2017 Waters Annual Report

Waters

THE SCIENCE OF WHAT'S POSSIBLE.®

Waters is the world's leading specialty measurement company, delivering benefit through innovations and people that enable customer success in the life, materials, and food sciences.

We dedicate the 2017 annual report to the memory of William J. Miller, our beloved Director who passed away on Christmas Eve, 2017. Bill joined the Waters Board of Directors in 1998 when we were a relatively new public company, and served with great distinction for two decades. Bill made countless contributions to every aspect of governance at Waters. Most recently, Bill served as Chairman of the Compensation Committee, and was an active member of the Audit Committee. Moreover, Bill was a man of the highest intellect and character. He generously shared his unique brand of "understated wisdom" on every topic the Board discussed. Whenever Bill spoke, everyone listened carefully. His inner peace, confidence and empathy touched us all. We miss him dearly.

2017 Annual Report

Dear Customers, Employees, and Shareholders,

I am pleased to report that Waters Corporation delivered a strong fiscal year 2017, and is poised for continued success given the current health of our customers around the world, and the confidence we have in our growth strategies and people.

Before I review 2017, describe our current business environment and outline our framework for long-term value creation, I would like to recognize and thank our customers. Now in my third year as CEO, I continue to be amazed by the vision, passion and contributions our customers make to society. We like to say "customer success is our mission." It's true! You will hear us talk about our values and vision at Waters, but when it comes to mission, the 7,000 women and men of Waters are fundamentally driven by the missions of our customers and their most demanding analytical measurement needs. Whether it's ensuring the integrity of a chemical entity in production, validating the design of a complex protein, advancing a higher performance composite material, or solving a vexing environmental riddle, our 40,000+ customers are changing the world one experiment at a time. We salute you and thank you for placing your trust in Waters!

Fiscal Year 2017

Two thousand and seventeen was a strong and rewarding year for Waters. For the fiscal year, our revenue grew 6%, our non-GAAP adjusted earnings per fully diluted share grew 13%, and our non-GAAP adjusted free cash flow grew 10%. To me, the highlight of the year was the revenue balance achieved across our end markets, geographies, and product lines, resulting in consistent sales performance and double-digit earnings per share growth in each quarter. Just as in 2016, we delivered a solid P&L in 2017 featuring growth and operating leverage, while investing in promising growth initiatives that give us confidence in sustainable performance.

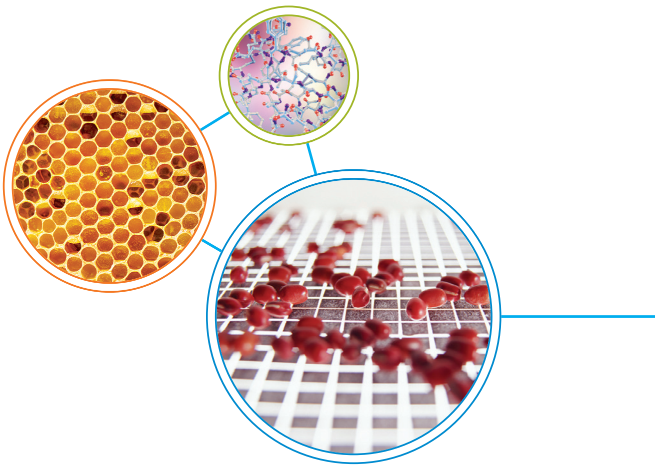
Sales to our broadly-defined pharmaceutical business grew 7% in 2017, on top of a 10% increase in 2016. We saw continued pharmaceutical strength in China and Europe, as well as an encouraging uptick in demand from United States customers in the second half of the year. In China, demand was driven by the ongoing government effort to enhance drug development, production quality, and data integrity. Waters' market-leading Empower™ chromatography data software and our recently introduced ACQUITY™ Arc™ liquid chromatography systems had particularly strong uptake in China. Waters' European pharmaceutical business experienced broad-based growth led by our world-class precision chemistries and service offerings. Strength in these areas of recurring revenue reflected the extensive installed base of Waters technologies, as well as the trust our customers have in our service engineers.

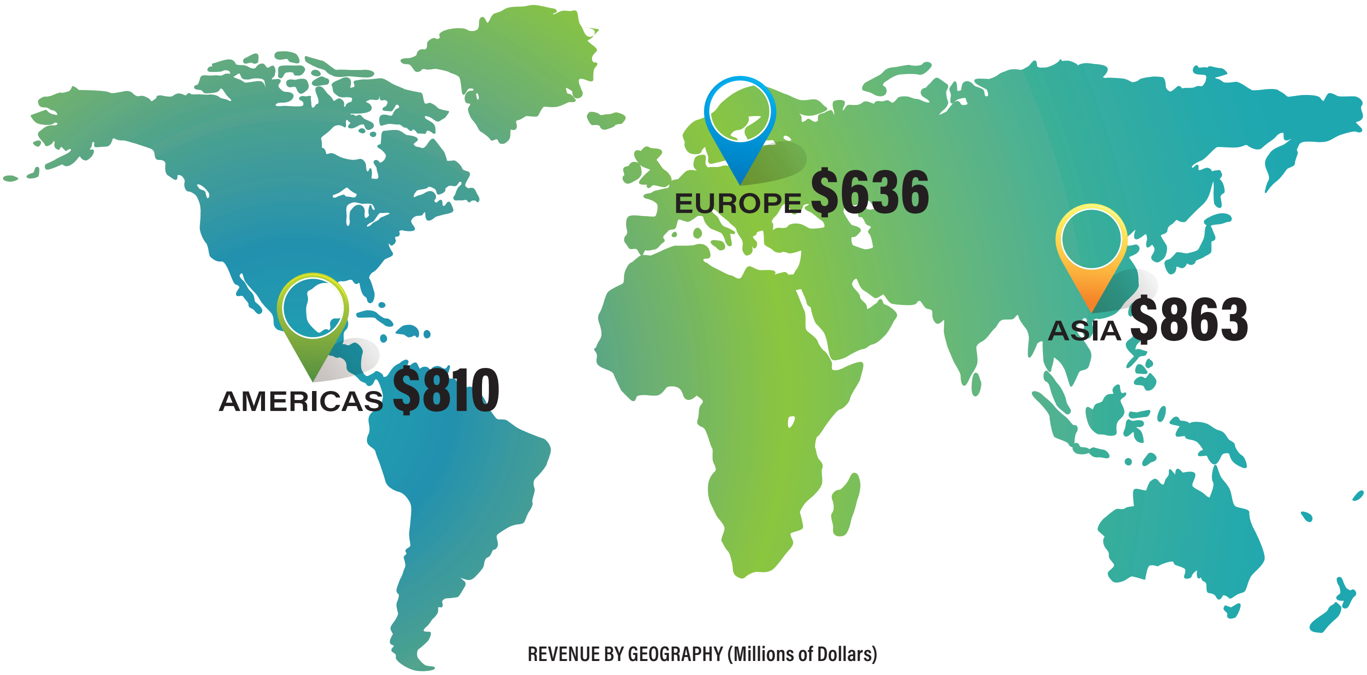
The consistency of our pharmaceutical business in recent years demonstrates ever-increasing customer diversification, attractive geographical balance, and strong positions in our small molecule, large molecule, and medical research applications. Our ongoing strategy work continues to emphasize the vast opportunities in our core pharmaceutical business, where we believe we are well-positioned to broaden our applications to meet the growing and increasingly complex requirements of our customers.

Our worldwide industrial category, which includes the materials characterization, food safety, environmental, and fine chemical markets, grew a solid 5% in 2017 behind favorable economic conditions and balanced growth across all key geographies and major product lines. Our materials business was led by strength in TA Instruments branded products, including thermal analysis and rheology technologies. The newly launched Discovery™ Series of thermal analyzers has received particularly enthusiastic customer response due to its unprecedented performance and ease-of-use. Looking ahead, we continue to see opportunities to capitalize on the accelerating pace of innovation in highly engineered, high-performance materials by a wide range of consumer and industrial companies. We will strengthen our unique materials technology portfolio encompassing both TA and Waters branded products to help customers better understand the relationship between the chemical structure and physical properties of the materials they are developing.

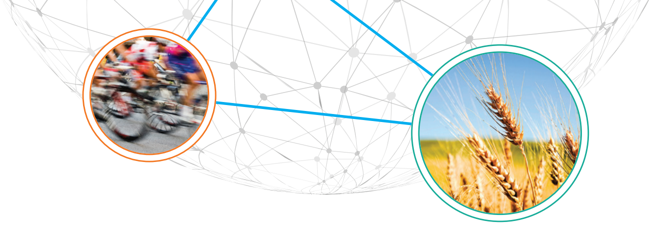
Finally, our academic and governmental category grew 6%. We saw strong spending from academic institutions around the world focused on biomedical research, particularly in the second half of the year. We believe this reflects the enthusiasm that researchers have for seeking new discoveries in the life sciences – a combination of new therapeutic strategies and novel diagnostic approaches.

As the global population grows and standards of living rise, the vast majority of countries and people are demanding increasingly greater access to and quality in the medications they take, the products they use, and the food they eat.





REVENUE BY GEOGRAPHY (Millions of Dollars)



The Bigger Picture

The year was also important for Waters in further refining our strategic plans, and in communicating a clearer framework for long-term value creation. During 2016, we initiated a rigorous new strategic planning process to better understand our market environment and changing customers' needs, leading to a new strategic framework that I outlined in last year's stakeholder letter. In March of 2017, we held a comprehensive Investor Day in New York to introduce our strategic plan and translate it into a clear five-point value creation model. We have since continued to communicate actively with investors and other stakeholders.

The current global economic backdrop is encouraging. By many measures, the world's largest economies are as healthy and balanced now as we have seen in decades. The combination of economic growth, positive employment trends and low inflation has created a favorable environment for customer investments, leading to consistent demand for our products which are tied to innovation and rising production. Additionally, U.S. Tax Reform appears to have benefitted both U.S.-oriented companies in the form of lower corporate tax rates, as well as global companies like Waters that now have permanent tax-efficient access to global cash. As a result, we expect to see more capital deployed in the U.S., and for the U.S. economy to be healthier and more sustainable.

The broader global context for advanced analytical measurement technologies is also promising. As the global population grows and standards of living rise, the vast majority of countries and people are demanding increasingly greater access and quality in the medications they take, the products they use, and the food they eat. These rising expectations are reinforced by strengthening and globally-harmonizing regulatory standards where more is being asked of manufacturers in terms of the performance, quality, safety, efficacy, authenticity, and compliance of the products they are selling.

At the core of these consumer and regulatory trends is the increasing need for understanding matter of all kinds – drugs, materials, food, and human pathology – at the molecular level. Yet biology and chemistry, and the increasing biochemical diversity of the world, remain relatively under-explored. As a scientific community, we are only scratching the surface in understanding the structures, properties, and functions of the underlying molecules that make up the world around us.

There is a growing appetite for more and better measurement of the most rigorous kind. To answer more questions than ever before, all stakeholders – consumers, corporations, regulators, governments, and academics – are raising the standard of measurement. To characterize, understand, and assure the performance of complex molecules in every facet of human life is an unmet need in the world, and one that Waters Corporation is well-positioned to continue addressing.

As we pursue these opportunities, we see three key market shifts that are shaping our strategic and investment focus.

First, customer measurement needs in the life, materials, and food sciences are becoming more application-specific, and customers are demanding simpler, more robust, and integrated workflow solutions. For Waters to continue to lead in our core pharmaceutical business, and fully scale our materials, food, clinical, and biomedical research businesses, we need to evolve our innovation and commercial approach to address the more specific needs of different customers.

Second, Waters has experienced a meaningful shift from U.S.-driven growth to Asia-driven growth. In 2017, Asia represented 37% of worldwide revenue, including 17% in China, 7% in Japan, and 6% in India. Asia has delivered 60% of Waters' corporate growth over the past three years, driven by rising regulatory standards and global regulatory harmonization in economies like China and India. Asia will be central to our strategic, innovation and commercial planning priorities.

Finally, demographic changes in our customers and our employee base are challenging us to operate differently. Our customer base is evolving, getting younger, more diverse, and looking for new ways to access knowledge and interact with Waters. Likewise, our employees are becoming increasingly diverse and bringing multi-generational perspectives. How well we engage our changing customers and employees will be pivotal to our ability to sustain success.

Long-Term Value Creation Framework

Given the environmental trends and our evolving business context, Waters has established a clear five-point framework for sustained value creation.

First, we will remain sharply focused on our highly-differentiated strategic positions in structurally attractive measurement markets. While many companies compete on the basis of breadth and diversification, Waters is committed to our "specialty" focus, in which we deliberately participate in a subset of the market for analytical instruments and related solutions. Our customer-defined markets in the life, materials, and food sciences, as well as our unique mix of instruments, software, precision chemistries, and service, are faster-growing and more profitable than the overall analytical instrument market. Our strategic plan is designed to enhance our performance in our focused business portfolio, which we believe will support industry-leading organic growth for the foreseeable future.

Second, our growth strategy is primarily driven by organic innovation. Over the past five years, we have increased our commitment to innovation by raising R&D from 7.5% to 8.5% of product sales. Furthermore, we are evolving our organization to deliver on core product development, as well as transformational engineering and breakthrough innovation. Our innovation approach is increasingly market-driven, systems-oriented, and disciplined.

Third, we are driving a systematic plan to achieve continuous operational improvement. While many admire our industry-leading margins, we believe we can continuously improve our efficiency to maximize investment in the business, while delivering strong profitability. Waters has a comprehensive operational improvement process reinforced by a rigorous balanced scorecard. As I have stated consistently, we will strive to balance growth, investment, and modest operating leverage to ensure consistent near-term performance, as well as sustainable long-term growth.

Fourth, we will continue to be judicious allocators of capital. Our top priority for capital deployment is to invest in the business through internal innovation, capital expenditure, and – only where it supports our strategies – highly disciplined external investments and acquisitions. We will also seek to optimize our capital structure and maintain an attractive cost of capital. Capital beyond growth and balance sheet needs will be returned to shareholders through our ongoing share repurchase program. While U.S. Tax Reform has greatly increased our access to capital, we will proceed carefully and thoughtfully. I view our significant cash balance as a strategic asset that should wait patiently for the right opportunities to invest in high ROIC initiatives.

As a scientific community, we are only scratching the surface in understanding the structures, properties, and functions of the underlying molecules that make up the world around us.

Fifth, and most importantly, we will continue to cultivate a performance-oriented culture and management team. Waters is a values-oriented, purpose-driven company where employees strive to achieve great things. Our leadership team is working hard to enhance the conditions that enable our employees to *Deliver Benefit*™ to all of our stakeholders. Core to our "people agenda" is talent and leadership development, together with continual enhancement of the diversity of our team and leadership. Waters has established a rigorous new process for organizational development incorporating these priorities, including a new senior leadership development curriculum that I am personally teaching.

Conclusion

By almost every measure, Waters is high-performing and well-positioned for continuing success. We focus on structurally attractive markets, enjoy a strong market position, and compete through widely-respected products and services built upon decades of innovation and value.

This year, we will celebrate Waters' 60th anniversary as a company. Waters has sustained its success by staying committed to enduring values, while aiming higher as a business. Looking forward, we see opportunity to *Deliver Benefit* in more ways than ever before. We are determined to deliver leading financial results, as well as compelling societal value, by helping our customers enhance human health and well-being through our innovations and the hard work of our team.

Sincerely,

Chris O'Connell

Christopher J. O'Connell
Chairman 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, 2017

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: Common Stock, par value $0.01 per share
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 and posted on its corporate website, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes ☑ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☑

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 ☐ (Do not check if a smaller reporting company) Smaller reporting company ☐ Emerging growth company ☐

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

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

State the aggregate market value of the registrant's common stock held by non-affiliates of the registrant as of July 1, 2017: $14,672,588,076.

Indicate the number of shares outstanding of the registrant's common stock as of February 16, 2018: 78,784,462

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement that will be filed for the 2018 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") is a specialty measurement company that has pioneered analytical workflow solutions involving liquid chromatography, mass spectrometry and thermal analysis innovations serving the life, materials and food sciences for nearly 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 life science, 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, distributing 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, distributing 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 16 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. 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 new technology and instrument. In 2015, the Company introduced the ACQUITY® Arc System and its enabling Arc Multi-flow path™ technology, which bridges the gap between HPLC and UPLC by emulating a variety of HPLC systems without altering the method's gradient table and enabling improved chromatographic performance of methods by leveraging 2.5-2.7 micron particle column technologies.

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 processes 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 2015, the Company introduced the Oasis® PRiME HLB cartridges, which process samples up to 40% faster and deliver samples that are up to 70% cleaner with fewer LC-MS matrix effects than samples prepared using other extraction techniques. In addition, the ACQUITY UPLC® Glycoprotein BEH Amide columns were introduced in 2015 to help biopharmaceutical companies to better understand where glycan groups (bonded sugars) are located within the therapeutic proteins they are developing and manufacturing. In 2016, the Company continued to expand its column chemistry capabilities through the introduction of CORTECS® C_8, CORTECS® Phenyl, CORTECS® T3 and CORTECS® Shield RP18.

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.

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 distribution 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 life science, 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 2015, the Company introduced the GlycoWorks® *Rapi*Fluor-MS® N-Glycan Kit, which enables fast de-glycosylation and labeling, reduces sample preparation time and allows mass detection for characterization and development with enhanced sensitivity. In 2016, the Company introduced the Xevo® TQ-XS mass spectrometry system enabled by the newly designed StepWave™ SX ion guide, which features a unique combination of ion optics, detection and ionization technologies resulting in levels of sensitivity not previously seen. The Company also introduced SONAR in 2016, which is a new data acquisition technology for use with the Xevo G2-XS that allows for the quantification and identification of lipids, metabolites and proteins in complex samples in a more efficient manner.

In November 2015, the Company acquired all of the outstanding stock of MPE Orbur Group Limited and its sole operating subsidiary, Midland Precision Equipment Company, Ltd. ("MPE"), a manufacturer of MS instrumentation components, for $12 million, net of cash acquired. MPE is a highly skilled manufacturer and former Waters supplier that produces critical components that support the Company's MS instrument systems.

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 2015, the Company's introduction of the Vion IMS Q-Tof Mass Spectrometer marks the first Waters mass spectrometer to be fully supported on UNIFI. In 2016, the Company announced two reference libraries available within UNIFI, the Metabolic Profiling CCS Library and the *Rapi*Fluor-MS® Glycan GU Scientific Library. The Company also introduced Symphony Data Pipeline software in 2016, which is a client-server application that automates the movement and transformation of large amounts of LC-MS data to speed up analytical workflows and liberate scientists from mundane yet necessary tasks associated with managing data files.

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 represents over 30% of sales for Waters. 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 2015, TA introduced the TAM IV and TAM IV-48, which extend the operating temperature range (4°C to 150°C) with long-term temperature stability for measuring processes. In 2015, TA also introduced the Affinity ITC and ITC Auto, which are designed for the most challenging life science laboratory environments that require high sensitivity, high productivity and the most advanced isothermal titration calorimetry. In 2016, TA introduced a new line of differential scanning calorimeters and thermogravimetric analyzers. These new Discovery DSC systems feature enhanced sensing technologies resulting in unprecedented performance in baseline flatness, sensitivity, resolution and reproducibility. In addition, TA introduced the ACS-2 Air Chiller System, ElectroForce 3310 test instrument and DuraPulse™ Stent Graft test instrument in 2016. In 2017, TA introduced the TAM Air microcalorimeter. Although designed to characterize the curing of cement, this instrument is an ideal platform for imaginative experimental design in a wide range of applications, including cement and concrete, material science, food, pharmaceuticals and environmental analysis. TA also introduced three new dilatometer product lines in its 800 platform, which are high precision systems designed to measure dimensional changes of a specimen brought about by dynamic thermal events in a wide range of applications, including material science, ceramics and metals. In 2017, TA introduced the Discovery SDT 650, which is a simultaneous differential scanning calorimeter/thermogravimetric analyzer and, we believe, the only system capable of simultaneous DSC/TGA measurement. In addition, TA introduced the Discovery HP-TGA750, a benchtop high pressure TGA that utilizes a patented ultra-high resolution magnetic suspension balance and new high precision temperature control system. Late in 2017, TA introduced the Discovery DMA 850, which measures the viscoelastic mechanical properties of material under controlled conditions of temperature, environment and mechanical stimulus (stress or strain). The DMA 850 features frictionless air bearing supports and a linear optical encoder, which ensures stable, accurate, high-resolution displacement measurement across the full travel range and enables displacement control of 5 nm.

