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 June 30, 2019

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 **(State or Other Jurisdiction of Incorporation or Organization)**	**04-2272148** **(I.R.S. Employer Identification No.)**
600 Riverpark Drive, North Reading, Massachusetts **(Address of Principal Executive Offices)**	**01864** **(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 every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files) Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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	☐	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 standards provided pursuant to Section 13(a) of the Exchange Act. ☐

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

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.125 per share	**TER**	**Nasdaq Stock Market LLC**

The number of shares outstanding of the registrant's only class of Common Stock as of August 5, 2019 was 169,945,820 shares.

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PART I

Item 1: Financial Statements

TERADYNE, INC.

CONDENSED CONSOLIDATED BALANCE SHEETS
(Unaudited)

	June 30, 2019	December 31, 2018
	(in thousands, except per share amount)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 495,107	$ 926,752
Marketable securities	400,227	190,096
Accounts receivable, less allowance for doubtful accounts of $1,736 and $1,673 at June 30, 2019 and December 31, 2018, respectively	372,199	291,267
Inventories, net	164,461	153,541
Prepayments and other current assets	184,832	170,826
Total current assets	1,616,826	1,732,482
Property, plant and equipment, net	295,895	279,821
Operating lease right-of-use assets, net	56,315	—
Marketable securities	99,001	87,731
Deferred tax assets	67,886	70,848
Other assets	25,712	11,509
Retirement plans assets	16,449	16,883
Acquired intangible assets, net	109,494	125,482
Goodwill	383,936	381,850
Total assets	$2,671,514	$ 2,706,606
LIABILITIES		
Current liabilities:		

Accounts payable	$ 103,449	$ 100,688
Accrued employees' compensation and withholdings	121,940	148,566
Deferred revenue and customer advances	89,837	77,711
Other accrued liabilities	77,053	78,272
Current operating lease liabilities	18,041	—
Contingent consideration	11,753	34,865
Income taxes payable	44,927	36,185
Total current liabilities	467,000	476,287
Retirement plans liabilities	122,596	117,456
Long-term deferred revenue and customer advances	37,365	32,750
Deferred tax liabilities	17,800	20,662
Long-term other accrued liabilities	9,660	37,547
Long-term contingent consideration	15,094	35,678
Long-term operating lease liabilities	46,460	—
Long-term incomes taxes payable	88,884	83,891
Debt	387,243	379,981
Total liabilities	1,192,102	1,184,252
Commitments and contingencies (See Note S)		
SHAREHOLDERS' EQUITY		
Common stock, $0.125 par value, 1,000,000 shares authorized; 170,436 and 175,522 shares issued and outstanding at June 30, 2019 and December 31, 2018, respectively	21,305	21,940
Additional paid-in capital	1,688,211	1,671,645
Accumulated other comprehensive loss	(7,591)	(13,040)
Accumulated deficit	(222,513)	(158,191)
Total shareholders' equity	1,479,412	1,522,354
Total liabilities and shareholders' equity	$2,671,514	$ 2,706,606

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, 2018, 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	
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
	(in thousands, except per share amount)			
Revenues:				
Products	$457,511	$434,051	$ 850,953	$ 837,976
Services	106,667	92,878	207,324	176,420
Total revenues	564,178	526,929	1,058,277	1,014,396
Cost of revenues:				
Cost of products	193,299	180,777	358,667	361,735
Cost of services	46,961	38,818	88,057	75,495
Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below)	240,260	219,595	446,724	437,230
Gross profit	323,918	307,334	611,553	577,166
Operating expenses:				
Selling and administrative	108,811	99,410	210,824	189,916
Engineering and development	81,434	75,342	158,225	149,750
Acquired intangible assets amortization	10,083	9,793	20,717	17,491
Restructuring and other	(10,404)	2,389	(5,292)	2,076
Total operating expenses	189,924	186,934	384,474	359,233
Income from operations	133,994	120,400	227,079	217,933
Non-operating (income) expense:				
Interest income	(5,430)	(5,427)	(13,482)	(11,407)
Interest expense	5,800	5,639	11,513	12,530
Other (income) expense, net	2,447	176	3,892	979
Income before income taxes	131,177	120,012	225,156	215,831
Income tax provision	33,780	18,975	18,621	27,821
Net income	$ 97,397	$101,037	$ 206,535	$ 188,010
Net income per common share:				
Basic	$ 0.57	$ 0.53	$ 1.20	$ 0.97
Diluted	$ 0.55	$ 0.52	$ 1.16	$ 0.94
Weighted average common shares—basic	171,241	190,730	172,387	192,992
Weighted average common shares—diluted	178,590	194,909	177,781	199,197

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, 2018, 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	
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
	(in thousands)			
Net income	$ 97,397	$101,037	$206,535	$188,010
Other comprehensive income, net of tax:				
Foreign currency translation adjustment, net of tax of $0	5,642	(29,323)	983	(18,781)
Available-for-sale marketable securities:				
Unrealized gains (losses) on marketable securities arising during period, net of tax of $678, $(25), $1,256, $(744), respectively	2,537	198	4,637	(2,489)
Less: Reclassification adjustment for (gains) losses included in net income, net of tax of $(6), $(68), $(26), $11, respectively	(27)	(199)	(97)	1,469
	2,510	(1)	4,540	(1,020)
Defined benefit pension and post-retirement plans:				
Amortization of prior service benefit included in net periodic pension and post-retirement benefit, net of tax of $(11), $(18), $(21), $(35), respectively	(37)	(61)	(74)	(123)
Other comprehensive income (loss)	8,115	(29,385)	5,449	(19,924)
Comprehensive income	$105,512	$ 71,652	$211,984	$168,086

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, 2018, are an integral part of the condensed consolidated financial statements.

TERADYNE, INC.

CONDENSED CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY
(Unaudited)

	Common Stock Shares Issued	Common Stock Par Value	Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Shareholders' Equity
			(in thousands)			
For the Three Months Ended June 30, 2019						
Balance, March 31, 2019	172,353	$ 21,544	$ 1,679,997	$ (15,706)	$ (215,607)	$ 1,470,228
Net issuance of common stock under stock-based plans	99	13	679			692
Stock-based compensation expense			7,535			7,535
Repurchase of common stock	(2,016)	(252)			(88,902)	(89,154)
Cash dividends ($0.09 per share)					(15,401)	(15,401)
Net income					97,397	97,397
Other comprehensive income				8,115		8,115
Balance, June 30, 2019	170,436	$ 21,305	$ 1,688,211	$ (7,591)	$ (222,513)	$ 1,479,412
For the Three Months Ended July 1, 2018						
Balance, April 1, 2018	193,808	$ 24,226	$ 1,638,756	$ 25,881	$ 216,120	$ 1,904,983
Net issuance of common stock under stock-based plans	54	7	(114)			(107)
Stock-based compensation expense			7,037			7,037
Repurchase of common stock	(5,900)	(738)			(225,782)	(226,520)
Cash dividends ($0.09 per share)					(17,105)	(17,105)
Net income					101,037	101,037
Other comprehensive loss				(29,385)		(29,385)
Balance, July 1, 2018	187,962	$ 23,495	$ 1,645,679	$ (3,504)	$ 74,270	$ 1,739,940
For the Six Months Ended June 30, 2019						
Balance, December 31, 2018	175,522	$ 21,940	$ 1,671,645	$ (13,040)	$ (158,191)	$ 1,522,354
Net issuance of common stock under stock-based plans	1,385	174	469			643
Stock-based compensation expense			16,097			16,097
Repurchase of common stock	(6,471)	(809)			(239,815)	(240,624)
Cash dividends ($0.09 per share)					(31,042)	(31,042)
Net income					206,535	206,535
Other comprehensive income				5,449		5,449
Balance, June 30, 2019	170,436	$ 21,305	$ 1,688,211	$ (7,591)	$ (222,513)	$ 1,479,412
For the Six Months Ended July 1, 2018						
Balance, December 31, 2017	195,548	$ 24,444	$ 1,638,413	$ 18,776	$ 272,013	$ 1,953,646
Net issuance of common stock under stock-based plans	1,253	157	(8,243)			(8,086)
Stock-based compensation expense			15,509			15,509
Repurchase of common stock	(8,839)	(1,106)			(366,085)	(367,191)
Cash dividends ($0.09 per share)					(34,703)	(34,703)
Net income					188,010	188,010
Other comprehensive loss				(19,924)		(19,924)
Reclassification of unrealized gains on equity securities				(3,125)	3,125	—
Reclassification of tax effects resulting from the Tax Reform Act				769	(769)	—
Cumulative effect of changes in accounting principle related to revenue recognition					12,679	12,679
Balance, July 1, 2018	187,962	$ 23,495	$ 1,645,679	$ (3,504)	$ 74,270	$ 1,739,940

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, 2018, are an integral part of the condensed consolidated financial statements.

TERADYNE, INC.

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)

	For the Six Months Ended June 30, 2019	For the Six Months Ended July 1, 2018
	(in thousands)	
Cash flows from operating activities:		
Net income	$ 206,535	$ 188,010
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation	33,882	33,156
Amortization	24,976	20,177
Stock-based compensation	18,109	17,625
Deferred taxes	515	17,312
Provision for excess and obsolete inventory	5,799	6,175
Contingent consideration fair value adjustment	(8,701)	(8,468)

(Gains) losses on marketable securities	(3,741)	762
Retirement plan actuarial losses (gains)	448	(71)
Other	429	406
Changes in operating assets and liabilities, net of businesses acquired:		
Accounts receivable	(79,478)	(179,403)
Inventories	(2,447)	(21,283)
Prepayments and other assets	(17,067)	1,641
Accounts payable and other liabilities	(14,424)	(8,155)
Deferred revenue and customer advances	15,826	10,518
Retirement plans contributions	(2,414)	(2,173)
Income taxes	(14,973)	(26,308)
Net cash provided by operating activities	163,274	49,921
Cash flows from investing activities:		
Purchases of property, plant and equipment	(58,956)	(62,663)
Purchases of marketable securities	(484,181)	(647,071)
Proceeds from sales of marketable securities	42,454	829,053
Proceeds from maturities of marketable securities	233,193	469,862
Proceeds from life insurance	273	—
Purchase of investments and acquisition of businesses, net of cash acquired	(21,970)	(170,632)
Net cash (used for) provided by investing activities	(289,187)	418,549
Cash flows from financing activities:		
Issuance of common stock under stock purchase and stock option plans	15,089	10,681
Repurchase of common stock	(247,222)	(360,795)
Dividend payments	(31,019)	(34,682)
Payments related to net settlement of employee stock compensation awards	(14,446)	(19,751)
Payments of contingent consideration	(27,615)	(13,571)
Net cash used for financing activities	(305,213)	(418,118)
Effects of exchange rate changes on cash and cash equivalents	(519)	189
(Decrease) increase in cash and cash equivalents	(431,645)	50,541
Cash and cash equivalents at beginning of period	926,752	429,843
Cash and cash equivalents at end of period	$ 495,107	$ 480,384

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, 2018, are an integral part of the condensed consolidated financial statements.

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 robotic arms, autonomous mobile robots, and advanced robotic control software used by global manufacturing and light industrial customers to improve quality, increase manufacturing and material handling efficiency and decrease manufacturing costs. Teradyne's automatic test equipment and industrial automation products and services include:

- semiconductor test ("Semiconductor Test") systems;
- industrial automation ("Industrial Automation") products;
- 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"); 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, 2018 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, 2019, for the year ended December 31, 2018.

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.

Investment in Other Company

Teradyne holds an investment in a private company that develops and sells advanced wearable technology. Teradyne does not have the ability to exert significant influence over the company. The investment was recorded at cost and is evaluated for impairment or an indication of changes in fair value resulting from observable price changes in orderly transactions for the identical or a similar investment of the same issuer on a quarterly basis. See Note D: "Acquisitions and Investment in Other Company."

Leases

In February 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2016-02, *"Leases (Topic 842)"* ("Topic 842"), which requires a lessee to record a right-of-use ("ROU") asset and a lease liability on the balance sheet for operating leases with terms longer than twelve months. Teradyne adopted this standard and the related amendments (collectively "ASC 842") on January 1, 2019 and utilized the modified retrospective approach provided by ASU 2018-11, *"Leases (Topic 842): Targeted Improvements,"* that allowed for a cumulative effect adjustment in the period of adoption. Under this method of adoption, the comparative information in the consolidated financial statements has not been revised and continues to be reported under the previously applicable lease accounting guidance (ASC 840). Teradyne also utilized the package of practical expedients permitted under the transition guidance which included the carry-forward of historical lease classification. Adoption of ASC 842 resulted in recording ROU assets and lease liabilities of approximately $50.1 million and $54.3 million, respectively. Operating lease liabilities were calculated using the discount rate on January 1, 2019. The adoption of ASC 842 did not have a material impact on beginning retained earnings, the consolidated statement of operations, cash flows, or earnings per share.

Under ASC 842, a contract is or contains a lease when Teradyne has the right to control the use of an identified asset. Teradyne determines if an arrangement is a lease at inception of the contract, which is the date on which the terms of the contract are agreed to and the agreement creates enforceable rights and obligations. The commencement date of the lease is the date that the lessor makes an underlying asset available for use by Teradyne. As of June 30, 2019, Teradyne does not have material leases that have not yet commenced.

Teradyne determines if the lease is operating or finance at the lease commencement date based upon the terms of the lease and the nature of the asset. The lease term used to calculate the lease liability includes options to extend or terminate the lease when it is reasonably certain that the option will be exercised.

For leases commencing after January 1, 2019, the lease liability is measured at the present value of future lease payments, discounted using the discount rate for the lease at the commencement date. As Teradyne is typically unable to determine the implicit rate, Teradyne uses an incremental borrowing rate based on the lease term and economic environment at commencement date. Teradyne initially measures payments based on an index by using the applicable rate at lease commencement. Variable payments that do not depend on an index are not included in the lease liability and are recognized as they are incurred. The ROU asset is initially measured as the amount of lease liability, adjusted for any initial lease costs, prepaid lease payments, and reduced by any lease incentives.

Teradyne's contracts often include non-lease components such as common area maintenance. Teradyne elected the practical expedient to account for the lease and non-lease components as a single lease component. For leases with a term of one year or less Teradyne has elected not to record the lease asset or liability. The lease payments are recognized in the consolidated statement of earnings on a straight-line basis over the lease term. Teradyne includes lease costs within cost of revenues and operating expenses. See Note H: "Leases."

C. RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS

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 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.

D. ACQUISITIONS AND INVESTMENT IN OTHER COMPANY

Acquisitions

Lemsys SA

On January 30, 2019, Teradyne acquired all of the issued and outstanding shares of Lemsys SA ("Lemsys") for a total purchase price of approximately $9.1 million. Lemsys strengthens Teradyne's position in the electrification trends of vehicles, solar, wind, and industrial applications. The Lemsys acquisition was accounted for as a business combination and, accordingly, the results have been included in Teradyne's Semiconductor Test segment from the date of acquisition. Teradyne's final allocation of the purchase price was goodwill of $1.4 million, which is not deductible for tax purposes, acquired intangible assets of $4.6 million with an average estimated useful life of 5.2 years, and $3.1 million of net tangible assets. The acquisition was not material to Teradyne's condensed consolidated financial statements.

Mobile Industrial Robots

On April 25, 2018, Teradyne acquired all of the issued and outstanding shares of Mobile Industrial Robots Aps ("MiR"), a Danish limited liability company located in Odense, Denmark. MiR is the leading maker of collaborative autonomous mobile robots for industrial applications. MiR is part of Teradyne's Industrial Automation segment.

