2018
ANNUAL REPORT

West

West: By Your Side for a Healthier World™

Our customers, the world's leading pharmaceutical, biotechnology, generic drug and medical device producers, are met with significant challenges and time constraints when bringing new products to market. With West by their side we can, together, create and deliver new solutions for injectable medicines that improve healthcare today and tomorrow.

Our quest to be an industry leader and trusted partner to our customers began nearly 100 years ago. Our mission—to contain and deliver injectable therapies that improve patients' lives—serves to remind our team of the important role West plays in delivering healthcare to millions of patients across the globe every day.

BY THE SIDE OF OUR CUSTOMERS

West's top priority is delivering high-quality products that meet the exact product specifications and quality standards customers require and expect. This focus on quality includes excellence in manufacturing, scientific and technical expertise, and management. At the manufacturing level, this means producing clean, sterile, high-quality components to minimize disruptions to our customers' supply chain and bringing safe, effective drug products to the market—and to the patient—quickly and efficiently.

Our products and services address the unique needs of our Biologics, Pharmaceutical, Generics and Contract Manufacturing customers. This year, we introduced our Integrated Solutions Program—a comprehensive approach that combines West's high-quality packaging and delivery products with our expert analytical testing, device manufacturing and assembly, and regulatory expertise.

BY THE SIDE OF OUR TEAM MEMBERS

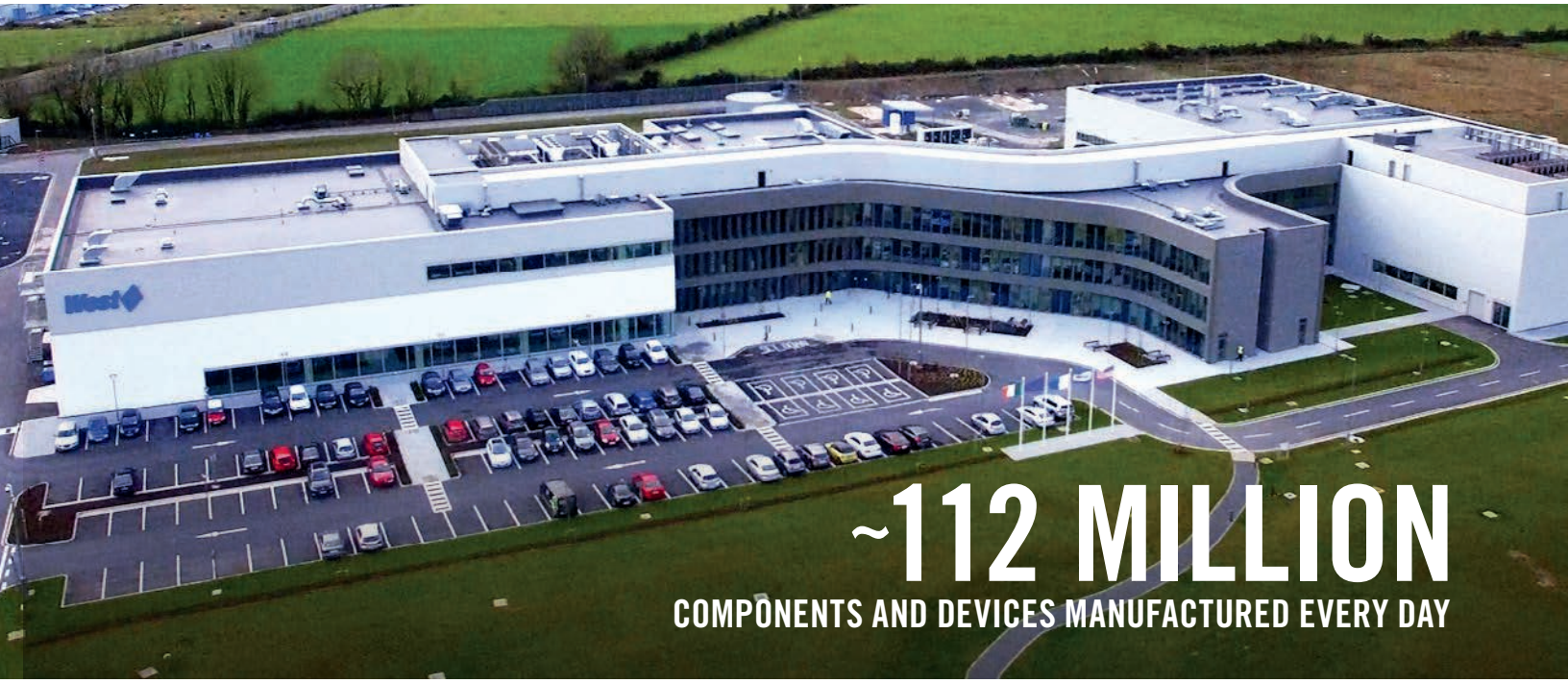
With approximately 7,700 team members across our global network, we are fortunate to have a broad spectrum of people who make up our Company. We understand that diversity is key to our success and know that a diverse workforce leads to greater innovation, more opportunities, better access to talent and stronger business performance. We encourage a culture of mutual respect, in which everyone understands and values the similarities and differences among our team members, customers, communities and other stakeholders.

BY THE SIDE OF OUR COMMUNITY

We are passionate about giving back to the communities in which we live and work. We recognize our responsibility to conduct our business in a sustainable manner, and we are proud of our team's history of giving and volunteering across the globe. Together with the Herman O. West Foundation, the Company contributes to a wide range of organizations working to improve the world and our local communities.

2018 AWARDS

- CPHI Excellence in Pharma: Corporate Social Responsibility
- Packaging Award: AccelTRA™
- Innovation Award: SelfDose™
- EcoVadis Gold Standard
- CEO Connection Mid-Market Social Impact Award



~112 MILLION
COMPONENTS AND DEVICES MANUFACTURED EVERY DAY

7,700
TEAM MEMBERS GLOBALLY

WEST LAUNCHED ONLINE STORE
westpharma.com/store

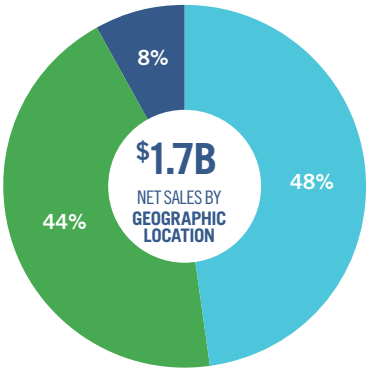
GLOBAL ANNUAL FOOD DRIVE PROVIDED

~224K+ MEALS

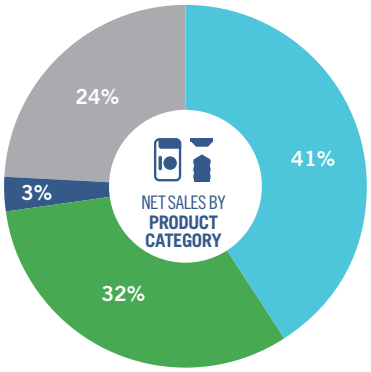
WEST AND ITS GLOBAL TEAM MEMBERS CONTRIBUTED TO

200+
CHARITABLE ORGANIZATIONS

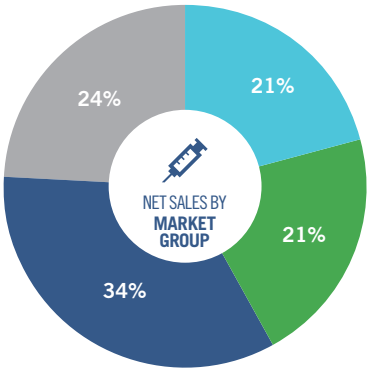
2018 NET SALES
Business at a Glance



- Americas
- Europe, Middle East, Africa
- Asia Pacific

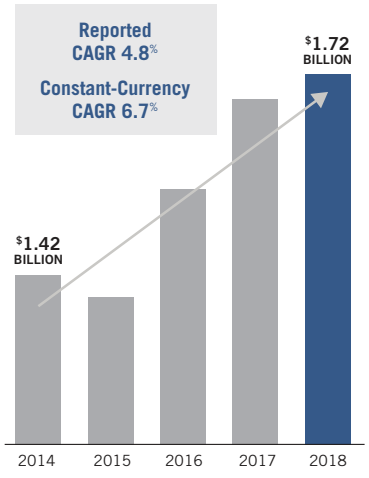


- High-Value Components
- Standard Packaging
- Delivery Devices
- Contract-Manufactured Products[1]

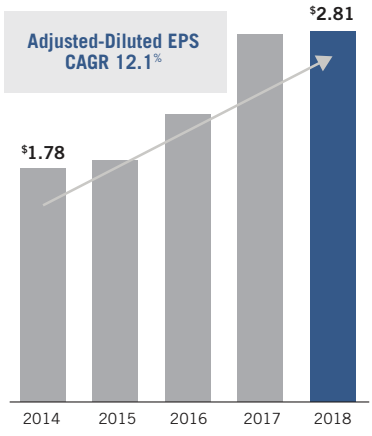


- Biologics
- Generics
- Pharma
- Contract-Manufactured Products[1]

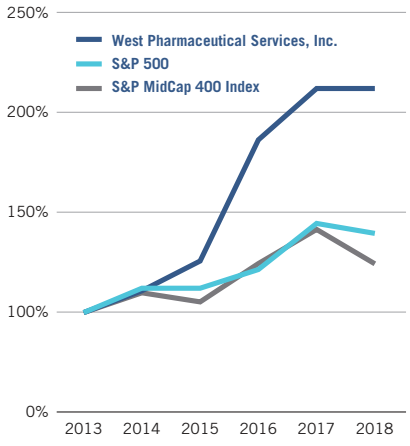
ANNUAL COMPARISON
Sustained, Consistent Growth



NET SALES[2]



ADJUSTED-DILUTED EPS[3]
(NON-GAAP)



5-YEAR TOTAL SHAREHOLDER RETURN[4]

[1]Non-proprietary products
[2]Please refer to "Note 3: Revenue" in our financial statements filed with our 2018 Form 10-K, which addresses new accounting guidance on revenue recognition.
[3]Please refer to our February 14, 2019 and January 9, 2019 current reports on Form 8-K for the reconciliation of Non-GAAP financial measures.
[4]Source: NASDAQ IR Insight

WEST PHARMACEUTICAL SERVICES, INC. & SUBSIDIARIES

Financial Summary

	2018	2017
Net Sales[1]	**$1,717.4**	$1,599.1
Net Sales Growth Ex-Currency	**5.6%**	
Diluted Earnings Per Share		
As reported (GAAP)	**$2.74**	$1.99
Restructuring and related charges	**0.08**	–
Argentina currency devaluation	**0.02**	–
Tax law changes	**(0.03)**	0.64
Venezuela deconsolidation	–	0.15
As adjusted (Non-GAAP)	**$2.81**	$2.78

Our 2018 as-reported results include the impact of net restructuring and related charges of $6.3 million ($0.08 per diluted share), a charge of $1.1 million ($0.02 per diluted share) related to the classification of Argentina's economy as highly inflationary under U.S. GAAP as of July 1, 2018, and a net tax benefit of $2.5 million ($0.03 per diluted share) for the impact of tax law changes, including the Tax Cuts and Jobs Act.

Our 2017 as-reported results include the impact of a discrete tax charge of $48.8 million ($0.64 per diluted share) related to the Tax Cuts and Jobs Act, and the impact of changes in enacted international tax rates on previously recorded deferral tax asset and liability balances, as well as a charge of $11.1 million ($0.15 per diluted share) related to the deconsolidation of our Venezuelan subsidiary.

Adjusted results are intended to aid investors in understanding the Company's year-over-year results and are considered non-GAAP financial measures. Non-GAAP financial measures should not be considered in isolation or as an alternative to such measures determined in accordance with GAAP. Our executive team uses these financial measures to evaluate the performance of the Company in terms of profitability and efficiency, as well as to compare operating results to prior periods.

For a discussion of non-GAAP financial measures, please refer to our 2018 Form 10-K filed on February 28, 2019 and our current Form 8-K filed on February 14, 2019.

[1]*Dollars in millions, except per share data*

A Letter from West's President and CEO

We made good progress in 2018 executing on our market-led strategy to deliver integrated containment and delivery solutions for injectable medicines to our global pharmaceutical and biotech customers. With a strong team in place, and the fundamentals of the markets we serve driving strong demand for our products and services, we are well-positioned to grow sales and expand profit margins in 2019 and beyond.

2018 PERFORMANCE HIGHLIGHTS

In 2018, we reported net sales of $1.717 billion, which represents 5.6% of organic, constant-currency growth over the prior year. Our Proprietary Products business segment sales grew organically by 3.9%, led by good growth in our Generics market unit and improved growth in our Pharma market unit. Despite a slower start to the year, the Biologics market unit ended 2018 with a return to more typical growth. Our Contract Manufacturing business segment sales grew organically by an impressive 11.6%, due to a focused strategy on healthcare drug delivery and diagnostics.

Our efforts to optimize our manufacturing network and operate more efficiently also led to double-digit growth in operating cash flow and healthy margins. As we have done for 48 years running, we returned cash to you, our shareholders, through quarterly dividend payments that have increased on an annual basis. We ended the year in a very strong financial position that will enable us to continue to invest in our business for the long term.

OUR PURPOSE: TO IMPROVE PATIENT LIVES

All 7,700 West team members are clear on our Company's vision, mission and purpose—to be a world leader in the containment and delivery of injectables therapies to improve patient lives. The role West plays in supporting the delivery of healthcare around the world is critical and has a direct impact on patient lives, and our team members appreciate and embrace this responsibility. Our 2018 results demonstrate how they are bringing to life the values which we espouse, across all aspects of our business.

Passion for Customers is our first core value. Our customers' success is our success. We work hard to deliver the critical high-quality drug containment and delivery components they require today, and ensure we are continuously innovating to meet their needs for tomorrow. Two great examples that support this value were the introduction of a new Integrated Solutions Program and the launch of several new products in 2018.

Our new Integrated Solutions Program helps our customers overcome the complexities they face when bringing drug products to the market. We offer a comprehensive portfolio of services that includes technical testing and analyses, regulatory and quality support and device engineering development, all of which are critical to ensuring complete and accurate drug registration filings. These services complement our high-value product and device offerings. At West, our unrivaled technical expertise helps our customers "Simplify the Journey™" throughout the drug development cycle.

We also launched several new products this year to support the unique customer groups we serve. Our AccelTRA™ product line was extended to include additional vial components. This product line helps our Generics customers meet increasing quality standards, ensure fast response to market volatility and move product to market quickly. In addition, we also launched Westar® Select, our latest quality enhancement offering, which provides customers with a tighter particulate specification, and is available through West's optimized global manufacturing network. These are both good examples of our market-led strategy in action—developing products and solutions to address unique customer needs.

Our second core value centers around our Leadership in Quality. We remind our team daily that we can never compromise on quality because patients are counting on us. This patient-first focus was the theme of our annual quality awareness week this past year. During our Quality Week, each West office holds events to reinforce the importance of maintaining West's top-quality standards and provides education and training for team members around our policies and practices in this area.