In May 2015, the Company acquired the net assets of the ElectroForce® business of the Bose Corporation ("ElectroForce"), a manufacturer of testing systems, for $9 million in cash. ElectroForce's core business is the manufacturing of dynamic mechanical testing systems used to characterize medical devices, biologic and engineered materials. The ElectroForce test instruments are based on unique motor designs that are quiet, energy-efficient and scalable, while delivering precise performance over a wide range of force and frequency. In 2017, TA introduced the WinTest® 8.0 software package, which will be standard on all new ElectroForce products. In addition, TA introduced the ElectroForce DMA 3200 in 2017, which combines fatigue and dynamic mechanical analysis into a single mechanical test platform.

In September 2016, the Company acquired all of the outstanding stock of Rubotherm GmbH ("Rubotherm"), a manufacturer of gravimetric analysis systems, for approximately $6 million in cash, $5 million of which was paid at closing and an additional $1 million paid after closing to settle certain liabilities. Rubotherm develops and manufactures analytical test instruments for thermogravimetric and sorption measurements that are used in both industrial and academic research laboratories in disciplines that include chemistry, material science and engineering. The Rubotherm acquisition will help support and further expand product offerings within TA's thermal analysis business.

TA Service

Similar to Waters, the servicing and support of TA's instruments is an important source of revenue and represents more than 25% of sales for TA. 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 governmental, academic 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 2017, 56% of the Company's sales were to pharmaceutical accounts, 31% to other industrial accounts and 13% to governmental agencies and academic institutions.

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 2017, 2016 and 2015, 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 88 sales offices throughout the world as of December 31, 2017 and approximately 3,800, 3,600 and 3,400 field representatives in 2017, 2016 and 2015, 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 9001:2008, ISO 13485:2003 and ISO 14001:2004, 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 9001:2008 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 manufactures specialty Supercritical Fluid Chromatography (“SFC”) and Supercritical Fluid Extraction (“SFE”) products in its facility in Sharpsburg, Pennsylvania. The Sharpsburg facility is aligned with the policies and procedures for product manufacturing and distribution as adhered to in the Milford, Massachusetts facility and is under the same structural leadership organization.

The Company primarily manufactures and distributes its LC columns at its facilities in Taunton, Massachusetts and Wexford, Ireland. 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 9001:2008. The Wexford facility is certified to ISO 9001:2015 and ISO 13485:2003/EN ISO 13485:2012. 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, ISO/IEC 17034 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 9001:2008 and ISO 13485:2003/EN ISO 13485:2012 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, Bochum, Germany, Huellhorst, Germany, Wetzlar, Germany and Ede, Netherlands 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 9001:2008 standards and the Eden Prairie facility is certified to both ISO 9001:2008 and ISO/IEC 17025:2005 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 2016, 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 2017 supply chain, and the Company plans to file its 2017 Form SD with the SEC in May 2018. 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 / Environmental Health & Safety".

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 2017, 2016 and 2015 were $133 million, $125 million and $119 million, respectively. In addition, in 2017 and 2015, the Company incurred charges of $5 million and $4 million, respectively, for acquired in-process research and development related to milestone payments associated with a 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. These licensing arrangements are significantly related to new, biologically-focused applications, as well as other applications, and require 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, 2017, 2016 and 2015, there were 1,004, 971 and 955 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.

Employees

The Company employed approximately 7,000, 6,900 and 6,600 employees at December 31, 2017, 2016 and 2015, respectively, with approximately 41% 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. The Company firmly believes that its future success largely depends upon its continued ability to attract and retain highly skilled employees.

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. as 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, Darmstadt, Germany; 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 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 2014, the Company published a sustainability report identifying the various actions and behaviors the Company has adopted 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 16 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 public may read and copy any materials the Company files or furnishes with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330.

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 and the documents incorporated herein, may contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), 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 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 newly enacted tax reform 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, under the heading "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II, Item 7 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:

- 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 the U.K. voting to exit 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 by 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 governmental, academic and research institutions; the effect of mergers and acquisitions on customer demand; 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, completion of purchase order documentation by our customers and ability of customers 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, such as the recently adopted accounting pronouncement regarding employee share-based payments; 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 newly enacted tax reform 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 common to companies in the analytical instrument industry, including, but not limited to, the following:

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% and 69% of the Company's net sales in 2017 and 2016, respectively, 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 United Kingdom, 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. voting to exit 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; 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.

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 governmental, academic 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. 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 56% of the Company's net sales in both 2017 and 2016 were to the worldwide pharmaceutical and biotechnology industries, 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.

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 in recent years, 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.

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, some of which include 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 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. These new products will be sold into both the clinical and non-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.

In addition, despite testing prior to the release and throughout the lifecycle of a product or service, 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. 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.

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 and the Senior Vice President and Chief Financial Officer, have an employment contract with the Company and there can be no assurance that such individuals will remain with the Company. If, for any reason, other such key personnel do not continue to be active in management, the Company's results of operations or financial condition could be adversely affected.

Failure to adequately protect intellectual property could have materially adverse effects on the Company's results of operations or financial condition.

The Company vigorously protects its intellectual property rights and seeks patent coverage on all developments that it regards as material and patentable. However, 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. Conversely, 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 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.

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% to in excess of 35% 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.

On December 22, 2017, the U.S. enacted legislation informally referred to as the Tax Cuts and Jobs Act (the "2017 Tax Act"). The 2017 Tax Act changed the U.S. tax system to a territorial tax system, including base broadening measures on non-U.S. earnings, whereby historical unremitted, earnings of foreign subsidiaries are deemed to have been repatriated to the U.S. in 2017 regardless of when the assets are actually remitted to the U.S., as well as reducing or eliminating certain domestic deductions and credits and limiting the deductibility of interest expense and executive compensation. Earnings deemed to have been distributed to the U.S. in accordance with the aforementioned 2017 Tax Act deemed distribution rules are subject to a Transition Toll Tax ("Transition Tax"), which is a one-time, mandatory deemed repatriation tax on the accumulated foreign earnings that have not been previously taxed. To the extent those earnings are deemed to have been invested in cash and cash equivalents, they will be taxed at a rate of 15.5%; the remainder of those earnings will be taxed at a rate of 8.0%. As a result, the Company's historical unremitted foreign earnings were deemed repatriated in 2017 and the Company incurred a $550 million estimated tax provision, which primarily consisted 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 Transition Tax will be paid over an eight-year period, starting in 2018, and will not accrue interest. The final impact of the 2017 Tax Act may differ from these estimates, due to, among other things, changes in interpretations, analysis and assumptions made by the Company, additional guidance that may be issued by the U.S. Department of the Treasury and tax planning actions that the Company may undertake.

The Company continues to be permanently reinvested in relation to the cumulative historical outside basis difference that is not related to the unremitted earnings that were taxed. We will continue to evaluate our assertions, including intentions and plans, on the cumulative historical outside basis differences, not related to the unremitted earnings that were taxed, in our foreign subsidiaries as of December 31, 2017. In accordance with authoritative guidance issued by the SEC, we expect to finalize our analysis and accounting related to the toll charge, deferred tax assets and liabilities and any remaining outside basis differences in our foreign subsidiaries during the measurement period; however, there can be no assurance given that these amounts will not need to be revised in the future, affecting the future financial condition and results of operations of the Company.

Going forward, the Company estimates that its effective tax rate will increase approximately one to three percentage points in the future; however, there can be no assurance given that the estimated future effective income tax rate increase will not be different and there can be no assurances that it will not have a material impact on the Company's results of operations or financial condition.

The Company has a contractual tax rate in Singapore of 0% through March 2021, based upon the achievement and continued satisfaction of certain operational and financial milestones, which the Company expects to continue to meet. Currently, the Company has determined that it is more likely than not to realize the contractual tax rate in Singapore of 0% and has not recognized any uncertain tax benefit in its balance sheet related to the achievement of the contractual milestones in Singapore. In the event that it appears that the milestone targets will not be met, the Company will no longer be entitled to a 0% contractual tax rate benefit on income earned in Singapore dating back to the start date of the agreement (April 1, 2016), at which time all tax benefits previously recorded would be reversed and an income tax charge equal to the statutory tax of 17% on income earned during that period would be recorded.

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, whether or not they have merit. 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.

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 $1,998 million in debt and $3,394 million in cash, cash equivalents and investments as of December 31, 2017. As of December 31, 2017, the Company also had the ability to borrow an additional $498 million 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 in the U.S. A majority of the Company's cash is generated from foreign operations, with $3,326 million of the Company's cash, cash equivalents and investments held by foreign subsidiaries. At December 31, 2017, the Company's cash, cash equivalents and investments generated from foreign subsidiaries have effectively been repatriated to the U.S., providing the Company with the ability to access the cash, cash equivalents and investments to satisfy U.S. cash requirements; however, the Company's financial condition and results of operations could still be adversely impacted if the Company is unable to 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. As of December 31, 2017, the Company was in compliance with all debt covenants.

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. 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 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 inherit 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.

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 rules, 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 rules 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 2016, 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 2017 supply chain, and the Company plans to file its 2017 Form SD with the SEC in May 2018. 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'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.

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, product returns and allowances, bad debts, inventory valuation, goodwill and intangible assets, income taxes, warranty and installation provisions, litigation, retirement plan obligations, stock-based compensation, equity investments, 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 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 United States, United Kingdom, 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.

Item 1B: *Unresolved Staff Comments*

None.

Item 2: *Properties*

Waters Corporation operates 21 United States facilities and 73 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
Milford, MA	M, R, S, A	Owned
Taunton, MA	M, R	Owned
Wakefield, MA	M, R, S, D, A	Leased
Eden Prairie, MN	M, R, S, D, A	Leased
Nixa, MO	M, S, D, A	Leased
Sharpsburg, PA	M, R, S, D, A	Leased
Lindon, UT	M, R, S, D, A	Leased
New Castle, 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
Bochum, Germany	R, S, A	Leased
Budapest, Hungary	R	Leased
Wexford, Ireland	M, R, D, A	Owned
Ede, Netherlands	M, R, S, D, A	Leased
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 11 field offices in the United States and 61 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		
Irvine, CA	Australia	India	Portugal
Pleasanton, CA	Austria	Ireland	Poland
Wood Dale, IL	Belgium	Israel	Puerto Rico
Carmel, IN	Brazil	Italy	Spain
Columbia, MD	Canada	Japan	Sweden
Beverly, MA	Czech Republic	Korea	Switzerland
Durham, NC	Denmark	Malaysia	Taiwan
Morrisville, NC	Finland	Mexico	United Kingdom
Parsippany, NJ	France	Netherlands	
Plymouth Meeting, PA	Germany	Norway	
Bellaire, TX	Hungary	People's Republic of China	

(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.

EXECUTIVE OFFICERS OF THE REGISTRANT

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:

Christopher J. O'Connell, 51, has served as a Director of the Company since September 2015, when he assumed the position of President and Chief Executive Officer of the Company. In December 2017, Mr. O'Connell was appointed as the Chairman of the Board of Directors of the Company. Mr. O'Connell served as Executive Vice President and President of Restorative Therapies Group of Medtronic plc from August 2009 to August 2015. From 1994 to August 2009, Mr. O'Connell served in the following positions at Medtronic plc: Senior Vice President and President of Medtronic Diabetes, President of Medtronic Physio-Control, Vice President of Sales and Marketing for the Cardiac Rhythm Management business, Vice President/General Manager of the Patient Management Business, Vice President of Corporate Strategy, Director of Investor Relations and Corporate Development Associate.

Mark T. Beaudouin, 63, was appointed Senior Vice President, General Counsel and Secretary in February 2016 and was Vice President, General Counsel and Secretary of the Company since April 2003. Prior to joining Waters Corporation, he served as Senior Vice President, General Counsel and Secretary of PAREXEL International Corporation, a bio/pharmaceutical services company, from January 2000 to April 2003. Previously, from May 1985 to January 2000, Mr. Beaudouin served in several senior legal management positions, including Vice President, General Counsel and Secretary of BC International, Inc., a development stage biotechnology company, First Senior Vice President, General Counsel and Secretary of J. Baker, Inc., a diversified retail company, and General Counsel and Secretary of GenRad, Inc., a high technology test equipment manufacturer.

Sherry L. Buck, 54, was appointed Senior Vice President and Chief Financial Officer in January 2017. Previously, Ms. Buck served as the Vice President, Chief Financial Officer of Libbey Inc. since August 2012. From 1993 to 2012, Ms. Buck held several positions at Whirlpool Corporation, including Vice President, Finance/Chief Financial Officer, Global Product and Enterprise Cost Leadership; Vice President, Finance—US; Vice President, Cost Leadership; Vice President, Finance—International; and Vice President, Business Performance Management.

Dr. Michael C. Harrington, 57, 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.

Terrance P. Kelly, 55, was appointed Senior Vice President and President, TA Instruments in February 2016. Mr. Kelly has served as President, TA instruments since February 2005. Mr. Kelly started his career in finance and accounting at ICI in 1985. He joined DuPont in 1988. He held various sales and marketing positions with DuPont, and later TA Instruments. Mr. Kelly joined Waters Corporation in 1996, when TA Instruments was acquired.

Ian S. King, 61, 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.

Elizabeth B. Rae, 60, was appointed Senior Vice President, Global Human Resources in February 2016 and was Vice President of Human Resources since October 2005 and Vice President of Worldwide Compensation and Benefits since January 2002. Ms. Rae joined Waters Corporation in January 1996 as Director of Worldwide Compensation. Prior to joining Waters Corporation, she held senior human resources positions in retail, healthcare and financial services companies.

David A. Terricciano, 62, was appointed Senior Vice President, Global Operations in February 2016. Mr. Terricciano previously served as Vice President of Global Operations since August 2001. Prior to joining Waters Corporation, he worked as Vice President and General Manager of Operations for Perkin-Elmer Instruments. Previously, he held a variety of executive positions at Goodrich Aerospace, Honeywell Aerospace and Textron Corporation.

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 Exchange Act, and is listed on the New York Stock Exchange under the symbol "WAT". As of February 16, 2018, the Company had 92 common stockholders of record. The Company has not declared or paid any dividends on its common stock in its past three fiscal years. The Company has not made any sales of unregistered equity securities in the years ended December 31, 2017, 2016 or 2015.

Securities Authorized for Issuance under Equity Compensation Plans

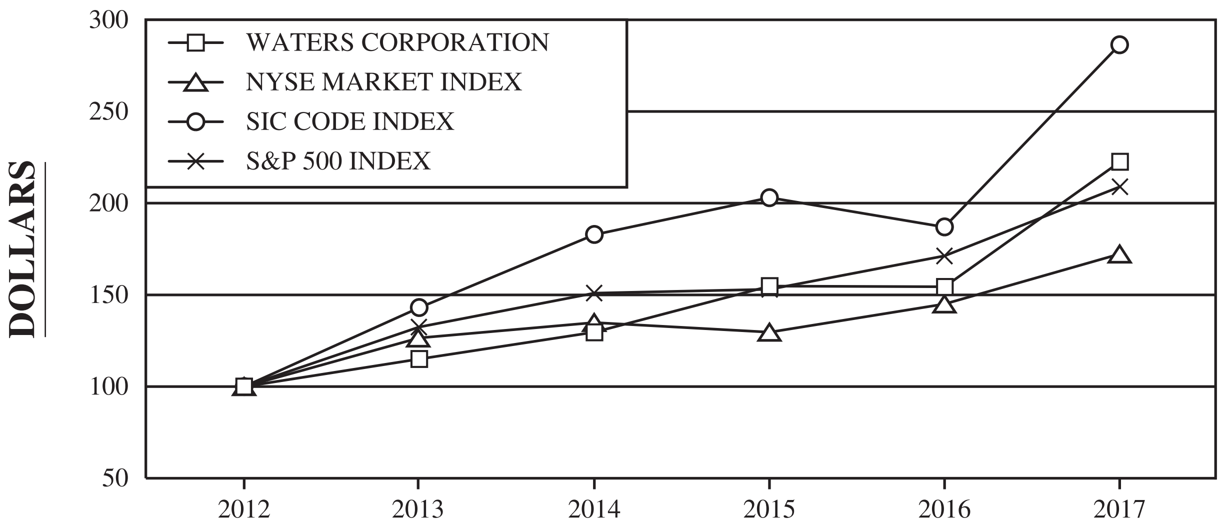
Equity compensation plan information is incorporated by reference from Part III, Item 12, Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters, of this document and should be considered an integral part of this Item 5.

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, 2012 (the last day of public trading of the Company's common stock in fiscal year 2012) through December 31, 2017 (the last day of public trading of the common stock in fiscal year 2017) in the Company's common stock, the NYSE Market Index, the SIC Code 3826 Index, the S&P 500 Index and the S&P Health Care 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, 2012
AMONG WATERS CORPORATION, NYSE MARKET INDEX, SIC CODE 3826 INDEX – LABORATORY ANALYTICAL INSTRUMENTS, S&P 500 INDEX
AND S&P HEALTH CARE INDEX



	2012	2013	2014	2015	2016	2017
WATERS CORPORATION	$100.00	$114.78	$129.38	$154.48	$154.26	$221.75
NYSE MARKET INDEX	$100.00	$126.28	$134.81	$129.29	$144.73	$171.83
SIC CODE INDEX	$100.00	$142.80	$182.12	$202.31	$186.41	$285.16
S&P 500 INDEX	$100.00	$132.39	$150.51	$152.59	$170.84	$208.14

Market for Registrant's Common Equity

The quarterly range of high and low sales prices for the Company's common stock as reported by the New York Stock Exchange is as follows:

For the Quarter Ended	Price Range	
	High	Low
April 2, 2016	$133.60	$112.00
July 2, 2016	$143.73	$128.90
October 1, 2016	$162.53	$140.76
December 31, 2016	$160.00	$133.35
April 1, 2017	$158.81	$134.68
July 1, 2017	$187.65	$154.15
September 30, 2017	$190.39	$171.32
December 31, 2017	$201.95	$179.27

Purchases of Equity Securities by the Issuer

The following table provides information about purchases by the Company during the three months ended December 31, 2017 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 (2)	Maximum Dollar Value of Shares that May Yet Be Purchased Under the Programs (2)
October 1 to October 28, 2017	—	$ —	—	$885,182
October 28 to November 25, 2017	260	$196.20	260	$834,170
November 26 to December 31, 2017	182	$196.65	171	$800,462
Total	442	$196.39	431	$800,462

(1) The Company repurchased $10 million of common stock related to the vesting of restricted stock units during 2017.

(2) In May 2017, the Company's Board of Directors authorized the repurchase of up to $1 billion of its outstanding common stock in open market transactions over a three-year period.

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 2017, 2016, 2015, 2014 and 2013. The Company's financial statements as of December 31, 2017 and 2016, and for each of the three years in the period ended December 31, 2017 are included in Item 8, Financial Statements and Supplementary Data, in Part II of this Form 10-K.

In thousands, except per share and employees data	2017	2016	2015	2014	2013
STATEMENT OF OPERATIONS DATA:					
Net sales	$2,309,078	$2,167,423	$2,042,332	$1,989,344	$1,904,218
Income from operations before income taxes	$ 641,097	$ 600,114	$ 541,919	$ 490,740	$ 490,105
Net income*	$ 20,311	$ 521,503	$ 469,053	$ 431,620	$ 450,003
Net income per basic common share*	$ 0.25	$ 6.46	$ 5.70	$ 5.12	$ 5.27
Weighted-average number of basic common shares	79,793	80,786	82,336	84,358	85,426
Net income per diluted common share*	$ 0.25	$ 6.41	$ 5.65	$ 5.07	$ 5.20
Weighted-average number of diluted common shares and equivalents	80,604	81,417	83,087	85,151	86,546
BALANCE SHEET AND OTHER DATA:					
Cash, cash equivalents and investments	$3,393,701	$2,813,032	$2,399,263	$2,055,388	$1,803,670
Working capital, including current maturities of debt**	$3,663,977	$3,115,124	$2,649,457	$2,236,558	$2,038,100
Total assets**	$5,324,354	$4,662,059	$4,268,677	$3,874,690	$3,580,106
Long-term debt**	$1,897,501	$1,701,966	$1,493,027	$1,237,463	$1,188,162
Stockholders' equity	$2,233,788	$2,301,949	$2,058,851	$1,894,666	$1,763,173
Employees	7,020	6,899	6,594	6,161	5,965

* 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 is not permitted. In 2017, the Company recognized an excess tax benefit, which decreased income tax expense by $20 million and added $0.24 to net income per diluted share.