The total purchase price of $197.8 million included $145.2 million of cash paid and $52.6 million of contingent consideration measured at fair value. The contingent consideration is payable in Euros upon the achievement of certain thresholds and targets for revenue and earnings before interest and taxes for periods from January 1, 2018 to December 31, 2018; January 1, 2018 to December 31, 2019; and January 1, 2018 to December 31, 2020. The contingent consideration related to revenue for the period from January 1, 2018 to December 31, 2018 in the amount of $30.8 million was paid in March 2019. The remaining maximum contingent consideration that could be paid is $84.1 million.

The valuation of the contingent consideration is dependent on the following assumptions: forecasted revenues, revenue volatility, earnings before interest and taxes, and discount rate. These assumptions were estimated based on a review of the historical and projected results.

The MiR acquisition was accounted for as a business combination and, accordingly, the results have been included in Teradyne's consolidated results of operations from the date of acquisition. MiR's products will help expand the Industrial Automation segment, which is a key component of Teradyne's growth strategy. The allocation of the total purchase price to MiR's net tangible liabilities and identifiable intangible assets was based on their estimated fair values as of the acquisition date. The excess of the purchase price over the identifiable intangible assets and net tangible liabilities in the amount of $136.0 million was allocated to goodwill, which is not deductible for tax purposes. MiR's results have been included in Teradyne's Industrial Automation segment from the date of acquisition.

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The following table represents the final allocation of the purchase price:

	Purchase Price Allocation (in thousands)
Goodwill	$ 135,976
Intangible assets	80,670
Tangible assets acquired and liabilities assumed:	
Current assets	6,039
Non-current assets	1,336
Accounts payable and current liabilities	(7,336)
Long-term deferred tax liabilities	(18,007)
Other long-term liabilities	(900)
Total purchase price	$ 197,778

Teradyne estimated the fair value of intangible assets using the income and cost approaches. Acquired intangible assets are amortized on a straight-line basis over their estimated useful lives. Components of these intangible assets and their estimated useful lives at the acquisition date are as follows:

	Fair Value (in thousands)	Estimated Useful Life (in years)
Developed technology	$ 58,900	7.0
Trademarks and tradenames	13,240	11.0
Customer relationships	8,500	2.5
Backlog	30	0.2
Total intangible assets	$ 80,670	7.2

The following unaudited pro forma information gives effect to the acquisition of MiR as if the acquisition occurred on January 1, 2018. The unaudited pro forma results are not necessarily indicative of what actually would have occurred had the acquisition been in effect for the periods presented:

	For the Three Months Ended July 1, 2018	For the Six Months Ended July 1, 2018
	(in thousands)	

Revenue	$ 528,238	$ 1,021,194
Net income	101,780	186,787
Net income per common share:		
Basic	$ 0.53	$ 0.97
Diluted	$ 0.52	$ 0.94

Pro forma results for the three and six months ended July 1, 2018 were adjusted to exclude $2.3 million and $2.9 million, respectively, of acquisition related costs, and $0.4 million of non-recurring expense related to fair value adjustment to acquisition-date inventory.

Energid Technologies Corporation

On February 26, 2018, Teradyne acquired all of the issued and outstanding shares of Energid Technologies Corporation ("Energid") for a total purchase price of approximately $27.6 million. Energid's technology enables and simplifies the programming of complex robotic motions used in a wide variety of end markets, ranging from heavy industry to healthcare, utilizing both traditional robots and collaborative robots. The Energid acquisition

was accounted for as a business combination and, accordingly, Energid's results have been included in Teradyne's Industrial Automation segment from the date of acquisition. As of the acquisition date, Teradyne's purchase price allocation was goodwill of $14.4 million which is deductible for tax purposes, acquired intangible assets of $12.3 million with an average estimated useful life of 7.7 years, and $1.0 million of net tangible assets. The acquisition was not material to Teradyne's condensed consolidated financial statements.

Investment in Other Company

On June 3, 2019, Teradyne invested $15.0 million in RealWear, Inc. ("RealWear"). RealWear, a private company, develops and sells advanced wearable technology including industrial, hands-free, head-mounted augmented reality devices that make the workplace safer and more productive. Teradyne's investment in RealWear aligns with its strategy of bringing the power of advanced automation to companies of all sizes to improve the productivity of their employees and the quality of their products and services. The investment was recorded at cost and is evaluated for impairment or an indication of changes in fair value resulting from observable price changes in orderly transactions for the identical or a similar investment of the same issuer on a quarterly basis. At June 30, 2019 the value of the investment was $15.0 million.

E. REVENUE

For the three and six months ended June 30, 2019, revenues recognized in accordance with ASC 606: "*Revenue from Contracts with Customers"* were $562.5 million and $1,054.9 million, respectively. For the three and six months ended June 30, 2019, Teradyne also recognized $1.7 million and $3.4 million, respectively, of revenues from leases of Teradyne systems, which are accounted for outside of ASC 606.

For the three and six months ended July 1, 2018, revenues recognized in accordance with ASC 606: "*Revenue from Contracts with Customers"* were $523.3 million and $1,006.5 million, respectively. For the three and six months ended July 1, 2018, Teradyne also recognized $3.6 million and $7.9 million, respectively, of revenues from leases of Teradyne systems, which are accounted for outside of ASC 606.

Disaggregation of Revenue

The following table provides information about disaggregated revenue by primary geographical market, major product line and timing of revenue recognition.

	For the Three Months Ended June 30, 2019										
	Semiconductor Test		System Test			Industrial Automation			Wireless Test	Corporate and Other	Consolidated
	System on a chip ("SOC")	Memory	Defense/ Aerospace	Storage Test	Production Board Test	Universal Robots	Mobile Industrial Robots	Energid			
	(in thousands)										
Americas											
Point in time	$ 7,426	$ 8,059	$ 17,225	$ 3,703	$ 1,341	$16,938	$ 2,783	$ —	$ 5,250	$ (89)	$ 62,636
Over time	8,175	724	6,850	—	792	255	—	787	676	—	18,259
Europe, Middle East and Africa											
Point in time	9,819	2,016	211	—	2,974	26,545	5,041	—	620	—	47,226
Over time	5,212	284	505	—	1,615	399	—	477	48	—	8,540
Asia Pacific											
Point in time	247,885	43,909	163	27,672	6,848	18,532	2,681	—	33,366	—	381,056
Over time	36,566	3,293	329	2,310	775	279	—	9	1,242	—	44,803
Lease Revenue	1,530	—	—	—	94	—	—	—	34	—	1,658
Total	$316,613	$58,285	$ 25,283	$33,685	$ 14,439	$62,948	$ 10,505	$1,273	$41,236	$ (89)	$ 564,178

	For the Three Months Ended July 1, 2018										
	Semiconductor Test		System Test			Industrial Automation			Wireless Test	Corporate and Other	Consolidated
	SOC	Memory	Defense/ Aerospace	Storage Test	Production Board Test	Universal Robots	Mobile Industrial Robots	Energid			
	(in thousands)										
Americas											
Point in time	$ 12,111	$ 2,827	$ 15,256	$ 5	$ 1,429	$16,053	$ 1,199	$ —	$ 4,716	$ (110)	$ 53,486
Over time	8,934	710	6,237	—	795	327	—	—	122	—	17,125
Europe, Middle East and Africa											
Point in time	10,227	847	447	—	4,849	26,616	2,000	—	26	—	45,012
Over time	5,689	254	539	—	1,713	526	—	—	257	—	8,978
Asia Pacific											
Point in time	218,352	59,633	385	31,824	3,741	13,895	1,310	—	27,663	—	356,803
Over time	34,951	2,285	258	1,428	744	131	—	—	2,103	—	41,900
Lease Revenue	3,268	—	—	—	32	—	—	—	325	—	3,625
Total	$293,532	$66,556	$ 23,122	$33,257	$ 13,303	$57,548	$ 4,509	$ —	$35,212	$ (110)	$ 526,929

	For the Six Months Ended June 30, 2019										
	Semiconductor Test		System Test			Industrial Automation			Wireless Test	Corporate and Other	Consolidated
	SOC	Memory	Defense/ Aerospace	Storage Test	Production Board Test	Universal Robots	Mobile Industrial Robots	Energid			
	(in thousands)										
Americas											
Point in time	$ 15,403	$ 16,110	$ 32,007	$ 5,295	$ 4,595	$ 32,235	$ 6,322	$ —	$ 7,340	$ (240)	$ 119,067
Over time	16,365	1,436	13,300	—	1,521	501	—	1,047	827	—	34,997
Europe, Middle East and Africa											
Point in time	20,851	2,168	250	—	8,038	52,448	8,883	—	1,356	—	93,994
Over time	10,493	563	974	—	3,169	815	—	766	93	—	16,873
Asia Pacific											
Point in time	467,698	79,415	426	44,279	10,483	32,709	4,408	—	57,995	—	697,413
Over time	75,479	6,573	1,093	4,364	1,696	507	—	221	2,601	—	92,534
Lease Revenue	3,197	—	—	—	137	—	—	—	65	—	3,399
Total	$609,486	$106,265	$ 48,050	$53,938	$ 29,639	$121,249	$ 19,613	$2,034	$70,277	$ (240)	$1,058,277

	For the Six Months Ended July 1, 2018										
	Semiconductor Test		System Test			Industrial Automation			Wireless Test	Corporate and Other	Consolidated
	SOC	Memory	Defense/ Aerospace	Storage Test	Production Board Test	Universal Robots	Mobile Industrial Robots	Energid			
	(in thousands)										
Americas											
Point in time	$ 21,711	$ 5,691	$ 26,853	$ 284	$ 3,189	$ 30,190	$ 1,199	$ —	$ 9,695	$ (332)	$ 98,480
Over time	17,517	1,406	12,425	—	1,552	652	—	—	233	—	33,785
Europe, Middle East and Africa											
Point in time	22,352	986	1,943	—	8,886	49,190	2,000	—	1,066	—	86,423
Over time	10,888	523	1,090	—	3,272	668	—	—	484	—	16,925
Asia Pacific											
Point in time	446,543	125,904	487	41,946	5,603	25,478	1,310	—	41,329	—	688,600
Over time	68,173	4,607	466	2,961	1,479	204	—	—	4,399	—	82,289
Lease Revenue	7,115	—	—	—	266	—	—	—	513	—	7,894
Total	$594,299	$139,117	$ 43,264	$45,191	$ 24,247	$106,382	$ 4,509	$ —	$57,719	$ (332)	$1,014,396

Contract Balances

During the three and six months ended June 30, 2019, Teradyne recognized $13.3 million and $33.4 million, respectively, that was previously included within the deferred revenue and customer advances balances. During the three and six months ended July 1, 2018, Teradyne recognized $24.7 million and $46.5 million, respectively, that was previously included within the deferred revenue and customer advances balances. This revenue primarily relates to extended warranties, training, application support, and post contract support. Each of these represents a distinct performance obligation. Teradyne expects to recognize 72% of the remaining performance obligation in the next 12 months, 22% in 1-3 years, and the remainder thereafter.

Accounts Receivable

Teradyne sells certain trade accounts receivables on a non-recourse basis to third-party financial institutions pursuant to factoring agreements. Teradyne accounts for these transactions as sales of receivables and presents cash proceeds as a cash provided by operating activities in the consolidated statements of cash flows. Total trade accounts receivable sold under the factoring agreements were $82.1 million and $8.9 million for the six months ended June 30, 2019 and July 1, 2018, respectively. Factoring fees for the sales of receivables were recorded in interest expense and were not material.

F. INVENTORIES

Inventories, net consisted of the following at June 30, 2019 and December 31, 2018:

	June 30, 2019	December 31, 2018
	(in thousands)	
Raw material	$ 96,824	$ 89,365
Work-in-process	31,676	31,014
Finished goods	35,961	33,162
	$164,461	$ 153,541

Inventory reserves at June 30, 2019 and December 31, 2018 were $102.6 million and $100.8 million, respectively.

G. 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's available-for-sale debt securities are classified as Level 2 and equity securities are classified as Level 1. Contingent consideration is classified as Level 3. 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.

During the three and six months ended June 30, 2019 and July 1, 2018, there were no transfers in or out of Level 1, Level 2, or Level 3 financial instruments.

Realized gains recorded in the three and six months ended June 30, 2019 were $0.1 million and $0.2 million, respectively. Realized losses recorded in the six months ended June 30, 2019 were $0.1 million.

Realized gains recorded in the three and six months ended July 1, 2018 were $0.1 million and $0.4 million, respectively. Realized losses recorded in the six months ended July 1, 2018 were $1.5 million. Realized gains are included in interest income and realized losses are included in interest expense.

Unrealized gains on equity securities recorded in the three and six months ended June 30, 2019 were $0.9 million and $3.7 million, respectively. Unrealized gains on equity securities recorded in the three and six months ended July 1, 2018 were $0.4 million. Unrealized gains on equity securities are included in interest income and unrealized losses are included in interest expense.

Unrealized gains and losses on available-for-sale debt securities are included in accumulated other comprehensive income (loss) on the balance sheet.

The cost of securities sold is based on the specific identification method.

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 June 30, 2019 and December 31, 2018.

	June 30, 2019			
	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	$ 235,370	$ —	$ —	$235,370
Cash equivalents	223,150	36,587	—	259,737
Available-for-sale securities:				
U.S. Treasury securities	—	190,322	—	190,322
Commercial paper	—	154,910	—	154,910
Corporate debt securities	—	94,431	—	94,431
Certificates of deposit and time deposits	—	19,723	—	19,723
U.S. government agency securities	—	9,838	—	9,838
Debt mutual funds	3,299	—	—	3,299
Non-U.S. government securities	—	388	—	388
Equity securities:				

Mutual funds	26,317	—	—	26,317
	$ 488,136	$ 506,199	$ —	$994,335
Derivative assets	—	34	—	34
Total	$ 488,136	$ 506,233	$ —	$994,369
Liabilities				
Contingent consideration	$ —	$ —	$ 26,847	$ 26,847
Derivative liabilities	—	324	—	324
Total	$ —	$ 324	$ 26,847	$ 27,171

Reported as follows:

	(Level 1)	(Level 2)	(Level 3)	Total
		(in thousands)		
Assets				
Cash and cash equivalents	$458,520	$ 36,587	$ —	$495,107
Marketable securities	—	400,227	—	400,227
Long-term marketable securities	29,616	69,385	—	99,001
Prepayments	—	34	—	34
Total	$488,136	$506,233	$ —	$994,369
Liabilities				
Other current liabilities	$ —	$ 324	$ —	$ 324
Contingent consideration	—	—	11,753	11,753
Long-term contingent consideration	—	—	15,094	15,094
Total	$ —	$ 324	$26,847	$ 27,171

	December 31, 2018			
	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	$ 312,512	$ —	$ —	$ 312,512
Cash equivalents	253,525	360,715	—	614,240
Available-for-sale securities:				
U.S. Treasury securities	—	109,721	—	109,721
Commercial paper	—	86,117	—	86,117
Corporate debt securities	—	40,020	—	40,020
U.S. government agency securities	—	9,611	—	9,611
Certificates of deposit and time deposits	—	7,604	—	7,604
Debt mutual funds	3,187	—	—	3,187
Non-U.S. government securities	—	376	—	376
Equity securities:				
Mutual funds	21,191	—	—	21,191
	$ 590,415	$ 614,164	$ —	$1,204,579
Derivative assets	—	79	—	79
Total	$ 590,415	$ 614,243	$ —	$1,204,658
Liabilities				
Contingent consideration	$ —	$ —	$ 70,543	$ 70,543
Derivative liabilities	—	514	—	514
Total	$ —	$ 514	$ 70,543	$ 71,057

Reported as follows:

	(Level 1)	(Level 2)	(Level 3)	Total
		(in thousands)		
Assets				
Cash and cash equivalents	$566,037	$360,715	$ —	$ 926,752
Marketable securities	—	190,096	—	190,096

Long-term marketable securities	24,378	63,353	—	87,731
Prepayments	—	79	—	79
Total	$590,415	$614,243	$ —	$1,204,658
Liabilities				
Other accrued liabilities	$ —	$ 514	$ —	$ 514
Contingent consideration	—	—	34,865	34,865
Long-term contingent consideration	—	—	35,678	35,678
Total	$ —	$ 514	$70,543	$ 71,057

Changes in the fair value of Level 3 contingent consideration for the three and six months ended June 30, 2019 and July 1, 2018 were as follows:

	For the Three Months Ended		For the Six Months Ended	
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
	(in thousands)			
Balance at beginning of period	$ 38,313	$ 15,581	$ 70,543	$ 45,102
Fair value adjustment (a)	(11,672)	(3,500)	(8,701)	(8,468)
Foreign currency impact	206	(2,566)	(405)	(2,566)
Payments (b)	—	—	(34,590)	(24,553)
Acquisition of MiR	—	51,399	—	51,399
Balance at end of period	$ 26,847	$ 60,914	$ 26,847	$ 60,914

(a) In the three and six months ended June 30, 2019, the fair value of contingent consideration for the earn-out in connection with the acquisition of MiR was decreased by $11.7 million and $8.7 million, respectively, primarily due to a decrease in the forecasted revenue. In the three and six months ended July 1, 2018, the fair value of contingent consideration for the earn-out in connection with the acquisition of Universal Robots A/S ("Universal Robots") was decreased by $3.5 million and $8.5 million, respectively, primarily due to a decrease in forecasted revenue.

