
**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 28, 2020

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)

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

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	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Emerging growth company	<input type="checkbox"/>
Smaller reporting company	<input type="checkbox"/>		

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

The number of shares outstanding of the registrant's only class of Common Stock as of July 24, 2020 was 166,032,335 shares.

TERADYNE, INC.

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PART I

Item 1: Financial Statements

TERADYNE, INC.

CONDENSED CONSOLIDATED BALANCE SHEETS
(Unaudited)

	June 28, 2020	December 31, 2019
	(in thousands, except per share amount)	
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 725,431	\$ 773,924
Marketable securities	229,791	137,303
Accounts receivable, less allowance for doubtful accounts of \$1,829 and \$1,736 at June 28, 2020 and December 31, 2019, respectively	694,521	362,368
Inventories, net	206,088	196,691
Prepayments and other current assets	238,176	188,598
Total current assets	<u>2,094,007</u>	<u>1,658,884</u>
Property, plant and equipment, net	353,595	320,216
Operating lease right-of-use assets, net	56,172	57,539
Marketable securities	106,968	104,490
Deferred tax assets	79,210	75,185
Retirement plans assets	17,817	18,457
Other assets	11,854	10,332
Acquired intangible assets, net	107,563	125,480
Goodwill	422,003	416,431
Total assets	<u>\$3,249,189</u>	<u>\$ 2,787,014</u>
LIABILITIES		
Current liabilities:		
Accounts payable	\$ 184,163	\$ 126,617
Accrued employees' compensation and withholdings	175,589	163,883
Deferred revenue and customer advances	124,224	104,876
Other accrued liabilities	119,732	70,871
Operating lease liabilities	20,000	19,476
Contingent consideration	16,789	9,106
Income taxes payable	89,216	44,200
Total current liabilities	<u>729,713</u>	<u>539,029</u>
Retirement plans liabilities	130,826	134,471
Long-term deferred revenue and customer advances	55,634	45,974
Long-term contingent consideration	32,948	30,599
Long-term other accrued liabilities	22,703	19,535
Deferred tax liabilities	11,997	14,070
Long-term operating lease liabilities	43,582	45,849
Long-term income taxes payable	74,930	82,642
Debt	402,305	394,687
Total liabilities	<u>1,504,638</u>	<u>1,306,856</u>
Commitments and contingencies (See Note Q)		
SHAREHOLDERS' EQUITY		
Common stock, \$0.125 par value, 1,000,000 shares authorized: 165,806 and 166,410 shares issued and outstanding at June 28, 2020 and December 31, 2019, respectively		
	20,725	20,801
Additional paid-in capital	1,730,716	1,720,129
Accumulated other comprehensive loss	(8,500)	(18,854)
Retained earnings (accumulated deficit)	1,610	(241,918)
Total shareholders' equity	<u>1,744,551</u>	<u>1,480,158</u>
Total liabilities and shareholders' equity	<u>\$3,249,189</u>	<u>\$ 2,787,014</u>

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, 2019, are an integral part of the condensed consolidated financial statements.

TERADYNE, INC.
**CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(Unaudited)**

	For the Three Months Ended		For the Six Months Ended	
	June 28, 2020	June 30, 2019	June 28, 2020	June 30, 2019
	(in thousands, except per share amount)			
Revenues:				
Products	\$734,630	\$457,511	\$1,345,536	\$ 850,953
Services	104,031	106,667	197,480	207,324
Total revenues	838,661	564,178	1,543,016	1,058,277
Cost of revenues:				
Cost of products	322,732	193,299	582,728	358,667
Cost of services	44,456	46,961	83,265	88,057
Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below)	367,188	240,260	665,993	446,724
Gross profit	471,473	323,918	877,023	611,553
Operating expenses:				
Selling and administrative	113,259	108,811	224,647	210,824
Engineering and development	94,102	81,434	179,261	158,225
Acquired intangible assets amortization	8,941	10,083	18,832	20,717
Restructuring and other	37,222	(10,404)	29,616	(5,292)
Total operating expenses	253,524	189,924	452,356	384,474
Income from operations	217,949	133,994	424,667	227,079
Non-operating (income) expense:				
Interest income	(1,368)	(4,384)	(4,119)	(9,373)
Interest expense	6,043	5,800	11,594	11,320
Other (income) expense, net	(4,017)	1,401	2,833	(24)
Income before income taxes	217,291	131,177	414,359	225,156
Income tax provision	28,383	33,780	49,261	18,621
Net income	<u>\$188,908</u>	<u>\$ 97,397</u>	<u>\$ 365,098</u>	<u>\$ 206,535</u>
Net income per common share:				
Basic	<u>\$ 1.14</u>	<u>\$ 0.57</u>	<u>\$ 2.20</u>	<u>\$ 1.20</u>
Diluted	<u>\$ 1.05</u>	<u>\$ 0.55</u>	<u>\$ 2.02</u>	<u>\$ 1.16</u>
Weighted average common shares—basic	<u>165,789</u>	<u>171,241</u>	<u>166,189</u>	<u>172,387</u>
Weighted average common shares—diluted	<u>180,257</u>	<u>178,590</u>	<u>180,497</u>	<u>177,781</u>
Cash dividend declared per common share	<u>\$ 0.10</u>	<u>\$ 0.09</u>	<u>\$ 0.20</u>	<u>\$ 0.18</u>

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, 2019, are an integral part of the condensed consolidated financial statements.

TERADYNE, INC.

CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(Unaudited)

	For the Three Months Ended		For the Six Months Ended	
	June 28, 2020	June 30, 2019	June 28, 2020	June 30, 2019
	(in thousands)			
Net income	\$ 188,908	\$ 97,397	\$ 365,098	\$ 206,535
Other comprehensive income, net of tax:				
Foreign currency translation adjustment, net of tax of \$0, \$0, \$0, \$0, respectively	15,805	5,642	7,026	983
Available-for-sale marketable securities:				
Unrealized gains on debt securities arising during period, net of tax of \$1,084, \$678, \$1,271, \$1,256, respectively	3,793	2,537	4,830	4,637
Less: Reclassification adjustment for gains included in net income, net of tax of \$(277), \$(6), \$(421), \$(26), respectively	(983)	(27)	(1,499)	(97)
	2,810	2,510	3,331	4,540
Defined benefit retirement plans:				
Amortization of prior service credit, net of tax of \$0, \$(11), \$(1), \$(21), respectively	(2)	(37)	(3)	(74)
Other comprehensive income	18,613	8,115	10,354	5,449
Comprehensive income	<u>\$207,521</u>	<u>\$105,512</u>	<u>\$375,452</u>	<u>\$211,984</u>

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TERADYNE, INC.
**CONDENSED CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY
(Unaudited)**

	Common Stock Shares	Common Stock Par Value	Additional Paid-in Capital	Accumulated Other Comprehensive Loss	(Accumulated Deficit) Retained Earnings	Total Shareholders' Equity
(in thousands)						
For the Three Months Ended June 28, 2020						
Balance, March 29, 2020	165,938	\$20,742	\$1,721,367	\$ (27,113)	\$ (164,323)	\$ 1,550,673
Net issuance of common stock under stock-based plans	41	5	(451)			(446)
Stock-based compensation expense			9,800			9,800
Repurchase of common stock	(173)	(22)			(6,379)	(6,401)
Cash dividends (\$0.10 per share)					(16,596)	(16,596)
Net income					188,908	188,908
Other comprehensive income				18,613		18,613
Balance, June 28, 2020	<u>165,806</u>	<u>\$20,725</u>	<u>\$1,730,716</u>	<u>\$ (8,500)</u>	<u>\$ 1,610</u>	<u>\$ 1,744,551</u>
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	<u>170,436</u>	<u>\$21,305</u>	<u>\$1,688,211</u>	<u>\$ (7,591)</u>	<u>\$ (222,513)</u>	<u>\$ 1,479,412</u>
For the Six Months Ended June 28, 2020						
Balance, December 31, 2019	166,410	\$20,801	\$1,720,129	\$ (18,854)	\$ (241,918)	\$ 1,480,158
Net issuance of common stock under stock-based plans	913	114	(10,496)			(10,382)
Stock-based compensation expense			21,083			21,083
Repurchase of common stock	(1,517)	(190)			(88,275)	(88,465)
Cash dividends (\$0.10 per share)					(33,295)	(33,295)
Net income					365,098	365,098
Other comprehensive income				10,354		10,354
Balance, June 28, 2020	<u>165,806</u>	<u>\$20,725</u>	<u>\$1,730,716</u>	<u>\$ (8,500)</u>	<u>\$ 1,610</u>	<u>\$ 1,744,551</u>
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	<u>170,436</u>	<u>\$21,305</u>	<u>\$1,688,211</u>	<u>\$ (7,591)</u>	<u>\$ (222,513)</u>	<u>\$ 1,479,412</u>

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, 2019, 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 28, 2020	June 30, 2019
	(in thousands)	
Cash flows from operating activities:		
Net income	\$ 365,098	\$ 206,535
Adjustments to reconcile net income from operations to net cash provided by operating activities:		
Depreciation	38,305	33,882
Amortization	26,234	24,976
Stock-based compensation	21,367	18,109
Contingent consideration adjustment	19,239	(8,701)
Provision for excess and obsolete inventory	9,637	5,799
Deferred taxes	(7,163)	515
Gains on investments	(469)	(3,741)
Retirement plan actuarial (gains) losses	(99)	448
Other	523	429
Changes in operating assets and liabilities, net of businesses acquired:		
Accounts receivable	(331,040)	(79,478)
Inventories	(3,728)	(2,447)
Prepayments and other assets	(49,479)	(17,067)
Accounts payable and other liabilities	113,578	(14,424)
Deferred revenue and customer advances	28,655	15,826
Retirement plans contributions	(2,501)	(2,414)
Income taxes	37,842	(14,973)
Net cash provided by operating activities	265,999	163,274
Cash flows from investing activities:		
Purchases of property, plant and equipment	(84,014)	(58,956)
Purchases of marketable securities	(299,548)	(484,181)
Proceeds from maturities of marketable securities	182,984	233,193
Proceeds from sales of marketable securities	26,661	42,454
Proceeds from life insurance	546	273
Acquisition of businesses, net of cash acquired	149	(21,970)
Net cash used for investing activities	(173,222)	(289,187)
Cash flows from financing activities:		
Issuance of common stock under stock purchase and stock option plans	12,757	15,089
Repurchase of common stock	(88,465)	(247,222)
Dividend payments	(33,266)	(31,019)
Payments related to net settlement of employee stock compensation awards	(22,519)	(14,446)
Payments of contingent consideration	(8,852)	(27,615)
Net cash used for financing activities	(140,345)	(305,213)
Effects of exchange rate changes on cash and cash equivalents	(925)	(519)
Decrease in cash and cash equivalents	(48,493)	(431,645)
Cash and cash equivalents at beginning of period	773,924	926,752
Cash and cash equivalents at end of period	<u>\$ 725,431</u>	<u>\$ 495,107</u>
Supplemental cash flow disclosure		
Non-cash investing activities:		
Capital expenditures incurred but not yet paid	\$ 6,281	\$ 4,068

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, 2019, 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;
- defense/aerospace (“Defense/Aerospace”) test instrumentation and systems, storage and system level test (“Storage Test”) systems, and circuit-board test and inspection (“Production Board Test”) systems (collectively these products represent “System Test”);
- industrial automation (“Industrial Automation”) products; and
- wireless test (“Wireless Test”) systems.

B. ACCOUNTING POLICIES

Basis of Presentation

The consolidated interim financial statements include the accounts of Teradyne and its wholly owned subsidiaries. All significant intercompany balances and transactions have been eliminated. These interim financial statements are unaudited and reflect all normal recurring adjustments that are, in the opinion of management, necessary for the fair statement of such interim financial statements. Certain prior year amounts were reclassified to conform to the current year presentation. The December 31, 2019 condensed consolidated balance sheet data was derived from audited financial statements but does not include all disclosures required by United States of America generally accepted accounting principles (“U.S. GAAP”) for complete financial statements. 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 2, 2020, for the year ended December 31, 2019.