** In 2015, the Company adopted new accounting guidance related to the presentation of debt issuance costs and deferred income taxes, both standards have been applied above retrospectively. Certain debt issuance costs have been reclassified from intangible assets and are presented as a direct deduction from the carrying value of the associated debt. Current deferred tax assets and liabilities have been reclassified as non-current deferred tax assets and liabilities.

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.

The Company's operating results are as follows for the years ended December 31, 2017, 2016 and 2015 (dollars in thousands, except per share data):

	Year Ended December 31,			% change	
	2017	2016	2015	*2017 vs. 2016*	*2016 vs. 2015*
Revenues:					
Product sales	$1,552,349	$1,460,296	$1,385,256	*6%*	*5%*
Service sales	756,729	707,127	657,076	*7%*	*8%*
Total net sales	2,309,078	2,167,423	2,042,332	*7%*	*6%*
Costs and operating expenses:					
Cost of sales	947,067	891,453	842,672	*6%*	*6%*
Selling and administrative expenses	544,703	513,031	495,747	*6%*	*3%*
Research and development expenses	132,593	125,187	118,545	*6%*	*6%*
Litigation provisions	11,114	3,524	3,939	*215%*	*(11%)*
Purchased intangibles amortization	6,743	9,889	10,123	*(32%)*	*(2%)*
Acquired in-process research and development	5,000	—	3,855	—	*(100%)*
Operating income	661,858	624,339	567,451	*6%*	*10%*
Operating income as a % of sales	*28.7%*	*28.8%*	*27.8%*		
Interest expense, net	(20,761)	(24,225)	(25,532)	*(14%)*	*(5%)*
Income before income taxes	641,097	600,114	541,919	*7%*	*11%*
Provision for income taxes	620,786	78,611	72,866	*690%*	*8%*
Net income	$ 20,311	$ 521,503	$ 469,053	*(96%)*	*11%*
Net income per diluted common share	$ 0.25	$ 6.41	$ 5.65	*(96%)*	*13%*

In 2017, the Company's sales increased 7% as compared to 2016. This growth was balanced across all customer and product classes. Instrument system sales increased 6% and 4% in 2017 and 2016, respectively. The increased demand for instrument system sales in 2017 was balanced across our LC-MS and TA instrument systems, while the increase in 2016 was primarily due to LC-MS instrument systems. Recurring revenues (combined sales of precision chemistry consumables and services) increased 7% and 8% in 2017 and 2016, respectively, as a result of a larger installed base of customers and higher billing demand for service sales.

Geographically, the Company experienced 10% sales growth in both Europe and Asia in 2017, while sales in the Americas was flat in 2017 as compared to the previous year. The Americas' sales growth was negatively impacted by natural disasters in the U.S., Mexico and Puerto Rico, as well as weaker customer sentiment in the first half of 2017. Europe's sales growth can be primarily attributed to the increase in customer demand from the improvement in the European economy as well as the effect of foreign currency translation, which added 2% to sales growth in 2017. Asia's sales growth was a result of the double-digit sales growth in China and India on strong demand for our products and services in those countries and in spite of lower customer demand in India in the second half of 2017 resulting from the implementation of the new Goods and Services Tax system.

In 2016, the Company's sales grew 6% as compared to 2015, with strong sales in our pharmaceutical and industrial markets, including balance across all product classes. The effect of foreign currency translation increased sales by 1% in 2017 and decreased sales by 1% in 2016 across all products and services. Recent acquisitions had a minimal impact on sales growth in both 2017 and 2016.

Sales to pharmaceutical customers grew 7% and 9% in 2017 and 2016, respectively. These increases were driven by the increasing need for global access to prescription drugs and the testing of newer and more complex biologic drugs. Geographically, the growth within our pharmaceutical market in 2017 was driven by double-digit growth in China, India and Europe, while sales growth in 2016 was driven by double-digit growth in China and Japan.

Combined sales to industrial customers, which includes materials characterization, food, environmental and fine chemical markets, grew 4% and 6% in 2017 and 2016, respectively. The growth in both 2017 and 2016 was driven by recent product introductions and rising global regulatory standards in both food and materials markets. Geographically, industrial market sales growth was highest in China and India in 2017, with modest growth in other regions offset by flat sales in the Americas. In 2016, industrial market sales growth was highest in Europe, followed by Asia and offset by weakness in the U.S.

Combined sales to governmental and academic customers increased 8% in 2017 and decreased 4% in 2016. The increase in sales to governmental and academic customers in 2017 was broad-based across all geographies, with double-digit growth in Europe and the Americas. The decreases in 2016 were a result of these institutions reducing their spending on the Company's products. In 2016, combined sales to governmental and academic customers grew in China and India but declined in all other regions. Sales to governmental and academic customers are highly dependent on when institutions receive funding to purchase our instrument systems and, as such, sales growth rates can vary significantly from period to period.

Operating income was $662 million in 2017, an increase of 6% as compared to 2016. This increase was primarily a result of the effect of higher sales volume achieved in 2017 being somewhat offset by the impact of $13 million of severance costs primarily associated with the closure of a facility in Germany and costs associated with providing U.S. employees with an early retirement transition incentive; an $11 million litigation settlement provision and related costs and a $5 million charge relating to a milestone payment for the licensing of certain intellectual property relating to mass spectrometry technologies yet to be commercialized. The change in operating income in 2017 as compared with 2016 was also impacted by $4 million of expense in 2017 related to the acceleration of certain stock awards as compared to $7 million of similar expense in 2016. Operating income increased 10% in 2016 as compared to 2015 as a result of higher sales volumes achieved in 2016 and the positive impact of foreign currency translation on our U.K. manufacturing and research and development costs as a result of the significantly weaker British Pound.

The provision for income taxes for 2017 includes a $550 million estimate for the impact of the enactment of the legislation informally referred to as the Tax Cuts and Jobs Act (the "2017 Tax Act"), which was signed into law on December 22, 2017. The 2017 Tax Act changed the U.S. tax system to a territorial system, including base broadening measures requiring the taxation of the Company's historical unremitted foreign earnings through a deemed repatriation, which resulted in a $550 million income tax provision that reduced net income per share by $6.82 for the twelve months ended December 31, 2017, as well as eliminating or reducing certain domestic deductions and credits and limiting the deductibility of interest expense and executive compensation. The $550 million income tax provision primarily consists of an estimated Transition Toll Tax ("Transition Tax") of $490 million, as well as estimated income tax provisions for state and withholding taxes of $40 million and a $20 million 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 Transition Tax will be paid over an eight-year period, starting in 2018, and will not accrue interest. As a result of the 2017 Tax Act, the Company was able to gain access to its cash and investment balances held outside the U.S. in a tax efficient manner that can be used for any general corporate purposes in the U.S. Going forward, the Company estimates that its effective income tax rate will increase approximately one to three percentage points in the future. The final impact of the 2017 Tax Act may differ from these estimates due to, among other things, changes in interpretations, analysis and assumptions made by the Company, additional guidance that may be issued by the U.S. Department of the Treasury, and tax planning actions that the Company may undertake.

In the first quarter of 2017, the Company adopted a new accounting standard that requires the excess tax benefit or deficiency on stock-based compensation to be included in the statement of operations as a component of the provision for income taxes, whereas previously it was recognized in equity. As a result, the Company recorded a tax benefit on stock-based compensation in 2017 that decreased income tax expense by $20 million and added $0.24 to net income per diluted share, respectively. Additionally, this standard required the Company to present the tax benefit in the consolidated statements of cash flows as an operating activity, whereas in the past this tax benefit was reflected as a financing activity. All prior periods presented in the cash flow have been adjusted accordingly.

The Company generated $698 million, $643 million and $573 million of net cash flows from operations in 2017, 2016 and 2015, respectively. The increases in operating cash flow in each year were primarily a result of the increase in sales and operating income. Beginning in 2018, and for the next four years, the Company is required to make annual U.S. federal tax payments of approximately $40 million to tax authorities in connection with the estimated $550 million 2017 Tax Act liabilities. The remaining 60% of this liability is required to be paid over a three-year period beginning in 2023. Also as a result of the 2017 Tax Act, the Company is expecting to make $40 million in state and withholding tax payments during 2018.

Cash flows used in investing activities included capital expenditures related to property, plant, equipment and software capitalization of $85 million, $95 million and $100 million in 2017, 2016 and 2015, respectively. In 2017, the Company made a $7 million payment for an 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. In addition, the Company made a milestone payment of $5 million in 2017 to acquire and license intellectual property. In September 2016, the Company acquired Rubotherm GmbH for approximately $6 million in cash. In February 2018, the Company's Board of Directors approved expanding its precision chemistry consumable manufacturing operations. 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 and investments and the Company does not expect to issue any debt in relation to this expansion.

In November 2017, the Company entered into a new credit agreement (the "2017 Credit Agreement") that 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 Company used $1.3 billion of the proceeds from the 2017 Credit Agreement to repay the outstanding amounts under the Company's existing multi-borrower credit agreement dated June 2013 (the "2013 Credit Agreement"), which was terminated early without penalty. In May 2017, the Company's Board of Directors authorized the Company to repurchase up to $1 billion of its outstanding common stock over a three-year period. During 2017, 2016 and 2015, the Company repurchased $323 million, $318 million and $327 million of the Company's outstanding common stock, respectively, under authorized share repurchase programs. 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, especially now that the 2017 Tax Act provides the Company with access to its offshore cash at much lower income tax rates. As a result, the Company currently anticipates using $1 billion of cash repatriated into the U.S. to reduce debt and repurchase common stock shares on the open market during 2018.

Results of Operations

Sales by Geography

Geographic sales information is presented below for the years ended December 31, 2017, 2016 and 2015 (in thousands):

	Year Ended December 31,			% change	
	2017	2016	2015	2017 vs. 2016	2016 vs. 2015
Net Sales:					
United States	$ 669,274	$ 665,280	$ 656,361	1%	1%
Europe	636,472	577,257	555,886	10%	4%
Asia:					
China	387,059	331,354	278,600	17%	19%
Japan	167,258	167,977	145,184	—	16%
Asia Other	308,300	283,653	272,179	9%	4%
Total Asia	862,617	782,984	695,963	10%	13%
Other	140,715	141,902	134,122	(1%)	6%
Total net sales	$2,309,078	$2,167,423	$2,042,332	7%	6%

In 2017, the sales growth in Asia was driven by double-digit increases in China's sales across all product and customer classes. The increase in Asia Other in 2017 was driven by strong sales in India across all product and customer classes. Japan's sales in 2017 were flat as the effect of foreign currency decreased sales by 3%. Japan's sales in 2017 were driven by recurring revenue sales to governmental and academic customers. Europe's sales in 2017 were balanced across all product lines and driven by sales to pharmaceutical, governmental and academic customers. Sales growth in the U.S. in 2017 was driven by TA instrument system sales and recurring revenues. In 2017, sales to the rest of the world were impacted by a decrease in demand from industrial customers resulting from recent natural disasters.

In 2016, sales growth in the U.S. was driven by increases in recurring revenues, which were offset by declines in instrument systems sales. U.S. sales increased to pharmaceutical customers but declined to non-pharmaceutical end-markets. Europe's sales in 2016 were also driven by recurring revenues and primarily due to increases to pharmaceutical and industrial customers. China achieved strong sales growth in all product and customer classes in 2016, with double-digit growth in LC-MS instrument systems and precision chemistry consumables as well as double-digit growth to pharmaceutical customers. Japan's increase in sales in 2016 was largely driven by the benefit of foreign currency translation, which increased sales by 12%. The increase in sales in the rest of Asia in 2016 was driven by LC-MS instrument systems and precision chemistry consumables sales to pharmaceutical and industrial customers. Sales to the rest of Asia decreased 6% due to the negative effect of foreign currency translation. Sales in the rest of the world in 2016 were broad-based across all product classes as sales increased to industrial customers but declined across all other customer classes.

Waters Products and Services Net Sales

Net sales for Waters products and services are as follows for the years ended December 31, 2017, 2016 and 2015 (in thousands):

	Year Ended December 31,						% change	
	2017	% of Total	2016	% of Total	2015	% of Total	2017 vs. 2016	2016 vs. 2015
Waters instrument systems	$ 988,750	48%	$ 943,218	49%	$ 895,626	50%	5%	5%
Chemistry consumables	372,157	18%	345,413	18%	317,941	17%	8%	9%
Total Waters product sales	1,360,907	66%	1,288,631	67%	1,213,567	67%	6%	6%
Waters service	686,656	34%	639,432	33%	593,301	33%	7%	8%
Total Waters net sales	$2,047,563	100%	$1,928,063	100%	$1,806,868	100%	6%	7%

The increase in Waters instrument system sales (LC and MS technology-based) in both 2017 and 2016 is primarily attributable to higher sales of LC-MS systems that incorporate the Company's tandem quadrupole technologies. Precision chemistry consumables sales increased in both 2017 and 2016 on the uptake in columns and application-specific testing kits. Waters service sales in both 2017 and 2016 benefited from increased sales of service plans and higher service demand billings to a higher installed base of customers. The effect of foreign currency translation had a minimal impact on Waters sales in both 2017 and 2016.

In 2017, Waters sales increased 10% in both Europe and Asia and were flat in the Americas. Waters sales increased 16% in China and were broad-based across all product and customer classes. Waters sales in Japan decreased 1%, primarily due to foreign currency translation, which decreased sales by 3%. Waters sales in the rest of Asia increased 8% and were driven by recurring revenues across all customer classes.

In 2016, Waters sales increased 2% in the U.S., 4% in Europe, 14% in Asia and 5% in the rest of the world. Waters sales increased 21% in China and were broad-based across all product and customer classes. Waters sales in Japan increased 15%, primarily due to the benefit of foreign currency translation, which increased sales by 12%. Waters sales in the rest of Asia increased 6% and were driven by product sales to pharmaceutical and industrial customers, offset by weakness within governmental and academic markets.

TA Product and Services Net Sales

Net sales for TA products and services are as follows for the years ended December 31, 2017, 2016 and 2015 (in thousands):

	Year Ended December 31,						% change	
	2017	% of Total	2016	% of Total	2015	% of Total	2017 vs. 2016	2016 vs. 2015
TA instrument systems	$191,442	73%	$171,665	72%	$171,689	73%	12%	—
TA service	70,073	27%	67,695	28%	63,775	27%	4%	6%
Total TA net sales	$261,515	100%	$239,360	100%	$235,464	100%	9%	2%

TA instrument system sales rebounded across all major product categories after a flat sales growth in 2016. In 2017, TA instrument system sales grew from thermal instrument systems, which were fueled by continued acceptance of the recently introduced Discovery product line. In addition, TA's rheology instrument systems saw strong performance across the entire range of products in the portfolio, driven by the Discovery Hybrid Rheometer and Rubber Rheometer instrument systems. TA service sales increased in both 2017 and 2016 due to sales of service plans and billings to a higher installed base of customers. The effect of foreign currency translation and recent acquisitions had a minimal impact on TA's sales in both 2017 and 2016.

In 2017, TA sales increased 14% in Asia, 11% in Europe and 5% in the Americas. TA achieved double-digit sales growth in Asia, with the exception of Japan, where a 5% sales growth included a 2% negative impact of foreign currency translation. TA sales in the U.S. in 2017 increased 8%, while the rest of the Americas declined after strong sales in the prior year. In 2016, TA sales increased 2% in both the Americas and Asia and increased 1% in Europe. TA sales were flat in the U.S. in 2016 but TA achieved a double-digit increase in the rest of the Americas. TA's sales in Japan in 2016 increased 19%, with a 10% increase due to the benefit of foreign currency translation.

Cost of Sales

The increase in cost of sales for both 2017 and 2016 were consistent with the increase in sales volumes. The effect of foreign currency translation had a minimal impact on cost of sales in 2017. In 2016, cost of sales included the benefit of a weaker British pound, which reduced the Company's U.K. manufacturing costs when translated into U.S. dollars.

Cost of sales are 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 that the impact of foreign currency translation may increase sales and still negatively impact gross profit during 2018, as the foreign currency translation benefit expected on Euro and Japanese yen sales would be somewhat mitigated by the unfavorable effect of a stronger British pound on the Company's U.K. manufacturing costs.

Selling and Administrative Expenses

Selling and administrative expenses increased 6% in 2017 and increased 3% in 2016. Selling and administrative expenses in both 2017 and 2016 were impacted by headcount additions and higher merit compensation costs, as well as $4 million and $7 million, respectively, of stock compensation expense related to the modification of certain stock awards upon the retirement of senior executives. In 2017, the Company incurred $13 million of severance costs in connection with the closure of a facility in Germany and an early retirement transition incentive program. Severance-related costs in 2016 and 2015 were $3 million and $3 million, respectively, in connection with a reduction in workforce. The effect of foreign currency translation increased selling and administrative expenses by 3% in 2017 and lowered these expenses by 2% in 2016.

As a percentage of net sales, selling and administrative expenses were 23.6%, 23.7% and 24.3% for 2017, 2016 and 2015, respectively.

Research and Development Expenses

Research and development expenses increased 6% in both 2017 and 2016. Research and development expenses in both 2017 and 2016 were impacted by additional headcount, merit compensation and costs associated with new products and the development of new technology initiatives. In addition, the effect of foreign currency translation reduced research and development expenses by 4% and 7% in 2017 and 2016, respectively, primarily due to the weakening of the British pound on the Company's U.K.-based research and development expenses. In 2016, research and development expenses also included a benefit of $2 million from a government grant.

Acquired In-Process Research and Development

During 2017 and 2015, the Company incurred charges of $5 million and $4 million, respectively, for acquired in-process research and development related to milestone payments associated with a 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. These licensing arrangements are significantly related to new, biologically-focused applications, as well as other applications, and require 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. These future payments may be significant and occur over multiple years.

Litigation Provision
In 2017, the Company incurred a $11 million litigation provision related to the issuance of a verdict in a German patent litigation case. In addition, the Company recorded $4 million of litigation settlement provisions and related costs in both 2016 and 2015.

Interest Expense, Net
The decreases in net interest expense in 2017 and 2016 were primarily attributable to higher income earned on increased cash, cash equivalents and investment balances.

Provision for Income Taxes
The four principal jurisdictions in which the Company manufactures are the U.S., Ireland, the U.K. and Singapore, where the marginal effective tax rates were approximately 37.5%, 12.5%, 19.25% and 0%, respectively, as of December 31, 2017. The Company has a contractual tax rate in Singapore of 0% on qualifying activities in Singapore through March 2021, based upon the achievement of certain contractual milestones, which the Company expects to continue to meet. The current statutory tax rate in Singapore is 17%. The effect of applying the contractual tax rate rather than the statutory tax rate to income from qualifying activities in Singapore increased the Company's net income in 2017, 2016 and 2015 by $25 million, $23 million and $20 million, respectively and increased the Company's net income per diluted share by $0.31, $0.29 and $0.25, respectively.

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.

The Company's effective tax rates were 96.8%, 13.1% and 13.4% in 2017, 2016 and 2015, respectively. The provision for income taxes for 2017 includes a $550 million estimate for the impact of the enactment of the 2017 Tax Act. Excluding the $550 million income tax expense for the 2017 Tax Act, the effective tax rate in 2017 would have been 11.0% and this effective income tax rate includes a $20 million or (3.1 percentage point) reduction in the income tax expense as a result of the adoption of new accounting guidance related to stock-based compensation. See Note 2 for further information regarding the adoption of this standard.