(b) In the six months ended June 30, 2019, Teradyne paid $30.8 million and $3.8 million of contingent consideration for the earn-outs in connection with the acquisition of MiR and Universal Robots, respectively. In the six months ended July 1, 2018, Teradyne paid $24.6 million of contingent consideration for the earn-out in connection with the acquisition of Universal Robots.

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

Liability	June 30, 2019 Fair Value (in thousands)	Valuation Technique	Unobservable Inputs	Weighted Average
Contingent consideration (MiR)	$26,847	Monte Carlo Simulation	Revenue volatility	19.0%
			Discount rate	0.2%

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As of June 30, 2019, the significant unobservable inputs used in the Monte Carlo simulation to fair value the MiR contingent consideration include forecasted revenues, revenue volatility, earnings before interest and taxes, and discount rate. Increases or decreases in the inputs would result in a higher or lower fair value measurement. As of June 30, 2019, the maximum amount of contingent consideration that could be paid in connection with the acquisition of MiR is $84.1 million. The remaining earn-out periods end on December 31, 2019 and December 31, 2020.

The carrying amounts and fair values of Teradyne's financial instruments at June 30, 2019 and December 31, 2018 were as follows:

	June 30, 2019		December 31, 2018	
	Carrying Value	Fair Value	Carrying Value	Fair Value
	(in thousands)			
Assets				
Cash and cash equivalents	$ 495,107	$495,107	$ 926,752	$926,752
Marketable securities	499,228	499,228	277,827	277,827
Derivative assets	34	34	79	79
Liabilities				
Contingent consideration	26,847	26,847	70,543	70,543
Derivative liabilities	324	324	514	514
Convertible debt (1)	387,243	747,213	379,981	547,113

(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 table summarizes the composition of available-for-sale marketable securities at June 30, 2019:

June 30, 2019	
Available-for-Sale	Fair Market

	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Value of Investments with Unrealized Losses
			(in thousands)		
U.S. Treasury securities	$189,927	$ 668	$ (273)	$190,322	$ 18,195
Commercial paper	154,903	9	(2)	154,910	10,322
Corporate debt securities	91,553	3,035	(157)	94,431	4,581
Certificates of deposit and time deposits	19,717	6	—	19,723	2,232
U.S. government agency securities	9,829	15	(6)	9,838	2,947
Debt mutual funds	3,187	112	—	3,299	—
Non-U.S. government securities	388	—	—	388	—
	$469,504	$ 3,845	$ (438)	$472,911	$ 38,277

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Reported as follows:

	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
			(in thousands)		
Marketable securities	$399,852	$ 391	$ (16)	$ 400,227	$ 21,708
Long-term marketable securities	69,652	3,454	(422)	72,684	16,569
	$469,504	$ 3,845	$ (438)	$ 472,911	$ 38,277

The following table summarizes the composition of available-for-sale marketable securities at December 31, 2018:

	December 31, 2018				
	Available-for-Sale				
	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
			(in thousands)		
U.S. Treasury securities	$110,969	$ 112	$ (1,360)	$109,721	$ 75,040
Commercial paper	86,130	13	(26)	86,117	85,094
Corporate debt securities	41,133	432	(1,545)	40,020	24,767
U.S. government agency securities	9,646	1	(36)	9,611	7,077
Certificates of deposit and time deposits	7,604	—	—	7,604	—
Debt mutual funds	3,153	34	—	3,187	—
Non-U.S. government securities	376	—	—	376	—
	$259,011	$ 592	$ (2,967)	$256,636	$ 191,978

Reported as follows:

	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
			(in thousands)		
Marketable securities	$190,100	$ 88	$ (92)	$190,096	$ 140,262
Long-term marketable securities	68,911	504	(2,875)	66,540	51,716
	$259,011	$ 592	$ (2,967)	$256,636	$ 191,978

As of June 30, 2019, the fair market value of investments in available-for-sale securities with unrealized losses totaled $38.3 million. Of this value, $22.7 million had unrealized losses of $0.4 million for greater than one year and $15.6 million had unrealized losses of $0.1 million for less than one year.

As of December 31, 2018, the fair market value of investments with unrealized losses totaled $192.0 million. Of this value, $28.5 million had unrealized losses of $1.6 million greater than one year and $163.5 million had unrealized losses of $1.4 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 June 30, 2019 and December 31, 2018 were temporary.

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The contractual maturities of investments in available-for-sale securities held at June 30, 2019 were as follows:

	June 30, 2019	
	Cost	Fair Market Value
	(in thousands)	
Due within one year	$399,852	$ 400,227
Due after 1 year through 5 years	12,304	12,411
Due after 5 years through 10 years	14,101	14,156
Due after 10 years	40,060	42,818
Total	$466,317	$ 469,612

Contractual maturities of investments in available-for-sale securities held at June 30, 2019 exclude $3.3 million of debt mutual funds as they do not have a contractual maturity date.

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 June 30, 2019 and December 31, 2018 was $143.3 million and $163.1 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 as of June 30, 2019 and December 31, 2018:

	Balance Sheet Location	June 30, 2019	December 31, 2018
		(in thousands)	
Derivatives not designated as hedging instruments:			
Foreign exchange contracts – derivative assets	Prepayments	$ 34	$ 79
Foreign exchange contracts – derivative liabilities	Other current liabilities	(324)	(514)
Total derivatives		$ (290)	$ (435)

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The following table summarizes the effect of derivative instruments recognized in the statement of operations for the three and six months ended June 30, 2019 and July 1, 2018.

	Location of Losses (Gains) Recognized in Statement of Operations	For the Three Months Ended		For the Six Months Ended	
		June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
		(in thousands)			
Derivatives not designated as hedging instruments:					
Foreign exchange contracts	Other (income) expense, net	$ 239	$ 1,826	$ 4,173	$ 3,401

(1) The table does not reflect the corresponding gains and losses from the remeasurement of monetary assets and liabilities denominated in foreign currencies.
(2) For the three months ended June 30, 2019, net losses from the remeasurement of monetary assets and liabilities denominated in foreign currencies were $1.3 million. For the six months ended June 30, 2019, net gains from the remeasurement of monetary assets and liabilities denominated in foreign currencies were $1.9 million.
(3) For the three and six months ended July 1, 2018, net gains from the remeasurement of monetary assets and liabilities denominated in foreign currencies were $1.9 million and $2.5 million, respectively.

See Note I: "Debt" regarding derivatives related to the convertible senior notes.

H. LEASES

On January 1, 2019, Teradyne adopted ASC 842 using the modified retrospective approach. Under this method of adoption, the comparative information in the consolidated financial statements has not been revised and continues to be reported under the previously applicable lease accounting guidance (ASC 840). Adoption of ASC 842 resulted in recording ROU assets and lease liabilities of approximately $50.1 million and $54.3 million, respectively. The adoption of ASC 842 did not have a material impact on beginning retained earnings, the consolidated statement of operations, cash flows, or earnings per share.

Teradyne has facility and auto leases, which are accounted for as operating leases. Teradyne's facility leases are primarily used for administrative functions, research and development, manufacturing, and storage and distribution. Remaining lease terms range from less than one year to ten years.

Total lease expense for the three months ended June 30, 2019 was $8.9 million and included $2.6 million of variable lease costs and $0.8 million of costs related to short-term leases which are not recorded on the consolidated balance sheets. Total lease expense for the six months ended June 30, 2019 was $17.1 million and included $5.0 million of variable lease costs and $1.5 million of costs related to short-term leases which are not recorded on the consolidated balance sheets.

At June 30, 2019, the weighted average remaining lease term and weighted average discount rate for operating leases was 4.7 years and 5.2%, respectively.

Supplemental cash flow information related to leases was as follows:

	For the Three Months Ended June 30, 2019	For the Six Months Ended June 30, 2019
	(in thousands)	
Cash paid for amounts included in the measurement of lease liabilities included in operating cash flows:	$ 4,993	$ 10,052
Right-of-use assets obtained in exchange for new lease obligations	9,675	15,412

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Maturities of lease liabilities as of June 30, 2019 were as follows:

	Operating Lease
	(in thousands)
2019	$ 10,725
2020	19,177
2021	16,510
2022	12,226
2023	5,849
Thereafter	12,583
Total lease payments	77,070
Less imputed interest	(12,569)
Total lease liabilities	$ 64,501

As of December 31, 2018, future non-cancelable rent obligations as determined under ASC 840 were as follows:

	Operating Lease
	(in thousands)
2019	$ 19,570
2020	18,293
2021	13,578
2022	9,693
2023	5,449
Thereafter	9,472
Total lease payments	$ 76,055

I. DEBT

Convertible Senior Notes

On December 12, 2016, Teradyne completed a private offering of $460.0 million aggregate principal amount of 1.25% convertible senior unsecured notes (the "Notes") due December 15, 2023 and received net proceeds, after issuance costs, of approximately $450.8 million, $33.0 million of which was used to pay the net cost of the convertible note hedge transactions and $50.1 million of which was used to repurchase 2.0 million shares of Teradyne's common stock under its existing stock repurchase program from purchasers of the Notes in privately negotiated transactions effected through one of the initial purchasers or its affiliates conducted concurrently with the pricing of the Note offering. 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 semiannually 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, only 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 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. As of June 30, 2019, the conversion price was approximately $31.70 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 conversion price of the Notes of $31.70. The Note Hedge Transactions cover, subject to customary anti-dilution adjustments, approximately 14.5 million shares of Teradyne's common 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 14.5 million shares of common stock. As of June 30, 2019, the strike price of the warrants was approximately $39.78 per share. The strike price is subject to adjustment under certain circumstances. 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.

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. The net cost of the Note Hedge Transactions, after being partially offset by the proceeds from the sale of the warrants, was approximately $33.0 million.

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 considered the guidance of ASC 815-40, *"Derivatives and Hedging—Contracts in Entity's Own Equity,"* and concluded that the convertible note hedge is both indexed to Teradyne's common stock and should be classified in stockholders' equity in its statements of financial position. The convertible note hedge is considered indexed to Teradyne's common 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 common stock.

Teradyne assessed whether the convertible note hedge should be classified as equity under ASC 815-40. In the Note Hedge Transactions contract the settlement terms permit net cash settlement or net share settlement, at the option of Teradyne. Therefore, the criteria as set forth in ASC 815-40 were evaluated by Teradyne. In reviewing the criteria, Teradyne noted the following: (1) the convertible note hedge does not require Teradyne to issue shares; (2) there is no requirement to net cash settle the convertible note hedge for failure to make timely filings with the SEC; (3) in the case of termination, the convertible note hedge is settled in the same

consideration as the holders of the underlying stock; (4) the counterparty does not have rights that rank higher than those of a shareholder of the stock underlying the convertible note hedge; and (5) there is no requirement to post collateral. Based on its analysis of those criteria, Teradyne concluded that the convertible note hedge should be recorded in equity and no further adjustment should be made in future periods to adjust the value of the convertible note hedge.

Teradyne analyzed the Warrant Transactions under ASC 815-40, *"Derivatives and Hedging—Contracts in Entity's Own Equity,"* and other relevant literature, and determined that it met the criteria for classification as an equity transaction and is considered indexed to Teradyne's common stock. As a result, Teradyne recorded the proceeds from the warrants as an increase to additional paid-in capital. Teradyne does not recognize subsequent changes in fair value of the warrants in its financial statements.

The provisions of ASC 470-20, "*Debt with Conversion and Other Options,*" are applicable to the Notes. ASC 470-20 requires Teradyne to separately account for the liability (debt) and equity (conversion feature) components of the Notes in a manner that reflects Teradyne's nonconvertible debt borrowing rate at the date of issuance when interest cost is recognized in subsequent periods. Teradyne allocated $100.8 million of the $460.0 million principal amount of the Notes to the equity component, which represents a discount to the debt and will be amortized to interest expense using the effective interest method through December 2023. Accordingly, Teradyne's effective annual interest rate on the Notes will be approximately 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 using the effective interest method over the seven year term of the Notes. As of June 30, 2019, debt issuance costs were approximately $4.8 million.

The below tables represent the key components of Teradyne's convertible senior notes:

	June 30, 2019	December 31, 2018
	(in thousands)	
Debt Principal	$460,000	$ 460,000
Unamortized discount	72,757	80,019
Net Carrying amount of convertible debt	$387,243	$ 379,981

	For the Three Months Ended		For the Six Months Ended	
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
	(in thousands)			
Contractual interest expense on the coupon	$ 1,438	$ 1,438	$ 2,875	$ 2,875
Amortization of the discount component recognized as interest expense	3,653	3,477	7,262	6,911
Total interest expense on the convertible debt	$ 5,091	$ 4,915	$10,137	$ 9,786

As of June 30, 2019, the remaining unamortized discount was $72.8 million, which will be amortized over 4.5 years using the effective interest rate method. The carrying amount of the equity component was $100.8 million. As of June 30, 2019, the if-converted value of the Notes was $695.2 million.

Revolving Credit Facility

On June 27, 2019, Teradyne terminated its credit agreement, which Teradyne entered into with Barclays Bank PLC, on April 27, 2015. The terminated credit agreement provided for a five-year, senior secured revolving credit facility of up to $350 million.