Our Operations Team is responsible for maintaining and continuously improving our ability to manufacture and deliver the highest quality products. In 2017, we started on a path to globalize our plant operations, so all our teams could work to one global standard for service, quality and safety. In just its second full year of operation, I am very pleased to see that the team has significantly improved plant utilization and maintained our industry-leading quality metrics, all while working to lower our capital spending requirements. The team is executing on key initiatives that will raise the bar on quality and lead-times, while we work to support new capacity for innovative products and reduce overall cost.

Our final core value is meant to guide the way we work, as One West Team. Working as One West Team is about building a sense of community both inside and outside the walls of West. Internally, we foster an environment where team members feel valued and respected and have opportunities to excel and grow in their jobs. It means we not only appreciate, but celebrate the diversity of our team, recognizing that diversity of thought, experience, geographic region and more, will propel us forward. It means we collaborate to keep our working environments safe, day in and day out. In 2018, our Recordable Injury Rate (RIR) of 0.82 was the lowest recorded since we began tracking this metric over a decade ago, and represents a 18% improvement over 2017, and a 60% improvement since 2015. Finally, our One West Team value means we also look outside the walls of West to support and give back to the communities in which we operate.

OUR LONG-TERM OUTLOOK

We continue to see positive market trends that support our business. More and more prescription medicines are being developed as injectable drugs. The bar for quality and reliability continues to be raised by both our customers and global regulators. Our customers continue to request technical and regulatory services to support the packaging and delivery of their products, as well as differentiated delivery devices to improve patient adoption and adherence. As the leader in our industry, we know we are uniquely placed to address these market needs.

Each year, we have seen growing interest and demand for our high-value product offerings, device platforms and our contract-manufacturing services. Across each market unit—Biologics, Generics, Pharma, and Contract Manufacturing—customers are seeking out West's differentiated packaging and delivery devices. We are seeing that interest grow around the world, with faster growth in the Asia Pacific and South America regions. Sales in 2018 within the Asia Pacific and South American markets represented about 10% of total sales and have grown by double-digits, further positioning the Company to serve our global customer base.

We know our future long-term growth is also predicated on the strength of our team and its leaders. I was pleased to welcome two new members onto our Executive Leadership Team this year: Silji Abraham joined as our Chief Digital and Transformation Officer in March, and Bernard Birkett joined as our new Chief Financial Officer in June, following William Federici's retirement. As West continues to execute our long-term strategy, the effective use of technology and strong business processes will be critical to our success, and I am confident Silji will speed our transformation in both of these areas. Bernard brings significant international experience from his previous roles, along with deep financial management skills. His knowledge of this industry, results-oriented leadership style and collaborative approach will be an asset to our team. I also wish to thank Bill Federici for his long and successful service to the Company.

Our Board of Directors continues to guide and support our leadership team, and we are grateful for their continued commitment to West. John Weiland, one of our longest-standing board members, will retire this year. During his 12 years of service, John has been a constant, seeing the Company through a great period of growth and success. He will be missed, and we thank him for his service to West.

Our work in 2018 has positioned us well to deliver on our long-term financial commitment to grow the business by 6-8%, expand operating margins by 100 basis points and increase our operating cash flow. Our diverse portfolio of high-value products and services is on track for continued growth and will be fueled by new products and line extensions. We are making significant progress in our Global Operations to deliver improved efficiencies, while deploying cutting-edge manufacturing strategies to advance our already strong position in service and quality. We are confident in our strategy for continued growth across the geographies and markets we serve, for both the short and long term, and look forward to the coming year.

Thank you for your continued support of West.

Sincerely,

Eric M. Green
President & CEO

18%
IMPROVEMENT IN RECORDABLE INJURY RATE (RIR) OVER 2017

10–15
SUSTAINABILITY IMPROVEMENT PROJECTS PER SITE

OUR TARGETED GIVING CONTINUES TO FOCUS ON CHILDREN, PEOPLE WITH DISABILITIES, HEALTHCARE AND EDUCATION

SUSTAINABILITY RATINGS IN TOP 5%
OF REPORTING COMPANIES

Our Commitment

West is committed to working closely by our customers' side to improve patient's health around the world. We also recognize our responsibility to conduct business in a sustainable manner and strive to be a good corporate citizen in the manner in which we operate our business. Caring for our environment and the communities in which we live and work is something we take very seriously, and is a defining characteristic for West and our 7,700 team members around the globe.

Below are some highlights of our corporate responsibility activities in 2018. These activities and our global sustainability program will be described in greater detail in our 2018 Corporate Responsibility Report to be published later this year.

HEALTH & SAFETY

At West, we firmly believe in the importance of cultivating a culture of safety where every team member has a shared responsibility and is engaged in ensuring a safe workplace. During 2018, we implemented a new Health, Safety and Environment (HSE) Management System, designed with a global and uniform approach to key areas of HSE, utilizing leading indicators and proactive activities to help reduce and/or eliminate accidents within our facilities.

As a result of our proactive approach and team member engagement in safety, we saw our 2018 Recordable Injury Rate (RIR) decrease to 0.82, an 18% improvement over 2017 and the lowest we have ever recorded.

ENVIRONMENTAL SUSTAINABILITY

As a company dedicated to creating a healthier world, West is also committed to creating a healthier environment. We strive to be good stewards in all our decision making—from the raw materials we use, to our production and manufacturing techniques, to how we package and distribute and how we handle the waste generated by our manufacturing processes.

Each of West's manufacturing sites is focused on 10–15 sustainability improvement projects, targeting reductions in greenhouse gas emissions, waste, energy and water usage, as well as an increase in recycling. We continue to seek renewable energy procurement opportunities, which will enable West to better utilize alternative energy sources, further helping to reduce our carbon footprint.

PHILANTHROPY

West's giving strategy encompasses community support through corporate giving by West Pharmaceutical Services, Inc.; the Herman O. West Foundation, an independently managed 501(c)(3) entity which awards scholarships and matching gifts; and West without Borders, our team member-led giving program.

Our targeted giving continues to focus on children, people with disabilities, healthcare and education. Across our global network of sites, team members host West without Borders campaigns for charities that have special meaning to them and their local community. For example, our team members in Germany supported Fortschritt StädteRegion Aachen e.V. (translated as "Step Forward"), an organization committed to helping physically and mentally disabled children successfully step into their next stage of life. Also, our team members in Arizona raised funds for Upwards for Children and Families, an organization helping special needs children achieve their utmost potential while empowering their families to thrive. There are dozens of similar programs sponsored by West team members throughout the world.

RECOGNITION

In 2018, we were honored to be the recipients of the Mid-Market Social Impact Award by the CEO Connection, as well as the Excellence in Pharma: Corporate Social Responsibility Award by CPhI. Also in 2018, West once again achieved the Gold Standard from EcoVadis, a leader in supplier sustainability ratings, placing us in the top 5% of reporting companies.

These awards and recognitions are a testament of our commitment to caring for our environment, our team members, and to the communities in which we operate.

CHAIRMAN'S ADDRESS

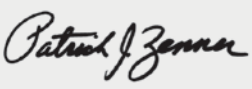
In 2018, West celebrated its 95th birthday. It is an honor to serve as chairperson of the Board of Directors for a Company that has been successful for such a long period of time, and one that is serving such a noble purpose—improving patient lives. These days, you hear a lot about purpose and its importance in ensuring the long-term sustainability of a corporation. The Board of Directors of your Company couldn't agree more. This past year, the Company continued to deliver significant value to patients, the communities in which West is present, the team members at West, and to you, its shareholders.

Healthcare systems across the world have treated patients with the more than 41 billion items that West makes every year. West has reduced its impact on the environment, and, at the same time, through the combined efforts of the Herman O. West Foundation and West team members, contributed approximately $2.5 million to charities and philanthropic causes. The Company continues to invest in its employees through a broad range of training and development programs, and with another year of solid growth in 2018, has returned value to shareholders through share repurchases and dividends.

The Board this year focused on several key areas we understand are of concern to our shareholders—understanding and mitigating corporate risk, driving corporate responsibility and developing a strong and diverse talent pool inside the Company. I am happy to report that in all these areas, the Company made great progress in 2018, but there is still room for improvement. West has a robust risk management system in place; a corporate responsibility program that was recognized this year with industry awards; and a strong people strategy that is driving talent management, succession planning, as well as diversity and inclusion across the Company.

On behalf of the Board of Directors, I am pleased to report that we believe West is in a strong position to continue its long history of making a meaningful difference in healthcare, and in doing so, create long-term value for all constituencies. We are all looking forward to another successful year in 2019.

Sincerely,



Patrick J. Zenner
Chairman of the Board

2019
BOARD OF DIRECTORS

Mark A. Buthman
Retired Executive Vice President & Chief Financial Officer
Kimberly-Clark Corporation
Director since 2011
Board committees: Compensation; Finance; Nominating and Corporate Governance

William F. Feehery, Ph.D.
President
Industrial Biosciences, DowDuPont
Director since 2012
Board committees: Audit; Compensation; Nominating and Corporate Governance

Eric M. Green
President & Chief Executive Officer
Director since 2015

Thomas W. Hofmann
Retired Senior Vice President & Chief Financial Officer
Sunoco, Inc.
Director since 2007
Board committees: Audit; Compensation

Paula A. Johnson, M.D., MPH
President
Wellesley College
Director since 2005
Board committees: Innovation and Technology; Nominating and Corporate Governance

Deborah L.V. Keller
Principal, Black Frame Advisors, LLC
Retired CEO, Covance Drug Development
Director since 2017
Board committees: Audit; Finance; Innovation and Technology

Myla P. Lai-Goldman, M.D.
Executive Chair
GeneCentric Therapeutics, Inc.
Director since 2014
Board committees: Finance; Innovation and Technology

Douglas A. Michels
Retired President & Chief Executive Officer
OraSure Technologies, Inc.
Director since 2011
Board committees: Audit; Compensation

Paolo Pucci
Chief Executive Officer
ArQule, Inc.
Director since 2016
Board committees: Finance; Innovation and Technology

Patrick J. Zenner
Retired President & Chief Executive Officer
Hoffmann-La Roche, Inc.
Director since 2002
Chairman of the Board
Board committee: Nominating and Corporate Governance

HONORARY DIRECTOR

Morihiro Sudo
President
Daikyo Seiko, Ltd.

EXECUTIVE OFFICERS

Silji Abraham
Senior Vice President & Chief Digital and Transformation Officer

Bernard J. Birkett
Senior Vice President, Chief Financial Officer & Treasurer

Annette F. Favorite
Senior Vice President & Chief Human Resources Officer

Karen A. Flynn
Senior Vice President & Chief Commercial Officer

Eric M. Green
President & Chief Executive Officer

Quintin J. Lai, Ph.D.
Vice President, Corporate Development, Strategy & Investor Relations

Daniel Malone
Vice President & Controller

George L. Miller
Senior Vice President, General Counsel & Corporate Secretary

David A. Montecalvo
Senior Vice President, Global Operations & Supply Chain

Eric Resnick
Vice President & Chief Technology Officer

BOARD COMMITTEES

Audit Committee
Thomas W. Hofmann, Chair

Compensation Committee
Douglas A. Michels, Chair

Finance Committee
Paolo Pucci, Chair

Innovation and Technology Committee
Myla P. Lai-Goldman, M.D., Chair

Nominating and Corporate Governance Committee
William F. Feehery, Ph.D., Chair

INDEPENDENT DIRECTORS

The Board of Directors has designated directors who are independent of Management as "Independent Directors." The Independent Directors' duties include annual evaluations of the Chief Executive Officer, his leadership succession plans and achievement of long-range strategic initiatives.

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

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2018

or

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

For the transition period from to

Commission File Number 1-8036

WEST PHARMACEUTICAL SERVICES, INC.
(Exact name of registrant as specified in its charter)

Pennsylvania	**23-1210010**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification Number)
530 Herman O. West Drive, Exton, PA	**19341-0645**
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: **610-594-2900**

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

Title of each class	**Name of each exchange on which registered**
Common Stock, par value $.25 per share	New York Stock Exchange

Securities registered pursuant to Section 12 (g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☑ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☑

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15 (d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☑ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☑ No ☐

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or 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.

Large accelerated filer	☑		Accelerated filer	☐
Non-accelerated filer	☐	(Do not check if a smaller reporting company)	Smaller reporting company	☐
			Emerging growth company	☐

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

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

The aggregate market value of the voting stock held by non-affiliates of the registrant as of June 30, 2018 was approximately $7,301,615,623 based on the closing price as reported on the New York Stock Exchange.

As of January 31, 2019, there were 74,186,169 shares of the registrant's common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Document	**Parts Into Which Incorporated**
Proxy Statement for the Annual Meeting of Shareholders to be held May 7, 2019	Part III

TABLE OF CONTENTS

PART I

Unless otherwise indicated, or the context otherwise requires, references in this report to "the Company", "we", "us", "our" and "West" refer to West Pharmaceutical Services, Inc. and its majority-owned subsidiaries.

All trademarks and registered trademarks used in this report are our property, either directly or indirectly through our subsidiaries, unless noted otherwise. Daikyo Crystal Zenith® ("CZ") is a registered trademark of Daikyo Seiko, Ltd. ("Daikyo").

Throughout this report, references to "Notes" refer to the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K ("Form 10-K"), unless otherwise indicated.

Information in this Form 10-K is current as of February 27, 2019, unless otherwise specified.

ITEM 1. BUSINESS

General

We are a leading global manufacturer in the design and production of technologically advanced, high-quality, integrated containment and delivery systems for injectable drugs and healthcare products. Our products include a variety of primary packaging, containment solutions, reconstitution and transfer systems, and drug delivery systems, as well as contract manufacturing and analytical lab services. Our customers include the leading biologic, generic, pharmaceutical, diagnostic, and medical device companies in the world. Our top priority is delivering quality products that meet the exact product specifications and quality standards customers require and expect. This focus on quality includes excellence in manufacturing, scientific and technical expertise and management, and enables us to partner with our customers to deliver safe, effective drug products to patients quickly and efficiently.

The Company was incorporated under the laws of the Commonwealth of Pennsylvania on July 27, 1923.

Business Segments

Our business operations are organized into two reportable segments, Proprietary Products and Contract-Manufactured Products.

Proprietary Products Segment

Our Proprietary Products reportable segment offers proprietary packaging, containment and drug delivery products, along with analytical lab services, to biologic, generic and pharmaceutical drug customers. Our packaging products include stoppers and seals for injectable packaging systems, which are designed to help ensure drug compatibility and stability with active drug products, while also supporting operational efficiency for customers. This product portfolio also includes syringe and cartridge components, including custom solutions for the specific needs of injectable drug applications, as well as administration systems that can enhance the safe delivery of drugs through advanced reconstitution, mixing and transfer technologies. We also provide films, coatings, washing and sterilization processes and services to enhance the quality of packaging components and mitigate the risk of contamination and compatibility issues.