The 2017 Tax Act changed the U.S. tax system to a territorial system, including base broadening measures requiring the taxation of the Company's historical unremitted foreign earnings through a deemed repatriation, which resulted in a $550 million income tax provision that reduced net income per share by $6.82 for the twelve months ended December 31, 2017, as well as eliminating or reducing certain domestic deductions and credits and limiting the deductibility of interest expense and executive compensation. The $550 million income tax provision primarily consists of an estimated Transition Tax of $490 million, as well as estimated income tax provisions for state and withholding taxes of $40 million and a $20 million 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 Transition Tax will be paid over an eight-year period, starting in 2018, and will not accrue interest. The final impact of the 2017 Tax Act may differ from these estimates due to, among other things, changes in interpretations, analysis and assumptions made by the Company, additional guidance that may be issued by the U.S. Department of the Treasury, and tax planning actions that the Company may undertake.

The income tax provision for 2016 included a $3 million tax benefit related to a release of a valuation allowance on certain net operating loss carryforwards. In 2015, the income tax provision included a $3 million tax benefit related to the completion of tax audit examinations. The remaining differences between effective tax rates can primarily be attributed to differences in the proportionate amounts of pre-tax income recognized in jurisdictions with different effective tax rates.

Liquidity and Capital Resources

Condensed Consolidated Statements of Cash Flows (in thousands):

	Year Ended December 31,		
	2017	2016	2015
Net income	$ 20,311	$ 521,503	$ 469,053
Depreciation and amortization	106,002	96,449	89,987
Stock-based compensation	39,436	40,998	33,368
Deferred income taxes	45,510	1,204	6,581
Excess tax benefit related to stock option plans	—	13,844	12,955
Gain on sale of assets	—	(1,500)	(1,377)
In-process research and development and other non-cash charges	5,000	—	4,638
Change in accounts receivable	(24,013)	(31,721)	(49,888)
Change in inventories	731	(20,147)	(19,967)
Change in accounts payable and other current liabilities	3,175	6,842	27,451
Change in deferred revenue and customer advances	10,386	9,974	16,172
Effect of the 2017 Tax Act	530,383	—	—
Other changes	(39,281)	5,474	(15,725)
Net cash provided by operating activities	697,640	642,920	573,248
Net cash used in investing activities	(535,752)	(487,918)	(399,739)
Net cash used in financing activities	(63,869)	(115,701)	(82,549)
Effect of exchange rate changes on cash and cash equivalents	38,669	(21,335)	(25,472)
Increase in cash and cash equivalents	$ 136,688	$ 17,966	$ 65,488

Cash Flow from Operating Activities

Net cash provided by operating activities was $698 million, $643 million and $573 million in 2017, 2016 and 2015, 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 71 days at December 31, 2017, 2016 and 2015.
- The changes in inventory were primarily attributable to anticipated annual increases in sales volumes, as well as new product launches.
- The changes in accounts payable and other current liabilities were a result of timing of payments to vendors, as well as income tax expenses related to the 2017 Tax Act which are expected to be settled in the next twelve months.
- 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, as a result of the adoption of a new accounting standard related to stock-based compensation, the Company reclassified $14 million and $13 million of excess tax benefits related to stock-based compensation in 2016 and 2015, respectively, from cash flows from financing activities to cash flows from operating activities.

Cash Used in Investing Activities

Net cash used in investing activities totaled $536 million, $488 million and $400 million in 2017, 2016 and 2015, respectively. Additions to fixed assets and capitalized software were $85 million, $95 million and $100 million in 2017, 2016 and 2015, respectively. In February 2018, the Company's Board of Directors approved expanding its chemistry synthesis operations. 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 and investments. The Company does not expect to issue any debt in relation to this expansion.

During 2017, 2016 and 2015, the Company purchased $3.0 billion, $2.4 billion and $2.0 billion of investments, respectively, while $2.5 billion, $2.0 billion and $1.7 billion of investments matured, respectively.

During 2017, the Company made a $7 million payment for an 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. During 2017 and 2015, the Company made payments of $5 million and $3 million, respectively, to acquire and license intellectual property relating to mass spectrometry technologies yet to be commercialized. Business acquisitions, net of cash acquired, were $6 million and $23 million during 2016 and 2015, respectively. There were no business acquisitions in 2017. In 2016, the Company sold an equity investment for $4 million and, in 2015, the Company received $5 million cash from the sale of a building in the U.K.

Cash Used in Financing Activities

In November 2017, the Company entered into 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 Company used $1.3 billion of the proceeds from the 2017 Credit Agreement to repay the outstanding amounts under the 2013 Credit Agreement, which was terminated early without penalty. The Company plans to use future proceeds from the revolving facility for general corporate purposes.

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.

During 2017, 2016 and 2015, the Company's net debt borrowings increased by $170 million, $160 million and $205 million, respectively. As of December 31, 2017, the Company had a total of $2 billion in outstanding debt, which consisted of $700 million in outstanding senior unsecured notes, $300 million borrowed under a term loan and $1 billion borrowed under a revolving credit facility, with both the term loan and revolving credit facilities under the 2017 Credit Agreement. As of December 31, 2017, the Company had a total amount available to borrow under the 2017 Credit Agreement of $498 million after outstanding letters of credit. As of December 31, 2017, the Company was in compliance with all debt covenants.

In May 2017, the Company's Board of Directors authorized the Company to repurchase up to $1 billion of its outstanding common stock over a three-year period. During 2017, 2016 and 2015, the Company repurchased 1.8 million, 2.3 million and 2.6 million shares of the Company's outstanding common stock at a cost of $323 million, $318 million and $327 million, respectively, under the May 2017 authorization and other previously announced programs. As of 2017, the Company had purchased an aggregate of 5.5 million shares at a cost of $750 million under the May 2014 authorization, which is now completed. At December 31, 2017, the Company had a total of $800 million in remaining authorized capacity for future repurchases under the May 2017 authorization. In addition, the Company repurchased $10 million, $8 million and $7 million of common stock related to the vesting of restricted stock units during the years ended December 31, 2017, 2016 and 2015, respectively. As a result of the deemed repatriation of the Company's offshore cash from the 2017 Tax Act, the Company currently anticipates deploying approximately $1 billion of cash to reduce debt and repurchase the Company's common stock shares on the open market during 2018.

The Company received $98 million, $62 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 2017, 2016 and 2015, respectively.

The Company had cash, cash equivalents and investments of $3,394 million as of December 31, 2017. The majority of the Company's cash, cash equivalents and investments are generated from foreign operations, with $3,326 million held by foreign subsidiaries at December 31, 2017, of which $304 million was held in currencies other than U.S. dollars. The Company believes it has sufficient levels of cash flow and access to its existing cash, cash equivalents and investments to fund operations and capital expenditures, service debt interest, finance potential acquisitions and continue the authorized stock repurchase program in the U.S. These cash requirements are managed by the Company's cash flow from operations, its existing cash, cash equivalents and investments, and the use of the Company's revolving credit facility.

Management believes, as of the date of this report, that its 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. Other than the Company gaining tax efficient access to its offshore cash, cash equivalents and investments as a result of the 2017 Tax Act, there have been no recent significant changes to the Company's financial position, nor are there any anticipated changes, to warrant a material adjustment related to indefinitely reinvested foreign earnings.

Contractual Obligations and Commercial Commitments

The following is a summary of the Company's known contractual obligations as of December 31, 2017 (in thousands):

	Payments Due by Year (1)							
	Total	2018	2019	2020	2021	2022	2023	After 2023
Notes payable and debt	$ 100,273	$100,273	$ —	$ —	$ —	$ —	$ —	$ —
Interest on senior unsecured notes	112,307	22,523	21,852	17,268	13,580	11,467	10,489	15,128
Long-term debt(2)	1,900,000	—	—	100,000	150,000	1,300,000	50,000	300,000
2017 Tax Act liability	530,383	80,000	40,000	40,000	40,000	40,000	74,000	216,383
Operating leases	89,682	23,168	18,228	14,122	8,652	6,220	5,285	14,007
Total	$2,732,645	$225,964	$80,080	$171,390	$212,232	$1,357,687	$139,774	$545,518

(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, 2017, 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, 2017 (in thousands):

	Amount of Commitments Expiration Per Period							
	Total	2018	2019	2020	2021	2022	2023	After 2023
Letters of credit	$1,733	$1,733	$—	$—	$—	$—	$—	$—

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 2018, the Company expects to contribute approximately $4 million to $10 million to the Company's defined benefit plans.

The Company has contingent consideration for an earnout pertaining to the Medimass acquisition. 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, 2017 is $3 million.

The Company licenses certain technology and software from third parties. Future minimum license fees payable under existing license agreements as of December 31, 2017 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 accounts for its uncertain tax return reporting 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 classified interest and penalties related to unrecognized tax benefits as a component of the provision for income taxes. If all of the Company's unrecognized tax benefits accrued as of December 31, 2017 were to become recognizable in the future, the Company would record a total reduction of approximately $6 million in its income tax provision.

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, 2012. However, carryforward tax attributes that were generated in years beginning on or before January 1, 2013 may still be adjusted upon examination by tax authorities if the attributes are utilized. 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.

During the year ended December 31, 2016, the Company concluded tax audit disputes outside the U.S. that, in part, related to matters for which the Company had recorded net uncertain tax benefits. The resolution of these tax disputes resulted in a $1 million reduction in the measurement of its unrecognized tax benefits for the year ended December 31, 2016.

During the year ended December 31, 2015, the Company concluded U.S. tax audit disputes that, in part, related to matters for which the Company had recorded net uncertain tax benefits. The resolution of these tax disputes resulted in a $2 million reduction in the measurement of its unrecognized tax benefits and a $2 million decrease in its provision for income taxes for the year ended December 31, 2015.

As of December 31, 2017, 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.

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

Sales of products and services are generally recorded based on product shipment and performance of service, respectively. The Company's deferred revenue on the consolidated balance sheets consists of the obligation on instrument service contracts and customer payments received in advance, prior to shipment of the instrument. At December 31, 2017, the Company had current and long-term deferred revenue liabilities of $167 million and $26 million, respectively. Revenue is recognized when all of the following revenue recognition criteria are met: persuasive evidence of an arrangement exists; delivery or performance has occurred; the vendor's fee is fixed or determinable; collectibility is reasonably assured and, if applicable, upon acceptance when acceptance criteria with contractual cash holdback are specified. Shipping and handling costs are included in cost of sales, net of amounts invoiced to the customer per the order.

Product shipments, including those for demonstration or evaluation, and service contracts are not recorded as revenue until a valid purchase order or master agreement is received, specifying fixed terms and prices. The Company generally recognizes product revenue when legal title has transferred and risk of loss passes to the customer. The Company generally structures its sales arrangements as shipping point or international equivalent and, accordingly, recognizes revenue upon shipment. In some cases, destination-based shipping terms are included in sales arrangements, in which cases revenue is generally recognized when the products arrive at the customer site.

The Company's method of revenue recognition for certain products requiring installation is accounted for in accordance with multiple-element revenue recognition accounting standards. With respect to the installation obligations, the larger of the contractual cash holdback or the best estimate of selling price of the installation service is deferred when the product is shipped and revenue is recognized as a multiple-element arrangement when installation is complete. The Company determines the best estimate of selling price of installation based upon a number of factors, including hourly service billing rates and estimated installation hours.

Instrument service contracts are typically billed at the beginning of the maintenance period. The amount of the service contract is amortized ratably to revenue over the instrument maintenance period. There are no deferred costs associated with the service contract, as the cost of the service is recorded when the service is performed. No revenue is recognized until all revenue recognition criteria have been met.

Sales of standalone software are accounted for in accordance with the accounting standards for software revenue recognition. The Company's software arrangements typically include software licenses and maintenance contracts. Software license revenue is recognized when persuasive evidence of an arrangement exists, delivery has occurred, the fee is fixed or determinable, collection is probable, and there are no significant post-delivery obligations remaining. The revenue associated with the software maintenance contract is recognized ratably over the maintenance term. Unspecified rights to software upgrades are typically sold as part of the maintenance contract on a when-and-if-available basis. The Company uses the residual method to allocate software revenue when a transaction includes multiple elements and vendor specific objective evidence of fair value of undelivered elements exists. Under the residual method, the fair value of the undelivered element (maintenance) is deferred and the remaining portion of the arrangement fee is allocated to the delivered element (software license) and recognized as revenue.

Returns and customer credits are infrequent and are recorded as a reduction to sales. Rights of return are not included in sales arrangements. Revenue associated with products that contain specific customer acceptance criteria is not recognized before the customer acceptance criteria are satisfied. Discounts from list prices are recorded as a reduction to sales.

Loss Provisions on Accounts Receivable and Inventory

The Company maintains allowances for doubtful accounts for estimated losses resulting from the inability of its customers to make required payments. If the financial condition of the Company's customers were to deteriorate, 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 bad debt 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, 2017 was $534 million, net of allowances for doubtful accounts and sales returns of $9 million.

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, 2017 was recorded at its net realizable value of $270 million, which is net of write-downs of $23 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 $228 million, $349 million and $360 million, respectively, as of December 31, 2017.

The Company performs annual impairment reviews of its goodwill on January 1 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; 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. In addition, as a result of the timing of the new 2017 Tax Act in the U.S., the Company has had to make reasonable estimates on certain amounts related to the deemed repatriation of foreign earnings based on the existing interpretations of the U.S. Department of the Treasury and state and local governments. These processes involve the Company estimating its actual current tax exposure, taking into account the amount, timing and character of taxable income, tax deductions and credits and assessing changes in tax laws, regulations, agreements, treaties and any new interpretations on the taxation of the deemed repatriation of foreign earnings. 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 reporting 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 classified interest and penalties related to unrecognized tax benefits as a component of the provision for income taxes. At December 31, 2017, the Company had unrecognized tax benefits of $7 million.

The Company has been granted a 0% contractual tax rate in Singapore that requires the achievement of certain operational and financial milestones that the Company expects to meet, to the extent not already achieved, by December 31, 2020 and maintain through at least March 31, 2021. As part of the Company's determination of uncertain tax positions, the Company regularly assesses its progress against these operational and financial milestone targets to determine whether the milestones can be reasonably achieved. These milestones were negotiated with the Singaporean tax authorities and established based on the Company's historical financial performance; the anticipated customer end-market demand, particularly in certain regions in the world, and the Company's anticipated future operating plans. These assessments require significant judgments and estimates about the Company's ability to meet the milestone targets for 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. The Company regularly monitors its actual and forecasted sales and operating results against these milestones and the Company makes the determination as to whether the future forecasted financial results are most likely to be achieved. These milestones are very similar in nature to the previous Singaporean tax holiday contractual agreements that the Company successfully completed. These milestones are not required to be met until December 21, 2020, at the earliest, which gives the Company sufficient time to make any necessary adjustments to its operating plans to achieve the milestones.

Currently, the Company has determined that it is more likely than not to realize the contractual tax rate in Singapore of 0% and has not recognized an uncertain tax benefit in its balance sheet related to the achievement of the contractual milestones in Singapore. However, these milestones can be significantly influenced by the business climate in Singapore and the Company's overall financial performance and, in the event that the Company determines that the milestone targets are not expected to be met, the Company would no longer be able to record a tax benefit at a 0% contractual tax rate on income earned in Singapore from and after the April 1, 2016 start date of the contract period. At such time, the Company would record an income tax charge on the affected Singapore income earned back to April 1, 2016 at the Singapore statutory tax rate(s) (currently 17%), with a corresponding income tax liability recorded on the balance sheet. For the year ended 2017, the effect of applying the contractual tax rate rather than the statutory tax rate to income from qualifying activities in Singapore increased the Company's net income and net income per diluted share by $25 million and $0.31, respectively.

On December 22, 2017, the U.S. enacted the 2017 Tax Act, which changed the U.S. tax system to a territorial tax system, including base broadening measures on non-U.S. earnings, whereby foreign earnings are effectively deemed to be repatriated to the U.S., as well as reducing or eliminating certain domestic deductions and credits and limiting the deductibility of interest expense and executive compensation. Included in the 2017 Tax Act is a Transition Tax, which is a one-time, mandatory deemed repatriation tax on the accumulated foreign earnings that have not been previously taxed. Earnings in the form of cash and cash equivalents will be taxed at a rate of 15.5% and all other earnings will be taxed at a rate of 8.0%. As a result, the Company's historical unremitted foreign earnings were deemed repatriated in 2017 and the Company incurred a $550 million estimated tax provision, which primarily consisted 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 Transition Tax will be paid over an eight-year period, starting in 2018, and will not accrue interest. The final impact of the 2017 Tax Act may differ from these estimates, due to, among other things, changes in interpretations, analysis and assumptions made by the Company, additional guidance that may be issued by the U.S. Department of the Treasury and tax planning actions that the Company may undertake.

In accordance with guidance in SEC Staff Accounting Bulletin No. 118, the final determination of the Transition Tax and the remeasurement of our deferred assets and liabilities will be completed as additional information becomes available, but no later than one year from the date of enactment of the 2017 Tax Act.

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, 2017, the Company's warranty liability was $13 million.

Litigation

As described in Item 3, Legal Proceedings, of Part I 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

Assumptions used in determining projected benefit obligations and the fair values of plan assets for the Company's 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 6.53% for its U.S. benefit plans and 2.64% 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, 2017 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, 2017, the Company determined the weighted-average discount rate to be 3.94% for the U.S. benefit plans and 1.79% 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 for the Waters Retirement Plan by less than $1 million. A one-quarter percentage point increase in the discount rate would decrease the Company's net periodic benefit cost for the Waters Retirement Plan 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, 2017, 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	$ 43	3.5
Restricted stock units	34	3.0
Performance stock units	10	2.5
Restricted stock	—	—
Total	$ 87	3.2

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.

Contingent Consideration

In addition to the initial cash consideration paid to acquire Medimass, the Company is obligated to make additional earnout payments based on a royalty due on future sales of products containing the REIMS technology. In accordance with the accounting standards for business combinations, the Company determines the fair value of the liability for contingent consideration at each reporting date using a probability-weighted discounted cash flow model. 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 estimated future results and a discount rate reflective of the Company's creditworthiness. A change in any of these unobservable inputs can significantly change the fair value of the contingent consideration. Although there is no contractual limit, total future undiscounted contingent consideration payments were estimated to be $3 million as of December 31, 2017, based on the Company's best estimate, as the earnout is based on future sales of certain products through 2034.

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*

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 strategy in managing exposure to changes in foreign currency exchange rates is to 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.

The Company does not specifically enter into any derivatives that hedge foreign-currency-denominated 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. At December 31, 2017, 2016 and 2015, the Company held foreign currency exchange contracts with notional amounts totaling $147 million, $120 million and $116 million, respectively.

The Company's foreign currency exchange contracts included in the consolidated balance sheets are classified as follows (in thousands):

	December 31, 2017	December 31, 2016
Other current assets	$566	$ 60
Other current liabilities	$182	$730

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

	Year Ended December 31,		
	2017	2016	2015
Realized gains (losses) on closed contracts	$3,894	$(10,401)	$(2,601)
Unrealized gains (losses) on open contracts	1,054	(883)	742
Cumulative net pre-tax gains (losses)	$4,948	$(11,284)	$(1,859)

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, 2017 would decrease pre-tax earnings by approximately $15 million.

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, 2017, 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. treasury bills, U.S. dollar-denominated treasury bills and commercial paper, bank deposits and corporate debt securities. 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, 2017 and 2016, $3,326 million out of $3,394 million and $2,766 million out of $2,813 million, respectively, of the Company's total cash, cash equivalents and investments were held by foreign subsidiaries. In addition, $304 million out of $3,394 million and $261 million out of $2,813 million of cash, cash equivalents and investments were held in currencies other than the U.S. dollar at December 31, 2017 and 2016, respectively. As of December 31, 2017, the Company has 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, 2017 would decrease by approximately $30 million, of which the majority would be recorded to foreign currency translation in other comprehensive income within stockholders' equity.

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, 2017.