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. Due to the COVID-19 pandemic, there has been uncertainty and disruption in the global economy and our markets. Teradyne is not aware of any specific event or circumstance that would require an update to its estimates or judgments or a revision of the carrying value of its assets or liabilities as of August 3, 2020, the date of issuance of this Quarterly Report on Form 10-Q. These estimates may change, as new events occur and additional information is obtained. Actual results could differ significantly from these estimates under different assumptions or conditions.

Goodwill

On January 26, 2017, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update (“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. Teradyne adopted this standard on January 1, 2020, on a prospective basis. The adoption of ASU 2017-04 did not have a material impact on the consolidated statement of operations, cash flows, or earnings per share. Teradyne assesses goodwill for impairment at least annually in the fourth quarter, as of December 31, on a reporting unit basis, or more frequently, when events and circumstances occur indicating that the recorded goodwill may be impaired. Under ASU 2017-04, 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.

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Credit Losses

In June 2016, the FASB issued ASU 2016-13, “Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments.” This standard introduced the expected credit losses methodology for the measurement of credit losses on financial assets that are not measured at fair value through net income and replaces the “incurred loss” model with an “expected credit loss” model that requires consideration of a broader range of information to estimate expected credit losses over the lifetime of the asset. Teradyne adopted this standard on January 1, 2020 on a modified retrospective basis. The adoption of ASU 2016-13 did not have a material impact on the consolidated statement of operations, balance sheets, cash flows, or earnings per share.

C. ACQUISITIONS

AutoGuide LLC

On November 13, 2019, Teradyne acquired 100% of the membership interests of AutoGuide, LLC (“AutoGuide”), a maker of high-payload autonomous mobile robots (“AMRs”), based in Chelmsford, MA, an emerging and fast growing segment of the global forklift market. The total purchase price was approximately \$81.6 million, which included cash paid of approximately \$57.6 million and \$24.0 million in fair value of contingent consideration payable upon achievement of certain performance targets, extending potentially through 2022. At June 28, 2020, the maximum contingent consideration that could be paid is \$106.9 million.

The contingent consideration is payable upon achievement of certain thresholds and targets for revenue and earnings before interest and taxes for periods from January 1, 2019 to December 31, 2020, January 1, 2019 to December 31, 2021, and January 1, 2019 to December 31, 2022.

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 AutoGuide 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. AutoGuide’s AMRs are used for material transport of payloads up to 4,500 kg in manufacturing, warehouse and logistics applications. These products complement Mobile Industrial Robots Aps (“MiR”) lower payload products and expand the Industrial Automation segment, which is a key component of Teradyne’s growth strategy.

The allocation of the total purchase price to AutoGuide’s net tangible assets 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 assets in the amount of \$41.2 million was allocated to goodwill, which is deductible for tax purposes. AutoGuide’s results have been included in Teradyne’s Industrial Automation segment from the date of acquisition.

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

	Purchase Price Allocation (in thousands)
Goodwill	\$ 41,223
Intangible assets	37,660
Tangible assets acquired and liabilities assumed:	
Other current assets	3,661
Non-current assets	1,227
Accounts payable and current liabilities	(1,223)
Long-term other liabilities	(949)
Total purchase price	<u>\$ 81,599</u>

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Teradyne estimated the fair value of intangible assets using the income approach. Forecasted revenues is the key assumption for estimating the fair value. 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:

	<u>Fair Value</u> <u>(in thousands)</u>	<u>Estimated Useful</u> <u>Life</u> <u>(in years)</u>
Developed technology	\$ 24,590	6.0
Trademarks and tradenames	7,360	6.0
Customer relationships	5,450	7.0
Backlog	260	0.3
Total intangible assets	\$ 37,660	6.1

The following unaudited pro forma information gives effect to the acquisition of AutoGuide 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:

	<u>For the Three Months</u> <u>Ended</u> <u>June 30,</u> <u>2019</u>	<u>For the Six Months</u> <u>Ended</u> <u>June 30,</u> <u>2019</u>
	<u>(in thousands)</u>	
Revenue	\$ 565,978	\$ 1,061,577
Net income	95,948	203,237
Net income per common share:		
Basic	\$ 0.56	\$ 1.18
Diluted	\$ 0.54	\$ 1.14

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 and wind power, 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 consolidated financial statements.

D. REVENUE

Disaggregation of Revenue

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

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	Semiconductor Test			Industrial Automation			Wireless Test	Corporate and Other	Total
	System on a Chip	Memory	System Test	Universal Robots	Mobile Industrial Robots	AutoGuide			
(in thousands)									
For the Three Months Ended									
June 28, 2020 (1)									
<i>Timing of Revenue Recognition</i>									
Point in Time	\$520,496	\$ 80,032	\$ 57,741	\$ 41,804	\$ 11,196	\$ 3,408	\$46,347	\$ (253)	\$ 760,771
Over Time	54,077	4,542	14,065	1,747	76	545	2,838	—	77,890
Total	\$574,573	\$ 84,574	\$ 71,806	\$ 43,551	\$ 11,272	\$ 3,953	\$49,185	\$ (253)	\$ 838,661
<i>Geographical Market</i>									
Asia Pacific	\$547,700	\$ 82,492	\$ 38,656	\$ 14,279	\$ 1,232	\$ —	\$41,907	\$ —	\$ 726,266
Americas	16,251	855	28,494	11,364	2,390	3,953	5,353	(253)	68,407
Europe, Middle East and Africa	10,622	1,227	4,656	17,908	7,650	—	1,925	—	43,988
Total	\$574,573	\$ 84,574	\$ 71,806	\$ 43,551	\$ 11,272	\$ 3,953	\$49,185	\$ (253)	\$ 838,661
For the Three Months Ended									
June 30, 2019 (1)									
<i>Timing of Revenue Recognition</i>									
Point in Time	\$265,130	\$ 53,984	\$ 60,137	\$ 62,015	\$ 10,505	\$ —	\$39,236	\$ (89)	\$ 490,918
Over Time	51,483	4,301	13,270	2,206	—	—	2,000	—	73,260
Total	\$316,613	\$ 58,285	\$ 73,407	\$ 64,221	\$ 10,505	\$ —	\$41,236	\$ (89)	\$ 564,178
<i>Geographical Market</i>									
Asia Pacific	\$285,981	\$ 47,202	\$ 38,191	\$ 18,820	\$ 2,681	\$ —	\$34,642	\$ —	\$ 427,517
Americas	15,601	8,783	29,911	17,980	2,783	—	5,926	(89)	80,895
Europe, Middle East and Africa	15,031	2,300	5,305	27,421	5,041	—	668	—	55,766
Total	\$316,613	\$ 58,285	\$ 73,407	\$ 64,221	\$ 10,505	\$ —	\$41,236	\$ (89)	\$ 564,178
For the Six Months Ended June 28,									
2020 (2)									
<i>Timing of Revenue Recognition</i>									
Point in Time	\$868,542	\$159,429	\$158,453	\$ 89,306	\$ 20,293	\$ 4,532	\$87,403	\$ (253)	\$1,387,705
Over Time	106,171	9,494	29,429	3,942	117	891	5,267	—	155,311
Total	\$974,713	\$168,923	\$187,882	\$ 93,248	\$ 20,410	\$ 5,423	\$92,670	\$ (253)	\$1,543,016
<i>Geographical Market</i>									
Asia Pacific	\$910,433	\$158,601	\$118,674	\$ 25,195	\$ 2,825	\$ —	\$79,711	\$ —	\$1,295,439
Americas	33,637	7,751	56,784	26,108	5,855	5,423	10,041	(253)	145,346
Europe, Middle East and Africa	30,643	2,571	12,424	41,945	11,730	—	2,918	—	102,231
Total	\$974,713	\$168,923	\$187,882	\$ 93,248	\$ 20,410	\$ 5,423	\$92,670	\$ (253)	\$1,543,016
For the Six Months Ended June 30,									
2019 (2)									
<i>Timing of Revenue Recognition</i>									
Point in Time	\$503,952	\$ 97,693	\$105,373	\$117,392	\$ 19,613	\$ —	\$66,691	\$ (240)	\$ 910,474
Over Time	105,534	8,572	26,254	3,857	—	—	3,586	—	147,803
Total	\$609,486	\$106,265	\$131,627	\$121,249	\$ 19,613	\$ —	\$70,277	\$ (240)	\$1,058,277
<i>Geographical Market</i>									
Asia Pacific	\$546,374	\$ 85,988	\$ 62,478	\$ 33,437	\$ 4,408	\$ —	\$60,661	\$ —	\$ 793,346
Americas	31,768	17,546	56,718	33,783	6,322	—	8,167	(240)	154,064
Europe, Middle East and Africa	31,344	2,731	12,431	54,029	8,883	—	1,449	—	110,867
Total	\$609,486	\$106,265	\$131,627	\$121,249	\$ 19,613	\$ —	\$70,277	\$ (240)	\$1,058,277

- (1) Includes \$2.5 million and \$1.7 million in 2020 and 2019, respectively, for leases of Teradyne's systems recognized outside Accounting Standards Codification ("ASC") 606 "Revenue from Contracts with Customers."
- (2) Includes \$4.3 million and \$3.4 million in 2020 and 2019, respectively, for leases of Teradyne's systems recognized outside ASC 606 "Revenue from Contracts with Customers."

Contract Balances

During the three and six months ended June 28, 2020, Teradyne recognized \$21.1 million and \$60.6 million, respectively, that was previously included within the deferred revenue and customer advances 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. This revenue primarily relates to undelivered hardware, extended warranties, training, application support, and post contract support. Each of these represents a distinct performance obligation. Teradyne expects to recognize 69% of the remaining performance obligation in the next 12 months, 26% 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 cash provided by operating activities in the consolidated statements of cash flows. Total trade accounts receivable sold under the factoring agreements were \$50.0 million and \$40.4 million for the three months ended June 28, 2020 and June 30, 2019, respectively and \$96.8 million and \$82.1 million for the six months ended June 28, 2020 and June 30, 2019, respectively. Factoring fees for the sales of receivables were recorded in interest expense and were not material.

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E. INVENTORIES

Inventories, net consisted of the following at June 28, 2020 and December 31, 2019:

	June 28, 2020	December 31, 2019
	(in thousands)	
Raw material	\$ 106,610	\$ 118,595
Work-in-process	29,710	32,695
Finished goods	69,768	45,401
	<u>\$ 206,088</u>	<u>\$ 196,691</u>

Inventory reserves at June 28, 2020 and December 31, 2019 were \$107.4 million and \$103.6 million, respectively.

F. 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 and debt mutual funds 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 28, 2020 and June 30, 2019, 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 28, 2020 were \$1.6 million and \$3.0 million, respectively. Realized losses recorded in the three and six months ended June 28, 2020 were \$0.1 million and \$0.2 million, respectively. 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 and losses are included in other (income) expense, net.

Unrealized gains on equity securities recorded in the three and six months ended June 28, 2020 were \$3.7 million. Unrealized losses on equity securities recorded in the six months ended June 28, 2020 were \$6.0 million. 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 and losses on equity securities are included in other (income) expense, net. Unrealized gains and losses on available-for-sale debt securities are included in accumulated other comprehensive income (loss).

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 28, 2020 and December 31, 2019.

