TERADYNE, INC
Form 10-Q
August 11, 2017
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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended July 2, 2017

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 No. 001-06462

TERADYNE, INC.

(Exact name of registrant as specified in its charter)

Massachusetts	**04-2272148**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification No.)**
600 Riverpark Drive, North Reading, Massachusetts	**01864**
(Address of Principal Executive Offices)	**(Zip Code)**

978-370-2700

(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 the filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, 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, smaller reporting company, or an emerging growth company. See the definitions of large accelerated filer, accelerated filer , smaller reporting company , and emerging growth company in Rule 12b-2 of the Exchange Act (check one):

Large accelerated filer	Accelerated filer
Non-accelerated filer	(Do not check if a smaller reporting company)
Emerging Growth Company	Smaller reporting 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 standard provided pursuant to Section 13(a) of the Exchange Act.

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

The number of shares outstanding of the registrant s only class of Common Stock as of August 7, 2017 was 197,831,996 shares.

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PART I

Item 1: Financial Statements

TERADYNE, INC.

CONDENSED CONSOLIDATED BALANCE SHEETS

(Unaudited)

	July 2, 2017	December 31, 2016
	(in thousands, except per share amount)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 598,349	$ 307,884
Marketable securities	809,338	871,024
Accounts receivable, less allowance for doubtful accounts of $2,236 and $2,356 at July 2, 2017 and December 31, 2016, respectively	405,946	192,444
Inventories, net	153,645	135,958
Prepayments	105,960	108,454
Other current assets	6,787	8,039
Total current assets	2,080,025	1,623,803
Property, plant and equipment, net	258,017	253,821
Marketable securities	212,501	433,843
Deferred tax assets	125,204	107,405
Other assets	12,429	12,165
Retirement plan assets	9,231	7,712
Acquired intangible assets, net	90,603	100,401
Goodwill	242,215	223,343
Total assets	$ 3,030,225	$ 2,762,493
LIABILITIES		
Current liabilities:		
Accounts payable	$ 103,454	$ 95,362
Accrued employees compensation and withholdings	122,246	109,944
Deferred revenue and customer advances	81,087	84,478
Other accrued liabilities	66,176	51,382
Contingent consideration	22,432	1,050
Accrued income taxes	43,812	30,480

Total current liabilities	439,207	372,696
Retirement plan liabilities	111,688	106,938
Long-term deferred revenue and customer advances	32,679	23,463
Deferred tax liabilities	10,714	12,144
Long-term other accrued liabilities	11,061	28,642
Long-term contingent consideration	16,983	37,282
Long-term debt	359,245	352,669
Total liabilities	981,577	933,834
Commitments and contingencies (Note P)		
SHAREHOLDERS EQUITY		
Common stock, $0.125 par value, 1,000,000 shares authorized; 197,999 and 199,177 shares issued and outstanding at July 2, 2017 and December 31, 2016, respectively	24,750	24,897
Additional paid-in capital	1,613,005	1,593,684
Accumulated other comprehensive income (loss)	5,915	(20,214)
Retained earnings	404,978	230,292
Total shareholders equity	2,048,648	1,828,659
Total liabilities and shareholders equity	$ 3,030,225	$ 2,762,493

The accompanying notes, together with the Notes to Consolidated Financial Statements included in Teradyne s Annual Report on Form 10-K for the year ended December 31, 2016, are an integral part of the condensed consolidated financial statements.

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TERADYNE, INC.

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

(Unaudited)

	For the Three Months Ended		For the Six Months Ended	
	July 2, 2017	July 3, 2016	July 2, 2017	July 3, 2016
	(in thousands, except per share amount)			
Revenues:				
Products	$ 610,356	$ 456,832	$ 983,560	$ 814,972
Services	86,545	74,960	170,254	147,815
Total revenues	696,901	531,792	1,153,814	962,787
Cost of revenues:				
Cost of products	267,171	215,795	422,137	383,350
Cost of services	38,511	33,127	75,525	66,234
Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below)	305,682	248,922	497,662	449,584
Gross profit	391,219	282,870	656,152	513,203
Operating expenses:				
Engineering and development	81,728	76,109	157,910	149,573
Selling and administrative	89,131	81,425	174,037	160,599
Acquired intangible assets amortization	8,166	16,244	16,118	36,238
Restructuring and other	2,288	2,608	4,799	4,195
Goodwill impairment		254,946		254,946
Acquired intangible assets impairment		83,339		83,339
Total operating expenses	181,313	514,671	352,864	688,890
Income (loss) from operations	209,906	(231,801)	303,288	(175,687)
Non-operating (income) expense:				
Interest income	(3,292)	(1,666)	(6,812)	(3,308)
Interest expense	5,509	691	10,911	1,401
Other (income) expense, net	812	(9)	296	(155)
Income (loss) before income taxes	206,877	(230,817)	298,893	(173,625)
Income tax provision (benefit)	31,901	(7,271)	38,696	(65)
Net income (loss)	$ 174,976	$ (223,546)	$ 260,197	$ (173,560)

Net income (loss) per common share:

Basic	$	0.88	$	(1.10)	$	1.30	$	(0.85)
Diluted	$	0.87	$	(1.10)	$	1.29	$	(0.85)
Weighted average common shares basic		198,774		203,018		199,390		203,645
Weighted average common shares diluted		201,529		203,018		201,732		203,645
Cash dividend declared per common share	$	0.07	$	0.06	$	0.14	$	0.12

The accompanying notes, together with the Notes to Consolidated Financial Statements included in Teradyne s Annual Report on Form 10-K for the year ended December 31, 2016, are an integral part of the condensed consolidated financial statements.

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TERADYNE, INC.

CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(Unaudited)

	For the Three Months Ended		For the Six Months Ended	
	July 2, 2017	July 3, 2016	July 2, 2017	July 3, 2016
	(in thousands)			
Net income (loss)	$ 174,976	$ (223,546)	$ 260,197	$ (173,560)
Other comprehensive income (loss), net of tax:				
Foreign currency translation adjustments, net of tax of $0, $0, $0, $0	15,981	(5,041)	24,944	5,229
Available-for-sale marketable securities:				
Unrealized gains on marketable securities arising during period, net of tax of $765, $1,102, $1,185, $2,354, respectively	985	2,375	1,498	5,446
Less: Reclassification adjustment for gains included in net income (loss), net of tax of $(42), $(13), $(106), $(2), respectively	(83)	(51)	(177)	(134)
	902	2,324	1,321	5,312
Defined benefit pension and post-retirement plan:				
Amortization of prior service (credit) cost included in net periodic pension and post-retirement expense/income, net of tax of $(38), $(47), $(77), $(93), respectively	(68)	(83)	(136)	(163)
Prior service income arising during the period, net of tax of $0, $34, $0, $34, respectively		59		59
	(68)	(24)	(136)	(104)
Other comprehensive income (loss)	16,815	(2,741)	26,129	10,437
Comprehensive income (loss)	$ 191,791	$ (226,287)	$ 286,326	$ (163,123)

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TERADYNE, INC.

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS

(Unaudited)

	For the Six Months Ended	
	July 2, 2017	July 3, 2016
	(in thousands)	
Cash flows from operating activities:		
Net income (loss)	$ 260,197	$ (173,560)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:		
Depreciation	32,474	32,168
Amortization	22,412	37,180
Stock-based compensation	17,312	15,457
Provision for excess and obsolete inventory	5,295	12,115
Contingent consideration fair value adjustment	2,133	2,478
Deferred taxes	(3,563)	(21,458)
Retirement plan actuarial gains	(2,504)	(1,862)
Goodwill impairment		254,946
Acquired intangible assets impairment		83,339
Impairment of fixed assets		4,179
Property insurance recovery		(5,051)
Other	1,153	576
Changes in operating assets and liabilities:		
Accounts receivable	(214,189)	(138,230)
Inventories	(8,149)	30,222
Prepayments and other assets	4,425	(13,657)
Accounts payable and other accrued expenses	34,504	(6,040)
Deferred revenue and customer advances	5,312	106,072
Retirement plan contributions	(1,983)	(2,298)
Income taxes	14,363	6
Net cash provided by operating activities	169,192	216,582
Cash flows from investing activities:		
Purchases of property, plant and equipment	(45,967)	(46,593)
Purchases of available-for-sale marketable securities	(334,819)	(437,311)
Proceeds from sales of available-for-sale marketable securities	313,254	334,798
Proceeds from maturities of available-for-sale marketable securities	307,607	128,024
Proceeds from property insurance		5,051
Net cash provided by (used for) investing activities	240,075	(16,031)

Cash flows from financing activities:		
Issuance of common stock under stock purchase and stock option plans	15,215	17,896
Repurchase of common stock	(94,328)	(56,783)
Dividend payments	(27,925)	(24,425)
Payments related to net settlement of employee stock compensation awards	(12,438)	(9,152)
Payments of contingent consideration	(1,050)	(11,697)
Net cash used for financing activities	(120,526)	(84,161)
Effects of exchange rate changes on cash and cash equivalents	1,724	
Increase in cash and cash equivalents	290,465	116,390
Cash and cash equivalents at beginning of period	307,884	264,705
Cash and cash equivalents at end of period	$ 598,349	$ 381,095

The accompanying notes, together with the Notes to Consolidated Financial Statements included in Teradyne s Annual Report on Form 10-K for the year ended December 31, 2016, are an integral part of the condensed consolidated financial statements.

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TERADYNE, INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

(Unaudited)

A. THE COMPANY

Teradyne, Inc. (Teradyne) is a leading global supplier of automation equipment for test and industrial applications. Teradyne designs, develops, manufactures and sells automatic test systems used to test semiconductors, wireless products, data storage and complex electronics systems in the consumer electronics, wireless, automotive, industrial, computing, communications, and aerospace and defense industries. Teradyne s industrial automation products include collaborative robots used by global manufacturing and light industrial customers to improve quality, increase manufacturing efficiency and decrease manufacturing costs. Teradyne s automatic test equipment and industrial automation products and services include:

semiconductor test (Semiconductor Test) systems;

defense/aerospace (Defense/Aerospace) test instrumentation and systems, storage test (Storage Test) systems, and circuit-board test and inspection (Production Board Test) systems (collectively these products represent System Test);

industrial automation (Industrial Automation) products; and

wireless test (Wireless Test) systems.

B. ACCOUNTING POLICIES

Basis of Presentation

The consolidated interim financial statements include the accounts of Teradyne and its wholly-owned subsidiaries. All significant intercompany balances and transactions have been eliminated. These interim financial statements are unaudited and reflect all normal recurring adjustments that are, in the opinion of management, necessary for the fair statement of such interim financial statements. Certain prior year amounts were reclassified to conform to the current year presentation. The December 31, 2016 condensed consolidated balance sheet data was derived from audited financial statements, but does not include all disclosures required by accounting principles generally accepted in the United States of America.

The accompanying financial information should be read in conjunction with the consolidated financial statements and notes thereto contained in Teradyne s Annual Report on Form 10-K, filed with the U.S. Securities and Exchange Commission (SEC) on March 1, 2017, for the year ended December 31, 2016.

Preparation of Financial Statements and Use of Estimates

The preparation of consolidated financial statements requires management to make estimates and judgments that affect the amounts reported in the financial statements. Actual results may differ significantly from these estimates.

Stock-Based Compensation

In March 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2016-09, *Compensation-Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting.* Teradyne adopted this ASU in the first quarter of 2017. This ASU changes how Teradyne accounts for certain aspects of share-based payment awards to employees, including the accounting for income taxes, forfeitures, and statutory tax withholding requirements, as well as classification in the statements of cash flows.

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Adoption of this ASU required recognition of a cumulative effect adjustment to retained earnings for any prior year excess tax benefits or tax deficiencies not previously recorded. The cumulative effect adjustment of $39 million was recorded as an increase to retained earnings and deferred tax assets.

This ASU also required a change in how Teradyne recognizes the excess tax benefits or tax deficiencies related to stock-based compensation. Prior to adopting ASU 2016-09, these excess tax benefits or tax deficiencies were credited or charged to additional paid-in capital in Teradyne s consolidated balance sheets. In accordance with ASU 2016-09, starting in first quarter of 2017, these excess tax benefits or tax deficiencies are recognized as a discrete tax benefit or discrete tax expense to the current income tax provision in Teradyne s consolidated statements of operations.

ASU 2016-09 requires companies to adopt the amendment related to accounting for excess tax benefits or tax deficiencies on a prospective basis. For the three and six months ended July 2, 2017, Teradyne recognized a discrete tax benefit of $0.8 and $6.0 million, respectively, related to net excess tax benefit.

In addition, under ASU 2016-09, all excess tax benefits related to share-based payments are reported as cash flows from operating activities. Previously, excess tax benefits from share-based payments arrangements were reported as cash flows from financing activities. The classification amendment was applied prospectively. This ASU also clarifies that all cash payments made to taxing authorities on the employees behalf for withheld shares should be presented as financing activities on the statement of cash flows. Previously, Teradyne reported cash payments made to taxing authorities as operating activities on the statement of cash flows. This change was applied retrospectively.

Upon adoption of ASU 2016-09, Teradyne made an accounting policy election to continue accounting for forfeitures by applying an estimated forfeiture rate.

Contingencies and Litigation

Teradyne may be subject to certain legal proceedings, lawsuits and other claims as discussed in Note P. Teradyne accrues for a loss contingency, including legal proceedings, lawsuits, pending claims and other legal matters, when the likelihood of a loss is probable and the amount of the loss can be reasonably estimated. When the reasonable estimate of the loss is within a range of amounts, and no amount in the range constitutes a better estimate than any other amount, Teradyne accrues the amount at the low end of the range. Teradyne adjusts the accruals from time to time as additional information is received, but the loss incurred may be significantly greater than or less than the amount accrued. Loss contingencies are disclosed when they are material and there is at least a reasonable possibility that a loss has been incurred. Attorney fees related to legal matters are expensed as incurred.

C. RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS

On March 10, 2017, the FASB issued ASU 2017-07, *Compensation Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost.* This ASU provides guidance on presentation of net periodic pension cost and net periodic postretirement benefit cost. The new standard requires the service cost component to be presented in the same line item as other employee compensation costs arising from services rendered during the period. The other components of net benefit cost such as interest cost, amortization of prior service cost, and actuarial gains or losses, are required to be presented separately outside of income or loss from operations. The presentation of service cost should be applied retrospectively. The guidance is effective for fiscal years beginning after December 15, 2017. Early adoption is permitted. This guidance will impact the presentation of Teradyne s consolidated financial statements. Current presentation of service cost components is consistent with the requirements of the new standard. Upon adoption of the new standard, Teradyne will present interest cost, amortization of prior service cost, and actuarial gains or losses within other (income) expense, net.

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On January 26, 2017, the FASB issued ASU 2017-04, *Intangibles Goodwill and Other (Topic 350): Simplifying the Accounting for Goodwill Impairment.* The new guidance removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. Goodwill impairment will now be the amount by which a reporting unit s carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. All other goodwill impairment guidance will remain largely unchanged. Entities will continue to have the option to perform a qualitative assessment to determine if a quantitative impairment test is necessary. The same one-step impairment test will be applied to goodwill at all reporting units, even those with zero or negative carrying amounts. Entities will be required to disclose the amount of goodwill at reporting units with zero or negative carrying amounts. The revised guidance will be applied prospectively, and is effective in 2020. Early adoption is permitted for any impairment tests performed after January 1, 2017. Teradyne is currently evaluating the impact of this ASU on its financial position, results of operations and statements of cash flows.

