinda served as the Chief Human Resources Officer for SPX FLOW, from July 2015 to December 2020, and Schnitzer Steel. She has also held leadership roles in business and cultural transformation, executive development, talent management, compensation, benefits, training, internal communications and business partner support at companies such as Caltex Petroleum, Dell Technologies, Invitrogen and Celanese Corporation. Belinda earned a Bachelor of Arts in psychology from the University of Texas, as well as both a master's degree and doctorate in industrial and organizational psychology from the University of Houston.

Ian S. King, 64, was appointed Senior Vice President, Global Products in July 2017. Mr. King joined Waters in 1982 and previously served as Senior Vice President, Instrument Technology; Vice President, Separations Technologies; and Vice President and General Manager of Consumable Division, as well as a variety of scientific and management positions in Waters Corporation's international subsidiaries. Prior to joining Waters Corporation, Mr. King worked at Edinburgh University as a research scientist.

Jonathan M. Pratt, 51, was appointed Senior Vice President and President, TA Instruments in August 2019. Prior to joining Waters Corporation, Mr. Pratt was President of Beckman Coulter Life Sciences from January 2017 to April 2019. Additionally, he held senior positions at Pall Corporation from 2001 to 2017, where he was Vice President and General Manager from October 2015 to December 2016 following Pall Corporation's acquisition by Danaher Corporation and, prior to that, President of its Food & Beverage, Laboratory and ForteBio businesses from April 2011 to October 2015. In August 2020, Mr. Pratt was appointed to the Board of SPX FLOW, Inc. (NYSE:FLOW) as an independent director and a member of the Audit, Compensation, and Nominating & Governance Committees.

Michael F. Silveira, 54, was elected by the Board of Directors of the Company to serve as the interim Chief Financial Officer, effective January 1, 2021. Mr. Silveira has been with the Company for 16 years and is a Certified Public Accountant. He joined Waters Corporation in 2004 as Assistant Corporate Controller and was most recently appointed Vice President and Corporate Controller in 2013. Prior to joining the Company, he held several financial management positions with Astro-Med, Inc (nka AstroNova), Textron, Inc. and KPMG.

Dan Welch, 59, was appointed Senior Vice President, Global Operations in July 2020 and was Vice President of Global Supply Chain since July 2019 and Senior Director, Supply Chain Management since August 2017. Mr. Welch joined Waters Corporation in May 2012 as General Manager and Senior Director of Manufacturing Operations. Prior to joining Waters Corporation, he held senior operations and engineering positions at semiconductor and solar energy companies.

PART II

Item 5: *Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities*

The Company's common stock is registered under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and is listed on the New York Stock Exchange under the symbol "WAT". As of February 19, 2021, the Company had 78 common stockholders of record. The Company has not declared or paid any dividends on its common stock in its past three fiscal years and does not intend to pay cash dividends in the foreseeable future. Any future determination to pay cash dividends will be made at the discretion of the Board of Directors and will depend on restrictions and other factors the Board of Directors may deem relevant. The Company has not made any sales of unregistered equity securities in the years ended December 31, 2020, 2019 or 2018.

Securities Authorized for Issuance under Equity Compensation Plans

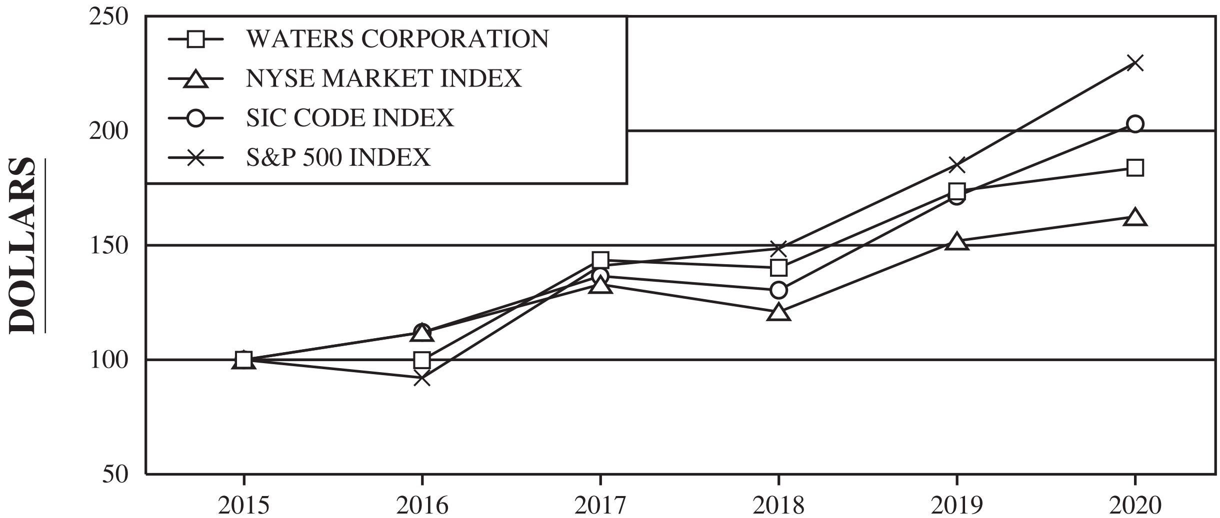
Equity compensation plan information is incorporated by reference from Part III, Item 12, Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters, of this document and should be considered an integral part of this Item 5.

Stock Price Performance Graph

The following performance graph and related information shall not be deemed to be "soliciting material" or to be "filed" with the SEC, nor shall such information be incorporated by reference into any future filing under the Securities Act of 1933, as amended, or the Exchange Act, except to the extent that the Company specifically incorporates it by reference into such filing.

The following graph compares the cumulative total return on $100 invested as of December 31, 2015 (the last day of public trading of the Company's common stock in fiscal year 2015) through December 31, 2020 (the last day of public trading of the common stock in fiscal year 2020) in the Company's common stock, the NYSE Market Index, the SIC Code 3826 Index and the S&P 500 Index. The return of the indices is calculated assuming reinvestment of dividends during the period presented. The Company has not paid any dividends since its IPO. The stock price performance shown on the graph below is not necessarily indicative of future price performance.

COMPARISON OF CUMULATIVE TOTAL RETURN SINCE DECEMBER 31, 2015 AMONG WATERS CORPORATION, NYSE MARKET INDEX, SIC CODE 3826 INDEX – LABORATORY ANALYTICAL INSTRUMENTS AND S&P 500 INDEX



	2015	2016	2017	2018	2019	2020
WATERS CORPORATION	100.00	99.86	143.55	140.18	173.61	183.85
NYSE MARKET INDEX	100.00	111.94	132.90	121.01	151.87	162.49
SIC CODE INDEX	100.00	111.96	136.40	130.42	171.49	203.04
S&P 500 INDEX	100.00	92.16	141.00	148.46	185.11	229.68

Purchases of Equity Securities by the Issuer

The following table provides information about purchases by the Company during the three months ended December 31, 2020 of equity securities registered by the Company under the Exchange Act (in thousands, except per share data):

Period	Total Number of Shares Purchased (1)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Programs	Maximum Dollar Value of Shares that May Yet Be Purchased Under the Programs (2)
September 27, 2020 to October 24, 2020	—	$—	—	$1,524,905
October 25, 2020 to November 21, 2020	—	$—	—	$1,524,905
November 22, 2020 to December 31, 2020	—	$—	—	$1,524,905
Total	—	$—	—	$1,524,905

(1) The Company repurchased less than one thousand shares of common stock at a cost of less than $1 million related to the vesting of restricted stock during the three months ended December 31, 2020.

(2) In January 2019, the Company's Board of Directors authorized the Company to repurchase up to $4 billion of its outstanding common stock in open market or private transactions over a two-year period. This new program replaced the remaining amounts available under the pre-existing authorization. During the second quarter of 2020, the Company temporarily suspended its share repurchases due to the uncertain business conditions caused by the COVID-19 pandemic. In December 2020, the Company's Board of Directors authorized the extension of the share repurchase program through January 21, 2023.

Item 6: Selected Financial Data

The following table sets forth selected historical consolidated financial and operating data for the periods indicated. The statement of operations and balance sheet data is derived from financial statements for the years 2020, 2019, 2018, 2017 and 2016. The Company's financial statements as of December 31, 2020 and 2019, and for each of the three years in the period ended December 31, 2020 are included in Part II, Item 8, Financial Statements and Supplementary Data, of this Form 10-K.

In thousands, except per share and employees data	2020	2019	2018	2017	2016
STATEMENT OF OPERATIONS DATA:					
Net sales	$2,365,365	$2,406,596	$2,419,929	$2,309,078	$2,167,423
Income from operations before income taxes	$ 610,914	$ 678,239	$ 682,146	$ 641,097	$ 600,114
Net income*	$ 521,571	$ 592,198	$ 593,794	$ 20,311	$ 521,503
Net income per basic common share*	$ 8.40	$ 8.76	$ 7.71	$ 0.25	$ 6.46
Weighted-average number of basic common shares	62,094	67,627	76,992	79,793	80,786
Net income per diluted common share*	$ 8.36	$ 8.69	$ 7.65	$ 0.25	$ 6.41
Weighted-average number of diluted common shares and equivalents	62,414	68,166	77,618	80,604	81,417
BALANCE SHEET AND OTHER DATA:					
Cash, cash equivalents and investments	$ 443,146	$ 337,144	$1,735,224	$3,393,701	$2,813,032
Working capital, including current maturities of debt**	$ 596,050	$ 721,157	$2,214,232	$3,663,977	$3,115,124
Total assets**	$2,839,920	$2,557,055	$3,727,426	$5,324,354	$4,662,059
Long-term debt	$1,206,515	$1,580,797	$1,148,172	$1,897,501	$1,701,966
Stockholders' equity (deficit)***	$ 232,144	$ (216,281)	$1,567,258	$2,233,788	$2,301,949
Employees	7,412	7,467	7,246	7,020	6,899

* The provision for income taxes for 2017 includes a $550 million estimate for the impact of the enactment of the 2017 Tax Act, which was signed into law on December 22, 2017. The $550 million income tax provision reduced net income per share by $6.82. The $550 million income tax provision primarily consists of an estimated transition tax, as well as estimated income tax provisions for state and withholding taxes and a provision associated with the remeasurement of the Company's deferred tax assets and liabilities from 35% to the new U.S. corporate income tax rate of 21%.

The Company adopted new accounting guidance related to stock-based compensation in 2017. The new accounting guidance requires the excess tax benefits or deficiencies related to stock-based compensation to be reflected in the consolidated statements of operations as a component of the provision for income taxes, whereas they were previously recognized in equity. This aspect of the new accounting guidance was required to be adopted on a prospective basis for the statement of operations and retroactive restatement was not permitted. In 2020, 2019 and 2018, the Company recognized an excess tax benefit, which decreased income tax expense by $7 million, $9 million and $9 million, respectively, and added $0.11, $0.14 and $0.11, respectively, to net income per diluted share.

In addition, in December 2018, the Company settled a pension plan obligation by making lump-sum cash payments and purchasing annuity contracts for participants to permanently extinguish the pension plan's obligations. As a result, the Company recorded a $46 million charge, which consisted of a $6 million cash contribution to the plan and a $40 million non-cash charge related to the reversal of unrecognized actuarial losses recorded in accumulated other comprehensive income in the stockholders' equity. The $46 million pre-tax charge reduced net income per diluted share by $0.39.

** In January 2019, the company adopted new accounting guidance related to the accounting for leases. The new guidance requires lessees to present the assets and liabilities that arise from leases on their balance sheets. The standard required using a modified retrospective transition approach to be applied to leases existing as of, or entered into after, January 1, 2019. As a result, the Company recorded a $93 million right-of-use asset as of December 31, 2019. The adoption of this standard did not have a material impact on the Company's results of operations, cash flows and stockholders' equity (deficit).

*** In 2018, the Company adopted new accounting guidance which eliminates the deferral of tax effects on intra-entity transfers other than inventory and requires an entity to recognize the income tax consequences when the transfer occurs. The Company adopted this standard as of January 1, 2018 with a $4 million charge to beginning retained earnings in the consolidated balance sheet.

Item 7: *Management's Discussion and Analysis of Financial Condition and Results of Operations*

Business and Financial Overview

The Company has two operating segments: Waters™ and TA™. Waters products and services primarily consist of high performance liquid chromatography ("HPLC"), ultra performance liquid chromatography ("UPLC™" and, together with HPLC, referred to as "LC"), mass spectrometry ("MS") and precision chemistry consumable products and related services. TA products and services primarily consist of thermal analysis, rheometry and calorimetry instrument systems and service sales. The Company's products are used by pharmaceutical, biochemical, industrial, nutritional safety, environmental, academic and governmental customers. These customers use the Company's products to detect, identify, monitor and measure the chemical, physical and biological composition of materials and to predict the suitability and stability of fine chemicals, pharmaceuticals, water, polymers, metals and viscous liquids in various industrial, consumer goods and healthcare products.

Both the Company's domestic and international operations have been and continue to be adversely affected by the ongoing global pandemic of a novel strain of coronavirus ("COVID-19") that has led to volatility and uncertainty in the U.S. and international markets. The Company is actively managing its business to respond to the COVID-19 impact; however, the Company cannot reasonably estimate the length or severity of the COVID-19 pandemic or the related response, or the extent to which the disruption may materially impact the Company's business, consolidated financial position, consolidated results of operations or consolidated cash flows in the future.

In 2020, the COVID-19 pandemic did not materially impact the Company's manufacturing facilities or those of the third parties to whom it outsources certain manufacturing processes, the distribution centers where its inventory is managed, or the operations of its logistics and other service providers. The Company also did not see material disruptions or delays in shipments of certain materials or components of its products.

At every stage of the pandemic, the Company has taken decisive and appropriate actions, including a mandatory remote work policy for all employees with the exception of those in manufacturing, distribution, and certain laboratory environments, as well as restrictions on non-essential travel and visitors into its facilities. The Company has engaged a medical advisor to guide its policy deployment, and the Company continues to take proactive measures to guard the health of its global employee base, and the safety of all customer interactions. The Company has implemented rigorous protocols to promote a safe work environment in all of its locations around the world and continues to closely monitor and update its multi-phase process that was developed during the year to ensure for the safe return of employees to its physical workplaces as social distancing, governmental requirements and other protocols allow.

The vast majority of the markets the Company serves, most notably the pharmaceutical, biomedical research, food/environmental and clinical markets, have continued to operate at various levels, and the Company is working closely with these customers to facilitate their seamless operation. Over the last several years, the Company has executed on a digital workplace strategy focused on providing modern connectivity and collaboration tools to its employees. The Company's strategic technology investments have enabled it to swiftly meet remote working needs as the COVID-19 situation has escalated and evolved. From a customer-facing perspective, the Company is leveraging digital demand generation activities, including virtual demos across all regions in which it operates, remote instrument installations, virtual sales seminars, online product training, and a rapid acceleration in one-on-one communications over emails, phone and video conferencing.

While the Company initially anticipated that the COVID-19 pandemic would have the biggest impact on the Company's financial results in the second quarter of 2020, and future quarters would improve as countries lifted their business restrictions, the new outbreaks of COVID-19 in the U.S. and elsewhere throughout the world have demonstrated that the COVID-19 pandemic continues to be fluid with uncertainties and risks remaining across the global economy. The Company took a proactive approach to managing through this unpredictability and implemented a series of cost reduction actions that include salary reductions, furloughs and reductions in non-essential spending and other working capital reductions in order to preserve liquidity and enhance financial flexibility. These cost reductions were completed by the end of 2020; however, the Company's plan will be adjusted accordingly depending on the pace of the recovery and any further lockdowns.

The Company's operating results are as follows for the years ended December 31, 2020, 2019 and 2018 (dollars in thousands, except per share data):

	Year Ended December 31,			*% change*	
	2020	2019	2018	*2020 vs. 2019*	*2019 vs. 2018*
Revenues:					
Product sales	$1,497,333	$1,567,189	$1,604,993	*(4%)*	*(2%)*
Service sales	868,032	839,407	814,936	*3%*	*3%*
Total net sales	2,365,365	2,406,596	2,419,929	*(2%)*	*(1%)*
Costs and operating expenses:					
Cost of sales	1,006,689	1,010,700	992,564	—	*2%*
Selling and administrative expenses	553,698	534,791	536,902	*4%*	—
Research and development expenses	140,777	142,955	143,403	*(2%)*	—
Purchased intangibles amortization	10,587	9,693	7,712	*9%*	*26%*
Asset impairments	6,945	—	—	**	—
Litigation provision (settlement)	1,180	—	(426)	**	**
Operating income	645,489	708,457	739,774	*(9%)*	*(4%)*
Operating income as a % of sales	*27.3%*	*29.4%*	*30.6%*		
Other expense	(1,775)	(3,586)	(47,794)	*(51%)*	**
Interest expense, net	(32,800)	(26,632)	(9,834)	*23%*	**
Income before income taxes	610,914	678,239	682,146	*(10%)*	*(1%)*
Provision for income taxes	89,343	86,041	88,352	*4%*	*(3%)*
Net income	$ 521,571	$ 592,198	$ 593,794	*(12%)*	—
Net income per diluted common share	$ 8.36	$ 8.69	$ 7.65	*(4%)*	*14%*

** Percentage not meaningful

The Company's net sales decreased approximately 2% in 2020 as compared to 2019, and decreased 1% in 2019 as compared to 2018. The decline in sales in 2020 can be attributed to the lower customer demand due to interruption in business activities caused by the uncertainties from the COVID-19 pandemic across the world. The negative impact of COVID-19 on our business was more pronounced in the first half of 2020 as the Company's sales declined 12% as compared to the prior year. In the second half of 2020, our customers began to resume laboratory and manufacturing operations and it resulted in the Company's second half sales growing 7% as compared to the prior year.

Foreign currency translation increased sales by less than 1% and decreased sales by 2% in 2020 and 2019, respectively. The Company's acquisitions of Andrew Alliance (as defined below) and ISS (as defined below) did not have material impacts on sales growth in 2020. Unless otherwise noted, sales growth or decline percentages are presented as compared with the same period in the prior year.

Instrument system sales decreased 8% and 4% in 2020 and 2019, respectively. In 2020, the decrease in instrument system sales was attributable to the weaker demand for our products by our customers due to interruption of business activities and the uncertainty caused by the COVID-19 pandemic. As customer demand started to return to normal levels, instrument system sales increased 3% in the second half of 2020 as compared to the prior year period, after having declined 22% in the first half of 2020 compared to the prior year period. In 2019, the decrease in instrument system sales was primarily driven by weaker demand for our products by our customers due to uncertainty caused by macroeconomic conditions and governmental policy changes. Foreign currency translation increased instrument system sales by 1% in 2020 and decreased sales by 1% in 2019. Recurring revenues (combined sales of precision chemistry consumables and services) increased 4% and 3% in 2020 and 2019, respectively, as a result of a larger installed base of customers and higher billing demand for service sales. In 2020, recurring revenues were also impacted by the interruption of business activities and the uncertainty caused by the COVID-19 pandemic. As our customers began to resume laboratory and manufacturing operations, recurring revenues increased 10% in the second half of 2020 as compared to the prior year period, after having declined 3% in the first half of 2020 compared to the prior year period. Recurring revenues were positively impacted by foreign currency translation in 2020, which increased sales by 1%; however foreign currency translation negatively impacted sales by 2% in 2019.

Geographically, the sales declines in 2020 were broad-based across the world, except for Europe, and were due to the weaker demand and disruption of business activities caused by the COVID-19 lockdowns. Sales in Asia decreased 4% in 2020 and increased 2% in 2019, with foreign currency translation having minimal impact on sales in 2020 and negatively impacting sales by 1% in 2019. In 2020, the sales decline in Asia was primarily driven by the 8% decrease in sales in China due to lower demand caused by the COVID-19 pandemic. Excluding sales in China, the Company's 2020 sales were flat with foreign currency translation positively impacting sales by 1%. The decline in the Company's sales in 2019 was a result of increased sales in the U.S., Canada, Japan and the rest of Asia being offset by a decrease in sales in other geographies on weaker demand for our products due to uncertainty caused by macroeconomic conditions, primarily from Brexit as well as Latin America, and governmental policy changes in China.

Sales in Europe increased 5% in 2020 and decreased 4% in 2019, with foreign currency translation positively impacting sales by 3% in 2020 and negatively impacting sales by 4% in 2019. Sales in the Americas decreased 4% and 1% in 2020 and 2019, respectively, with foreign currency translation having minimal impact on sales in 2020 and negatively impacting sales by 1% in 2019.

Sales to pharmaceutical customers increased 2% and were flat in 2020 and 2019, respectively, with foreign currency translation positively impacting sales by 1% in 2020 and negatively impacting sales by 2% in 2019. Combined sales to industrial customers, which include material characterization, food, environmental and fine chemical markets, declined 2% in both 2020 and 2019, with foreign currency translation positively impacting sales by 1% in 2020. The lower volume of sales to both pharmaceutical and industrial customers in 2020 was primarily due to the disruption in business activities caused by COVID-19. Similarly, TA sales declined 8% and 4% in 2020 and 2019, respectively.

Combined sales to academic and governmental customers decreased 16% in 2020 and increased 2% in 2019, with foreign currency translation having minimal impact on sales in 2020 and decreasing sales by 1% in 2019. The decline in sales to academic and governmental customers in 2020 was due to the lower demand for our products and services as the academic and governmental institutions adjusted their spending during the year to mitigate the effects of the COVID-19 pandemic. The most significant decline in academic and governmental sales in 2020 occurred in China where sales declined 31% due to government-mandated spending reductions.

Sales to our academic and governmental customers are highly dependent on when institutions receive funding to purchase our instrument systems and, as such, sales can vary significantly from period to period.

Operating income was $645 million in 2020, a decrease of 9% as compared to 2019. This decrease can be attributed to the decline in sales volumes caused by the COVID-19 pandemic, unfavorable manufacturing absorption and unfavorable foreign currency translation. The operating income decline was somewhat mitigated by a series of cost reduction actions that included salary reductions, furloughs and reductions in non-essential spending that increased operating income by approximately $103 million in 2020 versus our operating plan. Operating income in 2020 also included $27 million of severance-related costs in connection with a reduction in workforce and lease termination and exit costs.

Operating income decreased 4% in 2019 as compared to 2018. This decrease can be attributed to lower sales volume, the effect of foreign currency translation and $10 million of severance-related costs in connection with a reduction in workforce that occurred in early 2019, offset by lower variable incentive compensation costs.

The Company's effective tax rates were 14.6%, 12.7% and 13.0% for 2020, 2019 and 2018, respectively. Net income per diluted share was $8.36, $8.69 and $7.65 in 2020, 2019 and 2018, respectively. In 2018, the Company settled a pension plan obligation and incurred a $46 million expense which reduced the net income per diluted share by $0.39.

The Company generated $791 million, $643 million and $604 million of net cash flows from operations in 2020, 2019 and 2018, respectively. The increase in operating cash flow in 2020 was primarily a result of the $103 million reduction in expense from the cost actions implemented and working capital improvements during the year. The increase in operating cash flow in 2019 was primarily a result of payments made in 2018 that did not recur, including $103 million of income tax payments made in the U.S. relating to the Company's estimated 2017 transition tax liability and 2018 estimated tax payments, a $15 million litigation settlement payment and $11 million of contributions to certain defined benefit pension plans. Included in the 2020 and 2019 net cash flow from operations is $38 million and $29 million, respectively, of income tax payments made in the U.S. in relation to the 2017 transition tax liability. Over the next two years, the Company is required to make annual U.S. federal tax payments of approximately $38 million to tax authorities in connection with the Company's estimated remaining transition tax liabilities of $365 million under the 2017 Tax Act. The final 60% of the total liability is required to be paid over a three-year period beginning in 2023.

Cash flows used in investing activities included capital expenditures related to property, plant, equipment and software capitalization of $172 million, $164 million and $96 million in 2020, 2019 and 2018, respectively. In January of 2020, the Company acquired all of the outstanding stock of Andrew Alliance, S.A. and its two operating subsidiaries, Andrew Alliance USA, Inc. and Andrew Alliance France, SASU (collectively "Andrew Alliance"), for $80 million, net of cash acquired. The Company had an equity investment in Andrew Alliance that was valued at $4 million and included as part of the total consideration. In December 2020, the Company acquired all of the outstanding stock of Integrated Software Solutions Pty Limited and its two operating subsidiaries, Integrated Software Solutions Limited and Integrated Software Solutions USA, LLC (collectively, "ISS"), for $4 million, net of cash acquired. Neither of these acquisitions had a material effect on the Company's sales and expenses in 2020.

The cash flows from investing activities in 2020 also included $70 million of capital expenditures related to the expansion of the Company's precision chemistry consumable operations in the U.S. The Company has incurred $151 million on this facility through the end of 2020 and anticipates spending a total of $215 million to build and equip this new state-of-the-art manufacturing facility.

In January 2019, the Company's Board of Directors authorized the Company to repurchase up to $4 billion of its outstanding common stock over a two-year period. During 2020, 2019 and 2018, the Company repurchased

0.8 million, 11.1 million and 6.8 million shares of the Company's outstanding common stock at a cost of $167 million, $2.5 billion and $1.3 billion, respectively, under authorized share repurchase programs. As of December 31, 2020, the Company has a total of $1.5 billion authorized for future repurchases. In December 2020, the Company's Board of Directors authorized the extension of the share repurchase program through January 21, 2023. While the Company believes that it has the financial flexibility to fund these share repurchases given current cash and investment levels and debt borrowing capacity, as well as to invest in research, technology and business acquisitions to further grow the Company's sales and profits, the Company has temporarily suspended its share repurchases due to the uncertain business conditions caused by the COVID-19 pandemic.

Results of Operations

Sales by Geography

Geographic sales information is presented below for the years ended December 31, 2020, 2019 and 2018 (dollars in thousands):

	Year Ended December 31,			***% change***	
	2020	**2019**	**2018**	***2020 vs. 2019***	***2019 vs. 2018***
Net Sales:					
Asia:					
China	$ 404,352	$ 439,557	$ 443,321	*(8%)*	*(1%)*
Japan	179,815	180,707	173,357	—	*4%*
Asia Other	315,010	318,848	305,613	*(1%)*	*4%*
Total Asia	899,177	939,112	922,291	*(4%)*	*2%*
Americas:					
United States	678,313	692,277	683,596	*(2%)*	*1%*
Americas Other	119,529	137,964	151,581	*(13%)*	*(9%)*
Total Americas	797,842	830,241	835,177	*(4%)*	*(1%)*
Europe	668,346	637,243	662,461	*5%*	*(4%)*
Total net sales	$2,365,365	$2,406,596	$2,419,929	*(2%)*	*(1%)*

In 2020, sales decreased 2% as compared to 2019, as the COVID-19 pandemic caused interruptions in business activities and uncertainties that resulted in our customers reducing purchases of our products and services. Foreign currency translation had minimal impact on sales in 2020 and negatively impacted sales by 2% in 2019. The sales declines in 2020 occurred in all geographies and were a result of the weaker demand and disruption of business activities caused by the COVID-19 lockdowns, except in Europe where sales increased 5% as compared to the prior year. The most significant decline in sales in 2020 occurred in China, where sales declined 8%, as well as declines of 2% in the U.S. and 13% in the Americas Other region.