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June 28, 2020

	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	\$ 345,312	\$ —	\$ —	\$ 345,312
Cash equivalents	326,347	53,772	—	380,119
Available-for-sale securities:				—
U.S. Treasury securities	—	165,305	—	165,305
Commercial paper	—	63,844	—	63,844
Corporate debt securities	—	63,218	—	63,218
Certificates of deposit and time deposits	—	9,506	—	9,506
Debt mutual funds	6,876	—	—	6,876
U.S. government agency securities	—	4,425	—	4,425
Non-U.S. government securities	—	601	—	601
Equity securities:				
Mutual funds	22,984	—	—	22,984
	<u>\$ 701,519</u>	<u>\$ 360,671</u>	<u>\$ —</u>	<u>\$ 1,062,190</u>
Derivative assets	—	30	—	30
Total	<u>\$ 701,519</u>	<u>\$ 360,701</u>	<u>\$ —</u>	<u>\$ 1,062,220</u>
Liabilities				
Contingent consideration	\$ —	\$ —	\$ 49,737	\$ 49,737
Derivative liabilities	—	222	—	222
Total	<u>\$ —</u>	<u>\$ 222</u>	<u>\$ 49,737</u>	<u>\$ 49,959</u>

Reported as follows:

	(Level 1)	(Level 2)	(Level 3)	Total
	(in thousands)			
Assets				
Cash and cash equivalents	\$ 671,659	\$ 53,772	\$ —	\$ 725,431
Marketable securities	—	229,791	—	229,791
Long-term marketable securities	29,860	77,108	—	106,968
Prepayments and other current assets	—	30	—	30
Total	<u>\$ 701,519</u>	<u>\$ 360,701</u>	<u>\$ —</u>	<u>\$ 1,062,220</u>
Liabilities				
Other current liabilities	\$ —	\$ 222	\$ —	\$ 222
Contingent consideration	—	—	16,789	16,789
Long-term contingent consideration	—	—	32,948	32,948
Total	<u>\$ —</u>	<u>\$ 222</u>	<u>\$ 49,737</u>	<u>\$ 49,959</u>

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December 31, 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	\$ 311,975	\$ —	\$ —	311,975
Cash equivalents	410,285	51,664	—	461,949
Available-for-sale securities:				—
Corporate debt securities	—	97,307	—	97,307
Commercial paper	—	54,149	—	54,149
U.S. Treasury securities	—	42,382	—	42,382
U.S. government agency securities	—	9,952	—	9,952
Debt mutual funds	6,888	—	—	6,888
Certificates of deposit and time deposits	—	4,751	—	4,751
Non-U.S. government securities	—	592	—	592
Equity securities:				
Equity mutual funds	25,772	—	—	25,772
	<u>\$ 754,920</u>	<u>\$ 260,797</u>	<u>\$ —</u>	<u>\$ 1,015,717</u>
Derivative assets	—	528	—	528
Total	<u>\$ 754,920</u>	<u>\$ 261,325</u>	<u>\$ —</u>	<u>\$ 1,016,245</u>
Liabilities				
Contingent consideration	\$ —	\$ —	\$ 39,705	\$ 39,705
Derivative liabilities	—	203	—	203
Total	<u>\$ —</u>	<u>\$ 203</u>	<u>\$ 39,705</u>	<u>\$ 39,908</u>

Reported as follows:

	(Level 1)	(Level 2)	(Level 3)	Total
	(in thousands)			
Assets				
Cash and cash equivalents	\$ 722,260	\$ 51,664	\$ —	\$ 773,924
Marketable securities	—	137,303	—	137,303
Long-term marketable securities	32,660	71,830	—	104,490
Prepayments and other current assets	—	528	—	528
Total	<u>\$ 754,920</u>	<u>\$ 261,325</u>	<u>\$ —</u>	<u>\$ 1,016,245</u>
Liabilities				
Other accrued liabilities	\$ —	\$ 203	\$ —	\$ 203
Contingent consideration	—	—	9,106	9,106
Long-term contingent consideration	—	—	30,599	30,599
Total	<u>\$ —</u>	<u>\$ 203</u>	<u>\$ 39,705</u>	<u>\$ 39,908</u>

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Changes in the fair value of Level 3 contingent consideration for the three and six months ended June 28, 2020 and June 30, 2019 were as follows:

	For the Three Months Ended		For the Six Months Ended	
	June 28, 2020	June 30, 2019	June 28, 2020	June 30, 2019
	(in thousands)			
Balance at beginning of period	\$20,472	\$ 38,313	\$39,705	\$ 70,543
Foreign currency impact	6	206	(355)	(405)
Payments (a)(b)	—	—	(8,852)	(34,590)
Fair value adjustment (c)(d)	29,259	(11,672)	19,239	(8,701)
Balance at end of period	<u>\$49,737</u>	<u>\$ 26,847</u>	<u>\$49,737</u>	<u>\$ 26,847</u>

- (a) In the six months ended June 28, 2020, Teradyne paid \$8.9 million of contingent consideration for the earn-out in connection with the acquisition of MiR.
- (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 A/S (“Universal Robots”), respectively.
- (c) In the three and six months ended June 28, 2020, the fair value of contingent consideration for the earn-outs in connection with the acquisition of MiR decreased by \$0.6 million and \$3.6 million, respectively, due to lower forecasted results. In the three and six months ended June 28, 2020, the fair value of contingent consideration for the earn-outs in connection with the acquisition of AutoGuide increased by \$29.9 million and \$22.8 million, respectively, due to higher forecasted results.
- (d) 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 decreased by \$11.7 million and \$8.7 million, respectively, primarily due to a decrease in the forecasted revenue.

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

Liability	June 28, 2020 Fair Value (in thousands)	Valuation Technique	Unobservable Inputs	Weighted Average
Contingent consideration (AutoGuide)	\$ 49,737	Monte Carlo Simulation	Revenue volatility	15.5%
			Discount Rate	1.8%
Contingent consideration (MiR)	\$ —	Monte Carlo Simulation	Revenue volatility	10.0%
			Discount Rate	0.8%

As of June 28, 2020, the significant unobservable inputs used in the Monte Carlo simulation to fair value the AutoGuide and 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 28, 2020, the maximum amount of contingent consideration that could be paid in connection with the acquisition of AutoGuide is \$106.9 million. The earn-out periods end on December 31, 2020, December 31, 2021 and December 31, 2022.

As of June 28, 2020, the maximum amount of contingent consideration that could be paid in connection with the acquisition of MiR is \$63.5 million. The remaining earn-out period ends on December 31, 2020.

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The carrying amounts and fair values of Teradyne's financial instruments at June 28, 2020 and December 31, 2019 were as follows:

	June 28, 2020		December 31, 2019	
	Carrying Value	Fair Value	Carrying Value	Fair Value
	(in thousands)			
Assets				
Cash and cash equivalents	\$ 725,431	\$ 725,431	\$ 773,924	\$ 773,924
Marketable securities	336,759	336,759	241,793	241,793
Derivative assets	30	30	528	528
Liabilities				
Contingent consideration	49,737	49,737	39,705	39,705
Derivative liabilities	222	222	203	203
Convertible debt (1)	402,305	1,198,669	394,687	1,010,275

- (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 28, 2020:

	June 28, 2020				Fair Market Value of Investments with Unrealized Losses
	Available-for-Sale				
	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	
	(in thousands)				
U.S. Treasury securities	\$ 163,586	\$ 1,734	\$ (15)	\$ 165,305	\$ 18,709
Commercial paper	63,774	70	—	63,844	—
Corporate debt securities	56,672	6,682	(136)	63,218	1,447
Certificates of deposit and time deposits	9,498	8	—	9,506	—
Debt mutual funds	6,686	190	—	6,876	—
U.S. government agency securities	4,353	72	—	4,425	—
Non-U.S. government securities	601	—	—	601	—
	<u>\$305,170</u>	<u>\$ 8,756</u>	<u>\$ (151)</u>	<u>\$ 313,775</u>	<u>\$ 20,156</u>

Reported as follows:

	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
	(in thousands)				
Marketable securities	\$ 229,471	\$ 331	\$ (11)	\$ 229,791	\$ 17,366
Long-term marketable securities	75,699	8,425	(140)	83,984	2,790
	<u>\$305,170</u>	<u>\$ 8,756</u>	<u>\$ (151)</u>	<u>\$ 313,775</u>	<u>\$ 20,156</u>

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The following table summarizes the composition of available-for-sale marketable securities at December 31, 2019:

	December 31, 2019				Fair Market Value of Investments with Unrealized Losses
	Available-for-Sale				
	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	
	(in thousands)				
Corporate debt securities	\$ 93,267	\$ 4,081	\$ (41)	\$ 97,307	\$ 2,009
Commercial paper	54,124	26	(1)	54,149	1,391
U.S. Treasury securities	42,167	431	(216)	42,382	17,556
U.S. government agency securities	9,942	14	(4)	9,952	3,043
Debt mutual funds	6,753	135	—	6,888	—
Certificates of deposit and time deposits	4,751	—	—	4,751	—
Non-U.S. government securities	592	—	—	592	—
	<u>\$211,596</u>	<u>\$ 4,687</u>	<u>\$ (262)</u>	<u>\$ 216,021</u>	<u>\$ 23,999</u>

Reported as follows:

	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses			
					(in thousands)			
Marketable securities	\$ 137,144	\$ 160	\$ (1)	\$ 137,303	\$ 2,922			
Long-term marketable securities	74,452	4,527	(261)	78,718	21,077			
	<u>\$211,596</u>	<u>\$ 4,687</u>	<u>\$ (262)</u>	<u>\$ 216,021</u>	<u>\$ 23,999</u>			

As of June 28, 2020 and December 31, 2019, the fair market value of investments with unrealized losses less than one year totaled \$20.2 million and \$23.6 million, respectively.

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 28, 2020 and December 31, 2019 were not other than temporary.

The contractual maturities of investments in available-for-sale securities held at June 28, 2020 were as follows:

	June 28, 2020	
	Cost	Fair Market Value
	(in thousands)	
Due within one year	\$ 229,471	\$ 229,791
Due after 1 year through 5 years	21,054	21,587
Due after 5 years through 10 years	13,762	14,974
Due after 10 years	34,197	40,547
Total	<u>\$298,484</u>	<u>\$ 306,899</u>

Contractual maturities of investments in available-for-sale securities held at June 28, 2020 exclude debt mutual funds with a fair market value of \$6.9 million, as they do not have a contractual maturity date.

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Derivatives

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

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

The notional amount of foreign currency forward contracts at June 28, 2020 and December 31, 2019 was \$125.0 million and \$144.9 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 28, 2020 and December 31, 2019:

	<u>Balance Sheet Location</u>	<u>June 28, 2020</u>	<u>December 31, 2019</u>
(in thousands)			
Derivatives not designated as hedging instruments:			
Foreign exchange contracts	Prepayments	\$ 30	\$ 528
Foreign exchange contracts	Other current liabilities	(222)	(203)
Total derivatives		<u>\$ (192)</u>	<u>\$ 325</u>

The following table summarizes the effect of derivative instruments recognized in the statement of operations for the three and six months ended June 28, 2020 and June 30, 2019:

	<u>Location of (Gains) Losses Recognized in Statement of Operations</u>	<u>For the Three Months Ended</u>		<u>For the Six Months Ended</u>	
		<u>June 28, 2020</u>	<u>June 30, 2019</u>	<u>June 28, 2020</u>	<u>June 30, 2019</u>
(in thousands)					
Derivatives not designated as hedging instruments:					
Foreign exchange contracts	Other (income) expense, net	\$470	\$239	\$4,481	\$4,173

- (1) The table does not reflect the corresponding gains and losses from the remeasurement of the monetary assets and liabilities denominated in foreign currencies.
- (2) For the three months ended June 28, 2020, net losses from the remeasurement of monetary assets and liabilities denominated in foreign currencies were \$0.4 million. For the six months ended June 28, 2020, net gains from the remeasurement of monetary assets and liabilities denominated in foreign currencies were \$1.6 million.
- (3) 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.

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

G. 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.

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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. 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 28, 2020, the conversion price was approximately \$31.59 per share of Teradyne's common stock. The conversion rate is subject to adjustment under certain circumstances. As of August 3, 2020, nine holders exercised the option to convert eighteen thousand dollars' worth of Notes.

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 \$31.59. The Note Hedge Transactions cover, subject to customary anti-dilution adjustments, approximately 14.6 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 14.6 million shares of common stock. As of June 28, 2020, the strike price of the warrants was approximately \$39.64 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.