In October 2016, the FASB issued ASU 2016-16, *Accounting for Income Taxes: Intra-Entity Asset Transfers of Assets Other than Inventory.* Under current Generally Accepted Accounting Principles (GAAP), the tax effects of intra-entity asset transfers are deferred until the transferred asset is sold to a third party or otherwise recovered through use. The new guidance requires recognition of the tax expense from the sale of the asset in the seller s tax jurisdiction when the transfer occurs, even though the pre-tax effects of that transaction are eliminated in consolidation. Any deferred tax asset that arises in the buyer s jurisdiction would also be recognized at the time of the transfer. The new guidance does not apply to intra-entity transfers of inventory. The income tax consequences from the sale of inventory from one member of a consolidated entity to another will continue to be deferred until the inventory is sold to a third party. The new guidance will be effective in fiscal years beginning after December 15, 2017. Early adoption is permitted. The modified retrospective approach will be required for transition to the new guidance, with a cumulative-effect adjustment recorded in retained earnings as of the beginning of the period of adoption. Teradyne does not expect this ASU to have a material impact on its financial position, results of operations and statements of cash flows.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842).* The guidance in this ASU supersedes the lease recognition requirements in Accounting Standards Codification (ASC) Topic 840, *Leases.* The new standard establishes a right-of-use (ROU) model that requires a lessee to record an ROU asset and a lease liability on the balance sheet for all leases with terms longer than twelve months. Leases will be classified as either finance or operating, with classification affecting the pattern of expense recognition in the statements of operation. The new standard is effective for annual periods beginning after December 15, 2018 with early adoption permitted. A modified retrospective transition approach is required for lessees for capital and operating leases existing at, or entered into after, the beginning of the earliest comparative period presented in the financial statements. Teradyne is currently evaluating the impact of this ASU on its financial position and results of operations.

In January 2016, the FASB issued ASU 2016-01, *Financial Instruments Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities.* This ASU provides guidance for the recognition, measurement, presentation, and disclosure of financial instruments. The new pronouncement revises accounting related to equity investments and the presentation of certain fair value changes for financial liabilities measured at fair value. Among other things, it amends the presentation and disclosure requirements of equity securities that do not result in consolidation and are not accounted for under the equity method. Changes in the fair value of these equity securities will be recognized directly in net income. This pronouncement is effective for fiscal years beginning after December 15, 2017. Teradyne is currently evaluating the impact of this ASU on its financial position and results of operations.

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers (Topic 606),* which will replace numerous requirements in U.S. GAAP, including industry-specific requirements, and provide companies with a single revenue recognition model for recognizing revenue from contracts with customers. The core principle of the new standard is that a company should recognize revenue to show the transfer of promised goods or services to customers in an amount that reflects the consideration to which the company expects to be

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entitled to in exchange for those goods or services. In August 2015, FASB issued ASU 2015-14, which deferred the effective date of the new revenue standard by one year. For Teradyne, the standard will be effective in the first quarter of 2018. The two permitted transition methods under the new standard are the full retrospective method, in which case the standard would be applied to each prior reporting period presented, or the modified retrospective method, in which case the cumulative effect of applying the standard would be recognized at the date of initial application. Teradyne is in the process of assessing the impact of this ASU, including identification of changes to policies, processes and controls and the presentation necessary to meet the additional disclosure requirements. Teradyne has selected the modified retrospective transition method. Teradyne is still conducting its assessment and will continue to evaluate the impact of this ASU on its financial position and results of operations.

D. INVENTORIES

Inventories, net consisted of the following at July 2, 2017 and December 31, 2016:

	July 2, 2017	December 31, 2016
	(in thousands)	
Raw material	$ 64,235	$ 58,530
Work-in-process	15,842	22,946
Finished Goods	73,568	54,482
	$ 153,645	$ 135,958

Inventory reserves for the periods ending July 2, 2017 and December 31, 2016 were $114.8 million and $116.0 million, respectively.

E. FINANCIAL INSTRUMENTS

Cash Equivalents

Teradyne considers all highly liquid investments with maturities of three months or less at the date of acquisition to be cash equivalents.

Marketable Securities

Teradyne accounts for its investments in debt and equity securities in accordance with the provisions of ASC 320-10, *Investments Debt and Equity Securities.* ASC 320-10 requires that certain debt and equity securities be classified into one of three categories: trading, available-for-sale or held-to-maturity securities. As of July 2, 2017, Teradyne s investments in debt and equity securities were classified as available-for-sale and recorded at their fair market value.

On a quarterly basis, Teradyne reviews its investments to identify and evaluate those that have an indication of a potential other-than-temporary impairment. Factors considered in determining whether a loss is other-than-temporary include:

The length of time and the extent to which the market value has been less than cost;

The financial condition and near-term prospects of the issuer; and

The intent and ability to retain the investment in the issuer for a period of time sufficient to allow for any anticipated recovery in market value.

Teradyne uses the market and income approach techniques to value its financial instruments and there were no changes in valuation techniques during the three and six months ended July 2, 2017 and July 3, 2016. As

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defined in ASC 820-10, *Fair Value Measurements and Disclosures,* fair value is the price that would be received from the sale of an asset or paid to transfer a liability in an orderly transaction between market participants. ASC 820-10 requires that assets and liabilities carried at fair value be classified and disclosed in one of the following three categories:

Level 1: Quoted prices in active markets for identical assets as of the reporting date;

Level 2: Inputs other than Level 1, that are observable either directly or indirectly as of the reporting date. For example, a common approach for valuing fixed income securities is the use of matrix pricing. Matrix pricing is a mathematical technique used to value securities by relying on the securities relationship to other benchmark quoted prices, and is considered a Level 2 input; or

Level 3: Unobservable inputs that are not supported by market data. Unobservable inputs are developed based on the best information available, which might include Teradyne s own data.

Teradyne s available-for-sale debt and equity securities are classified as Level 1 and Level 2. Acquisition-related contingent consideration is classified within Level 3. Teradyne determines the fair value of acquisition-related contingent consideration using a Monte Carlo simulation model. Assumptions utilized in the model include forecasted revenues, revenue volatility and discount rate. The vast majority of Level 2 securities are fixed income securities priced by third party pricing vendors. These pricing vendors utilize the most recent observable market information in pricing these securities or, if specific prices are not available, use other observable inputs like market transactions involving identical or comparable securities.

Realized gains recorded in the three and six months ended July 2, 2017 were $0.2 million and $0.5 million, respectively. Realized losses recorded in the three and six months ended July 2, 2017 were $0.1 million and $0.2 million, respectively. Realized gains in the three and six months ended July 3, 2016 were $0.3 million and $0.4 million, respectively. Realized losses recorded in the three and six months ended July 3, 2016 were $0.2 million and $0.3 million, respectively. Realized gains are included in interest income and realized losses are included in interest expense. Unrealized gains and losses are included in accumulated other comprehensive income (loss). The cost of securities sold is based on the specific identification method.

During the three and six months ended July 2, 2017 and July 3, 2016, there were no transfers in or out of Level 1, Level 2 or Level 3 financial instruments.

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The following table sets forth by fair value hierarchy Teradyne s financial assets and liabilities that were measured at fair value on a recurring basis as of July 2, 2017 and December 31, 2016.

	July 2, 2017			
	Quoted Prices in Active Markets for Identical Instruments (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
	(in thousands)			
Assets				
Cash	$ 295,337	$	$	$ 295,337
Cash equivalents	179,293	123,719		303,012
Available-for-sale securities:				
U.S. Treasury securities		812,477		812,477
Commercial paper		73,275		73,275
Corporate debt securities		64,453		64,453
U.S. government agency securities		28,121		28,121
Certificates of deposit and time deposits		22,253		22,253
Equity and debt mutual funds	20,675			20,675
Non-U.S. government securities		585		585
Total	$ 495,305	$ 1,124,883	$	$ 1,620,188
Derivative assets		23		23
Total	$ 495,305	$ 1,124,906	$	$ 1,620,211
Liabilities				
Contingent consideration	$	$	$ 39,415	$ 39,415
Derivative liabilities		304		304
Total	$	$ 304	$ 39,415	$ 39,719

Reported as follows:

	(Level 1)	(Level 2)	(Level 3)	Total
	(in thousands)			
Assets				
Cash and cash equivalents	$ 474,630	$ 123,719	$	$ 598,349
Marketable securities		809,338		809,338
Long-term marketable securities	20,675	191,826		212,501

Prepayments		23		23
	$ 495,305	$ 1,124,906	$	$ 1,620,211
Liabilities	.			
Other current liabilities	$	$ 304	$	$ 304
Contingent consideration			22,432	22,432
Long-term contingent consideration			16,983	16,983
	$	$ 304	$ 39,415	$ 39,719

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	December 31, 2016			
	Quoted Prices in Active Markets for Identical Instruments (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
	(in thousands)			
Assets				
Cash	$ 214,722	$	$	$ 214,722
Cash equivalents	37,458	55,704		93,162
Available for sale securities:				
U.S. Treasury securities		900,038		900,038
Commercial paper		161,630		161,630
Corporate debt securities		100,153		100,153
Certificates of deposit and time deposits		82,133		82,133
U.S. government agency securities		42,014		42,014
Equity and debt mutual funds	18,171			18,171
Non-U.S. government securities		728		728
Total	$ 270,351	$ 1,342,400	$	$ 1,612,751
Derivative assets		1		1
Total	$ 270,351	$ 1,342,401	$	$ 1,612,752
Liabilities				
Contingent consideration	$	$	$ 38,332	$ 38,332
Derivative liabilities		131		131
Total	$	$ 131	$ 38,332	$ 38,463

Reported as follows:

	(Level 1)	(Level 2)	(Level 3)	Total
	(in thousands)			
Assets				
Cash and cash equivalents	$ 252,180	$ 55,704	$	$ 307,884
Marketable securities		871,024		871,024
Long-term marketable securities	18,171	415,672		433,843
Prepayments		1		1
	$ 270,351	$ 1,342,401	$	$ 1,612,752
Liabilities				

Other accrued liabilities	$		$	131	$		$	131
Contingent consideration						1,050		1,050
Long-term contingent consideration						37,282		37,282
	$		$	131	$	38,332	$	38,463

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Changes in the fair value of Level 3 contingent consideration for the three and six months ended July 2, 2017 and July 3, 2016 were as follows:

	For the Three Months Ended		For the Six Months Ended	
	July 2, 2017	July 3, 2016	July 2, 2017	July 3, 2016
	(in thousands)			
Balance at beginning of period	$ 37,916	$ 23,609	$ 38,332	$ 37,436
Payments (a)			(1,050)	(15,000)
Fair value adjustment (b)(c)	1,499	1,305	2,133	2,478
Balance at end of period	$ 39,415	$ 24,914	$ 39,415	$ 24,914

(a) In the six months ended July 2, 2017, Teradyne paid $1.1 million of contingent consideration for the earn-out in connection with the acquisition of Avionics Interface Technology, LLC (AIT). In the six months ended July 3, 2016, based on Universal Robot s calendar year 2015 EBITA results, Teradyne paid $15.0 million or 100% of the eligible EBITA contingent consideration amount in connection with the acquisition of Universal Robots.

(b) In the three and six months ended July, 2, 2017, the fair value of contingent consideration for the earn-out in connection with the acquisition of Universal Robots was increased by $1.5 million and $2.1 million, respectively, primarily due to a decrease in the discount rate. In the three and six months ended July 3, 2016, the fair value of contingent consideration for the earn-out in connection with the acquisition of Universal Robots was increased by $0.8 million and $1.9 million, respectively, primarily due to a decrease in the discount rate.

(c) In the three and six months ended July 3, 2016, the fair value of contingent consideration for the earn-out in connection with acquisition of AIT was increased by $0.6 million due to an increase in forecasted revenue.

The following table provides quantitative information associated with the fair value measurement of Teradyne s Level 3 financial instruments:

Liability	July 2, 2017 Fair Value (in thousands)	Valuation Technique	Unobservable Inputs	Weighted Average
Contingent consideration	$22,432	Monte Carlo	Revenue for the period July 1, 2015	12.8%
		Simulation	December 31, 2017 volatility	
(Universal Robots)			Discount Rate	2.9%
	$16,983	Monte Carlo	Revenue for the period July 1, 2015	12.8%
		Simulation	December 31, 2018 volatility	

Discount Rate	2.9%

As of July 2, 2017, the significant unobservable inputs used in the Monte Carlo simulation to fair value the Universal Robots contingent consideration include forecasted revenue, revenue volatility and discount rate. Increases or decreases in the inputs would result in a higher or lower fair value measurement. The maximum payment for each of the two Universal Robots revenue earn-outs is $25.0 million.

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The carrying amounts and fair values of Teradyne s financial instruments at July 2, 2017 and December 31, 2016 were as follows:

	July 2, 2017		December 31, 2016	
	Carrying Value	Fair Value	Carrying Value	Fair Value
	(in thousands)			
Assets				
Cash and cash equivalents	$ 598,349	$ 598,349	$ 307,884	$ 307,884
Marketable securities	1,021,839	1,021,839	1,304,867	1,304,867
Derivative assets	23	23	1	1
Liabilities				
Contingent consideration	39,415	39,415	38,332	38,332
Derivative liabilities	304	304	131	131
Convertible debt (1)	359,245	526,976	352,669	486,754

(1) The carrying value represents the bifurcated debt component only, while the fair value is based on quoted market prices for the convertible note which includes the equity conversion features.

The fair values of accounts receivable, net and accounts payable approximate the carrying value due to the short-term nature of these instruments.

The following tables summarize the composition of available-for-sale marketable securities at July 2, 2017 and December 31, 2016:

	July 2, 2017				
	Available-for-Sale				Fair Market Value of Investments with Unrealized Losses
	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	
	(in thousands)				
U.S. Treasury securities	$ 814,699	$ 69	$ (2,291)	$ 812,477	$ 808,057
Commercial paper	73,291		(16)	73,275	65,401
Corporate debt securities	62,766	1,954	(267)	64,453	33,059
U.S. government agency securities	28,135	7	(21)	28,121	20,800
Certificates of deposit and time deposits	22,245	8		22,253	
Equity and debt mutual funds	17,570	3,122	(17)	20,675	1,371
Non-U.S. government securities	578	7		585	
	$ 1,019,284	$ 5,167	$ (2,612)	$ 1,021,839	$ 928,688

Reported as follows:

	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
			(in thousands)		
Marketable securities	$ 810,544	$ 15	$ (1,221)	$ 809,338	$ 770,963
Long-term marketable securities	208,740	5,152	(1,391)	212,501	157,725
	$ 1,019,284	$ 5,167	$ (2,612)	$ 1,021,839	$ 928,688

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	December 31, 2016				
	Available-for-Sale				
	Cost	Unrealized Gain	Unrealized (Loss) (in thousands)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
U.S. Treasury securities	$ 901,975	$ 97	$ (2,034)	$ 900,038	$ 572,284
Commercial paper	161,672	24	(66)	161,630	84,034
Corporate debt securities	99,708	1,065	(620)	100,153	53,642
Certificates of deposit and time deposits	82,080	54	(1)	82,133	7,760
U.S. government agency securities	42,026	7	(19)	42,014	13,461
Equity and debt mutual funds	16,505	1,724	(58)	18,171	1,661
Non-U.S. government securities	745	6	(23)	728	137
	$ 1,304,711	$ 2,977	$ (2,821)	$ 1,304,867	$ 732,979

Reported as follows:

	Cost	Unrealized Gain	Unrealized (Loss) (in thousands)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
Marketable securities	$ 871,321	$ 134	$ (431)	$ 871,024	$ 423,128
Long-term marketable securities	433,390	2,843	(2,390)	433,843	309,851
	$ 1,304,711	$ 2,977	$ (2,821)	$ 1,304,867	$ 732,979

As of July 2, 2017, the fair market value of investments with unrealized losses totaled $928.7 million. Of this value, $1.8 million had unrealized losses of $0.2 million for greater than one year and $926.9 million had unrealized losses of $2.4 million for less than one year.