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J. PREPAYMENTS

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

	June 30, 2019	December 31, 2018
	(in thousands)	
Contract manufacturer and supplier prepayments	$139,232	$ 131,642
Prepaid taxes	10,810	9,646
Prepaid maintenance and other services	9,935	8,487
Other prepayments	16,086	12,744
Total prepayments	$176,063	$ 162,519

K. 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:

	June 30, 2019	December 31, 2018
	(in thousands)	
Maintenance and training	$ 60,331	$ 58,362
Extended warranty	28,716	27,422
Customer advances, undelivered performance obligations and other	38,155	24,677
Total deferred revenue and customer advances	$127,202	$ 110,461

L. 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	
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
	(in thousands)			
Balance at beginning of period	$ 7,752	$ 7,548	$ 7,909	$ 8,200
Acquisition	—	41	14	41

Accruals for warranties issued during the period	2,295	3,348	5,360	6,411
Accruals related to pre-existing warranties	694	(34)	2,024	(173)
Settlements made during the period	(2,608)	(3,767)	(7,174)	(7,343)
Balance at end of period	$ 8,133	$ 7,136	$ 8,133	$ 7,136

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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 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	
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
	(in thousands)			
Balance at beginning of period	$27,242	$24,590	$ 27,422	$ 24,438
Deferral of new extended warranty revenue	5,476	6,701	11,296	11,839
Recognition of extended warranty deferred revenue	(4,002)	(5,320)	(10,002)	(10,306)
Balance at end of period	$28,716	$25,971	$ 28,716	$ 25,971

M. 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").

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 earlier of (a) the first anniversary of the grant date or (b) the date of the following year's Annual Meeting of Shareholders. 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.

Performance-based restricted stock units ("PRSUs") granted to Teradyne's executive officers have a performance metric based on relative total shareholder return ("TSR"). 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 capped at four times the grant date value. The TSR 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 shorter of the three-year service period or the period from the grant to the date described in the retirement provisions below. Compensation expense for employees meeting the retirement provisions prior to the grant date will be recognized in full on the date of the grant. 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.

During the six months ended June 30, 2019 and July 1, 2018, 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 shorter of the three year service period or the period from the grant date to the date described in the retirement provisions below. Compensation expense for employees meeting the retirement provisions prior to the grant date

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will be recognized in full on the date of grant. 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.

If a PRSU 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 June 30, 2019 and July 1, 2018, Teradyne granted 0.1 million and 0.1 million TSR PRSUs, respectively, with a grant date fair value of $51.51 and $54.85, respectively. The fair value was estimated using the Monte Carlo simulation model with the following assumptions:

	For the Six Months Ended	
	June 30, 2019	July 1, 2018
Risk-free interest rate	2.6%	2.2%
Teradyne volatility-historical	31.9%	26.8%
NYSE Composite Index volatility-historical	11.9%	12.4%
Dividend yield	1.0%	0.8%

Expected volatility was based on the historical volatility of Teradyne's stock and the NYSE Composite Index for each of the 2019 and 2018 grants 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 each of the grants. Dividend yield was based upon an estimated annual dividend amount of $0.36 per share for 2019 grants and 2018 grants, divided by Teradyne's stock price on the grant date of $37.95 for 2019 grants and $47.70 for the 2018 grant.

During the six months ended June 30, 2019 and July 1, 2018, Teradyne granted 0.1 million and 0.1 million, respectively, of PBIT PRSUs with a grant date fair value of $36.88 and $46.62, respectively.

During the six months ended June 30, 2019, Teradyne granted 0.7 million of service-based restricted stock unit awards to employees at a weighted average grant date fair value of $36.10, 0.1 million of service-based restricted stock unit awards to non-employee directors at a weighted average grant date fair value of $48.03 and 0.1 million of service-based stock options to executive officers at a weighted average grant date fair value of $10.61.

During the six months ended July 1, 2018, Teradyne granted 0.6 million of service-based restricted stock unit awards to employees at a weighted average grant date fair value of $46.38, 0.1 million of service-based restricted stock unit awards to non-employee directors at a weighted average grant date fair value of $35.81, and 0.1 million of service-based stock options to executive officers at a weighted average grant date fair value of $12.17.

Restricted stock unit awards granted to employees vest in equal annual installments over four years. 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.

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

	For the Six Months Ended	
	June 30, 2019	July 1, 2018
Expected life (years)	5.0	5.0
Risk-free interest rate	2.5%	2.4%
Volatility-historical	30.1%	26.4%
Dividend yield	1.0%	0.8%

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 $0.36 per share divided by Teradyne's stock price on the grant date of $37.95 for 2019 grants and $47.70 for the 2018 grant.

N. ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)

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

	Foreign Currency Translation Adjustment	Unrealized Gains (Losses) on Marketable Securities	Retirement Plans Prior Service Credit	Total
		(in thousands)		
Six Months Ended June 30, 2019				
Balance at December 31, 2018, net of tax of $0, $(521), $(1,081), respectively	$ (12,523)	$ (1,845)	$ 1,328	$(13,040)
Other comprehensive income before reclassifications, net of tax of $0, $1,256, $0, respectively	983	4,637	—	5,620
Amounts reclassified from accumulated other comprehensive income, net of tax of $0, $(26), $(21), respectively	—	(97)	(74)	(171)

Net current period other comprehensive income (loss), net of tax of $0, $1,230, $(21), respectively	983	4,540	(74)	5,449
Balance at June 30, 2019, net of tax of $0, $709, $(1,102), respectively	$ (11,540)	$ 2,695	$ 1,254	$ (7,591)

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	Foreign Currency Translation Adjustments	Unrealized Gains (Losses) on Marketable Securities	Retirement Plans Prior Service Credit	Total
		(in thousands)		
Six Months Ended July 1, 2018				
Balance at December 31, 2017, net of tax of $0, $1,815, $(932), respectively	$ 15,919	$ 1,362	$ 1,495	$ 18,776
Other comprehensive income (loss) before reclassifications, net of tax of $0, $(774), $0, respectively	(18,781)	(2,489)	—	(21,270)
Amounts reclassified from accumulated other comprehensive income, net of tax of $0, $11, $(35), respectively	—	1,469	(123)	1,346
Net current period other comprehensive income (loss), net of tax of $0, $(733), $(35), respectively	(18,781)	(1,020)	(123)	(19,924)
Reclassification of income tax effects from the Tax Reform Act, net of tax of $0, $(691), $(78), respectively (a)	—	691	78	769
Reclassification of unrealized gains on equity securities, net of tax of $0, $(902), $0, respectively (b)	—	(3,125)	—	(3,125)
Balance as July 1, 2018, net of tax of $0, $(511), $(1,045), respectively	$ (2,862)	$ (2,092)	$ 1,450	$ (3,504)

(a) In the six months ended July 1, 2018, Teradyne early adopted the ASU 2018-02, *"Income Statement—Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income."* As a result, the stranded tax effects resulting from the Tax Reform Act enacted in December 2017 were reclassified from accumulated other comprehensive income to retained earnings.

(b) In the six months ended July 1, 2018, Teradyne adopted the ASU 2016-01, "*Financial Instruments—Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities."*

Reclassifications out of accumulated other comprehensive income (loss) to the statement of operations for the three and six months ended June 30, 2019 and July 1, 2018 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
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018	
		(in thousands)			
Available-for-sale marketable securities:					
Unrealized gains (losses), net of tax of $6, $68, $26, $(11), respectively	$ 27	$ 199	$ 97	$(1,469)	Interest income (expense)
Defined benefit pension and postretirement plans:					
Amortization of prior service benefit, net of tax of $11, $18, $21, $35 respectively	37	61	74	123	(a)
Total reclassifications, net of tax of $17, $86, $47, $24, respectively	$ 64	$ 260	$ 171	$(1,346)	Net income

(a) The amortization of prior service benefit is included in the computation of net periodic pension cost and postretirement benefit. See Note R: "Retirement Plans."

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O. 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.

The changes in the carrying amount of goodwill by reportable segments for the six months ended June 30, 2019, were as follows:

	Industrial Automation	System Test	Wireless Test	Semiconductor Test	Total

			(in thousands)		
Balance at December 31, 2018					
Goodwill	$ 363,358	$ 158,699	$ 361,819	$ 260,540	$1,144,416
Accumulated impairment losses	—	(148,183)	(353,843)	(260,540)	(762,566)
	363,358	10,516	7,976	—	381,850
Lemsys acquisition	—	—	—	1,428	1,428
Foreign currency translation adjustment	626	—	—	32	658
Balance at June 30, 2019					
Goodwill	363,984	158,699	361,819	262,000	1,146,502
Accumulated impairment losses	—	(148,183)	(353,843)	(260,540)	(762,566)
	$ 363,984	$ 10,516	$ 7,976	$ 1,460	$ 383,936

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 are no longer appropriate.

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

	June 30, 2019			
	Gross Carrying Amount (1)(2)	Accumulated Amortization (2)	Foreign Currency Translation Adjustment	Net Carrying Amount
		(in thousands)		
Developed technology	$ 337,198	$ (265,951)	$ (4,035)	$ 67,212
Customer relationships	100,313	(87,496)	(285)	12,532
Tradenames and trademarks	64,670	(34,131)	(789)	29,750
Total intangible assets	$ 502,181	$ (387,578)	$ (5,109)	$109,494

	December 31, 2018			
	Gross Carrying Amount	Accumulated Amortization	Foreign Currency Translation Adjustment	Net Carrying Amount
		(in thousands)		
Developed technology	$336,308	$ (252,080)	$ (4,079)	$ 80,149
Customer relationships	97,153	(83,448)	(340)	13,365
Tradenames and trademarks	64,420	(31,653)	(799)	31,968
Non-compete agreement	320	(320)	—	—
Backlog	30	(30)	—	—
Total intangible assets	$498,231	$ (367,531)	$ (5,218)	$125,482

(1) Includes $4.6 million of intangible assets from Lemsys acquisition.
(2) $0.7 million of amortizable intangible assets became fully amortized and have been eliminated from the gross carrying amount and accumulated amortization.

Aggregate intangible asset amortization expense was $10.1 million and $20.7 million, respectively, for the three and six months ended June 30, 2019 and $9.8 million and $17.5 million, respectively, for the three and six months ended July 1, 2018.

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

Year	Amortization Expense
	(in thousands)
2019 (remainder)	18,745
2020	25,037
2021	14,778
2022	13,885
2023	13,410
Thereafter	23,639

P. NET INCOME PER COMMON SHARE

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

	For the Three Months Ended	For the Six Months Ended

	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
	(in thousands, except per share amounts)			
Net income for basic and diluted net income per share	$ 97,397	$101,037	$206,535	$188,010
Weighted average common shares-basic	171,241	190,730	172,387	192,992
Effect of dilutive potential common shares:				
Incremental shares from assumed conversion of convertible notes (1)	4,364	2,643	3,275	3,520
Convertible note hedge warrant shares (2)	1,778	—	889	915
Restricted stock units	1,002	1,219	1,012	1,444
Stock options	183	274	202	298
Employee stock purchase plan	22	43	16	28
Dilutive potential common shares	7,349	4,179	5,394	6,205
Weighted average common shares-diluted	178,590	194,909	177,781	199,197
Net income per common share-basic	$ 0.57	$ 0.53	$ 1.20	$ 0.97
Net income per common share-diluted	$ 0.55	$ 0.52	$ 1.16	$ 0.94

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(1) Incremental shares from assumed conversion of the convertible notes were calculated using the difference between the average Teradyne stock price for the period and the conversion price of $31.70, multiplied by 14.5 million shares. The result of this calculation, representing the total intrinsic value of the convertible debt, was divided by the average Teradyne stock price for the period.

(2) Convertible note hedge warrant shares were calculated using the difference between the average Teradyne stock price for the period and the warrant price of $39.78, multiplied by 14.5 million shares. The result of this calculation, representing the total intrinsic value of the warrant, was divided by the average Teradyne stock price for the period.

The computation of diluted net income per common share for the three and six months ended June 30, 2019 excludes the effect of the potential vesting of 0.2 million and 0.4 million of stock options, respectively 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 1, 2018 excludes the effect of the potential vesting of 0.6 million and 0.5 million shares, respectively of restricted stock units because the effect would have been anti-dilutive.

Q. RESTRUCTURING AND OTHER

During the three months ended June 30, 2019, Teradyne recorded an $11.7 million credit for the decrease in the fair value of the MiR contingent consideration liability, partially offset by $0.8 million recorded for severance charges primarily in Semiconductor Test and $0.5 million of acquisition related compensation and expenses.

During the three months ended July 1, 2018, Teradyne recorded a $2.5 million charge for acquisition related expenses, and $2.4 million for employee severance charges, primarily in Semiconductor Test, partially offset by a $3.5 million credit for the decrease in the fair value of the Universal Robots.

During the six months ended June 30, 2019, Teradyne recorded an $8.7 million credit for the decrease in the fair value of the MiR contingent consideration liability, partially offset by $1.8 million of acquisition related compensation and expenses and $1.6 million recorded for severance charges primarily in Semiconductor Test.

During the six months ended July 1, 2018, Teradyne recorded $6.3 million for severance charges, primarily in Semiconductor Test and Industrial Automation, $3.3 million for acquisition related expenses, partially offset by an $8.5 million credit for the decrease in the fair value of the Universal Robots contingent consideration liability.

R. RETIREMENT PLANS

ASC 715, *"Compensation—Retirement Benefits"* requires an employer with a 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 Plans

Teradyne has defined benefit pension plans covering a portion of domestic employees and employees of certain non-U.S. subsidiaries. Benefits under these plans are based on employees' years of service and compensation. Teradyne's funding policy is to make contributions to these plans in accordance with local laws and to the extent that such contributions are tax deductible. The assets of the U.S. qualified pension plan consist primarily of fixed income and equity securities. In addition, Teradyne has unfunded qualified foreign plans as well as 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").

In the six months ended June 30, 2019, Teradyne contributed $1.3 million to the U.S. supplemental executive defined benefit pension plan and $0.4 million to certain qualified pension plans for non-U.S. subsidiaries.

For the three and six months ended June 30, 2019 and July 1, 2018, Teradyne's net periodic pension cost was comprised of the following:

	For the Three Months Ended			
	June 30, 2019		July 1, 2018	
	United States	Foreign	United States	Foreign
	(in thousands)			
Service cost	$ 399	$ 192	$ 545	$ 200
Interest cost	1,799	176	2,430	175
Expected return on plan assets	(1,510)	(7)	(2,550)	(5)
Amortization of prior service cost	—	—	14	—
Net actuarial loss (gain)	252	—	(189)	—
Settlement loss	—	—	78	—
Total net periodic pension cost	$ 940	$ 361	$ 328	$ 370

	For the Six Months Ended			
	June 30, 2019		July 1, 2018	
	United States	Foreign	United States	Foreign
	(in thousands)			
Service cost	$ 804	$ 381	$ 1,116	$ 426
Interest cost	3,595	349	5,427	372
Expected return on plan assets	(3,021)	(14)	(5,919)	(10)
Amortization of prior service cost	—	—	29	—
Net actuarial loss (gain)	252	—	(189)	—
Settlement loss	—	—	78	—
Total net periodic pension cost	$ 1,630	$ 716	$ 542	$ 788

Postretirement Benefit Plan

In addition to receiving pension benefits, Teradyne employees in the United States 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 June 30, 2019 and July 1, 2018, Teradyne's net periodic postretirement benefit cost was comprised of the following:

	For the Three Months Ended		For the Six Months Ended	
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
	(in thousands)			
Service cost	$ 11	$ 10	$ 20	$ 19
Interest cost	88	48	173	98
Amortization of prior service credit	(48)	(93)	(95)	(187)
Net actuarial loss	196	40	196	40
Special termination benefits	—	1,192	—	2,818
Total net periodic postretirement benefit cost	$ 247	$ 1,197	$ 294	$ 2,788

S. COMMITMENTS AND CONTINGENCIES

Purchase Commitments

As of June 30, 2019, Teradyne had entered into purchase commitments for certain components and materials. The purchase commitments covered by the agreements aggregate to approximately $306.9 million, of which $300.7 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.