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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 28, 2020, debt issuance costs were approximately \$3.8 million.

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

	June 28, 2020	December 31, 2019
	(in thousands)	
Debt Principal	\$459,987	\$ 460,000
Unamortized discount	57,682	65,313
Net Carrying amount of convertible debt	<u>\$402,305</u>	<u>\$ 394,687</u>

	For the Three Months Ended		For the Six Months Ended	
	June 28, 2020	June 30, 2019	June 28, 2020	June 30, 2019
	(in thousands)			
Contractual interest expense on the coupon	\$ 1,438	\$ 1,438	\$ 2,875	\$ 2,875
Amortization of the discount component and debt issue fees recognized as interest expense	3,839	3,653	7,631	7,262
Total interest expense on the convertible debt	<u>\$ 5,277</u>	<u>\$ 5,091</u>	<u>\$10,506</u>	<u>\$10,137</u>

As of June 28, 2020, the remaining unamortized discount was \$57.7 million, which will be amortized over 3.5 years using the effective interest rate method. The carrying amount of the equity component was \$100.8 million. As of June 28, 2020, the if-converted value of the Notes was \$1,192.0 million.

Revolving Credit Facility

On May 1, 2020, Teradyne entered into a credit agreement (the “Credit Agreement”) with Truist Bank, as administrative agent and collateral agent, and the lenders party thereto. The Credit Agreement provides for a three-year, senior secured revolving credit facility of \$400.0 million (the “Credit Facility”). The Credit Agreement further provides that, subject to customary conditions, Teradyne may seek to obtain from existing or new lenders incremental commitments under the Credit Facility in an aggregate principal amount not to exceed \$150.0 million.

Proceeds from the Credit Facility may be used for general corporate purposes and working capital. During the three months ended June 28, 2020, Teradyne incurred \$3.5 million in costs related to the revolving credit facility. These costs are being amortized over the three-year term of the revolving credit facility and are included in interest expense in the statement of operations. As of August 3, 2020, Teradyne has not borrowed any funds under the Credit Facility.

The interest rates applicable to loans under the Credit Facility are, at Teradyne’s option, equal to either a base rate plus a margin ranging from 0.50% to 1.25% per annum or LIBOR, a minimum of 0.75%, plus a margin ranging from 1.50% to 2.25% per annum, based on the consolidated leverage ratio of Teradyne. In addition, Teradyne will pay a commitment fee on the unused portion of the commitments under the Credit Facility ranging from 0.25% to 0.40% per annum, based on the then applicable consolidated leverage ratio.

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

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

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

As of August 3, 2020, Teradyne was in compliance with all covenants.

H. PREPAYMENTS

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

	June 28, 2020	December 31, 2019
	(in thousands)	
Contract manufacturer and supplier prepayments	\$ 191,029	\$ 143,392
Prepaid maintenance and other services	10,316	8,046
Prepaid taxes	6,665	8,503
Other prepayments	14,171	16,753
Total prepayments	<u>\$ 222,181</u>	<u>\$ 176,694</u>

I. 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 28, 2020	December 31, 2019
	(in thousands)	
Maintenance, service and training	\$ 75,144	\$ 63,815
Extended warranty	40,178	30,677
Customer advances, undelivered elements and other	64,536	56,358
Total deferred revenue and customer advances	<u>\$ 179,858</u>	<u>\$ 150,850</u>

J. PRODUCT WARRANTY

Teradyne generally provides a one-year warranty on its products, commencing upon installation, acceptance 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 balance below is included in other accrued liabilities.

	For the Three Months Ended		For the Six Months Ended	
	June 28, 2020	June 30, 2019	June 28, 2020	June 30, 2019
	(in thousands)			
Balance at beginning of period	\$ 10,971	\$ 7,752	\$ 8,996	\$ 7,909
Accruals for warranties issued during the period	6,200	2,295	11,267	5,360
Accruals related to pre-existing warranties	356	694	1,412	2,024
Settlements made during the period	(4,511)	(2,608)	(8,659)	(7,174)
Acquisition	—	—	—	14
Balance at end of period	<u>\$ 13,016</u>	<u>\$ 8,133</u>	<u>\$ 13,016</u>	<u>\$ 8,133</u>

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.

	For the Three Months Ended		For the Six Months Ended	
	June 28, 2020	June 30, 2019	June 28, 2020	June 30, 2019
	(in thousands)			
Balance at beginning of period	\$33,503	\$27,242	\$30,677	\$ 27,422
Deferral of new extended warranty revenue	11,450	5,476	19,050	11,296
Recognition of extended warranty deferred revenue	(4,775)	(4,002)	(9,549)	(10,002)
Balance at end of period	<u>\$40,178</u>	<u>\$28,716</u>	<u>\$40,178</u>	<u>\$ 28,716</u>

K. STOCK-BASED COMPENSATION

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

Service-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 service-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 may 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 0% to 200% of the target shares capped at four times the grant date value for grants prior to 2019. 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 executive officers meeting the retirement provisions prior to the grant date is recognized during the 365 days following 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.

PRsUs granted to Teradyne's executive officers may also have 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 0% to 200% 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 executive officers meeting the retirement provisions prior to the grant date is recognized during the 365 days following the 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.

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.

During the six months ended June 28, 2020 and June 30, 2019, Teradyne granted 0.4 million and 0.8 million of service-based restricted stock unit awards to employees at a weighted average grant date fair value of \$70.52 and \$36.84, respectively, and 0.1 million of service-based restricted stock unit awards to non-employee directors at a weighted average grant date fair value of \$64.99 and \$48.03, respectively.

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During the six months ended June 28, 2020 and June 30, 2019, Teradyne granted 0.1 million of PBIT PRSUs with a grant date fair value of \$70.94 and \$36.88, respectively.

During the six months ended June 28, 2020 and June 30, 2019, Teradyne granted 0.1 million of TSR PRSUs, with a grant date fair value of \$89.93 and \$51.51, respectively. The fair value was estimated using the Monte Carlo simulation model with the following assumptions:

	For the Six Months Ended	
	June 28, 2020	June 30, 2019
Risk-free interest rate	1.5%	2.6%
Teradyne volatility-historical	34.9%	31.9%
NYSE Composite Index volatility-historical	11.4%	11.9%
Dividend yield	0.6%	1.0%

Expected volatility was based on the historical volatility of Teradyne's stock and the NYSE Composite Index over the most recent three-year period. The risk-free interest rate was determined using the U.S. Treasury yield curve in effect at the time of grant. Dividend yield was based upon an estimated annual dividend amount of \$0.40 per share divided by Teradyne's stock price on the grant date of \$72.10 for the 2020 grant and an estimated annual dividend amount of \$0.36 per share divided by Teradyne's stock price on the grant date of \$36.75 for the 2019 grant.

During the six months ended June 28, 2020 and June 30, 2019, Teradyne granted 0.1 million of service-based stock options to executive officers at a weighted average grant date fair value of \$20.67 and \$10.61, respectively.

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 28, 2020	June 30, 2019
Expected life (years)	5.0	5.0
Risk-free interest rate	1.6%	2.5%
Volatility-historical	31.6%	30.1%
Dividend yield	0.6%	1.0%

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 \$0.40 per share divided by Teradyne's stock price on the grant date of \$72.10 for the 2020 grant and an estimated annual dividend amount of \$0.36 per share divided by Teradyne's stock price on the grant date of \$37.95 for the 2019 grant.

L. ACCUMULATED OTHER COMPREHENSIVE (LOSS) INCOME

Changes in accumulated other comprehensive (loss) income, 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 28, 2020				
Balance at December 31, 2019, net of tax of \$0, \$946, \$(1,124), respectively	\$ (23,514)	\$ 3,480	\$ 1,180	\$(18,854)
Other comprehensive income before reclassifications, net of tax of \$0, \$1,271, \$0, respectively	7,026	4,830	—	11,856
Amounts reclassified from accumulated other comprehensive income, net of tax of \$0, \$(421), \$(1), respectively	—	(1,499)	(3)	(1,502)
Net current period other comprehensive income (loss), net of tax of \$0, \$850, \$(1), respectively	7,026	3,331	(3)	10,354
Balance at June 28, 2020, net of tax of \$0, \$1,796, \$(1,125), respectively	<u>\$ (16,488)</u>	<u>\$ 6,811</u>	<u>\$ 1,177</u>	<u>\$ (8,500)</u>
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 as June 30, 2019, net of tax of \$0, \$709, \$(1,102), respectively	<u>\$ (11,540)</u>	<u>\$ 2,695</u>	<u>\$ 1,254</u>	<u>\$ (7,591)</u>

Reclassifications out of accumulated other comprehensive (loss) income to the statement of operations for the three and six months ended June 28, 2020 and June 30, 2019 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 28, 2020	June 30, 2019	June 28, 2020	June 30, 2019	
(in thousands)					
Available-for-sale marketable securities:					
Unrealized gains, net of tax of \$277, \$6, \$421, \$26, respectively	\$ 983	\$ 27	\$1,499	\$ 97	Interest income
Defined benefit retirement plans:					
Amortization of prior service credit, net of tax of \$0, \$11, \$1, \$21, respectively	2	37	3	74	(a)
Total reclassifications, net of tax of \$277, \$17, \$422, \$47, respectively	<u>\$ 985</u>	<u>\$ 64</u>	<u>\$1,502</u>	<u>\$ 171</u>	Net income

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

M. 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 28, 2020, were as follows:

	Industrial Automation	System Test	Wireless Test	Semiconductor Test	Total
	(in thousands)				
Balance at December 31, 2019					
Goodwill	\$ 396,483	\$ 158,699	\$ 361,819	\$ 261,996	\$ 1,178,997
Accumulated impairment losses	—	(148,183)	(353,843)	(260,540)	(762,566)
	396,483	10,516	7,976	1,456	416,431
AutoGuide acquisition	(149)	—	—	—	(149)
Foreign currency translation adjustment	5,671	—	—	50	5,721
Balance at June 28, 2020					
Goodwill	402,005	158,699	361,819	262,046	1,184,569
Accumulated impairment losses	—	(148,183)	(353,843)	(260,540)	(762,566)
	<u>\$ 402,005</u>	<u>\$ 10,516</u>	<u>\$ 7,976</u>	<u>\$ 1,506</u>	<u>\$ 422,003</u>

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:

	Gross Carrying Amount	Accumulated Amortization	Foreign Currency Translation Adjustment	Net Carrying Amount
	(in thousands)			
Balance at June 28, 2020				
Developed technology	\$361,787	\$ (292,394)	\$ (5,095)	\$ 64,298
Customer relationships	75,669	(61,730)	(295)	13,644
Tradenames and trademarks	70,120	(39,457)	(1,042)	29,621
Total intangible assets	<u>\$507,576</u>	<u>\$ (393,581)</u>	<u>\$ (6,432)</u>	<u>\$ 107,563</u>
Balance at December 31, 2019				
Developed technology	\$361,787	\$ (279,000)	\$ (5,709)	\$ 77,078
Customer relationships	75,669	(59,077)	(455)	16,137
Tradenames and trademarks	70,120	(36,671)	(1,184)	32,265
Backlog	260	(260)	—	—
Total intangible assets	<u>\$507,836</u>	<u>\$ (375,008)</u>	<u>\$ (7,348)</u>	<u>\$ 125,480</u>

Aggregate intangible asset amortization expense was \$8.9 million and \$18.8 million, respectively, for the three and six months ended June 28, 2020 and \$10.1 million and \$20.7 million, respectively, for the three and six months ended June 30, 2019.