As of December 31, 2016, the fair market value of investments with unrealized losses totaled $733.0 million. Of this value, $2.9 million had unrealized losses of $0.3 million for greater than one year and $730.1 million had unrealized losses of $2.5 million for less than one year.

Teradyne reviews its investments to identify and evaluate investments that have an indication of possible impairment. Based on this review, Teradyne determined that the unrealized losses related to these investments at July 2, 2017 and December 31, 2016 were temporary.

The contractual maturities of investments held at July 2, 2017 were as follows:

	July 2, 2017	
	Cost	Fair Market Value
	(in thousands)	
Due within one year	$ 810,544	$ 809,338
Due after 1 year through 5 years	139,051	138,811
Due after 5 years through 10 years	14,062	13,731
Due after 10 years	38,057	39,284
Total	$ 1,001,714	$ 1,001,164

Contractual maturities of investments held at July 2, 2017 exclude equity and debt mutual funds as they do not have contractual maturity dates.

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Derivatives

Teradyne conducts business in a number of foreign countries, with certain transactions denominated in local currencies. The purpose of Teradyne s foreign currency management is to minimize the effect of exchange rate fluctuations on certain foreign currency denominated monetary assets and liabilities. Teradyne does not use derivative financial instruments for trading or speculative purposes.

To minimize the effect of exchange rate fluctuations associated with the remeasurement of monetary assets and liabilities denominated in foreign currencies, Teradyne enters into foreign currency forward contracts. The change in fair value of these derivatives is recorded directly in earnings, and is used to offset the change in value of monetary assets and liabilities denominated in foreign currencies.

The notional amount of foreign currency forward contracts at July 2, 2017 and December 31, 2016 was $94.1 million and $83.9 million, respectively. The fair value of the outstanding contracts was a loss of $0.3 million at July 2, 2017 and a loss of $0.1 million at December 31, 2016.

For the three and six months ended July 2, 2017, Teradyne recorded net realized gains related to foreign currency forward contracts hedging net monetary assets and liabilities of $1.6 million and $0.6 million, respectively.

For the three and six months ended July 3, 2016, Teradyne recorded net realized losses related to foreign currency forward contracts hedging net monetary positions of $6.9 million and $10.2 million, respectively.

Gains and losses on foreign currency forward contracts and foreign currency remeasurement gains and losses on monetary assets and liabilities are included in other (income) expense, net.

The following table summarizes the fair value of derivative instruments at July 2, 2017 and December 31, 2016:

	Balance Sheet Location	July 2, 2017	December 31, 2016
		(in thousands)	
Derivatives not designated as hedging instruments:			
Foreign exchange contracts assets	Prepayments	$ 23	$ 1
Foreign exchange contracts liabilities	Other current liabilities	(304)	(131)
Total derivatives		$ (281)	$ (130)

The following table summarizes the effect of derivative instruments recognized in the statement of operations during the three and six months ended July 2, 2017 and July 3, 2016.

	Location of (Gains) Losses Recognized in Statement of Operations	For the Three Months Ended		For the Six Months Ended	
		July 2, 2017	July 3, 2016	July 2, 2017	July 3, 2016
		(in thousands)			

Derivatives not designated as hedging instruments:					
Foreign exchange contracts	Other (income) expense, net	$ (1,586)	$ 6,901	$ (575)	$ 10,199
Total Derivatives		$ (1,586)	$ 6,901	$ (575)	$ 10,199

The table does not reflect the corresponding gains and losses from the remeasurement of monetary assets and liabilities denominated in foreign currencies. For the three and six months ended July 2, 2017, net losses from the remeasurement of monetary assets and liabilities denominated in foreign currencies were $2.4 million and $0.9 million, respectively. For the three and six months ended July 3, 2016, net gains from the remeasurement of monetary assets and liabilities denominated in foreign currencies were $6.9 million and $10.4 million, respectively.

F. DEBT

Convertible Senior Notes

On December 12, 2016, Teradyne completed a private offering of $460.0 million convertible senior unsecured notes (the Notes). The Notes will mature on December 15, 2023, unless earlier repurchased or converted. The Notes bear interest from December 12, 2016 at a rate of 1.25% per year payable semi-annually in arrears on June 15 and December 15 of each year, beginning on June 15, 2017.

The Notes will be convertible at the option of the noteholders at any time prior to the close of business on the business day immediately preceding September 15, 2023, under the following circumstances: (1) during any calendar quarter beginning after March 31, 2017 (and only during such calendar quarter), if the closing sale price of the Teradyne s common stock, for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar quarter is greater than 130% of the conversion price on each applicable trading day; (2) during the five business day period after any five consecutive trading day period (the measurement period) in which the trading price (as defined in the Indenture) per $1,000 principal amount of Notes for each trading day of the measurement period was less than 98% of the product of the closing sale price of the Teradyne s common stock and the conversion rate on each such trading day; and (3) upon the occurrence of specified corporate events. On or after September 15, 2023 until the close of business on the second scheduled trading day immediately preceding the maturity date, holders may convert their Notes at any time, regardless of the foregoing circumstances. Teradyne may satisfy its conversion obligation by paying or delivering cash, shares of its common stock or a combination of cash and shares of its common stock, at Teradyne s election. The conversion rate for the Notes will initially be 31.4102 shares per $1,000 principal amount, which is equivalent to an initial conversion price of approximately $31.84 per share of Teradyne s common stock. The conversion rate is subject to adjustment under certain circumstances.

Concurrent with the offering of the Notes, Teradyne entered into convertible note hedge transactions (the Note Hedge Transactions) with the initial purchasers or their affiliates (the Option Counterparties). The Note Hedge Transactions cover, subject to customary anti-dilution adjustments, the number of shares of the common stock that underlie the Notes, with a strike price equal to the initial conversion price of the Notes of $31.84. The Note Hedge Transactions cover, subject to customary anti-dilution adjustments, approximately 14.4 million shares of Teradyne s common stock.

The convertible note hedge is considered indexed to Teradyne s stock as the terms of the Note Hedge Transactions do not contain an exercise contingency and the settlement amount equals the difference between the fair value of a fixed number of Teradyne s shares and a fixed strike price. Because the only variable that can affect the settlement amount is Teradyne s stock price, which is an input to the fair value of a fixed-for-fixed option contract, the convertible note hedge is considered indexed to Teradyne s stock.

Separately and concurrent with the pricing of the Notes, Teradyne entered into warrant transactions with the Option Counterparties (the Warrant Transactions) in which it sold net-share-settled (or, at its election subject to certain conditions, cash-settled) warrants to the Option Counterparties. The Warrant Transactions cover, subject to customary anti-dilution adjustments, approximately 14.4 million shares of common stock. The strike price of the warrants will initially be $39.95 per share (subject to adjustment). The Warrant Transactions could have a dilutive effect to Teradyne s common stock to the extent that the market price per share of Teradyne s common stock, as measured under the terms of the Warrant Transactions, exceeds the applicable strike price of the warrants.

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The Note Hedge Transactions are expected to reduce the potential dilution to Teradyne s common stock upon any conversion of the Notes. However, the Warrant Transactions could separately have a dilutive effect to the extent that the market value per share of Teradyne s common stock exceeds the applicable strike price of the warrant.

In connection with establishing their initial hedge of these convertible note hedge and warrant transactions, the Option Counterparties have entered into various derivative transactions with respect to Teradyne s common stock and/or purchased shares of Teradyne s common stock or other securities, including the Notes, concurrent with, or shortly after, the pricing of the Notes. In addition, the Option Counterparties may modify their hedge positions by entering into or unwinding various derivative transactions with respect to Teradyne s common stock or by selling Teradyne s common stock or other securities, including the Notes, in secondary market transactions (and may do so during any observation period related to the conversion of the Notes). These activities could adversely affect the value of Teradyne s common stock and the Notes.

Teradyne s effective annual interest rate on the Notes is 5.0%. The Notes are classified as long-term debt in the balance sheet based on their December 15, 2023 maturity date. Debt issuance costs of approximately $7.2 million are being amortized to interest expense over the seven year term of the Notes. As of July 2, 2017, unamortized debt issuance costs were $6.7 million.

The notes are classified as long-term debt in the consolidated balance sheets at July 2, 2017 and December 31, 2016. The below tables represent the key components of Teradyne s convertible senior notes:

	July 2, 2017	December 31, 2016
	(in thousands)	
Debt Principal	$ 460,000	$ 460,000
Unamortized discount	100,755	107,331
Net Carrying amount of convertible debt	$ 359,245	$ 352,669

	For the Three Months Ended July 2, 2017	For the Six Months Ended July 2, 2017
	(in thousands)	
Contractual interest expense on the coupon	$ 1,438	$ 2,875
Amortization of the discount component and debt issue fees recognized as interest expense	3,308	6,576
Total interest expense on the convertible debt	$ 4,746	$ 9,451

As of July 2, 2017, the remaining unamortized discount was $100.8 million, which will be amortized over 6.5 years using the effective interest rate method. The carrying amount of the equity component was $100.8 million. As of July 2, 2017, the conversion rate was equal to the initial conversion price of approximately $31.84 per share and the if-converted value of the Notes was $433.9 million.

Revolving Credit Facility

On April 27, 2015, Teradyne entered into a Credit Agreement (the Credit Agreement) with Barclays Bank PLC, as administrative agent and collateral agent, and the lenders party thereto. The Credit Agreement provides for a five-year, senior secured revolving credit facility of up to $350 million (the Credit Facility). The Credit Agreement further provides that, subject to customary conditions, Teradyne may seek to obtain from existing or new lenders incremental commitments under the Credit Facility in an aggregate principal amount not to exceed $150 million.

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Proceeds from the Credit Facility may be used for general corporate purposes and working capital. Teradyne incurred $2.3 million in costs related to the revolving credit facility. These costs are being amortized over the five-year term of the revolving credit facility and are included in interest expense in the statements of operations. As of August 11, 2017, Teradyne has not borrowed any funds under the Credit Facility.

The interest rates applicable to loans under the Credit Facility are, at Teradyne s option, equal to either a base rate plus a margin ranging from 0.00% to 1.00% per annum or LIBOR plus a margin ranging from 1.00% to 2.00% per annum, based on the Consolidated Leverage Ratio of Teradyne and its Restricted Subsidiaries. In addition, Teradyne will pay a commitment fee on the unused portion of the commitments under the Credit Facility ranging from 0.125% to 0.350% per annum, based on the then applicable Consolidated Leverage Ratio.

Teradyne is not required to repay any loans under the Credit Facility prior to maturity, subject to certain customary exceptions. Teradyne is permitted to prepay all or any portion of the loans under the Credit Facility prior to maturity without premium or penalty, other than customary LIBOR breakage costs.

The Credit Agreement contains customary events of default, representations, warranties and affirmative and negative covenants that, among other things, limit Teradyne s and its Restricted Subsidiaries ability to sell assets, grant liens on assets, incur other secured indebtedness and make certain investments and restricted payments, all subject to exceptions set forth in the Credit Agreement. The Credit Agreement also requires Teradyne to satisfy two financial ratios measured as of the end of each fiscal quarter: a consolidated leverage ratio and an interest coverage ratio. As of August 11, 2017, Teradyne was in compliance with all covenants.

The Credit Facility is guaranteed by certain of Teradyne s domestic subsidiaries and collateralized by assets of Teradyne and such subsidiaries, including a pledge of 65% of the capital stock of certain foreign subsidiaries.

G. PREPAYMENTS

Prepayments consist of the following and are included in prepayments on the balance sheet:

	July 2, 2017	**December 31, 2016**
	(in thousands)	
Contract manufacturer and supplier prepayments	$ 72,400	$ 77,017
Prepaid taxes	9,686	4,664
Prepaid maintenance and other services	7,952	7,676
Other prepayments	15,922	19,097
Total prepayments	$ 105,960	$ 108,454

H. DEFERRED REVENUE AND CUSTOMER ADVANCES

Deferred revenue and customer advances consist of the following and are included in short and long-term deferred revenue and customer advances on the balance sheet:

	July 2, 2017	December 31, 2016
	(in thousands)	
Extended warranty	$ 29,377	$ 28,200
Maintenance and training	57,544	46,803
Customer advances, undelivered elements and other	26,845	32,938
Total deferred revenue and customer advances	$ 113,766	$ 107,941

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I. PRODUCT WARRANTY

Teradyne generally provides a one-year warranty on its products, commencing upon installation, acceptance, delivery or shipment. A provision is recorded upon revenue recognition to cost of revenues for estimated warranty expense based on historical experience. Related costs are charged to the warranty accrual as incurred. The warranty balance below is included in other accrued liabilities on the balance sheet.

	For the Three Months Ended		For the Six Months Ended	
	July 2, 2017	July 3, 2016	July 2, 2017	July 3, 2016
	(in thousands)			
Balance at beginning of period	$ 7,054	$ 7,496	$ 7,203	$ 6,925
Accruals for warranties issued during the period	5,294	4,888	8,315	8,378
Adjustments related to pre-existing warranties	7	(420)	(464)	(177)
Settlements made during the period	(3,262)	(3,180)	(5,961)	(6,342)
Balance at end of period	$ 9,093	$ 8,784	$ 9,093	$ 8,784

When Teradyne receives revenue for extended warranties beyond one year, it is deferred and recognized on a straight-line basis over the contract period. Related costs are expensed as incurred. The extended warranty balance below is included in short and long-term deferred revenue and customer advances on the balance sheet.

	For the Three Months Ended		For the Six Months Ended	
	July 2, 2017	July 3, 2016	July 2, 2017	July 3, 2016
	(in thousands)			
Balance at beginning of period	$ 24,969	$ 29,427	$ 28,200	$ 30,024
Deferral of new extended warranty revenue	10,442	6,966	14,490	12,398
Recognition of extended warranty deferred revenue	(6,034)	(5,971)	(13,313)	(12,000)
Balance at end of period	$ 29,377	$ 30,422	$ 29,377	$ 30,422

J. STOCK-BASED COMPENSATION

Under Teradyne s stock compensation plans, Teradyne grants stock options, restricted stock units and performance-based restricted stock units, and employees are eligible to purchase Teradyne s common stock through its Employee Stock Purchase Plan (ESPP).

Stock options to purchase Teradyne s common stock at 100% of the fair market value on the grant date vest in equal annual installments over four years from the grant date and have a maximum term of seven years.

Time-based restricted stock unit awards granted to employees vest in equal annual installments over four years. Restricted stock unit awards granted to non-employee directors vest after a one year period, with 100% of the award vesting on the first anniversary of the grant date. Teradyne expenses the cost of the restricted stock unit awards subject to time-based vesting, which is determined to be the fair market value of the shares at the date of grant, ratably over the period during which the restrictions lapse.