In 2019, sales in China were negatively impacted by economic uncertainty caused by certain regulatory changes in our food and pharmaceutical markets. The 4% increase in sales in Japan was driven by instrument systems, primarily to pharmaceutical and academic and governmental customers, as well as foreign currency translation, which increased Japan's sales by 1% in 2019. Sales growth in Asia Other was due primarily to pharmaceutical and academic and governmental customer classes in 2019. Sales in the U.S. increased by 1% despite large pharmaceutical customers slowing capital spending on our instrument systems. Sales declines in Americas Other and Europe were broad-based across all product and customer classes due to macroeconomic conditions and political instability, except in Europe where sales to academic and governmental customers grew 8%. Sales in Europe were also negatively impacted by the effect of foreign currency translation, which decreased sales 4% in 2019.

Sales by Trade Class

Net sales by customer class are presented below for the years ended December 31, 2020, 2019 and 2018 (dollars in thousands):

	Year Ended December 31,			% change	
	2020	2019	2018	2020 vs. 2019	2019 vs. 2018
Pharmaceutical	$1,386,966	$1,365,275	$1,365,731	2%	—
Industrial	707,772	719,377	737,144	(2%)	(2%)
Academic and governmental	270,627	321,944	317,054	(16%)	2%
Total net sales	$2,365,365	$2,406,596	$2,419,929	(2%)	(1%)

In 2020, sales to pharmaceutical customers increased 2% with foreign currency translation positively impacting sales by 1%. The lower sales volumes to pharmaceutical customers in the first half of 2020 can be attributed to the disruption in business activities caused by COVID-19, despite increased demand for our products and services from certain pharmaceutical customers who are involved with COVID-19 diagnostic testing and the development of new drugs and therapies. Sales to industrial customers in 2020 declined 2%, which were significantly impacted by the TA sales declines of 8% in 2020. The sales declines to academic and governmental customers were broad-based across all product classes as academic and governmental customers adjusted their spending to mitigate the effects of the COVID-19 pandemic, which significantly impacted sales in China.

In 2019, sales to pharmaceutical customers were negatively impacted by the effect of foreign currency translation, which decreased sales to pharmaceutical customers by 2%, as well as a slower release of capital budgets by our customers due to uncertain macroeconomic conditions due to Brexit and regulatory changes in our food and pharmaceutical markets in China. Offsetting those declines was an increase in the need for global access to prescription drugs and the testing of newer and complex biologic drugs. The decline in sales to industrial customers in 2019 was due to weaker demand for our LC-MS instruments and also a 4% decline in TA sales. The increase in sales to academic and governmental customers was primarily due to higher instrument system sales.

Waters Products and Services Net Sales

Net sales for Waters products and services were as follows for the years ended December 31, 2020, 2019 and 2018 (dollars in thousands):

	Year Ended December 31,						% change	
	2020	% of Total	2019	% of Total	2018	% of Total	2020 vs. 2019	2019 vs. 2018
Waters instrument systems	$ 890,855	42%	$ 963,871	45%	$1,000,625	47%	(8%)	(4%)
Chemistry consumables	432,080	20%	412,018	19%	400,287	18%	5%	3%
Total Waters product sales	1,322,935	62%	1,375,889	64%	1,400,912	65%	(4%)	(2%)
Waters service	794,189	38%	761,594	36%	738,433	35%	4%	3%
Total Waters net sales	$2,117,124	100%	$2,137,483	100%	$2,139,345	100%	(1%)	—

Waters products and service sales decreased 1% in 2020 and were flat in 2019. Waters instrument system sales (LC and MS technology-based) decreased 8% in 2020 primarily attributed to the weaker demand for our products and services by our customers due to the disruption and uncertainty caused by the COVID-19 pandemic. Precision chemistry consumables sales increased 5% and 3% in 2020 and 2019, respectively, despite the disruption in business activities caused by COVID-19 in 2020. Waters service sales increased 4% and 3% in 2020 and 2019, respectively, primarily due to increased sales of service plans and higher service demand billings to a higher installed base of customers respectively, with sales in 2020 being partially offset by the weaker demand and disruption of business activities caused by the COVID-19 lockdowns. The effect of foreign currency translation increased Waters sales by 1% in 2020 and decreased sales by 2% in 2019.

In 2020, Waters sales in Europe and Japan increased 6% and 2%, respectively, with foreign currency translation adding 3% to Waters sales growth in Europe. Waters sales in India increased less than 1%, while all other geographies' sales declined with the most significant sales decline occurring in China, which was down 9%. In 2019, Waters sales increased 2% in Asia, were flat in the Americas and decreased 3% in Europe, where the effect of foreign currency decreased sales by 4%. Within Asia, Waters sales decreased 1% in China and increased 4% in Japan and 9% in the rest of Asia, excluding India.

TA Product and Services Net Sales

Net sales for TA products and services were as follows for the years ended December 31, 2020 and December 31, 2019 (dollars in thousands):

	Year Ended December 31,						*% change*	
	2020	**% of Total**	**2019**	**% of Total**	**2018**	**% of Total**	***2020 vs. 2019***	***2019 vs. 2018***
TA instrument systems	$174,398	*70%*	$191,300	*71%*	$204,081	*73%*	*(9%)*	*(6%)*
TA service	73,843	*30%*	77,813	*29%*	76,503	*27%*	*(5%)*	*2%*
Total TA net sales	$248,241	*100%*	$269,113	*100%*	$280,584	*100%*	*(8%)*	*(4%)*

TA product and service sales declines in 2020 were primarily due to lower customer demand resulting from the COVID-19 pandemic. TA's instrument system sales declined in 2019 primarily due to lower customer demand resulting from macroeconomic conditions, tariff posturing and political instability. TA service sales increased in 2019 due to sales of service plans and billings to a higher installed base of customers. The effect of foreign currency translation had a minimal impact on TA's sales in both 2020 and 2019.

TA sales declined in all major regions in 2020. In 2019, TA sales decreased 4% in the Americas, 12% in Europe and increased 1% in Asia.

Cost of Sales

Cost of sales were flat in 2020 as compared to 2019, due to lower sales volume, change in sales mix, unfavorable manufacturing absorption and the effect of foreign currency translation increasing cost of sales by 1% in 2020, primarily from the favorable foreign currency translation effect the British Pound had on the Company's U.K. manufacturing operations.

Cost of sales is affected by many factors, including, but not limited to, foreign currency translation, product mix, product costs of instrument systems and amortization of software platforms. At current foreign currency exchange rates, the Company expects foreign currency translation to slightly increase sales and gross profit during 2021.

Selling and Administrative Expenses

Selling and administrative expenses increased 4% in 2020 and were flat in 2019. The increase in selling and administrative expenses in 2020 can be attributed to the salary merit and incentive compensation increases along with the severance-related costs in connection with a reduction in workforce and lease-termination and exit costs. Severance and lease termination and exit costs were $27 million and $10 million in 2020 and 2019, respectively. Offsetting these increases in selling and administrative expenses were $70 million of savings in 2020, which includes COVID-19 and restructuring cost saving actions that reduced planned salaries and non-essential spending. The effect of foreign currency translation had minimal impact on selling and administrative expenses in 2020 and decreased selling and administrative expenses by 1% in 2019.

As a percentage of net sales, selling and administrative expenses were 23.4%, 22.2% and 22.2% for 2020, 2019 and 2018, respectively.

Research and Development Expenses

Research and development expenses decreased 2% in 2020 and were flat in 2019. Research and development expenses in 2020 include $15 million of cost action savings from salary reductions, furloughs and reductions in non-essential spending. Research and development expenses in both 2020 and 2019 were impacted by additional headcount, merit compensation and costs associated with new products and the development of new technology initiatives. Foreign currency translation had minimal impact on research and development costs in 2020 and decreased research and development costs by 2% in 2019.

Asset Impairments

During 2020, due to a shift in strategic priorities, the Company recorded a non-cash charge of $10 million for the impairment of certain intangible assets associated with the acquisition of Medimass Research Development and Service Kft ("Medimass"). In conjunction with the intangible asset impairment, the Company also reduced its liability for contingent consideration of $3 million during 2020 as the carrying value of this liability is based on the future sales of the Medimass intangible assets that were impaired. See Note 2, Basis of Presentation and Summary of Significant Accounting Policies, under the heading "Asset Impairments" in the Notes to Consolidated Financial Statements for a description of the impairment charge.

Interest Expense, Net

The increase in net interest expense in 2020 can be attributed to lower cash and investment balances in 2020 compared to 2019.

Provision for Income Taxes

The Company's effective tax rates were 14.6%, 12.7% and 13.0% in 2020, 2019 and 2018, respectively.

The Company's effective income tax rate differs from the U.S. federal statutory rate each year due to differences in the proportionate amounts of pre-tax income recognized in jurisdictions with different effective tax rates and the items discussed below.

The four principal jurisdictions in which the Company manufactures are the U.S., Ireland, the U.K. and Singapore, where the statutory tax rates were 21%, 12.5%, 19% and 17%, respectively, as of December 31, 2020. The Company has received a tax exemption on income arising from qualifying activities in Singapore through March 2021, based upon the achievement of certain contractual milestones, which the Company met as of December 31, 2020 and expects to maintain through March 2021. The effect of applying the 0% concessionary income tax rate rather than the statutory tax rate to income arising from qualifying activities in Singapore increased the Company's net income during the years ended December 31, 2020, 2019 and 2018 by $21 million, $24 million and $28 million, respectively, and increased the Company's net income per diluted share by $0.33, $0.35 and $0.36, respectively. In addition, the Company has a new Development and Expansion Incentive in Singapore that provides a concessionary income tax rate of 5% on certain types of income for the period of April 1, 2021 through March 31, 2026.

During 2020, the Company's effective tax rate differed from the 21% U.S. statutory tax rate primarily due to the jurisdictional mix of earnings, a $13 million provision related to the Global Intangible Low-Taxed Income ("GILTI") tax and a tax benefit of $7 million on stock-based compensation.

The 2019 effective tax rate differed from the U.S. federal statutory tax rate primarily due to the jurisdictional mix of earnings, an $11 million provision related to the GILTI tax and a tax benefit of $9 million on stock-based compensation.

The 2018 effective tax rate differed from the U.S. federal statutory tax rate primarily due to the jurisdictional mix of earnings, a $14 million provision related to the GILTI tax, an $8 million provision for a change in foreign currency exchange rates related to the transition tax, a $9 million benefit related to stock-based compensation and a $6 million net benefit related to the finalization of the impact of the Tax Cuts and Jobs Act (the "2017 Act").

At the end of 2018, and as a result of the enactment of the 2017 Act, we reevaluated our historic assertion and no longer considered undistributed earnings from foreign subsidiaries to be indefinitely reinvested. The Company recorded a tax provision of $3 million, $3 million and $4 million for 2020, 2019 and 2018, respectively, for future withholding taxes and U.S. state taxes on the repatriation of 2020, 2019 and 2018 undistributed earnings.

The Company's effective tax rate is influenced by many significant factors, including, but not limited to, the wide range of income tax rates in jurisdictions in which the Company operates; sales volumes and profit levels in each tax jurisdiction; changes in tax laws, tax rates and policies; the outcome of various ongoing tax audit examinations; and the impact of foreign currency transactions and translation. As a result of variability in these factors, the Company's effective tax rates in the future may not be similar to the effective tax rates for the current or prior years, or for previously forecasted periods.

Liquidity and Capital Resources

Condensed Consolidated Statements of Cash Flows (in thousands):

	Year Ended December 31,		
	2020	2019	2018
Net income	$ 521,571	$ 592,198	$ 593,794
Depreciation and amortization	125,361	105,296	108,408
Asset impairments	6,945	—	—
Stock-based compensation	36,865	38,577	37,541
Deferred income taxes	(2,693)	9,620	2,405
Change in accounts receivable	37,467	(22,195)	(47,921)
Change in inventories	18,940	(31,854)	(25,396)
Change in accounts payable and other current liabilities	140,598	9,784	(81,663)
Change in deferred revenue and customer advances	11,073	12,189	2,721
Effect of the 2017 Tax Cuts and Jobs Act	—	(3,229)	(6,059)
Other changes	(105,620)	(67,299)	20,616
Net cash provided by operating activities	790,507	643,087	604,446
Net cash (used in) provided by investing activities	(264,094)	768,802	1,683,302
Net cash used in financing activities	(440,502)	(1,872,678)	(2,119,522)
Effect of exchange rate changes on cash and cash equivalents	15,069	224	(14,265)
Increase (decrease) in cash and cash equivalents	$ 100,980	$ (460,565)	$ 153,961

Cash Flow Provided By Operating Activities

Net cash provided by operating activities was $791 million, $643 million and $604 million in 2020, 2019 and 2018, respectively. The changes within net cash provided by operating activities include the following significant changes in the sources and uses of net cash provided by operating activities, aside from the changes in net income:

- The changes in accounts receivable were primarily attributable to timing of payments made by customers and timing of sales. Days sales outstanding was 70 days at December 31, 2020, 77 days at December 31, 2019 and 74 days at December 31, 2018.

- The change in inventory in 2020 compared to 2019 is a result of the Company's efforts to reduce its inventory levels during the COVID-19 pandemic to preserve its liquidity. The changes in inventory in 2019 and 2018 were primarily attributable to new product launches and the increase in safety stock in advance of Brexit.
- The changes in accounts payable and other current liabilities were the result of timing of payments to vendors. In addition, the changes in 2020, 2019 and 2018 include $38 million, $29 million and $103 million, respectively, of income tax payments made in the U.S. relating to the Company's estimated 2017 tax reform liability and 2018 estimated income tax payments and a $15 million litigation settlement payment made in 2019.
- Net cash provided from deferred revenue and customer advances results from annual increases in new service contracts as a higher installed base of customers renew annual service contracts.
- Other changes were attributable to variation in the timing of various provisions, expenditures, prepaid income taxes and accruals in other current assets, other assets, other liabilities, and income tax expenses related to the 2017 Tax Act. In addition, in 2018, the Company made $11 million of contributions to certain defined benefit pension plans.

Cash (Used in) Provided By Investing Activities

Net cash used in investing activities totaled $264 million in 2020. Net cash provided by investing activities totaled $769 million and $1,683 million in 2019 and 2018, respectively. Additions to fixed assets and capitalized software were $172 million, $164 million and $96 million in 2020, 2019 and 2018, respectively. In February 2018, the Company's Board of Directors approved expanding its chemistry synthesis operations in the U.S. The Company anticipates spending an estimated $215 million to build and equip this new state-of-the-art manufacturing facility, which will be paid for with existing cash, investments and debt capacity. Through December 31, 2020, the Company has incurred $151 million of costs for this facility.

During 2020, 2019 and 2018, the Company purchased $26 million, $37 million and $1.0 billion of investments, respectively. During 2020, 2019 and 2018, $21 million, $978 million and $2.8 billion of investments matured, respectively. The majority of the proceeds received in 2019 and 2018 were repatriated into the U.S. at lower income tax rates as a result of the 2017 Tax Act and used to reduce the Company's debt and to repurchase shares.

Asset and business acquisitions, net of cash acquired, were $81 million and $31 million during 2020 and 2018, respectively. There were no business acquisitions in 2019. During 2020, 2019 and 2018, the Company made $6 million, $9 million and $8 million of investments in unaffiliated companies, respectively.

In January 2020, the company entered into a definitive agreement to acquire Andrew Alliance, an innovator in specialty laboratory automation technology, including software and robotics for approximately $80 million in cash. The Company had an equity investment in Andrew Alliance that was valued at $4 million and included as part of the total consideration. This acquisition did not have a material effect on the Company's sales and expenses in 2020.

In December 2020, the company entered into a definitive agreement to acquire ISS, a provider of clinical laboratory software systems, for $4 million in cash. This acquisition did not have a material effect on the Company's sales and expenses in 2020.

Cash Used in Financing Activities

In November 2017, the Company entered into a credit agreement (the "2017 Credit Agreement"), which provides for a $1.5 billion revolving facility and a $300 million term loan. The revolving facility and term loan both mature on November 30, 2022 and require no scheduled prepayments before that date.

The interest rates applicable to the 2017 Credit Agreement are, at the Company's option, equal to either the alternate base rate (which is a rate per annum equal to the greatest of (a) the prime rate in effect on such day, (b) the Federal Reserve Bank of New York Rate on such day plus 1/2 of 1% per annum and (c) the adjusted LIBO rate on such day (or if such day is not a business day, the immediately preceding business day) for a deposit in U.S. dollars with a maturity of one month plus 1% per annum) or the applicable 1, 2, 3 or 6 month adjusted LIBO rate or EURIBO rate for Euro-denominated loans, in each case, plus an interest rate margin based upon the Company's leverage ratio, which can range between 0 and 12.5 basis points for alternate base rate loans and between 80 and 112.5 basis points for LIBO rate or EURIBO rate loans. The facility fee on the 2017 Credit Agreement ranges between 7.5 and 25 basis points per annum, based on the leverage ratio, of the amount of the revolving facility commitments and the outstanding term loan. The 2017 Credit Agreement requires that the Company comply with an interest coverage ratio test of not less than 3.50:1 as of the end of any fiscal quarter for any period of four consecutive fiscal quarters and a leverage ratio test of not more than 3.50:1 as of the end of any fiscal quarter. In addition, the 2017 Credit Agreement includes negative covenants, affirmative covenants, representations and warranties and events of default that are customary for investment grade credit facilities.

Interest on the Company's fixed rate senior unsecured notes is payable semi-annually each year. Interest on the floating rate senior unsecured notes is payable quarterly. The Company may prepay all or some of the senior unsecured notes at any time in an amount not less than 10% of the aggregate principal amount outstanding, plus the applicable make-whole amount or prepayment premium for Series H and J senior unsecured notes. In the event of a change in control of the Company (as defined in the note purchase agreement), the Company may be required to prepay the senior unsecured notes at a price equal to 100% of the principal amount thereof, plus accrued and unpaid interest. These senior unsecured notes require that the Company comply with an interest coverage ratio test of not less than 3.50:1 for any period of four consecutive fiscal quarters and a leverage ratio test of not more than 3.50:1 as of the end of any fiscal quarter. In addition, these senior unsecured notes include customary negative covenants, affirmative covenants, representations and warranties and events of default.

The Company's net debt borrowings decreased by $325 million in 2020, increased by $535 million in 2019 and decreased by $850 million in 2018. As of December 31, 2020, the Company had a total of $1.4 billion in outstanding debt, which consisted of $960 million in outstanding senior unsecured notes $300 million borrowed under a term loan and $100 million borrowed under a revolving credit facility, with both the term loan and revolving credit facilities under the 2017 Credit Agreement. As of December 31, 2020, the Company had a total amount available to borrow under the 2017 Credit Agreement of $1.4 billion after outstanding letters of credit. As of December 31, 2020, the Company was in compliance with all debt covenants.

As of December 31, 2020, the Company has entered into three-year interest rate cross-currency swap derivative agreements with a notional value of $560 million to hedge the variability in the movement of foreign currency exchange rates on a portion of its Euro-denominated net asset investments. As a result of entering into these agreements, the Company lowered its net interest expense by $15 million, $12 million and $3 million during 2020, 2019 and 2018, respectively. The Company anticipates that these swap agreements will lower net interest expense by approximately $11 million annually in 2021 and $1 million in 2022 as the three-year term of the agreements expire.

In January 2019, the Company's Board of Directors authorized the Company to repurchase up to $4 billion of its outstanding common stock over a two-year period. During 2020, 2019 and 2018, the Company repurchased 0.8 million, 11.1 million and 6.8 million shares of the Company's outstanding common stock at a cost of $167 million, $2.5 billion and $1.3 billion, respectively, under the January 2019 authorization and other previously announced programs. In December 2020, the Company's Board of Directors authorized the extension of the share repurchase program through January 21, 2023. In addition, the Company repurchased $9 million, $8 million and $10 million of common stock related to the vesting of restricted stock units during the years ended December 31, 2020, 2019 and 2018, respectively.

The Company received $66 million, $54 million and $52 million of proceeds from the exercise of stock options and the purchase of shares pursuant to the Company's employee stock purchase plan in 2020, 2019 and 2018, respectively.

The Company had cash, cash equivalents and investments of $443 million as of December 31, 2020. The majority of the Company's cash and cash equivalents are generated from foreign operations, with $364 million held by foreign subsidiaries at December 31, 2020, of which $254 million was held in currencies other than U.S. dollars. While the Company believes it has sufficient levels of cash flow and access to its existing cash and cash equivalents, as well as the ability to raise funds from external sources and the borrowing capacity from existing, committed credit facilities, to fund operations and capital expenditures, service debt interest, finance potential acquisitions and continue the authorized stock repurchase program in the U.S., we have temporarily suspended our share repurchases due to the uncertain business conditions caused by the COVID-19 pandemic.

Management believes, as of the date of this report, that the Company's financial position, along with expected future cash flows from earnings based on historical trends and the ability to raise funds from external sources and the borrowing capacity from existing, committed credit facilities, will be sufficient to service debt and fund working capital and capital spending requirements, authorized share repurchase amounts and potential acquisitions for at least the next twelve months.

Contractual Obligations and Commercial Commitments

The following is a summary of the Company's known contractual obligations as of December 31, 2020 (in thousands):

	Payments Due by Year (1)							
	Total	2021	2022	2023	2024	2025	2026	After 2026
Notes payable and debt	$ 150,000	$150,000	$ —	$ —	$ —	$ —	$ —	$ —
Interest on senior unsecured notes	180,198	30,273	28,160	27,182	24,654	22,714	17,801	29,414
Long-term debt (2)	1,210,000	—	400,000	50,000	100,000	—	360,000	300,000
2017 Tax Act liability	365,314	38,454	38,454	72,101	96,135	120,170	—	—
Long-term software subscriptions	41,593	13,075	12,636	10,309	5,573	—	—	—
Operating leases	103,705	29,599	23,453	14,569	10,951	8,269	5,682	11,182
Total	$2,050,810	$261,401	$502,703	$174,161	$237,313	$151,153	$383,483	$340,596

(1) Does not include normal purchases made in the ordinary course of business and uncertain tax positions discussed below.

(2) The interest rates applicable to the 2017 Credit Agreement are, at the Company's option, equal to either the alternate base rate (which is a rate per annum equal to the greatest of (a) the prime rate in effect on such day, (b) the Federal Reserve Bank of New York Rate on such day plus 1/2 of 1% per annum and (c) the adjusted LIBO rate on such day (or if such day is not a business day, the immediately preceding business day) for a deposit in U.S. dollars with a maturity of one month plus 1% per annum) or the applicable 1, 2, 3 or 6 month adjusted LIBO rate or EURIBO rate for Euro-denominated loans, in each case, plus an interest rate margin based upon the Company's leverage ratio, which can range between 0 and 12.5 basis points for alternate base rate loans and between 80 and 112.5 basis points for LIBO rate or EURIBO rate loans. The facility fee on the 2017 Credit Agreement ranges between 7.5 and 25 basis points per annum, based on the leverage ratio, of the amount of the revolving facility commitments and the outstanding term loan. The 2017 Credit Agreement requires that the Company comply with an interest coverage ratio test of not less than 3.50:1 as of the end of any fiscal quarter for any period of four consecutive fiscal quarters and a leverage ratio test of not more than 3.50:1 as of the end of any fiscal quarter. In addition, the 2017 Credit Agreement includes

negative covenants, affirmative covenants, representations and warranties and events of default that are customary for investment grade credit facilities. As of December 31, 2020, the Company was in compliance with all such covenants.

The following is a summary of the Company's known commercial commitments as of December 31, 2020 (in thousands):

	Amount of Commitments Expiration Per Period							
	Total	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**After 2026**
Letters of credit	$1,961	$1,961	$—	$—	$—	$—	$—	$—

From time to time, the Company and its subsidiaries are involved in various litigation matters arising in the ordinary course of business. The Company believes it has meritorious arguments in its current litigation matters and believes any outcome, either individually or in the aggregate, will not be material to the Company's financial position or results of operations.

The Company has long-term liabilities for deferred employee compensation, including pension and supplemental executive retirement plans. The payments related to the supplemental retirement plan are not included above since they are dependent upon when the employee retires or leaves the Company and whether the employee elects lump-sum or annuity payments. During fiscal year 2021, the Company expects to contribute approximately $3 million to $6 million to the Company's defined benefit plans.

The Company has contingent consideration for an earnout pertaining to its December 2020 acquisition of the net assets of ISS. The earnout payments are not included above since they are dependent upon many factors that cannot be predicted with any certainty. The estimated fair value of the contingent consideration as of December 31, 2020 is $1 million.

The Company licenses certain technology and software from third parties. Future minimum license fees payable under existing license agreements as of December 31, 2020 are immaterial. The Company enters into licensing arrangements with third parties that require future milestone or royalty payments contingent upon future events. Upon the achievement of certain milestones in existing agreements, the Company could make additional future payments of up to $7 million, as well as royalties on future net sales. It is not possible to predict with reasonable certainty whether these milestones will be achieved or the timing for achievement. As a result, these potential payments are not included in the table above.

The Company has not paid any dividends and has no plans, at this time, to pay any dividends in the future.

Off-Balance Sheet Arrangements

The Company has not created, and is not party to, any special-purpose or off-balance sheet entities for the purpose of raising capital, incurring debt or operating parts of its business that are not consolidated (to the extent of the Company's ownership interest therein) into the consolidated financial statements. The Company has not entered into any transactions with unconsolidated entities whereby it has subordinated retained interests, derivative instruments or other contingent arrangements that expose the Company to material continuing risks, contingent liabilities or any other obligation under a variable interest in an unconsolidated entity that provides financing, liquidity, market risk or credit risk support to the Company.

The Company enters into standard indemnification agreements in its ordinary course of business. Pursuant to these agreements, the Company indemnifies, holds harmless and agrees to reimburse the indemnified party for losses suffered or incurred by the indemnified party, generally the Company's business partners or customers, in connection with patent, copyright or other intellectual property infringement claims by any third party with respect to its current products, as well as claims relating to property damage or personal injury resulting from the performance of services by the Company or its subcontractors. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is unlimited. Historically, the Company's costs to defend lawsuits or settle claims relating to such indemnity agreements have been minimal and management accordingly believes the estimated fair value of these agreements is immaterial.

Critical Accounting Policies and Estimates

Summary

The preparation of consolidated financial statements requires the Company to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent liabilities. Critical accounting policies are those that are central to the presentation of the Company's financial condition and results of operations that require management to make estimates about matters that are highly uncertain and that would have a material impact on the Company's results of operations given changes in the estimate that are reasonably likely to occur from period to period or use of different estimates that reasonably could have been used in the current period. On an ongoing basis, the Company evaluates its policies and estimates. The Company bases its estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual amounts may differ from these estimates under different assumptions or conditions. There are other items within the Company's consolidated financial statements that require estimation, but are not deemed critical as defined above. Changes in estimates used in these and other items could potentially have a material impact on the Company's consolidated financial statements.

