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

Form 10-Q

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

For the quarterly period ended June 30, 2018

or

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

For the transition period from _____ to _____.

Commission File Number: 01-14010

Waters Corporation

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

13-3668640
(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)

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 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 ☒

Indicate the number of shares outstanding of the registrant's common stock as of July 27, 2018: 77,067,003

WATERS CORPORATION AND SUBSIDIARIES

QUARTERLY REPORT ON FORM 10-Q

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WATERS CORPORATION AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(unaudited)

	June 30, 2018	December 31, 2017
	(In thousands, except per share data)	
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 742,204	\$ 642,319
Investments	1,506,289	2,751,382
Accounts receivable, net	492,826	533,825
Inventories	299,595	270,294
Other current assets	83,086	72,314
Total current assets	3,124,000	4,270,134
Property, plant and equipment, net	335,709	349,278
Intangible assets, net	218,175	228,395
Goodwill	357,507	359,819
Other assets	122,353	116,728
Total assets	\$ 4,157,744	\$ 5,324,354
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Notes payable and debt	\$ 499	\$ 100,273
Accounts payable	71,190	64,537
Accrued employee compensation	36,729	69,024
Deferred revenue and customer advances	203,715	166,840
Accrued income taxes	64,425	73,008
Accrued warranty	12,499	13,026
Other current liabilities	85,860	119,449
Total current liabilities	474,917	606,157
Long-term liabilities:		
Long-term debt	1,147,951	1,897,501
Long-term portion of retirement benefits	67,634	67,334
Long-term income tax liabilities	417,267	456,949
Other long-term liabilities	74,881	62,625
Total long-term liabilities	1,707,733	2,484,409
Total liabilities	2,182,650	3,090,566
Commitments and contingencies (Notes 6, 7 and 11)		
Stockholders' equity:		
Preferred stock, par value \$0.01 per share, 5,000 shares authorized, none issued at June 30, 2018 and December 31, 2017	—	—
Common stock, par value \$0.01 per share, 400,000 shares authorized, 160,298 and 159,845 shares issued, 77,032 and 79,337 shares outstanding at June 30, and December 31, 2017, respectively	1,603	1,598
Additional paid-in capital	1,798,708	1,745,088
Retained earnings	5,669,039	5,405,380
Treasury stock, at cost, 83,266 and 80,509 shares at June 30, 2018 and December 31, 2017, respectively	(5,361,355)	(4,808,211)
Accumulated other comprehensive loss	(132,901)	(110,067)
Total stockholders' equity	1,975,094	2,233,788
Total liabilities and stockholders' equity	\$ 4,157,744	\$ 5,324,354

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

WATERS CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(unaudited)

	Three Months Ended	
	June 30, 2018	July 1, 2017
	(In thousands, except per share data)	
Revenues:		
Product sales	\$ 388,869	\$ 372,838
Service sales	207,350	185,412
Total net sales	596,219	558,250
Costs and operating expenses:		
Cost of product sales	159,979	148,023
Cost of service sales	83,156	81,604
Selling and administrative expenses	136,645	130,093
Research and development expenses	35,644	32,937
Litigation settlement	—	10,018
Purchased intangibles amortization	1,602	1,693
Total costs and operating expenses	417,026	404,368
Operating income	179,193	153,882
Other income	(1,828)	(97)
Interest expense	(11,692)	(14,083)
Interest income	8,888	8,370
Income before income taxes	174,561	148,072
Provision for income taxes	18,884	16,250
Net income	\$ 155,677	\$ 131,822
Net income per basic common share	\$ 2.00	\$ 1.65
Weighted-average number of basic common shares	77,833	79,979
Net income per diluted common share	\$ 1.98	\$ 1.63
Weighted-average number of diluted common shares and equivalents	78,438	80,756

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

WATERS CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(unaudited)

	Six Months Ended	
	June 30, 2018	July 1, 2017
	(In thousands, except per share data)	
Revenues:		
Product sales	\$ 727,986	\$ 697,134
Service sales	398,903	359,085
Total net sales	1,126,889	1,056,219
Costs and operating expenses:		
Cost of product sales	300,445	281,179
Cost of service sales	164,111	159,543
Selling and administrative expenses	267,052	260,766
Research and development expenses	70,124	63,689
Litigation settlement	(1,672)	10,018
Purchased intangibles amortization	3,261	3,422
Acquired in-process research and development	—	5,000
Total costs and operating expenses	803,321	783,617
Operating income	323,568	272,602
Other income	(1,482)	52
Interest expense	(25,530)	(26,808)
Interest income	18,554	15,713
Income before income taxes	315,110	261,559
Provision for income taxes	47,482	24,180
Net income	\$ 267,628	\$ 237,379
Net income per basic common share	\$ 3.42	\$ 2.97
Weighted-average number of basic common shares	78,330	80,029
Net income per diluted common share	\$ 3.39	\$ 2.94
Weighted-average number of diluted common shares and equivalents	79,041	80,769

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

WATERS CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(unaudited)

	Three Months Ended		Six Months Ended	
	June 30,	July 1,	June 30,	July 1,
	2018	2017	2018	2017
	(In thousands)		(In thousands)	
Net income	\$ 155,677	\$ 131,822	\$ 267,628	\$ 237,379
Other comprehensive (loss) income:				
Foreign currency translation	(47,159)	38,241	(23,246)	67,382
Unrealized gains (losses) on investments before income taxes	1,453	794	(1,523)	1,382
Income tax benefit (expense)	164	(77)	257	(99)
Unrealized gains (losses) on investments, net of tax	1,617	717	(1,266)	1,283
Retirement liability adjustment before reclassifications	669	(1,075)	284	(1,531)
Amounts reclassified to other income	909	922	1,816	1,758
Retirement liability adjustment before income taxes	1,578	(153)	2,100	227
Income tax expense	(306)	(43)	(422)	(387)
Retirement liability adjustment, net of tax	1,272	(196)	1,678	(160)
Other comprehensive (loss) income	(44,270)	38,762	(22,834)	68,505
Comprehensive income	<u>\$ 111,407</u>	<u>\$ 170,584</u>	<u>\$ 244,794</u>	<u>\$ 305,884</u>

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

WATERS CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(unaudited)

	Six Months Ended	
	June 30, 2018	July 1, 2017
	(In thousands)	
Cash flows from operating activities:		
Net income	\$ 267,628	\$ 237,379
Adjustments to reconcile net income to net cash provided by operating activities:		
Stock-based compensation	18,971	17,794
Deferred income taxes	(2,992)	5,208
Depreciation	30,585	30,796
Amortization of intangibles	25,251	21,609
In-process research and development	—	5,000
Change in operating assets and liabilities:		
Decrease in accounts receivable	36,591	41,945
Increase in inventories	(33,877)	(19,169)
Increase in other current assets	(15,264)	(9,253)
Decrease (increase) in other assets	159	(1,154)
Decrease in accounts payable and other current liabilities	(68,414)	(34,802)
Increase in deferred revenue and customer advances	40,134	53,601
(Decrease) increase in other liabilities	(22,215)	2,306
Net cash provided by operating activities	276,557	351,260
Cash flows from investing activities:		
Additions to property, plant, equipment and software capitalization	(36,831)	(35,358)
Investment in unaffiliated company	(3,215)	(7,000)
Payments for intellectual property licenses	—	(5,000)
Purchases of investments	(513,342)	(1,554,769)
Maturities and sales of investments	1,759,770	1,308,275
Net cash provided by (used in) investing activities	1,206,382	(293,852)
Cash flows from financing activities:		
Proceeds from debt issuances	226	85,000
Payments on debt	(850,000)	(64)
Proceeds from stock plans	34,845	58,182
Purchases of treasury shares	(553,144)	(165,834)
(Payments for) proceeds from derivative contracts	(2,158)	430
Net cash used in financing activities	(1,370,231)	(22,286)
Effect of exchange rate changes on cash and cash equivalents	(12,823)	26,502
Increase in cash and cash equivalents	99,885	61,624
Cash and cash equivalents at beginning of period	642,319	505,631
Cash and cash equivalents at end of period	<u>\$ 742,204</u>	<u>\$ 567,255</u>

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

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(unaudited)

1 Basis of Presentation and Summary of Significant Accounting Policies

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 (“UPLCTM” 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 TATM 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.

The Company’s interim fiscal quarter typically ends on the thirteenth Saturday of each quarter. Since the Company’s fiscal year end is December 31, the first and fourth fiscal quarters may have more or less than thirteen complete weeks. The Company’s second fiscal quarters for 2018 and 2017 ended on June 30, 2018 and July 1, 2017, respectively.

The accompanying unaudited interim consolidated financial statements have been prepared in accordance with the instructions to the Quarterly Report on Form 10-Q and do not include all of the information and footnote disclosures required for annual financial statements prepared in accordance with generally accepted accounting principles (“GAAP”) in the United States of America. The consolidated financial statements include the accounts of the Company and its subsidiaries, which are wholly owned. All inter-company balances and transactions have been eliminated.

The preparation of consolidated financial statements in conformity with 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. Actual amounts may differ from these estimates under different assumptions or conditions.

It is management’s opinion that the accompanying interim consolidated financial statements reflect all adjustments (which are normal and recurring) that are necessary for a fair statement of the results for the interim periods. The interim consolidated financial statements should be read in conjunction with the consolidated financial statements included in the Company’s Annual Report on Form 10-K for the year ended December 31, 2017, as filed with the U.S. Securities and Exchange Commission on February 27, 2018.