Commencing in January 2014, Teradyne granted performance-based restricted stock units (PRSUs) to its executive officers with a performance metric based on relative total shareholder return (TSR). For TSR grants issued in 2014 and 2015, Teradyne s three-year TSR performance is measured against the Philadelphia Semiconductor Index. For TSR grants issued in 2016 and 2017, Teradyne s three-year TSR performance is measured against the New York Stock Exchange (NYSE) Composite Index. The final number of TSR PRSUs that vest will vary based upon the level of performance achieved from 200% to 0% of the target shares. The TSR

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PRSUs will vest upon the three-year anniversary of the grant date. The TSR PRSUs are valued using a Monte Carlo simulation model. The number of units expected to be earned, based upon the achievement of the TSR market condition, is factored into the grant date Monte Carlo valuation. Compensation expense is recognized on a straight-line basis over the three-year service period. Compensation expense is recognized regardless of the eventual number of units that are earned based upon the market condition, provided the executive officer remains an employee at the end of the three-year period. Compensation expense is reversed if at any time during the three-year service period the executive officer is no longer an employee, subject to the retirement and termination eligibility provisions noted below.

In January 2017 and 2016, Teradyne granted PRSUs to its executive officers with a performance metric based on three-year cumulative non-GAAP profit before interest and tax (PBIT) as a percent of Teradyne s revenue. Non-GAAP PBIT is a financial measure equal to GAAP income from operations less restructuring and other, net; amortization of acquired intangible assets; acquisition and divestiture related charges or credits; pension actuarial gains and losses; non-cash convertible debt interest expense; and other non-recurring gains and charges. The final number of PBIT PRSUs that vest will vary based upon the level of performance achieved from 200% to 0% of the target shares. The PBIT PRSUs will vest upon the three-year anniversary of the grant date. Compensation expense is recognized on a straight-line basis over the three-year service period. Compensation expense is recognized based on the number of units that are earned based upon the three-year Teradyne PBIT as a percent of Teradyne s revenue, provided the executive officer remains an employee at the end of the three-year period subject to the retirement and termination eligibility provisions noted below.

Beginning with PRSUs granted in January 2014, if the recipient s employment ends prior to the determination of the performance percentage due to (1) permanent disability or death or (2) retirement or termination other than for cause, after attaining both at least age sixty and at least ten years of service, then all or a portion of the recipient s PRSUs (based on the actual performance percentage achieved on the determination date) will vest on the date the performance percentage is determined. Except as set forth in the preceding sentence, no PRSUs will vest if the executive officer is no longer an employee at the end of the three-year period.

During the six months ended July 2, 2017 and July 3, 2016, Teradyne granted 0.1 million and 0.1 million TSR PRSUs, respectively, with a grant date fair value of $35.66 and $20.29, respectively. The fair value was estimated using the Monte Carlo simulation model with the following assumptions:

	For the Six Months Ended	
	July 2, 2017	**July 3, 2016**
Risk-free interest rate	1.5%	1.0%
Teradyne volatility-historical	26.6%	27.0%
NYSE Composite Index volatility-historical	13.4%	13.1%
Dividend yield	1.0%	1.2%

Expected volatility was based on the historical volatility of Teradyne s stock and the NYSE Composite Index for the 2017 and 2016 grant over the most recent three-year period. The risk-free interest rate was determined using the U.S. Treasury yield curve in effect at the time of grant. Dividend yield was based upon an estimated annual dividend amount of $0.28 per share for 2017 grants and $0.24 per share for 2016 grants, divided by Teradyne s stock price on the grant date of $28.56 for the 2017 grant and $19.43 for the 2016 grant.

During the six months ended July 2, 2017, Teradyne granted 0.1 million of PBIT PRSUs with a grant date fair value of $27.72.

During the six months ended July 2, 2017, Teradyne granted 0.8 million of service-based restricted stock unit awards to employees at a weighted average grant date fair value of $27.98, 0.1 million of service-based restricted stock unit awards to non-employee directors at a weighted average grant date fair value of $35.21, and

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0.1 million of service-based stock options to executive officers at a weighted average grant date fair value of $7.13.

During the six months ended July 3, 2016, Teradyne granted 0.1 million PBIT PRSUs with a grant date fair value of $18.71.

During the six months ended July 3, 2016, Teradyne granted 1.2 million of service-based restricted stock unit awards to employees at a weighted average grant date fair value of $18.49, 0.1 million of service-based restricted stock unit awards to non-employee directors at a weighted average grant date fair value of $18.71 and 0.1 million of service-based stock options to executive officers at a weighted average grant date fair value of $5.30.

Restricted stock unit awards granted to employees vest in equal annual installments over four years. Stock options vest in equal annual installments over four years and have a term of seven years from the date of grant.

The fair value of stock options was estimated using the Black-Scholes option-pricing model with the following assumptions:

	For the Six Months Ended	
	July 2, 2017	July 3, 2016
Expected life (years)	5.0	5.0
Risk-free interest rate	2.0%	1.4%
Volatility-historical	27.8%	32.9%
Dividend yield	1.0%	1.2%

Teradyne determined the stock options expected life based upon historical exercise data for executive officers, the age of the executive officers and the terms of the stock option grant. Volatility was determined using historical volatility for a period equal to the expected life. The risk-free interest rate was determined using the U.S. Treasury yield curve in effect at the time of grant. Dividend yield was based upon an estimated annual dividend amount of $0.28 per share for 2017 grants and $0.24 per share for 2016 grants, divided by Teradyne s stock price on the grant date, of $28.56 for the 2017 grant and $19.43 for the 2016 grant.

K. ACCUMULATED OTHER COMPREHENSIVE (LOSS) INCOME

Changes in accumulated other comprehensive (loss) income, which is presented net of tax, consist of the following:

	Foreign Currency Translation Adjustment	Unrealized Gains (Losses) on Marketable Securities	Retirement Plan Prior Service Credit	Total
		(in thousands)		
Six Months Ended July 2, 2017				
Balance at December 31, 2016, net of tax of $0, $209, $(778)	$ (21,921)	$ (60)	$ 1,767	$ (20,214)

Other comprehensive income before reclassifications, net of tax of $0, $1,185, $0	24,944	1,498		26,442
Amounts reclassified from accumulated other comprehensive income, net of tax of $0, $(106), $(77)		(177)	(136)	(313)
Net current period other comprehensive income (loss), net of tax of $0, $1,079 $(77)	24,944	1,321	(136)	26,129
Balance at July 2, 2017, net of tax of $0, $1,288, $(855)	$ 3,023	$ 1,261	$ 1,631	$ 5,915

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	Foreign Currency Translation Adjustments	Unrealized Gains (Losses) on Marketable Securities	Retirement Plan Prior Service Credit	Total
		(in thousands)		
Six Months Ended July 3, 2016				
Balance at December 31, 2015, net of tax of $0, $(459), $(622)	$ (8,759)	$ (1,414)	$ 2,029	$ (8,144)
Other comprehensive income before reclassifications, net of tax of $0, $2,354, $34	5,229	5,446	59	10,734
Amounts reclassified from accumulated other comprehensive income (loss), net of tax of $0, $(2), $(93)		(134)	(163)	(297)
Net current period other comprehensive income (loss), net of tax of $0, $2,352, $(59)	5,229	5,312	(104)	10,437
Balance as July 3, 2016, net of tax of $0, $1,893, $(681)	$ (3,530)	$ 3,898	$ 1,925	$ 2,293

Reclassifications out of accumulated other comprehensive (loss) income to the statement of operations for the three and six months ended July 2, 2017 and July 3, 2016 were as follows:

Details about Accumulated Other Comprehensive Income Components	**For the Three Months Ended**		**For the Six Months Ended**		**Affected Line Item in the Statements of Operations**
	July 2, 2017	**July 3, 2016**	**July 2, 2017**	**July 3, 2016**	
		(in thousands)			
Available-for-sale marketable securities:					
Unrealized gains, net of tax of $42, $13, $106, $2	$ 83	$ 51	$ 177	$ 134	Interest income
Defined benefit pension and postretirement plan:					
Amortization of prior service benefit, net of tax of $38, $47, $77, $93	68	83	136	163	(a)
Total reclassifications, net of tax of $80, $60, $183, $95	$ 151	$ 134	$ 313	$ 297	Net income

(a) The amortization of prior service credit is included in the computation of net periodic pension cost and postretirement benefit; see Note O: Retirement Plans.

L. GOODWILL AND ACQUIRED INTANGIBLE ASSETS

Goodwill

Teradyne performs its annual goodwill impairment test as required under the provisions of ASC 350-10, *Intangibles Goodwill and Other* on December 31 of each fiscal year unless interim indicators of impairment exist.

Goodwill is considered impaired when the net book value of a reporting unit exceeds its estimated fair value.

In the second quarter of 2016, the Wireless Test reporting unit (which is Teradyne s Wireless Test operating and reportable segment) reduced headcount by 11% as a result of a sharp decline in projected demand attributable to an estimated smaller future wireless test market. The decrease in projected demand was due to lower forecasted buying from Teradyne s largest Wireless Test segment customer (who had previously contributed between 51% and 73% of annual Wireless Test sales since the LitePoint acquisition in 2011) as a result of the customer s numerous operational efficiencies; slower smartphone growth rates; and a slowdown of

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new wireless technology adoption. Teradyne considered the headcount reduction and sharp decline in projected demand to be a triggering event for an interim goodwill impairment test.

Teradyne used the income and market approaches to determine the fair value of the Wireless Test reporting unit for step 1 of the goodwill impairment test. With respect to the income approach, Teradyne used the discounted cash flow method, which included seven year future cash flow projections and an estimated terminal value. The cash flow projections were prepared using Teradyne s forecast, which was based upon underlying estimates of the total market size, and Teradyne s market share in the wireless test market developed using Teradyne and independent third party data. The estimated terminal value was calculated using the Gordon Growth model. The market approach used a revenue multiple to develop an estimate of fair value. The revenue multiple was estimated using enterprise value as a ratio of next twelve months revenue for comparable companies. Teradyne equally weighted the income and market approaches to determine the fair value of the Wireless Test reporting unit. The carrying amount of the Wireless Test reporting unit exceeded its fair value; therefore, the second step of the goodwill impairment test was performed to calculate implied goodwill and to measure the amount of the impairment loss.

Teradyne allocated the fair value of the Wireless Test reporting unit to all of its assets and liabilities (including unrecognized intangible assets). The net book value of raw materials inventory was estimated as an approximation of current replacement costs. The fair value of finished goods inventory was estimated at the present value of selling price less direct selling costs and profit on the selling effort. The selling price used in the inventory fair values was based upon the product gross margins included in Teradyne s forecast. The fair value of the deferred revenue liability was estimated by assessing the costs required to service the obligation plus a reasonable profit margin. The fair value for personal property assets, which consisted of furniture and fixtures, machinery and equipment, computer equipment, software and leasehold improvements, was estimated using the replacement cost approach, which approximated carrying value. The fair value of intangible assets was estimated using the income approach and, in particular, developed technology and trademarks/trade names were valued using the relief-from-royalty method and customer relationships and customer backlog were valued using the discounted cash flow method. Royalty rates were estimated using rates applicable to wireless testing equipment and other similar technologies. Based upon this allocation, Teradyne determined that goodwill was valued at $8.0 million and recorded an impairment loss of $254.9 million in the second quarter of 2016.

The changes in the carrying amount of goodwill by reportable segments for the six months ended July 2, 2017, were as follows:

	Industrial Automation	System Test	Wireless Test	Semiconductor Test	Total
			(in thousands)		
Balance at December 31, 2016					
Goodwill	$ 204,851	$ 158,699	$ 361,819	$ 260,540	$ 985,909
Accumulated impairment losses		(148,183)	(353,843)	(260,540)	(762,566)
	204,851	10,516	7,976		223,343
Foreign currency translation adjustment	18,872				18,872
Balance at July 2, 2017					
Goodwill	223,723	158,699	361,819	260,540	1,004,781

Accumulated impairment losses		(148,183)	(353,843)	(260,540)	(762,566)
	$ 223,723	$ 10,516	$ 7,976	$	$ 242,215

Acquired Intangible Assets

Teradyne reviews long-lived assets for impairment whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable or that the useful lives of these assets

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are no longer appropriate. As a result of the Wireless Test segment goodwill impairment review in the second quarter of 2016, Teradyne performed an impairment test of the Wireless Test segment s intangible and long-lived assets. The impairment test is based on a comparison of the estimated undiscounted cash flows to the carrying value of the asset group. If undiscounted cash flows for the asset group are less than the carrying amount, the asset group is written down to its estimated fair value based on a discounted cash flow analysis. The cash flow estimates used to determine the impairment contain management s best estimates using appropriate assumptions and projections at that time. The fair value of intangible assets was estimated using the income approach and, in particular, developed technology and trademarks/trade names were valued using the relief-from-royalty method and customer relationships were valued using the discounted cash flow method. Royalty rates were estimated using rates applicable to wireless testing equipment and other similar technologies. As a result of the analysis, Teradyne recorded an $83.3 million impairment charge in the second quarter of 2016 in acquired intangible assets impairment on the statements of operations.

Amortizable acquired intangible assets consist of the following and are included in acquired intangible assets, net on the balance sheet:

	July 2, 2017			
	Gross Carrying Amount	Accumulated Amortization	Cumulative Foreign Currency Translation Adjustment	Net Carrying Amount
	(in thousands)			
Developed technology	$ 270,877	$ (215,973)	$ (524)	$ 54,380
Customer relationships	92,741	(81,294)	(55)	11,392
Tradenames and trademarks	50,100	(25,233)	(136)	24,731
Non-compete agreement	320	(220)		100
Customer backlog	170	(170)		
Total acquired intangible assets	$ 414,208	$ (322,890)	$ (715)	$ 90,603

	December 31, 2016			
	Gross Carrying Amount	Accumulated Amortization	Cumulative Foreign Currency Translation Adjustment	Net Carrying Amount
	(in thousands)			
Developed technology	$ 270,877	$ (206,376)	$ (5,093)	$ 59,408
Customer relationships	92,741	(76,707)	(538)	15,496
Tradenames and trademarks	50,100	(23,435)	(1,308)	25,357
Non-compete agreement	320	(180)		140
Customer backlog	170	(170)		

Total acquired intangible assets	$ 414,208	$ (306,868)	$ (6,939)	$ 100,401

Aggregate acquired intangible asset amortization expense was $8.2 million and $16.1 million, respectively, for the three and six months ended July 2, 2017 and $16.2 million and $36.2 million, respectively, for the three and six months ended July 3, 2016.