Revenue Recognition

The Company recognizes revenue upon transfer of control of promised products and services to customers in an amount that reflects the consideration the Company expects to receive in exchange for those products or services. The Company generally enters into contracts that include a combination of products and services. Revenue is allocated to distinct performance obligations and is recognized net of allowances for returns and discounts.

The Company recognizes revenue on product sales at the time control of the product transfers to the customer. In substantially all of the Company's arrangements, title of the product transfers at shipping point and, as a result, the Company determined control transfers at the point of shipment. In more limited cases, there are destination-based shipping terms and, thus, control is deemed to transfer when the products arrive at the customer site. All incremental costs of obtaining a contract are expensed as and when incurred if the expected amortization period of the asset that would have been recognized is one year or less. Shipping and handling costs are included as a component of cost of sales. In situations where the control of the goods transfers prior to the completion of the Company's obligation to ship the products to its customers, the Company has elected the practical expedient to account for the shipping services as a fulfillment cost. Accordingly, such costs are recognized when control of the related goods is transferred to the customer. In more rare situations, the Company has revenue associated with products that contain specific customer acceptance criteria and the related revenue is not recognized before the customer acceptance criteria are satisfied. The Company elected to exclude from the measurement of the transaction price all taxes assessed by a governmental authority that are both imposed on and concurrent with specific revenue-producing transactions and collected by the Company from a customer.

Generally, the Company's contracts for products include a performance obligation related to installation. The Company has determined that the installation represents a distinct performance obligation and revenue is recognized separately upon the completion of installation. The Company determines the amount of the transaction price to allocate to the installation service based on the standalone selling price of the product and the service, which requires judgment. The Company determines the relative standalone selling price of installation based upon a number of factors, including hourly service billing rates and estimated installation hours. In developing these estimates, the Company considers past history, competition, billing rates of current services and other factors.

The Company has sales from standalone software, which are included in instrument systems revenue. These arrangements typically include software licenses and maintenance contracts, both of which the Company has determined are distinct performance obligations. The Company determines the amount of the transaction price to allocate to the license and maintenance contract based on the relative standalone selling price of each performance obligation. Software license revenue is recognized at the point in time when control has been transferred to the customer. The revenue allocated to the software maintenance contract is recognized on a straight-line basis over the maintenance period, which is the contractual term of the contract, as a time-based measure of progress best reflects the Company's performance in satisfying this obligation. Unspecified rights to software upgrades are typically sold as part of the maintenance contract on a when-and-if-available basis.

Payment terms and conditions vary among the Company's revenue streams, although terms generally include a requirement of payment within 30 to 60 days of product shipment. Prior to providing payment terms to customers, an evaluation of their credit risk is performed. Returns and customer credits are infrequent and insignificant and are recorded as a reduction to sales. Rights of return are not included in sales arrangements and, therefore, there is minimal variable consideration included in the transaction price of our products.

Service revenue includes (i) service and software maintenance contracts and (ii) service calls (time and materials). Instrument service contracts and software maintenance contracts are typically annual contracts, which are billed at the beginning of the contract or maintenance period. The amount of the service and software maintenance contract is recognized on a straight-line basis to revenue over the maintenance service period, which is the contractual term of the contract, as a time-based measure of progress best reflects the Company's performance in satisfying this obligation. There are no deferred costs associated with the service contract, as the cost of the service is recorded when the service is performed. Service calls are recognized to revenue at the time a service is performed.

The Company's deferred revenue liabilities at December 31, 2020 of $240 million on the consolidated balance sheets consist of the obligation on instrument service contracts and customer payments received in advance, prior to transfer of control of the instrument. The Company records deferred revenue primarily related to its service contracts, where consideration is billable at the beginning of the service period.

Allowance for credit losses on Accounts Receivable

The Company adopted new accounting guidance regarding the accounting for credit losses as of January 1, 2020 using a modified retrospective transition approach that was applied to our trade receivable balances. The allowance for credit losses policies described below were effective as of January 1, 2020.

The Company maintains allowances for expected credit losses based on applying a historical loss rate to trade receivable aging balances to estimate a general reserve balance on current receivables along with an additional adjustment for any specific receivables with known or anticipated issues affecting the likelihood of recovery. The historical loss rate is calculated by comparing the prior year actual sales and accounts receivable balances to estimate the period of collection of trade receivables by aging category. This collection information by aging category is then compared to write offs over the same prior year period to estimate the amount of allowance that is attributable to each category of our accounts receivable aging. Past due balances with a probability of default based on historical data as well as relevant available forward-looking information are included in the specific adjustment. If the financial condition of the Company's customers were to deteriorate beyond what is estimated in the current expected credit loss model, resulting in an impairment of their ability to make payments, additional allowances may be required. The Company does not request collateral from its customers, but collectibility is enhanced through the use of credit card payments and letters of credit. The Company assesses collectibility based on a number of factors, including, but not limited to, past transaction history with the customer, the credit-worthiness of the customer, industry trends and the macro-economic environment. Historically, the Company has not experienced significant credit losses. Sales returns and allowances are estimates of future product returns related to current period revenue. Material differences may result in the amount and timing of revenue for any period if management made different judgments or utilized different estimates for sales returns and allowances for doubtful accounts. The Company's accounts receivable balance at December 31, 2020 was $573 million, net of allowances for expected credit losses of $14 million.

Loss Provision on Inventory

The Company values all of its inventories at the lower of cost or net realizable value on a first-in, first-out basis ("FIFO"). The Company estimates revisions to its inventory valuations based on technical obsolescence, historical demand, projections of future demand, including that in the Company's current backlog of orders, and industry and market conditions. If actual future demand or market conditions are less favorable than those projected by management, additional write-downs may be required. The Company's inventory balance at December 31, 2020 was recorded at its net realizable value of $304 million, which is net of write-downs of $29 million.

Long-Lived Assets, Intangible Assets and Goodwill

The Company assesses the impairment of identifiable intangibles, long-lived assets and goodwill whenever events or changes in circumstances indicate that the carrying value may not be recoverable. Factors the Company considers important which could trigger impairment include, but are not limited to, the following:

- significant underperformance relative to historical or projected future operating results, particularly as it pertains to capitalized software and patent costs;
- significant negative industry or economic trends, competitive products and technologies; and
- significant changes or developments in strategic technological collaborations or legal matters which affect the Company's capitalized patents, purchased technology, trademarks and intellectual properties, such as licenses.

When the Company determines that the carrying value of an individual intangible asset, long-lived asset or goodwill may not be recoverable based upon the existence of one or more of the above indicators, an estimate of undiscounted future cash flows produced by that intangible asset, long-lived asset or goodwill, including its eventual residual value, is compared to the carrying value to determine whether impairment exists. In the event that such cash flows are not expected to be sufficient to recover the carrying amount of the asset, the asset is written-down to its estimated fair value. Net intangible assets, long-lived assets and goodwill amounted to $259 million, $494 million and $444 million, respectively, as of December 31, 2020.

The Company performs annual impairment reviews of its goodwill on December 31 of each year. For goodwill impairment review purposes, the Company has two reporting units: Waters and TA. The Company currently does not expect to record an impairment charge in the foreseeable future as the estimated fair values of the reporting units significantly exceeds the carrying value of the reporting units; however, there can be no assurance that, at the time future reviews are completed, a material impairment charge will not be recorded. The factors that could cause a material goodwill impairment charge in the future include, but are not limited to, the following:

- significant decline in the Company's projected revenue, earnings or cash flows;
- significant adverse change in legal factors or business climate;
- significant decline in the Company's stock price or the stock price of comparable companies;
- adverse action or assessment by a regulator; and
- unanticipated competition.

Income Taxes
As part of the process of preparing the consolidated financial statements, the Company is required to estimate its income taxes in each of the jurisdictions in which it operates. This process involves the Company estimating its income taxes, taking into account the amount, timing and character of taxable income, tax deductions and credits and assessing changes in tax laws, regulations, agreements and treaties. Differing treatment of items for tax and accounting purposes, such as depreciation, amortization and inventory reserves, result in deferred tax assets and liabilities, which are included within the consolidated balance sheets. In the event that actual results differ from these estimates, or the Company adjusts these estimates in future periods, such changes could materially impact the Company's financial position and results of operations.

The accounting standards for income taxes require that a company continually evaluate the necessity of establishing or changing a valuation allowance for deferred tax assets depending on whether it is more likely than not that the actual benefit of those assets will be realized in future periods.

Uncertain Tax Positions
The Company accounts for its uncertain tax return positions in accordance with the accounting standards for income taxes, which require financial statement reporting of the expected future tax consequences of uncertain tax positions on the presumption that all concerned tax authorities possess full knowledge of those tax positions, as well as all of the pertinent facts and circumstances, but prohibit any discounting of unrecognized tax benefits associated with those positions for the time value of money. The Company classified interest and penalties related to unrecognized tax benefits as a component of the provision for income taxes. At December 31, 2020, the Company had unrecognized tax benefits, excluding interest and penalties, of $29 million.

The Company has a tax exemption in Singapore on certain types of income through March 2021, based upon the achievement and continued satisfaction of certain operational and financial milestones, which the Company met as of December 31, 2020 and expects to maintain through March 2021. These milestones include the following types of objectives: reaching and maintaining annual revenue and business spending targets; meeting capital expenditures targets; attaining and sustaining employment targets; and establishing a local research and development and service center. Currently, the Company has determined that it is more likely than not to realize the tax exemption in Singapore and, accordingly, has not recognized any reserves for unrecognized tax benefits on its balance sheet related to this exemption. In the event that any of the milestone targets were not met, the Company would not be entitled to the tax exemption on income earned in Singapore dating back to the start date of the agreement (April 1, 2016), and all the tax benefits previously recognized would be reversed, resulting in the recognition of income tax expense equal to the statutory tax of 17% on income earned during that period.

In addition, the Company has a new Development and Expansion Incentive in Singapore that provides a concessionary income tax rate of 5% on certain types of income for the period April 1, 2021 through March 31, 2026. This new incentive has similar requirements for business spending targets, attaining and sustaining employment targets and performance of certain research and manufacturing activities.

Warranty
Product warranties are recorded at the time revenue is recognized for certain product shipments. While the Company engages in extensive product quality programs and processes, including actively monitoring and evaluating the quality of its component suppliers, the Company's warranty obligation is affected by product failure rates, material usage and service delivery costs incurred in correcting a product failure. Should actual product failure rates, material usage or service delivery costs differ from the Company's previous estimates, revisions to the estimated warranty liability would be required. At December 31, 2020, the Company's warranty liability was $11 million.

Litigation

As described in Part I, Item 3, Legal Proceedings, of this Form 10-K, the Company is a party to various pending litigation matters. With respect to each pending claim, management determines whether it can reasonably estimate whether a loss is probable and, if so, the probable range of that loss. If and when management has determined, with respect to a particular claim, both that a loss is probable and that it can reasonably estimate the range of that loss, the Company records a charge equal to either its best estimate of that loss or the lowest amount in that probable range of loss. The Company will disclose additional exposures when the range of loss is subject to considerable uncertainty.

Pension and Other Retirement Benefits

In 2018, the Company settled its defined benefit pension plan in the U.S. As a result of this settlement, the Company's defined benefit pension obligations were significantly reduced in 2018 and 2019. The Company still maintains a number of smaller defined benefit pension plans and other retirement benefits throughout the world. Assumptions used in determining projected benefit obligations and the fair values of plan assets for the Company's remaining less significant pension plans and other retirement benefits are evaluated periodically by management. Changes in assumptions are based on relevant Company data. Critical assumptions, such as the discount rate used to measure the benefit obligations and the expected long-term rate of return on plan assets, are evaluated and updated annually. The Company has assumed that the weighted-average expected long-term rate of return on plan assets will be 6.25% for its U.S. benefit plans and 2.99% for its non-U.S. benefit plans.

At the end of each year, the Company determines the discount rate that reflects the current rate at which the pension liabilities could be effectively settled. The Company utilized Milliman's Bond Matching model to determine the discount rate for its U.S. benefit plans. The Company determined the discount rate for its non-U.S. benefit plans based on the analysis of the Mercer Pension Discount Curve for high quality investments as of December 31, 2020 that best matched the timing of the plan's future cash flows for the period to maturity of the pension benefits. Once the interest rates were determined, the plan's cash flow was discounted at the spot interest rate back to the measurement date. At December 31, 2020, the Company determined the weighted-average discount rate to be 2.25% for the U.S. benefit plans and 1.12% for the non-U.S. benefits plans.

A one-quarter percentage point increase in the assumed long-term rate of return would decrease the Company's net periodic benefit cost by less than $1 million. A one-quarter percentage point increase in the discount rate would decrease the Company's net periodic benefit cost by less than $1 million.

Stock-based Compensation

The accounting standards for stock-based compensation require that all share-based payments to employees be recognized in the statements of operations based on their fair values. The Company has used the Black-Scholes option pricing model and Monte Carlo simulation model to determine the fair value of its stock option awards and performance stock unit awards, respectively. Under the fair-value recognition provisions of this statement, share-based compensation cost is measured at the grant date based on the value of the award and is recognized as expense over the vesting period. Determining the fair value of share-based awards at the grant date requires judgment, including estimating stock price volatility and employee stock option exercise behaviors. If actual results differ significantly from these estimates, stock-based compensation expense and the Company's results of operations could be materially impacted. As stock-based compensation expense recognized in the consolidated statements of operations is based on awards that ultimately are expected to vest, the amount of the expense has been reduced for estimated forfeitures. These accounting standards require forfeitures to be estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates. Forfeitures are estimated based on historical experience. If factors change and the Company employs different assumptions in the application of these accounting standards, the compensation expense that the Company records in future periods may differ significantly from what the Company has recorded in the current period. The Company recognizes the expense using the straight-line attribution method.

As of December 31, 2020, unrecognized compensation costs and related weighted-average lives over which the costs will be amortized were as follows (in millions):

	Unrecognized Compensation Costs	Weighted-Average Life in Years
Stock options	$ 22	3.3
Restricted stock units	42	3.3
Performance stock units	9	1.9
Restricted stock	—	—
Total	$ 73	3.1

Business Combinations and Asset Acquisitions
The Company accounts for business acquisitions under the accounting standards for business combinations. The results of each acquisition are included in the Company's consolidated results as of the acquisition date and the purchase price of an acquisition is allocated to tangible and intangible assets and assumed liabilities based on their estimated fair values. Any excess of the fair value consideration transferred over the estimated fair values of the net assets acquired is recognized as goodwill. Acquired in-process research and development ("IPR&D") included in a business combination is capitalized as an indefinite-lived intangible asset. Development costs incurred after the acquisition are expensed as incurred and acquired IPR&D is tested for impairment annually until completion of the acquired programs. Upon commercialization, this indefinite-lived intangible asset is then accounted for as a finite-lived intangible asset and amortized on a straight-line basis over its estimated useful life, subject to periodic impairment reviews. If the research and development project is abandoned, the indefinite-lived asset is charged to expense. Legal costs, due diligence costs, business valuation costs and all other business acquisition costs are expensed when incurred.

The Company also acquires intellectual property through licensing arrangements. These arrangements often require upfront payments and may include additional milestone or royalty payments, contingent upon certain future events. IPR&D acquired in an asset acquisition (as opposed to a business combination) is expensed immediately unless there is an alternative future use. Subsequent payments made for the achievement of milestones are evaluated to determine whether they have an alternative future use or should be expensed. Payments made to third parties subsequent to commercialization are capitalized and amortized over the remaining useful life of the related asset, and are classified as intangible assets.

Recent Accounting Standard Changes and Developments

Information regarding recent accounting standard changes and developments is incorporated by reference from Part II, Item 8, Financial Statements and Supplementary Data, of this document and should be considered an integral part of this Item 7. See Note 2 in the Notes to the Consolidated Financial Statements for recently adopted and issued accounting standards.

Item 7A: *Quantitative and Qualitative Disclosures About Market Risk*

Derivative Transactions
The Company is a global company that operates in over 35 countries and, as a result, the Company's net sales, cost of sales, operating expenses and balance sheet amounts are significantly impacted by fluctuations in foreign currency exchange rates. The Company is exposed to currency price risk on foreign currency exchange rate fluctuations when it translates its non-U.S. dollar foreign subsidiaries' financial statements into U.S. dollars, and when any of the Company's subsidiaries purchase or sell products or services in a currency other than its own currency.

The Company's principal strategies in managing exposures to changes in foreign currency exchange rates are to (1) naturally hedge the foreign-currency-denominated liabilities on the Company's balance sheet against corresponding assets of the same currency, such that any changes in liabilities due to fluctuations in foreign currency exchange rates are typically offset by corresponding changes in assets and (2) mitigate foreign exchange risk exposure of international operations by hedging the variability in the movement of foreign currency exchange rates on a portion of its Euro-denominated net asset investments. The Company presents the derivative transactions in financing activities in the statement of cash flows.

Foreign Currency Exchange Contracts

The Company does not specifically enter into any derivatives that hedge foreign-currency-denominated operating assets, liabilities or commitments on its balance sheet, other than a portion of certain third-party accounts receivable and accounts payable, and the Company's net worldwide intercompany receivables and payables, which are eliminated in consolidation. The Company periodically aggregates these net worldwide balances by currency and then enters into foreign currency exchange contracts that mature within 90 days to hedge a portion of the remaining balance to minimize some of the Company's currency price risk exposure. The foreign currency exchange contracts are not designated for hedge accounting treatment. Principal hedged currencies include the Euro, Japanese yen, British pound, Mexican peso and Brazilian real.

Interest Rate Cross-Currency Swap Agreements

As of December 31, 2020, the Company has entered into three-year interest rate cross-currency swap derivative agreements with a notional value of $560 million to hedge the variability in the movement of foreign currency exchange rates on a portion of its Euro-denominated net asset investments. Under hedge accounting, the change in fair value of the derivative that relates to changes in the foreign currency spot rate are recorded in the currency translation adjustment in other comprehensive income and remain in accumulated comprehensive income in stockholders' equity (deficit) until the sale or substantial liquidation of the foreign operation. The difference between the interest rate received and paid under the interest rate cross-currency swap derivative agreement is recorded in interest income in the statement of operations.

The Company's foreign currency exchange contracts and interest rate cross-currency swap agreements included in the consolidated balance sheets are classified as follows (in thousands):

	December 31, 2020		December 31, 2019	
	Notional Value	Fair Value	Notional Value	Fair Value
Foreign currency exchange contracts:				
Other current assets	$ 66,690	$ 836	$119,576	$ 16
Other current liabilities	$ 20,000	$ 185	$ 29,495	$ 1,028
Interest rate cross-currency swap agreements:				
Other (liabilities) assets	$560,000	$(44,996)	$560,000	$ 4,485
Accumulated other comprehensive loss (income)		$ 44,996		$(4,485)

The following is a summary of the activity included in the statements of comprehensive income related to the foreign currency exchange contracts (in thousands):

	Financial Statement Classification	Year Ended December 31, 2020	2019	2018
Foreign currency exchange contracts:				
Realized gains (losses) on closed contracts	Cost of sales	$ 1,444	$ (3,552)	$(6,684)
Unrealized gains (losses) on open contracts	Cost of sales	1,663	(1,292)	(105)
Cumulative net pre-tax gains (losses)	Cost of sales	$ 3,107	$ (4,844)	$(6,789)
Interest rate cross-currency swap agreements:				
Interest earned	Interest income	$ 15,296	$11,709	$ 2,713
Unrealized (losses) gains on open contracts	Stockholders' equity (deficit)	$(44,996)	$ 4,485	$ 1,093

Assuming a hypothetical adverse change of 10% in year-end exchange rates (a strengthening of the U.S. dollar), the fair market value of the foreign currency exchange contracts outstanding as of December 31, 2020 would decrease pre-tax earnings by approximately $9 million. Assuming a hypothetical adverse change of 10% in year-end exchange rates (a strengthening of the U.S. dollar), the fair market value of the interest rate cross-currency swap agreements outstanding as of December 31, 2020 would increase by approximately $56 million and would be recorded to foreign currency translation in other comprehensive income within stockholders' equity (deficit). The related impact on interest income would not have a material effect on pre-tax earnings.

The Company's cash and cash equivalents are not subject to significant interest rate risk due to the short maturities of these instruments. The Company's cash equivalents represent highly liquid investments, with original maturities of 90 days or less, primarily in bank deposits, U.S. treasury bill money market funds and commercial paper. As of December 31, 2020, the carrying value of the Company's cash and cash equivalents approximated fair value.

The Company is exposed to the risk of interest rate fluctuations from the investments of cash generated from operations. Investments with maturities greater than 90 days are classified as investments, and are held primarily in U.S. dollar-denominated treasury bills and commercial paper, bank deposits and corporate debt securities. As of December 31, 2020, the Company estimates that a hypothetical adverse change of 100 basis points across all maturities would not have a material effect on the fair market value of its portfolio.

The Company is also exposed to the risk of exchange rate fluctuations. The Company maintains cash balances in various operating accounts in excess of federally insured limits, and in foreign subsidiary accounts in currencies other than the U.S. dollar. As of December 31, 2020 and 2019, $364 million out of $443 million and $249 million out of $337 million, respectively, of the Company's total cash, cash equivalents and investments were held by foreign subsidiaries. In addition, $254 million out of $443 million and $176 million out of $337 million of cash, cash equivalents and investments were held in currencies other than the U.S. dollar at December 31, 2020 and 2019, respectively. As of December 31, 2020, the Company had no holdings in auction rate securities or commercial paper issued by structured investment vehicles.

Assuming a hypothetical adverse change of 10% in year-end exchange rates (a strengthening of the U.S. dollar), the fair market value of the Company's cash, cash equivalents and investments held in currencies other than the U.S. dollar as of December 31, 2020 would decrease by approximately $25 million, of which the majority would be recorded to foreign currency translation in other comprehensive income within stockholders' equity (deficit).

Item 8: ***Financial Statements and Supplementary Data***

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Under the supervision and with the participation of our management, including our chief executive officer and chief financial officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on our evaluation under the framework in *Internal Control — Integrated Framework (2013)*, our management, including our chief executive officer and chief financial officer, concluded that our internal control over financial reporting was effective as of December 31, 2020.

The effectiveness of our internal control over financial reporting as of December 31, 2020 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which is included herein.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Waters Corporation

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Waters Corporation and its subsidiaries (the "Company") as of December 31, 2020 and 2019, and the related consolidated statements of operations, of comprehensive income, of stockholders' equity (deficit) and of cash flows for each of the three years in the period ended December 31, 2020, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control—Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control—Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinions

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

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

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

Definition and Limitations of Internal Control over Financial Reporting

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

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

Critical Audit Matters

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

Goodwill Impairment Assessment

As described in Notes 2 and 8 to the consolidated financial statements, the Company's consolidated goodwill balance was $444 million as of December 31, 2020. Management tests for goodwill impairment using a fair-value approach at the reporting unit level annually, or earlier, if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying amount. The Company performs an annual goodwill impairment assessment for its reporting units as of December 31 each year. Under the impairment assessment, if the carrying amount of a reporting unit exceeds its fair value, an impairment loss is recognized in an amount equal to the amount of the excess carrying amount of the reporting unit over its fair value. This impairment is limited to the total amount of goodwill allocated to that reporting unit. The fair value of reporting units was estimated using a discounted cash flows technique, which includes certain management assumptions, such as estimated future cash flows, estimated growth rates and discount rates. As disclosed by management, the estimated fair value of the reporting units significantly exceeds the carrying value.

The principal considerations for our determination that performing procedures relating to the goodwill impairment assessment is a critical audit matter are the significant judgment by management when developing the fair value measurement of the reporting units, which in turn led to a high degree of auditor judgment and effort in performing procedures and evaluating management's significant assumptions related to the estimated growth rates.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's goodwill impairment assessment, including controls over the valuation of the Company's reporting units. These procedures also included, among others, (i) testing management's process for developing the fair value estimates; (ii) evaluating the appropriateness of the discounted cash flow models;

(iii) testing the completeness and accuracy of underlying data used in the models; and (iv) evaluating the significant assumptions used by management related to the estimated growth rates. Evaluating management's assumptions related to estimated revenue growth rates involved evaluating whether the growth rates used by management were reasonable considering the current and past performance of the reporting units and whether those growth rates were consistent with evidence obtained in other areas of the audit.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
February 24, 2021

We have served as the Company's auditor since 1994.