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

<u>Year</u>	<u>Amortization Expense</u> <u>(in thousands)</u>
2020 (remainder)	11,721
2021	20,804
2022	19,911
2023	19,430
2024	19,123
Thereafter	16,574

N. NET INCOME PER COMMON SHARE

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

	<u>For the Three Months</u> <u>Ended</u>		<u>For the Six Months</u> <u>Ended</u>	
	<u>June 28,</u> <u>2020</u>	<u>June 30,</u> <u>2019</u>	<u>June 28,</u> <u>2020</u>	<u>June 30,</u> <u>2019</u>
	<u>(in thousands, except per share amounts)</u>			
Net income for basic and diluted net income per share	<u>\$188,908</u>	<u>\$ 97,397</u>	<u>\$365,098</u>	<u>\$206,535</u>
Weighted average common shares-basic	165,789	171,241	166,189	172,387
Effect of dilutive potential common shares:				
Incremental shares from assumed conversion of convertible notes (1)	7,599	4,364	7,466	3,275
Convertible note hedge warrant shares (2)	5,824	1,778	5,658	889
Restricted stock units	913	1,002	1,038	1,012
Stock options	132	183	133	202
Employee stock purchase plan	—	22	13	16
Dilutive potential common shares	<u>14,468</u>	<u>7,349</u>	<u>14,308</u>	<u>5,394</u>
Weighted average common shares-diluted	<u>180,257</u>	<u>178,590</u>	<u>180,497</u>	<u>177,781</u>
Net income per common share-basic	<u>\$ 1.14</u>	<u>\$ 0.57</u>	<u>\$ 2.20</u>	<u>\$ 1.20</u>
Net income per common share-diluted	<u>\$ 1.05</u>	<u>\$ 0.55</u>	<u>\$ 2.02</u>	<u>\$ 1.16</u>

- (1) Incremental shares from assumed conversion of the convertible notes was calculated using the difference between the average Teradyne stock price for the period and the conversion price of \$31.59, multiplied by 14.6 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 notes hedge warrant shares were calculated using the difference between the average Teradyne stock price for the period and the warrant price of \$39.64, multiplied by 14.6 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 28, 2020 excludes the effect of the potential vesting of 0.1 million and 0.2 million, respectively, of restricted stock units because the effect would have been anti-dilutive.

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.

O. RESTRUCTURING AND OTHER

During the three months ended June 28, 2020, Teradyne recorded a \$29.9 million charge for the increase in the fair value of the AutoGuide contingent consideration liability, a \$4.0 million contract termination settlement charge, \$3.1 million of acquisition related compensation and expenses, and \$0.8 million of other expenses, partially offset by a \$0.6 million gain for the decrease in the fair value of the MiR contingent consideration liability.

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During the three months ended June 30, 2019, Teradyne recorded a \$11.7 million gain 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 six months ended June 28, 2020, Teradyne recorded a \$22.8 million charge for the increase in the fair value of the AutoGuide contingent consideration liabilities, \$4.5 million of acquisition related compensation and expenses, a \$4.0 million contract termination settlement charge, \$1.1 million of other expenses, and \$0.8 million of severance charges primarily in Semiconductor Test, partially offset by a \$3.6 million gain for the decrease in the fair value of the MiR contingent consideration liability.

During the six months ended June 30, 2019, Teradyne recorded a \$8.7 million gain 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.

P. 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 at December 31. Teradyne uses a December 31 measurement date for all of its plans.

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 28, 2020, Teradyne contributed \$1.4 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.

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For the three and six months ended June 28, 2020 and June 30, 2019, Teradyne's net periodic pension cost was comprised of the following:

	For the Three Months Ended			
	June 28, 2020		June 30, 2019	
	United States	Foreign	United States	Foreign
	(in thousands)			
Service cost	\$ 433	\$ 208	\$ 399	\$ 192
Interest cost	1,523	119	1,799	176
Expected return on plan assets	(1,232)	(15)	(1,510)	(7)
Net actuarial loss	180	—	252	—
Total net periodic pension cost	<u>\$ 904</u>	<u>\$ 312</u>	<u>\$ 940</u>	<u>\$ 361</u>

	For the Six Months Ended			
	June 28, 2020		June 30, 2019	
	United States	Foreign	United States	Foreign
	(in thousands)			
Service cost	\$ 866	\$ 417	\$ 804	\$ 381
Interest cost	3,045	238	3,595	349
Expected return on plan assets	(2,464)	(31)	(3,021)	(14)
Net actuarial loss	180	—	252	—
Total net periodic pension cost	<u>\$ 1,627</u>	<u>\$ 624</u>	<u>\$ 1,630</u>	<u>\$ 716</u>

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 28, 2020 and June 30, 2019, Teradyne's net periodic postretirement benefit cost was comprised of the following:

	For the Three Months Ended		For the Six Months Ended	
	June 28, 2020	June 30, 2019	June 28, 2020	June 30, 2019
		(in thousands)		
Service cost	\$ 17	\$ 11	\$ 28	\$ 20
Interest cost	58	88	120	173
Amortization of prior service credit	(2)	(48)	(4)	(95)
Net actuarial (gain) loss	(279)	196	(279)	196
Total net periodic postretirement benefit (credit) cost	<u>\$ (206)</u>	<u>\$ 247</u>	<u>\$ (135)</u>	<u>\$ 294</u>

Q. COMMITMENTS AND CONTINGENCIES

Purchase Commitments

As of June 28, 2020, Teradyne had entered into purchase commitments for certain components and materials. The purchase commitments covered by the agreements aggregate to approximately \$544.2 million, of which \$534.3 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 such as, but not limited to, patent, employment, commercial and environmental matters. Teradyne believes that it has meritorious defenses against all pending claims and intends to vigorously contest them. While it is not possible to predict or determine the outcomes of any pending claims or to provide possible ranges of losses that may arise, Teradyne believes the potential losses associated with all of these actions are unlikely to have a material adverse effect on its business, financial position or results of operations.

R. 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 28, 2020	June 30, 2019	June 28, 2020	June 30, 2019
US statutory federal tax rate	21.0%	21.0%	21.0%	21.0%
Discrete benefit related to release of reserves for uncertain tax positions	0.1	(0.3)	0.1	(11.5)
Foreign taxes	(4.6)	(5.8)	(5.1)	(4.7)
International provisions of the U.S. Tax Cuts and Jobs Act of 2017	(1.9)	1.9	(1.1)	0.8
Tax credits	(1.4)	(2.1)	(1.6)	(2.5)
Discrete benefit related to equity compensation	(0.1)	(0.5)	(2.0)	(2.0)
Discrete expense related to U.S. transition tax	—	11.2	—	6.5
Other, net	—	0.4	0.6	0.7
Effective tax rate	<u>13.1%</u>	<u>25.8%</u>	<u>11.9%</u>	<u>8.3%</u>

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 28, 2020, 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 28, 2020 and December 31, 2019, Teradyne had \$21.4 million and \$21.2 million, respectively, of reserves for uncertain tax positions. The \$0.2 million net increase in reserves for uncertain tax positions is associated with U.S. research and development tax credits generated in the current year.

As of June 28, 2020, Teradyne estimates that it is reasonably possible that the balance of unrecognized tax benefits may decrease by approximately \$1.1 million in the next twelve months as a result of a lapse of statutes of limitation. The estimated decrease relates to transfer pricing.

Teradyne recognizes interest and penalties related to income tax matters in income tax expense. As of June 28, 2020 and December 31, 2019, \$1.7 million and \$1.4 million, respectively, of interest and penalties were accrued for uncertain tax positions. For the six months ended June 28, 2020 and June 30, 2019, expense of \$0.3 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 28, 2020 was \$13.6 million, or \$0.08 per diluted share. 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 holiday is scheduled to expire on December 31, 2020. Teradyne is currently in discussion with the Singapore Economic Development Board with respect to extension of the tax holiday for periods after December 31, 2020.

S. 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 and distribution channels. 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 and system level 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, 2019.

Segment information for the three and six months ended June 28, 2020 and June 30, 2019 is as follows:

	Semiconductor Test	System Test	Industrial Automation	Wireless Test	Corporate and Other	Consolidated
	(in thousands)					
Three Months Ended June 28, 2020						
Revenues	\$ 659,147	\$ 71,806	\$ 58,776	\$ 49,185	\$ (253)	\$ 838,661
Income (loss) before income taxes (1)(2)	228,787	19,193	(11,403)	14,482	(33,768)	217,291
Total assets (3)	1,192,355	126,164	662,103	108,066	1,160,501	3,249,189
Three Months Ended June 30, 2019						
Revenues	\$ 374,898	\$ 73,407	\$ 74,726	\$ 41,236	\$ (89)	\$ 564,178
Income before income taxes (1)(2)	91,355	23,535	(3,730)	10,930	9,087	131,177
Total assets (3)	745,073	123,460	601,676	93,232	1,108,073	2,671,514
Six Months Ended June 28, 2020						
Revenues	\$ 1,143,636	\$ 187,882	\$ 119,081	\$ 92,670	\$ (253)	\$ 1,543,016
Income (loss) before income taxes (1)(2)	382,603	67,600	(26,738)	24,702	(33,808)	414,359
Total assets (3)	1,192,355	126,164	662,103	108,066	1,160,501	3,249,189
Six Months Ended June 30, 2019						
Revenues	\$ 715,751	\$ 131,627	\$ 140,862	\$ 70,277	\$ (240)	\$ 1,058,277
Income (loss) before income taxes (1)(2)	174,404	38,875	(9,025)	14,558	6,344	225,156
Total assets (3)	745,073	123,460	601,676	93,232	1,108,073	2,671,514

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

(2) Included in income (loss) before taxes are charges and credits related to restructuring and other, and inventory charges.

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

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

	For the Three Months Ended		For the Six Months Ended	
	June 28, 2020	June 30, 2019	June 28, 2020	June 30, 2019
	(in thousands)		(in thousands)	
Semiconductor Test:				
Contract termination settlement charge	\$ 4,000	\$ —	\$ 4,000	\$ —
Cost of revenues—inventory charge	3,799	2,278	6,825	3,452
Restructuring and other—employee severance	—	—	—	924
Wireless Test:				
Cost of revenues—inventory charge	1,582	829	2,155	1,168
Industrial Automation:				
Restructuring and other—acquisition related expenses and compensation	—	—	790	1,695
System Test:				
Cost of revenues—inventory charge	—	—	—	763
Corporate and Other:				
Restructuring and other—AutoGuide contingent consideration adjustment	29,927	—	22,785	—
Restructuring and other—acquisition related expenses and compensation	2,974	—	3,715	—
Restructuring and other – other	750	—	750	—
Restructuring and other—MiR contingent consideration adjustment	(668)	(11,671)	(3,546)	(8,668)

T. SHAREHOLDERS' EQUITY

Stock Repurchase Program

In January 2020, Teradyne's Board of Directors authorized a new stock repurchase program for up to \$1.0 billion of common stock. Effective April 1, 2020, Teradyne suspended its share repurchase program.

During the six months ended June 28, 2020, Teradyne repurchased 1.5 million shares of common stock for \$88.5 million at an average price of \$58.33 per share. 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 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 2020 and May 2020, Teradyne's Board of Directors declared a quarterly cash dividend of \$0.10 per share. Dividend payments for the three and six months ended June 28, 2020 were \$16.6 million and \$33.3 million, respectively.

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.

While Teradyne declared a quarterly cash dividend and has suspended its share repurchase program, it may reduce or eliminate the cash dividend and may implement a new 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.

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, 2019. 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;
- defense/aerospace (“Defense/Aerospace”) test instrumentation and systems, storage and system level test (“Storage Test”) systems, and circuit-board test and inspection (“Production Board Test”) systems (collectively these products represent “System Test”);
- industrial automation (“Industrial Automation”) products; and
- wireless test (“Wireless Test”) systems.

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

The sales of our products and services are dependent, to a large degree, on these 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.

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. A few customers drive significant demand for our products both through direct sales and sales to the customers’ 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.