This segment's product portfolio also includes drug containment solutions, including CZ, a cyclic olefin polymer, in the form of vials, syringes and cartridges. These products can provide a high-quality solution to glass incompatibility issues and can stand up to cold storage environments, while reducing the risk of breakage that exists with glass. In addition, we offer a variety of self-injection devices, designed to address the need to provide at-home delivery of injectable therapies. These devices are patient-centric technologies that are easy-to-use and can be combined with connected health technologies that have the potential to increase adherence.

In addition to our Proprietary Products product portfolio, we provide our customers with a range of integrated services, including analytical lab services, pre-approval primary packaging support and engineering development, regulatory expertise, and after-sales technical support. Offering the combination of primary packaging components, containment solutions, and drug delivery devices, as well as a broad range of integrated services, helps to position us as the leader in the integrated containment and delivery of injectable medicines.

This reportable segment has manufacturing facilities in North and South America, Europe, and Asia Pacific, with affiliated companies in Mexico and Japan. Please refer to Item 2, *Properties*, for additional information on our manufacturing and other sites.

Please refer to Note 18, *Segment Information,* for net sales, operating profit and asset information for Proprietary Products.

Contract-Manufactured Products Segment

Our Contract-Manufactured Products reportable segment serves as a fully integrated business, focused on the design, manufacture, and automated assembly of complex devices, primarily for pharmaceutical, diagnostic, and medical device customers. These products include a variety of custom contract-manufacturing and assembly solutions, which use such technologies as multi-component molding, in-mold labeling, ultrasonic welding and clean room molding and device assembly. We manufacture customer-owned components and devices used in surgical, diagnostic, ophthalmic, injectable, and other drug delivery systems, as well as consumer products.

We have vast expertise in product design and development, including in-house mold design, an engineering center for developmental and prototype tooling, process design and validation and high-speed automated assemblies.

This reportable segment has manufacturing operations in North America and Europe. Please refer to Item 2, *Properties*, for additional information on our manufacturing and other sites.

Please refer to Note 18, *Segment Information,* for net sales, operating profit and asset information for Contract-Manufactured Products.

International

We have significant operations outside of the United States ("U.S."), which are managed through the same business segments as our U.S. operations – Proprietary Products and Contract-Manufactured Products. Sales outside of the U.S. accounted for 55.4% of our consolidated net sales in 2018. For a geographic breakdown of sales, please refer to Note 18, *Segment Information*. Please refer to Item 2, *Properties*, for additional information on our manufacturing and other sites.

Although the general business processes are similar to the domestic business, international operations are exposed to additional risks. These risks include currency fluctuations relative to the U.S. Dollar ("USD"), multiple tax jurisdictions and, particularly in South America, Israel and the Middle East, political and social issues that could destabilize local markets and affect the demand for our products.

See further discussion of our international operations, the risks associated with our international operations, and our attempt to minimize some of these risks in Part I, Item 1A, *Risk Factors;* Part II, Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations* under the caption *Financial Condition, Liquidity and Capital Resources;* Part II, Item 7A, *Quantitative and Qualitative Disclosures About Market Risk;* Note 1 under the captions *Financial Instruments* and *Foreign Currency Translation;* and Note 10, *Derivative Financial Instruments*.

Raw Materials

We use three basic raw materials in the manufacture of our products: elastomers, aluminum and plastic. Elastomers include both natural and synthetic materials. We currently have access to adequate supplies of these raw materials to meet our production needs through agreements with suppliers.

We employ a supply chain management strategy in our business segments, which involves purchasing from integrated suppliers that control their own sources of supply. Due to regulatory control over our production processes and the cost and time involved in qualifying suppliers, we rely on single-source suppliers for many critical raw materials. We purchase certain raw materials in the open market. This strategy increases the risk that our supply chain may be interrupted in the event of a supplier production or distribution problem. These risks are managed, where possible, by selecting suppliers with multiple manufacturing sites, rigorous quality control systems, surplus inventory levels and other methods of maintaining supply in case of an interruption in production or distribution.

Intellectual Property

Intellectual property, including patents, trade secrets and know-how, is important to our business. We own or license intellectual property rights, including issued patents and pending patent applications in the U.S. and in other countries, that relate to various aspects of our products. In 2018, more than 120 patents were issued to West across the globe. Some key value-added and proprietary products and processes are licensed from Daikyo. Our intellectual property rights have been useful in establishing our market position and in the growth of our business, and are expected to continue to be of value in the future.

Seasonality

Our business is not inherently seasonal.

Working Capital

We are required to carry significant amounts of inventory to meet customer requirements. In addition, some of our supply agreements require us to purchase inventory in bulk orders, which increases inventory levels but decreases the risk of supply interruption. For a more detailed discussion of working capital, please refer to the discussion in Part II, Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations* under the caption *Financial Condition, Liquidity and Capital Resource*s.

Marketing

Our Proprietary Products customers include most of the major biologic, generic, and pharmaceutical drug companies in the world, which incorporate our components and other offerings into their products for distribution to the point of care and ultimate end-user - the patient.

Our Contract-Manufactured Products customers include many of the world's largest pharmaceutical, diagnostic, and medical device companies. Contract-Manufactured Products components generally are incorporated into our customers' manufacturing lines for further processing or assembly.

Our products and services are sold and distributed primarily through our own sales force and distribution network, with limited use of contract sales agents and regional distributors.

Our ten largest customers accounted for 37.1% of our consolidated net sales in 2018, but none of these customers individually accounted for more than 10% of consolidated net sales. Please refer to Note 3, *Revenue*, and Note 18, *Segment Information*, for additional information on our consolidated net sales.

Order Backlog

Order backlog includes firm orders placed by customers for manufacture over a period of time according to their schedule or upon confirmation by the customer. We also have contractual arrangements with a number of our

customers. Products covered by these contracts are included in our backlog only as orders are received. Order backlog may be positively or negatively impacted by several factors, including customer ordering patterns and the necessary lead-time to deliver customer orders. Order backlog is one of many measures we use to understand future demand, and should not be considered in isolation to predict future sales growth.

At December 31, 2018 and 2017, the order backlog for Proprietary Products was $407.3 million and $377.4 million, respectively. The majority of the order backlog for Proprietary Products at December 31, 2018 is expected to be filled during 2019.

The majority of Contract-Manufactured Products manufacturing activity is governed by contractual volume expectations, subject to periodic revisions based on customer requirements.

Competition

With our range of proprietary technologies, we compete with several companies across our Proprietary Products product lines. Due to the special nature of our pharmaceutical packaging components and our long-standing participation in the market, competition for these components is based primarily on product design and performance, although total cost is becoming increasingly important as pharmaceutical companies continue with aggressive cost-control programs across their operations.

In addition, there are a number of competitors supplying medical devices and medical device components, including a number of pharmaceutical manufacturers who are also potential customers of our medical devices. We compete in this market on the basis of our reputation for quality and reliability in engineering and project management, as well as our knowledge of, and experience in, compliance with regulatory requirements.

We have specialized knowledge of container closure components, which is integral to developing delivery systems. With our range of proprietary technologies, we compete with new and established companies in the area of drug delivery devices, including suppliers of prefillable syringes, auto-injectors, safety needles and other proprietary systems.

We differentiate ourselves from our competition by serving as an integrated drug containment and delivery systems global supplier that can provide pre-approval primary packaging support and engineering development, analytical services, regulatory expertise and after-sale technical support. Customers also appreciate the global scope of our manufacturing capability and our ability to produce many products at multiple sites.

Our Contract-Manufactured Products business operates in very competitive markets for its products. The competition varies from smaller regional companies to large global molders. Given the cost pressures they face, many of our customers look to reduce costs by sourcing from low-cost locations. We differentiate ourselves by leveraging our global capabilities and by employing new technologies such as high-speed automated assembly, insert-molding, multi-shot precision molding and expertise with multiple-piece closure systems.

Research and Development Activities

We maintain our own research-scale production facilities and laboratories for developing new products, and offer contract engineering design and development services to assist customers with new product development. Our quality control, regulatory and laboratory testing capabilities are used to ensure compliance with applicable manufacturing and regulatory standards for primary and secondary pharmaceutical packaging components and delivery systems.

Commercial development of our new products and services for medical and pharmaceutical applications commonly requires several years. New products that we develop may require separate approval as medical devices, and products that are intended to be used in the packaging and delivery of pharmaceutical products are subject to both customer acceptance of our products and regulatory approval of the customer’s products following our development period.

We expect that research and development spending will continue to increase as we pursue innovative strategic platforms in prefillable syringes, injectable containers, advanced injection and safety and administration systems.

We also continue to seek new innovative opportunities for acquisition, licensing, partnering or development of products, services and technologies that serve the injectable drug containment and delivery market.

We spent $40.3 million in 2018, $39.1 million in 2017, and $36.8 million in 2016 on research and development, all of which related to Proprietary Products.

Environmental Regulations

We are subject to various federal, state and local provisions regulating the discharge of materials into the environment or otherwise relating to the protection of the environment. Our compliance with these laws and regulations has not had a material impact on our financial position, results of operations or cash flows. There were no required material capital expenditures for environmental controls in our facilities in 2018 and there are currently no needed or planned material expenditures for 2019.

Employees

As of December 31, 2018, we employed approximately 7,700 people in our operations throughout the world, including approximately 7,600 full-time employees.

Available Information

We maintain a website at *www.westpharma.com*. Our Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 are available on our website under the *Investors - SEC Filings* caption as soon as reasonably practical after we electronically file the material with, or furnish it to, the U.S. Securities and Exchange Commission ("SEC"). These filings are also available to the public over the Internet at the SEC's website at *www.sec.gov*. You may also read and copy any document we file at the SEC's Public Reference Room at 100 F. Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the Public Reference Room.

Throughout this Form 10-K, we incorporate by reference certain information from parts of other documents filed with the SEC and from our Proxy Statement for the 2019 Annual Meeting of Shareholders ("2019 Proxy Statement"), which will be filed with the SEC within 120 days following the end of our 2018 fiscal year. Our 2019 Proxy Statement will be available on our website on or about March 31, 2019, under the caption *Investors - Annual Reports & Proxy*.

Information about our corporate governance, including our Corporate Governance Principles and Code of Business Conduct, as well as information about our Directors, Board Committees, Committee Charters, and instructions on how to contact the Board, is available on our website under the *Investors - Corporate Governance* heading. We intend to make any required disclosures regarding any amendments of our Code of Business Conduct or waivers granted to any of our directors or executive officers under the caption *Code of Business Conduct* on our website. Information relating to the West Pharmaceutical Services Dividend Reinvestment Plan is also available on our website under the *Investors - Transfer Agent/Dividend Reinvestment* caption.

We will provide any of the foregoing information without charge upon written request to our Corporate Secretary, West Pharmaceutical Services, Inc., 530 Herman O. West Drive, Exton, PA 19341.

ITEM 1A. RISK FACTORS

The statements in this section describe major risks to our business and should be considered carefully. In addition, these statements constitute our cautionary statements under the Private Securities Litigation Reform Act of 1995.

Our disclosure and analysis in this Form 10-K contains some forward-looking statements that are based on management's beliefs and assumptions, current expectations, estimates and forecasts. We also provide forward-looking statements in other materials we release to the public as well as oral forward-looking statements. Such statements give our current expectations or forecasts of future events. They do not relate strictly to historical or current facts. We have attempted, wherever possible, to identify forward-looking statements by using words such as "estimate," "expect," "intend," "believe," "plan," "anticipate" and other words and terms of similar meaning. In particular, these include statements relating to future actions, business plans and prospects, new products, future performance or results of current or anticipated products, sales efforts, expenses, interest rates, foreign-exchange rates, economic effects, the outcome of contingencies, such as legal proceedings, and financial results.

Many of the factors that will determine our future results are beyond our ability to control or predict. Achievement of future results is subject to known or unknown risks or uncertainties, including, without limitation, the risks set forth below. Therefore, actual results could differ materially from past results and those expressed or implied in any forward-looking statement. You should bear this in mind as you consider forward-looking statements.

Unless required by applicable securities law, we undertake no obligation to publicly update forward-looking statements, whether as a result of new information, future events or otherwise. We also refer you to further disclosures we make on related subjects in our Quarterly Reports on Form 10-Q and Current Reports on Form 8-K to the SEC.

Our operating results may be adversely affected by unfavorable economic and market conditions.

The current uncertainty in the global economy, including the effects of recession or slow economic growth in the U.S., Europe, and emerging markets in Asia and South America, may negatively affect our operating results. Examples of the effects of these global economic challenges include: our suppliers' and our customers' inability to access the credit markets at commercially reasonable rates; reduction in sales due to customers decreasing their inventories in the near-term or long-term or due to liquidity difficulties; reduction in sales due to shortages of materials we purchase from our suppliers; reduction in research and development efforts and expenditures by our customers; our inability to hedge our currency and raw material risks sufficiently or at commercially reasonable prices; insolvency of suppliers or customers; inflationary pressures on our supplies or our products; and increased expenses due to growing global taxation of corporate profits or revenues. Our operating results in one or more geographic regions may also be affected by uncertain or changing economic conditions within that region. If economic and market conditions in the U.S. or Europe, or in emerging markets, weaken further, we may experience material adverse impacts on our business, financial condition and results of operations.

Our sales and profitability are largely dependent on the sale of drug products delivered by injection and the packaging of drug products. If the products developed by our customers in the future use another delivery system, our sales and profitability could suffer.

Our business depends to a substantial extent on customers' continued sales and development of products that are delivered by injection. If our customers fail to continue to sell, develop and deploy injectable products or we are unable to develop new products that assist in the delivery of drugs by alternative methods, our sales and profitability may suffer.

Changes in foreign currency exchange rates could have a material adverse effect on our business and/or results of operations.

Our business is subject to foreign currency exchange rate fluctuations. Sales outside of the U.S. accounted for 55.4% of our consolidated net sales in 2018 and we anticipate that sales from international operations will continue to

represent a significant portion of our total sales in the future. In addition, many of our manufacturing facilities and suppliers are located outside of the U.S. Further, we intend to continue our expansion into emerging and/or faster-growing markets outside of the U.S. in the future. Virtually all of our international sales, assets and related operating costs and expenses are earned, valued or incurred in the currency of the local country, primarily the Euro, the Singapore Dollar ("SGD"), and the Danish Krone. In addition, we are exposed to Japanese Yen ("Yen"), as we maintain a 25% ownership interest in, and we purchase finished goods and other materials from, Daikyo. We are also exposed to currencies in emerging market countries, such as the Chinese Yuan, the Indian Rupee, and various South American currencies. Our consolidated financial statements are presented in USD, and, therefore, we must translate the reported values of our foreign assets, liabilities, revenues and expenses into USD, which can result in significant fluctuations in the amount of those assets, liabilities, revenues or expenses. The exchange rates between these foreign currencies and USD in recent years have fluctuated significantly and may continue to do so in the future. Increases or decreases in the value of USD compared to these foreign currencies may negatively affect the value of these items in our consolidated financial statements, which could have a material adverse effect on our operating results.