WATERS CORPORATION AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

	December 31, 2020	December 31, 2019
	(In thousands, except per share data)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 436,695	$ 335,715
Investments	6,451	1,429
Accounts receivable, net	573,316	587,734
Inventories	304,281	320,551
Other current assets	80,290	67,062
Total current assets	1,401,033	1,312,491
Property, plant and equipment, net	494,003	417,342
Intangible assets, net	258,645	240,203
Goodwill	444,362	356,128
Operating lease assets	93,252	93,358
Other assets	148,625	137,533
Total assets	$ 2,839,920	$ 2,557,055
LIABILITIES AND STOCKHOLDERS' EQUITY (DEFICIT)		
Current liabilities:		
Notes payable and debt	$ 150,000	$ 100,366
Accounts payable	72,212	49,001
Accrued employee compensation	72,166	43,467
Deferred revenue and customer advances	198,240	176,360
Current operating lease liabilities	27,764	27,125
Accrued income taxes	76,558	45,967
Accrued warranty	10,950	11,964
Other current liabilities	197,093	137,084
Total current liabilities	804,983	591,334
Long-term liabilities:		
Long-term debt	1,206,515	1,580,797
Long-term portion of retirement benefits	72,620	59,159
Long-term income tax liabilities	357,493	394,562
Long-term operating lease liabilities	68,197	66,881
Other long-term liabilities	97,968	80,603
Total long-term liabilities	1,802,793	2,182,002
Total liabilities	2,607,776	2,773,336
Commitments and contingencies (Notes 6, 9, 10, 11, 12, 13 and 17)		
Stockholders' equity (deficit):		
Preferred stock, par value $0.01 per share, 5,000 shares authorized, none issued at December 31, 2020 and December 31, 2019	—	—
Common stock, par value $0.01 per share, 400,000 shares authorized, 161,666 and 161,030 shares issued, 62,309 and 62,587 shares outstanding at December 31, 2020 and December 31, 2019, respectively	1,617	1,610
Additional paid-in capital	2,029,465	1,926,753
Retained earnings	7,107,989	6,587,403
Treasury stock, at cost, 99,357 and 98,443 shares at December 31, 2020 and December 31, 2019, respectively	(8,788,984)	(8,612,576)
Accumulated other comprehensive loss	(117,943)	(119,471)
Total stockholders' equity (deficit)	232,144	(216,281)
Total liabilities and stockholders' equity (deficit)	$ 2,839,920	$ 2,557,055

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

WATERS CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS

	Year Ended December 31,		
	2020	2019	2018
	(In thousands, except per share data)		
Revenues:			
Product sales	$1,497,333	$1,567,189	$1,604,993
Service sales	868,032	839,407	814,936
Total net sales	2,365,365	2,406,596	2,419,929
Costs and operating expenses:			
Cost of product sales	638,033	642,706	656,275
Cost of service sales	368,656	367,994	336,289
Selling and administrative expenses	553,698	534,791	536,902
Research and development expenses	140,777	142,955	143,403
Purchased intangibles amortization	10,587	9,693	7,712
Asset impairments	6,945	—	—
Litigation provision (settlement) (Note 11)	1,180	—	(426)
Total costs and operating expenses	1,719,876	1,698,139	1,680,155
Operating income	645,489	708,457	739,774
Other expense	(1,775)	(3,586)	(47,794)
Interest expense	(49,070)	(48,690)	(48,641)
Interest income	16,270	22,058	38,807
Income before income taxes	610,914	678,239	682,146
Provision for income taxes	89,343	86,041	88,352
Net income	$ 521,571	$ 592,198	$ 593,794
Net income per basic common share	$ 8.40	$ 8.76	$ 7.71
Weighted-average number of basic common shares	62,094	67,627	76,992
Net income per diluted common share	$ 8.36	$ 8.69	$ 7.65
Weighted-average number of diluted common shares and equivalents	62,414	68,166	77,618

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

WATERS CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended December 31,		
	2020	2019	2018
		(In thousands)	
Net income	$521,571	$592,198	$593,794
Other comprehensive income (loss):			
Foreign currency translation	5,984	1,631	(36,279)
Unrealized gains on investments before income taxes	—	3,046	698
Income tax (expense) benefit	—	(641)	443
Unrealized gains on investments, net of tax	—	2,405	1,141
Retirement liability adjustment before reclassifications	(6,786)	(9,360)	(6,722)
Amounts reclassified to other expense	1,389	1,979	48,792
Retirement liability adjustment before income taxes	(5,397)	(7,381)	42,070
Income tax benefit (expense)	941	1,845	(14,836)
Retirement liability adjustment, net of tax	(4,456)	(5,536)	27,234
Other comprehensive income (loss)	1,528	(1,500)	(7,904)
Comprehensive income	$523,099	$590,698	$585,890

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

WATERS CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
	2020	2019	2018
	(In thousands)		
Cash flows from operating activities:			
Net income	$ 521,571	$ 592,198	$ 593,794
Adjustments to reconcile net income to net cash provided by operating activities:			
Stock-based compensation	36,865	38,577	37,541
Deferred income taxes	(2,693)	9,620	2,405
Depreciation	68,685	53,839	57,952
Amortization of intangibles	56,676	51,457	50,456
Asset impairments	6,945	—	—
Change in operating assets and liabilities, net of acquisitions:			
Decrease (increase) in accounts receivable	37,467	(22,195)	(47,921)
Decrease (increase) in inventories	18,940	(31,854)	(25,396)
Increase in other current assets	(27,030)	(10,918)	(12,446)
(Increase) decrease in other assets	(37,865)	(16,470)	6,047
Increase (decrease) in accounts payable and other current liabilities	140,598	9,784	(81,663)
Increase in deferred revenue and customer advances	11,073	12,189	2,721
Effect of the 2017 Tax Cuts and Jobs Act	—	(3,229)	(6,059)
(Decrease) increase in other liabilities	(40,725)	(39,911)	27,015
Net cash provided by operating activities	790,507	643,087	604,446
Cash flows from investing activities:			
Additions to property, plant, equipment and software capitalization	(172,384)	(163,823)	(96,079)
Asset and business acquisitions, net of cash acquired	(80,545)	—	(31,486)
Investment in unaffiliated company	(6,143)	(8,843)	(7,615)
Purchases of investments	(25,884)	(36,951)	(1,006,080)
Maturities and sales of investments	20,862	978,419	2,824,562
Net cash (used in) provided by investing activities	(264,094)	768,802	1,683,302
Cash flows from financing activities:			
Proceeds from debt issuances	315,000	925,670	274
Payments on debt	(640,366)	(390,482)	(850,435)
Payments of debt issuance costs	—	(2,932)	—
Proceeds from stock plans	66,033	53,715	52,429
Purchases of treasury shares	(196,409)	(2,469,258)	(1,315,106)
Proceeds from (payments for) derivative contracts	15,240	10,609	(6,684)
Net cash used in financing activities	(440,502)	(1,872,678)	(2,119,522)
Effect of exchange rate changes on cash and cash equivalents	15,069	224	(14,265)
Increase (decrease) in cash and cash equivalents	100,980	(460,565)	153,961
Cash and cash equivalents at beginning of period	335,715	796,280	642,319
Cash and cash equivalents at end of period	$ 436,695	$ 335,715	$ 796,280
Supplemental cash flow information:			
Income taxes paid	$ 97,621	$ 87,998	$ 159,397
Interest paid	$ 52,103	$ 42,843	$ 50,798

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

WATERS CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (DEFICIT)

	Number of Common Shares	Common Stock	Additional Paid-In Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Income (Loss)	Total Stockholders' Equity (Deficit)
				(In thousands)			
Balance December 31, 2017	159,845	$1,598	$1,745,088	$5,405,380	$(4,808,211)	$(110,067)	$ 2,233,788
Adoption of new accounting pronouncement	—	—	—	(3,969)	—	—	(3,969)
Net income	—	—	—	593,794	—	—	593,794
Other comprehensive loss	—	—	—	—	—	(7,904)	(7,904)
Issuance of common stock for employees:							
Employee Stock Purchase Plan	45	—	7,874	—	—	—	7,874
Stock options exercised	438	5	44,550	—	—	—	44,555
Treasury stock	—	—	—	—	(1,338,111)	—	(1,338,111)
Stock-based compensation	144	2	37,229	—	—	—	37,231
Balance December 31, 2018	160,472	$1,605	$1,834,741	$5,995,205	$(6,146,322)	$(117,971)	$ 1,567,258
Net income	—	—	—	592,198	—	—	592,198
Other comprehensive loss	—	—	—	—	—	(1,500)	(1,500)
Issuance of common stock for employees:							
Employee Stock Purchase Plan	43	—	7,996	—	—	—	7,996
Stock options exercised	406	4	45,715	—	—	—	45,719
Treasury stock	—	—	—	—	(2,466,254)	—	(2,466,254)
Stock-based compensation	109	1	38,301	—	—	—	38,302
Balance December 31, 2019	161,030	$1,610	$1,926,753	$6,587,403	$(8,612,576)	$(119,471)	$ (216,281)
Adoption of new accounting pronouncement	—	—	—	(985)	—	—	(985)
Net income	—	—	—	521,571	—	—	521,571
Other comprehensive income	—	—	—	—	—	1,528	1,528
Issuance of common stock for employees:							
Employee Stock Purchase Plan	43	—	7,531	—	—	—	7,531
Stock options exercised	456	5	58,497	—	—	—	58,502
Treasury stock	—	—	—	—	(176,408)	—	(176,408)
Stock-based compensation	137	2	36,684	—	—	—	36,686
Balance December 31, 2020	161,666	$1,617	$2,029,465	$7,107,989	$(8,788,984)	$(117,943)	$ 232,144

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

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1 Description of Business and Organization

Waters Corporation (the "Company," "we," "our," or "us") is a specialty measurement company that operates with a fundamental underlying purpose to advance the science that enables our customers to enhance human health and well-being. The Company has pioneered analytical workflow solutions involving liquid chromatography, mass spectrometry and thermal analysis innovations serving the life, materials and food sciences for more than 60 years. The Company primarily designs, manufactures, sells and services high performance liquid chromatography ("HPLC"), ultra performance liquid chromatography ("UPLC™" and together with HPLC, referred to as "LC") and mass spectrometry ("MS") technology systems and support products, including chromatography columns, other consumable products and comprehensive post-warranty service plans. These systems are complementary products that are frequently employed together ("LC-MS") and sold as integrated instrument systems using common software platforms. LC is a standard technique and is utilized in a broad range of industries to detect, identify, monitor and measure the chemical, physical and biological composition of materials, and to purify a full range of compounds. MS technology, principally in conjunction with chromatography, is employed in drug discovery and development, including clinical trial testing, the analysis of proteins in disease processes (known as "proteomics"), nutritional safety analysis and environmental testing. LC-MS instruments combine a liquid phase sample introduction and separation system with mass spectrometric compound identification and quantification. In addition, the Company designs, manufactures, sells and services thermal analysis, rheometry and calorimetry instruments through its TA™ product line. These instruments are used in predicting the suitability and stability of fine chemicals, pharmaceuticals, water, polymers, metals and viscous liquids for various industrial, consumer goods and healthcare products, as well as for life science research. The Company is also a developer and supplier of advanced software-based products that interface with the Company's instruments, as well as other manufacturers' instruments.

2 Basis of Presentation and Summary of Significant Accounting Policies

Use of Estimates

The preparation of consolidated financial statements in conformity with generally accepted accounting principles ("GAAP") requires the Company to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent liabilities at the dates of the financial statements. On an ongoing basis, the Company evaluates its estimates, including those related to revenue recognition, goodwill and intangible assets, income taxes, litigation, stock-based compensation and contingencies, and to a lesser extent, product returns and allowances, bad debts, inventory valuation, warranty and installation provisions, retirement plan obligations and equity investments, which are not as significant to our financial statements. The Company bases its estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual amounts may differ from these estimates under different assumptions or conditions.

Risks and Uncertainties

The Company is subject to risks common to companies in the analytical instrument industry, including, but not limited to, global economic and financial market conditions, fluctuations in foreign currency exchange rates, fluctuations in customer demand, development by its competitors of new technological innovations, costs of developing new technologies, levels of debt and debt service requirements, risk of disruption, dependence on key personnel, protection and litigation of proprietary technology, shifts in taxable income between tax jurisdictions and compliance with regulations of the U.S. Food and Drug Administration and similar foreign regulatory authorities and agencies.

Both the Company's domestic and international operations have been and continue to be adversely affected by the ongoing global pandemic of a novel strain of coronavirus ("COVID-19") and the resulting volatility and uncertainty it has caused in the U.S. and international markets. Since being declared a pandemic in March 2020 by the World Health Organization, COVID-19 has continued to spread throughout the U.S. and globally. The COVID-19 pandemic has caused significant volatility and uncertainty in U.S. and international markets, which has disrupted and is expected to continue to disrupt the Company's business and could result in a prolonged economic downturn. It is unclear whether increases in the number of infections will continue and amplify as certain areas of the economy are re-opened and restrictions are eased, or whether so called "second waves" of COVID-19 infections will be experienced in the U.S. and globally. The Company operates in over 35 countries, including those in the regions most impacted by the COVID-19 pandemic.

COVID-19 and the related economic uncertainty adversely impacted sales of the Company for the year ended December 31, 2020; however, through the date of the issuance of these financial statements, the Company's consolidated financial position, results of operations and cash flows have not been materially impacted and, thus, the Company concluded that no interim goodwill or long-lived asset impairment analyses were required. Further, there have been no violations of debt covenants. Any prolonged material disruption to the Company's employees, suppliers, manufacturing, or customers could result in a material impact to its consolidated financial position, results of operations or cash flows in the future.

Principles of Consolidation

The consolidated financial statements include the accounts of the Company and its subsidiaries, which are wholly owned. The Company consolidates entities in which it owns or controls fifty percent or more of the voting shares. All inter-company balances and transactions have been eliminated.

Translation of Foreign Currencies

The functional currency of each of the Company's foreign operating subsidiaries is the local currency of its country of domicile, except for the Company's subsidiaries in Hong Kong, Singapore and the Cayman Islands, where the underlying transactional cash flows are denominated in currencies other than the respective local currency of domicile. The functional currency of the Hong Kong, Singapore and Cayman Islands subsidiaries is the U.S. dollar, based on the respective entity's cash flows.

For most of the Company's foreign operations, assets and liabilities are translated into U.S. dollars at exchange rates prevailing on the balance sheet date, while revenues and expenses are translated at average exchange rates prevailing during the respective period. Any resulting translation gains or losses are included in accumulated other comprehensive income in the consolidated balance sheets.

The Company's net sales derived from operations outside the United States were 71%, 71% and 72% in 2020, 2019 and 2018, respectively. Gains and losses from foreign currency transactions are included primarily in cost of sales in the consolidated statements of operations. In 2020, 2019 and 2018, foreign currency transactions resulted in net losses of $7 million, $9 million and $3 million, respectively.

Seasonality of Business

The Company typically experiences an increase in sales in the fourth quarter, as a result of purchasing habits for capital goods of customers that tend to exhaust their spending budgets by calendar year end.

Cash, Cash Equivalents and Investments

Cash equivalents represent highly liquid investments, with original maturities of 90 days or less, primarily in bank deposits, U.S. treasury bill money market funds and commercial paper. Investments with longer maturities are classified as investments, and are held primarily in U.S. treasury bills, U.S. dollar-denominated treasury bills and commercial paper, bank deposits and corporate debt securities.

Investments are classified as available-for-sale (“AFS”) debt securities. If the AFS debt security’s fair value exceeds the security’s amortized cost the unrealized gain is recognized in accumulated other comprehensive income in stockholders’ equity (deficit), net of the related tax effects. If the AFS debt security’s fair value declines below its amortized cost the Company considers all available evidence to evaluate the extent to which the decline is due to credit-related factors or noncredit-related factors. If the decline is due to noncredit-related factors then no credit loss is recorded and the unrealized loss is recognized in accumulated other comprehensive income in stockholders’ equity (deficit), net of the related tax effects. If the decline is considered to be a credit-related impairment, it is recognized as an allowance on the consolidated balance sheet with a corresponding charge to the statement of operations. The credit allowance is limited to the difference between the fair value and the amortized cost basis. No credit-related allowances or impairments have been recognized on the Company’s investments in available-for-sale debt securities. The Company classifies its investments exclusive of those categorized as cash equivalents.

The Company maintains cash balances in various operating accounts in excess of federally insured limits, and in foreign subsidiary accounts in currencies other than the U.S. dollar. As of December 31, 2020 and 2019, $364 million out of $443 million and $249 million out of $337 million, respectively, of the Company’s total cash, cash equivalents and investments were held by foreign subsidiaries. In addition, $254 million out of $443 million and $176 million out of $337 million of cash, cash equivalents and investments were held in currencies other than the U.S. dollar at December 31, 2020 and 2019, respectively.

Accounts Receivable and Allowance for Credit Losses

The Company adopted new accounting guidance regarding the accounting for credit losses as of January 1, 2020 using a modified retrospective transition approach that was applied to the trade receivable balance as of January 1, 2020. This new accounting guidance required the Company to move from an incurred loss model to a current expected credit loss (“CECL”) model. Upon adoption, the Company recorded a net decrease of approximately $1 million to the Company’s stockholders’ deficit as of January 1, 2020. The adoption of this standard did not have a material impact on the Company’s balance sheets, results of operations or cash flows.

Trade accounts receivable are recorded at the invoiced amount and do not bear interest. The Company has very limited use of rebates and other cash considerations payable to customers and, as a result, the transaction price determination does not have any material variable consideration. The Company does not consider there to be significant concentrations of credit risk with respect to trade receivables due to the short-term nature of the balances, the Company having a large and diverse customer base, and the Company having a strong historical experience of collecting receivables with minimal defaults. As a result, credit risk is considered low across territories and trade receivables are considered to be a single class of financial asset. The allowance for credit losses is based on a number of factors and is calculated by applying a historical loss rate to trade receivable aging balances to estimate a general reserve balance along with an additional adjustment for any specific receivables with known or anticipated issues affecting the likelihood of recovery. Past due balances with a probability of default based on historical data as well as relevant available forward-looking information are included in the specific adjustment. The historical loss rate is reviewed on at least an annual basis and the allowance for credit losses is reviewed quarterly for any required adjustments. The Company does not have any off-balance sheet credit exposure related to its customers.

Trade receivables related to instrument sales are collateralized by the instrument that is sold. If there is a risk of default related to a receivable that is collateralized, then the fair value of the collateral is calculated and adjusted for the cost to re-possess, refurbish and re-sell the instrument. This adjusted fair value is compared to the receivable balance and the difference would be recorded as the expected credit loss.

Any recovery of amounts that were written off prior to adoption of the new CECL standard that are received after adoption are recorded in income in the period in which they are received.

The following is a summary of the activity of the Company's allowance for credit losses for the year ended December 31, 2020, 2019 and 2018 (in thousands). The December 31, 2020 balance is calculated using the CECL method and the December 31, 2019 and 2018 balances are calculated using the incurred loss method under legacy GAAP:

	Balance at Beginning of Period	Impact of CECL Adoption	Additions	Deductions	Balance at End of Period
Allowance for Doubtful Accounts					
December 31, 2020	$9,560	$985	$9,051	$(5,215)	$14,381
December 31, 2019	$7,663	$—	$4,701	$(2,804)	$ 9,560
December 31, 2018	$6,109	$—	$6,333	$(4,779)	$ 7,663

Concentration of Credit Risk

The Company sells its products and services to a significant number of large and small customers throughout the world, with net sales to the pharmaceutical industry of approximately 59% in 2020 and 57% in both 2019 and 2018. None of the Company's individual customers accounted for more than 2% of annual Company sales in 2020, 2019 or 2018. The Company performs continuing credit evaluations of its customers and generally does not require collateral, but in certain circumstances may require letters of credit or deposits. Historically, the Company has not experienced significant bad debt losses.

Inventory

The Company values all of its inventories at the lower of cost or net realizable value on a first-in, first-out basis ("FIFO").

Income Taxes

As part of the process of preparing the consolidated financial statements, the Company is required to estimate its income taxes in each of the jurisdictions in which it operates. This process involves the Company estimating its income taxes, taking into account the amount, timing and character of taxable income, tax deductions and credits and assessing changes in tax laws, regulations, agreements and treaties. Differing treatment of items for tax and accounting purposes, such as depreciation, amortization and inventory reserves, result in deferred tax assets and liabilities, which are included within the consolidated balance sheets. In the event that actual results differ from these estimates, or the Company adjusts these estimates in future periods, such changes could materially impact the Company's financial position and results of operations.

The accounting standards for income taxes require that a company continually evaluate the necessity of establishing or changing a valuation allowance for deferred tax assets depending on whether it is more likely than not that the actual benefit of those assets will be realized in future periods.

The Company accounts for its uncertain tax return positions in accordance with the accounting standards for income taxes, which require financial statement reporting of the expected future tax consequences of uncertain tax positions on the presumption that all concerned tax authorities possess full knowledge of those tax positions, as well as all of the pertinent facts and circumstances, but prohibit any discounting of unrecognized tax benefits associated with those positions for the time value of money. The Company classified interest and penalties related to unrecognized tax benefits as a component of the provision for income taxes.

As part of the 2017 Tax Act, there is a provision for the taxation of certain off-shore earnings referred to as the Global Intangible Low-Taxed Income ("GILTI") provision. This provision taxes off-shore earnings at a rate of 10.5%, partially offset with foreign tax credits. In connection with this provision, the Company's accounting policy is to treat this tax as a current period cost.

Leases

The Company adopted new accounting guidance regarding the accounting for leases as of January 1, 2019 using a modified retrospective transition approach that was applied to leases existing as of, or entered into after, January 1, 2019. The Company elected the package of transition provisions available for expired or existing contracts, which allowed the Company to carryforward historical assessments of (1) whether contracts are or contain leases, (2) lease classification and (3) initial direct costs. Upon adoption, the Company recorded a right-of-use lease asset and lease liability in the amount of $100 million as of January 1, 2019. The adoption of this standard did not have a material impact on the Company's results of operations, cash flows and retained earnings.

The Company's lease portfolio consists primarily of operating leases. The Company's operating leases consist of property leases for sales, demonstration, laboratory, warehouse and office spaces, automotive leases for sales and service personnel and equipment leases, primarily used in our manufacturing and distribution operations. The Company categorizes leases as either operating or finance leases at the commencement date of the lease. The Company does not have any material financing leases.

The Company makes variable lease payments that do not depend on a rate or index, primarily for items such as real estate taxes and other expenses. These expenses are recorded as variable costs in the period incurred. For the years ended December 31, 2020 and 2019, respectively, variable costs incurred were not material.

The Company's lease agreements may include tenant improvement allowances, rent holidays, and/or contingent rent provisions as well as a certain number of these leases contain rental escalation clauses that are either fixed or adjusted periodically for inflation of market rates which are factored into our determination of lease payments at lease inception. The Company's leases also sometimes include renewal options and/or termination options which are included in the determination of the lease term when they are reasonably certain to be exercised.

The Company has lease agreements which contain lease and non-lease components, which are accounted for as a single lease component for all underlying classes of assets.

For leases with terms greater than 12 months, the Company records a right-of-use asset and lease liability at the present value of lease payments over the term of the leases and records rent expense on a straight-line basis over the lease term. The Company has elected not to apply the recognition requirements to short-term leases with terms less than 12 months. For short-term leases, the Company recognizes lease payments in net income on a straight-line basis over the term of the lease. For the years ended December 31, 2020 or 2019, respectively, costs incurred related to short-term leases were not material.

When available, the Company uses the rate implicit in the lease to discount lease payments to determine the present value of the lease liabilities; however, most of the leases do not provide a readily determinable implicit rate and, as required by the accounting guidance, the Company estimates its incremental secured borrowing rate to discount the lease payments based on information available at lease commencement (or, for the leases in existence on the adoption date, the January 1, 2019 information). The Company's incremental borrowing rate reflects the estimated rate of interest that the Company would pay to borrow on a collateralized basis over a similar term to the lease payments in a similar economic environment.

Property, Plant and Equipment

Property, plant and equipment are recorded at cost. Expenditures for maintenance and repairs are charged to expense, while the costs of significant improvements are capitalized. Depreciation is provided using the straight-line method over the following estimated useful lives: buildings — fifteen to thirty-nine years; building improvements — five to ten years; leasehold improvements — the shorter of the economic useful life or life of lease; and production and other equipment — three to ten years. Upon retirement or sale, the cost of the assets disposed of and the related accumulated depreciation are eliminated from the consolidated balance sheets and related gains or losses are reflected in the consolidated statements of operations.

Asset Impairments

The Company reviews its long-lived assets for impairment in accordance with the accounting standards for property, plant and equipment. Whenever events or circumstances indicate that the carrying amount of an asset may not be recoverable, the Company evaluates the recoverability of the carrying value of the asset based on the expected future cash flows, relying on a number of factors, including, but not limited to, operating results, business plans, economic projections and anticipated future cash flows. If the asset is deemed not recoverable, it is written down to fair value and the impairment is recorded in the consolidated statements of operations.

During 2020, the Company recorded a non-cash charge of $10 million for the impairment of certain intangible assets associated with its 2014 acquisition of Medimass Research Development and Service Kft (“Medimass”). The impairment charge was due to a shift in strategic priorities. In conjunction with the intangible asset impairment the Company also reduced its liability for contingent consideration of $3 million during 2020 as the carrying value of this liability is based on the future sales of the Medimass intangible assets that were impaired. The net impact of $7 million is reported separately within the consolidated statements of operations.

Business Combinations and Asset Acquisitions

The Company accounts for business acquisitions under the accounting standards for business combinations. The results of each acquisition are included in the Company’s consolidated results as of the acquisition date and the purchase price of an acquisition is allocated to tangible and intangible assets and assumed liabilities based on their estimated fair values. Any excess of the fair value consideration transferred over the estimated fair values of the net assets acquired is recognized as goodwill. Acquired in-process research and development (“IPR&D”) included in a business combination is capitalized as an indefinite-lived intangible asset. Development costs incurred after the acquisition are expensed as incurred and acquired IPR&D is tested for impairment annually until completion of the acquired programs. Upon commercialization, this indefinite-lived intangible asset is then accounted for as a finite-lived intangible asset and amortized on a straight-line basis over its estimated useful life, subject to periodic impairment reviews. If the research and development project is abandoned, the indefinite-lived asset is charged to expense. Legal costs, due diligence costs, business valuation costs and all other business acquisition costs are expensed when incurred.

The Company also acquires intellectual property through licensing arrangements. These arrangements often require upfront payments and may include additional milestone or royalty payments, contingent upon certain future events. IPR&D acquired in an asset acquisition (as opposed to a business combination) is expensed immediately unless there is an alternative future use. Subsequent payments made for the achievement of milestones are evaluated to determine whether they have an alternative future use or should be expensed. Payments made to third parties subsequent to commercialization are capitalized and amortized over the remaining useful life of the related asset, and are classified as intangible assets.

Goodwill and Other Intangible Assets

The Company tests for goodwill impairment using a fair-value approach at the reporting unit level annually, or earlier, if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying amount. The Company performs an annual goodwill impairment assessment for its reporting units as of December 31 each year. The goodwill and other intangible assets accounting standards define a reporting unit as an operating segment, or one level below an operating segment, if discrete financial information is prepared and reviewed by management. For goodwill impairment review purposes, the Company has two reporting units: Waters™ and TA™. Goodwill is allocated to the reporting units at the time of acquisition.

As of January 1, 2020, the Company adopted a new accounting standard which eliminated the requirement to calculate the implied fair value of goodwill as noted above to measure a goodwill impairment charge. Under the prior accounting standard, if a reporting unit's carrying amount exceeds its estimated fair value, goodwill impairment is recognized to the extent that the carrying amount of goodwill exceeds the implied fair value of the goodwill. Under the new accounting standard impairment assessment, an impairment charge is based on the excess of a reporting unit's carrying amount over its fair value. If the carrying amount of a reporting unit exceeds its fair value, an impairment loss is recognized in an amount equal to the amount of the excess carrying amount of the reporting unit over its fair value This impairment is limited to the total amount of goodwill allocated to that reporting unit. The fair value of reporting units was estimated using a discounted cash flows technique, which includes certain management assumptions, such as estimated future cash flows, estimated growth rates and discount rates.

The Company's intangible assets include purchased technology; capitalized software development costs; costs associated with acquiring Company patents, trademarks and intellectual properties, such as licenses; and acquired IPR&D. Purchased intangibles are recorded at their fair market values as of the acquisition date and amortized over their estimated useful lives, ranging from one to fifteen years. Other intangibles are amortized over a period ranging from one to ten years. Acquired IPR&D is amortized from the date of completion of the acquired program over its estimated useful life. IPR&D and indefinite-lived intangibles are tested annually for impairment.

Software Development Costs

The Company capitalizes internal and external software development costs for products offered for sale in accordance with the accounting standards for the costs of software to be sold, leased, or otherwise marketed. Capitalized costs are amortized to cost of sales over the period of economic benefit, which approximates a straight-line basis over the estimated useful lives of the related software products, generally three to ten years. The Company capitalized $53 million, $40 million and $34 million of direct expenses that were related to the development of software in 2020, 2019 and 2018, respectively. Net capitalized software included in intangible assets totaled $175 million and $149 million at December 31, 2020 and 2019, respectively. See Note 8, "Goodwill and Other Intangibles".