T. INCOME TAXES

A reconciliation of the United States federal statutory corporate tax rate to Teradyne's effective tax rate was as follows:

	For the Three Months Ended		For the Six Months Ended	
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
US statutory federal tax rate	21.0%	21.0%	21.0%	21.0%
Discrete expense related to U.S. transition tax	11.2%	0.0%	6.5%	0.0%
International provisions of the U.S. Tax Cuts and Jobs Act of 2017	0.8%	(1.4%)	0.8%	(1.4%)
Discrete benefit related to equity compensation	(0.5%)	(0.1%)	(2.0%)	(3.5%)
Foreign taxes	(4.9%)	(3.4%)	(4.9%)	(3.4%)
Tax credits	(2.5%)	(2.1%)	(2.5%)	(2.1%)
Discrete benefit related to release of reserves for uncertain tax positions	(0.1%)	0.0%	(12.9%)	0.0%
Other, net	0.8%	1.8%	2.3%	2.3%
Effective tax rate	25.8%	15.8%	8.3%	12.9%

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 June 30, 2019, Teradyne believes that it will ultimately realize the deferred tax assets recorded on the condensed consolidated balance sheet. 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 June 30, 2019 and December 31, 2018, Teradyne had $13.4 million and $43.4 million, respectively, of reserves for uncertain tax positions. The $30.0 million net decrease in reserves for uncertain tax positions is primarily composed of reductions in uncertain tax positions amounting to $22.4 million related to transfer pricing and $7.3 million associated with U.S. research and development tax credits. These reductions resulted from the conclusion of the U.S. Federal income tax audit for the year ended December 31, 2015.

As of June 30, 2019, Teradyne does not anticipate a material change in the balance of unrecognized tax benefits during the next twelve months.

On July 27, 2015, in Altera Corp. v. Commissioner ("Altera"), the U.S. Tax Court issued an opinion invalidating the regulations relating to the treatment of stock-based compensation expense in an intercompany

cost-sharing arrangement. A final decision was issued by the Tax Court in December 2015. The IRS appealed the decision in June 2016. On July 24, 2018, the Ninth Circuit Federal Court issued a decision that was subsequently withdrawn and a reconstituted panel has conferred on the appeal. On June 7, 2019, the Ninth Circuit Federal Court upheld the cost-sharing regulations. Due to the uncertainty surrounding the status of the current regulations, questions related to the scope of potential benefits or obligations, the outcome of the appeals process, and questions regarding jurisdiction, Teradyne has not established any income tax reserves as of June 30, 2019 related to Altera. Teradyne estimates that including stock-based compensation in Teradyne's intercompany cost-sharing arrangement could result in a potential tax reserve of $5 million to $11 million. Teradyne will continue to monitor ongoing developments and potential impacts to our consolidated financial statements.

Teradyne recognizes interest and penalties related to income tax matters in income tax expense. As of June 30, 2019 and December 31, 2018, $0.4 million and $0.3 million, respectively, of interest and penalties were accrued for uncertain tax positions. For the six months ended June 30, 2019 and July 1, 2018, expense of $0.1 million and $0.1 million, respectively, 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 June 30, 2019 was $7.0 million, or $0.04 per diluted share. The tax savings due to the tax holiday for the six months ended July 1, 2018 was $4.8 million, or $0.02 per diluted share. The tax holiday is scheduled to expire on December 31, 2020.

U. SEGMENT INFORMATION

Teradyne has four reportable segments (Semiconductor Test, System Test, Industrial Automation and Wireless Test). Each of the Semiconductor Test, System Test, and Wireless Test segments is also an individual operating segment. The Industrial Automation reportable segment consists of operating segments with discrete financial information, which have been combined into one reportable segment as they share similar economic characteristics, types of products, production processes, distribution channels, and currency risks. The Semiconductor Test segment includes operations related to the design, manufacturing and marketing of semiconductor test products and services. 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 Industrial Automation segment includes operations related to the design, manufacturing and marketing of collaborative robotic arms, autonomous mobile robots and advanced robotic control software. The Wireless Test segment includes operations related to the design, manufacturing and marketing of wireless test products and services.

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, 2018, and Note B: "Accounting Policies" in this filing for any changes in the three and six months ended June 30, 2019.

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Segment information for the three and six months ended June 30, 2019 and July 1, 2018 is as follows:

	Semiconductor Test	Industrial Automation	System Test	Wireless Test	Corporate and Other	Consolidated
			(in thousands)			
Three Months Ended June 30, 2019						
Revenues	$ 374,898	$ 74,726	$ 73,407	$41,236	$ (89)	$ 564,178
Income (loss) before income taxes (1)(2)	91,355	(3,730)	23,535	10,930	9,087	131,177
Total assets (3)	745,073	601,676	123,460	93,232	1,108,073	2,671,514
Three Months Ended July 1, 2018						
Revenues	$ 360,088	$ 62,057	$ 69,682	$35,212	$ (110)	$ 526,929
Income (loss) before income taxes (1)(2)	91,159	(2,922)	20,352	10,308	1,115	120,012
Total assets (3)	765,484	597,293	107,199	77,638	1,384,106	2,931,720
Six Months Ended June 30, 2019						
Revenues	$ 715,751	$ 140,862	$131,627	$70,277	$ (240)	$1,058,277
Income (loss) before income taxes (1)(2)	174,404	(9,025)	38,875	14,558	6,344	225,156
Total assets (3)	745,073	601,676	123,460	93,232	1,108,073	2,671,514
Six Months Ended July 1, 2018						
Revenues	$ 733,416	$ 110,891	$112,702	$57,719	$ (332)	$1,014,396
Income (loss) before income taxes (1)(2)	179,238	(2,138)	26,240	10,772	1,719	215,831
Total assets (3)	765,484	597,293	107,199	77,638	1,384,106	2,931,720

(1) Included in Corporate and Other are: contingent consideration adjustments, severance charges, interest income, interest expense, net foreign exchange gains (losses), intercompany eliminations, acquisition related charges, and pension and postretirement plans actuarial losses.

(2) Included in the income (loss) before income taxes for each of the segments are charges and credits related to restructuring and other and inventory charges.

(3) Total business assets are directly 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 in the following line items in the statements of operations:

	For the Three Months Ended		For the Six Months Ended	
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
		(in thousands)		
Cost of revenues—inventory charge	$ 2,278	$ 1,613	$ 3,452	$ 3,779
Restructuring and other—employee severance	357	2,179	924	5,940

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

	For the Three Months Ended		For the Six Months Ended	
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
		(in thousands)		
Restructuring and other—acquisition related expenses and compensation	$ 434	$ —	$ 1,695	$ —
Restructuring and other—employee severance	202	218	297	338
Cost of revenues—inventory charge	—	—	416	—

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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	
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
		(in thousands)		
Cost of revenues—inventory charge	$ 295	$ 256	$ 763	$ 576

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	
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
		(in thousands)		
Cost of revenues—inventory charge	$ 829	$ 627	$ 1,168	$ 1,463

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

	For the Three Months Ended		For the Six Months Ended	
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
	(in thousands)			
Restructuring and other—MiR contingent consideration adjustment	$ (11,671)	$ —	$(8,668)	$ —
Restructuring and other—Universal Robots contingent consideration adjustment	—	(3,500)	—	(8,468)
Restructuring and other—acquisition related expenses and compensation	—	2,544	—	3,318

V. SHAREHOLDERS' EQUITY

Stock Repurchase Program

In January 2018, Teradyne's Board of Directors cancelled the December 2016 stock repurchase program and authorized a new stock repurchase program for up to $1.5 billion of common stock. Teradyne intends to repurchase $500 million in 2019.

During the six months ended June 30, 2019, Teradyne repurchased 6.5 million shares of common stock for $247.2 million at an average price of $38.20 per share. The cumulative repurchases under the $1.5 billion stock repurchase program as of June 30, 2019 totaled 28.1 million shares of common stock for $1.1 billion at an average price per share of $38.09.

During the six months ended July 1, 2018, Teradyne repurchased 8.8 million shares of common stock for $360.8 million at an average price of $40.82 per share.

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

Dividend

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

In January 2019 and May 2019, Teradyne's Board of Directors declared a quarterly cash dividend of $0.09 per share. Dividend payments for the three and six months ended June 30, 2019 were $15.4 million and $31.0 million, respectively.

In January 2018 and May 2018, Teradyne's Board of Directors declared a quarterly cash dividend of $0.09 per share. Dividend payments for the three and six months ended July 1, 2018 were $17.1 million and $34.7 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.

W. SUBSEQUENT EVENTS

Gregory Beecher retired as Vice President and Senior Advisor of Teradyne effective July 17, 2019 (the "Retirement Date"). As previously announced, Sanjay Mehta succeeded Mr. Beecher as Teradyne's Chief Financial Officer effective April 25, 2019. In connection with the retirement, Teradyne entered into an agreement on July 17, 2019 with Mr. Beecher (the "Retirement Agreement"). In the Retirement Agreement, Mr. Beecher agreed to be bound by non-competition and non-solicitation restrictions through January 31, 2023 (the "Non-Competition Period"). The Retirement Agreement also includes additional, standard terms and conditions relating to Mr. Beecher's separation from Teradyne.

Under the Retirement Agreement, Mr. Beecher's unvested time-based restricted stock units and stock options granted prior to 2019 will continue to vest in accordance with their terms; unvested time-based restricted stock units and stock options granted in 2019 prior to the Retirement Date will continue to vest during the Non-Competition Period in a pro-rated amount based on the number of days that Mr. Beecher was employed during 2019; unvested, performance-based restricted stock units awarded prior to 2019 will continue to vest in accordance with their terms; unvested, performance-based restricted stock units awarded in 2019 will vest on the date the amount of shares underlying the performance-based restricted stock units are determined in a pro-rated amount of shares based on the number of days that Mr. Beecher was employed during the 365 calendar day period following the grant date; vested options or options that vest during the Non-Competition Period may be exercised for the remainder of the applicable option term.

Teradyne will record a stock based compensation expense of approximately $2.5 million in the third quarter of 2019 related to the Retirement Agreement.

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, 2018. 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 robotic arms, autonomous mobile robots and advanced robotic control software used by global manufacturing and light industrial customers to improve quality, increase manufacturing and material handling efficiency and decrease manufacturing costs. Our automatic test equipment and industrial automation products and services include:

- semiconductor test ("Semiconductor Test") systems;
- industrial automation ("Industrial Automation") products;
- 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"); 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, autonomous mobile robots and wireless test systems.

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. Two customers drive 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.

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, electronics and industrial automation industries. Historically, these demand fluctuations have resulted in significant variations in our results of operations. In the first half of 2019, the revenue growth of our industrial automation business was below our forecast. We expect 2019 full year revenue growth of our industrial automation business to be under the low end of our long term range of 30% to 40%.

On February 26, 2018, we acquired Energid Technologies Corporation ("Energid") for a total purchase price of approximately $27.6 million. Energid's technology enables and simplifies the programming of complex robotic motions used in a wide variety of end markets, ranging from heavy industry to healthcare, utilizing both traditional robots and collaborative robots.

On April 25, 2018, we acquired Mobile Industrial Robots ApS ("MiR"), a Danish limited liability company. MiR is the leading maker of collaborative autonomous mobile robots for industrial applications. The total purchase price was approximately $197.8 million, which included cash paid of approximately $145.2 million and $52.6 million in fair value of contingent consideration payable upon achievement of certain thresholds and targets for revenue and earnings before interest and taxes through 2020. Contingent consideration for 2018 was $30.8 million and was paid in March 2019. The maximum payment for the remaining MiR contingent consideration that could be paid is $84.1 million.

MiR and Energid are included in our Industrial Automation segment.

On January 30, 2019, we acquired all of the issued and outstanding shares of Lemsys SA ("Lemsys") for a total purchase price of approximately $9.1 million. Lemsys strengthens our position in the electrification trends of vehicles, solar, wind, and industrial applications. Lemsys is included in our Semiconductor Test segment.

On June 3, 2019, we invested $15 million in RealWear, Inc. ("RealWear"). RealWear, a private company, develops and sells advanced wearable technology including industrial, hands-free, head-mounted augmented reality devices that make the workplace safer and more productive. Our investment in RealWear aligns with our strategy of bringing the power of advanced automation to companies of all sizes to improve the productivity of their employees and the quality of their products and services.

We believe our recent acquisitions and investments have 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.

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 and six months ended June 30, 2019 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, 2018, except as noted below.

Investment in Other Company

We hold an investment in a private company that develops and sells advanced wearable technology. We do not have the ability to exert significant influence over the company. The investment was recorded at cost and is evaluated for impairment or an indication of changes in fair value resulting from observable price changes in orderly transactions for the identical or a similar investment of the same issuer on a quarterly basis. See Note D: "Acquisitions and Investment in Other Company."

Leases

In February 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2016-02, *"Leases (Topic 842)"* ("Topic 842"), which requires a lessee to record a right-of-use ("ROU") asset and a lease liability on the balance sheet for operating leases with terms longer than twelve months. We adopted this standard and the related amendments (collectively "ASC 842") on January 1, 2019 and utilized the modified retrospective approach provided by ASU 2018-11, *"Leases (Topic 842): Targeted Improvements,"* that allowed for a cumulative effect adjustment in the period of adoption. Under this method of adoption, the comparative information in the consolidated financial statements has not been revised and continues to be reported under the previously applicable lease accounting guidance (ASC 840). We also utilized the package of practical expedients permitted under the transition guidance which included the carry-forward of historical lease classification. Adoption of ASC 842 resulted in recording ROU assets and lease liabilities of approximately $50.1 million and $54.3 million, respectively. Operating lease liabilities were calculated using the discount rate on January 1, 2019. The adoption of ASC 842 did not have a material impact on beginning retained earnings, the consolidated statement of operations, cash flows, or earnings per share.

Under ASC 842, a contract is or contains a lease when we have the right to control the use of an identified asset. We determine if an arrangement is a lease at inception of the contract, which is the date on which the terms of the contract are agreed to and the agreement creates enforceable rights and obligations. The commencement date of the lease is the date that the lessor makes an underlying asset available for use. As of June 30, 2019, we do not have material leases that have not yet commenced.

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We determine if the lease is operating or finance at the lease commencement date based upon the terms of the lease and the nature of the asset. The lease term used to calculate the lease liability includes options to extend or terminate the lease when it is reasonably certain that the option will be exercised.

For leases commencing after January 1, 2019, the lease liability is measured at the present value of future lease payments, discounted using the discount rate for the lease at the commencement date. As we are typically unable to determine the implicit rate, we use an incremental borrowing rate based on the lease term and economic environment at commencement date. We initially measure payments based on an index by using the applicable rate at lease commencement. Variable payments that do not depend on an index are not included in the lease liability and are recognized as they are incurred. The ROU asset is initially measured as the amount of lease liability, adjusted for any initial lease costs, prepaid lease payments, and reduced by any lease incentives.

Our contracts often include non-lease components such as common area maintenance. We elected the practical expedient to account for the lease and non-lease components as a single lease component. For leases with a term of one year or less we elected not to record the lease asset or liability. The lease payments are recognized in the consolidated statement of earnings on a straight-line basis over the lease term. We include lease costs within cost of revenues and operating expenses.

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.