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Estimated acquired intangible asset amortization expense for each of the five succeeding fiscal years is as follows:

Year	Amortization Expense (in thousands)
2017 (remainder)	14,353
2018	28,527
2019	24,604
2020	10,800
2021	3,621
Thereafter	8,698

M. NET INCOME (LOSS) PER COMMON SHARE

The following table sets forth the computation of basic and diluted net income (loss) per common share:

	For the Three Months Ended		For the Six Months Ended	
	July 2, 2017	July 3, 2016	July 2, 2017	July 3, 2016
	(in thousands, except per share amounts)			
Net income (loss) for basic and diluted net income (loss) per common share	$ 174,976	$ (223,546)	$ 260,197	$ (173,560)
Weighted average common shares-basic	198,774	203,018	199,390	203,645
Effect of dilutive potential common shares:				
Restricted stock units	1,622		1,576	
Incremental shares from assumed conversion of convertible note (1)	752		376	
Stock options	318		354	
Employee stock purchase plan	63		36	
Dilutive potential common shares	2,755		2,342	
Weighted average common shares-diluted	201,529	203,018	201,732	203,645
Net income (loss) per common share-basic	$ 0.88	$ (1.10)	$ 1.30	$ (0.85)
Net income (loss) per common share-diluted	$ 0.87	$ (1.10)	$ 1.29	$ (0.85)

(1) Incremental shares from assumed conversion of the convertible notes for the three and six months ended July 2, 2017 are calculated using the difference between the average Teradyne stock price for the period and the conversion price of $31.84, multiplied by the 14.4 million shares that would be issued upon conversion. The

result of this calculation, representing the total intrinsic value of the convertible debt, is divided by the average Teradyne stock price for the period.

The computation of diluted net income per common share for the three months ended July 2, 2017 excludes the effect of the potential exercise of stock options to purchase approximately 0.1 million shares because the effect would have been anti-dilutive.

The computation of diluted net income per common share for the three and six months ended July 3, 2016 excludes the effect of the potential exercise of all outstanding stock options and restricted stock units because Teradyne had a net loss and inclusion would be anti-dilutive.

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N. RESTRUCTURING AND OTHER

During the three months ended July 2, 2017, Teradyne recorded $1.5 million for the increase in the fair value of the Universal Robots contingent consideration liability and $0.8 million for employee severance charges.

During the six months ended July 2, 2017, Teradyne recorded $2.1 million for the increase in the fair value of the Universal Robots contingent consideration liability, $1.4 million for employee severance charges, primarily in Corporate and Industrial Automation, and $1.3 million was for a lease impairment of a Wireless Test facility in Sunnyvale, CA. The Sunnyvale, CA lease expires in 2020. The accrual for the future lease payments liability is reflected in other accrued liabilities and is expected to be paid over the term of the lease.

During the three months ended July 3, 2016, Teradyne recorded $1.3 million for employee severance charges related to headcount reductions of 62 people, of which 47 people were in Wireless Test and 15 people were in Semiconductor Test, and $1.3 million of other charges for the increase in the fair value of contingent consideration liability, of which $0.8 million was related to Universal Robots and $0.6 million was related to AIT.

During the three and six months ended July 3, 2016, Teradyne recorded $4.2 million for an impairment charge of fixed assets and $0.9 million for expenses related to an earthquake in Kumamoto, Japan. The $5.1 million of total charges were offset by $5.1 million of property insurance recovery related to the Japan earthquake.

During the six months ended July 3, 2016, Teradyne recorded $2.5 million for the increase in the fair value of contingent consideration liability, of which $1.9 million was related to Universal Robots and $0.6 million was related to AIT, and $1.7 million for employee severance charges related to headcount reductions of 74 people, of which 47 people were in Wireless Test and 27 people were in Semiconductor Test.

O. RETIREMENT PLANS

ASC 715, *Compensation Retirement Benefits* requires an employer with defined benefit plan or other postretirement benefit plan to recognize an asset or a liability on its balance sheet for the overfunded or underfunded status of the plan. The pension asset or liability represents a difference between the fair value of the pension plan s assets and the projected benefit obligation.

Defined Benefit Pension Plan

Teradyne has defined benefit pension plan covering a portion of domestic employees and employees of certain non-U.S. subsidiaries. Benefits under this plan are based on employees years of service and compensation. Teradyne s funding policy is to make contributions to this plan in accordance with local laws and to the extent that such contributions are tax deductible. The assets of this plan consist primarily of fixed income and equity securities. In addition, Teradyne has an unfunded supplemental executive defined benefit plan in the United States to provide retirement benefits in excess of levels allowed by the Employment Retirement Income Security Act (ERISA) and the Internal Revenue Code (IRC), as well as unfunded qualified foreign plan.

In the six months ended July 2, 2017, Teradyne contributed $1.3 million to the U.S. supplemental executive defined benefit pension plan and $0.4 million to certain qualified plans for non-U.S. subsidiaries.

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For the three and six months ended July 2, 2017 and July 3, 2016, Teradyne s net periodic pension (income) cost was comprised of the following:

	For the Three Months Ended			
	July 2, 2017		July 3, 2016	
	United States	Foreign	United States	Foreign
	(in thousands)			
Service cost	$ 560	$ 206	$ 575	$ 199
Interest cost	3,264	179	3,401	199
Expected return on plan assets	(3,004)	(6)	(3,472)	(5)
Amortization of prior service cost	18		24	
Net actuarial (gain) loss	(2,732)	243	(654)	
Total net periodic pension (income) cost	$ (1,894)	$ 622	$ (126)	$ 393

	For the Six Months Ended			
	July 2, 2017		July 3, 2016	
	United States	Foreign	United States	Foreign
	(in thousands)			
Service cost	$ 1,120	$ 392	$ 1,151	$ 406
Interest cost	6,576	342	6,815	405
Expected return on plan assets	(6,004)	(12)	(6,915)	(11)
Amortization of prior service cost	35		48	
Net actuarial (gain) loss	(2,732)	243	(1,848)	
Settlement				(238)
Total net periodic pension (income) cost	$ (1,005)	$ 965	$ (749)	$ 562

Postretirement Benefit Plan

In addition to receiving pension benefits, U.S. Teradyne employees who meet early retirement eligibility requirements as of their termination dates may participate in Teradyne s Welfare Plan, which includes medical and dental benefits up to age 65. Death benefits provide a fixed sum to retirees survivors and are available to all retirees. Substantially all of Teradyne s current U.S. employees could become eligible for these benefits, and the existing benefit obligation relates primarily to those employees.

For the three and six months ended July 2, 2017 and July 3, 2016, Teradyne s net periodic postretirement income was comprised of the following:

	For the Three Months Ended		For the Six Months Ended	
	July 2, 2017	July 3, 2016	July 2, 2017	July 3, 2016
	(in thousands)			
Service cost	$ 7	$ 9	$ 17	$ 19
Interest cost	50	53	100	109
Amortization of prior service benefit	(124)	(154)	(248)	(304)
Actuarial gain	(15)	(15)	(15)	(15)
Total net periodic post-retirement benefit	$ (82)	$ (107)	$ (146)	$ (191)

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P. COMMITMENTS AND CONTINGENCIES

Purchase Commitments

As of July 2, 2017, Teradyne had entered into purchase commitments for certain components and materials. The purchase commitments covered by the agreements aggregate to approximately $218.3 million, of which $206.1 million is for less than one year.

Legal Claims

Teradyne is subject to various legal proceedings and claims which have arisen in the ordinary course of business. In the opinion of management, the ultimate disposition of these matters will not have a material adverse effect on Teradyne s results of operations, financial condition or cash flows.

Q. INCOME TAXES

The effective tax rate for the three months ended July 2, 2017 and July 3, 2016 was 15.4% and 3.2%, respectively. The effective tax rate for the six months ended July 2, 2017 and July 3, 2016 was 12.9% and 0.0%, respectively.

The increase in the effective tax rate from the three and six months ended July 3, 2016 to the three and six months ended July 2, 2017 is primarily attributable to the effect of a U.S. non-deductible goodwill impairment charge, a shift in the geographic distribution of income which increased income subject to taxation in the U.S. relative to lower tax rate jurisdictions, decreases in the discrete benefits from tax reserve releases and non-taxable foreign exchange gains and an increase in the discrete benefit from stock-based compensation.

The effective tax rates for the three and six months ended July 2, 2017 differed from the expected federal statutory rate of 35% primarily because of the favorable effect of statutory rates applicable to income earned outside the U.S. The tax rates for the three and six months ended July 2, 2017 were also reduced by the benefit from U.S. research and development tax credits, partially offset by additions to the uncertain tax positions for transfer pricing, both of which are included in the projected annual effective tax rate.

Discrete tax items recorded in the three and six months ended July 2, 2017 amounted to expense of $0.5 million and benefit of $6.5 million, respectively. The $0.5 million of discrete tax expense recorded in the three months ended July 2, 2017 was primarily composed of $1.0 million of expense related to actuarial gains, $0.7 million of expense from non-taxable foreign exchange loss and $1.0 million of benefit from stock based compensation. The $6.5 million of discrete tax benefit recorded in the six months ended July 2, 2017 was primarily composed of $6.5 million of benefit from stock-based compensation, $1.0 million of expense related to actuarial gains, $0.7 million of benefit related to U.S. research and development tax credits and $0.3 million of expense from non-taxable foreign exchange loss.

The effective tax rates for the three and six months ended July 3, 2016 differed from the expected federal statutory rate of 35% as a result of a non-deductible goodwill impairment charge, which reduced the benefit of the U.S. loss before income taxes, and increases in uncertain tax positions for transfer pricing, offset by the effect of lower statutory rates applicable to income earned outside the U.S. and the benefit of U.S. research and development tax credits, all of which were included in the projected annual effective tax rate.

Discrete tax benefits recorded in the three and six months ended July 3, 2016 amounted to $4.4 million and $6.9 million, respectively. The $4.4 million of discrete tax benefits recorded in the three months ended July 3, 2016 was primarily composed of $2.6 million of tax reserve releases resulting from the settlement of a U.S. tax audit and $2.2 million from non-taxable foreign exchange gains net of $0.4 million of expense from other discrete tax items. The $6.9 million of discrete tax benefits recorded in the six months ended July 3, 2016 was primarily composed of $3.4 million from non-taxable foreign exchange gains, $2.6 million of tax reserve releases resulting from the settlement of a U.S. tax audit, and $0.9 million related to marketable securities.

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On a quarterly basis, Teradyne evaluates the realizability of the deferred tax assets by jurisdiction and assesses the need for a valuation allowance. As of July 2, 2017, Teradyne believes that it will ultimately realize the deferred tax assets recorded on the condensed consolidated balance sheets. However, should Teradyne believe that it is more-likely-than-not that the deferred tax assets would not be realized, the tax provision would increase in the period in which Teradyne determined that the realizability was not likely. Teradyne considers the probability of future taxable income and historical profitability, among other factors, in assessing the realizability of the deferred tax assets.

As of July 2, 2017 and December 31, 2016, Teradyne had $42.5 million and $39.0 million, respectively, of reserves for uncertain tax positions. The $3.5 million net increase in reserves for uncertain tax positions is primarily composed of additions related to transfer pricing exposures and tax credits.

As of July 2, 2017, Teradyne estimates that it is reasonably possible that the balance of uncertain tax positions may decrease approximately $0.8 million in the next twelve months as a result of a lapse of statutes of limitation. The estimated decrease is comprised primarily of reserves relating to tax credits.

Teradyne recognizes interest and penalties related to income tax matters in income tax expense. As of July 2, 2017 and December 31, 2016, $0.4 million and $0.4 million, respectively, of interest and penalties were accrued for uncertain tax positions. For the six months ended July 2, 2017, benefit of $0.1 million was recorded for interest and penalties related to income tax items. For the six months ended July 3, 2016, an expense of $0.3 million was recorded for interest and penalties related to income tax items.

Teradyne qualifies for a tax holiday in Singapore by fulfilling the requirements of an agreement with the Singapore Economic Development Board under which certain headcount and spending requirements must be met. The tax savings due to the tax holiday for the six months ended July 2, 2017 was $15.1 million, or $0.07 per diluted share. The tax savings due to the tax holiday for the six months ended July 3, 2016 was $30.7 million, or $0.15 per diluted share. The tax holiday is scheduled to expire on December 31, 2020.

R. SEGMENT INFORMATION

Teradyne has four operating segments (Semiconductor Test, Industrial Automation, System Test and Wireless Test), which are its reportable segments. The Semiconductor Test segment includes operations related to the design, manufacturing and marketing of semiconductor test products and services. The Industrial Automation segment includes operations related to the design, manufacturing and marketing of collaborative robots. The System Test segment includes operations related to the design, manufacturing and marketing of products and services for defense/aerospace instrumentation test, storage test and circuit-board test. The Wireless Test segment includes operations related to the design, manufacturing and marketing of wireless test products and services. Each operating segment has a segment manager who is directly accountable to and maintains regular contact with Teradyne s chief operating decision maker (Teradyne s chief executive officer) to discuss operating activities, financial results, forecasts, and plans for the segment.

Teradyne evaluates performance based on several factors, of which the primary financial measure is business segment income (loss) before income taxes. The accounting policies of the business segments in effect are described in Note B: Accounting Policies in Teradyne s Annual Report on Form 10-K for the year ended December 31, 2016.

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Segment information for the three and six months ended July 2, 2017 and July 3, 2016 is as follows:

	Semiconductor Test	Industrial Automation	System Test	Wireless Test	Corporate and Eliminations	Consolidated
			(in thousands)			
Three Months Ended July 2, 2017						
Revenues	$ 593,152	$ 39,337	$ 36,732	$ 27,680	$	$ 696,901
Income (loss) before income taxes (1)(2)	211,278	(1,081)	(5,692)	4,514	(2,142)	206,877
Total assets (3)	766,395	349,023	108,083	62,900	1,743,824	3,030,225
Three Months Ended July 3, 2016						
Revenues	$ 435,323	$ 25,102	$ 48,940	$ 22,427	$	$ 531,792
Income (loss) before income taxes (1)(2)	121,163	(4,501)	8,992	(356,505)	34	(230,817)
Total assets (3)	731,394	346,290	91,374	61,618	1,177,182	2,407,858
Six Months Ended July 2, 2017						
Revenues	$ 948,679	$ 75,610	$ 76,578	$ 52,947	$	$ 1,153,814
Income (loss) before income taxes (1)(2)	309,244	(3,652)	(8,451)	6,046	(4,294)	298,893
Total assets (3)	766,395	349,023	108,083	62,900	1,743,824	3,030,225
Six Months Ended July 3, 2016						
Revenues	$ 775,588	$ 41,848	$ 102,610	$ 42,741	$	$ 962,787
Income (loss) before income taxes (1)(2)	194,417	(11,669)	18,484	(376,645)	1,788	(173,625)
Total assets (3)	731,394	346,290	91,374	61,618	1,177,182	2,407,858

(1) Interest income, interest expense, contingent consideration adjustments, pension and postretirement plan actuarial gains and other income (expense) are included in Corporate and Eliminations.

(2) Included in income (loss) before taxes are charges and credits related to restructuring and other, inventory charges, goodwill impairment charges and acquired intangible assets impairment charge.

(3) Total business assets are attributable to each business. Corporate assets consist of cash and cash equivalents, marketable securities and certain other assets.