The Company capitalizes software development costs for internal use. Capitalized internal software development costs are amortized over the period of economic benefit, which approximates a straight-line basis over ten years. Net capitalized internal software included in property, plant and equipment totaled $8 million and $3 million at December 31, 2020 and 2019, respectively.

Other Investments

The Company accounts for its investments that represent less than twenty percent ownership, and for which the Company does not have the ability to exercise significant influence, using the accounting standards for investments in equity securities. Investments for which the Company does not have the ability to exercise significant influence, and for which there is not a readily determinable market value, are accounted for at cost, adjusted for subsequent observable price changes as applicable. The Company periodically evaluates the carrying value of its investments for which the Company does not have the ability to exercise significant influence, and for which there is not a readily determinable fair value and carries them at cost, less impairment, adjusted for subsequent observable price changes. For equity investments in which the Company has the ability to exercise significant influence over operating and financial policies of the investee, the equity method of accounting is used. The Company's share of net income or losses of equity method investments is included in the consolidated statements of operations and was not material in any period presented.

During the year ended December 31, 2020 and year ended December 31, 2019, the Company made investments in unaffiliated companies of $6 million and $9 million, respectively. During the year ended December 31, 2018, the Company made a $8 million investment in a developer of analytical system solutions used to make measurements, predict stability and accelerate product discovery in the routine analytic, process monitoring and quality control release processes for life science and biopharmaceutical markets.

Fair Value Measurements

In accordance with the accounting standards for fair value measurements and disclosures, certain of the Company's assets and liabilities are measured at fair value on a recurring basis as of December 31, 2020 and 2019. Fair values determined by Level 1 inputs utilize observable data, such as quoted prices in active markets. Fair values determined by Level 2 inputs utilize data points other than quoted prices in active markets that are observable either directly or indirectly. Fair values determined by Level 3 inputs utilize unobservable data points for which there is little or no market data, which require the reporting entity to develop its own assumptions.

The following table represents the Company's assets and liabilities measured at fair value on a recurring basis at December 31, 2020 (in thousands):

	Total at December 31, 2020	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Time deposits	$ 6,451	$ —	$ 6,451	$ —
Waters 401(k) Restoration Plan assets	38,988	38,988	—	—
Foreign currency exchange contracts	836	—	836	—
Total	$46,275	$38,988	$ 7,287	$ —
Liabilities:				
Contingent consideration	$ 1,185	$ —	$ —	$1,185
Foreign currency exchange contracts	185	—	185	—
Interest rate cross-currency swap agreements	44,996	—	44,996	—
Total	$46,366	$ —	$45,181	$1,185

The following table represents the Company's assets and liabilities measured at fair value on a recurring basis at December 31, 2019 (in thousands):

	Total at December 31, 2019	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Time deposits	$ 1,642	$ —	$1,642	$ —
Waters 401(k) Restoration Plan assets	30,158	30,158	—	—
Foreign currency exchange contracts	16	—	16	—
Interest rate cross-currency swap agreements	4,485	—	4,485	—
Total	$36,301	$30,158	$6,143	$ —
Liabilities:				
Contingent consideration	$ 2,557	$ —	$ —	$2,557
Foreign currency exchange contracts	1,028	—	1,028	—
Total	$ 3,585	$ —	$1,028	$2,557

Fair Value of 401(k) Restoration Plan Assets

The 401(k) Restoration Plan is a nonqualified defined contribution plan and the assets were held in registered mutual funds and have been classified as Level 1. The fair values of the assets in the plan are determined through market and observable sources from daily quoted prices on nationally recognized securities exchanges.

Fair Value of Cash Equivalents, Investments, Foreign Currency Exchange Contracts and Interest Rate Cross-Currency Swap Agreements

The fair values of the Company's cash equivalents, investments and foreign currency exchange contracts are determined through market and observable sources and have been classified as Level 2. These assets and liabilities have been initially valued at the transaction price and subsequently valued, typically utilizing third-party pricing services. The pricing services use many inputs to determine value, including reportable trades, benchmark yields, credit spreads, broker/dealer quotes, current spot rates and other industry and economic events. The Company validates the prices provided by third-party pricing services by reviewing their pricing methods and obtaining market values from other pricing sources.

Fair Value of Contingent Consideration

The fair value of the Company's liability for contingent consideration relates to earnout payments in connection with certain acquisitions and is determined using a probability-weighted discounted cash flow model, which uses significant unobservable inputs, and has been classified as Level 3. Subsequent changes in the fair value of the contingent consideration liability are recorded in the results of operations. The fair value of the contingent consideration liability associated with future earnout payments is based on several factors, including the estimated future results and a discount rate that reflects both the likelihood of achieving the estimated future results and the Company's creditworthiness. A change in any of these unobservable inputs can significantly change the fair value of the contingent consideration.

The fair value of future contingent consideration payments related to the December 2020 acquisition of ISS was estimated to be $1 million at December 31, 2020. The fair value is based on the achievement of certain revenue and customer account over the next two years after the acquisition date.

The fair value of future contingent consideration payments related to the July 2014 acquisition of Medimass Research, Development and Service Kft. was estimated to be $3 million at December 31, 2019, based on the Company's best estimate, as the earnout is based on future sales of certain products, some of which are currently in development, through 2034. During 2020, due to a shift in strategic priorities, the Company recorded a non-cash charge of $10 million for the impairment of certain intangible assets associated with the Medimass acquisition. In conjunction with the intangible asset impairment, the Company also reduced its liability for contingent consideration of $3 million during 2020 as the carrying value of this liability is based on the future sales of the Medimass intangible assets that were impaired.

Fair Value of Other Financial Instruments

The Company's accounts receivable, accounts payable and variable interest rate debt are recorded at cost, which approximates fair value due to their short-term nature. The carrying value of the Company's fixed interest rate debt was $910 million and $1.0 billion at December 31, 2020 and 2019, respectively. The fair value of the Company's fixed interest rate debt was estimated using discounted cash flow models, based on estimated current rates offered for similar debt under current market conditions for the Company. The fair value of the Company's fixed interest rate debt was estimated to be $963 million and $1.0 billion at December 31, 2020 and 2019, respectively, using Level 2 inputs.

Derivative Transactions

The Company is a global company that operates in over 35 countries and, as a result, the Company's net sales, cost of sales, operating expenses and balance sheet amounts are significantly impacted by fluctuations in foreign currency exchange rates. The Company is exposed to currency price risk on foreign currency exchange rate fluctuations when it translates its non-U.S. dollar foreign subsidiaries' financial statements into U.S. dollars and when any of the Company's subsidiaries purchase or sell products or services in a currency other than its own currency.

The Company's principal strategies in managing exposures to changes in foreign currency exchange rates are to (1) naturally hedge the foreign-currency-denominated liabilities on the Company's balance sheet against corresponding assets of the same currency, such that any changes in liabilities due to fluctuations in foreign currency exchange rates are typically offset by corresponding changes in assets and (2) mitigate foreign exchange risk exposure of international operations by hedging the variability in the movement of foreign currency exchange rates on a portion of its Euro-denominated net asset investments. The Company presents the derivative transactions in financing activities in the statement of cash flows.

Foreign Currency Exchange Contracts

The Company does not specifically enter into any derivatives that hedge foreign-currency-denominated operating assets, liabilities or commitments on its balance sheet, other than a portion of certain third-party accounts receivable and accounts payable, and the Company's net worldwide intercompany receivables and payables, which are eliminated in consolidation. The Company periodically aggregates its net worldwide balances by currency and then enters into foreign currency exchange contracts that mature within 90 days to hedge a portion of the remaining balance to minimize some of the Company's currency price risk exposure. The foreign currency exchange contracts are not designated for hedge accounting treatment. Principal hedged currencies include the Euro, Japanese yen, British pound, Mexican peso and Brazilian real.

Interest Rate Cross-Currency Swap Agreements

As of December 31, 2020, the Company had entered into three-year interest rate cross-currency swap derivative agreements with an aggregate notional value of $560 million to hedge the variability in the movement of foreign currency exchange rates on a portion of its Euro-denominated net asset investments. Under hedge accounting, the change in fair value of the derivative that relates to changes in the foreign currency spot rate are recorded in the currency translation adjustment in other comprehensive income and remain in accumulated comprehensive income in stockholders' equity (deficit) until the sale or substantial liquidation of the foreign operation. The difference between the interest rate received and paid under the interest rate cross-currency swap derivative agreement is recorded in interest income in the statement of operations.

The Company's foreign currency exchange contracts and interest rate cross-currency swap agreements included in the consolidated balance sheets are classified as follows (in thousands):

	December 31, 2020		December 31, 2019	
	Notional Value	Fair Value	Notional Value	Fair Value
Foreign currency exchange contracts:				
Other current assets	$ 66,690	$ 836	$119,576	$ 16
Other current liabilities	$ 20,000	$ 185	$ 29,495	$ 1,028
Interest rate cross-currency swap agreements:				
Other (liabilities) assets	$560,000	$(44,996)	$560,000	$ 4,485
Accumulated other comprehensive loss (income)		$ 44,996		$(4,485)

The following is a summary of the activity included in the statements of comprehensive income related to the foreign currency exchange contracts (in thousands):

	Financial Statement Classification	Year Ended December 31,		
		2020	2019	2018
Foreign currency exchange contracts:				
Realized gains (losses) on closed contracts	Cost of sales	$ 1,444	$ (3,552)	$(6,684)
Unrealized gains (losses) on open contracts	Cost of sales	1,663	(1,292)	(105)
Cumulative net pre-tax gains (losses)	Cost of sales	$ 3,107	$ (4,844)	$(6,789)
Interest rate cross-currency swap agreements:				
Interest earned	Interest income	$ 15,296	$11,709	$ 2,713
Unrealized (losses) gains on open contracts	Stockholders' equity (deficit)	$(44,996)	$ 4,485	$ 1,093

Stockholders' Equity (Deficit)

In January 2019, the Company's Board of Directors authorized the Company to repurchase up to $4 billion of its outstanding common stock over a two-year period. During 2020, 2019 and 2018, the Company repurchased 0.8 million, 11.1 million and 6.8 million shares of the Company's outstanding common stock at a cost of $167 million, $2.5 billion and $1.3 billion, respectively, under the January 2019 authorization and other previously announced programs. In addition, the Company repurchased $9 million, $8 million and $10 million of common stock related to the vesting of restricted stock units during the years ended December 31, 2020, 2019 and 2018, respectively. As of December 31, 2020, the Company has a total of $1.5 billion authorized for future repurchases. In December 2020, the Company's Board of Directors authorized the extension of the share repurchase program through January 21, 2023.

The Company accrued $20 million and $23 million at December 31, 2019 and 2018, respectively, as a result of treasury stock purchases that were unsettled. These transactions were settled in January 2020 and 2019, respectively. There was no such accrual at December 31, 2020.

Revenue Recognition

The Company recognizes revenue upon transfer of control of promised products and services to customers in an amount that reflects the consideration the Company expects to receive in exchange for those products or services. The Company generally enters into contracts that include a combination of products and services. Revenue is allocated to distinct performance obligations and is recognized net of allowances for returns and discounts.

The Company recognizes revenue on product sales at the time control of the product transfers to the customer. In substantially all of the Company's arrangements, title of the product transfers at shipping point and, as a result, the Company determined control transfers at the point of shipment. In more limited cases, there are destination-based shipping terms and, thus, control is deemed to transfer when the products arrive at the customer site. All incremental costs of obtaining a contract are expensed as and when incurred if the expected amortization period of the asset that would have been recognized is one year or less. Shipping and handling costs are included as a component of cost of sales. In situations where the control of the goods transfers prior to the completion of the Company's obligation to ship the products to its customers, the Company has elected the practical expedient to account for the shipping services as a fulfillment cost. Accordingly, such costs are recognized when control of the related goods is transferred to the customer. In more rare situations, the Company has revenue associated with products that contain specific customer acceptance criteria and the related revenue is not recognized before the customer acceptance criteria are satisfied. The Company elected to exclude from the measurement of the transaction price all taxes assessed by a governmental authority that are both imposed on and concurrent with specific revenue-producing transactions and collected by the Company from a customer.

Generally, the Company's contracts for products include a performance obligation related to installation. The Company has determined that the installation represents a distinct performance obligation and revenue is recognized separately upon the completion of installation. The Company determines the amount of the transaction price to allocate to the installation service based on the standalone selling price of the product and the service, which requires judgment. The Company determines the relative standalone selling price of installation based upon a number of factors, including hourly service billing rates and estimated installation hours. In developing these estimates, the Company considers past history, competition, billing rates of current services and other factors.

The Company has sales from standalone software, which are included in instrument systems revenue. These arrangements typically include software licenses and maintenance contracts, both of which the Company has determined are distinct performance obligations. The Company determines the amount of the transaction price to allocate to the license and maintenance contract based on the relative standalone selling price of each performance obligation. Software license revenue is recognized at the point in time when control has been transferred to the customer. The revenue allocated to the software maintenance contract is recognized on a straight-line basis over the maintenance period, which is the contractual term of the contract, as a time-based measure of progress best reflects the Company's performance in satisfying this obligation. Unspecified rights to software upgrades are typically sold as part of the maintenance contract on a when-and-if-available basis.

Payment terms and conditions vary among the Company's revenue streams, although terms generally include a requirement of payment within 30 to 60 days of product shipment. Prior to providing payment terms to customers, an evaluation of their credit risk is performed. Returns and customer credits are infrequent and insignificant and are recorded as a reduction to sales. Rights of return are not included in sales arrangements and, therefore, there is minimal variable consideration included in the transaction price of our products.

Service revenue includes (1) service and software maintenance contracts and (2) service calls (time and materials). Instrument service contracts and software maintenance contracts are typically annual contracts, which are billed at the beginning of the contract or maintenance period. The amount of the service and software maintenance contract is recognized on a straight-line basis to revenue over the maintenance service period, which is the contractual term of the contract, as a time-based measure of progress best reflects the Company's performance in satisfying this obligation. There are no deferred costs associated with the service contract, as the cost of the service is recorded when the service is performed. Service calls are recognized to revenue at the time a service is performed.

Product Warranty Costs

The Company accrues estimated product warranty costs at the time of sale, which are included in cost of sales in the consolidated statements of operations. While the Company engages in extensive product quality programs and processes, including actively monitoring and evaluating the quality of its component suppliers, the Company's warranty obligation is affected by product failure rates, material usage and service delivery costs incurred in correcting a product failure. The amount of the accrued warranty liability is based on historical information, such as past experience, product failure rates, number of units repaired and estimated costs of material and labor. The liability is reviewed for reasonableness at least quarterly.

The following is a summary of the activity of the Company's accrued warranty liability for the years ended December 31, 2020, 2019 and 2018 (in thousands):

	Balance at Beginning of Period	Accruals for Warranties	Settlements Made	Balance at End of Period
Accrued warranty liability:				
December 31, 2020	$11,964	$7,909	$(8,923)	$10,950
December 31, 2019	$12,300	$7,540	$(7,876)	$11,964
December 31, 2018	$13,026	$5,033	$(5,759)	$12,300

Advertising Costs

All advertising costs are expensed as incurred and are included in selling and administrative expenses in the consolidated statements of operations. Advertising expenses were $6 million, $6 million and $7 million for 2020, 2019 and 2018, respectively.

Research and Development Expenses

Research and development expenses are comprised of costs incurred in performing research and development activities, including salaries and benefits, facilities costs, overhead costs, contract services and other outside costs. Research and development expenses are expensed as incurred.

Stock-Based Compensation

The Company has two stock-based compensation plans, which are described in Note 14, "Stock-Based Compensation".

Earnings Per Share

In accordance with the earnings per share accounting standards, the Company presents two earnings per share ("EPS") amounts. Income per basic common share is based on income available to common shareholders and the weighted-average number of common shares outstanding during the periods presented. Income per diluted common share includes additional dilution from potential common stock, such as stock issuable pursuant to the exercise of stock options outstanding.

Retirement Plans

The Company sponsors various retirement plans, which are described in Note 17, “Retirement Plans”.

Comprehensive Income

The Company accounts for comprehensive income in accordance with the accounting standards for comprehensive income, which establish the accounting rules for reporting and displaying comprehensive income. These standards require that all components of comprehensive income be reported in a financial statement that is displayed with the same prominence as other financial statements.

Recently Adopted Accounting Standards

In June 2016, accounting guidance was issued that modifies the recognition of credit losses related to financial assets, such as debt securities, trade receivables, net investments in leases, off-balance sheet credit exposures, and other financial assets that have the contractual right to receive cash. Prior guidance required the recognition of a credit loss when it was considered probable that a loss event had occurred. The current guidance requires the measurement of expected credit losses to be based upon relevant information, including historical experience, current conditions, and reasonable and supportable forecasts that affect the collectability of the asset. As such, expected credit losses may be recognized sooner under the new guidance due to the broader range of information that will be required to determine credit loss estimates. The new guidance also amends the current other-than-temporary impairment model used for debt securities classified as available-for-sale. When the fair value of an available-for-sale debt security is below its amortized cost, the new guidance requires the total unrealized loss to be bifurcated into its credit and non-credit components. Any expected credit losses or subsequent recoveries will be recognized in earnings and any changes not considered credit related will continue to be recognized within other comprehensive income. This guidance is effective for annual and interim periods beginning after December 15, 2019. On January 1, 2020 the Company adopted this new standard using a modified retrospective method for all financial assets measured at amortized cost which only impacted the Company’s allowance on trade accounts receivable. The Company did not have any significant off-balance sheet credit exposures which would be impacted by the new guidance. Results for reporting periods beginning after January 1, 2020 are presented under the new standard while prior period amounts continue to be reported in accordance with previously applicable GAAP. The Company recorded a net decrease of $1 million to stockholders’ deficit as of January 1, 2020 for the cumulative effect of adopting the new standard due to converting to the current expected credit loss model for the allowance recorded against trade accounts receivables. This accounting standard did not have an impact on the Company’s results of operations and cash flows.

In January 2017, accounting guidance was issued that simplifies the accounting for goodwill impairment. The guidance eliminates step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. This guidance is effective for annual and interim periods beginning after December 15, 2019. The Company adopted this standard on January 1, 2020. The adoption of this standard did not have a material effect on the Company’s financial position, results of operations and cash flows.

In August 2018, accounting guidance was issued that modifies the disclosure requirements of fair value measurements. The amendments remove disclosures that are no longer considered cost beneficial, clarify the specific requirements of disclosure and add disclosure requirements identified as relevant. This guidance is effective for annual and interim periods beginning after December 15, 2019. The Company adopted this standard on January 1, 2020. The adoption of this standard did not have a material impact on the Company's financial position, results of operations and cash flows.

In August 2018, accounting guidance was issued that modifies the disclosure requirements for employers that sponsor defined benefit pension or other postretirement plans. The amendments remove disclosures that are no longer considered cost beneficial, clarify the specific requirements of disclosure and add disclosure requirements identified as relevant. This guidance is effective for annual and interim periods ending after December 15, 2020. The Company adopted this standard on January 1, 2020. The adoption of this standard did not have a material impact on the Company's financial position, results of operations and cash flows.

Recently Issued Accounting Standards

In December 2019, accounting guidance was issued that simplifies the accounting for income taxes by removing certain exceptions within the current guidance, including the approach for intraperiod tax allocation, the methodology for calculating income taxes in an interim period and the recognition of deferred tax liabilities for outside basis differences. The amendment also improves consistent application by clarifying and amending existing guidance related to aspects of the accounting for franchise taxes and enacted changes in tax laws or rates and clarifies the accounting for transactions that result in a step up in the tax basis of goodwill. This guidance is effective for annual and interim periods beginning after December 15, 2020 and early adoption is permitted. The Company does not expect that the adoption of this standard will have a material impact on the Company's financial position, results of operations and cash flows.

In January 2020, accounting guidance was issued that clarifies the accounting guidance for equity method investments, joint ventures, and derivatives and hedging. The update clarifies the interaction between different sections of the accounting guidance that could be applicable and helps clarify which guidance should be applied in certain situations which should increase relevance and comparability of financial statement information. This guidance is effective for annual and interim periods beginning after December 15, 2020 and early adoption is permitted. The Company does not expect that the adoption of this standard will have a material impact on the Company's financial position, results of operations and cash flows.

In March 2020, accounting guidance was issued that facilitates the effects of reference rate reform on financial reporting. The amendments in the update provide optional guidance for a limited period of time to ease the potential burden in accounting for or recognizing the effects of reference rate reform on financial reporting and apply to all entities, subject to meeting certain criteria, that have contracts, hedging relationships, and other transactions that reference LIBOR or another reference rate expected to be discontinued because of reference rate reform. In January of 2021 an update was issued to clarify that certain optional expedients and exceptions under the reference rate reform guidance for contract modifications and hedge accounting apply to derivatives that are affected by the discounting transition. Specifically, certain provisions in the reference rate reform guidance, if elected by an entity, apply to derivative instruments that use an interest rate for margining, discounting, or contract price alignment that is modified as a result of reference rate reform. This temporary guidance is effective for all entities as of March 12, 2020 through December 31, 2022. The Company may elect to apply this guidance for all contract modifications or eligible hedging relationships during that time period subject to certain criteria. The Company is still evaluating the impact of reference rate reform and whether this guidance will be adopted.

3 Revenue Recognition

The Company's deferred revenue liabilities on the consolidated balance sheets consist of the obligation on instrument service contracts and customer payments received in advance, prior to transfer of control of the instrument. The Company records deferred revenue primarily related to its service contracts, where consideration is billable at the beginning of the service period.

The following is a summary of the activity of the Company's deferred revenue and customer advances for the year ended December 31, 2020, 2019 and 2018 (in thousands):

	December 31,		
	2020	2019	2018
Balance at the beginning of the period	$ 213,695	$ 204,257	$ 192,589
Recognition of revenue included in balance at beginning of the period	(198,209)	(176,981)	(159,258)
Revenue deferred during the period, net of revenue recognized	224,273	186,419	170,926
Balance at the end of the period	$ 239,759	$ 213,695	$ 204,257

The Company classified $42 million and $38 million of deferred revenue and customer advances in other long-term liabilities at December 31, 2020 and 2019, respectively.

The amount of deferred revenue and customer advances equals the transaction price allocated to unfulfilled performance obligations for the period presented. Such amounts are expected to be recognized in the future as follows (in thousands):

	December 31, 2020
Deferred revenue and customer advances expected to be recognized in:	
One year or less	$198,240
13-24 months	23,647
25 months and beyond	17,872
Total	$239,759

4 Marketable Securities

The Company's marketable securities within cash equivalents and investments included in the consolidated balance sheets are detailed as follows (in thousands):

	December 31, 2020			
	Amortized Cost	Unrealized Gain	Unrealized Loss	Fair Value
Time deposits	6,451	—	—	6,451
Total	$6,451	$—	$—	$6,451
Amounts included in:				
Investments	6,451	—	—	6,451
Total	$6,451	$—	$—	$6,451

	December 31, 2019			
	Amortized Cost	Unrealized Gain	Unrealized Loss	Fair Value
Time deposits	1,642	—	—	1,642
Total	$1,642	$—	$—	$1,642
Amounts included in:				
Cash equivalents	$ 213	$—	$—	$ 213
Investments	1,429	—	—	1,429
Total	$1,642	$—	$—	$1,642

The estimated fair value of marketable debt securities by maturity date is as follows (in thousands):

	December 31, 2020	December 31, 2019
Due in one year or less	$6,451	$1,642
Total	$6,451	$1,642

Net realized gains and losses on sales of investments were not material in 2020, 2019 and 2018.

5 Inventories

Inventories are classified as follows (in thousands):

	December 31, 2020	December 31, 2019
Raw materials	$133,490	$126,850
Work in progress	18,678	15,457
Finished goods	152,113	178,244
Total inventories	$304,281	$320,551

During 2020, 2019 and 2018, the Company recorded inventory-related excess and obsolescence provisions of $12 million, $13 million and $8 million, respectively.

6 Property, Plant and Equipment

Property, plant and equipment consist of the following (in thousands):

	December 31,	
	2020	2019
Land and land improvements	$ 36,884	$ 37,040
Buildings and leasehold improvements	376,705	355,425
Production and other equipment	588,625	537,211
Construction in progress	125,925	57,985
Total property, plant and equipment	1,128,139	987,661
Less: accumulated depreciation and amortization	(634,136)	(570,319)
Property, plant and equipment, net	$ 494,003	$ 417,342

In February 2018, the Company's Board of Directors approved expanding its precision chemistry consumable manufacturing operations in the U.S. The Company anticipates spending an estimated $215 million to build and equip this new state-of-the-art manufacturing facility, and has spent $151 million on this facility through December 31, 2020.

During 2020, 2019 and 2018, the Company retired and disposed of approximately $19 million, $11 million and $9 million of property, plant and equipment, respectively, most of which was fully depreciated and no longer in use. Gains or losses on disposals were immaterial for the years ended December 31, 2020, 2019 and 2018.

7 Acquisitions

On January 15, 2020, the Company acquired all of the outstanding stock of Andrew Alliance, S.A. and its two operating subsidiaries, Andrew Alliance USA, Inc. and Andrew Alliance France, SASU (collectively, "Andrew Alliance"), for $80 million, net of cash acquired. The Company had an equity investment in Andrew Alliance that was valued at $4 million and included as part of the total consideration.

Andrew Alliance offers lab workflow automation solutions with the combination of its software platform and smart, connected laboratory equipment and accessories.

The Company allocated $7 million of the purchase price to intangible assets comprised of developed technology, trade name and customer relationships. The developed technology and customer relationships will be amortized over ten years and the trade name will be amortized over 3 years. The Company allocated $72 million of the purchase price to goodwill, which is not deductible for tax purposes. The principal factor that resulted in recognition of goodwill in the acquisition was that the purchase price was based, in part, on cash flow projections assuming the integration of any acquired technology, distribution channels and products with the Company's products, which are higher than if the acquired companies' technology, customer access or products were utilized on a stand-alone basis. The goodwill also includes value assigned to assembled workforce, which cannot be recognized as an intangible asset.

The fair values of the assets and liabilities acquired were determined using various income-approach valuation techniques, which use Level 3 inputs. The following table presents the fair values as of the acquisition date, as determined by the Company, of 100% of the assets and liabilities owned and recorded in connection with the acquisition of Andrew Alliance (in thousands):

Cash	$ 713
Accounts receivable and current other assets	806
Inventory	669
Prepaid and other assets	611
Property, plant and equipment, net	757
Operating lease assets	847
Intangible assets	6,960
Goodwill	71,632
Total assets acquired	82,995
Accrued expenses and other liabilities	2,093
Total consideration	80,902
Fair value of minority investment	3,525
Cash consideration paid	$77,377

On December 15, 2020, the Company acquired all of the outstanding stock of Integrated Software Solutions Pty Limited and its two operating subsidiaries Integrated Software Solutions Limited and Integrated Software Solutions USA, LLC (collectively, "ISS"), for $4 million, net of cash acquired. In addition, the Company may have to pay additional contingent consideration which has an estimated fair value of $1 million as of the close date. The contingent consideration is recorded as a liability and will be paid to the prior shareholders of ISS if certain revenue and customer account conditions are achieved over the next two years after the acquisition date.