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 November 13, 2019, we acquired 100% of the membership interests of AutoGuide, LLC (“AutoGuide”), a maker of high payload AMRs, an emerging and fast-growing segment of the global forklift market. The total purchase price was approximately \$81.6 million, which included cash paid of approximately \$57.6 million and \$24.0 million in fair value of contingent consideration payable upon achievement of certain performance targets, extending potentially through 2022. The maximum contingent consideration that could be paid is \$106.9 million. AutoGuide’s AMRs are used for material transport of payloads up to 4,500 kg in manufacturing, warehouse and logistics applications. These products complement MiR’s lower payload products. AutoGuide is included in our Industrial Automation segment.

We believe our recent acquisitions 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.

Impact of the COVID-19 Pandemic on our Business

The novel coronavirus (COVID-19) pandemic has resulted in government authorities implementing numerous measures in an effort to contain the spread of the virus, such as travel bans and restrictions, limitations on gatherings or social distancing requirements, quarantines, shelter-in-place orders, and business limitations and shutdowns. These measures have impacted our day-to-day operations and could disrupt our business, workforce and operations, as well as the operations of our customers, contract manufacturers and suppliers for an uncertain period of time. We are continuing to monitor the rapidly evolving situation regarding the COVID-19 pandemic and its impact on our business, results of operations, financial condition, liquidity and cash flows. However, despite careful tracking, we are unable to accurately predict the full impact of COVID-19, which will depend on future developments that are highly uncertain and cannot be predicted with accuracy, including, but not limited to, the duration and continued spread of the outbreak, its severity, the actions to contain the virus or treat its impact, and how quickly and to what extent normal economic and operating conditions can resume.

Health and Safety

In response to the COVID-19 pandemic, we have taken proactive, aggressive action to protect the health and safety of our employees, customers, contract manufacturers and suppliers and we have complied with all government orders around the globe. The spread of COVID-19 has caused us to modify our business practices, including implementing social distancing protocols, suspending employee travel, requiring most employees to work remotely, cancelling physical participation in meetings, and extensively and frequently disinfecting our workspaces. Around the world, the majority of our employees are working from home. However, some of our engineering, operations, supply line and customer support teams must be on-site at our or our customers' facilities. We are providing those on-site employees with the necessary protective resources and procedures to minimize their exposure risk. We may take further actions as may be required or recommended by government authorities or that we determine are in the best interests of our employees, customers, contract manufacturers and suppliers.

Operations

We believe the COVID-19 pandemic, and the numerous measures implemented by authorities in response, has adversely impacted our results of operations, including by increasing costs and decreasing demand in our Industrial Automation businesses, but we cannot accurately estimate the amount of the impact to our second quarter 2020 financial results or to our future financial results. In addition, restrictions on our access to manufacturing facilities or on our support operations or workforce, or similar limitations for our contract manufacturers and suppliers, and restrictions or disruptions affecting transportation, such as reduced availability of transportation and increased border controls or closures, could limit our capacity to meet customer demand which could have a material adverse effect on our financial condition and results of operations. These measures have impacted and may further impact our workforce and operations, as well as those of our customers, contract manufacturers and suppliers. The constraints and limits imposed on our operations may slow or diminish our production and research and development activities as well as application support projects with our customers. At this time, application support projects are largely on track with employees assisting customers on-site where necessary but with the use of enhanced safety protocols. Research and development projects are, with minor exceptions, on schedule despite the rapid shift of a significant number of our engineers working remotely. While governmental measures may be modified or extended, we expect that our manufacturing and research and development facilities will remain operational, at sufficient capacity to support production demand. We are monitoring our operations closely in an effort to avoid any potential productivity loss caused by responses to the COVID-19 pandemic.

Supply

We have not yet experienced any significant impacts or interruptions to our supply chain as a result of the COVID-19 pandemic. However, our suppliers have faced and may continue to face difficulties maintaining operations in light of government-ordered restrictions, including social distancing requirements and shelter-in-place mandates. Our supply chain team, and our suppliers, overcame numerous supply, production, and logistics obstacles during the first quarter, but there is no assurance we or they will be able to do so in the future. Although we regularly monitor the financial health of companies in our supply chain, financial hardship on our suppliers or sub-suppliers caused by the COVID-19 pandemic could disrupt our ability to obtain components required to manufacture our products, adversely affecting our operations. To mitigate the risk of any potential supply interruptions, we may choose to increase certain inventory levels during the quarter. Additionally, restrictions or disruptions affecting transportation, such as reduced availability of air transport, port closures and increased border controls or closures, have led in some instances to higher costs and delays, both for obtaining components and shipping finished goods to customers, which could harm our profitability, make our products less competitive, or cause our customers to seek alternative suppliers.

Demand

The COVID-19 pandemic has significantly increased economic uncertainty in our markets, which could result in a significant decrease in demand for our products for an uncertain period of time. Demand for our Test products was strong throughout the second quarter and into the third quarter. While there is incremental softening in the automotive sector, there is strengthening demand in mobility, 5G, and memory test. Our Industrial Automation business, however, has seen a significant decline in demand due to COVID-19 related shutdowns affecting global manufacturing. We anticipate that the COVID-19 pandemic could cause further global economic disruption that could cause demand for our products to decline, which would adversely affect our business.

Liquidity

Although there is uncertainty related to the anticipated impact of the COVID-19 pandemic on our future results, we believe our business model, our current cash reserves and the recent steps we have taken to manage our cash flow, such as suspending our stock repurchase program, leave us well-positioned to manage our business through this crisis as it continues to unfold. We have a strong balance sheet as well as an operating model that can flex up and down with extreme demand swings and still remain profitable. Based on our analysis, we believe our existing balances of cash and cash equivalents and our currently anticipated operating cash flows will be sufficient to meet our working capital needs and other capital and liquidity requirements for the next twelve months. However, due to the uncertainty related to the future impact of the COVID-19 pandemic, in order to bolster our liquidity position, on May 1, 2020 we entered into a credit agreement providing for a three-year, senior secured revolving credit facility of \$400 million as further described in Note G: “Debt.” As of August 3, 2020, we have not borrowed any funds under the credit facility. While test demand remained strong at the beginning of our third quarter and our balance sheet has over \$1 billion in available cash with no short-term debt as of August 3, 2020, the impact of the COVID-19 pandemic on short-term Test and Industrial Automation demand remain uncertain.

We are continuing to monitor the rapidly evolving situation regarding the COVID-19 pandemic and guidance from government authorities around the world, including federal, state and local public health authorities and may take additional actions based on their recommendations. In these circumstances, there may be developments outside our control requiring us to adjust our operating plan. As a result, given the uncertain nature of this situation, we are not able to accurately predict the full extent of the impact of COVID-19 on our business, financial condition, results of operations, liquidity or cash flows in the future. In addition, see Part II—Item 1A, “Risk Factors,” included herein for updates to our risk factors regarding risks associated with the COVID-19 pandemic.

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 six months ended June 28, 2020 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, 2019, except as noted below.

Due to the COVID-19 pandemic, there has been uncertainty and disruption in the global economy and our markets. We are not aware of any specific event or circumstance that would require an update to our estimates or judgments or a revision of the carrying value of our assets or liabilities as of August 3, 2020, the date of issuance of this Quarterly Report on Form 10-Q. These estimates may change, as new events occur and additional information is obtained. Actual results could differ significantly from these estimates under different assumptions or conditions.

Goodwill

On January 26, 2017, the Financial Accounting Standards Board (“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. We adopted this standard on January 1, 2020, on a prospective basis. The adoption of ASU 2017-04 did not have a material impact on the consolidated statement of operations, cash flows, or earnings per share. We assess goodwill for impairment at least annually in the fourth quarter, as of December 31, on a reporting unit basis, or more frequently, when events and circumstances occur indicating that the recorded goodwill may be impaired. Under ASU 2017-04, 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.

Credit Losses

In June 2016, the FASB issued ASU 2016-13, “*Financial Instruments—Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments.*” This standard introduced the expected credit losses methodology for the measurement of credit losses on financial assets that are not measured at fair value through net income and replaces the “incurred loss” model with an “expected credit loss” model that requires consideration of a broader range of information to estimate expected credit losses over the lifetime of the asset. We adopted this standard on January 1, 2020 on a modified retrospective basis. The adoption of ASU 2016-13 did not have a material impact on our consolidated statement of operations, balance sheets, cash flows, or earnings per share.

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. Due to the COVID-19 pandemic, there has been uncertainty and disruption in the global economy and our markets. Teradyne is not aware of any specific event or circumstance that would require an update to its estimates or judgments or a revision of the carrying value of its assets or liabilities as of August 3, 2020, the date of issuance of this Quarterly Report on Form 10-Q. These estimates may change, as new events occur and additional information is obtained. Actual results may differ significantly from these estimates under different assumptions or conditions.

SELECTED RELATIONSHIPS WITHIN THE CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

	For the Three Months Ended		For the Six Months Ended	
	June 28, 2020	June 30, 2019	June 28, 2020	June 30, 2019
Percentage of revenues:				
Revenues:				
Products	88%	81%	87%	80%
Services	12	19	13	20
Total revenues	100	100	100	100
Cost of revenues:				
Cost of products	38	34	38	34
Cost of services	5	8	5	8
Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below)	44	43	43	42
Gross profit	56	57	57	58
Operating expenses:				
Selling and administrative	14	19	15	20
Engineering and development	11	14	12	15
Acquired intangible assets amortization	1	2	1	2
Restructuring and other	3	(2)	1	(1)
Total operating expenses	29	34	29	36
Income from operations	27	24	28	21
Non-operating (income) expense:				
Interest income	—	(1)	—	(1)
Interest expense	1	1	1	1
Other (income) expense, net	—	—	—	—
Income before income taxes	26	23	27	21
Income tax provision	3	6	3	2
Net income	23%	17%	24%	20%

[Table of Contents](#)**Results of Operations****Second Quarter 2020 Compared to Second Quarter 2019****Revenues**

Revenues by our reportable segments were as follows:

	For the Three Months Ended		Dollar Change
	June 28, 2020	June 30, 2019	
	(in millions)		
Semiconductor Test	\$ 659.1	\$ 374.9	\$284.2
System Test	71.8	73.4	(1.6)
Industrial Automation	58.8	74.7	(15.9)
Wireless Test	49.2	41.2	8.0
Corporate and Other	(0.3)	—	(0.3)
	<u>\$ 838.7</u>	<u>\$ 564.2</u>	<u>\$274.5</u>

The increase in Semiconductor Test revenues of \$284.2 million, or 75.8%, was driven primarily by an increase in semiconductor mobility tester sales resulting from increased complexity of silicon in handsets which drives demand for testers, and an increase in memory test sales of flash and DRAM memory testers. The decrease in System Test revenues of \$1.6 million, or 2.2%, was primarily due to lower sales in Production Board Test due to lower automotive electronics demand, partially offset by higher sales in Storage Test of system level testers, and higher sales in Defense/Aerospace test instrumentation and systems. The decrease in Industrial Automation revenues of \$15.9 million, or 21.3%, was primarily due to lower demand for collaborative robotic arms in automotive and manufacturing markets amplified by the impacts of COVID-19. The increase in Wireless Test revenues of \$8.0 million, or 19.4%, was primarily due to increased demand for 5G and WiFi 6 testers.

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

	For the Three Months Ended	
	June 28, 2020	June 30, 2019
Taiwan	51%	27%
China	14	20
United States	7	14
Japan	7	6
Europe	6	9
Korea	6	9
Thailand	3	4
Singapore	2	3
Philippines	2	2
Malaysia	1	3
Rest of World	1	3
	<u>100%</u>	<u>100%</u>

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

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Gross Profit

Our gross profit was as follows:

	For the Three Months Ended		Dollar/Point Change
	June 28, 2020	June 30, 2019	
Gross profit	\$ 471.5	\$ 323.9	\$ 147.6
Percent of total revenues	56.2%	57.4%	(1.2)

Gross profit as a percent of revenue decreased by 1.2 points, primarily due to product mix in Semiconductor Test and higher logistic and operations costs due to COVID 19 pandemic.