Translation of Foreign Currencies

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

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

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)***Cash, Cash Equivalents and Investments***

Cash equivalents represent highly liquid investments, with original maturities of 90 days or less, while investments with longer maturities are classified as investments. 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 June 30, 2018 and December 31, 2017, \$1,165 million out of \$2,248 million and \$3,326 million out of \$3,394 million, respectively, of the Company's total cash, cash equivalents and investments were held by foreign subsidiaries. In addition, \$324 million out of \$2,248 million and \$304 million out of \$3,394 million of cash, cash equivalents and investments were held in currencies other than the U.S. dollar at June 30, 2018 and December 31, 2017, respectively.

Accounts Receivable and Allowance for Doubtful Accounts

Trade accounts receivable are recorded at the invoiced amount and do not bear interest. The Company has very limited use of rebates and other cash considerations payable to customers and, as a result, the transaction price determination does not have any material variable consideration. The 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. Historically, the Company has not experienced significant bad debt losses.

The following is a summary of the activity of the Company's allowance for doubtful accounts for the six months ended June 30, 2018 and July 1, 2017 (in thousands):

	Balance at Beginning of Period	Additions	Deduction	Balance at End of Period
Allowance for Doubtful Accounts				
June 30, 2018	\$ 6,109	\$ 1,825	\$ (1,778)	\$ 6,156
July 1, 2017	\$ 5,140	\$ 1,571	\$ (1,228)	\$ 5,483

Other Investments

During the six months ended June 30, 2018, the Company made a \$3 million investment in a developer of laboratory solutions to increase productivity and reproducibility for use in any industry.

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 June 30, 2018 and December 31, 2017. 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.

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

The following table represents the Company's assets and liabilities measured at fair value on a recurring basis at June 30, 2018 (in thousands):

	Total at June 30, 2018	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	\$ 237,759	\$ —	\$ 237,759	\$ —
Foreign government securities	2,954	—	2,954	—
Corporate debt securities	1,198,549	—	1,198,549	—
Time deposits	238,314	—	238,314	—
Equity securities	147	—	147	—
Waters 401(k) Restoration Plan assets	36,309	36,309	—	—
Foreign currency exchange contracts	167	—	167	—
Total	\$1,714,199	\$ 36,309	\$1,677,890	\$ —
Liabilities:				
Contingent consideration	\$ 3,550	\$ —	\$ —	\$ 3,550
Foreign currency exchange contracts	875	—	875	—
Total	\$ 4,425	\$ —	\$ 875	\$ 3,550

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

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 earnout payments in connection with 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 \$4 million and \$3 million at June 30, 2018 and December 31, 2017, respectively, 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 \$510 million and \$610 million at June 30, 2018 and December 31, 2017, respectively. The fair value of the Company's fixed interest rate debt was estimated using discounted cash flow models, based on estimated current rates offered for similar debt under current market conditions for the Company. The fair value of the Company's fixed interest rate debt was estimated to be \$499 million and \$608 million at June 30, 2018 and December 31, 2017, 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.

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

Principal hedged currencies include the Euro, Japanese yen, British pound, Mexican peso and Brazilian real. At June 30, 2018 and December 31, 2017, the Company held foreign currency exchange contracts with notional amounts totaling \$168 million and \$147 million, respectively.

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

	June 30, 2018	December 31, 2017
Other current assets	\$ 167	\$ 566
Other current liabilities	\$ 875	\$ 182

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):

	Three Months Ended		Six Months Ended	
	June 30, 2018	July 1, 2017	June 30, 2018	July 1, 2017
Realized (losses) gains on closed contracts	\$ (4,096)	\$ 1,868	\$ (2,158)	\$ 430
Unrealized (losses) gains on open contracts	(105)	2,209	(1,092)	2,077
Cumulative net pre-tax (losses) gains	<u>\$ (4,201)</u>	<u>\$ 4,077</u>	<u>\$ (3,250)</u>	<u>\$ 2,507</u>

In July 2018, the Company entered into a \$150 million U.S.-to-Euro interest rate cross-currency swap agreement that hedges the Company's net investment in its Euro denominated net assets.

Stockholders' Equity

In April 2018, the Company's Board of Directors authorized the Company to repurchase up to \$3 billion of its outstanding common stock over a three-year period. This new program adds the remaining \$526 million from the pre-existing program, allowing for the purchase of a total of \$3.5 billion of the Company's common stock over a three-year period. Upon commencement of the new authorization, the May 2017 authorization was terminated. During the six months ended June 30, 2018 and July 1, 2017, the Company repurchased 2.7 million and 0.9 million shares of the Company's outstanding common stock at a cost of \$546 million and \$159 million, respectively, under the April 2018 authorization and other previously announced programs. As of June 30, 2018, the Company had repurchased an aggregate of 1.4 million shares at a cost of \$271 million under the April 2018 repurchase program and had a total of \$3.3 billion authorized for future repurchases. In addition, the Company repurchased \$8 million and \$7 million of common stock related to the vesting of restricted stock units during the six months ended June 30, 2018 and July 1, 2017, 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.

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.

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

The following is a summary of the activity of the Company's accrued warranty liability for the six months ended June 30, 2018 and July 1, 2017 (in thousands):

	Balance at Beginning of Period	Accruals for Warranties	Settlements Made	Balance at End of Period
Accrued warranty liability:				
June 30, 2018	\$ 13,026	\$ 3,588	\$ (4,115)	\$ 12,499
July 1, 2017	\$ 13,391	\$ 3,842	\$ (4,369)	\$ 12,864

Other Commitments

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 the new state-of-the-art manufacturing facility, which will be paid for with existing cash and investments.

2 Revenue Recognition

The Company adopted new accounting guidance regarding the recognition of revenue from contracts with customers as of January 1, 2018.

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

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

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

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

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

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

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

The Company's deferred revenue liabilities 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. The Company records deferred revenue primarily related to its service contracts, where consideration is billable at the beginning of the service period.

The following is a summary of the activity of the Company's deferred revenue and customer advances for the six months ended June 30, 2018 and July 1, 2017 (in thousands):

	June 30, 2018	July 1, 2017
Balance at the beginning of the period	\$ 192,590	\$ 173,780
Recognition of revenue included in balance at beginning of the period	(138,227)	(122,930)
Revenue deferred during the period, net of revenue recognized	186,392	184,529
Balance at the end of the period	<u>\$ 240,755</u>	<u>\$ 235,379</u>

As of June 30, 2018 and December 31, 2017, \$37 million and \$26 million of deferred revenue and customer advances were classified in other long-term liabilities, respectively.

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

	June 30, 2018
Deferred revenue and customer advances expected to be recognized:	
In one year or less	\$ 203,715
In 13-24 months	24,522
In 25 months and beyond	12,518
Total	<u>\$ 240,755</u>

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

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):

	June 30, 2018			
	Amortized Cost	Unrealized Gain	Unrealized Loss	Fair Value
U.S. Treasury securities	\$ 239,150	\$ 3	\$ (1,394)	\$ 237,759
Foreign government securities	2,992	—	(38)	2,954
Corporate debt securities	1,202,456	384	(4,291)	1,198,549
Time deposits	238,315	—	(1)	238,314
Equity securities	77	70	—	147
Total	<u>\$1,682,990</u>	<u>\$ 457</u>	<u>\$ (5,724)</u>	<u>\$1,677,723</u>
Amounts included in:				
Cash equivalents	\$ 171,433	\$ 1	\$ —	\$ 171,434
Investments	1,511,557	456	(5,724)	1,506,289
Total	<u>\$1,682,990</u>	<u>\$ 457</u>	<u>\$ (5,724)</u>	<u>\$1,677,723</u>

	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	<u>\$2,949,502</u>	<u>\$ 1,049</u>	<u>\$ (4,793)</u>	<u>\$2,945,758</u>
Amounts included in:				
Cash equivalents	\$ 194,377	\$ —	\$ (1)	\$ 194,376
Investments	2,755,125	1,049	(4,792)	2,751,382
Total	<u>\$2,949,502</u>	<u>\$ 1,049</u>	<u>\$ (4,793)</u>	<u>\$2,945,758</u>

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

	June 30, 2018	December 31, 2017
Due in one year or less	\$ 1,002,140	\$ 1,722,553
Due after one year through three years	437,122	851,547
Total	<u>\$ 1,439,262</u>	<u>\$ 2,574,100</u>

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

4 Inventories

Inventories are classified as follows (in thousands):

	June 30, 2018	December 31, 2017
Raw materials	\$ 107,688	\$ 99,033
Work in progress	16,459	15,324
Finished goods	175,448	155,937
Total inventories	<u>\$ 299,595</u>	<u>\$ 270,294</u>

5 Goodwill and Other Intangibles

The carrying amount of goodwill was \$358 million and \$360 million at June 30, 2018 and December 31, 2017, respectively. During the six months ended June 30, 2018, the effect of foreign currency translation decreased goodwill by \$2 million.

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

	June 30, 2018			December 31, 2017		
	Gross Carrying Amount	Accumulated Amortization	Weighted- Average Amortization Period	Gross Carrying Amount	Accumulated Amortization	Weighted- Average Amortization Period
Capitalized software	\$442,294	\$ 294,533	5 years	\$438,652	\$ 285,461	5 years
Purchased intangibles	167,762	140,521	11 years	169,870	138,750	11 years
Trademarks and IPR&D	13,815	—	—	13,923	—	—
Licenses	5,716	4,767	6 years	5,840	4,628	6 years
Patents and other intangibles	75,042	46,633	8 years	72,815	43,866	8 years
Total	<u>\$704,629</u>	<u>\$ 486,454</u>	7 years	<u>\$701,100</u>	<u>\$ 472,705</u>	7 years

The gross carrying value of intangible assets and accumulated amortization for intangible assets decreased by \$15 million and \$11 million, respectively, in the six months ended June 30, 2018 due to the effects of foreign currency translation. Amortization expense for intangible assets was \$12 million for both the three months ended June 30, 2018 and July 1, 2017. Amortization expense for intangible assets was \$25 million and \$22 million for the six months ended June 30, 2018 and July 1, 2017, respectively. Amortization expense for intangible assets is estimated to be \$52 million per year for each of the next five years.