Included in the Semiconductor Test segment are charges and credits in the following line items in the statements of operations:

	For the Three Months Ended		For the Six Months Ended	
	July 2, 2017	July 3, 2016	July 2, 2017	July 3, 2016
		(in thousands)		
Cost of revenues inventory charge	$ 1,624	$ 2,234	$ 2,943	$ 5,919
Restructuring and other employee severance	132	337	(133)	751

Included in the Industrial Automation segment are charges in the following line item in the statements of operations:

	For the Three Months Ended		For the Six Months Ended	
	July 2, 2017	July 3, 2016	July 2, 2017	July 3, 2016
	(in thousands)			
Restructuring and other employee severance	321		945	

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Included in the System Test segment are charges in the following line item in the statements of operations:

	For the Three Months Ended		For the Six Months Ended	
	July 2, 2017	July 3, 2016	July 2, 2017	July 3, 2016
	(in thousands)			
Cost of revenues inventory charge	$ 473	$ 237	$ 1,358	$ 320

Included in the Wireless Test segment are charges in the following line items in the statements of operations:

	For the Three Months Ended		For the Six Months Ended	
	July 2, 2017	July 3, 2016	July 2, 2017	July 3, 2016
	(in thousands)			
Cost of revenues inventory charge	$ 472	$ 5,271	$ 994	$ 5,876
Restructuring and other lease impairment			1,313	
Goodwill impairment		254,946		254,946
Acquired intangible assets impairment		83,339		83,339
Restructuring and other employee severance		967		967

Included in Corporate and Eliminations are charges and credits in the following line items in the statements of operations:

	For the Three Months Ended		For the Six Months Ended	
	July 2, 2017	July 3, 2016	July 2, 2017	July 3, 2016
	(in thousands)			
Restructuring and other Universal Robots contingent consideration adjustment	$ 1,499	$ 755	$ 2,133	$ 1,928
Restructuring and other employee severance	325		530	
Restructuring and other impairment of fixed assets and expenses related to Japan earthquake		5,051		5,051
Restructuring and other property insurance recovery and proceeds		(5,051)		(5,051)
Restructuring and other AIT contingent consideration adjustment		550		550

S. SHAREHOLDERS EQUITY

Stock Repurchase Program

In December 2016, the Board of Directors approved a $500 million share repurchase authorization which commenced on January 1, 2017. Teradyne intends to repurchase at least $200 million in 2017. During the six months ended July 2, 2017, Teradyne repurchased 3.0 million shares of common stock at an average price of $31.77 per share, for a total price of $94.3 million.

During the six months ended July 3, 2016, Teradyne repurchased 2.9 million shares of common stock at an average price per share of $19.29, for a total price of $56.8 million.

The total price includes commissions and is recorded as a reduction to retained earnings.

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Dividend

Holders of Teradyne s common stock are entitled to receive dividends when they are declared by Teradyne s Board of Directors.

In January 2017 and May 2017, Teradyne s Board of Directors declared a quarterly cash dividend of $0.07 per share. Dividend payments for the three and six months ended July 2, 2017 were $13.9 million and $27.9 million, respectively.

In January 2016 and May 2016, Teradyne s Board of Directors declared a quarterly cash dividend of $0.06 per share. Dividend payments for the three and six months ended July 3, 2016 were $12.2 million and $24.4 million, respectively.

While Teradyne declared a quarterly cash dividend and authorized a share repurchase program, it may reduce or eliminate the cash dividend or share repurchase program in the future. Future cash dividends and stock repurchases are subject to the discretion of Teradyne s Board of Directors which will consider, among other things, Teradyne s earnings, capital requirements and financial condition.

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

Statements in this Quarterly Report on Form 10-Q which are not historical facts, so called forward-looking statements, are made pursuant to the safe harbor provisions of Section 21E of the Securities Exchange Act of 1934, as amended. Investors are cautioned that all forward-looking statements involve risks and uncertainties, including those detailed in our filings with the Securities and Exchange Commission. See also Part II, Item 1A of this Quarterly Report on Form 10-Q and Part I, Item 1A Risk Factors in our Annual Report on Form 10-K for the year ended December 31, 2016. Readers are cautioned not to place undue reliance on these forward-looking statements which reflect management s analysis only as of the date hereof. We assume no obligation to update these forward-looking statements to reflect actual results or changes in factors or assumptions affecting forward-looking statements, except as may be required by law.

Overview

We are a leading global supplier of automation equipment for test and industrial applications. We design, develop, manufacture and sell automatic test systems used to test semiconductors, wireless products, data storage and complex electronics systems in the consumer electronics, wireless, automotive, industrial, computing, communications, and aerospace and defense industries. Our industrial automation products include collaborative robots used by global manufacturing and light industrial customers to improve quality, increase manufacturing efficiency and decrease manufacturing costs. Our automatic test equipment and industrial automation products and services include:

- semiconductor test (Semiconductor Test) systems;
- defense/aerospace (Defense/Aerospace) test instrumentation and systems, storage test (Storage Test) systems, and circuit-board test and inspection (Production Board Test) systems (collectively these products represent System Test);
- industrial automation (Industrial Automation) products; and
- wireless test (Wireless Test) systems.

We have a customer base which includes integrated device manufacturers (IDMs), outsourced semiconductor assembly and test providers (OSATs), original equipment manufacturers (OEMs), wafer foundries, fabless companies that design, but contract with others for the manufacture of integrated circuits (ICs), developers of wireless devices and consumer electronics, manufacturers of circuit boards, automotive suppliers, wireless product manufacturers, storage device manufacturers, aerospace and military contractors, and distributors that sell collaborative robots.

The market for our test products is concentrated with a limited number of significant customers accounting for a substantial portion of the purchases of test equipment. One customer drives significant demand for our products both through direct sales and sales to the customer s supply partners. We expect that sales of our test products will continue to be concentrated with a limited number of significant customers for the foreseeable future.

In 2015, we acquired Universal Robots A/S (Universal Robots), the leading supplier of collaborative robots which are low-cost, easy-to-deploy and simple-to-program robots that work side by side with production workers to improve quality, increase manufacturing efficiency and decrease manufacturing costs. Universal Robots is a separate operating and reportable segment, Industrial Automation. The acquisition of Universal Robots provides a growth engine to our business and complements our existing System Test and Wireless Test segments. The total purchase price for Universal Robots was approximately $315 million, which included cash paid of approximately $284 million and $32 million in fair value of contingent consideration payable upon achievement of revenue and earnings targets through 2018. Contingent consideration paid for 2015 was $15 million. The remaining maximum contingent consideration that could be paid is $50 million.

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We believe our recent acquisition has enhanced our opportunities for growth. We intend to continue to invest in our business, grow market share in our markets and expand further our addressable markets while tightly managing our costs.

The sales of our products and services are dependent, to a large degree, on customers who are subject to cyclical trends in the demand for their products. These cyclical periods have had, and will continue to have, a significant effect on our business because our customers often delay or accelerate purchases in reaction to changes in their businesses and to demand fluctuations in the semiconductor and electronics industries. Historically, these demand fluctuations have resulted in significant variations in our results of operations. The sharp swings in the semiconductor and electronics industries have generally affected the semiconductor and electronics test equipment and services industries more significantly than the overall capital equipment sector.

For several years, this cyclical demand became an even/odd year trend where demand increased in even years and decreased in odd years due principally to demand swings in the mobility market of our Semiconductor Test business. We expect the even/odd year demand trend in the mobility market to lessen in 2017 and future years due to slower smart phone unit growth, along with rising device complexity and the reduced impact of parallel test in our Semiconductor Test business.

In the second quarter of 2016, the Wireless Test reporting unit (which is our Wireless Test operating and reportable segment) reduced headcount by 11% as a result of a sharp decline in projected demand attributable to an estimated smaller future wireless test market. The decrease in projected demand was due to lower forecasted buying from our largest Wireless Test segment customer (who had previously contributed between 51% and 73% of annual Wireless Test sales since the LitePoint acquisition in 2011) as a result of the customer s numerous operational efficiencies; slower smartphone growth rates; and a slowdown of new wireless technology adoption. We considered the headcount reduction and sharp decline in projected demand to be a triggering event for an interim goodwill impairment test. Following the interim goodwill impairment test, we recorded a goodwill impairment charge of $254.9 million, with approximately $8.0 million of goodwill remaining, and $83.3 million for the impairment of acquired intangible assets with approximately $4.3 million of acquired intangible assets remaining.

Critical Accounting Policies and Estimates

We have identified the policies which are critical to understanding our business and our results of operations. There have been no significant changes during the three months ended July 2, 2017 to the items disclosed as our critical accounting policies and estimates in Management s Discussion and Analysis of Financial Condition and Results of Operations in our Annual Report on Form 10-K for the fiscal year ended December 31, 2016.

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SELECTED RELATIONSHIPS WITHIN THE CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

	For the Three Months Ended		For the Six Months Ended	
	July 2, 2017	July 3, 2016	July 2, 2017	July 3, 2016
Percentage of revenues:				
Revenues:				
Products	88%	86%	85%	85%
Services	12	14	15	15
Total revenues	100	100	100	100
Cost of revenues:				
Cost of products	38	41	37	40
Cost of services	6	6	7	7
Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below)	44	47	43	47
Gross profit	56	53	57	53
Operating expenses:				
Engineering and development	12	14	14	16
Selling and administrative	13	15	15	17
Acquired intangible assets amortization	1	3	1	4
Restructuring and other				
Goodwill impairment		48		26
Acquired intangible assets impairment		16		9
Total operating expenses	26	97	31	72
Income (loss) from operations	30	(44)	26	(18)
Non-operating (income) expense:				
Interest income			(1)	
Interest expense	1		1	
Other (income) expense, net				
Income (loss) before income taxes	30	(43)	26	(18)
Income tax provision (benefit)	5	(1)	3	
Net income (loss)	25%	(42)%	23%	(18)%

Results of Operations

Second Quarter 2017 Compared to Second Quarter 2016

Book to Bill Ratio

Book to bill ratio is calculated as net bookings divided by net sales. Book to bill ratio by reportable segment was as follows:

	For the Three Months Ended	
	July 2, 2017	July 3, 2016
Semiconductor Test	0.6	0.9
System Test	0.8	0.6
Industrial Automation	0.8	1.0
Wireless Test	1.1	1.0
Total Company	0.7	0.9

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Revenues

Revenues by our four reportable segments were as follows:

	For the Three Months Ended		
	July 2, 2017	July 3, 2016	Dollar Change
		(in millions)	
Semiconductor Test	$ 593.2	$ 435.3	$ 157.9
Industrial Automation	39.3	25.1	14.2
System Test	36.7	48.9	(12.2)
Wireless Test	27.7	22.4	5.3
	$ 696.9	$ 531.7	$ 165.2

The increase in Semiconductor Test revenues of $157.9 million, or 36.3%, was driven primarily by increased sales in the applications processors, image sensor, flash memory, microcontroller, power management, and automotive safety test segments. The increase in Industrial Automation revenues of $14.2 million, or 56.6%, was due to higher demand for collaborative robots. The decrease in System Test revenues of $12.2 million, or 24.9%, was primarily due to lower sales in Storage Test of 3.5 hard disk drive testers for cloud storage. The increase in Wireless Test revenues of $5.3 million, or 23.7%, was primarily due to higher demand for connectivity test systems and increased service revenue.

Revenues by country as a percentage of total revenues were as follows (1):

	For the Three Months Ended	
	July 2, 2017	July 3, 2016
Taiwan	51%	48%
United States	9	11
China	8	8
Europe	6	5
Malaysia	5	6
Korea	5	6
Singapore	5	5
Japan	5	4
Philippines	5	4
Thailand	1	1
Rest of World		2
	100%	100%

(1) Revenues attributable to a country are based on location of customer site.

Gross Profit

Our gross profit was as follows:

	For the Three Months Ended July 2, 2017	July 3, 2016	Dollar/ Point Change
		(in millions)	
Gross profit	$ 391.2	$ 282.9	$ 108.3
Percent of Total Revenues	56.1%	53.2%	2.9

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Gross profit as a percent of revenue increased by 2.9 points, as a result of a 1.9 point increase related to favorable product mix in Semiconductor Test and 1.6 points due to higher sales primarily in Semiconductor Test and Industrial Automation.

We assess the carrying value of our inventory on a quarterly basis by estimating future demand and comparing that demand against on-hand and on-order inventory positions. Forecasted revenue information is obtained from sales and marketing groups and incorporates factors such as backlog and future revenue demand. This quarterly process identifies obsolete and excess inventory. Obsolete inventory, which represents items for which there is no demand, is fully reserved. Excess inventory, which represents inventory items that are not expected to be consumed during the next twelve quarters for our Semiconductor Test, System Test and Industrial Automation segments and the next four quarters for our Wireless Test segment, is written-down to estimated net realizable value.

During the three months ended July 2, 2017, we recorded an inventory provision of $2.6 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels. Of the $2.6 million of total excess and obsolete provisions, $1.6 million was related to Semiconductor Test, $0.5 million was related to System Test, and $0.5 million was related to Wireless Test.

During the three months ended July 3, 2016, we recorded an inventory provision of $7.7 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels. Of the $7.7 million of total excess and obsolete provisions, $5.3 million was related to Wireless Test, $2.2 million was related to Semiconductor Test, and $0.2 million was related to System Test.

During the three months ended July 2, 2017 and July 3, 2016, we scrapped $1.1 million and $1.5 million of inventory, respectively. During the three months ended July 2, 2017 and July 3, 2016, we sold $2.1 million and $5.1 million of previously written-down or written-off inventory, respectively. As of July 2, 2017, we had inventory related reserves for inventory which had been written-down or written-off totaling $114.8 million. We have no pre-determined timeline to scrap the remaining inventory.

Engineering and Development

Engineering and development expenses were as follows:

	For the Three Months Ended		
	July 2, 2017	July 3, 2016	Dollar Change
		(in millions)	
Engineering and development	$ 81.7	$ 76.1	$ 5.6
Percent of Total Revenues	11.7%	14.3%	

The increase of $5.6 million in engineering and development expenses was primarily due to higher variable compensation and additional spending in System Test, partially offset by lower spending in Wireless Test.

Selling and Administrative

Selling and administrative expenses were as follows:

	For the Three Months Ended		
	July 2, 2017	July 3, 2016	Dollar Change
		(in millions)	
Selling and administrative	$ 89.1	$ 81.4	$ 7.7
Percent of Total Revenues	12.8%	15.3%	

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The increase of $7.7 million in selling and administrative expenses was due primarily to higher variable compensation and higher spending in Industrial Automation, partially offset by lower spending in Wireless Test.

Acquired Intangible Assets Amortization

Acquired intangible assets amortization expense was as follows:

	For the Three Months Ended		
	July 2, 2017	July 3, 2016	Dollar Change
		(in millions)	
Acquired intangible assets amortization	$ 8.2	$ 16.2	$ (8.0)
Percent of Total Revenues	1.2%	3.1%	

Acquired intangible assets amortization expense decreased primarily in the Wireless Test segment due to the impairment of acquired intangible assets in the second quarter of 2016.

Goodwill Impairment

We assess goodwill for impairment at least annually, in the fourth quarter, as of December 31, or on an interim basis between annual tests when events or circumstances indicate that it is more-likely-than-not that the fair value of a reporting unit is less than its carrying value. In the second quarter of 2016, the Wireless Test reporting unit (which is our Wireless Test operating and reportable segment) reduced headcount by 11% as a result of a sharp decline in projected demand attributable to an estimated smaller future wireless test market. The decrease in projected demand was due to lower forecasted buying from our largest Wireless Test segment customer (who had previously contributed between 51% and 73% of annual Wireless Test sales since the LitePoint acquisition in 2011) as a result of the customer s numerous operational efficiencies; slower smartphone growth rates; and a slowdown of new wireless technology adoption. We considered the headcount reduction and sharp decline in projected demand to be a triggering event for an interim goodwill impairment test. Following the interim goodwill impairment test, we recorded a goodwill impairment charge of $254.9 million in the second quarter of 2016.