The effectiveness of our internal control over financial reporting as of December 31, 2017 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 as of December 31, 2017 and 2016, and the related consolidated statements of operations, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2017, including the related notes and schedule of valuation and qualifying accounts for each of the three years in the period ended December 31, 2017 appearing under Item 15(c) (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2017, 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, 2017 and 2016, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2017 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, 2017, 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 share-based payment transactions in 2017.

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.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
February 27, 2018

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

WATERS CORPORATION AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

	December 31, 2017	December 31, 2016
	(In thousands, except per share data)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 642,319	$ 505,631
Investments	2,751,382	2,307,401
Accounts receivable, net	533,825	489,340
Inventories	270,294	262,682
Other current assets	72,314	70,391
Total current assets	4,270,134	3,635,445
Property, plant and equipment, net	349,278	337,118
Intangible assets, net	228,395	207,055
Goodwill	359,819	352,080
Other assets	116,728	130,361
Total assets	$ 5,324,354	$ 4,662,059
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Notes payable and debt	$ 100,273	$ 125,297
Accounts payable	64,537	67,740
Accrued employee compensation	69,024	57,465
Deferred revenue and customer advances	166,840	148,837
Accrued income taxes	73,008	15,244
Accrued warranty	13,026	13,391
Other current liabilities	119,449	92,347
Total current liabilities	606,157	520,321
Long-term liabilities:		
Long-term debt	1,897,501	1,701,966
Long-term portion of retirement benefits	67,334	72,568
Long-term income tax liabilities	456,949	10,458
Other long-term liabilities	62,625	54,797
Total long-term liabilities	2,484,409	1,839,789
Total liabilities	3,090,566	2,360,110
Commitments and contingencies (Notes 5, 8, 9, 10, 11 and 15)		
Stockholders' equity:		
Preferred stock, par value $0.01 per share, 5,000 shares authorized, none issued at December 31, 2017 and December 31, 2016	—	—
Common stock, par value $0.01 per share, 400,000 shares authorized, 159,845 and 158,634 shares issued, 79,337 and 80,023 shares outstanding at December 31, 2017 and December 31, 2016, respectively	1,598	1,586
Additional paid-in capital	1,745,088	1,607,241
Retained earnings	5,405,380	5,385,069
Treasury stock, at cost, 80,509 and 78,611 shares at December 31, 2017 and December 31, 2016, respectively	(4,808,211)	(4,475,667)
Accumulated other comprehensive loss	(110,067)	(216,280)
Total stockholders' equity	2,233,788	2,301,949
Total liabilities and stockholders' equity	$ 5,324,354	$ 4,662,059

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

WATERS CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS

	Year Ended December 31,		
	2017	2016	2015
	(In thousands, except per share data)		
Revenues:			
Product sales	$1,552,349	$1,460,296	$1,385,256
Service sales	756,729	707,127	657,076
Total net sales	2,309,078	2,167,423	2,042,332
Costs and operating expenses:			
Cost of product sales	623,214	595,796	565,630
Cost of service sales	323,853	295,657	277,042
Selling and administrative expenses	544,703	513,031	495,747
Research and development expenses	132,593	125,187	118,545
Litigation provisions (Note 11)	11,114	3,524	3,939
Purchased intangibles amortization	6,743	9,889	10,123
Acquired in-process research and development (Note 2)	5,000	—	3,855
Total costs and operating expenses	1,647,220	1,543,084	1,474,881
Operating income	661,858	624,339	567,451
Interest expense	(56,839)	(44,911)	(36,243)
Interest income	36,078	20,686	10,711
Income before income taxes	641,097	600,114	541,919
Provision for income taxes	620,786	78,611	72,866
Net income	$ 20,311	$ 521,503	$ 469,053
Net income per basic common share	$ 0.25	$ 6.46	$ 5.70
Weighted-average number of basic common shares	79,793	80,786	82,336
Net income per diluted common share	$ 0.25	$ 6.41	$ 5.65
Weighted-average number of diluted common shares and equivalents	80,604	81,417	83,087

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,		
	2017	2016	2015
		(In thousands)	
Net income	$ 20,311	$521,503	$469,053
Other comprehensive income (loss):			
Foreign currency translation	101,148	(66,996)	(70,481)
Unrealized (losses) gains on investments before income taxes	(1,794)	279	(1,825)
Income tax benefit	68	111	31
Unrealized (losses) gains on investments, net of tax	(1,726)	390	(1,794)
Retirement liability adjustment before reclassifications	7,832	(6,783)	191
Amounts reclassified to selling and administrative expenses	3,948	3,263	4,443
Retirement liability adjustment before income taxes	11,780	(3,520)	4,634
Income tax (expense) benefit	(4,989)	572	(380)
Retirement liability adjustment, net of tax	6,791	(2,948)	4,254
Other comprehensive income (loss)	106,213	(69,554)	(68,021)
Comprehensive income	$126,524	$451,949	$401,032

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,		
	2017	2016	2015
		(In thousands)	
Cash flows from operating activities:			
Net income	$ 20,311	$ 521,503	$ 469,053
Adjustments to reconcile net income to net cash provided by operating activities:			
Stock-based compensation	39,436	40,998	33,368
Deferred income taxes	45,510	1,204	6,581
Depreciation	61,450	51,684	45,287
Amortization of intangibles	44,552	44,765	44,700
Excess tax benefit related to stock option plans	—	13,844	12,955
Gain on sale of assets	—	(1,500)	(1,377)
In-process research and development and other non-cash charges	5,000	—	4,638
Change in operating assets and liabilities, net of acquisitions:			
Increase in accounts receivable	(24,013)	(31,721)	(49,888)
Decrease (increase) in inventories	731	(20,147)	(19,967)
Increase in other current assets	(16,323)	(2,436)	(17,206)
Increase in other assets	(24,098)	(1,076)	(9,634)
Increase in accounts payable and other current liabilities	3,175	6,842	27,451
Increase in deferred revenue and customer advances	10,386	9,974	16,172
Effect of the 2017 Tax Act	530,383	—	—
Increase in other liabilities	1,140	8,986	11,115
Net cash provided by operating activities	697,640	642,920	573,248
Cash flows from investing activities:			
Additions to property, plant, equipment and software capitalization	(85,473)	(94,967)	(100,012)
Business acquisitions, net of cash acquired	—	(5,609)	(23,494)
Investment in unaffiliated company	(7,000)	—	—
Payments for intellectual property licenses	(5,000)	—	(3,000)
Purchases of investments	(2,960,379)	(2,396,032)	(2,010,368)
Maturities and sales of investments	2,522,100	2,004,690	1,731,981
Proceeds from sale of assets	—	4,000	5,154
Net cash used in investing activities	(535,752)	(487,918)	(399,739)
Cash flows from financing activities:			
Proceeds from debt issuances	1,480,190	485,298	325,219
Payments on debt	(1,310,214)	(325,323)	(120,140)
Payments of debt issuance costs	(2,984)	(1,705)	(2,382)
Proceeds from stock plans	97,789	62,189	52,060
Purchases of treasury shares	(332,544)	(325,759)	(334,705)
Proceeds from (payments for) derivative contracts	3,894	(10,401)	(2,601)
Net cash used in financing activities	(63,869)	(115,701)	(82,549)
Effect of exchange rate changes on cash and cash equivalents	38,669	(21,335)	(25,472)
Increase in cash and cash equivalents	136,688	17,966	65,488
Cash and cash equivalents at beginning of period	505,631	487,665	422,177
Cash and cash equivalents at end of period	$ 642,319	$ 505,631	$ 487,665
Supplemental cash flow information:			
Income taxes paid	$ 70,583	$ 50,007	$ 51,750
Interest paid	$ 56,503	$ 43,595	$ 37,396

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

WATERS CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

	Number of Common Shares	Common Stock	Additional Paid-In Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Income (Loss)	Total Stockholders' Equity
				(In thousands)			
Balance December 31, 2014	156,716	$1,567	$1,392,494	$4,394,513	$(3,815,203)	$ (78,705)	$1,894,666
Net income	—	—	—	469,053	—	—	469,053
Other comprehensive loss	—	—	—	—	—	(68,021)	(68,021)
Issuance of common stock for employees:							
Employee Stock Purchase Plan	53	1	5,495	—	—	—	5,496
Stock options exercised	727	7	46,557	—	—	—	46,564
Tax benefit related to stock option plans	—	—	12,955	—	—	—	12,955
Treasury stock	—	—	—	—	(334,705)	—	(334,705)
Stock-based compensation	181	2	32,841	—	—	—	32,843
Balance December 31, 2015	157,677	$1,577	$1,490,342	$4,863,566	$(4,149,908)	$(146,726)	$2,058,851
Net income	—	—	—	521,503	—	—	521,503
Other comprehensive loss	—	—	—	—	—	(69,554)	(69,554)
Issuance of common stock for employees:							
Employee Stock Purchase Plan	53	1	6,277	—	—	—	6,278
Stock options exercised	730	7	55,904	—	—	—	55,911
Tax benefit related to stock option plans	—	—	13,844	—	—	—	13,844
Treasury stock	—	—	—	—	(325,759)	—	(325,759)
Stock-based compensation	174	1	40,874	—	—	—	40,875
Balance December 31, 2016	158,634	$1,586	$1,607,241	$5,385,069	$(4,475,667)	$(216,280)	$2,301,949
Net income	—	—	—	20,311	—	—	20,311
Other comprehensive income	—	—	—	—	—	106,213	106,213
Issuance of common stock for employees:							
Employee Stock Purchase Plan	50	1	6,874	—	—	—	6,875
Stock options exercised	972	10	90,904	—	—	—	90,914
Treasury stock	—	—	—	—	(332,544)	—	(332,544)
Stock-based compensation	189	1	40,069	—	—	—	40,070
Balance December 31, 2017	159,845	$1,598	$1,745,088	$5,405,380	$(4,808,211)	$(110,067)	$2,233,788

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") is a specialty measurement company that has pioneered analytical workflow solutions involving liquid chromatography, mass spectrometry and thermal analysis innovations serving the life, materials and food sciences for nearly 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, product returns and allowances, bad debts, inventory valuation, goodwill and intangible assets, income taxes, warranty and installation provisions, litigation, retirement plan obligations, stock-based compensation, equity investments and contingencies. 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.

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 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%, 69% and 68% in 2017, 2016 and 2015, respectively. Gains and losses from foreign currency transactions are included in net income in the consolidated statements of operations. In 2017, 2016 and 2015 foreign currency transactions resulted in net losses of $1 million and $4 million, and a net gain of $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 in accordance with the accounting standards for investments in debt and equity securities. All available-for-sale securities are recorded at fair market value and any unrealized holding gains and losses, to the extent deemed temporary, are included in accumulated other comprehensive income in stockholders' equity, net of the related tax effects. If any adjustment to fair value reflects a decline in the value of the investment, the Company considers all available evidence to evaluate the extent to which the decline is "other than temporary" and, if so, records a loss as a charge to the statement of operations. 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, 2017 and 2016, $3,326 million out of $3,394 million and $2,766 million out of $2,813 million, respectively, of the Company's total cash, cash equivalents and investments were held by foreign subsidiaries. In addition, $304 million out of $3,394 million and $261 million out of $2,813 million of cash, cash equivalents and investments were held in currencies other than the U.S. dollar at December 31, 2017 and 2016, respectively.

Accounts Receivable and Allowance for Doubtful Accounts

Trade accounts receivable are recorded at the invoiced amount and do not bear interest. The allowance for doubtful accounts is the best estimate of the amount of probable credit losses in the existing accounts receivable. The allowance is based on a number of factors, including historical experience and the customer's credit-worthiness. The allowance for doubtful accounts is reviewed on at least a quarterly basis. Past due balances over

90 days and over a specified amount are reviewed individually for collectibility. Account balances are charged against the allowance when the Company determines it is probable that the receivable will not be recovered. The Company does not have any off-balance sheet credit exposure related to its customers. The allowance for sales returns is the best estimate of the amount of future product returns related to current period revenue and is based on historical experience.

The following is a summary of the activity of the Company's allowance for doubtful accounts and sales returns for the years ended December 31, 2017, 2016 and 2015 (in thousands):

	Balance at Beginning of Period	Additions	Deductions	Balance at End of Period
Allowance for Doubtful Accounts and Sales Returns:				
2017	$8,657	$9,059	$(8,386)	$9,330
2016	$7,496	$6,912	$(5,751)	$8,657
2015	$7,179	$6,739	$(6,422)	$7,496

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 56% in both 2017 and 2016 and 54% in 2015. None of the Company's individual customers accounted for more than 2% of annual Company sales in 2017, 2016 or 2015. 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

Deferred income taxes are recognized for temporary differences between the financial statement and income tax basis of assets and liabilities using tax rates in effect for the years in which the differences are expected to reverse. A valuation allowance is provided to offset any net deferred tax assets if, based upon the available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized. Appropriate long-term liabilities have also been recorded to recognize uncertain tax return reporting positions.

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 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.

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. Additionally, the Company performs an annual goodwill impairment assessment for its reporting units as of January 1 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. Under the impairment test, 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. 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; debt issuance costs 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. Debt issuance costs are amortized over the life of the related debt. 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 $35 million and $33 million of direct expenses that were related to the development of software in 2017 and 2016, respectively. Net capitalized software included in intangible assets totaled $153 million and $132 million at December 31, 2017 and 2016, respectively. See Note 7, "Goodwill and Other Intangibles".

The Company capitalizes internal software development costs for internal use in accordance with the accounting standards for goodwill and other intangible assets. 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 $3 million at both December 31, 2017 and 2016.

Other Investments

The Company accounts for its investments that represent less than twenty percent ownership, and for which the Company does not have significant influence, using the accounting standards for investments in debt and 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 under the cost method of accounting. The Company periodically evaluates the carrying value of its investments accounted for under the cost method of accounting and carries them at the lower of cost or estimated net realizable value. For investments in which the Company owns or controls between twenty and forty-nine percent of the voting shares, or over which it exerts significant influence over operating and financial policies, the equity method of accounting is used. The Company's share of net income or losses of equity investments is included in the consolidated statements of operations and was not material in any period presented.

During the year ended December 31, 2017, the Company made a $7 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. This investment was accounted for under the cost method of accounting.

During the year ended December 31, 2016, the Company sold an equity investment that was accounted for using the equity method of accounting and was included in other assets in the consolidated balance sheet for $4 million in cash.

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, 2017 and 2016. 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, 2017 (in thousands):

	Total at December 31, 2017	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
U.S. Treasury securities	$ 591,988	$ —	$ 591,988	$ —
Foreign government securities	6,952	—	6,952	—
Corporate debt securities	1,975,160	—	1,975,160	—
Time deposits	371,511	—	371,511	—
Equity securities	147	—	147	—
Waters 401(k) Restoration Plan assets	35,645	35,645	—	—
Foreign currency exchange contracts	566	—	566	—
Total	$2,981,969	$35,645	$2,946,324	$ —
Liabilities:				
Contingent consideration	$ 3,247	$ —	$ —	$3,247
Foreign currency exchange contracts	182	—	182	—
Total	$ 3,429	$ —	$ 182	$3,247

The following table represents the Company's assets and liabilities measured at fair value on a recurring basis at December 31, 2016 (in thousands):

	Total at December 31, 2016	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
U.S. Treasury securities	$ 570,313	$ —	$ 570,313	$ —
Foreign government securities	17,991	—	17,991	—
Corporate debt securities	1,643,838	—	1,643,838	—
Time deposits	199,906	—	199,906	—
Equity securities	147	—	147	—
Waters 401(k) Restoration Plan assets	30,954	30,954	—	—
Foreign currency exchange contracts	60	—	60	—
Total	$2,463,209	$30,954	$2,432,255	$ —
Liabilities:				
Contingent consideration	$ 3,007	$ —	$ —	$3,007
Foreign currency exchange contracts	730	—	730	—
Total	$ 3,737	$ —	$ 730	$3,007

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, Investment and Foreign Currency Exchange Contracts

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 the July 2014 acquisition of Medimass Research, Development and Service Kft. 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. Although there is no contractual limit, the fair value of future contingent consideration payments was estimated to be $3 million at both December 31, 2017 and December 31, 2016, 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.

Fair Value of Other Financial Instruments

The Company's cash, 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 $610 million at December 31, 2017 and 2016. 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 $608 million and $603 million at December 31, 2017 and 2016, 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 strategy in managing exposure to changes in foreign currency exchange rates is to 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.

The Company does not specifically enter into any derivatives that hedge foreign-currency-denominated 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. At December 31, 2017, 2016 and 2015, the Company held foreign currency exchange contracts with notional amounts totaling $147 million, $120 million and $116 million, respectively.

The Company's foreign currency exchange contracts included in the consolidated balance sheets are classified as follows (in thousands):

	December 31, 2017	December 31, 2016
Other current assets	$566	$ 60
Other current liabilities	$182	$730

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

	Year Ended December 31,		
	2017	2016	2015
Realized gains (losses) on closed contracts	$3,894	$(10,401)	$(2,601)
Unrealized gains (losses) on open contracts	1,054	(883)	742
Cumulative net pre-tax gains (losses)	$4,948	$(11,284)	$(1,859)

Stockholders' Equity

In May 2017, the Company's Board of Directors authorized the Company to repurchase up to $1 billion of its outstanding common stock over a three-year period. During 2017, 2016 and 2015, the Company repurchased 1.8 million, 2.3 million and 2.6 million shares of the Company's outstanding common stock at a cost of $323 million, $318 million and $327 million, respectively, under the May 2017 authorization and other previously announced programs. As of December 31, 2017, the Company repurchased an aggregate of 5.5 million shares at a cost of $750 million under the May 2014 repurchase program, which is now completed. As of December 31, 2017, the Company repurchased an aggregate of 1.1 million shares at a cost of $200 million under the May 2017 repurchase program and has a total of $800 million authorized for future repurchases. In addition, the Company repurchased $10 million, $8 million and $7 million of common stock related to the vesting of restricted stock units during the years ended December 31, 2017, 2016 and 2015, respectively. The Company believes that it has the financial flexibility to fund these share repurchases given current cash 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.

Revenue Recognition

Sales of products and services are generally recorded based on product shipment and performance of service, respectively. The Company's deferred revenue on the consolidated balance sheets consists of the obligation on instrument service contracts and customer payments received in advance, prior to shipment of the instrument. Revenue is recognized when all of the following revenue recognition criteria are met: persuasive evidence of an arrangement exists; delivery or performance has occurred; the vendor's fee is fixed or determinable; collectibility is reasonably assured and, if applicable, upon acceptance when acceptance criteria with contractual cash holdback are specified. Shipping and handling costs invoiced to the customer are included in net sales, while the costs associated with shipping and handling are included in cost of sales.

Product shipments and service contracts are not recorded as revenue until a valid purchase order or master agreement is received, specifying fixed terms and prices. The Company generally recognizes product revenue when legal title has transferred and risk of loss passes to the customer. The Company generally structures its sales arrangements as shipping point or international equivalent and, accordingly, recognizes revenue upon shipment. In some cases, destination-based shipping terms are included in sales arrangements, in which cases revenue is generally recognized when the products arrive at the customer site.

The Company's method of revenue recognition for certain products requiring installation is accounted for in accordance with multiple-element revenue recognition accounting standards. With respect to the installation obligations, the larger of the contractual cash holdback or the best estimate of selling price of the installation service is deferred when the product is shipped and revenue is recognized as a multiple-element arrangement when installation is complete. The Company determines the best estimate of selling price of installation based upon a number of factors, including hourly service billing rates and estimated installation hours.

Instrument service contracts are typically billed at the beginning of the maintenance period. The amount of the service contract is amortized ratably to revenue over the instrument maintenance period. There are no deferred costs associated with the service contract, as the cost of the service is recorded when the service is performed. No revenue is recognized until all revenue recognition criteria have been met.

Sales of standalone software are accounted for in accordance with the accounting standards for software revenue recognition. The Company's software arrangements typically include software licenses and maintenance contracts. Software license revenue is recognized when persuasive evidence of an arrangement exists, delivery has occurred, the fee is fixed or determinable, collection is probable, and there are no significant post-delivery obligations remaining. The revenue associated with the software maintenance contract is recognized ratably over the maintenance term. Unspecified rights to software upgrades are typically sold as part of the maintenance contract on a when-and-if-available basis. The Company uses the residual method to allocate software revenue when a transaction includes multiple elements and vendor specific objective evidence of fair value of undelivered elements exists. Under the residual method, the fair value of the undelivered element (maintenance) is deferred and the remaining portion of the arrangement fee is allocated to the delivered element (software license) and recognized as revenue.