In addition to translation risks, we incur currency transaction risk when we or one of our subsidiaries enters into a purchase or sales transaction in a currency other than that entity's local currency. In order to reduce our exposure to fluctuations in certain exchange rates, we have entered, and expect to continue to enter, into hedging arrangements, including the use of financial derivatives. There can be no certainty that we will be able to enter into or maintain hedges of these currency risks, or that our hedges will be effective, which could have a significant effect on our financial condition and operating results.

If we are unable to provide comparative value advantages, timely fulfill customer orders, or resist pricing pressure, we will have to reduce our prices, which may reduce our profit margins.

We compete with several companies across our major product lines. Because of the special nature of these products, competition is based primarily on product design and performance, although total cost is becoming increasingly important as pharmaceutical companies continue with aggressive cost-control programs across their operations. Companies often compete on the basis of price. We aim to differentiate ourselves from our competition by being a "full-service, value-added" global supplier that is able to provide pre-sale compatibility studies, engineering support, and other services and sophisticated post-sale technical support on a global basis. However, we face continued pricing pressure from our customers and competitors. If we are unable to resist or to offset the effects of continued pricing pressure through our value-added services, improved operating efficiencies and reduced expenditures, or if we have to reduce our prices, our sales and profitability may suffer.

Consolidation in the pharmaceutical and healthcare industries could adversely affect our future revenues and operating income.

The pharmaceutical and healthcare industries have experienced a significant amount of consolidation. As a result of this consolidation, competition to provide goods and services to customers has increased. In addition, group purchasing organizations and integrated health delivery networks have served to concentrate purchasing decisions for some customers, which has placed pricing pressure on suppliers. Further consolidation within the industries we serve could exert additional pressure on the prices of our products.

We are subject to regulation by governments around the world, and if these regulations are not complied with, existing and future operations may be curtailed, and we could be subject to liability.

The design, development, manufacturing, marketing and labeling of certain of our products and our customers' products that incorporate our products are subject to regulation by governmental authorities in the U.S., Europe and other countries, including the U.S. Food and Drug Administration ("FDA"), the European Medicines Agency, and the National Medical Products Administration (China). Complying with governmental regulation can be costly and can result in required modification or withdrawal of existing products and a substantial delay in the introduction of new products. Failure to comply with applicable regulatory requirements or failure to obtain regulatory approval for

a new product could result in expenses and actions that could adversely affect our business and financial performance.

Products that incorporate our technologies and medical devices that we produce are subject to regulations and extensive approval or clearance processes, which make the timing and success of new-product commercialization difficult to predict.

The process of obtaining and maintaining FDA and other required regulatory approvals is expensive and time-consuming. Historically, most medical devices that incorporate our technologies and medical devices that we produce have been subject to the FDA's 510(k) marketing approval process, which typically lasts from six to nine months. Supplemental or full pre-market approval reviews require a significantly longer period, delaying commercialization. Changes in regulation on a global scale must be monitored and actions taken to ensure ongoing compliance. Pharmaceutical products that incorporate our technologies and medical devices that we produce are subject to the FDA's New Drug Application process, which typically takes a number of years to complete. Additionally, biotechnology products that incorporate our technologies and medical devices that we produce are subject to the FDA's Biologics License Application process, which also typically takes a number of years to complete. Outside of the U.S., sales of medical devices and pharmaceutical or biotechnology products are subject to international regulatory requirements that vary from country to country. The time required to obtain approval for sale internationally may be longer or shorter than that required for FDA approval. There is no certainty that any regulatory approval may be obtained or maintained indefinitely, and our ability to launch products on to the market and maintain market presence is not guaranteed.

Changes in the regulation of drug products and devices may increase competitive pressure and adversely affect our business.

An effect of the governmental regulation of our medical devices and our customers' drug products, devices, and manufacturing processes is that compliance with regulations makes it difficult to change components and devices produced by one supplier with those from another supplier, due to the large amount of data and information that customers must generate to demonstrate that the components and devices are equivalent and pose no additional risk to the patient. The regulation of our medical devices and our customers' products that incorporate our components and devices has increased over time. If the applicable regulations were to be modified in a way that reduced the level of data and information needed to prove equivalency for a change from one supplier's components or devices to those made by another, it is likely that the competitive pressure would increase and adversely affect our sales and profitability.

If we are not successful in protecting our intellectual property rights, our ability to compete may be affected.

Our patents, trademarks and other intellectual property are important to our business. We rely on patent, trademark, copyright, trade secret, and other intellectual property laws, as well as nondisclosure and confidentiality agreements and other methods, to protect our proprietary products, information, technologies and processes. We also have obligations with respect to the non-use and non-disclosure of third-party intellectual property. We may need to engage in litigation or similar activities to enforce our intellectual property rights, to protect our trade secrets or to determine the validity and scope of proprietary rights of others. Any such litigation could require us to expend significant resources and divert the efforts and attention of our management and other personnel from our business operations. There can be no assurance that the steps we will take to prevent misappropriation, infringement or other violation of our intellectual property or the intellectual property of others will be successful. In addition, effective patent, copyright, trademark and trade secret protection may be unavailable or limited for some of our proprietary products in some countries. Failure to protect our intellectual property or successfully invalidate or defend against intellectual property protections of third parties could harm our business and results of operations. In addition, if relevant and effective patent protection is not available or has expired, we may not be able to prevent competitors from independently developing products and services similar or duplicative to ours.

Disruption in our manufacturing facilities could have a material adverse effect on our ability to make and sell products and have a negative impact on our reputation, performance or financial condition.

We have manufacturing sites throughout the world. In some instances, however, the manufacturing of certain product lines is concentrated in one or only a few of our plants. The functioning of our manufacturing and distribution assets and systems could be disrupted for reasons either within or beyond our control, including, without limitation: extreme weather or longer-term climatic changes; natural disasters; pandemic; war; accidental damage; disruption to the supply of material or services; product quality and safety issues; systems failure; workforce actions; or environmental contamination. There is a risk that incident management systems in place may prove inadequate and that any disruption may materially adversely affect our ability to make and sell products and, therefore, materially adversely affect our reputation, performance or financial condition.

The medical technology industry is very competitive and customer demands and/or new products in the marketplace could cause a reduction in demand.

The medical technology industry is subject to rapid technological changes, and we face significant competition across our product lines and in each market in which our products are sold. We face this competition from a wide range of companies, including large medical device companies, some of which have greater financial and marketing resources than we do. We also face competition from firms that are more specialized than we are with respect to particular markets. In some instances, competitors, including pharmaceutical companies, also offer, or are attempting to develop, alternative therapies for diseases that may be delivered via their own, or without, a medical device. The development of new or improved products, processes or technologies by other companies (such as needle-free injection technology) may reduce customer demand for our products or render some of our products or proposed products obsolete or less competitive. In addition, any failure or inability to meet increased customer quality expectations could cause a reduction in demand.

Significant developments in U.S. policies could have a material adverse effect on our business and/or results of operations.

Changes in U.S. social, political, regulatory, and economic conditions, or in laws and policies governing foreign trade, manufacturing, development, immigration, and investment, could have an adverse effect on our financial condition, results of operations and cash flows.

Our international sales and operations are subject to risks and uncertainties that vary by country and which could have a material adverse effect on our business and/or results of operations.

We conduct business in most of the major pharmaceutical markets in the world. Our international operations and our ability to implement our overall business strategy (including our plan to continue expanding into emerging and/or faster-growing markets outside of the U.S.) are subject to risks and uncertainties that can vary by country, and include: transportation delays and interruptions; political and economic instability and disruptions, including the United Kingdom's referendum on withdrawal from the European Union; imposition of duties and tariffs; import and export controls; the risks of divergent business expectations or cultural incompatibility inherent in establishing and maintaining operations in foreign countries; difficulties in staffing and managing multi-national operations; labor strikes and/or disputes; and potentially adverse tax consequences. Limitations on our ability to enforce legal rights and remedies with third parties or our joint venture partners outside of the U.S. could also create exposure. In addition, we may not be able to operate in compliance with foreign laws and regulations, or comply with applicable customs, currency exchange control regulations, transfer pricing regulations or any other laws or regulations to which we may be subject, in the event that these laws or regulations change. Any of these events could have an adverse effect on our international operations in the future by reducing the demand for our products or decreasing the prices at which we can sell our products, or otherwise have an adverse effect on our financial condition, results of operations and cash flows.

Disruptions in the supply of key raw materials could adversely impact our operations.

We generally purchase our raw materials and supplies required for the production of our products in the open market. For reasons of quality assurance, sole source availability or cost effectiveness, many components and raw materials are available and/or purchased only from a single supplier. Due to the stringent regulations and requirements of the FDA and other regulatory authorities regarding the manufacture of our products, we may not be able to quickly establish additional or replacement sources for these components or materials or do so without excessive cost. As a result, a reduction or interruption in supply, or an inability to secure alternative sources of raw materials or components, could have a material adverse effect on our business and/or results of operations.

Unauthorized access to our or our customers' information and systems could negatively impact our business.

Our systems and networks, as well as those of our customers, suppliers, service providers, and banks, have and may in the future become the target of cyberattacks or information security breaches which, in turn, could result in the unauthorized release and misuse of confidential or proprietary information about our company, our employees, or our customers, as well as disrupt our operations or damage our facilities or those of third parties. Additionally, our systems are subject to regulation to preserve the privacy of certain data held on those systems. We maintain an extensive network of technical security controls, policy enforcement mechanisms and monitoring systems, in order to address these threats. While these measures are designed to prevent, detect and respond to unauthorized activity in our systems, certain types of attacks could result in financial or information losses and/or reputational harm. If we cannot comply with regulations or prevent the unauthorized access, release and/or corruption of our or our customers' confidential, classified or personally identifiable information, our reputation could be damaged, and/or we could face financial losses. We may also be required to incur additional costs to modify or enhance our systems, or to try to prevent or remediate any such attacks. Modifying or enhancing our systems may result in unanticipated or prolonged disruption events, which could have a material adverse effect on our business and/or results of operations.

Raw material and energy prices have a significant impact on our profitability. If raw material and/or energy prices increase, and we cannot pass those price increases on to our customers, our profitability and financial condition may suffer.

We use three basic raw materials in the manufacture of our products: elastomers (which include synthetic and natural material), aluminum and plastic. In addition, our manufacturing facilities consume a wide variety of energy products to fuel, heat and cool our operations. Supply and demand factors, which are beyond our control, generally affect the price of our raw materials and utility costs. If we are unable to pass along increased raw material prices and energy costs to our customers, our profitability, and thus our financial condition, may be adversely affected. The prices of many of these raw materials and utilities are cyclical and volatile. For example, the prices of certain commodities, particularly petroleum-based raw materials, have in the recent past exhibited rapid changes, affecting the cost of synthetic elastomers and plastic. While we generally attempt to pass along increased costs to our customers in the form of sales price increases, historically there has been a time delay between raw material and/or energy price increases and our ability to increase the prices of our products. In some circumstances, we may not be able to increase the prices of our products due to competitive pressure and other factors.

If we are not timely or successful in new-product innovation or the development and commercialization of proprietary multi-component systems, our future revenues and operating income could be adversely affected.

Our growth partly depends on new-product innovation and the development and commercialization of proprietary multi-component systems for injectable drug administration and other healthcare applications. Product development and commercialization is inherently uncertain and is subject to a number of factors outside of our control, including any necessary regulatory approvals and commercial acceptance for the products. The ultimate timing and successful commercialization of new products and systems requires substantial evaluations of the functional, operational, clinical and economic viability of our products. In addition, the timely and adequate availability of filling capacity is essential to both conducting definitive stability trials and the timing of commercialization of customers' products in CZ vials, syringes and cartridges. Delays, interruptions or failures in developing and commercializing new-product

innovations or proprietary multi-component systems could adversely affect future revenues and operating income. In addition, adverse conditions may also result in future charges to recognize impairment in the carrying value of our goodwill and other intangible assets, which could have a material adverse effect on our financial results.

We may not succeed in finding and completing acquisition or other strategic transactions, which could have an adverse effect on our business and results of operations.

We have historically engaged in acquisition activity and we may in the future engage in acquisitions or other strategic transactions, such as joint ventures or investments in other entities. We may be unable to identify suitable targets, opportunistic or otherwise, for acquisitions or other strategic transactions in the future. If we identify a suitable candidate, our ability to successfully implement the strategic transaction would depend on a variety of factors including our ability to obtain financing on acceptable terms, and to comply with the restrictions contained in our debt agreements. Strategic transactions involve risks, including those associated with integrating the operations or maintaining the operations as separate (as applicable), financial reporting, disparate technologies and personnel of acquired companies, joint ventures or related companies; managing geographically dispersed operations or other strategic investments; the diversion of management's attention from other business concerns; the inherent risks in entering markets or lines of business in which we have either limited or no direct experience; the potential loss of key employees, customers and strategic partners of acquired companies, joint ventures or companies in which we may make strategic investments; and potentially other unknown risks. We may not successfully integrate any businesses or technologies we may acquire or strategically develop in the future and may not achieve anticipated revenue and cost benefits relating to any such strategic transactions. Strategic transactions may be expensive, time consuming and may strain our resources. Strategic transactions may not be accretive to our earnings and may negatively impact our results of operations as a result of, among other things, the incurrence of debt, one-time write-offs of goodwill, additional carrying costs of patent or trademark portfolios, and amortization expenses of other intangible assets. In addition, strategic transactions that we may pursue could result in dilutive issuances of equity securities.

Product defects could adversely affect the results of our operations.

The design, manufacture and marketing of pharmaceutical packaging and medical devices involve certain inherent risks. Manufacturing or design defects, unanticipated use of our products, or inadequate disclosure of risks relating to the use of our products can lead to injury or other adverse events. These events could lead to recalls or safety alerts relating to our products (either voluntary or required by the FDA or similar governmental authorities in other countries), and could result, in certain cases, in the removal of a product from the market. A recall could result in significant costs, as well as negative publicity and damage to our reputation that could reduce demand for our products. Personal injuries relating to the use of our products can also result in product liability claims being brought against us. In some circumstances, such adverse events could also cause delays in new product approvals.

Our operations must comply with environmental statutes and regulations, and any failure to comply could result in extensive costs which would harm our business.

The manufacture of some of our products involves the use, transportation, storage and disposal of hazardous or toxic materials and is subject to various environmental protection and occupational health and safety laws and regulations in the countries in which we operate. This has exposed us in the past, and could expose us in the future, to risks of accidental contamination and events of non-compliance with environmental laws. Any such occurrences could result in regulatory enforcement or personal injury and property damage claims or could lead to a shutdown of some of our operations, which could have an adverse effect on our business and results of operations. We currently incur costs to comply with environmental laws and regulations and these costs may become more significant.

A loss of key personnel or highly skilled employees could disrupt our operations.

Our future success depends, in large part, on our ability to retain key employees, including our executive officers, individuals in technical, marketing, sales and research positions. Competition for experienced employees, particularly for persons with specialized skills, can be intense. Our ability to recruit such talent will depend on a number of factors, including compensation and benefits, work location and work environment. If we cannot effectively recruit and retain qualified executives and employees, our business could be adversely affected. Although we believe that we will be able to attract and retain talented personnel and replace key personnel should the need arise, our inability to do so on a timely basis could disrupt the operations of the unit affected or our overall operations. In addition, because of the complex nature of many of our products and programs, we are generally dependent on an educated and highly skilled engineering staff and workforce. Our operations could be disrupted by a shortage of available skilled employees.