ISS offers clinical laboratory software systems that will support and further expand product offerings within our clinical business. The net assets acquired primarily relate to ISS' laboratory information system, OMNI-Lab.

Our preliminary estimate of the fair value of the specifically identifiable assets acquired and liabilities assumed as of the date of acquisition of ISS is subject to the finalization of management's analysis. The final determination of these fair values will be completed as additional information becomes available but no later than one year from the acquisition date. The Company expects the final determination of asset and liability fair values to be immaterial to our financial position.

The impact of the ISS acquisition on the Company's revenues and net income during the quarter was immaterial. The year-to-date proforma effect on the ongoing operations of the Company as though this acquisition had occurred at the beginning of the periods covered by this report was also immaterial.

In July 2018, the Company acquired the sole intellectual property rights to the Desorption Electrospray Ionization ("DESI") imaging technology for $30 million in cash and a future contractual obligation to pay a minimum royalty of $3 million over the remaining life of the patent. DESI is a mass spectrometry imaging technique that is used to develop medical therapies. The Company accounted for this transaction as an asset acquisition as it did not meet the definition of a business. The Company allocated $33 million of fair value to a purchased intangible asset which will be amortized over the useful life of 12 years.

In each acquisition, the sellers provided the Company with customary representations, warranties and indemnification, which would be settled in the future if and when a breach of the contractual representation or warranty condition occurs.

The pro forma effect of the ongoing operations for Waters Corporation from Andrew Alliance, ISS and the DESI imaging technology, either individually or in the aggregate, as though these acquisitions had occurred at the beginning of the periods covered by this report were immaterial.

8 Goodwill and Other Intangibles

The carrying amount of goodwill was $444 million and $356 million at December 31, 2020 and 2019, respectively. The acquisitions of Andrew Alliance and ISS Solutions increased goodwill by $72 million and $5 million, respectively, while the effect of foreign currency translation increased goodwill by $11 million.

The Company's intangible assets included in the consolidated balance sheets are detailed as follows (dollars in thousands):

	December 31, 2020			December 31, 2019		
	Gross Carrying Amount	Accumulated Amortization	Weighted-Average Amortization Period	Gross Carrying Amount	Accumulated Amortization	Weighted-Average Amortization Period
Capitalized software	$584,452	$409,847	5 years	$481,986	$333,255	5 years
Purchased intangibles	205,585	160,342	11 years	200,523	151,722	11 years
Trademarks and IPR&D	9,680	—	—	13,782	—	—
Licenses	5,923	5,697	6 years	5,669	5,298	6 years
Patents and other intangibles	90,699	61,808	8 years	83,035	54,517	8 years
Total	$896,339	$637,694	7 years	$784,995	$544,792	7 years

The gross carrying value of intangible assets and accumulated amortization for intangible assets increased by $58 million and $42 million, respectively, in the year ended December 31, 2020 due to the effects of foreign currency translation. Amortization expense for intangible assets was $57 million, $51 million and $50 million for the years ended December 31, 2020, 2019 and 2018, respectively. Amortization expense for intangible assets is estimated to be $57 million per year for each of the next five years.

During 2020, the Company recorded a non-cash charge of $10 million for the impairment of certain intangible assets associated with its 2014 acquisition of Medimass due to a shift in strategic priorities. As a result, the Company reduced the gross carrying amount and accumulated amortization balances of its intangible assets by $15 million and $5 million, respectively.

9 Debt

In November 2017, the Company entered into a credit agreement (the "2017 Credit Agreement") that provides for a $1.5 billion revolving facility and a $300 million term loan. As of December 31, 2020 and 2019, the revolving facility and term loan had a total of $400 million and $625 million, respectively, outstanding and mature on November 30, 2022 and require no scheduled prepayments before that date.

The interest rates applicable to the 2017 Credit Agreement are, at the Company's option, equal to either the alternate base rate (which is a rate per annum equal to the greatest of (1) the prime rate in effect on such day, (2) the Federal Reserve Bank of New York Rate on such day plus 1/2 of 1% per annum and (3) the adjusted LIBO rate on such day (or if such day is not a business day, the immediately preceding business day) for a deposit in U.S. dollars with a maturity of one month plus 1% per annum) or the applicable 1, 2, 3 or 6 month adjusted LIBO rate or EURIBO rate for Euro-denominated loans, in each case, plus an interest rate margin based upon the Company's leverage ratio, which can range between 0 and 12.5 basis points for alternate base rate loans and between 80 and 112.5 basis points for LIBO rate or EURIBO rate loans. The facility fee on the 2017 Credit Agreement ranges between 7.5 and 25 basis points per annum, based on the leverage ratio, of the amount of the revolving facility commitments and the outstanding term loan. The 2017 Credit Agreement requires that the Company comply with an interest coverage ratio test of not less than 3.50:1 as of the end of any fiscal quarter for any period of four consecutive fiscal quarters and a leverage ratio test of not more than 3.50:1 as of the end of any fiscal quarter. In addition, the 2017 Credit Agreement includes negative covenants, affirmative covenants, representations and warranties and events of default that are customary for investment grade credit facilities.

As of December 31, 2020 and 2019, the Company had a total of $960 million and $1.1 billion, respectively, of outstanding senior unsecured notes. Interest on the fixed rate senior unsecured notes is payable semi-annually each year. Interest on the floating rate senior unsecured notes is payable quarterly. The Company may prepay all or some of the senior unsecured notes at any time in an amount not less than 10% of the aggregate principal amount outstanding, plus the applicable make-whole amount or prepayment premium for the Series H senior unsecured note. In the event of a change in control of the Company (as defined in the note purchase agreement), the Company may be required to prepay the senior unsecured notes at a price equal to 100% of the principal amount thereof, plus accrued and unpaid interest. These senior unsecured notes require that the Company comply with an interest coverage ratio test of not less than 3.50:1 for any period of four consecutive fiscal quarters and a leverage ratio test of not more than 3.50:1 as of the end of any fiscal quarter. In addition, these senior unsecured notes include customary negative covenants, affirmative covenants, representations and warranties and events of default.

In February 2019, certain defined terms related to the subsidiary guarantors were amended in the 2017 Credit Agreement and senior unsecured note agreements. In addition, the Company amended the senior unsecured note agreements to allow the Company to elect an increase in the permitted leverage ratio from 3.50:1 to 4.0:1, for a period of three consecutive quarters, for a material acquisition of $400 million or more. During the period of time where the leverage ratio exceeds 3.50:1, the interest payable on the senior unsecured notes shall increase by 0.50%. The debt covenants in the senior unsecured note agreements were also modified to address the change in accounting guidance for leases.

The Company had the following outstanding debt at December 31, 2020 and 2019 (in thousands):

	December 31, 2020	December 31, 2019
Foreign subsidiary lines of credit	$ —	$ 366
Senior unsecured notes - Series B - 5.00%, due February 2020	—	100,000
Senior unsecured notes - Series E - 3.97%, due March 2021	50,000	—
Senior unsecured notes - Series F - 3.40%, due June 2021	100,000	—
Total notes payable and debt, current	150,000	100,366
Senior unsecured notes - Series E - 3.97%, due March 2021	—	50,000
Senior unsecured notes - Series F - 3.40%, due June 2021	—	100,000
Senior unsecured notes - Series G - 3.92%, due June 2024	50,000	50,000
Senior unsecured notes - Series H - floating rate*, due June 2024	50,000	50,000
Senior unsecured notes - Series I - 3.13%, due May 2023	50,000	50,000
Senior unsecured notes - Series K - 3.44%, due May 2026	160,000	160,000
Senior unsecured notes - Series L - 3.31%, due September 2026	200,000	200,000
Senior unsecured notes - Series M - 3.53%, due September 2029	300,000	300,000
Credit agreement	400,000	625,000
Unamortized debt issuance costs	(3,485)	(4,203)
Total long-term debt	1,206,515	1,580,797
Total debt	$1,356,515	$1,681,163

* Series H senior unsecured notes bear interest at a 3-month LIBOR for that floating rate interest period plus 1.25%.

As of both December 31, 2020 and 2019, the Company had a total amount available to borrow under the 2017 Credit Agreement of $1.4 billion after outstanding letters of credit. The weighted-average interest rates applicable to the senior unsecured notes and credit agreement borrowings collectively were 2.92% and 3.39% at December 31, 2020 and 2019, respectively. As of December 31, 2020, the Company was in compliance with all debt covenants.

The Company and its foreign subsidiaries also had available short-term lines of credit totaling $109 million and $105 million at December 31, 2020 and 2019, respectively, for the purpose of short-term borrowing and issuance of commercial guarantees. The weighted-average interest rate applicable to these short-term borrowings was 1.48% for December 31, 2019. None of the Company's foreign subsidiaries had outstanding short-term borrowings as of December 31, 2020.

As of December 31, 2020, the Company had entered into three-year interest rate cross-currency swap derivative agreements with an aggregate notional value of $560 million to hedge the variability in the movement of foreign currency exchange rates on a portion of its Euro-denominated net asset investments.

Annual maturities of debt outstanding at December 31, 2020 are as follows (in thousands):

	Total
2021	$ 150,000
2022	400,000
2023	50,000
2024	100,000
2025	—
Thereafter	660,000
Total	$1,360,000

10 Income Taxes

Income tax data for the years ended December 31, 2020, 2019 and 2018 is as follows (in thousands):

	Year Ended December 31,		
	2020	2019	2018
The components of income before income taxes are as follows:			
Domestic	$ 75,193	$ 97,325	$ 57,822
Foreign	535,721	580,914	624,324
Total	$610,914	$678,239	$682,146

	Year Ended December 31,		
	2020	2019	2018
The components of the income tax provision were as follows:			
Federal	$28,385	$ 7,009	$ 27,277
State	4,243	3,329	(11,964)
Foreign	59,408	66,083	70,634
Total current tax provision	$92,036	$76,421	$ 85,947
Federal	$ (8,244)	$ 6,913	$ (3,256)
State	(506)	1,253	2,247
Foreign	6,057	1,454	3,414
Total deferred tax provision	(2,693)	9,620	2,405
Total provision	$89,343	$86,041	$ 88,352

The differences between income taxes computed at the United States statutory rate and the provision for income taxes are summarized as follows for the years ended December 31, 2020, 2019 and 2018 (in thousands):

	Year Ended December 31,		
	2020	2019	2018
Federal tax computed at U.S. statutory income tax rate	$128,292	$142,430	$143,251
Enactment of the 2017 Tax Cuts and Jobs Act	—	—	(6,059)
Foreign currency exchange impact on distributed earnings	—	(3,229)	7,495
GILTI, net of foreign tax credits	13,319	10,523	13,727
State income tax, net of federal income tax benefit	2,415	3,459	2,910
Net effect of foreign operations	(48,962)	(52,727)	(57,003)
Effect of stock-based compensation	(6,798)	(9,211)	(9,089)
Other, net	1,077	(5,204)	(6,880)
Provision for income taxes	$ 89,343	$ 86,041	$ 88,352

The Company's effective tax rates were 14.6%, 12.7% and 13.0% for the years ended December 31, 2020, 2019 and 2018, respectively.

The Company's effective income tax rate differs from the U.S. federal statutory rate each year due to differences in the proportionate amounts of pre-tax income recognized in jurisdictions with different effective tax rates and the items discussed below.

The four principal jurisdictions in which the Company manufactures are the U.S., Ireland, the U.K. and Singapore, where the statutory tax rates were 21%, 12.5%, 19% and 17%, respectively, as of December 31, 2020. The Company has received a tax exemption on income arising from qualifying activities in Singapore through March 2021, based upon the achievement of certain contractual milestones, which the Company met as of December 31, 2020 and expects to maintain through March 2021. The effect of applying the 0% concessionary income tax rate rather than the statutory tax rate to income arising from qualifying activities in Singapore increased the Company's net income during the years ended December 31, 2020, 2019 and 2018 by $21 million, $24 million and $28 million, respectively, and increased the Company's net income per diluted share by $0.33, $0.35 and $0.36, respectively. In addition, the Company has a new Development and Expansion Incentive in Singapore that provides a concessionary income tax rate of 5% on certain types of income for the period April 1, 2021 through March 31, 2026.

During 2020, the Company's effective tax rate differed from the 21% U.S. statutory tax rate primarily due to the jurisdictional mix of earnings, a $13 million provision related to the GILTI tax and a tax benefit of $7 million on stock-based compensation.

The 2019 effective tax rate differed from the U.S. federal statutory tax rate primarily due to the jurisdictional mix of earnings, an $11 million provision related to the GILTI tax and a tax benefit of $9 million on stock-based compensation.

The 2018 effective tax rate differed from the U.S. federal statutory tax rate primarily due to the jurisdictional mix of earnings, a $14 million provision related to the GILTI tax, an $8 million provision for a change in foreign currency exchange rates related to the transition tax, a $9 million benefit related to stock-based compensation and a $6 million net benefit related to the finalization of the impact of the Tax Cuts and Jobs Act (the "2017 Act").

At the end of 2018, and as a result of the enactment of the 2017 Act, we reevaluated our historic assertion and no longer considered undistributed earnings from foreign subsidiaries to be indefinitely reinvested. The

Company recorded a tax provision of $3 million, $3 million and $4 million for 2020, 2019 and 2018, respectively, for future withholding taxes and U.S. state taxes on the repatriation of 2020, 2019 and 2018 undistributed earnings.

The tax effects of temporary differences and carryforwards which give rise to deferred tax assets and deferred tax liabilities are summarized as follows (in thousands):

	December 31,	
	2020	2019
Deferred tax assets:		
Net operating losses and credits	$ 61,962	$ 55,939
Depreciation	5,701	4,776
Operating leases	24,317	19,849
Amortization	2,377	3,738
Stock-based compensation	7,773	9,790
Deferred compensation	27,754	20,077
Unrealized foreign currency gain/loss	—	7,955
Deferred revenue	11,341	9,696
Revaluation of equity investments and licenses	4,492	3,424
Inventory	5,060	4,824
Accrued liabilities and reserves	10,639	7,215
Other	3,483	3,839
Total deferred tax assets	164,899	151,122
Valuation allowance	(60,101)	(51,221)
Deferred tax assets, net of valuation allowance	104,798	99,901
Deferred tax liabilities:		
Capitalized software	(23,748)	(21,025)
Operating leases	(24,314)	(19,553)
Indefinite-lived intangibles	(14,973)	(14,363)
Unrealized foreign currency gain/loss	(10,819)	—
Deferred tax liability on foreign earnings	(17,277)	(18,027)
Total deferred tax liabilities	(91,131)	(72,968)
Net deferred tax assets	$ 13,667	$ 26,933

The Company has gross foreign net operating losses of $249 million, of which $230 million do not expire under current laws and $19 million start expiring in 2021. As of December 31, 2020, the Company has provided a deferred tax valuation allowance of $60 million, of which $55 million relates to certain foreign net operating losses. The Company's net deferred tax assets associated with net operating losses and tax credit carryforwards are approximately $7 million as of December 31, 2020, which represent the future tax benefit of foreign net operating loss carryforwards that do not expire under current law.

The Company accounts for its uncertain tax return positions in accordance with the accounting standards for income taxes, which require financial statement reporting of the expected future tax consequences of uncertain tax reporting positions on the presumption that all concerned tax authorities possess full knowledge of those tax reporting positions, as well as all of the pertinent facts and circumstances, but prohibit any discounting of unrecognized tax benefits associated with those reporting positions for the time value of money. The Company continues to classify interest and penalties related to unrecognized tax benefits as a component of the provision for income taxes.

The following is a summary of the activity of the Company's gross unrecognized tax benefits, excluding interest and penalties, for the year ended December 31, 2020, 2019 and 2018 (in thousands):

	2020	2019	2018
Balance at the beginning of the period	$27,790	$26,108	$ 5,843
Net reductions for settlement of tax audits	(399)	—	—
Net reductions for lapse of statutes taken during the period	(684)	(261)	(436)
Net additions for tax positions taken during the prior period	—	—	17,651
Net additions for tax positions taken during the current period	1,959	1,943	3,050
Balance at the end of the period	$28,666	$27,790	$26,108

As of 2020, the total amount of gross unrecognized tax benefits was $29 million, all of which, if recognized, would impact the Company's effective tax rate.

With limited exceptions, the Company is no longer subject to tax audit examinations in significant jurisdictions for the years ended on or before December 31, 2015. The Company continuously monitors the lapsing of statutes of limitations on potential tax assessments for related changes in the measurement of unrecognized tax benefits, related net interest and penalties and deferred tax assets and liabilities.

As of December 31, 2020, the Company expects to record additional reductions in the measurement of its unrecognized tax benefits and related net interest and penalties of approximately $1 million within the next twelve months due to potential tax audit settlements and the lapsing of statutes of limitations on potential tax assessments. The Company does not expect to record any other material reductions in the measurement of its unrecognized tax benefits within the next twelve months.

As of December 31, 2020, the Company is currently under an income tax audit in the U.S. for its 2017 and 2018 tax years. The Company is also subject to various foreign audits and inquiries and we currently do not expect any material adjustments.

The following is a summary of the activity of the Company's valuation allowance for the years ended December 31, 2020, 2019 and 2018 (in thousands):

	Balance at Beginning of Period	Charged to Provision for Income Taxes*	Other**	Balance at End of Period
Valuation allowance for deferred tax assets:				
2020	$51,221	$ 1,137	$ 7,743	$60,101
2019	$53,893	$(1,242)	$(1,430)	$51,221
2018	$62,098	$(2,128)	$(6,077)	$53,893

* These amounts have been recorded as part of the income statement provision for income taxes. The income statement effects of these amounts have largely been offset by amounts related to changes in other deferred tax balance sheet accounts.

** The change in the valuation allowance during the year ended December 31, 2020 is primarily due to the effect of foreign currency translation on a valuation allowance related to a net operating loss carryforward and acquired historical net operating losses. The change in the valuation allowance during the year ended December 31, 2019 was primarily due to the effect of foreign currency translation on a valuation allowance related to a net operating loss carryforward. The change in the valuation allowance during the year ended December 31, 2018 was primarily due to the write-off of a valuation allowance to Retained Earnings for the tax effect related to intra-entity transfers.

In March 2020, the U.S. federal government enacted the Coronavirus Aid, Relief and Economic Security Act (the "CARES Act"). The CARES Act is an emergency economic stimulus package in response to the COVID-19 outbreak which, among other things, contains numerous income tax provisions. The CARES Act does not have a material impact on the Company's consolidated financial statements or related disclosures.

11 Litigation

From time to time, the Company and its subsidiaries are involved in various litigation matters arising in the ordinary course of business. The Company believes it has meritorious arguments in its current litigation matters and believes any outcome, either individually or in the aggregate, will not be material to the Company's financial position, results of operations or cash flows. During the year ended December 31, 2017, the Company incurred $11 million of litigation provisions and related costs, primarily related to the issuance of a verdict in a patent litigation case. In the first quarter of 2018, the Company resolved the case with a final settlement that resulted in a gain of $2 million. The accrued patent litigation expense is in other current liabilities in the consolidated balance sheets at December 31, 2020 and 2019.

12 Leases

As of December 31, 2020 and 2019, the Company had lease agreements that expire at various dates through 2034, with weighted-average remaining lease terms of 5.2 years and 5.3 years, respectively. Rental expense was $38 million and $36 million for the years ended December 31, 2020 and 2019, respectively. As of December 31, 2020 and 2019, the weighted-average discount rates used to determine the present value of lease liabilities were 3.50% and 3.80%, respectively. During the years ended December 31, 2020 and 2019 cash paid for amounts included in the measurement of lease liabilities in operating activities in the statement of cash flows was $38 million and $36 million, respectively. The Company recorded $16 million and $118 million right-of-use assets in exchange for new operating lease liabilities during the years ended December 31, 2020 and 2019, respectively.

The Company's right-of-use lease assets and lease liabilities included in the consolidated balance sheets are classified as follows (in thousands):

		December 31,	
	Financial Statement Classification	**2020**	**2019**
Assets:			
Property operating lease assets	Operating lease assets	$62,374	$64,206
Automobile operating lease assets	Operating lease assets	29,694	27,197
Equipment operating lease assets	Operating lease assets	1,184	1,955
Total lease assets		$93,252	$93,358
Liabilities:			
Current operating lease liabilities	Current operating lease liabilities	$27,764	$27,125
Long-term operating lease liabilities	Long-term operating lease liabilities	68,197	66,881
Total lease liabilities		$95,961	$94,006

Undiscounted future minimum rents payable as of December 31, 2020 under non-cancelable leases with initial terms exceeding one year reconcile to lease liabilities included in the consolidated balance sheet as follows (in thousands):

2021	$ 29,599
2022	23,453
2023	14,569
2024	10,951
2025	8,269
2026 and thereafter	16,864
Total future minimum lease payments	103,705
Less: amount of lease payments representing interest	(7,744)
Present value of future minimum lease payments	95,961
Less: current operating lease liabilities	(27,764)
Long-term operating lease liabilities	$ 68,197

13 Other Commitments and Contingencies

The Company licenses certain technology and software from third parties in the course of ordinary business. Future minimum license fees payable under existing license agreements as of December 31, 2020 are immaterial for the years ended December 31, 2021 and thereafter. The Company enters into licensing arrangements with third parties that require future milestone or royalty payments contingent upon future events. Upon the achievement of certain milestones in existing agreements, the Company could make additional future payments of up to $7 million, as well as royalties on future net sales.

The Company enters into standard indemnification agreements in its ordinary course of business. Pursuant to these agreements, the Company indemnifies, holds harmless and agrees to reimburse the indemnified party for losses suffered or incurred by the indemnified party, generally the Company's business partners or customers, in connection with patent, copyright or other intellectual property infringement claims by any third party with respect to its current products, as well as claims relating to property damage or personal injury resulting from the performance of services by the Company or its subcontractors. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is unlimited. Historically, the Company's costs to defend lawsuits or settle claims relating to such indemnity agreements have been minimal and management accordingly believes the estimated fair value of these agreements is immaterial.

14 Stock-Based Compensation

In May 2020, the Company's shareholders approved the Company's 2020 Equity Incentive Plan ("2020 Plan"). As of December 31, 2020, the 2020 Plan has 7.2 million shares available for grant in the form of incentive or non-qualified stock options, stock appreciation rights ("SARs"), restricted stock or other types of awards (e.g. restricted stock units and performance stock units). The Company issues new shares of common stock upon exercise of stock options, restricted stock unit conversion or performance stock unit conversion. Under the 2020 Plan, the exercise price for stock options may not be less than the fair market value of the underlying stock at the date of grant. The 2020 Plan is scheduled to terminate on May 13, 2030. Options generally will expire no later than ten years after the date on which they are granted and will become exercisable as directed by the Compensation Committee of the Board of Directors and generally vest in equal annual installments over a five-year period. A SAR may be granted alone or in conjunction with an option or other award. Shares of restricted stock, restricted stock units and performance stock units may be issued under the 2020 Plan for such consideration as is determined by the Compensation Committee of the Board of Directors. As of December 31, 2020, the Company had stock options, restricted stock and restricted and performance stock unit awards outstanding.

In May 2009, the Company's shareholders approved the 2009 Employee Stock Purchase Plan, under which eligible employees may contribute up to 15% of their earnings toward the quarterly purchase of the Company's common stock. The plan makes available 0.9 million shares of the Company's common stock, which includes the remaining shares available under the 1996 Employee Stock Purchase Plan. As of December 31, 2020, 1.5 million shares have been issued under both the 2009 and 1996 Employee Stock Purchase Plans. Each plan period lasts three months beginning on January 1, April 1, July 1 and October 1 of each year. The purchase price for each share of stock is the lesser of 90% of the market price on the first day of the plan period or 100% of the market price on the last day of the plan period. Stock-based compensation expense related to this plan was $1 million for each of the years ended December 31, 2020, 2019 and 2018, respectively.

The Company accounts for stock-based compensation costs in accordance with the accounting standards for stock-based compensation, which require that all share-based payments to employees be recognized in the statements of operations, based on their grant date fair values. The Company recognizes the expense using the straight-line attribution method. The stock-based compensation expense recognized in the consolidated statements of operations is based on awards that ultimately are expected to vest; therefore, the amount of expense has been reduced for estimated forfeitures. Forfeitures are estimated based on historical experience. If actual results differ significantly from these estimates, stock-based compensation expense and the Company's results of operations could be materially impacted. In addition, if the Company employs different assumptions in the application of these standards, the compensation expense that the Company records in the future periods may differ significantly from what the Company has recorded in the current period.

The consolidated statements of operations for the years ended December 31, 2020, 2019 and 2018 include the following stock-based compensation expense related to stock option awards, restricted stock awards, restricted stock unit awards, performance stock unit awards and the employee stock purchase plan (in thousands):

	2020	2019	2018
Cost of sales	$ 2,485	$ 2,271	$ 2,212
Selling and administrative expenses	29,711	30,907	30,443
Research and development expenses	4,669	5,399	4,886
Total stock-based compensation	$36,865	$38,577	$37,541

During the years ended December 31, 2020, 2019 and 2018, the Company recognized $1 million, less than $1 million and $1 million of expense, respectively, of stock-based compensation related to the modification of certain stock awards upon the retirement of senior executives.

Stock Options

In determining the fair value of the stock options, the Company makes a variety of assumptions and estimates, including volatility measures, expected yields and expected stock option lives. The fair value of each option grant was estimated on the date of grant using the Black-Scholes option pricing model. The Company uses implied volatility on its publicly-traded options as the basis for its estimate of expected volatility. The Company believes that implied volatility is the most appropriate indicator of expected volatility because it is generally reflective of historical volatility and expectations of how future volatility will differ from historical volatility. The expected life assumption for grants is based on historical experience for the population of non-qualified stock option exercises. The risk-free interest rate is the yield currently available on U.S. Treasury zero-coupon issues with a remaining term approximating the expected term used as the input to the Black-Scholes model. The relevant data used to determine the value of the stock options granted during the year ended December 31, 2020, 2019 and 2018 are as follows:

Options Issued and Significant Weighted-Average Assumptions Used to Estimate Option Fair Values	2020	2019	2018
Options issued in thousands	267	146	321
Risk-free interest rate	1.2%	2.5%	2.7%
Expected life in years	6	5	6
Expected volatility	27.8%	24.5%	25.3%
Expected dividends	—	—	—

Weighted-Average Exercise Price and Fair Value of Options on the Date of Grant	2020	2019	2018
Exercise price	$215.12	$230.37	$196.78
Fair value	$ 63.14	$ 61.75	$ 59.89

The following table summarizes stock option activity for the plans for the year ended December 31, 2020 (in thousands, except per share data):

	Number of Shares	Exercise Price per Share			Weighted-Average Exercise Price per Share
Outstanding at December 31, 2019	1,455	$ 61.63	to	$238.52	$158.61
Granted	267	$188.63	to	$235.06	$215.12
Exercised	(456)	$ 61.63	to	$208.47	$128.43
Canceled	(199)	$128.93	to	$238.52	$192.08
Outstanding at December 31, 2020	1,067	$ 75.94	to	$238.52	$179.59

The following table details the options outstanding at December 31, 2020 by range of exercise prices (in thousands, except per share data):

Exercise Price Range	Number of Shares Outstanding	Weighted-Average Exercise Price	Remaining Contractual Life of Options Outstanding	Number of Shares Exercisable	Weighted-Average Exercise Price
$75.94 to $154.33	363	$127.38	4.9	296	$123.41
$154.34 to $203.37	410	$194.29	7.8	162	$191.60
$203.38 to $238.52	294	$223.55	8.4	45	$221.51
Total	1,067	$179.59	7.0	503	$154.16

During 2020, 2019 and 2018, the total intrinsic value of the stock options exercised (i.e., the difference between the market price at exercise and the price paid by the employee to exercise the options) was $45 million, $45 million and $44 million, respectively. The total cash received from the exercise of these stock options was $59 million, $46 million and $45 million for the years ended December 31, 2020, 2019 and 2018, respectively.