Returns and customer credits are infrequent and are recorded as a reduction to sales. Rights of return are not included in sales arrangements. Revenue associated with products that contain specific customer acceptance criteria is not recognized before the customer acceptance criteria are satisfied. Discounts from list prices are recorded as a reduction to sales.

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, 2017, 2016 and 2015 (in thousands):

	Balance at Beginning of Period	Accruals for Warranties	Settlements Made	Balance at End of Period
Accrued warranty liability:				
2017	$13,391	$8,746	$(9,111)	$13,026
2016	$13,349	$9,755	$(9,713)	$13,391
2015	$13,266	$8,390	$(8,307)	$13,349

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 for 2017 and were $11 million for both 2016 and 2015.

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. During 2017 and 2015, the Company incurred $5 million and $4 million charges, respectively, for acquired in-process research and development related to the licensing of 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. These licensing arrangements are significantly related to new, biologically-focused applications, as well as other applications, and require 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.

Stock-Based Compensation

The Company has two stock-based compensation plans, which are described in Note 12, "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 15, "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 July 2015, accounting guidance was issued which clarifies the measurement of inventory. The new guidance requires inventory to be measured at the lower of cost and net realizable value. Net realizable value is the estimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal and transportation. This guidance is effective for annual and interim periods beginning after December 15, 2016. The Company adopted this standard as of January 1, 2017 and this standard did not have a material effect on the Company's financial position, results of operations and cash flows.

In March 2016, accounting guidance was issued which simplifies the accounting for share-based payment transactions, including the income tax consequences, classification of awards as either equity or liabilities and classification on the statement of cash flows. This guidance was effective for annual and interim reporting periods beginning after December 15, 2016. The new guidance is required to be adopted on a prospective basis for the statement of operations and the Company has elected to retrospectively apply the cash flow aspects of this new guidance. In addition, the Company has elected to continue to estimate forfeitures at the time of grant and update forfeiture estimates throughout the requisite service period. The Company adopted this standard as of January 1, 2017 and recognized an excess tax benefit related to stock-based compensation which decreased income tax expense for 2017 by $20 million and added $0.24 to net income per diluted share. These excess tax benefits were previously recorded in equity and there were no cumulative-effect adjustments to retained earnings as a result of the adoption of this standard. In addition, the Company reclassified $14 million and $13 million of excess tax benefits related to stock-based compensation from cash flows from financing activities to cash flows from operating activities for 2016 and 2015, respectively.

Recently Issued Accounting Standards

In May 2014, amended accounting guidance was issued regarding the recognition of revenue from contracts with customers. The objective of this guidance is to significantly enhance comparability and clarify principles of revenue recognition practices across entities, industries, jurisdictions and capital markets. This guidance was originally effective for annual and interim reporting periods beginning after December 15, 2016; however, the Financial Accounting Standards Board ("FASB") amended the standard in August 2015 to delay the effective period date by one year to annual and interim periods beginning after December 15, 2017. Adoption prior to December 15, 2016 was not permitted. In March 2016, the FASB clarified the implementation guidance on principal versus agent considerations and, in April 2016, clarification was made regarding certain aspects of identifying performance obligations and licensing implementation guidance. In May 2016, additional guidance was issued related to disclosure of remaining performance obligations, as well as other amendments to guidance on collectibility, non-cash consideration and the presentation of sales and other similar taxes collected from customers. The Company did not early adopt this accounting standard and will apply the modified-retrospective method. 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 2016, accounting guidance was issued which primarily affects the classification and measurement of certain financial instruments, principally equity investments and certain financial liabilities. Under the new guidance, there will no longer be an available-for-sale classification for equity securities with readily determinable fair values. Changes to the fair value of equity investments will be recognized through earnings. Equity investments carried at cost should be adjusted for changes in observable prices, as applicable, and qualitatively assessed for impairment annually. Changes to the fair value of financial liabilities under the fair value option due to instrument specific credit risk will be recognized separately in other comprehensive income. The new guidance also requires financial assets and financial liabilities to be presented separately and grouped by measurement category in the notes to the financial statements. This guidance is effective for annual and interim reporting periods beginning after December 15, 2017 and early adoption of certain provisions of this guidance is permitted. The Company currently does not expect that the adoption of this standard will have a material effect on the Company's financial position, results of operations and cash flows.

In February 2016, accounting guidance was issued regarding the accounting for leases. This new comprehensive lease standard amends various aspects of existing accounting guidance for leases. The core principle of the new guidance will require lessees to present the assets and liabilities that arise from leases on their balance sheets. This guidance is effective for annual and interim reporting periods beginning after December 15, 2018 and early adoption is permitted. The Company expects that the adoption of this standard will have a material effect on the Company's balance sheet; however, it is not expected to have an overall material impact on the Company's results of operations and cash flows. Please see Note 11, "Other Commitments and Contingencies", for additional information.

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. Current guidance requires the recognition of a credit loss when it is considered probable that a loss event has occurred. The new 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. The Company currently does not expect that the adoption of this standard will have a material effect on the Company's financial position, results of operations and cash flows.

In August 2016, accounting guidance was issued that clarifies the classification of certain cash flows. The new guidance addresses eight specific areas where current accounting guidance is either unclear or does not specifically address classification issues. This guidance is effective for annual and interim periods beginning after December 15, 2017 and early adoption is permitted. The Company currently does not believe that the adoption of this standard will have a material impact on the Company's cash flows.

In October 2016, accounting guidance was issued regarding intra-entity transfers of assets other than inventory. The new guidance 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. This guidance is effective for annual and interim periods beginning after December 15, 2017 and early adoption is permitted. The Company does not believe 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 2017, accounting guidance was issued that clarifies the definition of a business. The new guidance provides a more robust framework to use in determining when a set of assets and activities is a business, thus narrowing the definition and the amount of transactions accounted for as business combinations. This guidance is effective for annual and interim periods beginning after December 15, 2017 and early application is permitted under certain circumstances. The Company will apply this guidance prospectively to any business combination transactions that take place after adoption of this new guidance.

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 and early adoption is permitted. The Company currently does not expect that the adoption of this standard will have a material effect on the Company's financial position, results of operations and cash flows.

In March 2017, accounting guidance was issued regarding the presentation of net periodic pension cost and net periodic postretirement benefit cost. The new guidance requires that an employer disaggregate the service cost component from other components of net benefit cost, with service cost reported in the same line items as other compensation costs and the other components of net benefit costs presented outside income from operations. This guidance is effective for annual and interim periods beginning after December 15, 2017 and early adoption is permitted. The Company currently does not believe that the adoption of this standard will have a material impact on the Company's financial position, results of operations and cash flows. Please see Note 15, "Retirement Plans", for additional information.

In March 2017, accounting guidance was issued to amend the amortization period for certain purchased callable debt securities held at a premium. Specifically, the amortization period for certain callable debt securities will be shortened to end at the earliest call date. This guidance is effective for annual and interim periods beginning after December 15, 2018 and early adoption is permitted. The Company currently does not believe that the adoption of this standard will have a material impact on the Company's financial position, results of operations and cash flows.

In May 2017, accounting guidance was issued that clarifies the accounting for a change to the terms or conditions of a share-based payment award. The standard provides more specific guidance for determining when a change to an award requires modification accounting and when it should be deemed purely administrative in nature. This guidance is effective for annual and interim periods beginning after December 15, 2017 and early adoption is permitted. The Company currently does not believe that the adoption of this standard will have a material impact on the Company's financial position, results of operations and cash flows.

3 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, 2017			
	Amortized Cost	Unrealized Gain	Unrealized Loss	Fair Value
U.S. Treasury securities	$ 593,599	$ 82	$(1,693)	$ 591,988
Foreign government securities	6,982	—	(30)	6,952
Corporate debt securities	1,977,329	897	(3,066)	1,975,160
Time deposits	371,515	—	(4)	371,511
Equity securities	77	70	—	147
Total	$2,949,502	$1,049	$(4,793)	$2,945,758
Amounts included in:				
Cash equivalents	$ 194,377	$ —	$ (1)	$ 194,376
Investments	2,755,125	1,049	(4,792)	2,751,382
Total	$2,949,502	$1,049	$(4,793)	$2,945,758

	December 31, 2016			
	Amortized Cost	Unrealized Gain	Unrealized Loss	Fair Value
U.S. Treasury securities	$ 570,695	$253	$ (635)	$ 570,313
Foreign government securities	17,999	—	(8)	17,991
Corporate debt securities	1,645,468	496	(2,126)	1,643,838
Time deposits	199,906	—	—	199,906
Equity securities	77	70	—	147
Total	$2,434,145	$819	$(2,769)	$2,432,195
Amounts included in:				
Cash equivalents	$ 124,793	$ 1	$ —	$ 124,794
Investments	2,309,352	818	(2,769)	2,307,401
Total	$2,434,145	$819	$(2,769)	$2,432,195

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

	December 31, 2017	December 31, 2016
Due in one year or less	$1,722,553	$1,388,537
Due after one year through three years	851,547	843,605
Total	$2,574,100	$2,232,142

Realized gains and losses on sales of investments were not material in 2017, 2016 and 2015.

4 Inventories

Inventories are classified as follows (in thousands):

	December 31,	
	2017	2016
Raw materials	$ 99,033	$ 95,430
Work in progress	15,324	16,585
Finished goods	155,937	150,667
Total inventories	$270,294	$262,682

During 2017, 2016 and 2015, the Company recorded inventory-related excess and obsolescence provisions of $2 million, $9 million and $5 million, respectively.

5 Property, Plant and Equipment

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

	December 31, 2017	December 31, 2016
Land and land improvements	$ 37,525	$ 35,720
Buildings and leasehold improvements	294,219	274,021
Production and other equipment	484,475	438,604
Construction in progress	22,140	20,204
Total property, plant and equipment	838,359	768,549
Less: accumulated depreciation and amortization	(489,081)	(431,431)
Property, plant and equipment, net	$ 349,278	$ 337,118

During 2017, 2016 and 2015, the Company retired and disposed of approximately $15 million, $15 million and $29 million of property, plant and equipment, respectively, most of which was fully depreciated and no longer in use. Gains on disposal were immaterial for the years ended December 31, 2017 and 2016.

In February 2018, the Company's Board of Directors approved expanding its chemistry synthesis operations. 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 and investments. The Company does not expect to issue any debt in relation to this expansion.

6 Acquisitions

In September 2016, the Company acquired all of the outstanding stock of Rubotherm GmbH ("Rubotherm"), a manufacturer of gravimetric analysis systems, for approximately $6 million in cash, $5 million of which was paid at closing and an additional $1 million paid after closing to settle certain liabilities. Rubotherm develops and manufactures analytical test instruments for thermogravimetric and sorption measurements that are used in both industrial and academic research laboratories in disciplines that include chemistry, material science and engineering. The Rubotherm acquisition will help support and further expand product offerings within TA's thermal analysis business.

In November 2015, the Company acquired all of the outstanding stock of MPE Orbur Group Limited and its sole operating subsidiary, Midland Precision Equipment Company, Ltd. ("MPE"), a manufacturer of MS instrumentation components, for $12 million, net of cash acquired. MPE is a highly skilled manufacturer and former Waters supplier that produces critical components that support the Company's MS instrument systems. MPE was acquired to bring this key supplier in house to reduce manufacturing costs in the future and to reduce risk to our supply chain.

In the fourth quarter of 2015, the Company acquired certain assets of its Malaysian sales and service distributor for $2 million in cash.

In May 2015, the Company acquired the net assets of the ElectroForce® business of the Bose Corporation ("ElectroForce"), a manufacturer of testing systems, for $9 million in cash. ElectroForce's core business is the manufacturing of dynamic mechanical testing systems used to characterize medical devices, biologic and engineered materials. The ElectroForce test instruments are based on unique motor designs that are quiet, energy-efficient, scalable and deliver precise performance over a wide range of force and frequency. ElectroForce was acquired to expand TA's product offering into new markets, while leveraging the technology, infrastructure and customer bases of the combined organizations.

The principal factor that resulted in recognition of goodwill in these acquisitions is 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 is of considerably greater value than utilizing each of the acquired companies' technology, customer access or products on a standalone basis. The goodwill also includes value assigned to assembled workforce, which cannot be recognized as an intangible asset. Specifically, the goodwill acquired with MPE consists of the value assigned to its workforce and the future incremental sales synergies anticipated.

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, Rubotherm, MPE, the Malaysian sales and service distributor and ElectroForce, either individually or in the aggregate, as though these acquisitions had occurred at the beginning of the periods covered by this report was immaterial.

7 Goodwill and Other Intangibles

The carrying amount of goodwill was $360 million and $352 million at December 31, 2017 and 2016, respectively. During the year ended December 31, 2017, the effect of foreign currency translation increased goodwill by $8 million.

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

	December 31, 2017			December 31, 2016		
	Gross Carrying Amount	Accumulated Amortization	Weighted-Average Amortization Period	Gross Carrying Amount	Accumulated Amortization	Weighted-Average Amortization Period
Capitalized software	$438,652	$285,461	5 years	$355,973	$223,572	5 years
Purchased intangibles	169,870	138,750	11 years	162,180	127,045	11 years
Trademarks and IPR&D	13,923	—	—	13,544	—	—
Licenses	5,840	4,628	6 years	4,632	3,851	6 years
Patents and other intangibles	72,815	43,866	8 years	61,646	36,452	8 years
Total	$701,100	$472,705	7 years	$597,975	$390,920	7 years

The gross carrying value of intangible assets and accumulated amortization for intangible assets increased by $58 million and $38 million, respectively, in the year ended December 31, 2017 due to the effects of foreign currency translation. Amortization expense for intangible assets was $45 million for each of the years ended December 31, 2017, 2016 and 2015. Amortization expense for intangible assets is estimated to be $46 million per year for each of the next five years.

8 Debt

In November 2017, the Company entered into a new credit agreement (the "2017 Credit Agreement") that 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 Company used $1.3 billion of the proceeds from the 2017 Credit Agreement to repay the outstanding amounts under the Company's existing multi-borrower credit agreement dated June 2013 (the "2013 Credit Agreement"), which was terminated early without penalty. The Company plans to use future proceeds from the revolving facility for general corporate purposes.

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 both December 31, 2017 and 2016, the Company had a total of $700 million 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 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 had the following outstanding debt at December 31, 2017 and 2016 (in thousands):

	December 31, 2017	December 31, 2016
Foreign subsidiary lines of credit	$ 273	$ 297
Senior unsecured notes - Series D - 3.22%, due March 2018	100,000	—
Credit agreement	—	125,000
Total notes payable and debt, current	100,273	125,297
Senior unsecured notes - Series B - 5.00%, due February 2020	100,000	100,000
Senior unsecured notes - Series D - 3.22%, due March 2018	—	100,000
Senior unsecured notes - Series E - 3.97%, due March 2021	50,000	50,000
Senior unsecured notes - Series F - 3.40%, due June 2021	100,000	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 J - floating rate**, due May 2024	40,000	40,000
Senior unsecured notes - Series K - 3.44%, due May 2026	160,000	160,000
Credit agreement	1,300,000	1,005,000
Unamortized debt issuance costs	(2,499)	(3,034)
Total long-term debt	1,897,501	1,701,966
Total debt	$1,997,774	$1,827,263

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

** Series J senior unsecured notes bear interest at a 3-month LIBOR for that floating rate interest period plus 1.45%.

As of December 31, 2017 and 2016, the Company had a total amount available to borrow under existing credit agreements of $498 million and $468 million, respectively, after outstanding letters of credit. The weighted-average interest rates applicable to the senior unsecured notes and credit agreement borrowings collectively were 2.98% and 2.55% at December 31, 2017 and 2016, respectively. As of December 31, 2017, the Company was in compliance with all debt covenants.

The Company and its foreign subsidiaries also had available short-term lines of credit totaling $91 million and $79 million at December 31, 2017 and 2016, respectively, for the purpose of short-term borrowing and issuance of commercial guarantees. At December 31, 2017 and 2016, the weighted-average interest rates applicable to these short-term borrowings were 1.48% and 1.49%, respectively.

Annual maturities of debt outstanding at December 31, 2017 are as follows (in thousands):

	Total
2018	$ 100,273
2019	—
2020	100,000
2021	150,000
2022	1,300,000
Thereafter	350,000
Total	$2,000,273

9 Income Taxes

Income tax data for the years ended December 31, 2017, 2016 and 2015 is as follows (in thousands):

	Year Ended December 31,		
	2017	2016	2015
The components of income from operations before income taxes are as follows:			
Domestic	$ 55,751	$ 35,154	$ 66,716
Foreign	585,346	564,960	475,203
Total	$641,097	$600,114	$541,919

	Year Ended December 31,		
	2017	2016	2015
The current and deferred components of the provision for income taxes on operations are as follows:			
Current	$575,276	$77,407	$66,285
Deferred	45,510	1,204	6,581
Total	$620,786	$78,611	$72,866
The jurisdictional components of the provision for income taxes on operations are as follows:			
Federal	$535,777	$19,693	$20,882
State	26,561	3,090	3,389
Foreign	58,448	55,828	48,595
Total	$620,786	$78,611	$72,866

The U.S. enacted the Tax Cuts and Jobs Act (the "2017 Tax Act") on December 22, 2017 ("Enactment Date").

The 2017 Tax Act contains several key provisions including, but not limited to the following:

- A one-time tax on the mandatory deemed repatriation of pre-2018 foreign earnings and profits ("E&P"), referred to as the toll charge;
- Reduction in the Corporate tax rate from 35% to 21% for tax years beginning after December 31, 2017;
- Introduction of a new U.S. tax on certain off-shore earnings referred to as Global Intangible Low-Taxed Income ("GILTI") at an effective tax rate of 10.5% for tax years beginning after December 31, 2017 (increasing to 13.125% for tax years beginning after December 31, 2025) with a partial offset by foreign tax credits; and
- Introduction of a territorial tax system beginning in 2018 by providing a 100% dividends received deduction on certain qualified dividends from foreign subsidiaries.

During the fourth quarter of 2017, we recorded an incremental income tax provision of $550 million, which is comprised of the following:

- An estimated income tax provision of $490 million for the one-time deemed repatriation of pre-2018 E&P. In accordance with the 2017 Tax Act, the toll charge liability may be paid over eight years. As such, we have recorded $450 million and $40 million in long-term income tax liabilities and accrued income taxes (current), respectively, as of December 31, 2017;
- An estimated net income tax provision of $20 million, for the remeasurement of our deferred tax assets and liabilities at the newly enacted tax rate of 21%; and
- As a result of the 2017 Tax Act and the Company's expectations about distributing certain cash balances from its foreign subsidiaries to the U.S., the Company also recorded estimated income tax provisions for estimated state income taxes and foreign withholding taxes of $40 million.

The $550 million income tax provision recorded was based on currently available information and interpretations of applying the provisions of the 2017 Tax Act as of the time of filing this Annual Report on Form 10-K. In accordance with authoritative guidance issued by the Securities and Exchange Commission ("SEC"), the income tax effect of the 2017 Tax Act represent provisional amounts for which our accounting is incomplete but for which reasonable estimates were determined and recorded during the fourth quarter of 2017. The guidance provides for a measurement period, up to one year from the Enactment Date, in which provisional amounts may be adjusted when additional information is obtained, prepared and analyzed. Adjustments to provisional amounts identified during the measurement period should be recorded as an income tax provision or benefit in the period the adjustment is determined.

We continue to evaluate the impacts of the 2017 Tax Act and consider the amounts recorded to be provisional. In addition, we are still evaluating the GILTI provisions of the 2017 Tax Act and its impact, if any, on our consolidated financial statements as of December 31, 2017. Companies are allowed to adopt an accounting policy to either recognize deferred taxes for GILTI or treat such as a tax cost in the year incurred. We have not yet determined our accounting policy because determining the impact of the GILTI provisions requires additional analysis. As such, we did not record a deferred income tax expense or benefit related to the GILTI provisions in our consolidated statement of operations for the year ended December 31, 2017 and we will finalize this analysis and determination during the measurement period.