In July 2018, the Company acquired the sole intellectual property rights to the Desorption Electrospray Ionization (“DESI”) imaging technology for \$30 million. DESI is a mass spectrometry imaging technique that is used to develop medical therapies.

6 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 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

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

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 June 30, 2018 and December 31, 2017, the Company had a total of \$560 million and \$700 million of outstanding senior unsecured notes, respectively. 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 June 30, 2018 and December 31, 2017 (in thousands):

	June 30, 2018	December 31, 2017
Foreign subsidiary lines of credit	\$ 499	\$ 273
Senior unsecured notes—Series D - 3.22%, due March 2018	—	100,000
Total notes payable and debt, current	499	100,273
Senior unsecured notes—Series B - 5.00%, due February 2020	100,000	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
Senior unsecured notes—Series K - 3.44%, due May 2026	160,000	160,000
Credit agreement	590,000	1,300,000
Unamortized debt issuance costs	(2,049)	(2,499)
Total long-term debt	1,147,951	1,897,501
Total debt	\$ 1,148,450	\$ 1,997,774

* 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 bore interest at a 3-month LIBOR for that floating rate interest period plus 1.45%.

As of June 30, 2018 and December 31, 2017, the Company had a total amount available to borrow under existing credit agreements of \$1,208 million and \$498 million, respectively, after outstanding letters of credit. During the six months ended June 30, 2018, the Company reduced its outstanding debt by \$850 million using cash repatriated under the 2017 Tax Cuts and Jobs Act. The weighted-average interest rates applicable to the senior unsecured notes and credit agreement borrowings collectively were 3.59% and 2.98% at June 30, 2018 and December 31, 2017, respectively. As of June 30, 2018, the Company was in compliance with all debt covenants.

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

The Company and its foreign subsidiaries also had available short-term lines of credit totaling \$90 million and \$91 million at June 30, 2018 and December 31, 2017, respectively, for the purpose of short-term borrowing and issuance of commercial guarantees. The weighted-average interest rate applicable to these short-term borrowings was 1.48% for both June 30, 2018 and December 31, 2017.

7 Income Taxes

In December 2017, the U.S. enacted legislation informally referred to as the Tax Cuts and Jobs Act (the “2017 Tax Act”). For the year ended December 31, 2017 the Company accrued a \$550 million tax provision related to the 2017 Tax Act. The \$550 million expense was comprised of \$490 million related to the federal toll charge, \$40 million for state income taxes and foreign withholding taxes and \$20 million for the revaluation of the Company’s deferred tax assets and liabilities at the new federal tax rate of 21%. The Company continues to analyze its information and review new guidance from the Internal Revenue Service and state tax authorities. The Company has not made any adjustment to its provisional accrual established at December 31, 2017 during the six months ended June 30, 2018.

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

The four principal jurisdictions in which the Company manufactures are the U.S., Ireland, the U.K. and Singapore, where the statutory tax rates are 21%, 12.5%, 19% and 17%, respectively, as of June 30, 2018. 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 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 for the six months ended June 30, 2018 and July 1, 2017 by \$13 million and \$11 million, respectively, and increased the Company’s net income per diluted share by \$0.17 and \$0.14, respectively.

The Company’s effective tax rate for the three months ended June 30, 2018 and July 1, 2017 was 10.8% and 11.0%, respectively. The Company’s effective tax rate for the six months ended June 30, 2018 and July 1, 2017 was 15.1% and 9.2%, respectively. The effective tax rate for the three and six months ended June 30, 2018 reflects the enactment of the 2017 Tax Act. The most significant changes applicable to the Company under the new law are the reduction in the U.S. federal income tax rate from 35% to 21% and the new GILTI provision described above. The impact of the GILTI provision is an increase of approximately 2.5 percentage points to our effective tax rates for both the three and six months ended June 30, 2018. In addition, the tax provision for the three months ended June 30, 2018 includes a \$9 million reduction in the income tax expense related to the change in foreign currency exchange rates on the earnings taxed in December 2017 under the toll charge of the 2017 Tax Act and a \$1 million tax benefit related to stock-based compensation. The impact of these two discrete items decreased the effective tax rate by 5.6 percentage points for the three months ended June 30, 2018. The effective income tax rate for the three months ended July 1, 2017 included a \$4 million tax benefit related to stock-based compensation. Income tax expense for the six months ended June 30, 2018 includes a \$7 million tax benefit related to stock-based compensation and \$4 million of additional income tax expense related to the change in foreign currency exchange rates on the earnings taxed in December 2017 under the toll charge of the 2017 Tax Act. The net impact of these two discrete items for the six months ended June 30, 2018 was a decrease in the effective income tax rate of 1.0 percentage points. The effective income tax rate for the six months ended July 1, 2017 included a \$12 million tax benefit related to stock-based compensation. The remaining differences between the 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 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.

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

The following is a summary of the activity of the Company's unrecognized tax benefits for the six months ended June 30, 2018 and July 1, 2017 (in thousands):

	June 30, 2018	July 1, 2017
Balance at the beginning of the period	\$ 5,843	\$ 9,964
Net changes in uncertain tax benefits	217	(1,870)
Balance at the end of the period	<u>\$ 6,060</u>	<u>\$ 8,094</u>

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, 2013. However, carryforward tax attributes that were generated in years beginning on or before January 1, 2014 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. As of June 30, 2018, 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 adopted new accounting guidance which eliminates the deferral of tax effects on intra-entity transfers other than inventory and requires an entity to recognize the income tax consequences when the transfer occurs. The Company adopted this standard as of January 1, 2018 with a \$4 million charge to beginning retained earnings in the consolidated balance sheet.

8 Stock-Based Compensation

The Company maintains various shareholder-approved, stock-based compensation plans which allow for the issuance of incentive or non-qualified stock options, stock appreciation rights, restricted stock or other types of awards (e.g. restricted stock units and performance stock units).

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

The consolidated statements of operations for the three and six months ended June 30, 2018 and July 1, 2017 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):

	Three Months Ended		Six Months Ended	
	June 30, 2018	July 1, 2017	June 30, 2018	July 1, 2017
Cost of sales	\$ 603	\$ 787	\$ 1,208	\$ 1,525
Selling and administrative expenses	7,639	7,602	16,123	14,790
Research and development expenses	837	750	1,640	1,479
Total stock-based compensation	<u>\$ 9,079</u>	<u>\$ 9,139</u>	<u>\$ 18,971</u>	<u>\$ 17,794</u>

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

Stock Options

In determining the fair value of the stock options, the Company makes a variety of assumptions and estimates, including volatility measures, expected yields and expected stock option lives. The fair value of each option grant was estimated on the date of grant using the Black-Scholes option pricing model. The Company uses implied volatility on its publicly-traded options as the basis for its estimate of expected volatility. The Company believes that implied volatility is the most appropriate indicator of expected volatility because it is generally reflective of historical volatility and expectations of how future volatility will differ from historical volatility. The expected life assumption for grants is based on historical experience for the population of non-qualified stock option exercises. The risk-free interest rate is the yield currently available on U.S. Treasury zero-coupon issues with a remaining term approximating the expected term used as the input to the Black-Scholes model. The relevant data used to determine the value of the stock options granted during the six months ended June 30, 2018 and July 1, 2017 are as follows:

Options Issued and Significant Assumptions Used to Estimate Option Fair Values	Six Months Ended	
	June 30, 2018	July 1, 2017
Options issued in thousands	140	207
Risk-free interest rate	2.7%	2.2%
Expected life in years	6	6
Expected volatility	0.232	0.232
Expected dividends	—	—

Weighted-Average Exercise Price and Fair Value of Options on the Date of Grant	Six Months Ended	
	June 30, 2018	July 1, 2017
Exercise price	\$ 205.97	\$ 149.74
Fair value	\$ 58.26	\$ 40.39

The following table summarizes stock option activity for the plans for the six months ended June 30, 2018 (in thousands, except per share data):

	Number of Shares	Exercise Price per Share	Weighted-Average Exercise Price per Share
Outstanding at December 31, 2017	2,039	\$ 38.09 to \$194.26	\$ 124.41
Granted	140	\$ 192.62 to \$208.47	\$ 205.97
Exercised	(305)	\$ 38.09 to \$154.33	\$ 101.09
Canceled	(137)	\$ 98.21 to \$154.33	\$ 126.04
Outstanding at June 30, 2018	<u>1,737</u>	\$ 38.09 to \$208.47	\$ 134.95

Restricted Stock

During the six months ended June 30, 2018, the Company granted four thousand shares of restricted stock. The weighted-average fair value per share of these awards on the grant date was \$195.69.

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

Restricted Stock Units

The following table summarizes the unvested restricted stock unit award activity for the six months ended June 30, 2018 (in thousands, except per share data):

	Shares	Weighted-Average Fair Value per Share
Unvested at December 31, 2017	374	\$ 124.81
Granted	88	\$ 208.26
Vested	(116)	\$ 117.35
Forfeited	(12)	\$ 118.07
Unvested at June 30, 2018	<u>334</u>	\$ 149.63

Restricted stock units are generally granted annually in February and vest in equal annual installments over a five-year period.