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

During the three months ended June 28, 2020, we recorded an inventory provision of \$5.6 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 and \$1.6 million was related to Wireless Test.

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 and \$0.8 million was related to Wireless Test and \$0.3 million was related to System Test.

During the three months ended June 28, 2020 and June 30, 2019, we scrapped \$1.8 million and \$2.6 million of inventory, respectively. During the three months ended June 28, 2020 and June 30, 2019, we sold \$0.3 million and \$0.4 million of previously written-down or written-off inventory, respectively. As of June 28, 2020, we had inventory related reserves for inventory, which had been written-down or written-off totaling \$107.4 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		Dollar Change
	June 28, 2020	June 30, 2019	
Selling and administrative	\$ 113.3	\$ 108.8	\$ 4.5
Percent of total revenues	13.5%	19.3%	

The increase of \$4.5 million in selling and administrative expenses was primarily due to higher variable compensation, partially offset by lower sales and marketing spending in Industrial Automation.

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Engineering and Development

Engineering and development expenses were as follows:

	For the Three Months Ended		Dollar Change
	June 28, 2020	June 30, 2019	
	(in millions)		
Engineering and development	\$ 94.1	\$ 81.4	\$ 12.7
Percent of total revenues	11.2%	14.4%	

The increase of \$12.7 million in engineering and development expenses was primarily due to higher variable compensation and higher spending in Semiconductor Test.

Restructuring and Other

During the three months ended June 28, 2020, we recorded a \$29.9 million charge for the increase in the fair value of the AutoGuide contingent consideration liability, a \$4.0 million contract termination settlement charge, \$3.1 million of acquisition related compensation and expenses, and \$0.8 million of other expenses, partially offset by a \$0.6 million gain for the decrease in the fair value of the MiR contingent consideration liability.

During the three months ended June 30, 2019, we recorded a \$11.7 million gain 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.

Interest and Other

	For the Three Months Ended		Dollar Change
	June 28, 2020	June 30, 2019	
	(in millions)		
Interest income	\$ (1.4)	\$ (4.4)	\$ 3.0
Interest expense	6.0	5.8	0.2
Other (income) expense, net	(4.0)	1.4	(5.4)

Interest income decreased by \$3.0 million primarily due to lower interest rates and lower marketable securities balance in 2020 compared to 2019. Other (income) expense, net changed by \$5.4 million, from an expense of \$1.4 million to an income of \$4.0 million, primarily due to changes in unrealized gains/losses on equity securities.

Income (Loss) Before Income Taxes

	For the Three Months Ended		Dollar Change
	June 28, 2020	June 30, 2019	
	(in millions)		
Semiconductor Test	\$ 228.8	\$ 91.4	\$137.4
System Test	19.2	23.5	(4.3)
Wireless Test	14.5	10.9	3.6
Industrial Automation	(11.4)	(3.7)	(7.7)
Corporate and Other (1)	(33.8)	9.1	(42.9)
	<u>\$ 217.3</u>	<u>\$ 131.2</u>	<u>\$ 86.1</u>

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

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The increase in income before income taxes in Semiconductor Test was driven primarily by an increase in semiconductor mobility tester sales resulting from increased complexity of silicon in handsets which drives demand for testers, and an increase in memory test sales of flash and DRAM memory testers. The decrease in income before income taxes in System Test was primarily due to lower sales in Production Board Test due to lower automotive electronics demand, partially offset by higher sales in Storage Test of system level testers, and higher sales in Defense/Aerospace test instrumentation and systems. The increase in income before income taxes in Wireless Test was primarily due to increased sales of 5G and WiFi 6 testers. The decrease in income before income taxes in Industrial Automation was primarily due to lower sales due to lower demand for collaborative robotic arms in automotive and manufacturing markets amplified by the impacts of COVID-19.

Income Taxes

The effective tax rate for the three months ended June 28, 2020 and June 30, 2019 was 13.1% and 25.8%, respectively. The decrease in the effective tax rate from the three months ended June 30, 2019 to the three months ended June 28, 2020 was primarily attributable to a reduction in discrete expense related to the U.S. one-time transition tax.

Six Months 2020 Compared to Six Months 2019

Revenues

Revenues by our four reportable segments were as follows:

	For the Six Months Ended		Dollar Change
	June 28, 2020	June 30, 2019	
	(in millions)		
Semiconductor Test	\$1,143.6	\$ 715.8	\$427.8
System Test	187.9	131.6	56.3
Industrial Automation	119.1	140.9	(21.8)
Wireless Test	92.7	70.3	22.4
Corporate and Other	(0.3)	(0.2)	(0.1)
	<u>\$1,543.0</u>	<u>\$1,058.3</u>	<u>\$484.6</u>

The increase in Semiconductor Test revenues of \$427.8 million, or 59.8%, was driven primarily by an increase in semiconductor mobility tester sales resulting from increased complexity of silicon in handsets which drives demand for testers, and an increase in memory test sales of flash and DRAM testers. The increase in System Test revenues of \$56.3 million, or 42.8%, was primarily due to higher sales in Storage Test of system level testers, and higher sales in Defense/Aerospace test instrumentation and systems, partially offset by lower sales in Production Board Test due to lower automotive electronics demand. The decrease in Industrial Automation revenues of \$21.8 million, or 15.5%, was primarily due to lower demand for collaborative robotic arms in automotive and manufacturing markets amplified by the impacts of COVID-19. The increase in Wireless Test revenues of \$22.4 million, or 31.9%, was primarily due to increased sales of 5G and WiFi 6 testers.

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

	For the Six Months Ended	
	June 28, 2020	June 30, 2019
Taiwan	41%	23%
China	15	19
Korea	10	10
United States	9	14
Europe	7	10
Japan	7	9
Thailand	4	4
Malaysia	2	3
Singapore	2	4
Philippines	2	3
Rest of World	1	1
	<u>100%</u>	<u>100%</u>

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

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Gross Profit

Our gross profit was as follows:

	For the Six Months Ended		Dollar/Point Change
	June 28, 2020	June 30, 2019	
Gross profit	\$877.0	\$611.6	\$ 265.4
Percent of total revenues	56.8%	57.8%	(1.0)

Gross profit as a percent of revenue decreased by 1.0 point, primarily due to product mix in Semiconductor 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 28, 2020, we recorded an inventory provision of \$9.6 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels, of which \$6.8 million was related to Semiconductor Test, \$2.2 million was related to Wireless Test, \$0.4 million was related to System Test, and \$0.2 million was related to Industrial Automation.

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 June 28, 2020 and June 30, 2019, we scrapped \$3.0 million and \$3.0 million of inventory, respectively. During the six months ended June 28, 2020 and June 30, 2019, we sold \$1.4 million and \$1.1 million of previously written-down or written-off inventory, respectively. As of June 28, 2020, we had inventory related reserves for inventory, which had been written-down or written-off totaling \$107.4 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		Dollar Change
	June 28, 2020	June 30, 2019	
Selling and administrative	\$224.6	\$210.8	\$ 13.8
Percent of total revenues	14.6%	19.9%	

The increase of \$13.8 million in selling and administrative expenses was primarily due to higher variable compensation and higher sales and marketing spending in Wireless Test and Semiconductor Test.

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Engineering and Development

Engineering and development expenses were as follows:

	For the Six Months Ended		Dollar Change
	June 28, 2020	June 30, 2019	
	(in millions)		
Engineering and development	\$ 179.3	\$ 158.2	\$ 21.1
Percent of total revenues	11.6%	15.0%	

The increase of \$21.1 million in engineering and development expenses was primarily due to higher variable compensation and higher spending in Semiconductor Test and Industrial Automation.

Restructuring and Other

During the six months ended June 28, 2020, we recorded a \$22.8 million charge for the increase in the fair value of the AutoGuide contingent consideration liabilities, \$4.5 million of acquisition related compensation and expenses, a \$4.0 million contract termination settlement charge, \$1.1 million of other expenses, and \$0.8 million of severance charges primarily in Semiconductor Test, partially offset by a \$3.6 million gain for the decrease in the fair value of the MiR contingent consideration liability.

During the six months ended June 30, 2019, we recorded a \$8.7 million gain 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.

Interest and Other

	For the Six Months Ended		Dollar Change
	June 28, 2020	June 30, 2019	
	(in millions)		
Interest income	\$ (4.1)	\$ (9.4)	\$ 5.3
Interest expense	11.6	11.3	0.3
Other (income) expense, net	2.8	—	2.8

Interest income decreased by \$5.3 million primarily due to lower interest rates and lower marketable securities balance in 2020 compared to 2019. Other (income) expense, net increased by \$2.8 million primarily due to the change in unrealized gains/losses on equity securities and higher foreign exchange losses.

Income (Loss) Before Income Taxes

	For the Six Months Ended		Dollar Change
	June 28, 2020	June 30, 2019	
	(in millions)		
Semiconductor Test	\$ 382.6	\$ 174.4	\$ 208.2
System Test	67.6	38.9	28.7
Wireless Test	24.7	14.6	10.1
Industrial Automation	(26.7)	(9.0)	(17.7)
Corporate and Other (1)	(33.8)	6.3	(40.1)
	<u>\$ 414.4</u>	<u>\$ 225.2</u>	<u>\$ 189.2</u>

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

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The increase in income before income taxes in Semiconductor Test was driven primarily by an increase in semiconductor mobility tester sales resulting from increased complexity of silicon in handsets which drives demand for testers, and an increase in memory test sales of flash and DRAM testers. The increase in income before income taxes in System Test was primarily due to higher sales in Storage Test of system level testers, and higher sales in Defense/Aerospace test instrumentation and systems, partially offset by lower sales in Production Board Test due to lower automotive electronics demand. The increase in Wireless Test income before income taxes was primarily due to increased sales of 5G and WiFi 6 testers. The decrease in income before income taxes in Industrial Automation was primarily due to lower demand for collaborative robotic arms in automotive and manufacturing markets amplified by the impacts of COVID-19.

Income Taxes

The effective tax rate for the six months ended June 28, 2020 and June 30, 2019 was 11.9% and 8.3%, respectively. The increase in the effective tax rate from the six months ended June 30, 2019 to the six months ended June 28, 2020 was primarily attributable to a reduction in discrete benefit related to the release of reserves for uncertain tax positions partially offset by a reduction in discrete expense related to the U.S. one-time transition tax.

Contractual Obligations

The following table reflects our contractual obligations as of June 28, 2020:

	Payments Due by Period					
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years	Other
Purchase obligations	\$ 544,225	\$534,282	\$ 9,943	\$ —	\$ —	\$ —
Convertible debt	459,987	—	—	459,987	—	—
Retirement plans contributions	130,826	5,216	10,386	10,318	104,906	—
Transition tax payable (1)	88,157	13,227	15,795	34,539	24,596	—
Operating lease obligations	77,692	23,956	31,508	13,367	8,861	—
Interest on long-term debt	20,125	5,750	11,500	2,875	—	—
Fair value of contingent consideration	49,737	16,789	32,948	—	—	—
Other long-term liabilities reflected on the balance sheet under GAAP (2)	90,336	—	47,470	7,700	464	34,702
Total	\$1,461,085	\$599,220	\$159,550	\$528,786	\$138,827	\$34,702

- (1) Represents the transition tax liability associated with our accumulated foreign earnings as a result of 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 increased by \$46.5 million in the six months ended June 28, 2020 to \$1,062.2 million.

Operating activities during the six months ended June 28, 2020 provided cash of \$266.0 million. Changes in operating assets and liabilities used cash of \$206.7 million. This was due to a \$384.2 million increase in operating assets and a \$177.6 million increase in operating liabilities.

The increase in operating assets was due to a \$331.0 million increase in accounts receivable due to increased sales, a \$49.5 million increase in prepayments and other assets, and a \$3.7 million increase in inventories.

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The increase in operating liabilities was due to a \$54.9 million increase in accounts payable, a \$47.2 million increase in other accrued liabilities, a \$37.8 million increase in income taxes, a \$28.7 million increase in deferred revenue and customer advance payments, a \$11.4 million increase in accrued employee compensation, partially offset by \$2.5 million of retirement plan contributions.