Acquired Intangible Assets Impairment

We review long-lived assets for impairment whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable or that the useful lives of these assets are no longer appropriate. As a result of the Wireless Test segment goodwill impairment review in the second quarter of 2016, we performed an impairment test of the Wireless Test segment s intangible and long-lived assets based on a comparison of the estimated undiscounted cash flows to the carrying value of the assets. If undiscounted cash flows for the asset are less than the carrying amount, the asset is written down to its estimated fair value based on a discounted cash flow analysis. The cash flow estimates used to determine the impairment contain management s best estimates using appropriate assumptions and projections at that time. As a result of the analysis, we recorded an $83.3 million impairment charge in the second quarter of 2016.

Restructuring and Other

During the three months ended July 2, 2017, we recorded $1.5 million for the increase in the fair value of the Universal Robots contingent consideration liability and $0.8 million for employee severance charges.

During the three months ended July 3, 2016, we recorded $1.3 million for employee severance charges related to headcount reductions of 62 people, of which 47 people were in Wireless Test and 15 people were in Semiconductor Test, and $1.3 million for the increase in the fair value of contingent consideration liability, of which $0.8 million was related to Universal Robots and $0.6 million was related to AIT.

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During the three months ended July 3, 2016, we recorded $4.2 million for an impairment charge of fixed assets and $0.9 million for expenses related to an earthquake in Kumamoto, Japan. The $5.1 million of total charges were offset by $5.1 million of property insurance recovery related to the Japan earthquake.

Interest and Other

	For the Three Months Ended		
	July 2, 2017	July 3, 2016	Dollar Change
		(in millions)	
Interest income	$ (3.3)	$ (1.7)	$ (1.6)
Interest expense	5.5	0.7	4.8
Other (income) expense, net	0.8		0.8

Interest income increased by $1.6 million due primarily to higher cash and marketable securities balances and higher interest rates in the second quarter of 2017. Interest expense increased by $4.8 million due primarily to interest expense related to our convertible senior notes. Other (income) expense, net in the second quarter of 2017 included net foreign exchange loss.

Income (Loss) Before Income Taxes

	For the Three Months Ended		
	July 2, 2017	July 3, 2016	Dollar Change
		(in millions)	
Semiconductor Test	$ 211.3	$ 121.2	$ 90.1
Wireless Test	4.5	(356.5)	361.0
Industrial Automation	(1.1)	(4.5)	3.4
System Test	(5.7)	9.0	(14.7)
Corporate (1)	(2.1)		(2.1)
	$ 206.9	$ (230.8)	$ 437.6

(1) Included in Corporate are: contingent consideration adjustments, pension actuarial gains, impairment of fixed assets and expenses related to the Japan earthquake, property insurance recovery and proceeds, other income (expense), interest income and interest expense.

The increase in income before income taxes in Semiconductor Test was driven primarily by increased sales and higher gross margin due to favorable product mix. The increase in income before income taxes in Wireless Test was primarily due to goodwill and intangible assets impairment charges included in the second quarter of 2016 and lower intangible assets amortization, lower operating expenses and higher demand for connectivity test systems in the second quarter of 2017. The increase in income before income taxes in Industrial Automation was due to higher demand for collaborative robots. The decrease in income before income taxes in System Test was primarily due to lower sales in Storage Test of 3.5 hard disk drive testers for cloud storage and increased spending for new product development.

Income Taxes

The effective tax rate for the three months ended July 2, 2017 and July 3, 2016 was 15.4% and 3.2%, respectively.

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The increase in the effective tax rate is primarily attributable to the effect of a U.S. non-deductible goodwill impairment charge, a shift in the geographic distribution of income which increased income subject to taxation in the U.S. relative to lower tax rate jurisdictions, decreases in the discrete benefits from tax reserve releases and non-taxable foreign exchange gains and an increase in the discrete benefit from stock based compensation.

Six Months 2017 Compared to Six Months 2016

Revenues

Revenues by our four reportable segments were as follows:

	For the Six Months Ended		
	July 2, 2017	July 3, 2016	Dollar Change
		(in millions)	
Semiconductor Test	$ 948.7	$ 775.6	$ 173.1
System Test	76.6	102.6	(26.0)
Industrial Automation	75.6	41.8	33.8
Wireless Test	52.9	42.7	10.2
	$ 1,153.8	$ 962.7	$ 191.1

The increase in Semiconductor Test revenues of $173.1 million, or 22.3%, was driven primarily by increased sales in the microcontroller, power management, automotive safety and flash memory test segments. The decrease in System Test revenues of $26.0 million, or 25.3%, was primarily due to lower sales in Storage Test of 3.5 hard disk drive testers for cloud storage. The increase in Industrial Automation revenues of $33.8 million, or 80.9%, was due to higher demand for collaborative robots. The increase in Wireless Test revenues of $10.2 million, or 23.9%, was primarily due to higher demand for connectivity test systems and increased service revenue.

Revenues by country as a percentage of total revenues were as follows (1):

	For the Six Months Ended	
	July 2, 2017	July 3, 2016
Taiwan	41%	45%
United States	10	11
China	9	9
Japan	8	7
Europe	7	6
Malaysia	7	5
Korea	6	6
Singapore	5	4

Philippines	5	3
Thailand	1	2
Rest of World	1	2
	100%	100%

(1) Revenues attributable to a country are based on location of customer site.

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Gross Profit

Our gross profit was as follows:

	For the Six Months Ended		Dollar/ Point Change
	July 2, 2017	July 3, 2016	
	(in millions)		
Gross profit	$ 656.2	$ 513.2	$ 143.0
Percent of Total Revenues	56.9%	53.3%	3.6

Gross profit as a percent of revenue increased by 3.6 points, as a result of a 2.4 point increase related to favorable product mix in Semiconductor Test and 1.2 points due to higher sales primarily in Semiconductor Test and Industrial Automation.

We assess the carrying value of our inventory on a quarterly basis by estimating future demand and comparing that demand against on-hand and on-order inventory positions. Forecasted revenue information is obtained from sales and marketing groups and incorporates factors such as backlog and future revenue demand. This quarterly process identifies obsolete and excess inventory. Obsolete inventory, which represents items for which there is no demand, is fully reserved. Excess inventory, which represents inventory items that are not expected to be consumed during the next twelve quarters for our Semiconductor Test, System Test and Industrial Automation segments and the next four quarters for our Wireless Test segment, is written-down to estimated net realizable value.

During the six months ended July 2, 2017, we recorded an inventory provision of $5.3 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels. Of the $5.3 million of total excess and obsolete provisions, $2.9 million was related to Semiconductor Test, $1.4 million was related to System Test, and $1.0 million was related to Wireless Test.

During the six months ended July 3, 2016, we recorded an inventory provision of $12.1 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels. Of the $12.1 million of total excess and obsolete provisions, $5.9 million was related to Semiconductor Test, $5.9 million was related to Wireless Test, and $0.3 million was related to System Test.

During the six months ended July 2, 2017 and July 3, 2016, we scrapped $2.9 million and $2.2 million of inventory, respectively. During the six months ended July 2, 2017 and July 3, 2016, we sold $3.3 million and $6.3 million of previously written-down or written-off inventory, respectively. As of July 2, 2017, we had inventory related reserves for inventory which had been written-down or written-off totaling $114.8 million. We have no pre-determined timeline to scrap the remaining inventory.

Engineering and Development

Engineering and development expenses were as follows:

	For the Six Months Ended		Dollar Change
	July 2, 2017	July 3, 2016	
	(in millions)		
Engineering and development	$ 157.9	$ 149.6	$ 8.3
Percent of Total Revenues	13.7%	15.5%	

The increase of $8.3 million in engineering and development expenses was primarily due to higher variable compensation and additional spending in System Test and Industrial Automation, partially offset by lower spending in Wireless Test.

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Selling and Administrative

Selling and administrative expenses were as follows:

	For the Six Months Ended		
	July 2, 2017	July 3, 2016	Dollar Change
	(in millions)		
Selling and administrative	$ 174.0	$ 160.6	$ 13.4
Percent of Total Revenues	15.1%	16.7%	

The increase of $13.4 million in selling and administrative expenses was due primarily to higher variable compensation and higher spending in Industrial Automation, partially offset by lower spending in Wireless Test.

Acquired Intangible Assets Amortization

Acquired intangible assets amortization expense was as follows:

	For the Six Months Ended		
	July 2, 2017	July 3, 2016	Dollar Change
	(in millions)		
Acquired intangible assets amortization	$ 16.1	$ 36.2	$ (20.1)
Percent of Total Revenues	1.4%	3.8%	

Acquired intangible assets amortization expense decreased primarily in the Wireless Test segment due to the impairment of acquired intangible assets in the second quarter of 2016.

Goodwill Impairment

We assess goodwill for impairment at least annually, in the fourth quarter, as of December 31, or on an interim basis between annual tests when events or circumstances indicate that it is more-likely-than-not that the fair value of a reporting unit is less than its carrying value. In the second quarter of 2016, the Wireless Test reporting unit (which is our Wireless Test operating and reportable segment) reduced headcount by 11% as a result of a sharp decline in projected demand attributable to an estimated smaller future wireless test market. The decrease in projected demand was due to lower forecasted buying from our largest Wireless Test segment customer (who had previously contributed between 51% and 73% of annual Wireless Test sales since the LitePoint acquisition in 2011) as a result of the customer s numerous operational efficiencies; slower smartphone growth rates; and a slowdown of new wireless technology adoption. We considered the headcount reduction and sharp decline in projected demand to be a triggering event for an interim goodwill impairment test. Following the interim goodwill impairment test, we recorded a goodwill impairment charge of $254.9 million in the second quarter of 2016.

Acquired Intangible Assets Impairment

We review long-lived assets for impairment whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable or that the useful lives of these assets are no longer appropriate. As a result of the Wireless Test segment goodwill impairment review in the second quarter of 2016, we performed an impairment test of the Wireless Test segment s intangible and long-lived assets based on a comparison of the estimated undiscounted cash flows to the recorded value of the assets. If undiscounted cash flows for the asset are less than the carrying amount, the asset is written down to its estimated fair value based on a discounted cash flow analysis. The cash flow estimates used to determine the impairment contain

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management s best estimates using appropriate assumptions and projections at that time. As a result of the analysis, we recorded an $83.3 million impairment charge in the second quarter of 2016.

Restructuring and Other

During the six months ended July 2, 2017, we recorded $2.1 million for the increase in the fair value of the Universal Robots contingent consideration liability, $1.4 million for employee severance charges, primarily in Corporate and Industrial Automation, and $1.3 million was for a lease impairment of a Wireless Test facility in Sunnyvale, CA. The Sunnyvale, CA lease expires in 2020. The accrual for the future lease payments liability is reflected in other accrued liabilities and is expected to be paid over the term of the lease.

During the six months ended July 3, 2016, we recorded $4.2 million for an impairment charge of fixed assets and $0.9 million for expenses related to an earthquake in Kumamoto, Japan. The $5.1 million of total charges were offset by $5.1 million of property insurance recovery related to the Japan earthquake.

During the six months ended July 3, 2016, we recorded $2.5 million for the increase in the fair value of contingent consideration liability, of which $1.9 million was related to Universal Robots and $0.6 million was related to AIT, and $1.7 million for employee severance charges related to headcount reductions of 74 people, of which 47 people were in Wireless Test and 27 people were in Semiconductor Test.

Interest and Other

	For the Six Months Ended		
	July 2, 2017	July 3, 2016	Dollar Change
		(in millions)	
Interest income	$ (6.8)	$ (3.3)	$ (3.5)
Interest expense	10.9	1.4	9.5
Other (income) expense, net	0.3	(0.2)	0.5

Interest income increased by $3.5 million due primarily to higher cash and marketable securities balances and higher interest rates in 2017. Interest expense increased by $9.5 million due primarily to interest expense related to our convertible senior notes. Other (income) expense, net included net foreign exchange gains and losses.

Income (Loss) Before Income Taxes

	For the Six Months Ended		
	July 2, 2017	July 3, 2016	Dollar Change
		(in millions)	
Semiconductor Test	$ 309.2	$ 194.4	$ 114.8
Wireless Test	6.0	(376.6)	382.6
Industrial Automation	(3.7)	(11.7)	8.0

System Test	(8.5)	18.5	(27.0)
Corporate (1)	(4.3)	1.8	(6.1)
	$ 298.9	$ (173.6)	$ 472.5

(1) Included in Corporate are: contingent consideration adjustments, pension actuarial gains, impairment of fixed assets and expenses related to the Japan earthquake, property insurance recovery and proceeds, other income (expense), interest income and interest expense.

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The increase in income before income taxes in Semiconductor Test was driven primarily by increased sales and higher gross margin due to favorable product mix. The increase in income before income taxes in Wireless Test was primarily due to goodwill and intangible assets impairment charges in 2016 and lower intangible assets amortization, lower operating expenses and higher demand for connectivity test systems in 2017. The increase in income before income taxes in Industrial Automation was due to higher demand for collaborative robots. The decrease in income before income taxes in System Test was primarily due to lower sales in Storage Test of 3.5 hard disk drive testers for cloud storage and increased spending for new product development.

Income Taxes

The effective tax rate for the six months ended July 2, 2017 and July 3, 2016 was 12.9% and 0.0%, respectively.

The increase in the effective tax rate is primarily attributable to the effect of a U.S. non-deductible goodwill impairment charge, a shift in the geographic distribution of income which increased income subject to taxation in the U.S. relative to lower tax rate jurisdictions, decreases in the discrete benefits from tax reserve releases and non-taxable foreign exchange gains and an increase in the discrete benefit from stock-based compensation.

Contractual Obligations

The following table reflects our contractual obligations as of July 2, 2017:

	Payments Due by Period					
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years	Other
	(in thousands)					
Convertible debt	$ 460,000	$	$	$	$ 460,000	$
Purchase obligations	218,279	206,071	12,208			
Retirement plan contributions	115,693	6,378	7,972	10,246	91,097	
Operating lease obligations	66,597	17,298	27,589	14,556	7,154	
Interest on long-term debt	37,375	5,750	11,500	11,500	8,625	
Fair value of contingent consideration	39,415	22,432	16,983			
Other long-term liabilities reflected on the balance sheet under GAAP (1)	54,454		32,679			21,775
Total	$ 991,813	$ 257,929	$ 108,931	$ 36,302	$ 566,876	$ 21,775

(1) Included in other long-term liabilities are liabilities for customer advances, extended warranty, uncertain tax positions, deferred tax liabilities and other obligations. For certain long-term obligations, we are unable to provide a reasonably reliable estimate of the timing of future payments relating to these obligations and therefore we included these amounts in the column marked Other.

Liquidity and Capital Resources

Our cash, cash equivalents and marketable securities balances increased by $7.4 million in the six months ended July 2, 2017 to $1,620 million.

In the six months ended July 2, 2017, changes in operating assets and liabilities used cash of $165.7 million. This was due to a $217.9 million increase in operating assets partially offset by a $52.2 million increase in operating liabilities.

The increase in operating assets was primarily due to a $214.2 million increase in accounts receivable due to the delivery profile of second quarter shipments and an $8.1 million increase in inventories, partially offset by a $4.4 million decrease in prepayments and other assets.