Performance Stock Units

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

In determining the fair value of the performance stock units, the Company makes a variety of assumptions and estimates, including volatility measures, expected yields and expected terms. The fair value of each performance stock unit grant was estimated on the date of grant using the Monte Carlo simulation model. The Company uses implied volatility on its publicly-traded options as the basis for its estimate of expected volatility. The Company believes that implied volatility is the most appropriate indicator of expected volatility because it is generally reflective of historical volatility and expectations of how future volatility will differ from historical volatility. The expected life assumption for grants is based on the performance period of the underlying performance stock units. The risk-free interest rate is the yield currently available on U.S. Treasury zero-coupon issues with a remaining term approximating the expected term used as the input to the Monte Carlo simulation model. The correlation coefficient is used to model the way in which each company in the S&P Health Care Index tends to move in relation to each other during the performance period. The relevant data used to determine the value of the performance stock units granted during the six months ended June 30, 2018 and July 1, 2017 are as follows:

Performance Stock Units Issued and Significant Assumptions Used to Estimate Fair Values	Six Months Ended	
	June 30, 2018	July 1, 2017
Performance stock units issued (in thousands)	16	20
Risk-free interest rate	2.0%	1.5%
Expected life in years	2.8	3.0
Expected volatility	0.234	0.232
Average volatility of peer companies	0.258	0.261
Correlation coefficient	0.372	0.385
Expected dividends	—	—

The following table summarizes the unvested performance stock unit award activity for the six months ended June 30, 2018 (in thousands, except per share data):

	Shares	Weighted-Average Fair Value per Share
Unvested at December 31, 2017	64	\$ 196.29
Granted	16	\$ 253.44
Forfeited	(5)	\$ 188.45
Unvested at June 30, 2018	<u>75</u>	\$ 209.00

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

9 Earnings Per Share

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

Three Months Ended June 30, 2018			
	Net Income (Numerator)	Weighted- Average Shares (Denominator)	Per Share Amount
Net income per basic common share	\$ 155,677	77,833	\$ 2.00
Effect of dilutive stock option, restricted stock, performance stock unit and restricted stock unit securities	—	605	(0.02)
Net income per diluted common share	<u>\$ 155,677</u>	<u>78,438</u>	<u>\$ 1.98</u>
Three Months Ended July 1, 2017			
	Net Income (Numerator)	Weighted- Average Shares (Denominator)	Per Share Amount
Net income per basic common share	\$ 131,822	79,979	\$ 1.65
Effect of dilutive stock option, restricted stock, performance stock unit and restricted stock unit securities	—	777	(0.02)
Net income per diluted common share	<u>\$ 131,822</u>	<u>80,756</u>	<u>\$ 1.63</u>
Six Months Ended June 30, 2018			
	Net Income (Numerator)	Weighted- Average Shares (Denominator)	Per Share Amount
Net income per basic common share	\$ 267,628	78,330	\$ 3.42
Effect of dilutive stock option, restricted stock, performance stock unit and restricted stock unit securities	—	711	(0.03)
Net income per diluted common share	<u>\$ 267,628</u>	<u>79,041</u>	<u>\$ 3.39</u>
Six Months Ended July 1, 2017			
	Net Income (Numerator)	Weighted- Average Shares (Denominator)	Per Share Amount
Net income per basic common share	\$ 237,379	80,029	\$ 2.97
Effect of dilutive stock option, restricted stock, performance stock unit and restricted stock unit securities	—	740	(0.03)
Net income per diluted common share	<u>\$ 237,379</u>	<u>80,769</u>	<u>\$ 2.94</u>

For both the three and six months ended June 30, 2018, the Company had 0.1 million and stock options that were antidilutive due to having higher exercise prices than the Company's average stock price during the period. For the three and six months ended July 1, 2017, the Company had 0.4 million and 0.5 million stock options that were antidilutive, respectively. These securities were not included in the computation of diluted EPS. The effect of dilutive securities was calculated using the treasury stock method.

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

10 Accumulated Other Comprehensive Income

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

	<u>Currency Translation</u>	<u>Unrealized Gain (Loss) on Retirement Plans</u>	<u>Unrealized Gain (Loss) on Investments</u>	<u>Accumulated Other Comprehensive Income (Loss)</u>
Balance at December 31, 2017	\$ (69,418)	\$ (37,103)	\$ (3,546)	\$ (110,067)
Other comprehensive (loss) income, net of tax	(23,246)	1,678	(1,266)	(22,834)
Balance at June 30, 2018	<u>\$ (92,664)</u>	<u>\$ (35,425)</u>	<u>\$ (4,812)</u>	<u>\$ (132,901)</u>

11 Retirement Plans

The Company sponsors various retirement plans. The Company adopted new accounting guidance which requires that an employer disaggregate the service cost component from other components of net benefit cost. As a result of the adoption of this standard, the components of net periodic benefit cost other than the service cost component are included in other income in the consolidated statements of operations and all previous periods have been adjusted accordingly. The summary of the components of net periodic pension costs for the plans for the three and six months ended June 30, 2018 and July 1, 2017 is as follows (in thousands):

	<u>Three Months Ended</u>					
	<u>June 30, 2018</u>	<u>June 30, 2018</u>		<u>July 1, 2017</u>	<u>July 1, 2017</u>	
	<u>U.S. Pension Plans</u>	<u>U.S. Retiree Healthcare Plan</u>	<u>Non-U.S. Pension Plans</u>	<u>U.S. Pension Plans</u>	<u>U.S. Retiree Healthcare Plan</u>	<u>Non-U.S. Pension Plans</u>
Service cost	\$ 142	\$ 151	\$ 1,339	\$ 124	\$ 170	\$ 1,240
Interest cost	1,627	162	416	1,696	159	368
Expected return on plan assets	(630)	(175)	(481)	(2,487)	(147)	(414)
Net amortization:						
Prior service credit	—	(2)	(32)	—	—	(47)
Net actuarial loss	772	—	171	734	—	235
Net periodic pension cost	<u>\$ 1,911</u>	<u>\$ 136</u>	<u>\$ 1,413</u>	<u>\$ 67</u>	<u>\$ 182</u>	<u>\$ 1,382</u>

	<u>Six Months Ended</u>					
	<u>June 30, 2018</u>	<u>June 30, 2018</u>		<u>July 1, 2017</u>	<u>July 1, 2017</u>	
	<u>U.S. Pension Plans</u>	<u>U.S. Retiree Healthcare Plan</u>	<u>Non-U.S. Pension Plans</u>	<u>U.S. Pension Plans</u>	<u>U.S. Retiree Healthcare Plan</u>	<u>Non-U.S. Pension Plans</u>
Service cost	\$ 284	\$ 283	\$ 2,713	\$ 225	\$ 273	\$ 2,491
Interest cost	3,246	318	844	3,415	309	726
Expected return on plan assets	(3,415)	(353)	(974)	(5,150)	(294)	(816)
Net amortization:						
Prior service credit	—	(10)	(63)	—	—	(93)
Net actuarial loss	1,541	—	348	1,385	—	466
Net periodic pension cost (benefit)	<u>\$ 1,656</u>	<u>\$ 238</u>	<u>\$ 2,868</u>	<u>\$ (125)</u>	<u>\$ 288</u>	<u>\$ 2,774</u>

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

In 2018, the Company's board of directors approved the termination of the frozen U.S. defined benefit pension plans. The Company anticipates that it will take six months to a year to settle all of these plans' obligations and, during this timeframe, the Company may incur pension accounting charges in connection with the termination of these plans.

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 for all plans, excluding the U.S. defined benefit pension plans.

12 Business Segment Information

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 TM and TA TM.

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 three and six months ended June 30, 2018 and July 1, 2017 (in thousands):

	Three Months Ended		Six Months Ended	
	<u>June 30, 2018</u>	<u>July 1, 2017</u>	<u>June 30, 2018</u>	<u>July 1, 2017</u>
Product net sales:				
Waters instrument systems	\$ 239,928	\$ 238,548	\$ 438,031	\$ 436,337
Chemistry consumables	99,129	90,824	197,839	178,727
TA instrument systems	49,812	43,466	92,116	82,070
Total product sales	388,869	372,838	727,986	697,134
Service net sales:				
Waters service	188,248	168,408	362,581	326,142
TA service	19,102	17,004	36,322	32,943
Total service sales	207,350	185,412	398,903	359,085
Total net sales	<u>\$ 596,219</u>	<u>\$ 558,250</u>	<u>\$ 1,126,889</u>	<u>\$1,056,219</u>

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

Geographic sales information is presented below for the three and six months ended June 30, 2018 and July 1, 2017 (in thousands):

	Three Months Ended		Six Months Ended	
	June 30, 2018	July 1, 2017	June 30, 2018	July 1, 2017
Net Sales:				
Asia:				
China	\$ 109,709	\$ 94,104	\$ 203,537	\$ 179,226
Japan	43,183	41,559	85,948	82,856
Asia Other	84,013	80,040	147,700	148,727
Total Asia	236,905	215,703	437,185	410,809
Americas:				
United States	161,485	164,374	308,306	303,608
Americas Other	36,641	32,212	71,530	67,628
Total Americas	198,126	196,586	379,836	371,236
Europe	161,188	145,961	309,868	274,174
Total net sales	<u>\$ 596,219</u>	<u>\$ 558,250</u>	<u>\$ 1,126,889</u>	<u>\$1,056,219</u>