Investing activities during the six months ended June 28, 2020 used cash of \$173.2 million, due to \$299.5 million used for purchases of marketable securities, and \$84.0 million used for purchases of property, plant and equipment, partially offset by \$183.0 million and \$26.7 million in proceeds from maturities and sales of marketable securities, respectively, and proceeds from life insurance of \$0.5 million related to the cash surrender value from the cancellation of a Teradyne owned life insurance policy, and \$0.1 million, net of cash acquired, for the acquisition of AutoGuide.

Financing activities during the six months ended June 28, 2020 used cash of \$140.3 million, due to \$88.5 million used for the repurchase of 1.5 million shares of common stock at an average price of \$58.33 per share, \$22.5 million used for payments related to net settlements of employee stock compensation awards, \$33.3 million used for dividend payments, and \$8.9 million used for a payment related to MiR acquisition contingent consideration, partially offset by \$12.8 million from the issuance of common stock under employee stock purchase and stock option plans.

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.

In January 2020 and May 2020, our Board of Directors declared a quarterly cash dividend of \$0.10 per share. Dividend payments for the six months ended June 28, 2020 were \$33.3 million.

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 2020, our Board of Directors cancelled the January 2018 stock repurchase program and approved a new stock repurchase program for up to \$1.0 billion of common stock. On April 1, 2020, we suspended the share repurchase program. During the six months ended June 28, 2020, we repurchased 1.5 million shares of common stock for \$88.5 million at an average price of \$58.33 per share. 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.

While we declared a quarterly cash dividend and suspended our share repurchase program, we may reduce or eliminate the cash dividend and may implement a new 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.

On May 1, 2020, we entered into a credit agreement providing for a three-year, senior secured revolving credit facility of \$400 million. As of August 3, 2020, we have not borrowed any funds under the credit facility.

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We believe our cash, cash equivalents and marketable securities balance will be sufficient to pay our quarterly dividend 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. At this time, the COVID-19 pandemic has not had an impact on our liquidity, but there is no assurance that continued impacts resulting from the pandemic will not have an adverse effect in the future.

Equity Compensation Plans

As discussed in Note Q: “Stock Based Compensation” in our 2019 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.

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 2, 2020. 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, 2019.

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 28, 2020, the Notes had a fair value of \$1,198.7 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 2020 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	\$1,314,002	\$ 115,333	9.6%
No Change	1,198,669	—	—
10% Decrease	1,085,067	(113,602)	(9.5)

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. The evaluation included any impact to our controls caused by remote working arrangements for a number of our employees due to the COVID-19 pandemic. 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.

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 such as, but not limited to, patent, employment, commercial and environmental matters. We believe that we have meritorious defenses against all pending claims and intend to vigorously contest them. While it is not possible to predict or determine the outcomes of any pending claims or to provide possible ranges of losses that may arise, we believe the potential losses associated with all of these actions are unlikely to have a material adverse effect on our business, financial position or results of operations.

Item 1A: Risk Factors

In addition to other information set forth in this Form 10-Q, including the risk discussed below, 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, 2019, 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 and many of these risks could be further increased due to the COVID-19 pandemic.

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.

The novel coronavirus (COVID-19) pandemic has impacted our business and could materially adversely affect our results of operations, financial condition, liquidity or cash flows.

The global outbreak of the novel strain of the coronavirus (COVID-19) has resulted in government authorities implementing numerous measures in an effort to contain the spread of the virus, such as travel bans and restrictions, limitations on gatherings or social distancing requirements, quarantines, shelter-in-place orders, and business limitations and shutdowns. These measures have impacted our day-to-day operations and could disrupt our business, workforce and operations, as well as the operations of our customers, contract manufacturers and suppliers for an uncertain period of time. The COVID-19 pandemic, and the numerous measures implemented by authorities in response, has adversely impacted our results of operations, including by increasing costs company-wide and decreasing demand in our Industrial Automation businesses, but we cannot accurately estimate the full extent of the impact for our 2020 financial results or to our future financial results.

The COVID-19 pandemic has significantly increased economic uncertainty in our markets, which could result in a significant decrease in demand for our products for an uncertain period of time. In addition, restrictions on our access to manufacturing facilities or on our support operations or workforce, or similar limitations for our contractor manufacturers and suppliers, and restrictions or disruptions affecting transportation, such as reduced availability of transportation and increased border controls or closures, could limit our capacity to meet customer demand, which could have a material adverse effect on our financial condition and results of operations. The spread of COVID-19 has caused us to modify our business practices, including implementing social distancing protocols, suspending employee travel, requiring most employees to work remotely, canceling physical participation in meetings, events and conferences, and extensively and frequently disinfecting our workspaces, and we may take further actions as may be required by government authorities or that we determine are in the best interests of our employees, customers, contract manufacturers and suppliers. These measures may not be sufficient to mitigate the risks posed by the virus, and our ability to perform critical functions could be harmed. Due to the uncertainty regarding the duration, severity and business impact of the COVID-19 pandemic, as of April 1, 2020, we have suspended our stock repurchase program announced in January 2020. At this time, we do not know whether or when we will resume our 2020 repurchase plan or authorize future stock repurchase programs.

We are continuing to monitor the rapidly evolving situation regarding the COVID-19 pandemic and its impact on our business, results of operations, financial condition, liquidity and cash flows. However, despite careful tracking, we are unable to accurately predict the full impact of COVID-19, which will depend on future developments that are highly uncertain and cannot be predicted with accuracy, including, but not limited to, the duration and continued spread of the outbreak, its severity, the actions to contain the virus or treat its impact, and how quickly and to what extent normal economic and operating conditions can resume.

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. 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.

On May 15, 2020, the U.S. Department of Commerce published new regulations expanding the scope of the U.S. EAR to include additional products that would become subject to the Entity List restrictions relating to Huawei and the designated Huawei entities including HiSilicon. The comment period for the new regulations ended on July 14, 2020. These new regulations restrict the sale to Huawei and the designated Huawei entities of items, such as semiconductor devices, manufactured by Huawei’s contract manufacturers under specific, detailed conditions set forth in the new regulations. While the new regulations do not impose any new restrictions on Teradyne directly, the new regulations may impact our sales to third party contract manufacturers used by Huawei and HiSilicon to manufacture and test semiconductor and other electronic devices. Because the impact of these new regulations on Huawei’s business is both fluid and uncertain, at this time, we do not know the potential extent of the impact of the new regulations on our business with Huawei, HiSilicon and their contract manufacturers. However, it is possible that these new regulations and any other additional regulations that may be implemented by the U.S. Department of Commerce or other government agency could have a material impact on our business and financial results.

On April 28, 2020, the Department of Commerce published new export control regulations for certain U.S. products and technology sold to military and civilian end users in China. The regulations went into effect on June 29, 2020. We do not expect that compliance with the new export controls will significantly impact our ability to sell products to our customers in China or to manufacture products in China. The new export controls, however, could disrupt our supply chain, increase our compliance costs and impact the demand for our products in China and, thus, have a material adverse impact on our business, financial condition or results of operations. In addition, while we maintain an export compliance program, our compliance controls could be circumvented, exposing us to legal liabilities. We will continue to assess the potential impact of the new export controls on our business and operations and take appropriate actions, including filing for licenses with the Department of Commerce, to minimize any disruption. However, we cannot be certain that the actions we take will mitigate all of the risks associated with the new export controls that may impact our business.

We have incurred indebtedness and may incur additional indebtedness.

On December 12, 2016, we 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, after being partially offset by proceeds from the sale of the warrants, of the convertible note hedge transactions and \$50.1 million of which was used to repurchase 2.0 million shares of our common stock. Holders of the Notes may require us to repurchase the Notes upon the occurrence of certain fundamental changes involving us or the holders may elect to convert into shares of our common stock.

On May 1, 2020, we entered into a three-year, senior secured revolving credit facility of up to \$400.0 million. Subject to customary conditions, we may seek to obtain from existing or new lenders incremental commitments under the credit facility in an aggregate principal amount not to exceed \$150.0 million. We have not borrowed any funds under this credit facility. We could borrow funds under this credit facility at any time for general corporate purposes and working capital.

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The issuance of the Notes and any additional indebtedness, among other things, could:

- make it difficult to make payments on this indebtedness and our other obligations;
- make it difficult to obtain any necessary future financing for working capital, capital expenditures, debt service requirements or other purposes;
- require the dedication of a substantial portion of any cash flow from operations to service for indebtedness, thereby reducing the amount of cash flow available for other purposes, including capital expenditures; and
- limit our flexibility in planning for, or reacting to, changes in our business and the industries in which we compete.

Restrictive covenants in the agreement governing our senior secured revolving credit facility may restrict our ability to pursue business strategies.

The agreement governing our senior secured revolving credit facility limits our ability, among other things, to: incur additional secured indebtedness; sell, transfer, license or dispose of assets; consolidate or merge; enter into transactions with our affiliates; and incur liens. In addition, our senior secured revolving credit facility contains financial and other restrictive covenants that limit our ability to engage in activities that may be in our long term best interest, such as, subject to permitted exceptions, making capital expenditures in excess of certain thresholds, making investments, loans and other advances, and prepaying any additional indebtedness while our indebtedness under our senior secured revolving credit facility is outstanding. Our failure to comply with financial and other restrictive covenants could result in an event of default, which if not cured or waived, could result in the lenders requiring immediate payment of all outstanding borrowings or foreclosing on collateral pledged to them to secure the indebtedness.

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

In January 2020, our Board of Directors cancelled the January 2018 stock repurchase program and authorized a new stock repurchase program for up to \$1.0 billion of common stock. On April 1, 2020, we suspended the repurchase program. During the six months ended June 28, 2020, we repurchased 1.5 million shares of common stock for \$88.5 million at an average price of \$58.33 per share. 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.

The following table includes information with respect to repurchases we made of our common stock during the three months ended June 28, 2020 (in thousands except per share price):

<u>Period</u>	<u>(a) Total Number of Shares (or Units) Purchased</u>	<u>(b) Average Price Paid per Share (or Unit)</u>	<u>(c) Total Number of Shares (or Units) Purchased as Part of Publicly Announced Plans or Programs</u>	<u>(d) Maximum Number (or Approximate Dollar Value) of Shares (or Units) that may Yet Be Purchased Under the Plans or Programs</u>
March 30, 2020 – April 26, 2020	174	\$ 54.57	173	\$ 911,535
April 27, 2020 – May 24, 2020	5	\$ 57.88	—	\$ 911,535
May 25, 2020 – June 28, 2020	1	\$ 69.05	—	\$ 911,535
	<u>180 (1)</u>	<u>\$ 54.78 (1)</u>	<u>173</u>	

(1) Includes approximately eight thousand shares at an average price of \$59.13 withheld from employees for the payment of taxes.

We satisfy U.S. federal and state minimum withholding tax obligations due upon the vesting and the conversion of restricted stock units into shares of our common stock, by automatically withholding from the shares being issued, a number of shares with an aggregate fair market value on the date of such vesting and conversion that would satisfy the minimum withholding amount due.

Item 4: Mine Safety Disclosures

Not Applicable

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Item 6: Exhibits

<u>Exhibit Number</u>	<u>Description</u>
10.1	<u>Credit Agreement, dated May 1, 2020, by and among Teradyne, Inc., as the Borrower, Truist Bank, as the administrative agent, issuing bank and swingline lender, and the several banks and other financial institutions and lenders from time to time party thereto filed as Exhibit 10.1 to Teradyne's Current Report on Form 8-K filed May 5, 2020</u>
31.1	<u>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)</u>
31.2	<u>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)</u>
32.1	<u>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)</u>
32.2	<u>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)</u>
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (formatted as Inline XBRL, and contained in Exhibit 101)

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 3, 2020

**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 28, 2020 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 3, 2020

**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 28, 2020 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 3, 2020