The increase in operating liabilities was due to a $21.1 million increase in other accrued liabilities, a $14.4 million increase in income taxes, an $11.9 million increase in accrued employee compensation due primarily to variable compensation, a $5.3 million increase in deferred revenue and customer advance payments, and a $1.6 million increase in accounts payable, partially offset by $2.0 million of retirement plan contributions.

Investing activities during the six months ended July 2, 2017 provided cash of $240.1 million, due to $313.3 million and $307.6 million in proceeds from maturities and sales of marketable securities, respectively, partially offset by $334.8 used for purchases of marketable securities and $46.0 million used for purchases of property, plant and equipment.

Financing activities during the six months ended July 2, 2017 used cash of $120.5 million, due to $94.3 million used for the repurchase of 3.0 million shares of common stock at an average price of $31.77 per share, $27.9 million used for dividend payments, $12.4 million used for payment related to net settlement of employee stock compensation awards and $1.1 million used for a payment related to AIT acquisition contingent consideration, partially offset by $15.2 million from the issuance of common stock under employee stock purchase and stock option plans.

In the six months ended July 3, 2016, changes in operating assets and liabilities used cash of $23.9 million. This was due to a $121.7 million increase in operating assets partially offset by a $97.7 million increase in operating liabilities.

The increase in operating assets was due to a $138.2 million increase in accounts receivable due to higher sales and a $13.7 million increase in prepayments and other assets, partially offset by a $30.2 million decrease in inventories. The increase in operating liabilities was due to a $106.1 million increase in customer advance payments and deferred revenue, an $11.6 million increase in accounts payable, and a $7.2 million increase in other accrued liabilities, partially offset by a $24.8 million decrease in accrued employee compensation due primarily to variable compensation and employee stock compensation awards payroll tax payments and $2.3 million of retirement plan contributions.

Investing activities during the six months ended July 3, 2016 used cash of $16.0 million, due to $437.3 million used for purchases of marketable securities and $46.6 million used for purchases of property, plant and equipment, partially offset by $334.8 million and $128.0 million in proceeds from sales and maturities of marketable securities, respectively, and proceeds from property insurance of $5.1 million related to the Japan earthquake.

Financing activities during the six months ended July 3, 2016 used cash of $84.2 million, due to $56.8 million used for the repurchase of 2.9 million shares of common stock at an average price of $19.29 per share, $24.4 million used for dividend payments, $11.7 million used for a payment related to the Universal Robots acquisition contingent consideration, and $9.2 million payments related to net settlement of employee stock compensation awards, partially offset by $17.9 million from the issuance of common stock under employee stock purchase and stock option plans.

In January 2017 and May 2017, our Board of Directors declared a quarterly cash dividend of $0.07 per share. In the six months ended July 2, 2017, dividend payments were $27.9 million.

In January 2016 and May 2016, our Board of Directors declared a quarterly cash dividend of $0.06 per share. In the six months ended July 3, 2016, dividend payments were $24.4 million.

In December 2016, the Board of Directors approved a $500 million share repurchase authorization which commenced on January 1, 2017. We intend to repurchase at least $200 million in 2017. During the six months ended July 2, 2017, we repurchased 3.0 million shares of common stock at an average price of $31.77 per share, for a total price of $94.3 million. The total price includes commissions and is recorded as a reduction to retained earnings.

During the six months ended July 3, 2016, we repurchased 2.9 million shares of common stock at an average price per share of $19.29, for a total price of $56.8 million.

While we declared a quarterly cash dividend and authorized a share repurchase program, we may reduce or eliminate the cash dividend or share repurchase program in the future. Future cash dividends and stock repurchases are subject to the discretion of our Board of Directors which will consider, among other things, our earnings, capital requirements and financial condition.

We believe our cash, cash equivalents and marketable securities balance will be sufficient to pay our quarterly dividend, execute our authorized share repurchase program and meet our working capital and expenditure needs for at least the next twelve months. The amount of cash, cash equivalents and marketable securities in the U.S. and our operations in the U.S. provide sufficient liquidity to fund our business activities in the U.S. We have $869 million of cash, cash equivalents and marketable securities outside the U.S. that if repatriated would incur additional taxes. Determination of the additional taxes that would be incurred is not practicable due to uncertainty regarding the remittance structure, the mix of earnings and earnings and profit pools in the year of remittance, and overall complexity of the calculation. Inflation has not had a significant long-term impact on earnings.

Equity Compensation Plans

As discussed in Note O: Stock Based Compensation in our 2016 Form 10-K, we have a 1996 Employee Stock Purchase Plan and a 2006 Equity and Cash Compensation Incentive Plan (the 2006 Equity Plan).

The purpose of the 1996 Employee Stock Purchase Plan is to encourage stock ownership by all eligible employees of Teradyne. The purpose of the 2006 Equity Plan is to provide equity ownership and compensation opportunities in Teradyne to our employees, officers, directors, consultants and/or advisors. Both plans were approved by our shareholders.

Recently Issued Accounting Pronouncements

On March 10, 2017, the FASB issued ASU 2017-07, *Compensation Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost.* This ASU provides guidance on presentation of net periodic pension cost and net periodic postretirement benefit cost. The new standard requires the service cost component to be presented in the same line item as other employee compensation costs arising from services rendered during the period. The other components of net benefit cost such as interest cost, amortization of prior service cost, and actuarial gains or losses, are required to be presented separately outside of income or loss from operations. The presentation of service cost should be applied retrospectively. The guidance is effective for fiscal years beginning after December 15, 2017. Early adoption is permitted. This guidance will impact the presentation of our consolidated financial statements. Current presentation of service cost components is consistent with the requirements of the new standard. Upon adoption of the new standard, we will present interest cost, amortization of prior service cost, and actuarial gains or losses within other (income) expense, net.

On January 26, 2017, the FASB issued ASU 2017-04, *Intangibles Goodwill and Other (Topic 350): Simplifying the Accounting for Goodwill Impairment.* The new guidance removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. Goodwill impairment will now be the amount by which a reporting unit s carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. All other goodwill impairment guidance will remain largely unchanged. Entities will continue to have the option to perform a qualitative assessment to determine if a quantitative impairment test is necessary. The same one-step impairment test will be applied to goodwill at all reporting units, even those with zero or negative carrying amounts. Entities will be required to disclose the amount of goodwill at reporting units with zero or negative carrying amounts. The revised guidance will be applied prospectively, and is effective in 2020. Early adoption is permitted for any impairment tests performed after January 1, 2017. We are currently evaluating the impact of this ASU on our financial position, results of operations and statements of cash flows.

In October 2016, the FASB issued ASU 2016-16, *Accounting for Income Taxes: Intra-Entity Asset Transfers of Assets Other than Inventory*. Under current Generally Accepted Accounting Principles (GAAP), the tax effects of intra-entity asset transfers are deferred until the transferred asset is sold to a third party or otherwise recovered through use. The new guidance requires recognition of the tax expense from the sale of the asset in the seller s tax jurisdiction when the transfer occurs, even though the pre-tax effects of that transaction are eliminated in consolidation. Any deferred tax asset that arises in the buyer s jurisdiction would also be recognized at the time of the transfer. The new guidance does not apply to intra-entity transfers of inventory. The income tax consequences from the sale of inventory from one member of a consolidated entity to another will continue to be deferred until the inventory is sold to a third party. The new guidance will be effective in fiscal years beginning after December 15, 2017. Early adoption is permitted. The modified retrospective approach will be required for transition to the new guidance, with a cumulative-effect adjustment recorded in retained earnings as of the beginning of the period of adoption. We do not expect this ASU to have a material impact on our financial position, results of operations and statements of cash flows.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842).* The guidance in this ASU supersedes the lease recognition requirements in Accounting Standards Codification (ASC) Topic 840, *Leases.* The new standard establishes a right-of-use (ROU) model that requires a lessee to record an ROU asset and a lease liability on the balance sheet for all leases with terms longer than twelve months. Leases will be classified as either finance or operating, with classification affecting the pattern of expense recognition in the statements of operation. The new standard is effective for annual periods beginning after December 15, 2018 with early adoption permitted. A modified retrospective transition approach is required for lessees for capital and operating leases existing at, or entered into after, the beginning of the earliest comparative period presented in the financial statements. We are currently evaluating the impact of this ASU on our financial position and results of operations.

In January 2016, the FASB issued ASU 2016-01, *Financial Instruments Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities*. This ASU provides guidance for the recognition, measurement, presentation, and disclosure of financial instruments. The new pronouncement revises accounting related to equity investments and the presentation of certain fair value changes for financial liabilities measured at fair value. Among other things, it amends the presentation and disclosure requirements of equity securities that do not result in consolidation and are not accounted for under the equity method. Changes in the fair value of these equity securities will be recognized directly in net income. This pronouncement is effective for fiscal years beginning after December 15, 2017. We are currently evaluating the impact of this ASU on our financial position and results of operations.

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers (Topic 606),* which will replace numerous requirements in U.S. GAAP, including industry-specific requirements, and provide companies with a single revenue recognition model for recognizing revenue from contracts with customers. The core principle of the new standard is that a company should recognize revenue to show the transfer of promised goods or services to customers in an amount that reflects the consideration to which the company expects to be entitled to in exchange for those goods or services. In August 2015, FASB issued ASU 2015-14, which deferred the effective date of the new revenue standard by one year. For Teradyne, the standard will be effective in the first quarter of 2018. The two permitted transition methods under the new standard are the full retrospective method, in which case the standard would be applied to each prior reporting period presented, or the modified retrospective method, in which case the cumulative effect of applying the standard would be recognized at the date of initial application. We are in the process of assessing the impact of this ASU, including identification of changes to policies, processes and controls and the presentation necessary to meet the additional disclosure requirements. We have selected the modified retrospective transition method. We are still conducting our assessment and will continue to evaluate the impact of this ASU on our financial position and results of operations.

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Item 3: Quantitative and Qualitative Disclosures about Market Risks

For Quantitative and Qualitative Disclosures about Market Risk affecting Teradyne, see Part 2 Item 7a, Quantitative and Qualitative Disclosures about Market Risks, in our Annual Report on Form 10-K filed with the SEC on March 1, 2017. There were no material changes in our exposure to market risk from those set forth in our Annual Report for the fiscal year ended December 31, 2016.

In addition to market risks described in our Annual Report on Form 10-K, we have an equity price risk related to the fair value of our convertible senior unsecured notes issued in December 2016. In December 2016, Teradyne issued $460 million aggregate principal amount of 1.25% convertible senior unsecured notes (the Notes) due December 15, 2023. As of July 2, 2017, the Notes had a fair value of $527.0 million. The table below provides a sensitivity analysis of hypothetical 10% changes of Teradyne s stock price as of the end of the second quarter of 2017 and the estimated impact on the fair value of the Notes. The selected scenarios are not predictions of future events, but rather are intended to illustrate the effect such event may have on the fair value of the Notes. The fair value of the Notes is subject to equity price risk due to the convertible feature. The fair value of the Notes will generally increase as Teradyne s common stock price increases and will generally decrease as the common stock price declines in value. The change in stock price affects the fair value of the convertible senior notes, but does not impact Teradyne s financial position, cash flows or results of operations due to the fixed nature of the debt obligation. Additionally, we carry the Notes at face value less unamortized discount on our balance sheet, and we present the fair value for required disclosure purposes only. In connection with the offering of the Notes we also sold warrants to the option counterparties. These transactions have been accounted for as an adjustment to our shareholders equity. The convertible note hedge transactions are expected to reduce the potential equity dilution upon conversion of the Notes. The warrants along with any shares issuable upon conversion of the Notes will have a dilutive effect on our earnings per share to the extent that the average market price of our common stock for a given reporting period exceeds the applicable strike price or conversion price of the warrants or Notes, respectively.

Hypothetical Change in Teradyne Stock Price	Fair Value	Estimated Change in Fair Value	Hypothetical Percentage Increase (Decrease) in Fair Value
10% Increase	$ 559,636	$ 32,660	6.2%
No Change	526,976		
10% Decrease	498,548	(28,428)	(5.4)

See Note F: Debt for further information.

Item 4: Controls and Procedures

As of the end of the period covered by this report, our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures pursuant to Rule 13a-15(b) or Rule 15d-15(f) promulgated under the Exchange Act. Based upon that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of the end of the period covered by this report, our disclosure controls and procedures were effective in ensuring that material information required to be disclosed in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC s rules and forms, including ensuring that such material information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

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PART II. OTHER INFORMATION

Item 1: Legal Proceedings

We are subject to various legal proceedings and claims, which have arisen, in the ordinary course of business. In the opinion of management, the ultimate disposition of these matters will not have a material adverse effect on our results of operations, financial condition or cash flows.

Item 1A: Risk Factors

In addition to other information set forth in this Form 10-Q, you should carefully consider the factors discussed in Part I, Item 1A: Risk Factors in our Annual Report on Form 10-K for the year ended December 31, 2016, which could materially affect our business, financial condition or future results. The risk factors described in our Annual Report on Form 10-K remain applicable to our business.

The risks described in our Annual Report on Form 10-K are not the only risks that we face. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially adversely affect our business, financial condition and/or operating results.

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

In December 2016, the Board of Directors approved a $500 million share repurchase authorization which commenced on January 1, 2017. We intend to repurchase at least $200 million in 2017. During the six months ended July 2, 2017, we repurchased 3.0 million shares of common stock at an average price of $31.77 per share, for a total price of $94.3 million. The total price includes commissions and is recorded as a reduction to retained earnings.

During the six months ended July 3, 2016, we repurchased 2.9 million shares of common stock at an average price per share of $19.29, for a total price of $56.8 million.

The following table includes information with respect to repurchases we made of our common stock during the three months ended July 2, 2017 (in thousands except per share price):

Period		(a) Total Number of Shares (or Units) Purchased	(b) Average Price Paid per Share (or Unit)		(c) Total Number of Shares (or Units) Purchased as Part of Publicly Announced Plans or Programs	(d) Maximum Number (or Approximate Dollar Value) of Shares (or Units) that may Yet Be Purchased Under the Plans or Programs	
April 3, 2017	April 30, 2017	540	$	31.64	539	$	445,203
May 1, 2017	May 28, 2017	510	$	35.31	509	$	427,236
May 29, 2017	July 2, 2017	638	$	33.90	636	$	405,672

1,688	(1)	$	33.60	(1)	1,684

(1) Includes 4,319 shares at an average price of $34.36 withheld from employees for the payment of taxes.
We satisfy U.S. federal and state minimum withholding tax obligations due upon the vesting and the conversion of restricted stock units into shares of our common stock, by automatically withholding from the shares being issued, a number of shares with an aggregate fair market value on the date of such vesting and conversion that would satisfy the minimum withholding amount due.

Item 4: Mine Safety Disclosures

Not Applicable

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Item 6: Exhibits

Exhibit Number	Description
31.1	Certification of Principal Executive Officer, pursuant to Rule 13a-14(a) of Securities and Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)
31.2	Certification of Principal Financial Officer, pursuant to Rule 13a-14(a) of Securities and Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)
32.1	Certification of Principal Executive Officer pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (furnished herewith)
32.2	Certification of Principal Financial Officer pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (furnished herewith)
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

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SIGNATURES

Pursuant to the requirements 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.

TERADYNE, INC.
Registrant

/s/ Gregory R. Beecher
Gregory R. Beecher

Vice President,

Chief Financial Officer and Treasurer

(Duly Authorized Officer

and Principal Financial Officer)

August 11, 2017