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SELECTED RELATIONSHIPS WITHIN THE CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

	For the Three Months Ended		For the Six Months Ended	
	June 30, 2019	July 1, 2018	June 30, 2019	July 1, 2018
Percentage of revenues:				
Revenues:				
Products	81%	82%	80%	83%
Services	19	18	20	17
Total revenues	100	100	100	100
Cost of revenues:				
Cost of products	34	34	34	36
Cost of services	8	7	8	7
Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below)	43	42	42	43
Gross profit	57	58	58	57

Operating expenses:				
Selling and administrative	19	19	20	19
Engineering and development	14	14	15	15
Acquired intangible assets amortization	2	2	2	2
Restructuring and other	(2)	—	(1)	—
Total operating expenses	34	35	36	35
Income from operations	24	23	21	21
Non-operating (income) expense:				
Interest income	(1)	(1)	(1)	(1)
Interest expense	1	1	1	1
Other (income) expense, net	—	—	—	—
Income before income taxes	23	23	21	21
Income tax provision	6	4	2	3
Net income	17%	19%	20%	19%

Results of Operations

Second Quarter 2019 Compared to Second Quarter 2018

Revenues

Revenues by our four reportable segments were as follows:

	For the Three Months Ended		
	June 30, 2019	July 1, 2018	Dollar Change
		(in millions)	
Semiconductor Test	$ 374.9	$ 360.1	$ 14.8
Industrial Automation	74.7	62.1	12.6
System Test	73.4	69.7	3.7
Wireless Test	41.2	35.2	6.0
	$ 564.2	$ 526.9	$ 37.3

The increase in Semiconductor Test revenues of $14.8 million, or 4.1%, was driven primarily by an increase in semiconductor test sales for 5G infrastructure and higher service revenues, partially offset by lower microcontroller, power linear and mobile image sensor test sales.

The increase in Industrial Automation revenues of $12.6 million, or 20.3%, was due to higher demand for collaborative robotic arms and the acquisition of MiR, which was acquired on April 25, 2018. The increase in System Test revenues of $3.7 million, or 5.3%, was primarily due to higher sales in Defense/Aerospace test instrumentation and systems, and higher sales in Production Board Test from higher 5G demand. The increase in Wireless Test revenues of $6.0 million, or 17.0%, was primarily due to higher demand for millimeter wave and cellular test products driven by new wireless standards and 5G, partially offset by a decrease in connectivity test sales.

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

	For the Three Months Ended	
	June 30, 2019	July 1, 2018
Taiwan	27%	25%
China	20	16
United States	14	13
Europe	9	10
Korea	9	8
Japan	6	7
Thailand	4	6
Malaysia	3	7
Singapore	3	4
Philippines	2	3
Rest of World	3	1
	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

	June 30, 2019	July 1, 2018	Dollar/ Point Change
		(in millions)	
Gross profit	$ 323.9	$ 307.3	$ 16.6
Percent of total revenues	57.4%	58.3%	(0.9)

Gross profit as a percent of revenue decreased by 0.9 points, primarily due to higher excess and obsolescence charges in Semiconductor Test and unfavorable product mix.

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.

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During the three months ended June 30, 2019, we recorded an inventory provision of $3.4 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels, of which $2.3 million was related to Semiconductor Test, $0.8 million was related to Wireless Test and $0.3 million was related to System Test.

During the three months ended July 1, 2018, we recorded an inventory provision of $2.7 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels, of which $1.6 million was related to Semiconductor Test, $0.6 million was related to Wireless Test, $0.3 million was related to System Test, and $0.2 million was related to Industrial Automation.

During the three months ended June 30, 2019 and July 1, 2018, we scrapped $2.6 million and $1.1 million of inventory, respectively. During the three months ended June 30, 2019 and July 1, 2018, we sold $0.4 million and $1.9 million of previously written-down or written-off inventory, respectively. As of June 30, 2019, we had inventory related reserves for inventory, which had been written-down or written-off totaling $102.6 million. We have no pre-determined timeline to scrap the remaining inventory.

Selling and Administrative

Selling and administrative expenses were as follows:

	For the Three Months Ended		
	June 30, 2019	July 1, 2018	Dollar Change
		(in millions)	
Selling and administrative	$ 108.8	$ 99.4	$ 9.4
Percent of total revenues	19.3%	18.9%	

The increase of $9.4 million in selling and administrative expenses was due primarily to higher spending in Industrial Automation from higher sales and marketing spending in Universal Robots and MiR. MiR was acquired on April 25, 2018.

Engineering and Development

Engineering and development expenses were as follows:

	For the Three Months Ended		
	June 30, 2019	July 1, 2018	Dollar Change
		(in millions)	
Engineering and development	$ 81.4	$ 75.3	$ 6.1
Percent of total revenues	14.4%	14.3%	

The increase of $6.1 million in engineering and development expenses was primarily due to higher spending in Industrial Automation and Wireless Test.

Acquired Intangible Assets Amortization

Acquired intangible assets amortization expense was as follows:

	For the Three Months Ended		
	June 30, 2019	July 1, 2018	Dollar Change
		(in millions)	
Acquired intangible assets amortization	$ 10.1	$ 9.8	$ 0.3
Percent of total revenues	1.8%	1.9%	

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Acquired intangible assets amortization expense increased primarily due to Industrial Automation acquisitions of MiR and Energid in 2018 and the Semiconductor Test acquisition of Lemsys in 2019.

Restructuring and Other

During the three months ended June 30, 2019, we recorded an $11.7 million credit for the decrease in the fair value of the MiR contingent consideration liability, partially offset by $0.8 million recorded for severance charges primarily in Semiconductor Test and $0.5 million of acquisition related compensation and expenses.

During the three months ended July 1, 2018, we recorded $2.5 million of acquisition related expenses, and $2.4 million for employee severance charges, primarily in Semiconductor Test, partially offset by a $3.5 million credit for the decrease in the fair value of Universal Robots contingent consideration.

Interest and Other

	For the Three Months Ended		
	June 30, 2019	July 1, 2018	Dollar Change
	(in millions)		
Interest income	$ (5.4)	$ (5.4)	$ —
Interest expense	5.8	5.6	0.2
Other (income) expense, net	2.4	0.2	2.2

Other (income) expense, net increased by $2.2 million due primarily to higher foreign exchange losses and higher pension costs.

Income (Loss) Before Income Taxes

	For the Three Months Ended		
	June 30, 2019	July 1, 2018	Dollar Change
	(in millions)		
Semiconductor Test	$ 91.4	$ 91.2	$ 0.2
System Test	23.5	20.4	3.1
Wireless Test	10.9	10.3	0.6
Industrial Automation	(3.7)	(2.9)	(0.8)
Corporate and Other (1)	9.1	1.1	8.0
	$ 131.2	$ 120.0	$ 11.2

(1) Included in Corporate and Other are: contingent consideration adjustments, employee severance, interest income, interest expense, net foreign exchange gains and losses, intercompany eliminations, and acquisition related expenses.

The increase in income before income taxes in System Test was primarily due to higher sales in Storage Test of 3.5" hard disk drive testers. The increase in income before income taxes in Wireless Test was primarily due to higher demand for millimeter wave and cellular test products. The decrease in income before income taxes in Industrial Automation was primarily due to increased intangible assets amortization expense from the acquisition of MiR on April 25 2018.

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Income Taxes

The effective tax rate for the three months ended June 30, 2019 and July 1, 2018 was 25.8% and 15.8%, respectively. The increase in the effective tax rate from the three months ended July 1, 2018 to the three months ended June 30, 2019 resulted from an increase in net discrete tax expense and an increase in the net unfavorable impact of the international provisions of the U.S. Tax Cuts and Jobs Act of 2017. These increases were partially offset by a projected shift in the geographic distribution of income, which reduces the income subject to taxation in higher tax rate jurisdictions relative to lower tax rate jurisdictions, an increase in benefit related to U.S. research and development tax credits and a decrease in expense related to the uncertain tax positions for transfer pricing.

Six Months 2019 Compared to Six Months 2018

Revenues

Revenues by our four reportable segments were as follows:

	For the Six Months Ended		
	June 30, 2019	July 1, 2018	Dollar Change
	(in millions)		
Semiconductor Test	$ 715.8	$ 733.4	$ (17.6)
Industrial Automation	140.9	110.9	30.0
System Test	131.6	112.7	18.9
Wireless Test	70.3	57.7	12.6
Corporate and Other	(0.2)	(0.3)	0.1
	$1,058.3	$1,014.4	$ 43.9

The decrease in Semiconductor Test revenues of $17.6 million, or 2.4%, was driven primarily by a decrease in memory test sales, partially offset by higher sales related to 5G infrastructure, higher image sensor test sales and higher service revenues. The increase in Industrial Automation revenues of $30.0 million, or 27.1%, was due to higher demand for collaborative robotic arms and the acquisition of MiR, which was acquired on April 25, 2018. The increase in System Test revenues of $18.9 million, or 16.8%, was primarily due to higher sales in Storage Test of 3.5" hard disk drive testers and higher sales in Production Board Test due to 5G. The increase in Wireless Test revenues of $12.6 million, or 21.8%, was primarily due to higher demand for millimeter wave and cellular test products driven by new wireless standards and 5G partially offset by lower sales in connectivity test products.

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

	For the Six Months Ended	
	June 30, 2019	July 1, 2018
Taiwan	23%	27%
China	19	16
United States	14	13
Europe	10	10
Korea	10	10
Japan	9	6
Singapore	4	4
Thailand	4	4
Malaysia	3	5
Philippines	3	5
Rest of World	1	—
	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 Six Months Ended		
	June 30, 2019	July 1, 2018	Dollar/Point Change
	(in millions)		
Gross profit	$ 611.6	$ 577.2	$ 34.4
Percent of total revenues	57.8%	56.9%	0.9

Gross profit as a percent of revenue increased by 0.9 points, primarily due to favorable product mix in Semiconductor Test and System Test.

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 June 30, 2019, we recorded an inventory provision of $5.8 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels, of which $3.5 million was related to Semiconductor Test, $1.1 million was related to Wireless Test, $0.8 million was related to System Test, and $0.4 million was related to Industrial Automation.

During the six months ended July 1, 2018, we recorded an inventory provision of $6.2 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels, of which $3.8 million was related to Semiconductor Test, $1.5 million was related to Wireless Test, $0.6 million was related to System Test, and $0.3 million was related to Industrial Automation.

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During the six months ended June 30, 2019 and July 1, 2018, we scrapped $3.0 million and $1.5 million of inventory, respectively. During the six months ended June 30, 2019 and July 1, 2018, we sold $1.1 million and $4.2 million of previously written-down or written-off inventory, respectively. As of June 30, 2019, we had inventory related reserves for inventory, which had been written-down or written-off totaling $102.6 million. We have no pre-determined timeline to scrap the remaining inventory.

Selling and Administrative

Selling and administrative expenses were as follows:

	For the Six Months Ended		
	June 30, 2019	July 1, 2018	Dollar Change
	(in millions)		
Selling and administrative	$ 210.8	$ 189.9	$ 20.9
Percent of total revenues	19.9%	18.7%	

The increase of $20.9 million in selling and administrative expenses was due primarily to higher spending in Industrial Automation from higher sales and marketing spending in Universal Robots and MiR, which was acquired on April 25, 2018, and higher variable compensation.

Engineering and Development

Engineering and development expenses were as follows:

	For the Six Months Ended		
	June 30, 2019	July 1, 2018	Dollar Change
	(in millions)		
Engineering and development	$ 158.2	$ 149.8	$ 8.4
Percent of total revenues	15.0%	14.8%	

The increase of $8.4 million in engineering and development expenses was primarily due to higher spending in Industrial Automation and Wireless Test and higher variable compensation.

Acquired Intangible Assets Amortization

Acquired intangible assets amortization expense was as follows:

	For the Six Months Ended		
	June 30, 2019	July 1, 2018	Dollar Change
	(in millions)		
Acquired intangible assets amortization	$ 20.7	$ 17.5	$ 3.2
Percent of total revenues	2.0%	1.7%	

Acquired intangible assets amortization expense increased primarily due to the Industrial Automation acquisitions of MiR and Energid in 2018 and the Semiconductor Test acquisition of Lemsys in 2019.

Restructuring and Other

During the six months ended June 30, 2019, we recorded an $8.7 million credit for the decrease in the fair value of the MiR contingent consideration liability, partially offset by $1.8 million of acquisition related compensation and expenses and $1.6 million recorded for severance charges primarily in Semiconductor Test.

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During the six months ended July 1, 2018, we recorded $6.3 million for severance charges, primarily in Semiconductor Test and Industrial Automation, and $3.3 million for acquisition related expenses, partially offset by an $8.5 million credit for the decrease in the fair value of the Universal Robots contingent consideration liability.

Interest and Other

For the Six Months Ended

	June 30, 2019	July 1, 2018	Dollar Change
		(in millions)	
Interest income	$ (13.5)	$ (11.4)	$ (2.1)
Interest expense	11.5	12.5	(1.0)
Other (income) expense, net	3.9	1.0	2.9

Interest income increased by $2.1 million due primarily to unrealized gains on equity marketable securities in 2019. Interest expense decreased by $1.0 million due primarily to lower realized losses on sales of marketable securities in 2019. Other (income) expense, net increased by $2.9 million due primarily to higher pension costs and higher foreign exchange losses.

Income (Loss) Before Income Taxes

	For the Six Months Ended		
	June 30, 2019	July 1, 2018	Dollar Change
		(in millions)	
Semiconductor Test	$ 174.4	$ 179.2	$ (4.8)
System Test	38.9	26.2	12.7
Wireless Test	14.6	10.8	3.8
Industrial Automation	(9.0)	(2.1)	(6.9)
Corporate and Other (1)	6.3	1.7	4.6
	$ 225.2	$ 215.8	$ 9.4

(1) Included in Corporate and Other are: contingent consideration adjustments, employee severance, interest income, interest expense, net foreign exchange gains and losses, intercompany eliminations, and acquisition related expenses.

The decrease in income before income taxes in Semiconductor Test was driven primarily by a decrease in memory test sales, partially offset by higher sales related to 5G infrastructure, higher image sensor test sales and higher service revenues. The increase in income before income taxes in System Test was primarily due to higher sales in Storage Test of 3.5" hard disk drive testers and higher sales in Production Board Test for 5G. The increase in income before income taxes in Wireless Test was primarily due to higher demand for millimeter wave and cellular test products driven by new wireless standards and 5G, partially offset by lower connectivity test products sales. The decrease in income before income taxes in Industrial Automation was primarily due to increased intangible assets amortization expense from the acquisitions of MiR and Energid in 2018.

Income Taxes

The effective tax rate for the six months ended June 30, 2019 and July 1, 2018 was 8.3% and 12.9%, respectively. The decrease in the effective tax rate from the six months ended July 1, 2018 to the six months

ended June 30, 2019 resulted from an increase in net discrete tax benefit, an increase in benefit related to U.S. research and development tax credits, a decrease in expense related to the uncertain tax positions for transfer pricing and a projected shift in the geographic distribution of income, which reduces the income subject to taxation in higher tax rate jurisdictions relative to lower tax rate jurisdictions. These reductions were partially offset by an increase in the net unfavorable impact of the international provisions of the U.S. Tax Cuts and Jobs Act of 2017.