The aggregate intrinsic value of the outstanding stock options at December 31, 2020 was $72 million. Options exercisable at December 31, 2020, 2019 and 2018 were 0.5 million, 0.7 million and 0.8 million, respectively. The weighted-average exercise prices of options exercisable at December 31, 2020, 2019 and 2018 were $154.16, $134.94 and $117.08, respectively. The weighted-average remaining contractual life of the exercisable outstanding stock options at December 31, 2020 was 5.7 years. The aggregate intrinsic value of stock options exercisable as of December 31, 2020 was $48 million.

At December 31, 2020, the Company had 1.1 million stock options that are vested and expected to vest. The intrinsic value, weighted-average exercise price and remaining contractual life of the vested and expected to vest stock options were $76 million, $179.44 and 7 years, respectively, at December 31, 2020.

As of December 31, 2020, there were $20 million of total unrecognized compensation costs related to unvested stock option awards that are expected to vest. These costs are expected to be recognized over a weighted-average period of 3.5 years.

Restricted Stock

During the years ended December 31, 2020, 2019 and 2018, the Company granted six thousand, five thousand and five thousand shares of restricted stock, respectively. The weighted-average fair value per share on the grant date of the restricted stock granted in 2020, 2019 and 2018 was $229.67, $183.41 and $194.73, respectively. The Company has recorded $1 million of compensation expense in each of the years ended December 31, 2020, 2019 and 2018 related to the restricted stock grants. As of December 31, 2020, the Company had five thousand unvested shares of restricted stock outstanding, which have been fully expensed.

Restricted Stock Units

The following table summarizes the unvested restricted stock unit award activity for the year ended December 31, 2020 (in thousands, except per share data):

	Shares	Weighted-Average Grant Date Fair Value per Share
Unvested at December 31, 2019	260	$184.70
Granted	119	$206.99
Vested	(88)	$162.43
Forfeited	(20)	$180.90
Unvested at December 31, 2020	271	$202.00

Restricted stock units are generally granted annually in February and vest in equal annual installments over a five-year period. The amount of compensation costs recognized for the years ended December 31, 2020, 2019 and 2018 on the restricted stock units expected to vest were $15 million, $14 million and $16 million, respectively. As of December 31, 2020, there were $37 million of total unrecognized compensation costs related to the restricted stock unit awards that are expected to vest. These costs are expected to be recognized over a weighted-average period of 3.4 years.

Performance Stock Units

The Company's performance stock units are equity compensation awards with a market vesting condition based on the Company's Total Shareholder Return ("TSR") relative to the TSR of the components of the S&P Health Care Index. TSR is the change in value of a stock price over time, including the reinvestment of dividends. The vesting schedule ranges from 0% to 200% of the target shares awarded. Beginning with the grants made in 2020, the vesting conditions for performance stock units now include a performance condition based on future sales growth.

In determining the fair value of the performance stock units, the Company makes a variety of assumptions and estimates, including volatility measures, expected yields and expected terms. The fair value of each performance stock unit grant was estimated on the date of grant using the Monte Carlo simulation model. The

Company uses implied volatility on its publicly-traded options as the basis for its estimate of expected volatility. The Company believes that implied volatility is the most appropriate indicator of expected volatility because it is generally reflective of historical volatility and expectations of how future volatility will differ from historical volatility. The expected life assumption for grants is based on the performance period of the underlying performance stock units. The risk-free interest rate is the yield currently available on U.S. Treasury zero-coupon issues with a remaining term approximating the expected term used as the input to the Monte Carlo simulation model. The correlation coefficient is used to model the way in which each company in the S&P Health Care Index tends to move in relation to each other during the performance period. The relevant data used to determine the value of the performance stock units granted during the year ended December 31, 2020, 2019 and 2018 are as follows:

Performance Stock Units Issued and Significant Assumptions Used to Estimate Fair Values	2020	2019	2018
Performance stock units issued in thousands	58	13	40
Risk-free interest rate	1.3%	2.4%	2.4%
Expected life in years	2.9	2.8	3.0
Expected volatility	25.1%	23.5%	22.0%
Average volatility of peer companies	26.1%	26.2%	25.9%
Correlation Coefficient	36.6%	34.2%	35.9%
Expected dividends	—	—	—

The following table summarizes the unvested performance stock unit award activity for the year ended December 31, 2020 (in thousands, except per share data):

	Shares	Weighted-Average Fair Value per Share
Unvested at December 31, 2019	105	$233.11
Granted	58	$190.45
Vested	(36)	$184.51
Forfeited	(32)	$218.63
Unvested at December 31, 2020	95	$230.36

The amount of compensation costs recognized for the years ended December 31, 2020, 2019 and 2018 on the performance stock units expected to vest were $6 million, $7 million and $5 million, respectively. As of December 31, 2020, there were $9 million of total unrecognized compensation costs related to the restricted stock unit awards that are expected to vest. These costs are expected to be recognized over a weighted-average period of 1.9 years.

15 Earnings Per Share

Basic and diluted EPS calculations are detailed as follows (in thousands, except per share data):

	Year Ended December 31, 2020		
	Net Income (Numerator)	Weighted-Average Shares (Denominator)	Per Share Amount
Net income per basic common share	$521,571	62,094	$ 8.40
Effect of dilutive stock option, restricted stock, performance stock unit and restricted stock unit securities	—	320	(0.04)
Net income per diluted common share	$521,571	62,414	$ 8.36

	Year Ended December 31, 2019		
	Net Income (Numerator)	Weighted-Average Shares (Denominator)	Per Share Amount
Net income per basic common share	$592,198	67,627	$ 8.76
Effect of dilutive stock option, restricted stock, performance stock unit and restricted stock unit securities	—	539	(0.07)
Net income per diluted common share	$592,198	68,166	$ 8.69

	Year Ended December 31, 2018		
	Net Income (Numerator)	Weighted-Average Shares (Denominator)	Per Share Amount
Net income per basic common share	$593,794	76,992	$ 7.71
Effect of dilutive stock option, restricted stock, performance stock unit and restricted stock unit securities	—	626	(0.06)
Net income per diluted common share	$593,794	77,618	$ 7.65

For the years ended December 31, 2020, 2019 and 2018, the Company had 0.3 million, 0.1 million and 0.1 million stock options that were antidilutive, respectively, due to having higher exercise prices than the Company's average stock price during the period. These securities were not included in the computation of diluted EPS. The effect of dilutive securities was calculated using the treasury stock method.

16 Accumulated Other Comprehensive Income

The components of accumulated other comprehensive loss are detailed as follows (in thousands):

	Currency Translation	Unrealized Loss on Retirement Plans	Unrealized Gain (Loss) on Investments	Accumulated Other Comprehensive Loss
Balance at December 31, 2018	$(105,697)	$ (9,869)	$(2,405)	$(117,971)
Other comprehensive income (loss), net of tax	1,631	(5,536)	2,405	(1,500)
Balance at December 31, 2019	$(104,066)	$(15,405)	$ —	$(119,471)
Other comprehensive loss, net of tax	5,984	(4,456)	—	1,528
Balance at December 31, 2020	$ (98,082)	$(19,861)	$ —	$(117,943)

17 Retirement Plans

U.S. employees are eligible to participate in the Waters Employee Investment Plan, a 401(k) defined contribution plan, immediately upon hire. Employees may contribute up to 60% of eligible pay on a pre-tax or post-tax basis and the Company makes matching contributions of 100% for contributions up to 6% of eligible pay. The Company also sponsors a 401(k) Restoration Plan, which is a nonqualified defined contribution plan. Employees are 100% vested in employee and Company matching contributions for both plans. For the years ended December 31, 2020, 2019 and 2018, the Company's matching contributions amounted to $7 million, $17 million and $17 million, respectively. Due to the uncertain global business environment relating to the COVID-19 pandemic, the Company's management temporarily suspended the employer matching contributions associated with these 401(k) plans, which was implemented from May 22, 2020 through the end of 2020.

In May 2018, the Company's Board of Directors approved the termination of two defined benefit pension plans in the U.S. for which the pay credit accruals have been frozen, the Waters Retirement Plan and the Waters Retirement Restoration Plan (collectively, the "U.S. Pension Plans"). In December 2018, the Company settled the Waters Retirement Plan obligation by making lump-sum cash payments and purchasing annuity contracts for participants to permanently extinguish the pension plan's obligations. As a result, the Company recorded a $46 million charge to other expense, which consisted of a $6 million cash contribution to the plan and a $40 million non-cash charge related to the reversal of unrecognized actuarial losses recorded in accumulated other comprehensive income in the stockholders' equity. The $46 million pre-tax charge reduced net income per diluted share by $0.39. The termination of the Waters Retirement Restoration Plan was completed in 2019.

The Company also sponsors other employee benefit plans in the U.S., including a retiree healthcare plan, which provides reimbursement for medical expenses and is contributory. There are various employee benefit plans outside the United States (both defined benefit and defined contribution plans). Certain non-U.S. defined benefit plans ("Non-U.S. Pension Plans") are included in the disclosures below, which are required under the accounting standards for retirement benefits.

The Company contributed $14 million, $15 million and $13 million in the years ended December 31, 2020, 2019 and 2018, respectively, to the non-U.S. plans (primarily defined contribution plans) which are currently outside of the scope of the required disclosures. The eligibility and vesting of non-U.S. plans are consistent with local laws and regulations.

The net periodic pension cost is made up of several components that reflect different aspects of the Company's financial arrangements as well as the cost of benefits earned by employees. These components are determined using the projected unit credit actuarial cost method and are based on certain actuarial assumptions. The Company's accounting policy is to reflect in the projected benefit obligation all benefit changes to which the Company is committed as of the current valuation date; use a market-related value of assets to determine pension expense; amortize increases in prior service costs on a straight-line basis over the expected future service of active participants as of the date such costs are first recognized; and amortize cumulative actuarial gains and losses in excess of 10% of the larger of the market-related value of plan assets and the projected benefit obligation over the expected future service of active participants.

Summary data for the U.S. Pension Plans, U.S. Retiree Healthcare Plan and Non-U.S. Pension Plans are presented in the following tables, using the measurement dates of December 31, 2020 and 2019, respectively.

The reconciliation of the projected benefit obligations for the plans at December 31, 2020 and 2019 is as follows (in thousands):

	2020			2019		
	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans
Projected benefit obligation, January 1	$—	$21,186	$103,366	$ 972	$17,724	$ 93,722
Service cost	—	665	4,519	—	499	4,339
Employee contributions	—	1,149	514	—	1,214	499
Interest cost	—	711	1,413	29	777	1,735
Actuarial losses (gains)	—	2,788	2,624	(32)	2,081	13,385
Benefits paid	—	(1,130)	(1,474)	—	(1,109)	(3,281)
Plan settlements	—	—	(1,449)	(969)	—	(7,407)
Other plans	—	—	—	—	—	1,598
Currency impact	—	—	10,077	—	—	(1,224)
Projected benefit obligation, December 31	$—	$25,369	$119,590	$ —	$21,186	$103,366

The reconciliation of the fair value of the plan assets at December 31, 2020 and 2019 is as follows (in thousands):

	2020			2019		
	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans
Fair value of plan assets, January 1	$—	$13,773	$83,011	$ —	$11,080	$81,587
Actual return on plan assets	—	1,967	1,395	—	2,140	6,237
Company contributions	—	409	3,581	969	448	6,103
Employee contributions	—	1,149	514	—	1,214	499
Plan settlements	—	—	(1,449)	(969)	—	(7,044)
Benefits paid	—	(1,130)	(1,474)	—	(1,109)	(3,281)
Other plans	—	—	—	—	—	82
Currency impact	—	—	8,312	—	—	(1,172)
Fair value of plan assets, December 31	$—	$16,168	$93,890	$ —	$13,773	$83,011

The summary of the funded status for the plans at December 31, 2020 and 2019 is as follows (in thousands):

	2020			2019		
	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans
Projected benefit obligation	$—	$(25,369)	$(119,590)	$—	$(21,186)	$(103,366)
Fair value of plan assets	—	16,168	93,890	—	13,773	83,011
Funded status	$—	$ (9,201)	$ (25,700)	$—	$ (7,413)	$ (20,355)

The change in the Company's projected benefit obligation for the year ended December 31, 2020 was primarily due to fluctuations in foreign currency exchange rates during the year, net actuarial losses that arose during the year driven by a decline in discount rates and differences between expected and actual return on plan assets. The change in the Company's projected benefit obligation for the year ended December 31, 2019 was primarily due to net actuarial losses that arose during the year driven by a decline in discount rates and differences between expected and actual return on plan assets.

The summary of the amounts recognized in the consolidated balance sheets for the plans at December 31, 2020 and 2019 is as follows (in thousands):

	2020			2019		
	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans
Long-term assets	$—	$ —	$ 971	$—	$ —	$ 1,466
Current liabilities	—	(409)	(1,999)	—	(448)	(4)
Long-term liabilities	—	(8,792)	(24,672)	—	(6,965)	(21,817)
Net amount recognized at December 31	$—	$(9,201)	$(25,700)	$—	$(7,413)	$(20,355)

The accumulated benefit obligation for all defined benefit pension plans was $103 million and $88 million at December 31, 2020 and 2019, respectively.

The summary of the Non-U.S. Pension Plans that have accumulated benefit obligations in excess of plan assets at December 31, 2020 and 2019 is as follows (in thousands):

	2020	2019
Accumulated benefit obligations	$84,940	$73,644
Fair value of plan assets	$68,334	$60,832

The summary of the Non-U.S. Pension Plans that have projected benefit obligations in excess of plan assets at December 31, 2020 and 2019 is as follows (in thousands):

	2020	2019
Projected benefit obligations	$107,093	$92,984
Fair value of plan assets	$ 80,422	$71,163

The summary of the components of net periodic pension costs for the plans for the years ended December 31, 2020, 2019 and 2018 is as follows (in thousands):

	2020			2019			2018		
	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans
Service cost	$—	$ 665	$ 4,519	$—	$ 499	$ 4,339	$ 568	$ 566	$ 5,368
Interest cost	—	711	1,413	29	777	1,735	6,491	636	1,707
Expected return on plan assets	—	(871)	(1,874)	—	(706)	(2,154)	(6,833)	(706)	(1,974)
Settlement loss	—	—	235	27	—	1,548	45,157	—	—
Net amortization:									
Prior service credit	—	(19)	(163)	—	(19)	(108)	—	(19)	(108)
Net actuarial loss	—	—	1,571	—	—	531	3,082	—	680
Net periodic pension cost	$—	$ 486	$ 5,701	$ 56	$ 551	$ 5,891	$48,465	$ 477	$ 5,673

The summary of the changes in amounts recognized in other comprehensive income (loss) for the plans for the years ended December 31, 2020, 2019 and 2018 is as follows (in thousands):

	2020			2019			2018		
	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans
Prior service cost	$—	$ —	$ —	$—	$ —	$ —	$ —	$ 130	$ 44
Net (loss) gain arising during the year	—	(1,692)	(3,104)	32	(648)	(8,940)	(10,616)	(670)	4,088
Amortization:									
Prior service credit	—	(19)	(163)	—	(19)	(108)	—	(19)	(35)
Net loss	—	—	1,806	27	—	2,079	48,239	—	680
Other Plans	—	—	—	—	—	18	—	—	(354)
Currency impact	—	—	(2,225)	—	—	178	—	—	583
Total recognized in other comprehensive income (loss)	$—	$(1,711)	$(3,686)	$ 59	$(667)	$(6,773)	$ 37,623	$(559)	$5,006

The components of net periodic benefit cost other than the service cost component are included in other expense in the consolidated statements of operations.

The summary of the amounts included in accumulated other comprehensive loss in stockholders' equity (deficit) for the plans at December 31, 2020 and 2019 is as follows (in thousands):

	2020			2019		
	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans
Net actuarial loss	$—	$(2,423)	$(24,138)	$—	$(731)	$(20,600)
Prior service credit	—	74	358	—	93	506
Total	$—	$(2,349)	$(23,780)	$—	$(638)	$(20,094)

The plans' investment asset mix is as follows at December 31, 2020 and 2019:

	2020		2019	
	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans
Equity securities	67%	5%	64%	6%
Debt securities	33%	20%	36%	21%
Cash and cash equivalents	0%	1%	0%	1%
Insurance contracts and other	0%	74%	0%	72%
Total	100%	100%	100%	100%

The plans' investment policies include the following asset allocation guidelines:

	U.S. Retiree Healthcare Plan		Non-U.S. Pension Plans
	Policy Target	Range	Policy Target
Equity securities	60%	30% - 90%	5%
Debt securities	35%	20% - 50%	20%
Cash and cash equivalents	0%	0% - 10%	10%
Insurance contracts and other	5%	0% - 10%	65%

The asset allocation policy for the U.S. Retiree Healthcare Plan was developed in consideration of the following long-term investment objectives: achieving a return on assets consistent with the investment policy, achieving portfolio returns which compare favorably with those of other similar plans, professionally managed portfolios and of appropriate market indexes and maintaining sufficient liquidity to meet the obligations of the plan. Within the equity portfolio of the U.S. Retiree Healthcare Plan, investments are diversified among market capitalization and investment strategy, and targets a 45% allocation of the equity portfolio to be invested in financial markets outside of the United States. The Company does not invest in its own stock within the U.S. Retiree Healthcare Plan's assets.

Plan assets are measured at fair value using the following valuation techniques and inputs:

Level 1: The fair value of these types of investments is based on market and observable sources from daily quoted prices on nationally recognized securities exchanges.

Level 2: The fair value of these types of investments utilizes data points other than quoted prices in active markets that are observable either directly or indirectly.

Level 3: These bank and insurance investment contracts are issued by well-known, highly-rated companies. The fair value disclosed represents the present value of future cash flows under the terms of the respective contracts. Significant assumptions used to determine the fair value of these contracts include the amount and timing of future cash flows and counterparty credit risk.

There have been no changes in the above valuation techniques associated with determining the value of the plans' assets during the years ended December 31, 2020 and 2019.

The fair value of the Company's retirement plan assets are as follows at December 31, 2020 (in thousands):

	Total at December 31, 2020	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
U.S. Retiree Healthcare Plan:				
Mutual funds[(a)]	16,168	16,168	—	—
Total U.S. Retiree Healthcare Plan	16,168	16,168	—	—
Non-U.S. Pension Plans:				
Cash equivalents[(b)]	1,188	1,188	—	—
Mutual funds[(c)]	23,582	23,582	—	—
Bank and insurance investment contracts[(d)]	69,120	—	—	69,120
Total Non-U.S. Pension Plans	93,890	24,770	—	69,120
Total fair value of retirement plan assets	$110,058	$40,938	$—	$69,120

The fair value of the Company's retirement plan assets are as follows at December 31, 2019 (in thousands):

	Total at December 31, 2019	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
U.S. Retiree Healthcare Plan:				
Mutual funds[(e)]	13,773	13,773	—	—
Total U.S. Retiree Healthcare Plan	13,773	13,773	—	—
Non-U.S. Pension Plans:				
Cash equivalents[(b)]	690	690	—	—
Mutual funds[(f)]	22,202	22,202	—	—
Bank and insurance investment contracts[(d)]	60,119	—	—	60,119
Total Non-U.S. Pension Plans	83,011	22,892	—	60,119
Total fair value of retirement plan assets	$96,784	$36,665	$—	$60,119

(a) The mutual fund balance in the U.S. Retiree Healthcare Plan is invested in the following categories: 36% in the common stock of large-cap U.S. companies, 31% in the common stock of international growth companies and 33% in fixed income bonds of U.S. companies and the U.S. government.

(b) Primarily represents deposit account funds held with various financial institutions.

(c) The mutual fund balance in the Non-U.S. Pension Plans is primarily invested in the following categories: 64% in international bonds, 19% in the common stock of international companies and 17% in various other global investments.
(d) Amount represents bank and insurance guaranteed investment contracts.
(e) The mutual fund balance in the U.S. Retiree Healthcare Plan is invested in the following categories: 35% in the common stock of large-cap U.S. companies, 29% in the common stock of international growth companies and 36% in fixed income bonds of U.S. companies and the U.S. government.
(f) The mutual fund balance in the Non-U.S. Pension Plans is invested in the following categories: 57% in international bonds, 23% in the common stock of international companies and 20% in various other global investments.

The following table summarizes the changes in fair value of the Level 3 retirement plan assets for the years ended December 31, 2020 and 2019 (in thousands):

	Insurance Guaranteed Investment Contracts
Fair value of assets, December 31, 2018	$56,718
Net purchases (sales) and appreciation (depreciation)	3,401
Fair value of assets, December 31, 2019	60,119
Net purchases (sales) and appreciation (depreciation)	9,001
Fair value of assets, December 31, 2020	$69,120

The weighted-average assumptions used to determine the benefit obligation in the consolidated balance sheets at December 31, 2020, 2019 and 2018 are as follows:

	2020		2019		2018	
	U.S.	Non-U.S.	U.S.	Non-U.S.	U.S.	Non-U.S.
Discount rate	2.25%	1.12%	3.42%	1.38%	4.40%	1.95%
Increases in compensation levels	**	2.69%	**	2.83%	**	2.66%
Interest crediting rate	5.25%	0.85%	5.25%	0.79%	5.25%	0.81%

** Not applicable

The weighted-average assumptions used to determine the net periodic pension cost for the years ended December 31, 2020, 2019 and 2018 are as follows:

	2020		2019		2018	
	U.S.	Non-U.S.	U.S.	Non-U.S.	U.S.	Non-U.S.
Discount rate	3.42%	1.98%	4.41%	2.25%	3.96%	1.93%
Return on plan assets	6.25%	2.99%	6.25%	3.11%	4.35%	2.75%
Increases in compensation levels	**	3.62%	**	3.20%	**	2.70%
Interest crediting rate	5.25%	0.63%	5.25%	0.58%	5.25%	0.60%

** Not applicable

To develop the expected long-term rate of return on assets assumption, the Company considered historical returns and future expectations for returns for each asset class, as well as the target asset allocation of the pension portfolio and historical expenses paid by the plan. A one-quarter percentage point increase in the assumed long-term rate of return on assets would decrease the Company's net periodic benefit cost by less than $1 million. A one-quarter percentage point increase in the discount rate would decrease the Company's net periodic benefit cost by less than $1 million.

During fiscal year 2021, the Company expects to contribute a total of approximately $3 million to $6 million to the Company's defined benefit plans. Estimated future benefit payments from the plans as of December 31, 2020 are as follows (in thousands):

	U.S. Retiree Healthcare Plans	Non-U.S. Pension Plans	Total
2021	$1,279	$ 5,177	$ 6,456
2022	1,338	3,539	4,877
2023	1,460	3,086	4,546
2024	1,534	3,204	4,738
2025	1,549	4,436	5,985
2026 - 2030	7,790	23,898	31,688

18 Business Segment Information

The accounting standards for segment reporting establish standards for reporting information about operating segments in annual financial statements and require selected information for those segments to be presented in interim financial reports of public business enterprises. They also establish standards for related disclosures about products and services, geographic areas and major customers. The Company's business activities, for which discrete financial information is available, are regularly reviewed and evaluated by the chief operating decision maker. As a result of this evaluation, the Company determined that it has two operating segments: Waters™ and TA™.

The Waters operating segment is primarily in the business of designing, manufacturing, selling and servicing LC and MS instruments, columns and other precision chemistry consumables that can be integrated and used along with other analytical instruments. The TA operating segment is primarily in the business of designing, manufacturing, selling and servicing thermal analysis, rheometry and calorimetry instruments. The Company's two operating segments have similar economic characteristics; product processes; products and services; types and classes of customers; methods of distribution; and regulatory environments. Because of these similarities, the two segments have been aggregated into one reporting segment for financial statement purposes. Please refer to the consolidated financial statements for financial information regarding the one reportable segment of the Company.

Net sales for the Company's products and services are as follows for the years ended December 31, 2020, 2019 and 2018 (in thousands):

	2020	2019	2018
Product net sales:			
Waters instrument systems	$ 890,855	$ 963,871	$1,000,625
Chemistry consumables	432,080	412,018	400,287
TA instrument systems	174,398	191,300	204,081
Total product sales	1,497,333	1,567,189	1,604,993
Service net sales:			
Waters service	794,189	761,594	738,433
TA service	73,843	77,813	76,503
Total service sales	868,032	839,407	814,936
Total net sales	$2,365,365	$2,406,596	$2,419,929

Net sales are attributable to geographic areas based on the region of destination. Geographic sales information is presented below for the years ended December 31, 2020, 2019 and 2018 (in thousands):

	2020	2019	2018
Net Sales:			
Asia:			
China	$ 404,352	$ 439,557	$ 443,321
Japan	179,815	180,707	173,357
Asia Other	315,010	318,848	305,613
Total Asia	899,177	939,112	922,291
Americas:			
United States	678,313	692,277	683,596
Americas Other	119,529	137,964	151,581
Total Americas	797,842	830,241	835,177
Europe	668,346	637,243	662,461
Total net sales	$2,365,365	$2,406,596	$2,419,929

None of the Company's individual customers accounts for more than 2% of annual Company sales. Net sales by customer class are as follows for the years ended December 31, 2020, 2019 and 2018 (in thousands):

	2020	2019	2018
Pharmaceutical	$1,386,966	$1,365,275	$1,365,731
Industrial	707,772	719,377	737,144
Academic and governmental	270,627	321,944	317,054
Total net sales	$2,365,365	$2,406,596	$2,419,929

Net sales for the Company recognized at a point in time versus over time are as follows for the years ended December 31, 2020, 2019 and 2018 (in thousands):

	2020	2019	2018
Net sales recognized at a point in time:			
Instrument systems	$1,065,253	$1,155,171	$1,204,706
Chemistry consumables	432,080	412,018	400,287
Service sales recognized at a point in time (time & materials)	365,776	323,247	317,549
Total net sales recognized at a point in time	1,863,109	1,890,436	1,922,542
Net sales recognized over time:			
Service and software sales recognized over time (contracts)	502,256	516,160	497,387
Total net sales	$2,365,365	$2,406,596	$2,419,929

Long-lived assets information at December 31, 2020 and 2019 is presented below (in thousands):

	2020	2019	2018
Long-lived assets:			
United States	$350,615	$276,891	$203,664
Americas Other	1,179	1,929	1,680
Total Americas	351,794	278,820	205,344
Europe	119,978	116,734	118,513
Asia	22,231	21,788	19,226
Total long-lived assets	$494,003	$417,342	$343,083

The Other category includes Canada, Latin America and Puerto Rico. Long-lived assets exclude goodwill, other intangible assets and other assets.