Net sales by customer class are as follows for the three and six months ended June 30, 2018 and July 1, 2017 (in thousands):

	Three Months Ended		Six Months Ended	
	June 30, 2018	July 1, 2017	June 30, 2018	July 1, 2017
Pharmaceutical	\$ 338,354	\$ 319,650	\$ 643,682	\$ 599,460
Industrial	183,664	174,531	345,994	335,834
Governmental and academic	74,201	64,069	137,213	120,925
Total net sales	<u>\$ 596,219</u>	<u>\$ 558,250</u>	<u>\$ 1,126,889</u>	<u>\$1,056,219</u>

Net sales for the Company recognized at a point in time versus over time are as follows for the three and six months ended June 30, 2018 and July 1, 2017 (in thousands):

	Three Months Ended		Six Months Ended	
	June 30, 2018	July 1, 2017	June 30, 2018	July 1, 2017
Net sales recognized at a point in time:				
Instrument systems	\$ 289,740	\$ 282,014	\$ 530,147	\$ 518,407
Chemistry consumables	99,129	90,824	197,839	178,727
Service sales recognized at a point in time (time & materials)	80,397	72,937	152,915	140,439
Total net sales recognized at a point in time	469,266	445,775	880,901	837,573
Net sales recognized over time:				
Service and software sales recognized over time (contracts)	126,953	112,475	245,988	218,646
Total net sales	<u>\$ 596,219</u>	<u>\$ 558,250</u>	<u>\$ 1,126,889</u>	<u>\$1,056,219</u>

13 Recent Accounting Standard Changes and Developments

Recently Adopted 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

CONDENSED NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (unaudited) – (Continued)

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 adopted this standard as of January 1, 2018 and applied the modified-retrospective method. The Company elected the practical expedient and only evaluated the contracts that were considered incomplete as of January 1, 2018 when quantifying the cumulative effect adjustment under the modified retrospective method. The adoption of this standard did not have a material impact on the Company's financial position, results of operations or cash flows and, as such, did not require any adjustments to information reported in the prior year.

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. The Company adopted this standard as of January 1, 2018 and the adoption of this standard did not have a material impact on the Company's financial position, results of operations and cash flows.

In August 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 adopted this standard as of January 1, 2018 and the adoption of this standard did not 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. The Company adopted this standard as of January 1, 2018 with a \$4 million charge to beginning retained earnings in the consolidated balance sheet. Please see Note 7, "Income Taxes", for additional information.

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. The Company adopted this standard as of January 1, 2018 and will apply this guidance prospectively to any business combination transactions that take place in the future.

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. The Company adopted this standard as of January 1, 2018 and has reported the components of net periodic benefit cost other than the service cost component in other income on the consolidated statements of operations for all periods presented. Please see Note 11, "Retirement Plans", for additional information.

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. The Company adopted this standard as of January 1, 2018 and the adoption of this standard did not have a material impact on the Company's financial position, results of operations and cash flows.

In August 2017, accounting guidance was issued which simplifies the application of hedge accounting and enables companies to better portray the economics of their risk management activities in their financial statements. The Company adopted this standard in the second quarter of 2018, and this adoption did not have a material impact on the Company's financial position, results of operations and cash flows.

Recently Issued Accounting Standards

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.

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 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 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 February 2018, accounting guidance was issued to address the impact of the 2017 Tax Cuts and Jobs Act on items recorded in accumulated other comprehensive income. Because current accounting guidance requires deferred tax liabilities and assets to be adjusted for the effect of a change in tax laws or rates with the effect recorded in income from continuing operations, even if the related tax effects were originally recognized in other comprehensive income, the new guidance allows a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the 2017 Tax Act. This guidance is effective for annual and interim periods beginning after December 15, 2018 and early adoption is permitted. The Company is currently evaluating the potential impact that the adoption of this standard will have on the Company's financial position, results of operations and cash flows.

Item 2: Management's Discussion and Analysis of Financial Condition and Results of Operations

Business and Financial Overview

The Company has two operating segments: Waters TM and TA TM. Waters products and services primarily consist of high performance liquid chromatography ("HPLC"), ultra performance liquid chromatography ("UPLC TM") 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 three and six months ended June 30, 2018 and July 1, 2017 (dollars in thousands, except per share data):

	Three Months Ended			Six Months Ended		
	June 30, 2018	July 1, 2017	% change	June 30, 2018	July 1, 2017	% change
Revenues:						
Product sales	\$ 388,869	\$ 372,838	4%	\$ 727,986	\$ 697,134	4%
Service sales	207,350	185,412	12%	398,903	359,085	11%
Total net sales	596,219	558,250	7%	1,126,889	1,056,219	7%
Costs and operating expenses:						
Cost of sales	243,135	229,627	6%	464,556	440,722	5%
Selling and administrative expenses	136,645	130,093	5%	267,052	260,766	2%
Research and development expenses	35,644	32,937	8%	70,124	63,689	10%
Litigation settlement (provision)	—	10,018	**	(1,672)	10,018	**
Purchased intangibles amortization	1,602	1,693	(5%)	3,261	3,422	(5%)
Acquired in-process research and development	—	—	—	—	5,000	(100%)
Operating income	179,193	153,882	16%	323,568	272,602	19%
Operating income as a % of sales	30.1%	27.6%		28.7%	25.8%	
Other income	(1,828)	(97)	**	(1,482)	52	**
Interest expense, net	(2,804)	(5,713)	(51%)	(6,976)	(11,095)	(37%)
Income before income taxes	174,561	148,072	18%	315,110	261,559	20%
Provision for income taxes	18,884	16,250	16%	47,482	24,180	96%
Net income	\$ 155,677	\$ 131,822	18%	\$ 267,628	\$ 237,379	13%
Net income per diluted common share	\$ 1.98	\$ 1.63	21%	\$ 3.39	\$ 2.94	15%

** Percentage not meaningful

The Company's sales increased 7% for both the second quarter and first half of 2018 as compared to the second quarter and first half of 2017, with foreign currency translation contributing 2% and 3% to the sales growth for the second quarter and first half of 2018, respectively. Unless otherwise noted, sales growth or decline percentages are presented as compared with the same period in the prior year.

Instrument system sales increased 3% and 2% in the quarter and year-to-date on strong demand for our TA instrument systems being partially offset by weaker customer demand for our LC and MS instrument systems. Recurring revenues (combined sales of precision chemistry consumables and services) increased 11% in both the quarter and year-to-date as a result of a larger installed base of customers and higher billing demand for service sales and despite there being one less calendar day in the first half of 2018 as compared to the first half of 2017.

In the second quarter of 2018, the Company's sales increased 10% in Asia and Europe, and 1% in the Americas. Year-to-date, the Company's sales increased 13% in Europe, 6% in Asia and 2% in the Americas. Sales growth in Europe benefited from the effect of foreign currency translation, which added 5% and 9% to the sales growth rate to the quarter and year-to-date, respectively. Sales growth in Asia was a result of the double-digit sales growth in China, which was broad-based across all product lines and driven by sales to pharmaceutical, governmental and academic customers, offset by a 3% and 6% decline in sales in India for the quarter and year-to-date, respectively, on weaker customer demand for our instrument systems. Foreign currency translation reduced India's sales growth by 3% and 1% in the quarter and year-to-date, respectively. Sales growth in the Americas for the quarter was impacted by a 2% decrease in sales in the U.S., while U.S. sales increased 2% year-to-date.

Net sales by customer class is presented below for the three and six months ended June 30, 2018 and July 1, 2017 (dollars in thousands):

	Three Months Ended			Six Months Ended		
	June 30, 2018	July 1, 2017	% change	June 30, 2018	July 1, 2017	% change
Pharmaceutical	\$ 338,354	\$ 319,650	6%	\$ 643,682	\$ 599,460	7%
Industrial	183,664	174,531	5%	345,994	335,834	3%
Governmental and academic	74,201	64,069	16%	137,213	120,925	13%
Total net sales	<u>\$ 596,219</u>	<u>\$ 558,250</u>	<u>7%</u>	<u>\$ 1,126,889</u>	<u>\$1,056,219</u>	<u>7%</u>

Sales to pharmaceutical customers increased 6% and 7% for the quarter and year-to-date, 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 was driven by double-digit growth in China.

Combined sales to industrial customers, which include customers in materials characterization, food, environmental and fine chemical markets, grew 5% and 3% for the quarter and year-to-date, respectively. Industrial sales were negatively impacted by a decline in sales to environmental customers during 2018 as compared to 2017.

Combined sales to governmental and academic customers increased 16% and 13% for the quarter and year-to-date, respectively. The increase in sales to governmental and academic customers was broad-based across all product categories and geographies and was driven by sales to customers in China and Europe. Sales to governmental and academic customers are highly dependent on when institutions receive funding to purchase our instrument systems and, as such, sales can vary significantly from period to period.

Operating income increased 16% and 19% for the quarter and year-to-date, respectively. This increase was primarily a result of the effect of higher sales volume achieved in 2018 and the impact of the certain expenses incurred in 2017 that did not occur again in 2018. These expenses include \$10 million of litigation settlement provisions and related costs for both the second quarter and first half of 2017; \$2 million and \$11 million in the second quarter and year-to-date, respectively, 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; and a \$5 million year-to-date charge relating to a milestone payment for the licensing of certain intellectual property relating to mass spectrometry technologies yet to be commercialized.