The uncertain effects of potential climate change legislation could lead to significantly increased costs.

If legislation or regulations are enacted or promulgated in the U.S., Europe or Asia or any other jurisdictions in which we do business that limit or reduce allowable greenhouse gas emissions and other emissions, such restrictions could have a significant effect on our operating and financial decisions, including those involving capital expenditures to reduce emissions, and our results of operations. Our manufacturing operations may not be able to operate as planned if we are not able to comply with new legal and regulatory legislation around climate change, or it may become too costly to operate in a profitable manner. Additionally, suppliers' added expenses could be passed on to us in the form of higher prices and we may not be able to pass on such expenses to our customers through price increases.

Healthcare reform may adversely affect our results of operations.

Changes in the U.S. or international healthcare systems, including the Patient Protection and Affordable Care Act (the "PPACA"), could result in reduced demand for our products, as our sales depend, in part, on the extent to which pharmaceutical companies and healthcare providers and facilities are reimbursed by government authorities, private insurers and other third-party payers for the costs of our products. The coverage policies and reimbursement levels of third-party payers, which can vary among public and private sources, may affect which products customers purchase and the prices they are willing to pay for these products in a particular jurisdiction. Legislative or administrative reforms to reimbursement systems in the U.S. (including the possible termination of the PPACA and potential replacement thereafter with a different system) or abroad (for example, those under consideration in France, Germany, Italy and the United Kingdom) could significantly reduce reimbursement for our customers' products, which could in turn reduce the demand for our products.

Moreover, in the coming years, additional changes could be made to global governmental healthcare programs that could significantly impact the success of our products. We will continue to evaluate the PPACA, as amended, the implementation of regulations or guidance related to various provisions of the PPACA by federal agencies, the potential repeal and replacement of the PPACA, as well as trends and changes that may be encouraged by the legislation and other healthcare legislation globally and that may potentially impact our business over time.

No assurance can be given that we will continue to pay or declare dividends.

We have historically paid dividends. However, there can be no assurance that we will pay or declare dividends in the future. The actual declaration and payment of future dividends, the amount of any such dividends, and the establishment of record and payment dates, if any, are subject to determination by our Board of Directors each quarter after its review of our then-current strategy, applicable debt covenants and financial performance and position, among other things. Our declaration and payment of future dividends is subject to risks and uncertainties, including: deterioration of our financial performance or position; inability to declare a dividend in compliance with applicable laws or debt covenants; an increase in our cash needs or decrease in available cash; and the business judgment of the Board of Directors that a declaration of a dividend is not in our best interest.

Our results of operations and earnings may not meet guidance or expectations.

We provide public guidance on our expected results of operations for future periods. This guidance is comprised of forward-looking statements subject to risks and uncertainties, including the risks and uncertainties described in this Form 10-K and in our other public filings and public statements, and is based necessarily on assumptions we make at the time we provide such guidance. Our guidance may not always be accurate. If, in the future, our results of operations for a particular period do not meet our guidance or the expectations of investment analysts or if we reduce our guidance for future periods, the market price of our common stock could decline significantly.

We are exposed to credit risk on accounts receivable and certain prepayments made in the normal course of business. This risk is heightened during periods when economic conditions worsen.

A substantial majority of our outstanding trade receivables are not covered by collateral or credit insurance. In addition, we have made prepayments associated with insurance premiums and other advances in the normal course of business. While we have procedures to monitor and limit exposure to credit risk on trade receivables and other current assets, there can be no assurance such procedures will effectively limit our credit risk and avoid losses, which could have a material adverse effect on our financial condition and operating results.

If we fail to comply with our obligations under our distributorship or license agreements with Daikyo, the agreements are terminated early or we are unable to renew these agreements on the same or substantially similar terms, we could lose license rights that are important to our business.

Key value-added and proprietary products and processes are licensed from our affiliate, Daikyo, including but not limited to, CZ, FluroTec® and B2-coating technologies. Our rights to these products and processes are licensed pursuant to agreements that expire in 2027. However, if the agreements are terminated early, our business could be adversely impacted.

ITEM IB. UNRESOLVED STAFF COMMENTS

As of the filing of this Form 10-K, there were no unresolved comments from the Staff of the SEC.

ITEM 2. PROPERTIES

Our corporate headquarters are located at 530 Herman O. West Drive, Exton, Pennsylvania.

The following table summarizes production facilities by segment and geographic region. All facilities shown are owned except where otherwise noted.

Proprietary Products

Manufacturing:

North American Operations	*European Operations*	*Asia Pacific Operations*
United States	Denmark	China
Clearwater, FL	Horsens	Qingpu
Jersey Shore, PA	England	India
Kearney, NE	St. Austell	Sri City
Kinston, NC	France	Singapore
Lititz, PA	Le Nouvion	Jurong
Scottsdale, AZ (2)	Le Vaudreuil	
St. Petersburg, FL (1)	Germany	
	Eschweiler (1) (2)	
South American Operations	Stolberg	
Brazil	Ireland	
Sao Paulo	Waterford	
	Serbia	
	Kovin	

Mold-and-Die Tool Shop:		**Contract Analytical Laboratory:**
North American Operations	*European Operations*	*North American Operations*
United States	England	United States
Upper Darby, PA	Bodmin (2)	Exton, PA

Contract-Manufactured Products

Manufacturing:

North American Operations	*European Operations*
United States	Ireland
Grand Rapids, MI	Dublin (2)
Phoenix, AZ (2)	
Tempe, AZ (2)	
Williamsport, PA	
Puerto Rico	
Cayey	

(1) This manufacturing facility is also used for research and development activities.
(2) This facility is leased in whole or in part.

Our Proprietary Products reportable segment leases facilities located in Germany, Israel and New Jersey for research and development, as well as other activities. Sales offices in various locations are leased under short-term arrangements.

ITEM 3. LEGAL PROCEEDINGS

None.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

EXECUTIVE OFFICERS OF THE COMPANY

The executive officers of the Company are set forth in this table. Generally, executive officers are elected by the Board of Directors annually at the regular meeting of the Board of Directors following the Annual Meeting of Shareholders. Additionally, executive officers may be elected upon hire or due to a promotion.

Name	Age	Position
Silji Abraham	47	Senior Vice President, Chief Digital and Transformation Officer since February 2018. Prior to joining West, he most recently served as Executive Vice President and Chief Information Officer of MilliporeSigma, a subsidiary of Merck KGaA, Darmstadt, Germany. Prior to this role, he served as Chief Information Officer at Sigma-Aldrich Corporation, a leading life science and technology company, and worked in various leadership roles at Invensys Operations Management, ArvinMeritor and Chrysler Group.
Bernard J. Birkett	50	Senior Vice President, Chief Financial Officer and Treasurer since June 2018. Prior to joining West, he spent more than 20 years at Merit Medical Systems, Inc., a leading manufacturer of disposable medical devices, where he served in a number of senior global leadership roles, including Chief Financial Officer and Treasurer, Controller for Europe, Middle East and Africa (EMEA) and Vice President of International Finance.
Annette F. Favorite	54	Senior Vice President and Chief Human Resources Officer since October 2015. Prior to joining West, she spent more than 25 years at IBM Corporation, an information technology services company, in a number of strategic and global human resources roles. Most recently, she served as Vice President, Global Talent Management.
Karen A. Flynn	56	Senior Vice President and Chief Commercial Officer since January 2016. She was President, Pharmaceutical Packaging Systems from October 2014 to January 2016, President, Pharmaceutical Packaging Systems Americas Region from June 2012 to October 2014, and Vice President, Sales from May 2008 to June 2012. From 2000 to 2008, she worked in Sales Management, most recently as Vice President, Global Accounts, for Catalent (formerly a business segment of Cardinal Health). Prior thereto, she held various positions at West, including roles in Quality, Research and Development, and Sales.
Eric M. Green	49	Chief Executive Officer since April 2015 and President since December 2015. Prior to joining West, he was Executive Vice President and President of the Research Markets business unit at Sigma-Aldrich Corporation from 2013 to 2015. From 2009 to 2013, he served as Vice President and Managing Director, International, where he was responsible for Asia Pacific and Latin America, and prior thereto, held various commercial and operational roles.
Quintin J. Lai	52	Vice President, Corporate Development, Strategy and Investor Relations since January 2016. Prior to joining West, he was Vice President of Investor Relations and Corporate Strategy at Sigma-Aldrich Corporation from 2012 to 2015. From 2002 to 2012, he was at Robert W. Baird & Company, where he held various roles, including Managing Director and Senior Equity Research Analyst of the Life Science Tools and Diagnostic sector and Associate Director of Equity Research.

Daniel Malone	57	Vice President and Corporate Controller since August 2011. He was Vice President of Finance, Pharmaceutical Packaging Systems Americas Region, from September 2008 to August 2011, and Director of Financial and Management Reporting from October 1999 to September 2008.
George L. Miller	64	Senior Vice President, General Counsel and Corporate Secretary since joining West in November 2015. Previously, he served as Senior Vice President, General Counsel and Corporate Secretary for Sigma-Aldrich Corporation from 2009 to 2015. Prior to working at Sigma-Aldrich, he held senior legal positions with Novartis AG, a global healthcare company.
David A. Montecalvo	53	Senior Vice President, Global Operations and Supply Chain since September 2016. Prior to joining West, he served in a number of senior leadership roles at Medtronic plc, including Vice President, Contract Manufacturing Operations, for the company's Restorative Therapies Group, and Vice President, Business Operations Integration, where he was responsible for directing and leading the global operations integration of Covidien plc into Medtronic. Prior thereto, he held senior operations and product development roles at Urologix, Inc. and LecTec Corporation.
Eric Resnick	55	Vice President and Chief Technology Officer since March 2016. Previously, he served as Vice President and General Manager of Integrated Packaging and Delivery within West's Innovation and Technology Team and President Proprietary Products - Pharmaceutical Delivery Systems from March 2015 until March 2016. He served as Vice President Research and Development and Self-Injection Systems from March 2014 until March 2015, and Vice President and General Manager of West's Contract Manufacturing Delivery Devices division from 2008 until March 2014. Prior thereto, he held various positions of increasing responsibility since joining The Tech Group in 2001. Prior to joining West, he held engineering and operating roles with Eastman Kodak Company and Ortho Clinical Diagnostics.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Our common stock is listed on the New York Stock Exchange ("NYSE") under the symbol "WST." The following table shows the high and low prices for our common stock as reported by the NYSE, for the periods indicated.

	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		Year	
	High	Low	High	Low	High	Low	High	Low	High	Low
2018	$102.80	$84.73	$102.14	$82.74	$124.51	$96.97	$125.09	$91.75	$125.09	$82.74
2017	$88.30	$79.06	$99.91	$77.97	$96.81	$80.02	$103.36	$89.77	$103.36	$77.97

As of January 31, 2019, we had 805 shareholders of record, which excludes shareholders whose shares were held by brokerage firms, depositaries and other institutional firms in "street names" for their customers.

Dividends

Our common stock paid a quarterly dividend of $0.13 per share in each of the first three quarters of 2017; $0.14 per share in the fourth quarter of 2017 and each of the first three quarters of 2018; and $0.15 per share in the fourth quarter of 2018.

Issuer Purchases of Equity Securities

The following table shows information with respect to purchases of our common stock made during the three months ended December 31, 2018 by us or any of our "affiliated purchasers" as defined in Rule 10b-18(a)(3) under the Exchange Act:

Period	Total number of shares purchased (1)(2)	Average price paid per share (1)(2)	Total number of shares purchased as part of publicly announced plans or programs (2)	Maximum number (or approximate dollar value) of shares that may yet be purchased under the plans or programs (2) (3)
October 1 – 31, 2018	—	$ —	—	—
November 1 – 30, 2018	140	108.80	—	—
December 1 – 31, 2018	—	—	—	—
Total	140	$ 108.80	—	—

(1) Includes 140 shares purchased on behalf of employees enrolled in the Non-Qualified Deferred Compensation Plan for Designated Employees (Amended and Restated Effective December 1, 2018). Under the plan, Company match contributions are delivered to the plan's investment administrator, who then purchases shares in the open market and credits the shares to individual plan accounts.

(2) In February 2018, we announced a share repurchase program for calendar-year 2018 authorizing the repurchase of up to 800,000 shares of our common stock from time to time on the open market or in privately-negotiated transactions as permitted under the Securities Exchange Act of 1934 Rule 10b-18. The number of shares repurchased and the timing of such transactions depended on a variety of factors, including market conditions. There were no shares purchased during the three months ended December 31, 2018. During the year ended December 31, 2018, we purchased 800,000 shares of our common stock under the program at a cost of $70.8 million, or an average price of $88.51 per share.

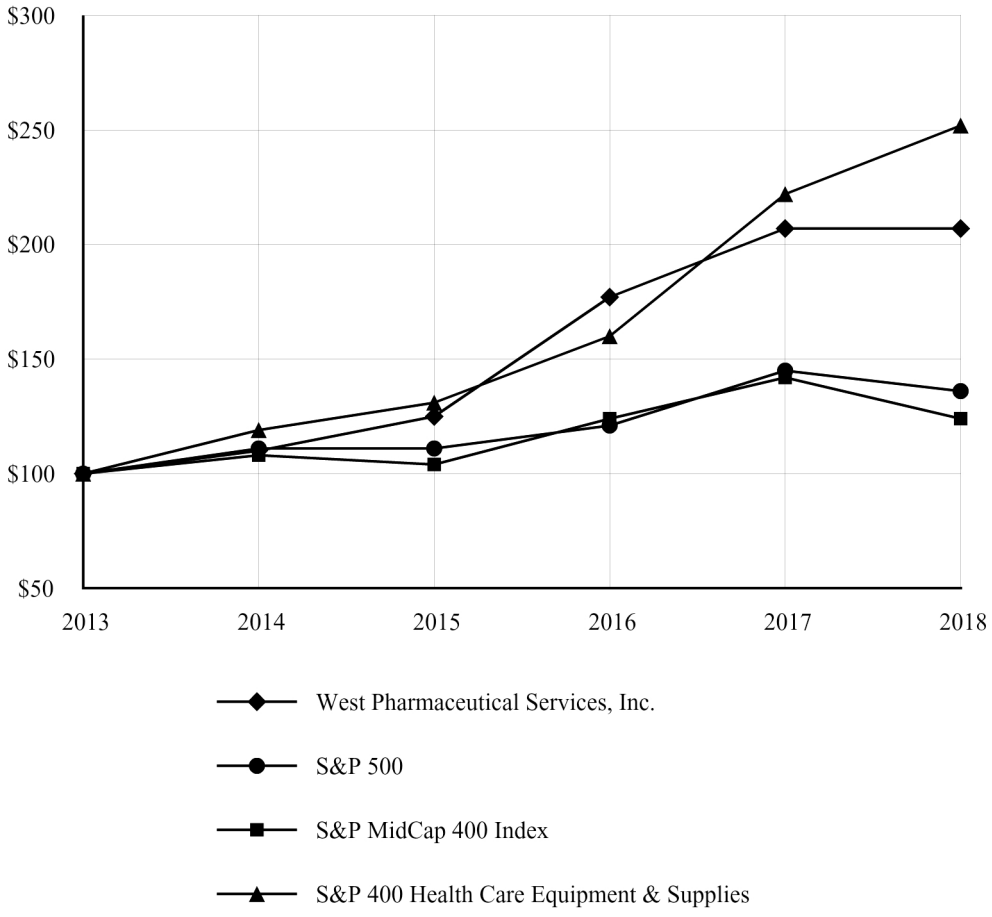
(3) In February 2019, we announced a share repurchase program for calendar-year 2019 authorizing the repurchase of up to 800,000 shares of our common stock from time to time on the open market or in privately-negotiated transactions as permitted under the Securities Exchange Act of 1934 Rule 10b-18. The number of shares to be repurchased and the timing of such transactions will depend on a variety of factors, including market conditions. This share repurchase program is expected to be completed by December 31, 2019.