Contractual Obligations

The following table reflects our contractual obligations as of June 30, 2019:

	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	306,949	300,663	6,286	—	—	—
Retirement plans contributions	127,435	9,406	20,382	25,188	72,459	—
Transition tax payable (1)	98,414	9,530	16,930	24,337	47,617	—
Operating lease obligations	78,700	21,018	32,845	14,398	10,439	—
Fair value of contingent consideration	26,847	11,753	15,094	—	—	—
Interest on long-term debt	25,875	5,750	11,500	8,625	—	—
Other long-term liabilities reflected on the balance sheet under GAAP (2)	64,825	—	30,093	7,272	—	27,460
Total	$1,189,045	$ 358,120	$133,130	$539,820	$130,515	$27,460

(1) Represents the transition tax liability associated with our accumulated foreign earnings as a result of the enactment of the Tax Reform Act on December 22, 2017.

(2) 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 decreased by $210.2 million in the six months ended June 30, 2019 to $994.3 million.

Operating activities during the six months ended June 30, 2019 provided cash of $163.3 million. Changes in operating assets and liabilities used cash of $115.0 million due to a $99.0 million increase in operating assets and a $16.0 million decrease in operating liabilities.

The increase in operating assets was primarily due to a $79.5 million increase in accounts receivable due to increased sales, a $17.1 million increase in prepayments and other assets, and a $2.4 million increase in inventories.

The decrease in operating liabilities was due to a $26.8 million decrease in accrued employee compensation due primarily to first quarter payments related to variable compensation, a $15.0 million decrease in income taxes, and $2.4 million of retirement plan contributions, partially offset by a $15.8 million increase in deferred revenue and customer advance payments, a $10.3 million increase in other accrued liabilities, and a $2.0 million increase in accounts payable.

Investing activities during the six months ended June 30, 2019 used cash of $289.2 million, due to $484.2 million used for purchases of marketable securities, $59.0 million used for purchases of property, plant and equipment, $15 million used for an investment in RealWear, and $7.0 million, net of cash acquired, used for the acquisition of Lemsys, partially offset by $233.2 million and $42.5 million in proceeds from maturities and sales of marketable securities, respectively, and proceeds from life insurance of $0.3 million related to the cash surrender value from the cancellation of a Teradyne owned life insurance policy.

Financing activities during the six months ended June 30, 2019 used cash of $305.2 million, due to $247.2 million used for the repurchase of 6.5 million shares of common stock at an average price of $38.20 per share, $31.0 million used for dividend payments, $27.6 million used for payments related to MiR and Universal Robots acquisition contingent consideration, and $14.4 million used for payments related to net settlements of employee stock compensation awards, partially offset by $15.1 million from the issuance of common stock under employee stock purchase and stock option plans.

Operating activities during the six months ended July 1, 2018 provided cash of $49.9 million. Changes in operating assets and liabilities used cash of $225.2 million due to a $199.0 million increase in operating assets and a $26.1 million decrease in operating liabilities.

The increase in operating assets was primarily due to a $179.4 million increase in accounts receivable due to an increase in shipments during the last month of the quarter and the impact of the new revenue recognition standard and a $21.3 million increase in inventories, partially offset by a $1.6 million decrease in prepayments and other assets.

The decrease in operating liabilities was due to a $27.3 million decrease in accrued employee compensation due primarily to first quarter payments related to variable compensation, a $26.3 million decrease in income taxes, and $2.2 million of retirement plan contributions, partially offset by a $14.7 million increase in accounts payable, a $10.5 million increase in deferred revenue and customer advance payments, and a $4.5 million increase in other accrued liabilities.

Investing activities during the six months ended July 1, 2018 provided cash of $418.5 million, due to $829.1 million and $469.9 million in proceeds from sales and maturities of marketable securities, respectively, partially offset by $647.1 million used for purchases of marketable securities, $170.6 million used for the acquisitions of MiR and Energid, and $62.7 million used for purchases of property, plant and equipment.

Financing activities during the six months ended July 1, 2018 used cash of $418.1 million, due to $360.8 million used for the repurchase of 8.8 million shares of common stock at an average price of $40.82 per share, $34.7 million used for dividend payments, $19.8 million used for payment related to net settlement of employee stock compensation awards, and $13.6 million used for a payment related to Universal Robots acquisition contingent consideration, partially offset by $10.7 million from the issuance of common stock under employee stock purchase and stock option plans.

In January 2019 and May 2019, our Board of Directors declared a quarterly cash dividend of $0.09 per share. Dividend payments for the six months ended June 30, 2019 were $31.0 million.

In January 2018 and May 2018, our Board of Directors declared a quarterly cash dividend of $0.09 per share. Dividend payments for the six months ended July 1, 2018 were $34.7 million.

In January 2018, our Board of Directors cancelled the December 2016 stock repurchase program and authorized a new stock repurchase program for up to $1.5 billion of common stock. We intend to repurchase $500 million in 2019. During the six months ended June 30, 2019, we repurchased 6.5 million shares of common stock for $247.2 million at an average price of $38.20 per share. During the six months ended July 1, 2018, we repurchased 8.8 million shares of common stock for $360.8 million at an average price of $40.82 per share. The cumulative repurchases under the $1.5 billion stock repurchase program as of June 30, 2019 totaled 28.1 million shares of common stock for $1,070.7 million at an average price per share of $38.09.

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. Inflation has not had a significant long-term impact on earnings.

Equity Compensation Plans

As discussed in Note O: "Stock Based Compensation" in our 2018 Annual Report on 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 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 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.

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, 2018. There were no material changes in our exposure to market risk from those set forth in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018.

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 June 30, 2019, the Notes had a fair value of $747.2 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 2019 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	$807,728	$ 60,515	8.1%
No Change	747,213	—	—
10% Decrease	688,885	(58,328)	(7.8)

See Note I: "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, 2018, 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.

Trade regulations and restrictions could impact our ability to sell products to and support certain customers, which may materially adversely affect our sales and results of operations.

We are subject to U.S. laws and regulations that limit and restrict the export of some of our products and services and may restrict our transactions with certain customers, business partners and other persons. In certain circumstances, export control and economic sanctions regulations may prohibit the export of certain products, services and technologies, and in other circumstances we may be required to obtain an export license before exporting the controlled item. We must also comply with export restrictions and laws imposed by other countries affecting trade and investments. We maintain an export compliance program but there are risks that the compliance controls could be circumvented, exposing us to legal liabilities. Compliance with these laws has not significantly limited our sales, but could significantly limit them in the future. Changes in, and responses to, U.S. trade policy could reduce the competitiveness of our products and cause our sales to drop, which could have a material adverse effect on our business, financial condition or results of operations.

The U.S. government from time to time has issued export restrictions that prohibit U.S. companies from exporting U.S. manufactured products, foreign manufactured products with more than 25% controlled U.S. content, as well as U.S. origin technology. For example, the U.S. Department of Commerce has restricted the access of U.S. origin technologies to certain Chinese companies by adding those companies to the Entity List under U.S. Export Administration Regulations ("EAR"). On May 16, 2019, Huawei and 68 of its affiliates, including HiSilicon, were added to the U.S. Department of Commerce Entity List under the EAR. This action by the U.S. Department of Commerce imposes new export licensing requirements on exports, re-exports, and in-country transfers of all U.S. regulated products, software and technology to the designated Huawei entities. While most of our products are not subject to the EAR and therefore not affected by the Entity List restrictions, certain of our products are currently manufactured in the U.S. and thus subject to the Entity List restrictions. Compliance with the Entity List restrictions has not significantly impacted our sales, but could limit sales in the future. In addition, the prohibition on transfers of U.S. origin technology to Huawei could significantly limit our ability to service certain of our products sold to Huawei and our ability to engage in product development activities with Huawei and, therefore, could have a material adverse effect on our business, financial condition or results of operations. Furthermore, Huawei's inability to obtain products from other companies in its supply chain may adversely impact Huawei's demand for our products. Huawei or other foreign customers affected by future U.S. government sanctions or threats of sanctions may respond by developing their own solutions to replace our products or by adopting our foreign competitors' solutions. Also, our controls related to Entity List compliance could be circumvented, exposing us to legal liabilities. Even if such restrictions are lifted, any financial or other penalties or continuing export restrictions imposed on Huawei could have a material adverse effect on our business, financial condition or results of operations.

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

In January 2018, our Board of Directors cancelled the December 2016 stock repurchase program and authorized a new stock repurchase program for up to $1.5 billion of common stock. We intend to repurchase $500 million in 2019. During the six months ended June 30, 2019, we repurchased 6.5 million shares of common stock for $247.2 million at an average price of $38.20 per share. During the six months ended July 1, 2018, we repurchased 8.8 million shares of common stock for $360.8 million at an average price of $40.82 per share. The cumulative repurchases under the $1.5 billion stock repurchase program as of June 30, 2019 totaled 28.1 million shares of common stock for $1,070.7 million at an average price per share of $38.09.

The following table includes information with respect to repurchases we made of our common stock during the three months ended June 30, 2019 (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 1, 2019 – April 28, 2019	829	$ 43.53	828	$ 483,987
April 29, 2019 – May 26, 2019	596	$ 47.66	595	$ 455,641

May 27, 2019 – June 30, 2019	593	$ 44.47	592	$ 429,297
	2,018 (1)	$ 45.03 (1)	2,015	

(1) Includes approximately three thousand shares at an average price of $44.36 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

Item 6: Exhibits

Exhibit Number	Description
10.1	Executive Officer Retirement Agreement dated July 17, 2019 between Teradyne and Gregory R. Beecher, (filed herewith)*
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)

Exhibit Number	Description
101.INS	XBRL Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL 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

* Management Contract or Compensatory Plan

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/ Sanjay Mehta

Sanjay Mehta
Vice President,
Chief Financial Officer and Treasurer
(Duly Authorized Officer
and Principal Financial Officer)

August 9, 2019

Exhibit 10.1

EXECUTIVE OFFICER RETIREMENT AGREEMENT

EXECUTIVE OFFICER RETIREMENT AGREEMENT entered into this 17th day of July 2019, by and between Teradyne, Inc., a Massachusetts corporation ("Teradyne" or the "Company"), and the undersigned executive officer of Teradyne ("Executive").

WITNESSETH:

WHEREAS, the Executive is retiring from the Company effective July 17, 2019 (the "Retirement Date").

WHEREAS, Teradyne recognizes the contributions the Executive has made to the success of the Company and wishes to ensure the Executive does not engage in any business competitive with the Company following his retirement for the period from the Retirement Date through January 31, 2023 (the "Non-Competition Period").

WHEREAS, Teradyne and Executive desire to set forth certain terms and conditions relating to the Executive's retirement from Teradyne.

NOW THEREFORE, in consideration of the premises and of the mutual covenants and agreements hereinafter set forth, the parties hereto hereby agree as follows:

1. Consideration.

In consideration for the signing of the Release attached as Schedule B as well as the promises and covenants including the Non-Competition and Non-Solicitation provision set forth herein, the Company agrees to the following treatment of the portions of the Executive's outstanding equity grants which remain unvested as of the Retirement Date; provided that such treatment shall be subject to Section 2 hereof and full compliance by the Executive with Section 4 hereof:

a) Any unvested, time-based restricted stock units granted before 2019 shall continue to vest during the Non-Competition Period;

b) Any unvested, time-based restricted stock units granted in 2019 prior to the Retirement Date shall continue to vest during the Non-Competition Period in a pro-rated amount based on the number of days that the Executive was employed during 2019;

c) Any unvested stock options granted before 2019 shall continue to vest and become exercisable during the Non-Competition Period;

d) Any unvested stock options granted in 2019 prior to the Retirement Date shall continue to vest and become exercisable during the Non-Competition Period in a pro-rated amount based on the number of days that the Executive was employed during 2019;

e) Any vested stock options as of the Retirement Date or stock options that become vested during the Non-Competition Period may be exercised for the remainder of the generally applicable term of such option, which in all cases is no later than seven (7) years from the respective dates of grant;

f) Any unvested, performance-based restricted stock units awarded more than 365 days prior to the Retirement Date shall vest on the date the amount of shares underlying the performance-based restricted stock units are determined at the end of the three-year performance period at the performance level determined by the Board as set forth in the applicable performance-based restricted stock unit agreement; and

g) Any unvested, performance-based restricted stock units awarded less than 365 days prior to the Retirement Date shall vest on the date the amount of shares underlying the performance-based restricted stock units are determined at the end of the performance period (i) in a pro-rated amount of shares based on the number of days that the Executive was employed during the 365 calendar day period following the grant date, and (ii) at the performance level determined by the Board as set forth in the applicable performance-based restricted stock unit agreement.

Schedule A attached hereto and incorporated herein is a complete list of the Executive's outstanding equity grants from the Company as of the Retirement Date. The parties agree that, except as otherwise provided herein, the terms of the Executive's existing equity award agreements shall continue in effect and that any portion of the Executive's outstanding equity grants which are not vested by reason of the application of Section 1(a), (b), (c), (d), (f) and (g) shall be forfeited as of the last day of the Non-Competition Period or on such earlier date pursuant to Section 2 or Section 4. Notwithstanding anything to the contrary herein, the settlement date for equity grants that become vested by reason of the application of Section 1(a), (b), (f) and (g) shall occur no later than December 31 of the year in which such vesting occurs.

Executive acknowledges that he is not and would not be entitled to the consideration described in this Section 1 absent his execution and non-revocation of this Agreement and the release. The consideration described in this Section 1 is in addition to other retirement and/or pension benefits to which the Executive may be entitled associated with the Executive's retirement. The parties acknowledge that Executive shall not be entitled to any severance or separation payment or benefit associated with his retirement, other than all accrued wages and unused vacation time as of the Retirement Date. The Executive acknowledges and agrees that his termination of employment with the Company shall not be considered a retirement for purposes of his unvested equity grants which are outstanding as of the Retirement Date and that the settlement or exercise of rights under such grants shall not be accelerated.

2. Conditions to Consideration.

The consideration and entitlements set forth above in Section 2 shall be conditioned on Executive's signing, and not revoking, a Release, in the form attached as Schedule B, within twenty-one (21) days following the Retirement Date, plus any legally required revocation period.

3. Compensation in connection with Retirement.

Executive shall receive the following compensation in connection with his retirement:

a) Variable compensation payment for 2019 pro-rated to the Retirement Date paid in accordance with and at the time consistent with the Company's standard practice;

b) Profit sharing payments, if any, for 2019 made in accordance with the Company's standard practice; and

c) All other compensation and benefits to which the executive is currently entitled in connection with his employment or his retirement.

4. Non-Competition and Non-Solicitation.

During the Non-Competition Period, Executive shall not directly or indirectly:

a) Engage in any business or enterprise (whether as an owner, partner, officer, Executive, director, investor, lender, consultant, independent contractor or otherwise, except as the holder of not more than 1% of the combined voting power of the outstanding stock of a publicly held company) that is competitive with Teradyne (including but not limited to, any business or enterprise that develops, designs, produces, markets, sells or renders any product or service competitive with any product or service developed, produced, marketed, sold or rendered by Teradyne while Executive was employed by Teradyne);

b) Either alone or in association with others, recruit, solicit, hire or engage as an independent contractor, any person who was employed by Teradyne at any time during the period of Executive's employment with Teradyne, except for an individual whose employment with Teradyne has been terminated for a period of six months or longer; or

c) Either alone or in association with others, solicit, divert or take away, or attempt to divert or to take away, the business or patronage of any client or customer or entity that was a prospective client or customer of Teradyne during the Executive's employment.

If any restriction set forth in this Section 4 is found by any court of competent jurisdiction to be unenforceable because it extends for too long a period of time or over too great a range of activities or in too broad a geographic area, it shall be interpreted to extend only over the maximum period of time, range of activities or geographic area as to which it may be enforceable.