The Company generated \$277 million and \$351 million of net cash flows from operations in the first half of 2018 and 2017, respectively. This decrease in operating cash flow was primarily a result of \$65 million in income tax payments made in the U.S. relating to the Company's estimated 2017 tax reform liability and 2018 estimated tax payments and a \$15 million litigation settlement payment. Over 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 Company's estimated tax liabilities of \$550 million under the legislation informally referred to as the Tax Cuts and Jobs Act ("2017 Tax Act"). The remaining 60% of this liability is required to be paid over a three-year period beginning in 2023.

Cash flows used in investing activities included capital expenditures related to property, plant, equipment and software capitalization of \$37 million and \$35 million in the second quarter of 2018 and 2017, respectively. 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 July 2018, the Company acquired the sole intellectual property rights to the Desorption Electrospray Ionization ("DESI") imaging technology for \$30 million. DESI is a mass spectrometry imaging technique that is used to develop medical therapies.

In April 2018, the Company's Board of Directors authorized the Company to repurchase up to \$3 billion of its outstanding common stock over a three-year period. This new program adds the remaining \$526 million from the pre-existing program, allowing for the purchase of a total of \$3.5 billion of the Company's common stock over a three-year period. Upon commencement of the new authorization, the May 2017 authorization was terminated. During the first half of 2018 and 2017, the Company repurchased \$546 million and \$159 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.

In July 2018, the Company entered into a \$150 million U.S.-to-Euro interest rate cross-currency swap agreement that hedges the Company's net investment in its Euro denominated net assets.

Results of Operations

Sales by Geography

Geographic sales information is presented below for the three and six months ended June 30, 2018 and July 1, 2017 (dollars in thousands):

	Three Months Ended			Six Months Ended		
	June 30, 2018	July 1, 2017	% change	June 30, 2018	July 1, 2017	% change
Net Sales:						
Asia:						
China	\$ 109,709	\$ 94,104	17%	\$ 203,537	\$ 179,226	14%
Japan	43,183	41,559	4%	85,948	82,856	4%
Asia Other	84,013	80,040	5%	147,700	148,727	(1%)
Total Asia	236,905	215,703	10%	437,185	410,809	6%
Americas:						
United States	161,485	164,374	(2%)	308,306	303,608	2%
Americas Other	36,641	32,212	14%	71,530	67,628	6%
Total Americas	198,126	196,586	1%	379,836	371,236	2%
Europe	161,188	145,961	10%	309,868	274,174	13%
Total net sales	<u>\$ 596,219</u>	<u>\$ 558,250</u>	<u>7%</u>	<u>\$ 1,126,889</u>	<u>\$ 1,056,219</u>	<u>7%</u>

Sales in China increased across all product lines and were driven by double-digit increases in sales to pharmaceutical, governmental and academic customers. Sales in Japan benefited from foreign currency translation by 2% and 4% for the second quarter and year-to-date, respectively. In the second quarter of 2018, the sales growth in the rest of Asia was driven by recurring revenues to pharmaceutical and industrial customers, while the year-to-date sales growth in the rest of Asia was impacted by weaker sales to environmental customers in the first quarter of 2018. The decline in sales in the U.S. in the second quarter of 2018 is primarily due to weaker demand for high-end biomedical research LC-MS instrument systems to pharmaceutical and industrial customers. Sales growth in the U.S. year-to-date was driven by recurring revenues and sales to pharmaceutical and industrial customers. In the second quarter of 2018, the rest of the Americas had double-digit sales growth across all product categories and double-digit sales growth to pharmaceutical, governmental and academic customers, which was offset by a decline in sales to industrial customers. Year-to-date, sales for the rest of the Americas were unfavorably impacted by double-digit sales growth experienced in the first quarter of 2017. Sales growth in Europe was primarily attributed to the effect of foreign currency translation, which increased sales 5% and 9% for the quarter and year-to-date, respectively.

Waters Products and Services Net Sales

Net sales for Waters products and services are as follows for the three and six months ended June 30, 2018 and July 1, 2017 (dollars in thousands):

	Three Months Ended				
	June 30, 2018	% of Total	July 1, 2017	% of Total	% change
Waters instrument systems	\$ 239,928	46%	\$ 238,548	48%	1%
Chemistry consumables	99,129	18%	90,824	18%	9%
Total Waters product sales	339,057	64%	329,372	66%	3%
Waters service	188,248	36%	168,408	34%	12%
Total Waters net sales	\$ 527,305	100%	\$ 497,780	100%	6%

	Six Months Ended				
	June 30, 2018	% of Total	July 1, 2017	% of Total	% change
Waters instrument systems	\$ 438,031	44%	\$ 436,337	46%	—
Chemistry consumables	197,839	20%	178,727	19%	11%
Total Waters product sales	635,870	64%	615,064	65%	3%
Waters service	362,581	36%	326,142	35%	11%
Total Waters net sales	\$ 998,451	100%	\$ 941,206	100%	6%

Precision chemistry consumables sales increased on the uptake in columns and application-specific testing kits and were driven by double-digit growth in China and Europe, primarily from sales to pharmaceutical, governmental and academic customers. Waters service sales benefited from increased sales of service plans and higher service demand billings to a higher installed base of customers and were broad-based across all product lines and customer classes. The effect of foreign currency translation increased Waters sales 2% and 3% for the quarter and year-to-date, respectively.

In the second quarter of 2018, Waters sales increased 9% in both Europe and Asia and were flat in the Americas. Year-to-date, Waters sales increased 13% in Europe, 6% in Asia and 1% in the Americas. Waters sales in Europe benefited from the effect of foreign currency translation, which increased sales by 5% and 9% for the quarter and year-to-date, respectively. Within Asia for the quarter and year-to-date, Waters sales increased in China 16% and 13%, respectively, and increased in Japan 5% and 6%, respectively. Sales in the rest of Asia increased 2% in the quarter but decreased 3% year-to-date.

TA Product and Services Net Sales

Net sales for TA products and services are as follows for the three and six months ended June 30, 2018 and July 1, 2017 (dollars in thousands):

	Three Months Ended				
	June 30, 2018	% of Total	July 1, 2017	% of Total	% change
TA instrument systems	\$ 49,812	72%	\$ 43,466	72%	15%
TA service	19,102	28%	17,004	28%	12%
Total TA net sales	\$ 68,914	100%	\$ 60,470	100%	14%

	Six Months Ended				
	June 30, 2018	% of Total	July 1, 2017	% of Total	% change
TA instrument systems	\$ 92,116	72%	\$ 82,070	71%	12%
TA service	36,322	28%	32,943	29%	10%
Total TA net sales	<u>\$ 128,438</u>	<u>100%</u>	<u>\$ 115,013</u>	<u>100%</u>	<u>12%</u>

In the second quarter of 2018, TA instrument system sales grew from thermal instrument systems, which were a result of continued market acceptance of the recently introduced Discovery product line, as well as TA's microcalorimetry and mechanical testing instrument systems. TA service sales increased due to sales of service plans and billings to a higher installed base of customers. The effect of foreign currency translation increased TA's sales 2% and 3% in the quarter and year-to-date, respectively.

In the second quarter of 2018, TA sales increased 21% in Europe, 19% in Asia and 7% in the Americas. Year-to-date, TA sales increased 14% in Europe, 13% in Asia and 10% in the Americas. TA sales in Europe benefited from the effect of foreign currency translation, which increased sales 5% and 8% in the quarter and year-to-date, respectively. Within Asia, TA experienced double-digit sales growth in China and Asia Other, which were offset by declines in Japan. TA's sales in the U.S. increased 8% and 11% in the quarter and year-to-date, respectively.

Cost of Sales

The increase in cost of sales for the second quarter of 2018 was consistent with the increase in sales volume. Cost of sales is affected by many factors, including, but not limited to, foreign currency translation, product mix, product costs of instrument systems and amortization of software platforms. At current foreign currency exchange rates, the Company expects foreign currency translation to negatively impact gross profit for the remainder of 2018.

Selling and Administrative Expenses

Selling and administrative expenses increased 5% and 2% for the quarter and year-to-date, respectively. In 2018, the effect of foreign currency translation increased selling and administrative expenses by 4% and 5% in the quarter and year-to-date, respectively. In addition, selling and administrative expenses were impacted by headcount additions and higher merit compensation costs. In 2017, the Company incurred \$2 million and \$11 million of severance costs in connection with the closure of a facility in Germany and an early retirement transition incentive program in the quarter and year-to-date, respectively.

As a percentage of net sales, selling and administrative expenses were 22.9% and 23.7% for the 2018 quarter and year-to-date, respectively, and 23.3% and 24.7% for the 2017 quarter and year-to-date, respectively.

Research and Development Expenses

Research and development expenses increased 8% and 10% in 2018 quarter and year-to-date, respectively, primarily as a result of 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 increased research and development expenses by 3% in the first half of 2018 and was approximately neutral in the second quarter of 2018.

Acquired In-Process Research and Development

During the first half of 2017, the Company incurred charges of \$5 million 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 Settlement

In the second quarter of 2017, the Company incurred a \$10 million litigation provision related to the issuance of a verdict in a patent litigation case. In the first quarter of 2018, the Company resolved the case with a final settlement that resulted in a gain of \$2 million.

Interest Expense, Net

The decrease in net interest expense in the second quarter of 2018 was primarily attributable to the Company using cash, cash equivalents and investment balances recently repatriated into the U.S. to reduce its debt by \$850 million during the second quarter of 2018 as well as higher yields on investments.