Performance Graph

The following performance graph compares the cumulative total return to holders of our common stock with the cumulative total return of the following Standard & Poor's ("S&P") indices, for the five years ended December 31, 2018: 500, MidCap 400 Index and 400 Health Care Equipment & Supplies Industry.

Cumulative total return to shareholders is measured by dividing total dividends (assuming dividend reinvestment) plus the per-share price change for the period by the share price at the beginning of the period. The Company's cumulative shareholder return is based on an investment of $100 on December 31, 2013 and is compared to the cumulative total return of the S&P indices mentioned above over the period with a like amount invested.

Comparison of Cumulative Five Year Total Return



ITEM 6. SELECTED FINANCIAL DATA

FIVE-YEAR SUMMARY
West Pharmaceutical Services, Inc. and Subsidiaries

(in millions, except per share data)	2018	2017	2016	2015	2014
SUMMARY OF OPERATIONS					
Net sales	$ 1,717.4	$ 1,599.1	$ 1,509.1	$ 1,399.8	$ 1,421.4
Operating profit †	240.3	225.8	195.2	177.0	182.0
Net income	206.9	150.7	143.6	95.6	127.1
Net income per share:					
Basic (1)	$ 2.80	$ 2.04	$ 1.96	$ 1.33	$ 1.79
Diluted (2)	2.74	1.99	1.91	1.30	1.75
Weighted average common shares outstanding	73.9	73.9	73.3	72.0	70.9
Weighted average shares assuming dilution	75.4	75.8	75.0	73.8	72.8
Dividends declared per common share	$ 0.58	$ 0.54	$ 0.50	$ 0.46	$ 0.41
YEAR-END FINANCIAL POSITION					
Cash and cash equivalents	$ 337.4	$ 235.9	$ 203.0	$ 274.6	$ 255.3
Working capital	610.7	464.0	400.9	359.4	406.6
Total assets	1,978.9	1,862.8	1,716.7	1,695.1	1,669.7
Total invested capital:					
Total debt	196.1	197.0	228.6	298.2	335.5
Total equity	1,396.3	1,279.9	1,117.5	1,023.9	956.9
Total invested capital	$ 1,592.4	$ 1,476.9	$ 1,346.1	$ 1,322.1	$ 1,292.4
PERFORMANCE MEASUREMENTS (3)					
Gross margin (a)	31.8%	32.1%	33.2%	32.6%	31.5%
Operating profitability (b) †	14.0%	14.1%	12.9%	12.6%	12.8%
Effective tax rate (4)	17.2%	36.4%	28.7%	22.6%	28.0%
Return on invested capital (c) †	13.0%	10.2%	10.4%	10.5%	10.2%
Net debt-to-total invested capital (d)	N/A	N/A	2.2%	2.3%	7.7%
Research and development expenses	$ 40.3	$ 39.1	$ 36.8	$ 34.1	$ 37.3
Operating cash flow	288.6	263.3	219.4	212.4	182.9
Stock price range	$125.09-82.74	$103.36-77.97	$86.50-53.88	$64.59-48.66	$55.29-39.11

(1) Based on weighted average common shares outstanding.

(2) Based on weighted average shares, assuming dilution.

(3) Performance measurements represent indicators commonly used in the financial community. The following performance measures are not in conformity with U.S. generally accepted accounting principles ("U.S. GAAP") and should not be used as a substitute for the comparable U.S. GAAP financial measures. The non-U.S. GAAP financial measures are included as management uses them in evaluating our results of operations, and believes that this information provides users with a valuable insight into our overall performance and financial position.

(a) Net sales minus cost of goods and services sold, including applicable depreciation and amortization, divided by net sales.
(b) Operating profit divided by net sales.
(c) Operating profit multiplied by one minus the effective tax rate divided by average total invested capital.
(d) Net debt (total debt less cash and cash equivalents) divided by total invested capital less cash and cash equivalents.

(4) As a result of the Tax Cuts and Jobs Act (the "2017 Tax Act"), the federal statutory rate was reduced from 35.0% to 21.0% effective for tax years beginning after December 31, 2017. Please refer to Note 16, *Income Taxes*, for further discussion of the 2017 Tax Act.

† Reflects our adoption of the guidance issued by the Financial Accounting Standards Board ("FASB") regarding the presentation of net periodic pension and postretirement benefit cost (net benefit cost).

Factors affecting the comparability of the information reflected in the selected financial data:

- Net income in 2018 included the impact of restructuring and related charges of $7.2 million (net of $1.9 million in tax), a gain on the sale of fixed assets as a result of our restructuring plans of $0.9 million (net of $0.2 million in tax), a charge of $1.1 million related to the classification of Argentina's economy as highly inflationary under U.S. GAAP as of July 1, 2018, a net tax benefit of $2.5 million for the impact of tax law changes, including the 2017 Tax Act, and a tax benefit of $14.3 million associated with our adoption in 2017 of guidance issued by the FASB regarding share-based payment transactions.

- Net income in 2017 included the impact of a discrete tax charge of $48.8 million related to the 2017 Tax Act and the impact of changes in enacted international tax rates on previously-recorded deferred tax asset and liability balances, as well as a tax benefit of $33.1 million associated with our adoption of the guidance issued by the FASB regarding share-based payment transactions and a charge of $11.1 million related to the deconsolidation of our Venezuelan subsidiary.

- Net income in 2016 included the impact of restructuring and related charges of $17.4 million (net of $9.0 million in tax), a charge related to the devaluation of the Venezuelan Bolivar of $2.7 million, a pension curtailment gain of $1.3 million (net of $0.8 million in tax), and a discrete tax charge of $1.0 million.

- Net income in 2015 included the impact of a pension settlement charge of $32.0 million (net of $18.4 million in tax), a charge for executive retirement and related costs of $6.9 million (net of $4.0 million in tax) and a discrete tax charge of $0.8 million.

- Net income in 2014 included the impact of a charge for license costs associated with acquired in-process research of $0.8 million (net of $0.4 million in tax) and discrete tax charges of $1.8 million.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

OVERVIEW

The following discussion is intended to further the reader's understanding of the consolidated financial condition and results of operations of our Company. It should be read in conjunction with our consolidated financial statements and the accompanying footnotes included in Part II, Item 8 of this Form 10-K. These historical financial statements may not be indicative of our future performance. This Management's Discussion and Analysis of Financial Condition and Results of Operations contains a number of forward-looking statements, all of which are based on our current expectations and could be affected by the uncertainties and risks discussed in Part I, Item 1A of this Form 10-K.

Non-U.S. GAAP Financial Measures

For the purpose of aiding the comparison of our year-over-year results, we may refer to net sales and other financial results excluding the effects of changes in foreign currency exchange rates. The constant-currency amounts are calculated by translating the current year's functional currency results at the prior-year period's exchange rate. We may also refer to consolidated operating profit and consolidated operating profit margin excluding the effects of unallocated items. The re-measured results excluding effects from currency translation and excluding the effects of

unallocated items are not in conformity with U.S. GAAP and should not be used as a substitute for the comparable U.S. GAAP financial measures. The non-U.S. GAAP financial measures are incorporated into our discussion and analysis as management uses them in evaluating our results of operations, and believes that this information provides users a valuable insight into our results.

Our Operations

We are a leading global manufacturer in the design and production of technologically advanced, high-quality, integrated containment and delivery systems for injectable drugs and healthcare products. Our products include a variety of primary packaging, containment solutions, reconstitution and transfer systems, and drug delivery systems, as well as contract manufacturing and analytical lab services. Our customers include the leading biologic, generic, pharmaceutical, diagnostic, and medical device companies in the world. Our top priority is delivering quality products that meet the exact product specifications and quality standards customers require and expect. This focus on quality includes excellence in manufacturing, scientific and technical expertise and management, so we can partner with our customers to deliver safe, effective drug products to patients quickly and efficiently. The Company was incorporated under the laws of the Commonwealth of Pennsylvania on July 27, 1923.

Our business operations are organized into two reportable segments, Proprietary Products and Contract-Manufactured Products. Our Proprietary Products reportable segment offers proprietary packaging, containment and drug delivery products, along with analytical lab services, to biologic, generic and pharmaceutical drug customers. Our Contract-Manufactured Products reportable segment serves as a fully integrated business, focused on the design, manufacture, and automated assembly of complex devices, primarily for pharmaceutical, diagnostic, and medical device customers. We also maintain partnerships to share technologies and market products with affiliates in Japan and Mexico.

2018 Financial Performance Summary

Consolidated net sales increased by $118.3 million, or 7.4%, in 2018. Excluding foreign currency translation effects, consolidated net sales increased by $89.7 million, or 5.6%.

Net income in 2018 was $206.9 million, or $2.74 per diluted share, compared to $150.7 million, or $1.99 per diluted share, in 2017. Net income in 2018 included the impact of restructuring and related charges of $7.2 million (net of $1.9 million in tax), or $0.09 per diluted share, a gain on the sale of fixed assets as a result of our restructuring plans of $0.9 million (net of $0.2 million in tax), or $0.01 per diluted share, a charge of $1.1 million, or $0.02 per diluted share, related to the classification of Argentina's economy as highly inflationary under U.S. GAAP as of July 1, 2018, a net tax benefit of $2.5 million, or $0.03 per diluted share, for the impact of tax law changes, including the 2017 Tax Act, and a tax benefit of $14.3 million, or $0.19 per diluted share, associated with our adoption in 2017 of guidance issued by the FASB regarding share-based payment transactions. Net income in 2017 included the impact of a discrete tax charge of $48.8 million, or $0.64 per diluted share, related to the 2017 Tax Act and the impact of changes in enacted international tax rates on previously-recorded deferred tax asset and liability balances, a tax benefit of $33.1 million, or $0.44 per diluted share, associated with our adoption of the guidance issued by the FASB regarding share-based payment transactions, and a charge of $11.1 million, or $0.15 per diluted share, related to the deconsolidation of our Venezuelan subsidiary.

On January 24, 2019, we issued a voluntary recall of our Vial2Bag® product line due to reports of potential unpredictable or variable dosing under certain conditions. Our 2018 results included an $11.3 million provision for product returns, recorded as a reduction of sales. Our inventory balance for these devices was $6.5 million at December 31, 2018, which included estimated in-transit inventory being returned by our customers. We are working to develop the support required to get the products back on the market, and we currently believe the returned inventory will be saleable in 2019.

At December 31, 2018, our cash and cash equivalents balance totaled $337.4 million and our available borrowing capacity under our $300.0 million multi-currency revolving credit facility (the "Credit Facility") was $268.9 million.

RESULTS OF OPERATIONS

We evaluate the performance of our segments based upon, among other things, segment net sales and operating profit. Segment operating profit excludes general corporate costs, which include executive and director compensation, stock-based compensation, adjustments to annual incentive plan expense for over- or under-attainment of targets, certain pension and other retirement benefit costs, and other corporate facilities and administrative expenses not allocated to the segments. Also excluded are items that we consider not representative of ongoing operations. Such items are referred to as other unallocated items and generally include restructuring and related charges, certain asset impairments and other specifically-identified income or expense items.

Percentages in the following tables and throughout this *Results of Operations* section may reflect rounding adjustments.

Net Sales

The following table presents net sales, consolidated and by reportable segment:

	Year Ended December 31,			% Change	
($ in millions)	2018	2017	2016	2018/2017	2017/2016
Proprietary Products	$ 1,308.6	$ 1,236.9	$ 1,189.9	5.8%	3.9%
Contract-Manufactured Products	409.1	362.5	320.2	12.9%	13.2%
Intersegment sales elimination	(0.3)	(0.3)	(1.0)	—%	—%
Consolidated net sales	$ 1,717.4	$ 1,599.1	$ 1,509.1	7.4%	6.0%

2018 compared to 2017

Consolidated net sales increased by $118.3 million, or 7.4%, in 2018, including a favorable foreign currency translation impact of $28.6 million. Excluding foreign currency translation effects, consolidated net sales increased by $89.7 million, or 5.6%.

Proprietary Products – Proprietary Products net sales increased by $71.7 million, or 5.8%, in 2018, including a favorable foreign currency translation impact of $23.8 million. Excluding foreign currency translation effects, net sales increased by $47.9 million, or 3.9%, as growth in our high-value product offerings, including our Westar® and FluroTec-coated components, our ready-to-use seals, stoppers, and plungers, and our NovaPure® products, as well as sales price increases, partially offset the impact of the voluntary recall of Vial2Bag products and the deconsolidation of our Venezuelan subsidiary as of April 1, 2017.

Contract-Manufactured Products – Contract-Manufactured Products net sales increased by $46.6 million, or 12.9%, in 2018, including a favorable foreign currency translation impact of $4.8 million. Excluding foreign currency translation effects, net sales increased by $41.8 million, or 11.6%, despite the impact of the loss of a consumer-product customer in early 2018. Higher sales volume, particularly in Ireland, contributed 10.4 percentage points of the increase, and sales price increases contributed 1.2 percentage points of the increase.

2017 compared to 2016

Consolidated net sales increased by $90.0 million, or 6.0%, in 2017, including a favorable foreign currency translation impact of $12.2 million. Excluding foreign currency translation effects, consolidated net sales increased by $77.8 million, or 5.2%.

Proprietary Products – Proprietary Products net sales increased by $47.0 million, or 3.9%, in 2017, including a favorable foreign currency translation impact of $8.4 million. Excluding foreign currency translation effects, net sales increased by $38.6 million, or 3.2%. Proprietary Products sales growth in 2017 was slower than in 2016, as customers continued to work down inventory purchased in 2016 mostly to address long production lead-times for high-value products. Additional production capacity and staffing improved our lead-times, and we began to see

positive growth for customers in the Biologics and Generics market units. Higher sales volume contributed 2.2 percentage points of the increase, and sales price increases contributed 1.0 percentage points of the increase.