Executive acknowledges that the restrictions contained in this Section 5 are necessary for the protection of the business and goodwill of Teradyne and are considered by Executive to be reasonable for such purpose. Executive agrees that any breach of this Section 5 will cause Teradyne irreparable harm and therefore, in the event of any such breach, in addition to such other remedies that may be available, Teradyne shall have the right to seek equitable and/or injunctive relief.

The geographic scope of this Section 4 shall extend to anywhere Teradyne or any of its subsidiaries is doing business, has done business or has plans to do business.

Executive agrees that during the Non-Competition Period, he will make reasonable good faith efforts to give verbal notice to Teradyne of each new business activity he plans to undertake, at least (5) business days prior to beginning any such activity.

If Executive violates the provisions of this Section 4, Teradyne shall be entitled to discontinue any continued vesting per Section 1 and all equity grants subject to this Agreement which are unvested as of the date of the violation shall be forfeited. Executive shall nevertheless continue to be bound by the restrictions set forth in this Section 4 for an additional period of time equal to the duration of the violation, such additional period not to exceed 24 months from the end of the Non-Competition Period.

5. Deferred Compensation/Section 409A.

Notwithstanding any other provision of this Agreement, if the Executive is a "specified employee" at the time of the Executive's "separation from service" as such terms are defined in Section 409A of the Code, all payments, benefits, or removal of restrictions on the transfer of equity under this Agreement with respect to the Executive's "separation from service" that constitute compensation deferred under a nonqualified deferred compensation plan as defined in Section 409A of the Code and regulations thereunder for which an exemption does not apply and to which such the Executive as a "specified employee" would otherwise be entitled during the first six months following the date of "separation from service" shall be made on the first day of the seventh month after the date of "separation from service" (or, if earlier, the date of death of the Executive).

For purposes of this Agreement, each amount to be paid or benefit to be provided shall be construed as a separate identified payment for purposes of Section 409A, and any payments that are due within the "short term deferral period" as defined in Section 409A and regulations thereunder or payments that are made under separation pay plans as described in Treasury Regulation Section 1.409A-1(b)(9)(ii), (iii) or (iv), shall not be treated as deferred compensation unless applicable law requires otherwise. Neither Teradyne nor the Executive shall have the right to accelerate or defer the delivery of any payments or benefits under this Agreement except to the extent specifically permitted or required by Section 409A.

This Agreement is intended to comply with the provisions of Section 409A and regulations thereunder and the Agreement shall, to the extent practicable, be construed and administered in accordance therewith. Terms defined in the Agreement shall have the meanings given such terms under Section 409A if and to the extent required to comply with Section 409A. In any event, Teradyne makes no representations or warranty and shall have no liability to the Executive or any other person if any provisions of or payments under this Agreement are determined to constitute deferred compensation subject to Code Section 409A but not to satisfy the conditions of that section.

6. Governing Law and Dispute Resolution.

This Agreement shall be governed by and construed in accordance with the internal laws of the Commonwealth of Massachusetts, other than its choice of law rules, and this Agreement shall be deemed to be performable in Massachusetts. The Executive and the Company agree that any dispute, controversy or claim arising between the parties relating to this Agreement shall be resolved by final and binding arbitration before a single arbitrator, except that the parties may seek equitable relief in court to preserve the status quo pending final resolution in arbitration. The arbitrator shall be selected in accordance with the Employment Dispute Resolution rules of the American Arbitration Association ("AAA") pertaining at the time the dispute arises. The parties agree that such arbitration shall take place at the offices of the AAA in Boston, Massachusetts. In such arbitration proceedings, the arbitrator shall have the discretion, to be exercised in accordance with applicable law, to award any damages permitted by law, and to allocate among the parties the arbitrator's fees, tribunal and other administrative and litigation costs and, to the prevailing party, reasonable attorneys' fees. The award of the arbitrator may be confirmed before and entered as a judgment of any court having jurisdiction of the parties.

7. Severability.

In case any one or more of the provisions contained in this Agreement for any reason shall be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision of this Agreement and this Agreement shall be construed to the maximum extent permitted by law.

8. Waivers and Modifications.

This Agreement may be modified, and the rights, remedies and obligations contained in any provision hereof may be waived, only in accordance with this Section 8. No waiver by either party of any breach by the other or any provision hereof shall be deemed to be a waiver of any later or other breach thereof or as a waiver of any other provision of this Agreement. This Agreement may not be waived, changed, discharged or terminated orally or by any course of dealing between the parties, but only by an instrument in writing signed by the party against whom any waiver, change, discharge or termination is sought.

9. Assignment.

This Agreement, and Executive's and Teradyne's rights and obligations hereunder, may not be assigned by Executive or Teradyne; any purported assignment by Executive or Teradyne in violation hereof shall be null and void.

10. Entire Agreement.

This Agreement, including Schedule A and Schedule B, constitutes the entire understanding of the parties relating to the subject matter hereof and supersedes all agreements, written or oral, made prior to the date hereof between Executive and Teradyne relating to the subject matter hereof, except for the attached Release once executed, and the equity award agreements, as modified hereby, between Teradyne and Executive.

11. Notices.

All notices hereunder shall be in writing and shall be delivered in person or mailed by certified or registered mail, return receipt requested, addressed as follows:

If to Teradyne, to: Teradyne, Inc.
600 Riverpark Drive
North Reading, MA 01864
Attention: General Counsel

If to Executive, at Executive's address in his employment file on record with the Human Resources Department.

12. Cooperation.

Executive agrees to cooperate fully with the Company in the defense or prosecution of any claims or actions now in existence or which may be brought in the future against or on behalf of the Company. The Executive's full cooperation in connection with such claims or actions shall include, but not be limited to, being available to meet with Company counsel to prepare for trial or discovery or an administrative hearing or alternative dispute resolution and to act as a witness when requested by the Company at reasonable times designated by the Company.

13. Return of Property.

No later than the Retirement Date, Executive shall return to the Company all Company property in his possession or control, including all electronic documents

14. Non-Disparagement.

The Executive understands and agrees that in consideration for the covenants, terms and conditions herein, he shall not make any false, disparaging or derogatory statements to any third person or entity, including any media outlet, in public or private regarding the Company's directors, officers, executives, agents, or representatives or the Company's business affairs and financial condition. The Company understands and agrees that in consideration for the covenants, terms and conditions herein, it shall cause its directors and executive officers to not make any false, disparaging or derogatory statements to any third party or entity, including any media outlet, in public or private, regarding the Executive.

15. Confidential Information

The Executive acknowledges that the information, observations and data (including trade secrets) obtained by him while employed by the Company concerning the Company or any affiliate are the property of the Company. The Executive agrees that he will not use, publish or disclose, at any time after the Retirement Date, any secret or confidential information or data concerning any discovery, invention, opportunity, product, design, formula, algorithm or process, or any secret or confidential production, sales or other business information, relating to the Company or any client, subsidiary or affiliate of the Company which he may acquire or have acquired during any period of employment with the Company or any affiliate. The term "confidential information" shall not include information that is in the public domain at the time of the disclosure. The Executive further agrees to turn over at or prior to the expiration of his employment all tangible forms of such information in his possession or under his control, including drawings, specifications, models, customer lists and other documents and records as well as all copies and reproductions thereof. Prior to or concurrent with any cessation of services hereunder, the Executive shall reduce to writing and deliver to the Company such information as the Company may reasonably request to the extent that such information pertains to the business and operations of the Company and its subsidiaries and affiliates and any product or service offered by the Company or its affiliates.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first above written.

TERADYNE, INC.	EXECUTIVE
By: /s/ Michael Callahan	/s/ Gregory Beecher
Name: Michael Callahan	Name: Gregory Beecher
Title: Vice President and Corporate Controller	

SCHEDULE B

Release

In consideration of the payments and benefits described in the Executive Officer Retirement Agreement dated July 17, 2019 between me and Teradyne, Inc. (the "Company"), all of which I acknowledge I would not otherwise be entitled to receive, I hereby fully, forever, irrevocably and unconditionally release, remise and discharge the Company, its successors and assigns and their respective officers, directors, stockholders, corporate affiliates, subsidiaries, parent companies, agents and Executives (each in their individual and corporate capacities) (hereinafter, the "Released Parties") from any and all claims, charges, complaints, demands, actions, causes of action, suits, rights, debts, sums of money, costs, accounts, reckonings, covenants, contracts, agreements, promises, doings, omissions, damages, executions, obligations, liabilities, and expenses (including attorneys' fees and costs), of every kind and nature which I ever had or now have against the Released Parties arising out of my employment with and/or termination or separation from the Company or relating to my relationship as an officer or in any other capacity for the Company, including, but not limited to, all employment discrimination claims under Title VII of the Civil Rights Act of 1964, as amended; the Age Discrimination in Employment Act of 1967, as amended; the Family and Medical Leave Act; the Employee Retirement Income Security Act of 1974, 29 U.S.C. § 1001, et seq.; the Americans With Disabilities Act of 1990, as amended; the Worker Adjustment and Retraining Notification Act; the Civil Rights Act of 1991; the National Labor Relations Act, as amended; Sections 1981 through 1988 of Title 42 of the United States Code, as amended; the Older Workers Benefit Protection Act; the Occupational Safety and Health Act, as amended; the Civil Rights Act of 1866, 29 U.S.C. § 1981, et seq; the Rehabilitation Act of 1973, 29 U.S.C. § 701, et seq.; the Immigration Reform and Control Act; the Fair Credit Reporting Act; the Equal Pay Act; the Massachusetts Law Against Discrimination, G.L. c. 151B; the Massachusetts Privacy Statute, G.L. c. 214, § 1B; the Massachusetts Civil Rights Act, G.L. c. 12, § 11H and 11I; the Massachusetts Equal Rights Act, G.L. c. 93, § 102; the Massachusetts Labor and Industries Act, G.L. c. 149, § 1 et seq.; the Massachusetts Parental Leave Act, G.L. c. 149, § 105D; the Massachusetts Sexual Harassment Statute, G.L. c. 214 § 1C; the Massachusetts Wage Payment Statute, G.L. c. 149, §§ 148, 148A, 148B, 148C, 149, 150, 150A-150C, 151, 152, 152A, et seq.; the Massachusetts Wage and Hour laws, G.L. c. 151§1A et seq.; The Massachusetts Leave Law for Victims and Family Members of Abusive Behavior, G.L. c.149, § 52E; et seq.; The Massachusetts Earned Sick Time Law, G.L. c.149, § 148C), all as amended; all common law claims including, but not limited to, actions in tort, defamation and breach of contract; all claims to any non-vested ownership interest in the Company, contractual or otherwise, including but not limited to claims to stock or stock options; and any claim or damage arising out of my employment with, termination or separation from the Company (including a claim for retaliation) under any common law theory or any federal, state or local statute or ordinance not expressly referenced above; provided, however, that notwithstanding the foregoing, the Company agrees and hereby acknowledges that this Release Agreement is not intended to and does not (i) apply to any claims I may bring to enforce the terms of the Executive Officer Agreement, (ii) release the Company of any obligation it may have pursuant to a written agreement, the Company's articles of organization or bylaws, or as mandated by statute to indemnify me as an officer of the Company; and (iii) release the Company of any obligation to provide and/or pay benefits to me or my estate, conservator or designated beneficiary(ies) under and in accordance with the terms of any applicable Company benefit plan and/or program; provided further, that nothing in this Release Agreement prevents me from filing, cooperating with, or participating in any proceeding before the EEOC or a state Fair Employment Practices Agency (except that I acknowledge that I may not be able to recover any monetary benefits in connection with any such claim, charge or proceeding).

Waiver of Rights and Claims Under the Age Discrimination in Employment Act of 1967: Because I am 40 years of age or older, I have been informed that I have or may have specific rights and/or claims under the Age Discrimination in Employment Act of 1967 (ADEA) and I agree that:

In consideration for the payments and benefits described in the Executive Officer Agreement, which I am not otherwise entitled to receive, I specifically and voluntarily waive such rights and/or claims under the ADEA I might have against the Released Parties to the extent such rights and/or claims arose prior to the date this Release Agreement was executed;

I understand that rights or claims under the ADEA which may arise after the date this Release Agreement is executed are not waived by me;

I was advised that I have at least 21 days within which to consider the terms of this Release Agreement and to consult with or seek advice from an attorney of my choice or any other person of your choosing prior to executing this Release Agreement;

I have carefully read and fully understand all of the provisions of this Release Agreement, and I knowingly and voluntarily agree to all of the terms set forth in this Release Agreement; and

In entering into this Release Agreement I am not relying on any representation, promise or inducement made by the Company or its attorneys with the exception of those promises described in this document.

Period for Review and Consideration of Agreement:

I acknowledge that I was informed and understand that I have twenty-one (21) days to review this Release Agreement and consider its terms before signing it. The 21-day review period will not be affected or extended by any revisions, whether material or immaterial, that might be made to this Agreement.

Accord and Satisfaction: The amounts set forth in the Executive Officer Agreement shall be complete and unconditional payment, settlement, accord and/or satisfaction with respect to all obligations and liabilities of the Released Parties to me, including, without limitation, all claims for back wages, salary, vacation pay, draws, incentive pay, bonuses, cash awards, equity awards, commissions, severance pay, reimbursement of expenses, any and all other forms of compensation or benefits, attorney's fees, or other costs or sums.

Revocation Period: I may revoke this Release Agreement at any time during the seven-day period immediately following my execution hereof. As a result, this Release Agreement shall not become effective or enforceable and the Company shall have no obligation to make any payments or provide any benefits described herein until the seven-day revocation period has expired.

/s/ Gregory Beecher	July 17, 2019
Name: Gregory Beecher	Date
/s/ Nancy Perez	July 17, 2019
Witness	Date

IF YOU DO NOT WISH TO USE THE 21-DAY PERIOD,
PLEASE CAREFULLY REVIEW AND SIGN THIS DOCUMENT

I, Gregory Beecher, acknowledge that I was informed and understand that I have 21 days within which to consider the attached Release Agreement, have been advised of my right to consult with an attorney regarding such Release Agreement and have considered carefully every provision of the Release Agreement, and that after having engaged in those actions, I prefer to and have requested that I enter into the Release Agreement prior to the expiration of the 21-day period.

Dated: July 17, 2019	/s/ Gregory Beecher
	Name: Gregory Beecher
Dated: July 17, 2019	/s/ Nancy Perez
	Witness

Exhibit 31.1

CERTIFICATIONS

I, Mark E. Jagiela, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Teradyne, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent function):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 9, 2019

By: /S/ MARK E. JAGIELA

Mark E. Jagiela
Chief Executive Officer

Exhibit 31.2

CERTIFICATIONS

I, Sanjay Mehta, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Teradyne, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent function):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 9, 2019

By: /S/ SANJAY MEHTA

Sanjay Mehta
Chief Financial Officer

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report of Teradyne, Inc. (the “Company”) on Form 10-Q for the period ended June 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Mark E. Jagiela, Chief Executive Officer of the Company, certify pursuant to 18 U.S.C (S) 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company as of the dates and for the periods expressed in the Report.

/S/ MARK E. JAGIELA

Mark E. Jagiela
Chief Executive Officer
August 9, 2019

Exhibit 32.2

CERTIFICATION PURSUANT TO
18 U.S.C SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report of Teradyne, Inc. (the “Company”) on Form 10-Q for the period ended June 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Sanjay Mehta, Chief Financial Officer of the Company, certify pursuant to 18 U.S.C (S) 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company as of the dates and for the periods expressed in the Report.

/S/ SANJAY MEHTA

Sanjay Mehta
Chief Financial Officer
August 9, 2019