Provision for Income Taxes

In December 2017, the U.S. enacted legislation informally referred to as the Tax Cuts and Jobs Act (the “2017 Tax Act”). For the year ended December 31, 2017 the Company accrued a \$550 million tax provision related to the 2017 Tax Act. The \$550 million expense was comprised of \$490 million related to the federal toll charge, \$40 million for state income taxes and foreign withholding taxes and \$20 million for the revaluation of the Company’s deferred tax assets and liabilities at the new federal tax rate of 21%. The Company continues to analyze its information and review new guidance from the Internal Revenue Service and state tax authorities. The Company has not made any adjustment to its provisional accrual established at December 31, 2017 in the second quarter of 2018.

The four principal jurisdictions in which the Company manufactures are the U.S., Ireland, the U.K. and Singapore, where the statutory tax rates are 21%, 12.5%, 19% and 17%, respectively, as of June 30, 2018. 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 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 year-to-date in 2018 and 2017 by \$13 million and \$11 million, respectively, and increased the Company’s net income per diluted share by \$0.17 and \$0.14, 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 rate for the second quarter of 2018 and 2017 was 10.8% and 11%, respectively. The Company’s effective tax rate year-to-date for 2018 and 2017 was 15.1% and 9.2%, respectively. The effective tax rate for the second quarter of 2018 reflects the enactment of the 2017 Tax Act. The most significant changes applicable to the Company under the new law are the reduction in the U.S. federal income tax rate from 35% to 21% and the new Global Intangible Low-Taxed Income (“GILTI”) provision. The impact of the GILTI provision is an increase of approximately 2.5 percentage points to our effective tax rate as of June 30, 2018. The second quarter of 2018 income tax expense includes a \$9 million of reduction in the income tax expense related to the change in foreign currency exchange rates on the earnings taxed in December 2017 under the toll charge of the 2017 Tax Act and a \$1 million tax benefit related to stock-based compensation. The impact of these two discrete items decreased the effective tax rate by 5.6 percentage points in the second quarter. The effective tax rate for the second quarter of 2017 included a \$4 million tax benefit related to stock-based compensation. The 2018 year-to-date income tax expense includes a \$7 million tax benefit related to stock-based compensation and \$4 million of additional income tax expense related to the change in foreign currency exchange rates on the earnings taxed in December 2017 under the toll charge of the 2017 Tax Act. The net impact of these two discrete items in 2018 was a decrease in the effective tax rate of 1.0 percentage points. The effective tax rate year-to-date for 2017 included a \$12 million tax benefit related to stock-based compensation. The remaining differences between the effective tax rates can be primarily 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):

	Six Months Ended	
	June 30, 2018	July 1, 2017
Net income	\$ 267,628	\$ 237,379
Depreciation and amortization	55,836	52,405
Stock-based compensation	18,971	17,794
Deferred income taxes	(2,992)	5,208
In-process research and development	—	5,000
Change in accounts receivable	36,591	41,945
Change in inventories	(33,877)	(19,169)
Change in accounts payable and other current liabilities	(68,414)	(34,802)
Change in deferred revenue and customer advances	40,134	53,601
Other changes	(37,320)	(8,101)
Net cash provided by operating activities	276,557	351,260
Net cash provided by (used in) investing activities	1,206,382	(293,852)
Net cash used in financing activities	(1,370,231)	(22,286)
Effect of exchange rate changes on cash and cash equivalents	(12,823)	26,502
Increase in cash and cash equivalents	\$ 99,885	\$ 61,624

Cash Flow from Operating Activities

Net cash provided by operating activities was \$277 million and \$351 million during the six months ended June 30, 2018 and July 1, 2017, 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 were 75 days at both June 30, 2018 and July 1, 2017.
- 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 \$65 million in income tax payments made in the U.S. relating to the Company's estimated 2017 tax reform liability and 2018 estimated income tax payments, a \$15 million litigation settlement payment, as well as the timing of payments to vendors.
- 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 and other liabilities.
- In May 2018, the Company's board of directors approved the termination of the frozen U.S. defined benefit pension plans. The Company anticipates it will take six months to a year to settle all of these plans' obligations and, during this timeframe, the Company may incur pension accounting charges in connection with these plan terminations. The Company currently has \$36 million of net actuarial losses in accumulated comprehensive income in stockholders equity that will be charged to the consolidated statement of operations as the plans are settled. These pension plans are currently in a net overfunded status for GAAP purposes; however, the Company may incur additional costs and have to make additional cash contributions into the plans to purchase third party annuity contracts to settle the individual pension obligations. The ultimate cost and cash requirement to fund the plan terminations will not be known until all employees choose whether to receive an annuity or a lump sum payment.

Cash Flow from Investing Activities

Net cash provided by investing activities totaled \$1,206 million in the six months ended June 30, 2018 compared to net cash used in investing activities that totaled \$294 million in the six months ended July 1, 2017. Additions to fixed assets and capitalized software were \$37 million and \$35 million in the first half of 2018 and 2017, respectively. 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. The Company does not expect to issue any debt in relation to this expansion. The Company has incurred \$2 million of costs associated with the construction of this facility during the second quarter of 2018.

During the six months ended June 30, 2018 and July 1, 2017, the Company purchased \$513 million and \$1,555 million of investments, respectively, while \$1,760 million and \$1,308 million of investments matured, respectively, and were used for financing activities described below. During the first half of 2018, the Company made a \$3 million payment for an investment in a developer of laboratory solutions to increase productivity and reproducibility for use in any industry. During the first half of 2017, the Company made payments of \$7 million 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 \$5 million milestone payment in the first half of 2017 for acquired in-process research and development for the licensing of certain intellectual property relating to mass spectrometry technologies yet to be commercialized. In July 2018, the Company acquired the sole intellectual property rights to the Desorption Electrospray Ionization ("DESI") imaging technology for \$30 million. DESI is a mass spectrometry imaging technique that is used to develop medical therapies.

Cash Flow from Financing Activities

During the six months ended June 30, 2018 and July 1, 2017, the Company's net debt borrowings decreased by \$850 million and increased by \$85 million, respectively. During the six months ended June 30, 2018, the Company reduced its outstanding debt using cash repatriated under the 2017 Tax Cuts and Jobs Act. As of June 30, 2018, the Company had a total of \$1,148 million in outstanding debt, which consisted of \$560 million in outstanding senior unsecured notes, \$300 million borrowed under a term loan and \$290 million borrowed under a revolving credit facility, with both the term loan and revolving credit facilities under the credit agreement dated November 2017 ("2017 Credit Agreement"). As of June 30, 2018, the Company had a total amount available to borrow under the 2017 Credit Agreement of \$1,208 million after outstanding letters of credit. As of June 30, 2018, the Company was in compliance with all debt covenants. In July 2018, the Company entered into a \$150 million U.S.-to-Euro interest rate cross-currency swap agreement that hedges the Company's net investment in its Euro denominated net assets. As a result of entering into this agreement, the Company anticipates lowering net interest expense by approximately \$5 million annually over the next three years.

In April 2018, the Company's Board of Directors authorized the Company to repurchase up to \$3 billion of its outstanding common stock over a three-year period. This new program adds the remaining \$526 million from the pre-existing program, allowing for the purchase of a total of \$3.5 billion of the Company's common stock over a three-year period. Upon commencement of the new authorization, the May 2017 authorization was terminated. During the first half of 2018 and 2017, the Company repurchased \$546 million and \$159 million, respectively, of the Company's outstanding common stock under authorized share repurchase programs. In addition, the Company repurchased \$8 million and \$7 million of common stock related to the vesting of restricted stock units during the six months ended June 30, 2018 and July 1, 2017, 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 an additional \$550 million of cash to reduce debt and repurchase the Company's common stock shares on the open market during 2018.

The Company received \$35 million and \$58 million of proceeds from the exercise of stock options and the purchase of shares pursuant to the Company's employee stock purchase plan during the six months ended June 30, 2018 and July 1, 2017, respectively.

The Company had cash, cash equivalents and investments of \$2,248 million as of June 30, 2018. The majority of the Company's cash, cash equivalents and investments are generated from foreign operations, with \$1,165 million held by foreign subsidiaries at June 30, 2018, of which \$324 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 the Company's financial position, along with expected future cash flows from earnings based on historical trends and the ability to raise funds from external sources and the borrowing capacity from existing, committed credit facilities, will be sufficient to service debt and fund working capital and capital spending requirements, authorized share repurchase amounts and potential acquisitions for at least the next twelve months. 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, Commercial Commitments, Contingent Liabilities and Dividends

A summary of the Company's contractual obligations and commercial commitments is included in the Company's Annual Report on Form 10-K for the year ended December 31, 2017, as filed with the U.S. Securities and Exchange Commission ("SEC") on February 27, 2018. The Company reviewed its contractual obligations and commercial commitments as of June 30, 2018 and determined that there were no material changes outside the ordinary course of business from the information set forth in the Annual Report on Form 10-K.

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 that it has meritorious arguments in its current litigation matters and that any outcome, either individually or in the aggregate, will not be material to the Company's financial position or results of operations.

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.

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

In the Company's Annual Report on Form 10-K for the year ended December 31, 2017, as filed with the SEC on February 27, 2018, the Company's most critical accounting policies and estimates upon which its financial status depends were identified as those relating to revenue recognition, loss provisions on accounts receivable and inventory, valuation of long-lived assets, intangible assets and goodwill, income taxes, uncertain tax positions, warranty, litigation, pension and other postretirement benefit obligations, stock-based compensation, business combinations and asset acquisitions and valuation of contingent consideration. The Company reviewed its policies and determined that those policies remain the Company's most critical accounting policies for the six months ended June 30, 2018. Except for the adoption of the new revenue recognition accounting standard, the Company did not make any changes in those policies during the six months ended June 30, 2018. Please refer to Note 2, Revenue Recognition, for further information regarding the new revenue recognition accounting policy.