Contract-Manufactured Products – Contract-Manufactured Products net sales increased by $42.3 million, or 13.2%, in 2017, including a favorable foreign currency translation impact of $3.8 million. Excluding foreign currency translation effects, net sales increased by $38.5 million, or 12.0%, primarily due to the initial commercial ramp-up of projects that commenced in the latter half of 2016. Higher sales volume contributed 10.8 percentage points of the increase, and sales price increases contributed 1.2 percentage points of the increase.

Gross Profit

The following table presents gross profit and related gross margins, consolidated and by reportable segment:

	Year Ended December 31,			% Change	
($ in millions)	2018	2017	2016	2018/2017	2017/2016
Proprietary Products:					
Gross profit	$ 485.4	$ 449.3	$ 448.3	8.0 %	0.2%
Gross profit margin	37.1%	36.3%	37.7%		
Contract-Manufactured Products:					
Gross profit	$ 60.0	$ 63.6	$ 53.1	(5.7)%	19.8%
Gross profit margin	14.7%	17.5%	16.5%		
Consolidated gross profit	$ 545.4	$ 512.9	$ 501.4	6.3 %	2.3%
Consolidated gross profit margin	31.8%	32.1%	33.2%		

2018 compared to 2017

Consolidated gross profit increased by $32.5 million, or 6.3%, in 2018, including a favorable foreign currency translation impact of $9.3 million. Consolidated gross profit margin decreased by 0.3 margin points in 2018.

Proprietary Products – Proprietary Products gross profit increased by $36.1 million, or 8.0%, in 2018, including a favorable foreign currency translation impact of $8.5 million. Proprietary Products gross profit margin increased by 0.8 margin points in 2018, as production efficiencies, a favorable mix of products sold, and sales price increases were partially offset by the impact of under-absorbed overhead costs from our new facility in Waterford, Ireland and the deconsolidation of our Venezuelan subsidiary as of April 1, 2017, as well as increased labor and depreciation costs and higher raw material costs.

Contract-Manufactured Products – Contract-Manufactured Products gross profit decreased by $3.6 million, or 5.7%, in 2018, including a favorable foreign currency translation impact of $0.8 million. Contract-Manufactured Products gross profit margin decreased by 2.8 margin points in 2018, due to unabsorbed overhead from plant consolidation activities, start-up costs associated with the launch of new programs, an unfavorable mix of product sales, and lower profitability on development and tooling agreements, and higher raw material costs, partially offset by sales price increases and production efficiencies.

2017 compared to 2016

Consolidated gross profit increased by $11.5 million, or 2.3%, in 2017, including a favorable foreign currency translation impact of $3.3 million. Consolidated gross profit margin decreased by 1.1 margin points in 2017.

Proprietary Products – Proprietary Products gross profit increased by $1.0 million, or 0.2%, in 2017, including a favorable foreign currency translation impact of $2.6 million. Proprietary Products gross profit margin decreased by 1.4 margin points in 2017, as production efficiencies and modest price increases were more than offset by increased material labor and overhead costs.

Contract-Manufactured Products – Contract-Manufactured Products gross profit increased by $10.5 million, or 19.8%, in 2017, including a favorable foreign currency translation impact of $0.7 million. Contract-Manufactured Products gross profit margin increased by 1.0 margin points in 2017, as sales price increases, a favorable mix of products sold, higher sales volume, and production efficiencies were partially offset by increased labor, overhead, and depreciation costs.

Research and Development ("R&D") Costs

The following table presents R&D costs, consolidated and by reportable segment:

	Year Ended December 31,			% Change	
($ in millions)	2018	2017	2016	2018/2017	2017/2016
Proprietary Products	$ 40.3	$ 39.1	$ 36.8	3.1%	6.3%
Contract-Manufactured Products	—	—	—	—	—
Consolidated R&D costs	$ 40.3	$ 39.1	$ 36.8	3.1%	6.3%

2018 compared to 2017

Consolidated R&D costs increased by $1.2 million, or 3.1%, in 2018. Efforts remain focused on the continued investment in self-injection systems development, elastomeric packaging components, and formulation development.

2017 compared to 2016

Consolidated R&D costs increased by $2.3 million, or 6.3%, in 2017, due to continued investment in self-injection systems development and formulation development.

All of the R&D costs incurred during 2018 and 2017 related to Proprietary Products.

Selling, General and Administrative ("SG&A") Costs

The following table presents SG&A costs, consolidated and by reportable segment and corporate:

	Year Ended December 31,			% Change	
($ in millions)	2018	2017	2016	2018/2017	2017/2016
Proprietary Products	$ 185.0	$ 175.3	$ 167.4	5.5%	4.7 %
Contract-Manufactured Products	16.5	15.4	15.2	7.1%	1.3 %
Corporate	61.4	55.3	57.0	11.0%	(3.0)%
Consolidated SG&A costs	$ 262.9	$ 246.0	$ 239.6	6.9%	2.7 %
SG&A as a % of net sales	*15.3%*	*15.4%*	*15.9%*		

2018 compared to 2017

Consolidated SG&A costs increased by $16.9 million, or 6.9%, in 2018, including the impact of foreign currency translation, which increased SG&A costs by $2.4 million.

Proprietary Products – Proprietary Products SG&A costs increased by $9.7 million, or 5.5%, in 2018, due to higher commercial sales compensation costs and legal costs. Foreign currency translation increased Proprietary Products SG&A costs by $2.3 million.

Contract-Manufactured Products – Contract-Manufactured Products SG&A costs increased by $1.1 million, or 7.1%, in 2018, due to increases in compensation and miscellaneous costs.

Corporate – Corporate SG&A costs increased by $6.1 million, or 11.0%, in 2018, primarily due to the impact of higher achievement levels on incentive compensation costs and increased personnel costs.

2017 compared to 2016

Consolidated SG&A costs increased by $6.4 million, or 2.7%, in 2017, including the impact of foreign currency translation, which increased SG&A costs by $1.2 million.

Proprietary Products – Proprietary Products SG&A costs increased by $7.9 million, or 4.7%, in 2017, due to increases in compensation costs, primarily related to headcount and merit increases. Foreign currency translation increased Proprietary Products SG&A costs by $1.2 million.

Contract-Manufactured Products – Contract-Manufactured Products SG&A costs increased by $0.2 million, or 1.3%, in 2017, due to an increase in incentive compensation and travel costs.

Corporate – Corporate SG&A costs decreased by $1.7 million, or 3.0%, in 2017, due to decreases in U.S. pension costs and stock-based compensation expense, partially offset by increases in headcount and outside services.

Other Expense

The following table presents other income and expense items, consolidated and by reportable segment and unallocated items:

Expense (income)	Year Ended December 31,		
($ in millions)	2018	2017	2016
Proprietary Products	$ (6.3)	$ (8.9)	$ 1.0
Contract-Manufactured Products	(0.8)	(0.1)	(0.3)
Corporate	(0.1)	(0.1)	—
Unallocated items	9.1	11.1	29.1
Consolidated other expense	$ 1.9	$ 2.0	$ 29.8

Other income and expense items, consisting of foreign exchange transaction gains and losses, gains and losses on the sale of fixed assets, development and licensing income, contingent consideration, and miscellaneous income and charges, are generally recorded within segment results.

2018 compared to 2017

Consolidated other expense decreased by $0.1 million in 2018.

Proprietary Products – Proprietary Products other income decreased by $2.6 million in 2018, primarily as we recorded income of $9.1 million attributable to the reimbursement of certain costs related to a technology that we subsequently licensed to a third party in 2017, partially offset by foreign exchange transaction gains in Europe in 2018. Please refer to Note 15, *Other Expense*, for further discussion of the $9.1 million attributable to the reimbursement of certain costs.

Contract-Manufactured Products – Contract-Manufactured Products other income increased by $0.7 million in 2018, due to gains on the sale of fixed assets.

Corporate – Corporate other income remained constant at $0.1 million in 2018.

Unallocated items – During 2018, we recorded $9.1 million in restructuring and related charges, a $1.1 million gain on the sale of fixed assets as a result of our restructuring plans, and a charge of $1.1 million related to the classification of Argentina's economy as highly inflationary under U.S. GAAP as of July 1, 2018. Once fully

completed, we expect that our 2018 restructuring plan will provide annualized savings in the range of $13.5 million to $14.5 million. Please refer to Note 15, *Other Expense*, for further discussion of these items.

2017 compared to 2016

Consolidated other expense decreased by $27.8 million in 2017.

Proprietary Products – Proprietary Products other (income) expense changed by $9.9 million in 2017, primarily as we recorded income of $9.1 million attributable to the reimbursement of certain costs related to a technology that we subsequently licensed to a third party.

Contract-Manufactured Products – Contract-Manufactured Products other income decreased by $0.2 million in 2017, due to gains on the sale of fixed assets recorded in 2016, partially offset by foreign exchange transaction gains recorded in 2017.

Corporate – Corporate other income increased by $0.1 million in 2017.

Unallocated items – During 2017, as a result of the continued deterioration of conditions in Venezuela as well as our continued reduced access to USD settlement controlled by the Venezuelan government, we recorded a charge of $11.1 million related to the deconsolidation of our Venezuelan subsidiary, following our determination that we no longer met the U.S. GAAP criteria for control of that subsidiary. Please refer to Note 15, *Other Expense*, for further discussion of these items.

Operating Profit

The following table presents adjusted operating profit, consolidated and by reportable segment, corporate and unallocated items:

	Year Ended December 31,			% Change	
($ in millions)	2018	2017	2016	2018/2017	2017/2016
Proprietary Products	$ 266.4	$ 243.8	$ 243.1	9.3 %	0.3 %
Contract-Manufactured Products	44.3	48.3	38.2	(8.3)%	26.4 %
Corporate	(61.3)	(55.2)	(57.0)	11.1 %	(3.2)%
Adjusted consolidated operating profit	$ 249.4	$ 236.9	$ 224.3	5.3 %	5.6 %
Adjusted consolidated operating profit margin	14.5%	14.8%	14.9%		
Unallocated items	(9.1)	(11.1)	(29.1)		
Consolidated operating profit	$ 240.3	$ 225.8	$ 195.2	6.4 %	15.7 %
Consolidated operating profit margin	14.0%	14.1%	12.9%		

2018 compared to 2017

Consolidated operating profit increased by $14.5 million, or 6.4%, in 2018, including a favorable foreign currency translation impact of $6.6 million.

Proprietary Products – Proprietary Products operating profit increased by $22.6 million, or 9.3%, in 2018, including a favorable foreign currency translation impact of $5.9 million, due to the factors described above.

Contract-Manufactured Products – Contract-Manufactured Products operating profit decreased by $4.0 million, or 8.3%, in 2018, including a favorable foreign currency translation impact of $0.7 million, due to the factors described above.

Corporate – Corporate costs increased by $6.1 million, or 11.1%, in 2018, due to the factors described above.

Unallocated items – Please refer to the *Other Expense* section for details.

Excluding the unallocated items, our adjusted consolidated operating profit margin decreased by 0.3 margin points in 2018.

2017 compared to 2016

Consolidated operating profit increased by $30.6 million, or 15.7%, in 2017, including a favorable foreign currency translation impact of $1.6 million.

Proprietary Products – Proprietary Products operating profit increased by $0.7 million, or 0.3%, in 2017, including a favorable foreign currency translation impact of $0.9 million, due to the factors described above.

Contract-Manufactured Products – Contract-Manufactured Products operating profit increased by $10.1 million, or 26.4%, in 2017, including a favorable foreign currency translation impact of $0.7 million, due to the factors described above.

Corporate – Corporate costs decreased by $1.8 million, or 3.2%, in 2017, due to the factors described above.

Unallocated items – Please refer to the *Other Expense* section for details.

Excluding the unallocated items, our adjusted consolidated operating profit margin decreased by 0.1 margin points in 2017.

Interest Expense, Net

The following table presents interest expense, net, by significant component:

	Year Ended December 31,			% Change	
($ in millions)	2018	2017	2016	2018/2017	2017/2016
Interest expense	$ 9.3	$ 10.5	$ 11.7	(11.4)%	(10.3)%
Capitalized interest	(0.9)	(2.7)	(3.6)	(66.7)%	(25.0)%
Interest income	(2.1)	(1.3)	(1.1)	61.5 %	18.2 %
Interest expense, net	$ 6.3	$ 6.5	$ 7.0	(3.1)%	(7.1)%

2018 compared to 2017

Interest expense, net, decreased by $0.2 million, or 3.1%, in 2018, due to lower interest expense resulting from less average debt outstanding during 2018, as compared to 2017, and an increase in interest income, partially offset by a decrease in capitalized interest due to the completion of several major projects in 2017, including certain components of our new facility in Waterford, Ireland. The Waterford facility began commercial production during the second half of 2018.

2017 compared to 2016

Interest expense, net, decreased by $0.5 million, or 7.1%, in 2017, due to lower interest expense resulting from less average debt outstanding during 2017, as compared to 2016, partially offset by a decrease in capitalized interest.

Other Nonoperating Income

2018 compared to 2017

Other nonoperating income increased by $3.6 million in 2018, due to an increase in the expected return on pension plan assets and a decrease in recognized actuarial losses for 2018. Please refer to Note 2, *New Accounting Standards*, and Note 14, *Benefit Plans*, for information on guidance issued by the FASB on the presentation of net periodic

pension and postretirement benefit cost (net benefit cost) that we adopted as of January 1, 2018, on a retrospective basis.

2017 compared to 2016

Other nonoperating income increased by $1.5 million in 2017, primarily due to an increase in the expected return on pension plan assets for 2017.

Income Taxes

The provision for income taxes was $41.4 million, $80.9 million, and $54.4 million for the years 2018, 2017, and 2016, respectively, and the effective tax rate was 17.2%, 36.4%, and 28.7%, respectively.

During 2018, we recorded a net tax benefit of $2.5 million for the impact of tax law changes, including the 2017 Tax Act, and a tax benefit of $14.3 million associated with our adoption in 2017 of guidance issued by the FASB regarding share-based payment transactions. Please refer to Note 16, *Income Taxes*, for further discussion of the 2017 Tax Act.

During 2017, we recorded a discrete tax charge of $48.8 million related to the 2017 Tax Act and the impact of changes in enacted international tax rates on previously-recorded deferred tax asset and liability balances, as well as a tax benefit of $33.1 million associated with our adoption of the guidance issued by the FASB regarding share-based payment transactions.

During 2016, we recorded a tax benefit of $9.0 million in connection with restructuring and related charges of $26.4 million, a discrete tax charge of $0.8 million related to the pension curtailment gain of $2.1 million, and a discrete tax charge of $1.0 million resulting from the impact of changes in enacted tax rates on our previously-recorded deferred tax asset and liability balances.

Please refer to Note 16, *Income Taxes*, for further discussion of our income taxes.