The Company recorded a provisional amount for its toll charge, which represents its reasonable estimate of the liability due for the mandatory deemed repatriation of its foreign E&P. Determining the provisional toll charge liability required a significant effort based on a number of estimates and factors that need to be further analyzed and finalized including, but not limited to, the following:

- Analyzing our accumulated foreign E&P and related foreign tax pools, including historical practices and assertions made in determining such; and
- Determining the composition, including intercompany receivables and payables of specified foreign corporations, of our foreign E&P that is held in cash or liquid assets and other assets at several measurement dates, as a different tax rate is applied to each when determining the toll charge liability.

For the aforementioned factors as well as the proximity of the enactment of the 2017 Tax Act to our year-end, we had limited time to analyze the 2017 Tax Act and its various interpretations including any additional guidance issued through the time of filing this Annual Report on Form 10-K, to assess how to apply the new law to our specific facts and circumstances and determine the toll charge that we expect to include in our 2017 tax return. We made certain assumptions and estimates in determining the provisional toll charge that may result in adjustments when we finalize our analysis and accounting for the 2017 Tax Act.

Certain income tax effects of the 2017 Tax Act represent provisional amounts for which our analysis is incomplete but for which reasonable estimates were determined and recorded during the fourth quarter of 2017. Our actual results may materially differ from our current estimates due to, among other things, further guidance that may be issued by U.S. federal or state tax authorities to interpret the 2017 Tax Act, or guidance from the SEC or FASB regarding income tax accounting matters related to the 2017 Tax Act. We will continue to analyze the 2017 Tax Act and any additional guidance that may be issued so we can finalize the tax effects of the 2017 Tax Act on our financial statements in the measurement period.

At December 31, 2017, as a result of the 2017 Tax Act deemed repatriation and plans to distribute certain cash balances from its foreign subsidiaries to the U.S., we have recorded state and foreign withholding taxes on the unremitted earnings of our foreign subsidiaries. The Company continues to be indefinitely reinvested in relation to the cumulative historical outside basis difference not related to the unremitted earnings that were taxed. We will continue to evaluate our assertions, including intentions and plans, on the cumulative historical outside basis differences, not related to the unremitted earnings that were taxed, in our foreign subsidiaries as of December 31, 2017. We expect to finalize our analysis and accounting related to the toll charge, deferred tax assets and liabilities and any remaining outside basis differences in our foreign subsidiaries during the measurement period. The determination of the unrecognized deferred tax liability on cumulative historical outside basis differences that are not related to the unremitted earnings that were taxed is not practicable.

	Year Ended December 31,		
	2017	**2016**	**2015**
The differences between income taxes computed at the United States statutory rate and the provision for income taxes are summarized as follows:			
Federal tax computed at U.S. statutory income tax rate	$ 224,384	$ 210,040	$ 189,672
2017 Tax Act	550,000	—	—
Settlement of tax audits	706	345	(3,258)
State income tax, net of federal income tax benefit	1,289	2,008	2,601
Net effect of foreign operations	(134,117)	(133,518)	(112,426)
Effect of stock-based compensation	(19,566)	—	—
Other, net	(1,910)	(264)	(3,723)
Provision for income taxes	$ 620,786	$ 78,611	$ 72,866

The four principal jurisdictions in which the Company manufactures are the U.S., Ireland, the U.K. and Singapore, where the marginal effective tax rates were approximately 37.5%, 12.5%, 19.25% and 0%, respectively, as of December 31, 2017. The Company has a contractual tax rate of 0% on qualifying activities in Singapore through March 2021, based upon the achievement of certain contractual milestones, which the Company expects to continue to meet. The current statutory tax rate in Singapore is 17%. The effect of applying the contractual tax rate rather than the statutory tax rate to income from qualifying activities in Singapore increased the Company's net income in 2017, 2016 and 2015 by $25 million, $23 million and $20 million, respectively and increased the Company's net income per diluted share by $0.31, $0.29 and $0.25, respectively.

The Company's effective tax rates for the years ended December 31, 2017, 2016 and 2015 were 96.8%, 13.1% and 13.4%, respectively. The provision for income taxes for 2017 includes a $550 million estimate for the impact of the 2017 Tax Act. In addition, the effective tax rate in 2017 includes the adoption of new accounting guidance related to stock-based compensation, which decreased income tax expense by $20 million and decreased the Company's effective tax rate by 3.1 percentage points. See Note 2 for further information regarding the adoption of this standard.

The income tax provision for 2016 included a $3 million tax benefit related to a release of a valuation allowance on certain net operating loss carryforwards. In 2015, the income tax provision included a $3 million tax benefit related to the completion of tax audit examinations. The remaining differences between effective tax rates can primarily be attributed to differences in the proportionate amounts of pre-tax income recognized in jurisdictions with different effective tax rates.

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,	
	2017	**2016**
Deferred tax assets:		
Net operating losses and credits	$ 75,630	$ 76,027
Depreciation	5,952	8,310
Stock-based compensation	9,815	19,609
Deferred compensation	21,434	24,813
Revaluation of equity investments and licenses	3,465	4,707
Inventory	4,864	5,235
Accrued liabilities and reserves	8,230	8,814
Other	11,873	15,948
Total deferred tax assets	141,263	163,463
Valuation allowance	(62,098)	(61,225)
Deferred tax assets, net of valuation allowance	79,165	102,238
Deferred tax liabilities:		
Capitalized software	(19,630)	(15,323)
Amortization	(3,394)	(5,115)
Indefinite-lived intangibles	(13,254)	(19,680)
Deferred tax liability on foreign earnings	(21,000)	—
Total deferred tax liabilities	(57,278)	(40,118)
Net deferred tax assets	$ 21,887	$ 62,120

As of December 31, 2017, the Company has provided a deferred tax valuation allowance of $62 million, of which $59 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 $17 million as of December 31, 2017, which represent the future tax benefit of foreign net operating loss carryforwards that do not expire under current law.

As a result of the adoption of new accounting guidance related to stock-based compensation, the Company no longer records excess tax benefits related to stock-based compensation in equity. The income tax benefits associated with equity compensation expense recognized for tax purposes and credited to additional paid-in capital were $14 million and $13 million for the years ended December 31, 2016 and 2015, respectively.

The Company accounts for its uncertain tax return reporting 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 unrecognized tax benefits for the years ended December 31, 2017, 2016 and 2015 (in thousands):

	2017	2016	2015
Balance at the beginning of the period	$ 9,964	$14,450	$19,596
Changes resulting from completion of tax examinations	—	(828)	(2,405)
Other changes in uncertain tax benefits	(4,121)	(3,658)	(2,741)
Balance at the end of the period	$ 5,843	$ 9,964	$14,450

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, 2012. However, carryforward tax attributes that were generated in years beginning on or before January 1, 2013 may still be adjusted upon examination by tax authorities if the attributes are utilized. 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.

During the year ended December 31, 2016, the Company concluded tax audit disputes outside the U.S. that, in part, related to matters for which the Company had recorded net uncertain tax benefits. The resolution of these tax disputes resulted in a $1 million reduction in the measurement of its unrecognized tax benefits for the year ended December 31, 2016.

During the year ended December 31, 2015, the Company concluded U.S. tax audit disputes that, in part, related to matters for which the Company had recorded net uncertain tax benefits. The resolution of these tax disputes resulted in a $2 million reduction in the measurement of its unrecognized tax benefits and a $2 million decrease in its provision for income taxes for the year ended December 31, 2015.

As of December 31, 2017, 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.

10 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 2017, 2016 and 2015, the Company recorded $11 million, $4 million and $4 million of litigation settlement provisions and related costs, respectively. The accrued patent litigation expense is in other current liabilities in the consolidated balance sheets at December 31, 2017 and 2016.

11 Other Commitments and Contingencies

Lease agreements, expiring at various dates through 2031, cover buildings, office equipment and automobiles. Rental expense was $27 million, $28 million and $27 million for the years ended December 31, 2017, 2016 and 2015, respectively. Future minimum rents payable as of December 31, 2017 under non-cancelable leases with initial terms exceeding one year are as follows (in thousands):

2018	$23,168
2019	18,228
2020	14,122
2021	8,652
2022 and thereafter	25,512
Total	$89,682

The Company licenses certain technology and software from third parties. Future minimum license fees payable under existing license agreements as of December 31, 2017 are immaterial for the years ended December 31, 2018 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.

12 Stock-Based Compensation

In May 2012, the Company's shareholders approved the Company's 2012 Equity Incentive Plan ("2012 Plan"). As of December 31, 2017, the 2012 Plan has 2.7 million shares available for grant in the form of incentive or non-qualified stock options, stock appreciation rights ("SARs"), restricted stock, restricted stock units, performance stock units or other types of awards. The Company issues new shares of common stock upon exercise of stock options, restricted stock unit conversion or performance stock unit conversion. Under the 2012 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 2012 Plan is scheduled to terminate on May 9, 2022. 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, and restricted stock units and performance stock units may be issued under the 2012 Plan for such consideration as is determined by the Compensation Committee of the Board of Directors. As of December 31, 2017, 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, 2017, 1.4 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, 2017, 2016 and 2015, 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. The new stock-based compensation accounting guidance offers the option of recognizing forfeitures as they occur or estimating forfeitures at the time of grant and, if necessary, revising in subsequent periods if actual forfeitures differ from those estimates. The Company has elected to remain consistent with prior periods and estimate forfeitures at the time of grant and, if necessary, revise in subsequent periods in which actual forfeitures differ from those estimates. 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, 2017, 2016 and 2015 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):

	2017	2016	2015
Cost of sales	$ 3,032	$ 2,738	$ 2,590
Selling and administrative expenses	33,335	34,451	26,431
Research and development expenses	3,069	3,809	4,347
Total stock-based compensation	$39,436	$40,998	$33,368

During the years ended December 31, 2017 and 2016, the Company recognized $4 million and $7 million, respectively, of stock compensation expense 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 2017, 2016 and 2015 are as follows:

Options Issued and Significant Assumptions Used to Estimate Option Fair Values	2017	2016	2015
Options issued in thousands	389	324	673
Risk-free interest rate	2.2%	1.9%	1.8%
Expected life in years	6	6	6
Expected volatility	0.227	0.247	0.257
Expected dividends	—	—	—

Weighted-Average Exercise Price and Fair Value of Options on the Date of Grant	2017	2016	2015
Exercise price	$170.24	$135.02	$127.63
Fair value	$ 45.73	$ 37.44	$ 35.84

The following table summarizes stock option activity for the plans for the year ended December 31, 2017 (in thousands, except per share data):

	Number of Shares	Exercise Price per Share	Weighted-Average Exercise Price
Outstanding at December 31, 2016	2,697	$ 38.09 to $139.51	$106.55
Granted	389	$136.43 to $194.26	$170.24
Exercised	(972)	$ 41.20 to $139.51	$ 93.49
Canceled	(75)	$ 87.06 to $139.51	$120.59
Outstanding at December 31, 2017	2,039	$ 38.09 to $194.26	$124.41

The following table details the options outstanding at December 31, 2017 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
$38.09 to $79.99	157	$ 67.58	2.7	157	$ 67.58
$80.00 to $113.36	642	$103.01	6.2	391	$ 98.74
$113.37 to $194.26	1,240	$142.69	8.6	307	$128.26
Total	2,039	$124.41	7.4	855	$103.63

During 2017, 2016 and 2015, 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 $76 million, $53 million and $48 million, respectively. The total cash received from the exercise of these stock options was $91 million, $56 million and $47 million for the years ended December 31, 2017, 2016 and 2015, respectively.

The aggregate intrinsic value of the outstanding stock options at December 31, 2017 was $140 million. Options exercisable at December 31, 2017, 2016 and 2015 were 0.9 million, 1.3 million and 1.5 million, respectively. The weighted-average exercise prices of options exercisable at December 31, 2017, 2016 and 2015 were $103.63, $92.26 and $80.71, respectively. The weighted-average remaining contractual life of the exercisable outstanding stock options at December 31, 2017 was 5.6 years.

At December 31, 2017, the Company had 2 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 $137 million, $124.18 and 7.2 years, respectively, at December 31, 2017.

As of December 31, 2017, there were $42 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, 2017, 2016 and 2015, the Company granted 8 thousand, 8 thousand and 10 thousand shares of restricted stock, respectively. The weighted-average fair value per share on the grant date of the restricted stock granted in 2017, 2016 and 2015 was $140.10, $130.35 and $113.88, respectively. The Company has recorded $1 million of compensation expense in each of the years ended December 31, 2017, 2016 and 2015 related to the restricted stock grants. As of December 31, 2017, the Company had 6 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, 2017 (in thousands, except for per share amounts):

	Shares	Weighted-Average Fair Value
Unvested at December 31, 2016	453	$110.34
Granted	107	$154.60
Vested	(164)	$105.02
Forfeited	(22)	$119.27
Unvested at December 31, 2017	374	$124.81

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, 2017, 2016 and 2015 on the restricted stock units expected to vest were $17 million, $17 million and $16 million, respectively. As of December 31, 2017, there were $32 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 3.0 years.

Performance Stock Units

During year ended December 31, 2017, the Company issued performance stock units, which 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.

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 2017 are as follows:

Performance Stock Units Issued and Significant Assumptions Used to Estimate Fair Values	2017
Performance stock units issued in thousands	40
Risk-free interest rate	1.6%
Expected life in years	3.0
Expected volatility	0.209
Average volatility of peer companies	0.256
Correlation Coefficient	0.378
Expected dividends	—

The following table summarizes the unvested performance stock unit award activity for the year ended December 31, 2017 (in thousands, except for per share amounts):

	Shares	Weighted-Average Fair Value
Unvested at December 31, 2016	27	$171.16
Granted	40	$210.25
Forfeited	(3)	$156.25
Unvested at December 31, 2017	64	$196.29

The amount of compensation costs recognized for the years ended December 31, 2017 and 2016 on the performance stock units expected to vest were $2 million and less than $1 million, respectively. As of December 31, 2017, there were $10 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 2.5 years.

13 Earnings Per Share

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

	Year Ended December 31, 2017		
	Net Income (Numerator)	Weighted-Average Shares (Denominator)	Per Share Amount
Net income per basic common share	$20,311	79,793	$0.25
Effect of dilutive stock option, restricted stock, performance stock unit and restricted stock unit securities	—	811	—
Net income per diluted common share	$20,311	80,604	$0.25

	Year Ended December 31, 2016		
	Net Income (Numerator)	Weighted-Average Shares (Denominator)	Per Share Amount
Net income per basic common share	$521,503	80,786	$ 6.46
Effect of dilutive stock option, restricted stock, performance stock unit and restricted stock unit securities	—	631	(0.05)
Net income per diluted common share	$521,503	81,417	$ 6.41

	Year Ended December 31, 2015		
	Net Income (Numerator)	Weighted-Average Shares (Denominator)	Per Share Amount
Net income per basic common share	$469,053	82,336	$ 5.70
Effect of dilutive stock option, restricted stock and restricted stock unit securities	—	751	(0.05)
Net income per diluted common share	$469,053	83,087	$ 5.65

For the years ended December 31, 2017, 2016 and 2015, the Company had 0.4 million, 0.9 million and 1.2 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.

14 Accumulated Other Comprehensive Income

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

	Currency Translation	Unrealized Gain (Loss) on Retirement Plans	Unrealized Gain (Loss) on Investments	Accumulated Other Comprehensive Income (Loss)
Balance at December 31, 2016	$(170,566)	$(43,894)	$(1,820)	$(216,280)
Other comprehensive income (loss), net of tax	101,148	6,791	(1,726)	106,213
Balance at December 31, 2017	$ (69,418)	$(37,103)	$(3,546)	$(110,067)

15 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, 2017, 2016 and 2015, the Company's matching contributions amounted to $16 million, $15 million and $14 million, respectively.

The Company maintains two defined benefit 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"). 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 $12 million, $12 million and $11 million in the years ended December 31, 2017, 2016 and 2015, 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, 2017 and 2016, respectively.

The reconciliation of the projected benefit obligations for the plans at December 31, 2017 and 2016 is as follows (in thousands):

	2017			2016		
	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	$159,416	$14,921	$85,311	$155,003	$12,963	$75,677
Service cost	450	546	5,082	377	473	4,954
Employee contributions	—	1,041	605	—	987	584
Interest cost	6,829	618	1,518	6,931	557	1,699
Actuarial losses (gains)	8,658	942	(2,590)	2,338	586	6,510
Benefits paid	(5,058)	(947)	(2,078)	(5,233)	(645)	(2,141)
Plan amendments	—	—	636	—	—	—
Plan settlements	(2,231)	—	(1,229)	—	—	—
Other plans	—	—	196	—	—	1,305
Currency impact	—	—	8,927	—	—	(3,277)
Projected benefit obligation, December 31	$168,064	$17,121	$96,378	$159,416	$14,921	$85,311

The accumulated benefit obligations for the plans at December 31, 2017 and 2016 are as follows (in thousands):

	2017			2016		
	U.S. Pension Plans	U.S. Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Healthcare Plan	Non-U.S. Pension Plans
Accumulated benefit obligation	$168,064	**	$82,615	$159,416	**	$72,618

** Not applicable.

The reconciliation of the fair value of the plan assets at December 31, 2017 and 2016 is as follows (in thousands):

	2017			2016		
	U.S. Pension Plans	U.S. Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Healthcare Plan	Non-U.S. Pension Plans
Fair value of plan assets, January 1	$144,665	$ 9,142	$65,548	$136,128	$8,001	$60,441
Actual return on plan assets	27,729	1,542	390	8,621	510	4,741
Company contributions	6,162	347	4,733	5,149	289	4,579
Employee contributions	—	1,041	605	—	987	584
Plan settlements	(2,125)	—	(915)	—	—	—
Benefits paid	(5,058)	(947)	(2,078)	(5,233)	(645)	(2,141)
Other plans	—	—	(213)	—	—	262
Currency impact	—	—	6,920	—	—	(2,918)
Fair value of plan assets, December 31	$171,373	$11,125	$74,990	$144,665	$9,142	$65,548

The summary of the funded status for the plans at December 31, 2017 and 2016 is as follows (in thousands):

	2017			2016		
	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	$(168,064)	$(17,121)	$(96,378)	$(159,416)	$(14,921)	$(85,311)
Fair value of plan assets	171,373	11,125	74,990	144,665	9,142	65,548
Funded status	$ 3,309	$ (5,996)	$(21,388)	$ (14,751)	$ (5,779)	$(19,763)

The summary of the amounts recognized in the consolidated balance sheets for the plans at December 31, 2017 and 2016 is as follows (in thousands):

	2017			2016		
	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	$ 4,562	$ —	$ 1,245	$ —	$ —	$ 1,084
Current liabilities	(76)	(347)	—	(1,343)	(289)	—
Long-term liabilities	(1,177)	(5,649)	(22,633)	(13,408)	(5,490)	(20,847)
Net amount recognized at December 31	$ 3,309	$(5,996)	$(21,388)	$(14,751)	$(5,779)	$(19,763)

The summary of the components of net periodic pension costs for the plans for the years ended December 31, 2017, 2016 and 2015 is as follows (in thousands):

	2017			2016			2015		
	U.S. Pension Plans	U.S. Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Healthcare Plan	Non-U.S. Pension Plans
Service cost	$ 450	$ 546	$ 5,082	$ 377	$ 473	$ 4,954	$ —	$ 577	$ 5,087
Interest cost	6,829	618	1,518	6,931	557	1,699	6,128	470	1,503
Expected return on plan assets	(10,298)	(587)	(1,688)	(9,635)	(519)	(1,596)	(9,145)	(497)	(1,542)
Settlement loss	155	—	232	—	—	—	—	—	95
Net amortization:									
Prior service (credit) cost	—	—	(168)	—	—	(192)	—	—	39
Net actuarial loss	2,770	—	959	2,702	—	753	3,278	—	1,031
Net periodic pension (benefit) cost	$ (94)	$ 577	$ 5,935	$ 375	$ 511	$ 5,618	$ 261	$ 550	$ 6,213