New Accounting Pronouncements

Please refer to Note 13, Recent Accounting Standard Changes and Developments, in the Condensed Notes to Consolidated Financial Statements.

Special Note Regarding Forward-Looking Statements

Certain of the statements in this Quarterly Report on Form 10-Q, including the information incorporated by reference 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 new or proposed tariff or trade regulations; the impact of foreign currency translation on financial results; development of products by acquired businesses; the growth rate of sales and research and development expenses; the impact of costs associated with developing new technologies and bringing these new technologies to market; the impact of new product launches and the associated costs, such as the amortization expense related to software platforms; geographic sales mix of business; development of products by acquired businesses and the amount of contingent payments to the sellers of an acquired business; anticipated expenses, including interest expense, capitalized software costs and effective tax rates; the impact of the 2017 Tax Act in the U.S.; the impact and outcome of the Company’s various ongoing tax audit examinations; the achievement of contractual milestones to preserve foreign tax rates; the impact and outcome of litigation matters; the impact of the loss of intellectual property protection; the impact of new accounting standards and pronouncements; the adequacy of the Company’s supply chain and manufacturing capabilities and facilities; the impact of regulatory compliance; the Company’s expected cash flow, borrowing capacity, debt repayment and refinancing; the Company’s ability to fund working capital, capital expenditures, service debt, repay outstanding lines of credit, make authorized share repurchases, fund potential acquisitions and pay any adverse litigation or tax audit liabilities, particularly in the U.S.; future impairment charges; the Company’s contributions to defined benefit plans; the Company’s expectations regarding changes to its financial position; compliance with applicable environmental laws; and the impact of recent acquisitions on sales and earnings.

Many of these statements appear, in particular, under the heading “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in Part I, Item 2 of this Quarterly Report on Form 10-Q. 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 new or proposed tariff or trade regulations; 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 for the Company’s products among the Company’s customers and various market sectors, particularly if they should reduce capital expenditures or are unable to obtain funding, as in the cases of governmental, academic and research institutions; the effect of mergers and acquisitions on customer demand for the Company’s products; and the Company’s ability to sustain and enhance service.
- Negative industry trends; changes in the competitive landscape as a result of changes in ownership, mergers and continued consolidation among the Company’s competitors; introduction of competing products by other companies and loss of market share; pressures on prices from customers or resulting from competition; regulatory, economic and competitive obstacles to new product introductions; lack of acceptance of new products; expansion of our business in developing markets; spending by certain end-markets; ability to obtain alternative sources for components and modules; and the possibility that future sales of new products related to acquisitions, which trigger contingent purchase payments, may exceed the Company’s expectations.
- Increased regulatory burdens as the Company’s business evolves, especially with respect to the United States Food and Drug Administration and the United States Environmental Protection Agency, 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; 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 legislation 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 discussed under the heading "Risk Factors" under Part I, Item 1A of the Company's Annual Report on Form 10-K for the year ended December 31, 2017, as filed with the SEC on February 27, 2018. 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 Quarterly Report on Form 10-Q 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 3: *Quantitative and Qualitative Disclosures About Market Risk*

The Company is exposed to the risk of interest rate fluctuations from the investments of cash generated from operations. Investments with maturities greater than 90 days are classified as investments, and are held primarily in U.S. dollar-denominated treasury bills and commercial paper, bank deposits and corporate debt securities. As of June 30, 2018, the Company estimates that a hypothetical adverse change of 100 basis points across all maturities would not have a material effect on the fair market value of its portfolio.

The Company is also exposed to the risk of exchange rate fluctuations. The Company maintains cash balances in various operating accounts in excess of federally insured limits, and in foreign subsidiary accounts in currencies other than the U.S. dollar. As of June 30, 2018 and December 31, 2017, \$1,165 million out of \$2,248 million and \$3,326 million out of \$3,394 million, respectively, of the Company's total cash, cash equivalents and investments were held by foreign subsidiaries. In addition, \$324 million out of \$2,248 million and \$304 million out of \$3,394 million of cash, cash equivalents and investments were held in currencies other than the U.S. dollar at June 30, 2018 and December 31, 2017, respectively. As of June 30, 2018, 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 June 30, 2018 would decrease by approximately \$35 million, of which the majority would be recorded to foreign currency translation in other comprehensive income within stockholders' equity.

There have been no other material changes in the Company's market risk during the six months ended June 30, 2018. For information regarding the Company's market risk, refer to Item 7A of Part II of the Company's Annual Report on Form 10-K for the year ended December 31, 2017, as filed with the SEC on February 27, 2018.

Item 4: *Controls and Procedures*

Evaluation of Disclosure Controls and Procedures

The Company's chief executive officer and chief financial officer (principal executive officer and principal financial officer), with the participation of management, evaluated the effectiveness of the Company's disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of the end of the period covered by this Quarterly Report on Form 10-Q. 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 June 30, 2018 (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.

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 June 30, 2018 that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

Part II: Other Information

Item 1: Legal Proceedings

There have been no material changes in the Company's legal proceedings during the three months ended June 30, 2018 as described in Item 3 of Part 1 of the Company's Annual Report on Form 10-K for the year ended December 31, 2017, as filed with the SEC on February 27, 2018.

Item 1A: Risk Factors

Information regarding risk factors of the Company is set forth under the heading "Risk Factors" under Part I, Item 1A in the Company's Annual Report on Form 10-K for the year ended December 31, 2017, as filed with the SEC on February 27, 2018. The Company reviewed its risk factors as of June 30, 2018 and determined that there were no material changes from the ones set forth in the Form 10-K. Note, however, the discussion under the subheading "Special Note Regarding Forward-Looking Statements" in Part I, Item 2 of this Quarterly Report on Form 10-Q. These risks are not the only ones facing the Company. Additional risks and uncertainties not currently known to the Company or that the Company currently deems to be immaterial also may materially adversely affect the Company's business, financial condition and operating results.

Item 2: Unregistered Sales of Equity Securities and Use of Proceeds

Purchases of Equity Securities by the Issuer

The following table provides information about purchases by the Company during the three months ended June 30, 2018 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)
April 1 to April 28, 2018	—	\$ —	—	\$ 525,627
April 29 to May 26, 2018	830	\$ 192.60	830	\$ 365,794
May 27 to June 30, 2018	556	\$ 199.36	555	\$ 254,966
Total	1,386	\$ 195.31	1,385	\$ 3,254,966

- (1) The Company repurchased 1 thousand shares of common stock at a cost of less than \$1 million related to the vesting of restricted stock units during the six months ended June 30, 2018.
- (2) In April 2018, the Company's Board of Directors authorized the repurchase of up to \$3 billion of its outstanding common stock in open market transactions over a three-year period.

Item 6: Exhibits

Exhibit Number	Description of Document
31.1	<u>Chief Executive Officer Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</u>
31.2	<u>Chief Financial Officer Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</u>
32.1	<u>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. (*)</u>
32.2	<u>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. (*)</u>
101	The following materials from Waters Corporation's Annual Report on Form 10-Q for the quarter ended June 30, 2018, formatted in XBRL (Extensible Business Reporting Language): (i) the Consolidated Balance Sheets (unaudited), (ii) the Consolidated Statements of Operations (unaudited), (iii) the Consolidated Statements of Comprehensive Income (unaudited), (iv) the Consolidated Statements of Cash Flows (unaudited) and (v) Condensed Notes to Consolidated Financial Statements (unaudited).

(**) 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.

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.

W ATERS C ORPORATION

/s/ Sherry L. Buck

Sherry L. Buck
*Senior Vice President and
Chief Financial Officer*

Date: August 3, 2018

**CHIEF EXECUTIVE OFFICER CERTIFICATION PURSUANT TO SECTION 302
OF THE SARBANES-OXLEY ACT OF 2002**

I, Christopher J. O'Connell, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Waters Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 3, 2018

/s/ Christopher J. O'Connell

Christopher J. O'Connell
Chief Executive Officer

**CHIEF FINANCIAL OFFICER CERTIFICATION PURSUANT TO SECTION 302
OF THE SARBANES-OXLEY ACT OF 2002**

I, Sherry L. Buck, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Waters Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 3, 2018

/s/ Sherry L. Buck

Sherry L. Buck
Chief Financial Officer

**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**

The certification set forth below is hereby made solely for the purpose of satisfying the requirements of Section 906 of the Sarbanes-Oxley Act of 2002 and may not be relied upon or used for any other purposes.

In connection with the Quarterly Report of Waters Corporation (the “Company”) on Form 10-Q for the period ended June 30, 2018, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Christopher J. O’Connell, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge: (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

A signed original of this written statement required by Section 906 or other document authenticating, acknowledging or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

Date: August 3, 2018

By: /s/ Christopher J. O’Connell

Christopher J. O’Connell
Chief Executive Officer

**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**

The certification set forth below is hereby made solely for the purpose of satisfying the requirements of Section 906 of the Sarbanes-Oxley Act of 2002 and may not be relied upon or used for any other purposes.

In connection with the Quarterly Report of Waters Corporation (the “Company”) on Form 10-Q for the period ended June 30, 2018, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Sherry L. Buck, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge: (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

A signed original of this written statement required by Section 906 or other document authenticating, acknowledging or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

Date: August 3, 2018

By: /s/ Sherry L. Buck

Sherry L. Buck
Chief Financial Officer