19 Unaudited Quarterly Results

The Company's unaudited quarterly results are summarized below (in thousands, except per share data):

2020	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total
Net sales	$464,939	$519,984	$593,784	$786,658	$2,365,365
Costs and operating expenses:					
Cost of sales	210,644	213,134	262,342	320,569	1,006,689
Selling and administrative expenses	147,735	117,449	135,430	153,084	553,698
Research and development expenses	34,989	31,155	34,971	39,662	140,777
Purchased intangibles amortization	2,625	2,618	2,657	2,687	10,587
Asset impairments	—	—	—	6,945	6,945
Litigation provisions	666	514	—	—	1,180
Total costs and operating expenses	396,659	364,870	435,400	522,947	1,719,876
Operating income	68,280	155,114	158,384	263,711	645,489
Other (expense) income	(374)	(736)	(1,039)	374	(1,775)
Interest expense	(14,079)	(13,018)	(10,915)	(11,058)	(49,070)
Interest income	4,036	4,003	4,007	4,224	16,270
Income before income taxes	57,863	145,363	150,437	257,251	610,914
Provision for income taxes	4,301	22,434	23,668	38,940	89,343
Net income	$ 53,562	$122,929	$126,769	$218,311	$ 521,571
Net income per basic common share	0.86	1.98	2.04	3.51	8.40
Weighted-average number of basic common shares	62,232	61,944	62,002	62,170	62,094
Net income per diluted common share	0.86	1.98	2.03	3.49	8.36
Weighted-average number of diluted common shares and equivalents	62,626	62,184	62,303	62,501	62,414

2019	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total
Net sales	$513,862	$599,162	$577,278	$716,294	$2,406,596
Costs and operating expenses:					
Cost of sales	221,031	249,546	241,055	299,068	1,010,700
Selling and administrative expenses	134,339	133,208	126,036	141,208	534,791
Research and development expenses	35,060	36,490	34,333	37,072	142,955
Purchased intangibles amortization	2,281	2,264	2,619	2,529	9,693
Total costs and operating expenses	392,711	421,508	404,043	479,877	1,698,139
Operating income	121,151	177,654	173,235	236,417	708,457
Other expense	(525)	(342)	(496)	(2,223)	(3,586)
Interest expense	(11,563)	(11,448)	(11,456)	(14,223)	(48,690)
Interest income	8,315	5,871	3,455	4,417	22,058
Income before income taxes	117,378	171,735	164,738	224,388	678,239
Provision for income taxes	8,392	27,325	26,605	23,719	86,041
Net income	$108,986	$144,410	$138,133	$200,669	$ 592,198
Net income per basic common share	1.52	2.09	2.09	3.15	8.76
Weighted-average number of basic common shares	71,704	68,989	66,226	63,795	67,627
Net income per diluted common share	1.51	2.08	2.07	3.12	8.69
Weighted-average number of diluted common shares and equivalents	72,415	69,494	66,768	64,348	68,166

The Company typically experiences an increase in sales in the fourth quarter, as a result of purchasing habits for capital goods of customers that tend to exhaust their spending budgets by calendar year end. Selling and administrative expenses are typically higher after the first quarter in each year as the Company's annual payroll merit increases take effect. Selling and administrative expenses will vary in the fourth quarter in relation to performance in the quarter and for the year.

During the fourth quarter of 2020, the Company recorded a non-cash charge of $10 million for the impairment of certain intangible assets associated with its 2014 acquisition of Medimass. The impairment charge was due to a shift in strategic priorities. In conjunction with the intangible asset impairment the Company also reduced its liability for contingent consideration of $3 million during 2020 as the carrying value of this liability is based on the future sales of the Medimass intangible assets that were impaired. The net impact of $7 million is reported separately within the consolidated statements of operations.

Item 9: ***Changes in and Disagreements with Accountants on Accounting and Financial Disclosure***

None.

Item 9A: ***Controls and Procedures***

Evaluation of Disclosure Controls and Procedures

The Company's chief executive officer and chief financial officer (principal executive officer and principal financial officer), with the participation of management, evaluated the effectiveness of the Company's disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")) as of the end of the period covered by this annual report on Form 10-K. Based on this evaluation, the Company's chief executive officer and chief financial officer concluded that the Company's disclosure controls and procedures were effective as of December 31, 2020 (1) to ensure that information required to be disclosed by the Company, including its consolidated subsidiaries, in the reports that it files or submits under the Exchange Act is accumulated and communicated to the Company's management, including its chief executive officer and chief financial officer, to allow timely decisions regarding the required disclosure and (2) to provide reasonable assurance that information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms.

Management's Annual Report on Internal Control Over Financial Reporting

See Management's Report on Internal Control Over Financial Reporting in Item 8 on page 52 of this Form 10-K.

Report of the Independent Registered Public Accounting Firm

See the report of PricewaterhouseCoopers LLP in Item 8 beginning on page 53 of this Form 10-K.

Changes in Internal Control Over Financial Reporting

No change was identified in the Company's internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the quarter ended December 31, 2020 that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

Item 9B: ***Other Information***

None.

PART III

Item 10: *Directors, Executive Officers and Corporate Governance*

Information regarding the Company's directors and any material changes to the process by which security holders may recommend nominees to the Board of Directors is contained in the definitive proxy statement for the 2021 Annual Meeting of Stockholders under the headings "Election of Directors", "Directors Meetings and Board Committees", "Corporate Governance", "Report of the Audit Committee of the Board of Directors" and "Compensation of Directors and Executive Officers". Information regarding compliance with Section 16(a) of the Exchange Act is contained in the Company's definitive proxy statement for the 2021 Annual Meeting of Stockholders under the heading "Delinquent Section 16(a) Reports". Information regarding the Company's Audit Committee and Audit Committee Financial Expert is contained in the definitive proxy statement for the 2021 Annual Meeting of Stockholders under the headings "Report of the Audit Committee of the Board of Directors" and "Directors Meetings and Board Committees". Such information is incorporated herein by reference. Information regarding the Company's executive officers is contained in Part I of this Form 10-K.

The Company has adopted a Global Code of Business Conduct & Ethics (the "Code") that applies to all of the Company's employees (including its executive officers) and directors and that is in compliance with Item 406 of Regulation S-K. The Code has been distributed to all employees of the Company. In addition, the Code is available on the Company's website, www.waters.com, under the caption "Corporate Governance". The Company intends to satisfy the disclosure requirement regarding any amendment to, or waiver of a provision of, the Code applicable to any executive officer or director by posting such information on its website. The Company shall also provide to any person without charge, upon request, a copy of the Code. Any such request must be made in writing to the Secretary of the Company, c/o Waters Corporation, 34 Maple Street, Milford, MA 01757.

The Company's corporate governance guidelines and the charters of the audit committee, compensation committee, finance committee and nominating and corporate governance committee of the Board of Directors are available on the Company's website, www.waters.com, under the caption "Corporate Governance". The Company shall provide to any person without charge, upon request, a copy of any of the foregoing materials. Any such request must be made in writing to the Secretary of the Company, c/o Waters Corporation, 34 Maple Street, Milford, MA 01757.

Item 11: *Executive Compensation*

This information is contained in the Company's definitive proxy statement for the 2021 Annual Meeting of Stockholders under the headings "Compensation of Directors and Executive Officers", "Compensation Committee Interlocks and Insider Participation" and "Compensation Committee Report". Such information is incorporated herein by reference.

Item 12: *Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters*

Except for the Equity Compensation Plan information set forth below, this information is contained in the Company's definitive proxy statement for the 2021 Annual Meeting of Stockholders under the heading "Security Ownership of Certain Beneficial Owners and Management". Such information is incorporated herein by reference.

Equity Compensation Plan Information

The following table provides information as of December 31, 2020 about the Company's common stock that may be issued upon the exercise of options, warrants and rights under its existing equity compensation plans (in thousands):

	A	B	C
	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights (1)	Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights (1)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (excluding securities reflected in column (A))
Equity compensation plans approved by security holders . . .	1,476	$179.59	7,195
Equity compensation plans not approved by security holders . . .	—	—	—
Total	1,476	$179.59	7,195

(1) Column (a) includes an aggregate of 408 shares of common stock to be issued upon settlement of restricted stock, restricted stock units and performance stock units. The weighted-average share price in column (b) does not take into account restricted stock, restricted stock units or performance stock units, which do not have an exercise price.

See Note 14, Stock-Based Compensation, in the Notes to Consolidated Financial Statements for a description of the material features of the Company's equity compensation plans.

Item 13: ***Certain Relationships and Related Transactions and Director Independence***

This information is contained in the Company's definitive proxy statement for the 2021 Annual Meeting of Stockholders under the headings "Directors Meetings and Board Committees", "Corporate Governance" and "Compensation of Directors and Executive Officers". Such information is incorporated herein by reference.

Item 14: ***Principal Accountant Fees and Services***

This information is contained in the Company's definitive proxy statement for the 2021 Annual Meeting of Stockholders under the headings "Ratification of Selection of Independent Registered Public Accounting Firm" and "Report of the Audit Committee of the Board of Directors". Such information is incorporated herein by reference.

PART IV

Item 15: ***Exhibits, Financial Statement Schedules***

(a) Documents filed as part of this report:

(1) Financial Statements:

The consolidated financial statements of the Company and its subsidiaries are filed as part of this Form 10-K and are set forth on pages 56 to 103. The report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, dated February 24, 2021, is set forth beginning on page 53 of this Form 10-K.

(2) Exhibits:

Exhibit Number	Description of Document
3.1	Second Amended and Restated Certificate of Incorporation of Waters Corporation.(1)(P)
3.2	Certificate of Amendment of Second Amended and Restated Certificate of Incorporation of Waters Corporation, dated as of May 12, 1999.(3)
3.3	Certificate of Amendment of Second Amended and Restated Certificate of Incorporation of Waters Corporation, dated as of July 27, 2000.(4)
3.4	Certificate of Amendment of Second Amended and Restated Certificate of Incorporation of Waters Corporation, dated as of May 25, 2001.(5)
3.5	Amended and Restated Bylaws of Waters Corporation, dated as of October 8, 2020.(33)
4.1	Description of Registrant's Securities
10.1	Waters Corporation Retirement Plan.(2)(P)(*)
10.2	Waters Corporation 2003 Equity Incentive Plan.(6)(*)
10.3	First Amendment to the Waters Corporation 2003 Equity Incentive Plan.(7)(*)
10.4	Form of Director Stock Option Agreement under the Waters Corporation 2003 Equity Incentive Plan, as amended.(8)(*)
10.5	Form of Director Restricted Stock Agreement under the Waters Corporation 2003 Equity Incentive Plan, as amended.(8)(*)
10.6	Form of Executive Officer Stock Option Agreement under the Waters Corporation 2003 Equity Incentive Plan, as amended.(8)(*)
10.7	Second Amendment to the Waters Corporation 2003 Equity Incentive Plan.(9)(*)
10.8	Third Amendment to the Waters Corporation 2003 Equity Incentive Plan.(10)(*)
10.9	Amended and Restated Waters 401(k) Restoration Plan, effective January 1, 2008.(11)(*)
10.10	Change of Control/Severance Agreement, dated as of February 27, 2008, between Waters Corporation and Mark T. Beaudouin.(12)(*)
10.11	Change of Control/Severance Agreement, dated as of February 27, 2008, between Waters Corporation and Elizabeth B. Rae.(12)(*)
10.12	Change of Control/Severance Agreement, dated as of February 27, 2008, between Waters Corporation and Eugene G. Cassis.(21)(*)
10.13	Amended and Restated Waters Retirement Restoration Plan, effective January 1, 2008.(13)(*)

Exhibit Number	Description of Document
10.14	Amended and Restated Waters Corporation 1996 Non-Employee Director Deferred Compensation Plan, Effective January 1, 2008.(13)(*)
10.15	2014 Waters Corporation Management Incentive Plan.(21)(*)
10.16	Waters Corporation 2009 Employee Stock Purchase Plan.(14)(*)
10.17	Note Purchase Agreement, dated as of February 1, 2010, between Waters Corporation and the purchases named therein.(15)
10.18	First Amendment to the Note Purchase Agreement, dated as of February 1, 2010.(16)
10.19	Note Purchase Agreement, dated March 15, 2011, between Waters Corporation and the purchases named therein.(16)
10.20	Waters Corporation 2012 Equity Incentive Plan.(17)(*)
10.21	Form of Waters 2012 Stock Option Agreement - Executive Officers.(18)(*)
10.22	Form of Waters 2012 Stock Option Agreement - Directors.(18)(*)
10.23	Form of Waters 2012 Restricted Stock Agreement - Directors.(18)(*)
10.24	Form of Waters 2012 Restricted Stock Unit Agreement for Executive Officers - Five Year Vesting.(19)(*)
10.25	Form of Waters 2012 Restricted Stock Unit Agreement for Executive Officers - One Year Vesting.(19)(*)
10.26	Note Purchase Agreement, dated June 30, 2014, between Waters Corporation and the purchases named therein.(20)
10.27	Change of Control/Severance Agreement, dated as of April 1, 2015, between Waters Corporation and Michael F. Silveira.(22)(*)
10.28	President and Chief Executive Employment Agreement.(23)(*)
10.29	Change of Control/Severance Agreement, dated as of September 8, 2015, between Waters Corporation and Christopher J. O'Connell.(23)(*)
10.30	Note Purchase Agreement, dated as of May 12, 2016, between Waters Corporation and the purchasers named therein.(24)
10.31	Form of Waters 2012 Performance Stock Unit Award Agreement.(25)(*)
10.32	Senior Vice President and Chief Financial Officer Employment Agreement.(26)(*)
10.33	Change of Control/Severance Agreement, dated as of January 9, 2017, between Waters Corporation and Sherry L. Buck.(26)(*)
10.34	Form of Change of Control/Severance Agreement.(27)(*)
10.35	Employment Agreement, dated July 21, 2017, between Waters Corporation and Dr. Rohit Khanna.(28)(*)
10.36	Credit Agreement, dated as of November 30, 2017, among Waters Corporation, JPMorgan Chase Bank, N.A., JP Morgan Europe Limited and other Lenders party thereto.(30)
10.37	First Amendment to the Credit Agreement, dated as of November 30, 2017, among Waters Corporation, JPMorgan Chase Bank, N.A., JP Morgan Europe Limited and other Lenders party thereto.(31)
10.38	Second Amendment to the Note Purchase Agreement, dated as of February 1, 2010.(31)
10.39	First Amendment to the Note Purchase Agreement, dated as of March 15, 2011.(31)

Exhibit Number	Description of Document
10.40	First Amendment to the Note Purchase Agreement, dated as of June 30, 2014.(31)
10.41	First Amendment to the Note Purchase Agreement, dated as of May 12, 2016.(31)
10.42	Note Purchase Agreement, dated as of September 12, 2019, between Waters Corporation and the purchasers named therein.(32)
10.43	Form of Performance Stock Unit Award Agreement under the Waters Corporation 2012 Equity Incentive Plan.(36)(*)
10.44	Chief Executive Officer Transition and Separation Agreement, dated June 17, 2020, between Waters Corporation and Christopher J. O'Connell.(34)(*)
10.45	President and Chief Executive Employment Agreement, dated July 14, 2020, between Waters Corporation and Udit Batra.(34)(*)
10.46	Change of Control/Severance Agreement, dated as of July 14, 2020, between Waters Corporation and Udit Batra.(34)(*)
10.47	Waters Corporation 2020 Equity Incentive Plan.(35)(*)
10.48	Employee Form of Stock Option Award Agreement under the Waters Corporation 2020 Equity Incentive Plan.(34)(*)
10.49	Director Form of Stock Option Award Agreement under the Waters Corporation 2020 Equity Incentive Plan.(34)(*)
10.50	Form of RSU Agreement under the Waters Corporation 2020 Equity Incentive Plan.(34)(*)
10.51	CEO Form of PSU Agreement under the Waters Corporation 2020 Equity Incentive Plan.(34)(*)
10.52	Employee (Non-CEO) PSU Agreement under the Waters Corporation 2020 Equity Incentive Plan.(34)(*)
10.53	Director Form of RSA Agreement under the Waters Corporation 2020 Equity Incentive Plan.(34)(*)
21.1	Subsidiaries of Waters Corporation.
23.1	Consent of PricewaterhouseCoopers LLP, an independent registered public accounting firm.
31.1	Chief Executive Officer Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Chief Financial Officer Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1	Chief Executive Officer Certification Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.(**)
32.2	Chief Financial Officer Certification Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.(**)
101	The following materials from Waters Corporation's Annual Report on Form 10-K for the year ended December 31, 2020, formatted in iXBRL (Inline eXtensible Business Reporting Language): (i) the Consolidated Balance Sheets, (ii) the Consolidated Statements of Operations, (iii) the Consolidated Statements of Comprehensive Income, (iv) the Consolidated Statements of Cash Flows, (v) the Consolidated Statements of Stockholders' Equity (Deficit) and (vi) Notes to Consolidated Financial Statements.
104	Cover Page Interactive Date File (formatted in iXBRL and contained in Exhibit 101).

(1) Incorporated by reference to the Registrant's Report on Form 10-K dated March 29, 1996 (File No. 001-14010).

(2) Incorporated by reference to the Registrant's Registration Statement on Form S-1 (File No. 333-96934).

(3) Incorporated by reference to the Registrant's Report on Form 10-Q dated August 11, 1999 (File No. 001-14010).

(4) Incorporated by reference to the Registrant's Report on Form 10-Q dated August 8, 2000 (File No. 001-14010).

(5) Incorporated by reference to the Registrant's Report on Form 10-K dated March 28, 2002 (File No. 001-14010).

(6) Incorporated by reference to the Registrant's Report on Form S-8 dated November 20, 2003 (File No. 333-110613).

(7) Incorporated by reference to the Registrant's Report on Form 10-K dated March 12, 2004 (File No. 001-14010).

(8) Incorporated by reference to the Registrant's Report on Form 10-Q dated November 10, 2004 (File No. 001-14010).

(9) Incorporated by reference to the Registrant's Report on Form 10-Q dated August 5, 2005 (File No. 001-14010).

(10) Incorporated by reference to the Registrant's Report on Form 10-K dated March 1, 2007 (File No. 001-14010).

(11) Incorporated by reference to the Registrant's Report on Form 10-Q dated November 2, 2007 (File No. 001-14010).

(12) Incorporated by reference to the Registrant's Report on Form 10-K dated February 29, 2008 (File No. 001-14010).

(13) Incorporated by reference to the Registrant's Report on Form 10-K dated February 27, 2009 (File No. 001-14010).

(14) Incorporated by reference to the Registrant's Report on Form S-8 dated July 10, 2009 (File No. 333-160507).

(15) Incorporated by reference to the Registrant's Report on Form 10-K dated February 26, 2010 (File No. 001-14010).

(16) Incorporated by reference to the Registrant's Report on Form 10-Q dated May 6, 2011 (File No. 001-14010).

(17) Incorporated by reference to the Registrant's Report on Form S-8 dated September 5, 2012 (File No. 333-183721).

(18) Incorporated by reference to the Registrant's Report on Form 8-K dated December 11, 2012 (File No. 001-14010).

(19) Incorporated by reference to the Registrant's Report on Form 8-K dated December 11, 2013 (File No. 001-14010).

(20) Incorporated by reference to the Registrant's Report on Form 10-Q dated August 1, 2014 (File No. 001-14010).

(21) Incorporated by reference to the Registrant's Report on Form 10-K dated February 27, 2015 (File No. 001-14010).

(22) Incorporated by reference to the Registrant's Report on Form 10-Q dated May 8, 2015 (File No. 001-14010).

(23) Incorporated by reference to the Registrant's Report on Form 10-Q dated August 7, 2015 (File No. 001-14010).

(24) Incorporated by reference to the Registrant's Report on Form 10-Q dated August 5, 2016 (File No. 001-14010).

(25) Incorporated by reference to the Registrant's Report on Form 8-K dated December 15, 2016 (File No. 001-14010).

(26) Incorporated by reference to the Registrant's Report on Form 10-K dated February 24, 2017 (File No. 001-14010).

(27) Incorporated by reference to the Registrant's Report on Form 8-K dated March 27, 2017 (File No. 001-14010).

(28) Incorporated by reference to the Registrant's Report on Form 10-Q dated November 3, 2017 (File No. 001-14010).

(29) Incorporated by reference to the Registrant's Report on Form 8-K dated December 8, 2017 (File No. 001-14010).

(30) Incorporated by reference to the Registrant's Report on Form 10-K dated February 27, 2018 (File No. 001-14010).

(31) Incorporated by reference to the Registrant's Report on Form 10-K/A dated March 1, 2019 (File No. 001-14010).

(32) Incorporated by reference to the Registrant's Report on Form 8-K dated September 16, 2019 (File No. 001-14010).

(33) Incorporated by reference to the Registrant's Report on Form 8-K dated October 8, 2020 (File No. 001-14010).

(34) Incorporated by reference to the Registrant's Report on Form 10-Q dated July 29, 2020 (File No. 001-14010).

(35) Incorporated by reference to Exhibit 4.2 of the Registration Statement filed on Form S-8 dated June 8, 2020 (File No. 333-239020).

(36) Incorporated by reference to the Registrant' Report on Form 10-K dated February 25, 2020 (File No. 001-14010).

(P) Paper Filing

(*) Management contract or compensatory plan required to be filed as an Exhibit to this Form 10-K.

(**) This exhibit shall not be deemed "filed" for purposes of Section 18 of the Exchange Act, or otherwise subject to the liability of that section, nor shall it be deemed incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Exchange Act, whether made before or after the date hereof and irrespective of any general incorporation language in any filing, except to the extent the Company specifically incorporates it by reference.

(b) See Item 15 (a) (2) above.

Item 16: ***Form 10-K Summary***

The optional summary in Item 16 has not been included in this Form 10-K.

SIGNATURES

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

WATERS CORPORATION

/s/ Michael F. Silveira

Michael F. Silveira
Interim Chief Financial Officer
(principal financial officer)
(principal accounting officer)

Date: February 24, 2021

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed by the following persons on behalf of the registrant and in the capacities indicated on February 24, 2021.

/s/ Dr. Flemming Ornskov, M.D., M.P.H. Dr. Flemming Ornskov, M.D., M.P.H.	Chairman of the Board of Directors
/s/ Dr. Udit Batra Dr. Udit Batra	President and Chief Executive Officer Director (principal executive officer)
/s/ Michael F. Silveira Michael F. Silveira	Interim Chief Financial Officer (principal financial officer) (principal accounting officer)
/s/ Linda Baddour Linda Baddour	Director
/s/ Dr. Michael J. Berendt Dr. Michael J. Berendt	Director
/s/ Edward Conard Edward Conard	Director
/s/ Dr. Pearl S. Huang Dr. Pearl S. Huang	Director
/s/ Gary Hendrickson Gary Hendrickson	Director
/s/ Christopher A. Kuebler Christopher A. Kuebler	Director
/s/ JoAnn A. Reed JoAnn A. Reed	Director
/s/ Thomas P. Salice Thomas P. Salice	Director

Directors

Dr. Flemming Ornskov, M.D., M.P.H.
Chairman of the Board,
Waters Corporation
Chief Executive Officer, Galderma SA

Dr. Udit Batra, Ph.D.
President and Chief Executive Officer,
Waters Corporation

Linda Baddour
Life Sciences Services Consultant,
Former Executive Vice President,
and Chief Financial Officer,
PRA Health Sciences

Dr. Michael J. Berendt, Ph.D.
Life Sciences Industry
Consultant and Investor,
Former Sr. Vice President,
Pharmaceutical Research,
Bayer Corporation,
and Former CEO of
Telesta Therapeutics Inc.
and Aegera Therapeutics

Edward Conard
Independent Director and Investor,
Former Managing Director,
Bain Capital

Gary Hendrickson
Former Chairman and Chief
Executive Officer,
The Valspar Corporation
and Private Investor

Dr. Pearl S. Huang, Ph.D.
President and Chief Executive Officer,
Cygnal Therapeutics, and Venture
Partner at Flagship Pioneering

Christopher A. Kuebler
Former Chairman and Chief
Executive Officer, Covance Inc.

JoAnn A. Reed
Health Care Services Consultant

Thomas P. Salice
Managing Member,
SFW Capital Partners, LLC

Executive Officers

Dr. Udit Batra, Ph.D.
President and Chief Executive Officer

Keeley A. Aleman
Senior Vice President,
General Counsel and Secretary

Robert G. Carson
Senior Vice President,
Corporate Development

Dr. Michael C. Harrington, Ph.D.
Senior Vice President,
Global Markets

Dr. Belinda Gaye Hyde, Ph.D.
Senior Vice President,
Global Human Resources

Ian S. King
Senior Vice President,
Global Products

Jonathan M. Pratt
Senior Vice President and President,
TA Instruments

Michael F. Silveira
Interim Chief Financial Officer

Daniel J. Welch
Senior Vice President,
Global Operations

Transfer Agent and Registrar

Shareholder correspondence
should be mailed to:
Computershare
P.O. Box 505000
Louisville, KY 40233

Overnight correspondence
should be mailed to:
Computershare Investor Services
462 South 4th Street, Suite 1600
Louisville, KY 40202

Shareholder website:
www-us.computershare.com/investor

Shareholder online inquiries:
www-us.computershare.com/
investor/Contact/Enquiry

Shareholder Services:
Toll-Free Number: 877-239-3295

Independent Registered Public Accounting Firm

PricewaterhouseCoopers LLP
101 Seaport Boulevard
Boston, MA 02210
Phone: 617-530-5000

Shareholders' Meeting

Date:
Tuesday, May 11, 2021, at 9:00 a.m.
Location:
Virtual Meeting
To attend:
Please visit: www.proxydocs.com/WAT
to register in advance to attend the
Virtual Meeting

Stock Symbol

NYSE: WAT

Investor Relations

Bryan Brokmeier, CFA
Senior Director, Investor Relations
Phone: 508-482-3448
Email: investor_relations@waters.com

Form 10-K

A copy of the Company's 10-K, filed
with the Securities and Exchange
Commission, is available without
charge upon written request to:
Waters Corporation
34 Maple Street
Milford, MA 01757

Offices

Corporate Headquarters
Waters Corporation
34 Maple Street
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