The summary of the changes in amounts recognized in other comprehensive income (loss) for the plans for the years ended December 31, 2017, 2016 and 2015 is as follows (in thousands):

	2017			2016			2015		
	U.S. Pension Plans	U.S. Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Healthcare Plan	Non-U.S. Pension Plans
Prior service credit (cost)	$ —	$—	$ (636)	$ —	$ —	$ —	$ —	$ —	$ 645
Net gain (loss) arising during the year	8,879	13	1,609	(3,352)	(594)	(3,361)	(6,365)	1,126	3,025
Amortization:									
Prior service (credit) cost	—	—	(168)	—	—	(192)	—	—	39
Net loss	2,925	—	1,191	2,702	—	753	3,278	—	1,126
Other Plans	—	—	—	—	—	(360)	—	—	—
Currency impact	—	—	(2,033)	—	—	884	—	—	1,760
Total recognized in other comprehensive income (loss)	$11,804	$ 13	$ (37)	$ (650)	$(594)	$(2,276)	$(3,087)	$1,126	$6,595

The summary of the amounts included in accumulated other comprehensive loss in stockholders' equity for the plans at December 31, 2017 and 2016 is as follows (in thousands):

	2017			2016		
	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) gain	$(37,682)	$588	$(18,857)	$(49,486)	$575	$(19,638)
Prior service credit	—	—	530	—	—	1,348
Total	$(37,682)	$588	$(18,327)	$(49,486)	$575	$(18,290)

The summary of the amounts included in accumulated other comprehensive loss expected to be included in next year's net periodic benefit cost for the plans at December 31, 2017 is as follows (in thousands):

	2017		
	U.S. Pension Plans	U.S. Retiree Healthcare Plan	Non-U.S. Pension Plans
Net actuarial loss	$(3,075)	$—	$(685)
Prior service credit	—	—	119
Total	$(3,075)	$—	$(566)

The plans' investment asset mix is as follows at December 31, 2017 and 2016:

	2017			2016		
	U.S. Pension Plans	U.S. Healthcare Plan	Non-U.S. Pension Plans	U.S. Pension Plans	U.S. Healthcare Plan	Non-U.S. Pension Plans
Equity securities	77%	65%	7%	74%	58%	7%
Debt securities	23%	35%	16%	25%	42%	18%
Cash and cash equivalents	0%	0%	8%	1%	0%	6%
Insurance contracts and other	0%	0%	69%	0%	0%	69%
Total	100%	100%	100%	100%	100%	100%

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

	U.S. Pension and U.S. Retiree Healthcare Plans		Non-U.S. Pension Plans
	Policy Target	Range	Policy Target
Equity securities	70%	50% - 90%	5%
Debt securities	25%	20% - 60%	20%
Cash and cash equivalents	5%	0% - 20%	10%
Insurance contracts and other	0%	0% - 20%	65%

The asset allocation policy for the U.S. Pension Plans and 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 exceed the average return for similarly invested funds and maximizing portfolio returns with at least a return of 2.5% above the one-year constant maturity Treasury bond yield over reasonable measurement periods and based on reasonable market cycles.

Within the equity portfolio of the U.S. retirement plans, investments are diversified among market capitalization and investment strategy. The Company targets a 30% allocation of its U.S. retirement plans' 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. retirement plans' 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 the money market funds held with financial institutions is based on the net asset value of the underlying treasury bill and commercial paper, which are valued using third-party pricing services that utilize inputs such as benchmark yields, credit spreads and broker/dealer quotes to determine the value.

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, 2017 and 2016.

Investments valued at NAV consist of hedge funds in the U.S Pension Plans, which are valued based on underlying investments in equity securities of U.S. companies where the hedge fund manager is targeting a particular net long or net short position on the underlying stock. The fair value of these funds is initially based on market and observable sources from daily quoted prices on nationally recognized securities exchanges and then adjustments are made to the net asset value of the hedge fund to account for the effects of any liquidation or redemption restrictions. The redemption terms for the hedge funds are generally quarterly with a 90 day notification period and there are no redemption restrictions.

The fair value of the Company's retirement plan assets are as follows at December 31, 2017 (in thousands):

	Total at December 31, 2017	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
U.S. Pension Plans:				
Mutual funds[a]	$163,438	$163,438	$—	$ —
Total U.S. Pension Plans	163,438	163,438	—	—
U.S. Retiree Healthcare Plan:				
Mutual funds[b]	11,125	11,125	—	—
Total U.S. Retiree Healthcare Plan	11,125	11,125	—	—
Non-U.S. Pension Plans:				
Cash equivalents[c]	5,783	5,783	—	—
Mutual funds[d]	17,244	17,244	—	—
Bank and insurance investment contracts[e]	51,963	—	—	51,963
Total Non-U.S. Pension Plans	74,990	23,027	—	51,963
Total fair value of retirement plan assets	249,553	$197,590	$—	$51,963
Investments valued at NAV	7,935			
Total retirement plan assets	$257,488			

The fair value of the Company's retirement plan assets are as follows at December 31, 2016 (in thousands):

	Total at December 31, 2016	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
U.S. Pension Plans:				
Mutual funds[f]	$136,548	$136,548	$—	$ —
Cash equivalents[g]	728	—	728	—
Total U.S. Pension Plans	137,276	136,548	728	—
U.S. Retiree Healthcare Plan:				
Mutual funds[h]	9,142	9,142	—	—
Total U.S. Retiree Healthcare Plan	9,142	9,142	—	—
Non-U.S. Pension Plans:				
Cash equivalents[c]	3,718	3,718	—	—
Mutual funds[i]	16,737	16,737	—	—
Bank and insurance investment contracts[e]	45,093	—	—	45,093
Total Non-U.S. Pension Plans	65,548	20,455	—	45,093
Total fair value of retirement plan assets	211,966	$166,145	$728	$45,093
Investments valued at NAV	7,389			
Total retirement plan assets	$219,355			

(a) The mutual fund balance in the U.S. Pension Plans are invested in the following categories: 45% in the common stock of large-cap U.S. companies, 30% in the common stock of international growth companies and 25% in fixed income bonds issued by U.S. companies and by the U.S. government and its agencies.
(b) The mutual fund balance in the U.S. Retiree Healthcare Plan is invested in the following categories: 41% in the common stock of large-cap U.S. companies, 24% in the common stock of international growth companies and 35% in fixed income bonds of U.S. companies and U.S. government.
(c) Primarily represents deposit account funds held with various financial institutions.
(d) The mutual fund balance in the Non-U.S. Pension Plans is primarily invested in the following categories: 58% in international bonds, 32% in the common stock of international companies, 1% in mortgages and real estate and 9% in various other global investments.
(e) Amount represents bank and insurance guaranteed investment contracts.
(f) The mutual fund balance in the U.S. Pension Plans are invested in the following categories: 35% in the common stock of large-cap U.S. companies, 38% in the common stock of international growth companies and 27% in fixed income bonds issued by U.S. companies and by the U.S. government and its agencies.
(g) Primarily represents money market funds held with various financial institutions.
(h) The mutual fund balance in the U.S. Retiree Healthcare Plan is invested in the following categories: 38% in the common stock of large-cap U.S. companies, 19% in the common stock of international growth companies and 43% in fixed income bonds of U.S. companies and U.S. government.
(i) The mutual fund balance in the Non-U.S. Pension Plans is invested in the following categories: 56% in international bonds and 30% in the common stock of international companies, 8% in mortgages and real estate and 6% 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, 2017 and 2016 (in thousands):

	Insurance Guaranteed Investment Contracts
Fair value of assets, December 31, 2015	$38,943
Net purchases (sales) and appreciation (depreciation)	6,150
Fair value of assets, December 31, 2016	45,093
Net purchases (sales) and appreciation (depreciation)	6,870
Fair value of assets, December 31, 2017	$51,963

The weighted-average assumptions used to determine the benefit obligation in the consolidated balance sheets at December 31, 2017, 2016 and 2015 are as follows:

	2017		2016		2015	
	U.S.	Non-U.S.	U.S.	Non-U.S.	U.S.	Non-U.S.
Discount rate	3.94%	1.79%	4.41%	1.71%	4.59%	2.23%
Increases in compensation levels	**	2.43%	**	2.47%	**	2.45%

** Not applicable

The weighted-average assumptions used to determine the net periodic pension cost at December 31, 2017, 2016 and 2015 are as follows:

	2017		2016		2015	
	U.S.	Non-U.S.	U.S.	Non-U.S.	U.S.	Non-U.S.
Discount rate	4.28%	1.80%	4.42%	2.20%	3.71%	1.98%
Return on plan assets	6.53%	2.64%	6.47%	2.74%	6.35%	2.58%
Increases in compensation levels	**	2.63%	**	2.50%	**	2.57%

** 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 for the Waters Retirement Plan by less than $1 million. A one-quarter percentage point increase in the discount rate would decrease the Company's net periodic benefit cost for the Waters Retirement Plan by less than $1 million.

During fiscal year 2018, the Company expects to contribute a total of approximately $4 million to $10 million to the Company's defined benefit plans. Estimated future benefit payments from the plans as of December 31, 2017 are as follows (in thousands):

	U.S. Pension and Retiree Healthcare Plans	Non-U.S. Pension Plans	Total
2018	$ 9,385	$ 2,396	$11,781
2019	10,114	1,563	11,677
2020	10,287	2,060	12,347
2021	10,777	2,089	12,866
2022	10,749	2,963	13,712
2023 - 2027	58,789	18,217	77,006

16 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, distributing 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, distributing 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, 2017, 2016 and 2015 (in thousands):

	2017	2016	2015
Product net sales:			
Waters instrument systems	$ 988,750	$ 943,218	$ 895,626
Chemistry consumables	372,157	345,413	317,941
TA instrument systems	191,442	171,665	171,689
Total product sales	1,552,349	1,460,296	1,385,256
Service net sales:			
Waters service	686,656	639,432	593,301
TA service	70,073	67,695	63,775
Total service sales	756,729	707,127	657,076
Total net sales	$2,309,078	$2,167,423	$2,042,332

Geographic sales information is presented below for the years ended December 31, 2017, 2016 and 2015 (in thousands):

	2017	2016	2015
Net Sales:			
United States	$ 669,274	$ 665,280	$ 656,361
Europe	636,472	577,257	555,886
Asia:			
China	387,059	331,354	278,600
Japan	167,258	167,977	145,184
Asia Other	308,300	283,653	272,179
Total Asia	862,617	782,984	695,963
Other	140,715	141,902	134,122
Total net sales	$2,309,078	$2,167,423	$2,042,332

The Other category includes Canada, Latin America and Puerto Rico. Net sales are attributable to geographic areas based on the region of destination. None of the Company's individual customers accounts for more than 2% of annual Company sales.

Long-lived assets information at December 31, 2017 and 2016 is presented below (in thousands):

	2017	2016	2015
Long-lived assets:			
United States	$186,344	$207,062	$192,352
Europe	136,440	114,848	128,189
Asia	24,774	14,376	11,868
Other	1,720	832	946
Total long-lived assets	$349,278	$337,118	$333,355

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

17 Unaudited Quarterly Results

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

2017	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total
Net sales	$497,969	$558,250	$565,584	$ 687,275	$2,309,078
Costs and operating expenses:					
Cost of sales	211,095	229,627	235,892	270,453	947,067
Selling and administrative expenses	130,524	130,190	135,194	148,795	544,703
Research and development expenses	30,752	32,937	33,782	35,122	132,593
Litigation provisions	—	10,018	—	1,096	11,114
Purchased intangibles amortization	1,729	1,693	1,682	1,639	6,743
Acquired in-process research and development	5,000	—	—	—	5,000
Total costs and operating expenses	379,100	404,465	406,550	457,105	1,647,220
Operating income	118,869	153,785	159,034	230,170	661,858
Interest expense	(12,725)	(14,083)	(14,750)	(15,281)	(56,839)
Interest income	7,343	8,370	9,516	10,849	36,078
Income before income taxes	113,487	148,072	153,800	225,738	641,097
Provision for income taxes	7,930	16,250	17,696	578,910	620,786
Net income (loss)	$105,557	$131,822	$136,104	$(353,172)	$ 20,311
Net income (loss) per basic common share	1.32	1.65	1.71	(4.44)	0.25
Weighted-average number of basic common shares	80,073	79,979	79,712	79,454	79,793
Net income (loss) per diluted common share	1.31	1.63	1.69	(4.44)	0.25
Weighted-average number of diluted common shares and equivalents	80,769	80,756	80,521	79,454	80,604

2016	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total
Net sales	$475,246	$536,560	$526,830	$628,787	$2,167,423
Costs and operating expenses:					
Cost of sales	201,151	220,379	218,344	251,579	891,453
Selling and administrative expenses	129,351	129,581	123,861	130,238	513,031
Research and development expenses	29,438	32,578	30,418	32,753	125,187
Litigation provisions	—	—	—	3,524	3,524
Purchased intangibles amortization	2,644	2,411	2,476	2,358	9,889
Total costs and operating expenses	362,584	384,949	375,099	420,452	1,543,084
Operating income	112,662	151,611	151,731	208,335	624,339
Interest expense	(10,119)	(10,983)	(11,707)	(12,102)	(44,911)
Interest income	4,087	4,827	5,426	6,346	20,686
Income before income taxes	106,630	145,455	145,450	202,579	600,114
Provision for income taxes	12,578	17,238	20,594	28,201	78,611
Net income	$ 94,052	$128,217	$124,856	$174,378	$ 521,503
Net income per basic common share	1.16	1.59	1.55	2.17	6.46
Weighted-average number of basic common shares	81,275	80,804	80,677	80,366	80,786
Net income per diluted common share	1.15	1.57	1.53	2.15	6.41
Weighted-average number of diluted common shares and equivalents	81,974	81,455	81,388	80,954	81,417

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. In the third quarter of 2017 and first quarter of 2016, the Company recorded $4 million and $7 million of stock compensation expenses, respectively, in selling and administrative expenses related to the modification of certain stock awards upon the retirement of senior executives.

In the first quarter of 2017, the Company recorded a $5 million charge related to acquired in-process research and development (see Note 2). In 2017 and in fourth quarter of 2016, the company recorded litigation provisions of $11 million and $4 million, respectively (see Note 10). In the fourth quarter of 2017, the Company recorded a $550 million income tax provision as a result of the 2017 Tax Act (see Note 9).

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 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 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, 2017 (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 47 of this Form 10-K.

Report of the Independent Registered Public Accounting Firm

See the report of PricewaterhouseCoopers LLP in Item 8 on page 48 of this Form 10-K.

Changes in Internal Controls 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, 2017 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 2018 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 2018 Annual Meeting of Stockholders under the heading "Section 16(a) Beneficial Ownership Reporting Compliance". Information regarding the Company's Audit Committee and Audit Committee Financial Expert is contained in the definitive proxy statement for the 2018 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 Code of Business Conduct and 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, 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.

In 2017, the Company adopted a proxy access bylaw provision that allows eligible stockholders or groups of up to 20 stockholders who have held at least 3% of the Company's common stock continuously for three years to nominate up to two individuals or 20% of the Board of Directors, whichever is greater, for election at the Company's Annual Meeting of Stockholders, and to have those individuals included in the Company's proxy materials for that meeting. The Company believes that the proxy access bylaw adopted by the Company strikes an appropriate balance between providing meaningful proxy access for stockholders and limiting the potential for abuse.

Item 11: *Executive Compensation*

This information is contained in the Company's definitive proxy statement for the 2018 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 2018 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, 2017 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	2,521	$124.41	3,346
Equity compensation plans not approved by security holders	—	—	—
Total	2,521	$124.41	3,346

(1) Column (a) includes an aggregate of 482 thousand ordinary shares 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 12, 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 2018 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 2018 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 50 to 93. The report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, dated February 27, 2018, is set forth on page 48 of this Form 10-K.

(2) Financial Statement Schedule:

See (c) below.

(3) 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 December 5, 2017.(29)
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.(23)(*)

Exhibit Number	Description of Document
10.13	Amended and Restated Waters Retirement Restoration Plan, effective January 1, 2008.(13)(*)
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.
21.1	Subsidiaries of Waters Corporation.
23.1	Consent of PricewaterhouseCoopers LLP, an independent registered public accounting firm.

Exhibit Number	Description of Document
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, 2017, formatted in XBRL (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 and (vi) Notes to Consolidated Financial Statements.

(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).

(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) (3) above.

(c) Financial Statement Schedule:

The following additional financial statement schedule should be considered in conjunction with the consolidated financial statements. All other schedules have been omitted because the required information is either not applicable or not sufficiently material to require submission of the schedule.

WATERS CORPORATION AND SUBSIDIARIES
SCHEDULE II - VALUATION AND QUALIFYING ACCOUNTS
For each of the three years in the period ended December 31, 2017

	Balance at Beginning of Period	Charged to Provision for Income Taxes*	Other**	Balance at End of Period
Valuation allowance for deferred tax assets:				
2017	$61,225	$(6,363)	$ 7,236	$62,098
2016	$68,595	$(5,473)	$ (1,897)	$61,225
2015	$82,550	$ 1,363	$(15,318)	$68,595

* 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, 2017 is 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, 2016 is primarily due to the effect of foreign currency translation on a valuation allowance related to a net operating loss carryforward and the release of a valuation allowance related to a foreign tax credit carryforward due to expiration.

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/ SHERRY L. BUCK

Sherry L. Buck
Senior Vice President and
Chief Financial Officer

Date: February 27, 2018

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 27, 2018.

/s/ CHRISTOPHER J. O'CONNELL Christopher J. O'Connell	Chairman of the Board of Directors, President and Chief Executive Officer (principal executive officer)
/s/ SHERRY L. BUCK Sherry L. Buck	Senior Vice President and Chief Financial Officer (principal financial officer) (principal accounting officer)
/s/ DR. MICHAEL J. BERENDT Dr. Michael J. Berendt	Director
/s/ EDWARD CONARD Edward Conard	Director
/s/ DR. LAURIE H. GLIMCHER Dr. Laurie H. Glimcher	Director
/s/ CHRISTOPHER A. KUEBLER Christopher A. Kuebler	Director
/s/ FLEMMING ORNSKOV Flemming Ornskov	Director
/s/ JOANN A. REED JoAnn A. Reed	Director
/s/ THOMAS P. SALICE Thomas P. Salice	Director

Directors

Christopher J. O'Connell
Chairman and Chief Executive Officer
Waters Corporation

Michael J. Berendt, Ph.D.
Life Sciences Industry Consultant and Investor

Edward Conard
Independent Director and Investor

Laurie H. Glimcher, M.D.
President and CEO,
Dana-Farber Cancer Institute
Principal Investigator and Director,
Dana-Farber/Harvard Cancer Center
Richard and Susan Smith Professor of Medicine, Harvard Medical School

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

Flemming Ornskov, MD, MBA
Chief Executive Officer, Shire plc

JoAnn A. Reed
Health Care Services Consultant

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

Executive Officers

Christopher J. O'Connell
Chairman and Chief Executive Officer

Mark T. Beaudouin
Senior Vice President, General Counsel and Secretary

Sherry L. Buck
Senior Vice President and Chief Financial Officer

Robert G. Carson
Senior Vice President,
Corporate Development

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

Terrence P. Kelly
Senior Vice President and President,
TA Instruments

Francis Kim
Senior Vice President,
Global Operations

Ian S. King
Senior Vice President,
Global Products

Elizabeth B. Rae
Senior Vice President,
Global Human Resources

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

Attorneys

Ropes & Gray LLP
Prudential Tower
800 Boylston Street
Boston, MA 02199-3600
Phone: 617-951-7000

Stockholders' Meeting

Date: Wednesday, May 9th, 11:30 a.m.
Location:
Waters Corporation
34 Maple Street
Milford, MA 01757
Directions:
Call 800-252-4752, Ext. 3314 or
www.waters.com/directionsMilford

Stock Symbol

NYSE: WAT

Investor Relations

Bryan Brokmeier, CFA
Senior Director, Investor Relations
Phone: 508-482-3448
Email: bryan_brokmeier@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

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