Equity in Net Income of Affiliated Companies

Equity in net income of affiliated companies represents the contribution to earnings from our 25% ownership interest in Daikyo and our 49% ownership interest in four companies in Mexico. Equity in net income of affiliated companies was $7.6 million, $9.2 million, and $8.2 million for the years 2018, 2017, and 2016, respectively. Equity in net income of affiliated companies decreased by $1.6 million, or 17.4%, in 2018, primarily due to the impact of gains on the sale of investment securities by Daikyo in 2017. Equity in net income of affiliated companies increased by $1.0 million, or 12.2%, in 2017, due to the impact of gains on the sale of investment securities by Daikyo, partially offset by foreign exchange transaction losses in Mexico.

Net Income

Net income in 2018 was $206.9 million, or $2.74 per diluted share, compared to $150.7 million, or $1.99 per diluted share, in 2017. Our 2018 results included the impact of restructuring and related charges of $7.2 million (net of $1.9 million in tax), a gain on the sale of fixed assets as a result of our restructuring plans of $0.9 million (net of $0.2 million in tax), a charge of $1.1 million related to the classification of Argentina's economy as highly inflationary under U.S. GAAP as of July 1, 2018, a net tax benefit of $2.5 million for the impact of tax law changes, including the 2017 Tax Act, and a tax benefit of $14.3 million associated with our adoption in 2017 of guidance issued by the FASB regarding share-based payment transactions.

Net income in 2017 was $150.7 million, or $1.99 per diluted share, compared to $143.6 million, or $1.91 per diluted share, in 2016. Our 2017 results included the impact of a discrete tax charge of $48.8 million related to the 2017 Tax Act and the impact of changes in enacted international tax rates on previously-recorded deferred tax asset and liability balances, as well as a tax benefit of $33.1 million associated with our adoption of the guidance issued by the

FASB regarding share-based payment transactions and a charge of $11.1 million related to the deconsolidation of our Venezuelan subsidiary.

Net income in 2016 was $143.6 million, or $1.91 per diluted share, compared to $95.6 million, or $1.30 per diluted share, in 2015. Our 2016 results included the impact of restructuring and related charges of $17.4 million (net of $9.0 million in tax), a charge related to the devaluation of the Venezuelan Bolivar of $2.7 million, a pension curtailment gain of $1.3 million (net of $0.8 million in tax), and a discrete tax charge of $1.0 million.

FINANCIAL CONDITION, LIQUIDITY AND CAPITAL RESOURCES

Cash Flows

The following table presents cash flow data for the years ended December 31:

($ in millions)	2018	2017	2016
Net cash provided by operating activities	$ 288.6	$ 263.3	$ 219.4
Net cash used in investing activities	$ (100.8)	$ (133.6)	$ (175.8)
Net cash used in financing activities	$ (80.7)	$ (109.0)	$ (113.9)

Net Cash Provided by Operating Activities

2018 compared to 2017
Net cash provided by operating activities increased by $25.3 million in 2018, primarily due to improved operating results and a decrease in pension plan contributions in 2018.

2017 compared to 2016
Net cash provided by operating activities increased by $43.9 million in 2017, due to improved operating results.

Net Cash Used in Investing Activities

2018 compared to 2017
Net cash used in investing activities decreased by $32.8 million in 2018, mostly due to a $26.1 million decrease in capital spending due to the completion of several major projects in 2017, including certain components of our new facility in Waterford, Ireland.

2017 compared to 2016
Net cash used in investing activities decreased by $42.2 million in 2017, mostly due to a $39.4 million decrease in capital spending due to the completion of several major projects, including certain components of our new facility in Waterford, Ireland.

Net Cash Used in Financing Activities

2018 compared to 2017
Net cash used in financing activities decreased by $28.3 million in 2018, primarily due to lower debt repayment activity in 2018.

2017 compared to 2016
Net cash used in financing activities decreased by $4.9 million in 2017, due to a decrease in net debt repayments, partially offset by an increase in purchases under our share repurchase programs.

We paid cash dividends totaling $42.1 million ($0.57 per share), $39.1 million ($0.53 per share), and $35.8 million ($0.49 per share) during 2018, 2017, and 2016, respectively.

Liquidity and Capital Resources

The table below presents selected liquidity and capital measures as of:

($ in millions)	December 31, 2018	December 31, 2017
Cash and cash equivalents	$ 337.4	$ 235.9
Working capital	$ 610.7	$ 464.0
Total debt	$ 196.1	$ 197.0
Total equity	$ 1,396.3	$ 1,279.9
Net debt-to-total invested capital	N/A	N/A

Cash and cash equivalents include all instruments that have maturities of ninety days or less when purchased. Working capital is defined as current assets less current liabilities. Net debt is defined as total debt less cash and cash equivalents, and total invested capital is defined as the sum of net debt and total equity. Net debt and total invested capital are non-U.S. GAAP financial measures that should not be used as a substitute for the comparable U.S. GAAP financial measures. The non-U.S. GAAP financial measures are incorporated into our discussion and analysis as management believes that this information provides users with a valuable insight into our overall performance and financial position.

Cash and cash equivalents – Our cash and cash equivalents balance at December 31, 2018 consisted of cash held in depository accounts with banks around the world and cash invested in high-quality, short-term investments. The cash and cash equivalents balance at December 31, 2018 included $174.6 million of cash held by subsidiaries within the U.S., and $162.8 million of cash held by subsidiaries outside of the U.S. In response to the 2017 Tax Act, we reevaluated our position regarding permanent reinvestment of foreign subsidiary earnings and profits through 2017 (with the exception of China and Mexico) and decided that those profits were no longer permanently reinvested. As of January 1, 2018, we reasserted indefinite reinvestment related to all post-2017 unremitted earnings in all of our foreign subsidiaries. In general, it is our practice and intention to permanently reinvest the earnings of our foreign subsidiaries and repatriate earnings only when the tax impact is de minimis, and that position has not changed subsequent to the one-time transition tax under the 2017 Tax Act, except as noted above. Accordingly, no deferred taxes have been provided for withholding taxes or other taxes that would result upon repatriation of approximately $79.7 million of undistributed earnings from foreign subsidiaries to the U.S., as those earnings continue to be permanently reinvested. Further, it is impracticable for us to estimate any future tax costs for any unrecognized deferred tax liabilities associated with our indefinite reinvestment assertion, because the actual tax liability, if any, would be dependent on complex analysis and calculations considering various tax laws, exchange rates, circumstances existing when there is a repatriation, sale, or liquidation, or other factors.

Working capital - Working capital at December 31, 2018 increased by $146.7 million, or 31.6%, as compared to December 31, 2017, including a decrease of $16.5 million due to foreign currency translation. Excluding the impact of currency exchange rates, cash and cash equivalents, accounts receivable, inventories, and total current liabilities increased by $107.1 million, $43.8 million, $7.0 million, and $11.3 million, respectively. The increase in accounts receivable was due to increased sales activity, longer customer payment terms, and our adoption of the new revenue recognition guidance. The increase in current liabilities was due to an increase in accrued salaries, wages and benefits.

Debt and credit facilities - The $0.9 million decrease in total debt at December 31, 2018, as compared to December 31, 2017, primarily resulted from foreign currency rate fluctuations.

Our sources of liquidity include our Credit Facility. At December 31, 2018, we had $28.6 million in outstanding long-term borrowings under this facility, of which $4.6 million was denominated in Yen and $24.0 million was denominated in Euro. These borrowings, together with outstanding letters of credit of $2.5 million, resulted in a borrowing capacity available under our Credit Facility of $268.9 million at December 31, 2018. We do not expect

any significant limitations on our ability to access this source of funds. Please refer to Note 9, *Debt*, for further discussion of our Credit Facility.

Pursuant to the financial covenants in our debt agreements, we are required to maintain established interest coverage ratios and to not exceed established leverage ratios. In addition, the agreements contain other customary covenants, none of which we consider restrictive to our operations. At December 31, 2018, we were in compliance with all of our debt covenants, and we expect to continue to be in compliance with the terms of these agreements throughout 2019.

We believe that cash on hand and cash generated from operations, together with availability under our Credit Facility, will be adequate to address our foreseeable liquidity needs based on our current expectations of our business operations, capital expenditures and scheduled payments of debt obligations.

Commitments and Contractual Obligations

The following table summarizes our commitments and contractual obligations at December 31, 2018. These obligations are not expected to have a material impact on liquidity.

		Payments Due By Period			
($ in millions)	Total	Less than 1 year	1 - 3 years	3 - 5 years	More than 5 years
Purchase obligations [(1)]	$ 72.7	$ 14.0	$ 18.7	$ 18.5	$ 21.5
Debt (excluding unamortized debt issuance costs)	196.7	0.1	28.6	42.0	126.0
Interest on debt and interest rate swaps [(2)]	42.0	6.8	13.2	10.7	11.3
Operating lease obligations	81.5	13.0	18.3	12.4	37.8
Other long-term liabilities [(3)]	3.3	0.4	0.8	0.9	1.2
Total contractual obligations [(4)]	$ 396.2	$ 34.3	$ 79.6	$ 84.5	$ 197.8

(1) Our business creates a need to enter into various commitments with suppliers. In accordance with U.S. GAAP, these purchase obligations are not reflected in the accompanying consolidated balance sheets. These purchase commitments do not exceed our projected requirements and are in the normal course of business.

(2) For fixed-rate long-term debt, interest was based on principal amounts and fixed coupon rates at year-end. Future interest payments on variable-rate debt were calculated using principal amounts and the applicable ending interest rate at year-end. Interest on fixed-rate derivative instruments was based on notional amounts and fixed interest rates contractually obligated at year-end.

(3) Represents acquisition-related contingencies. In connection with certain business acquisitions, we agreed to make payments to the sellers if and when certain operating milestones are achieved, such as sales and operating income targets.

(4) This table does not include obligations pertaining to pension and postretirement benefits because the actual amount and timing of future contributions may vary significantly depending upon plan asset performance, benefit payments, and other factors. Contributions to our plans are expected to be $3.9 million in 2019. Please refer to Note 14, *Benefit Plans*, for estimated benefit payments over the next ten years.

Reserves for uncertain tax positions - The table above does not include $3.9 million of total gross unrecognized tax benefits as of December 31, 2018. Due to the high degree of uncertainty regarding the timing of potential cash flows, we cannot reasonably estimate the settlement periods for amounts which may be paid.

Letters of credit - We have letters of credit totaling $2.5 million supporting the reimbursement of workers' compensation and other claims paid on our behalf by insurance carriers. Our accrual for insurance obligations was

$3.4 million at December 31, 2018, of which $0.9 million is in excess of our deductible and, therefore, is reimbursable by the insurance company.

OFF-BALANCE SHEET ARRANGEMENTS

At December 31, 2018, we had no off-balance sheet financing arrangements other than operating leases, unconditional purchase obligations incurred in the ordinary course of business, and outstanding letters of credit related to various insurance programs.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

Management's discussion and analysis addresses consolidated financial statements that are prepared in accordance with U.S. GAAP. The application of these principles requires management to make estimates and assumptions, some of which are subjective and complex, that affect the amounts reported in the consolidated financial statements. We believe the following accounting policies and estimates are critical to understanding and evaluating our results of operations and financial position:

Revenue Recognition: Our revenue results from the sale of goods or services and reflects the consideration to which we expect to be entitled in exchange for those goods or services. We record revenue based on a five-step model, in accordance with Accounting Standards Codification ("ASC") Topic 606 ("ASC 606"). Following the identification of a contract with a customer, we identify the performance obligations (goods or services) in the contract, determine the transaction price, allocate the transaction price to the performance obligations in the contract, and recognize the revenue when (or as) we satisfy the performance obligations by transferring the promised goods or services to our customers. A good or service is transferred when (or as) the customer obtains control of that good or service.

We recognize the majority of our revenue, primarily relating to Proprietary Products product sales, at a point in time, following the transfer of control of our products to our customers, which typically occurs upon shipment or delivery, depending on the terms of the related agreements.

We recognize revenue relating to our Contract-Manufactured Products product sales and certain Proprietary Products product sales over time, as our performance does not create an asset with an alternative use to us and we have an enforceable right to payment for performance completed to date.

We recognize revenue relating to our development and tooling agreements over time, as our performance creates or enhances an asset that the customer controls as the asset is created or enhanced.

For revenue recognized over time, revenue is recognized by applying a method of measuring progress toward complete satisfaction of the related performance obligation. When selecting the method for measuring progress, we select the method that best depicts the transfer of control of goods or services promised to our customers.

Revenue for our Contract-Manufactured Products product sales, certain Proprietary Products product sales, and our development and tooling agreements is recorded under an input method, which recognizes revenue on the basis of our efforts or inputs to the satisfaction of a performance obligation (for example, resources consumed, labor hours expended, costs incurred, time elapsed, or machine hours used) relative to the total expected inputs to the satisfaction of that performance obligation. The input method that we use is based on costs incurred.

The majority of the performance obligations within our contracts are satisfied within one year or less. Performance obligations satisfied beyond one year include those relating to a nonrefundable customer payment of $20.0 million received in June 2013 in return for the exclusive use of the SmartDose® technology platform within a specific therapeutic area. As of December 31, 2018, there was $6.5 million of unearned income related to this payment, of which $0.9 million was included in other current liabilities and $5.6 million was included in other long-term liabilities. The unearned income is being recognized as income on a straight-line basis over the remaining term of the agreement. The agreement does not include a future minimum purchase commitment from the customer.

Our revenue can be generated from contracts with multiple performance obligations. When a sales agreement involves multiple performance obligations, each obligation is separately identified and the transaction price is allocated based on the amount of consideration we expect to be entitled in exchange for transferring the promised good or service to the customer.

Some customers receive pricing rebates upon attaining established sales volumes. We record rebate costs when sales occur based on our assessment of the likelihood that the required volumes will be attained. We also maintain an allowance for product returns, as we believe that we are able to reasonably estimate the amount of returns based on our substantial historical experience.

Contract assets or liabilities result from transactions with revenue recorded over time. If the measure of remaining rights exceeds the measure of the remaining performance obligations, we record a contract asset. Contract assets are recorded on the consolidated balance sheet in accounts receivable, net, and other assets (current and noncurrent portions, respectively). Contract assets included in accounts receivable, net, relate to the unbilled amounts of our product sales for which we have recognized revenue over time. Contract assets included in other assets represent the remaining performance obligations of our development and tooling agreements. Conversely, if the measure of the remaining performance obligations exceeds the measure of the remaining rights, we record a contract liability. Contract liabilities are recorded on the consolidated balance sheet in other liabilities (current and noncurrent portions, respectively) and represent cash payments received in advance of our performance.

Impairment of Long-Lived Assets: Long-lived assets, including property, plant and equipment, are tested for impairment whenever circumstances indicate that the carrying value of these assets may not be recoverable. An asset is considered impaired if the carrying value of the asset exceeds the sum of the future expected undiscounted cash flows to be derived from the asset. Once an asset is considered impaired, an impairment loss is recorded within other (income) expense for the difference between the asset's carrying value and its fair value. For assets held and used in the business, management determines fair value using estimated future cash flows to be derived from the asset, discounted to a net present value using an appropriate discount rate. For assets held for sale or for investment purposes, management determines fair value by estimating the proceeds to be received upon sale of the asset, less disposition costs. During 2018, as part of our 2018 restructuring plan, we recorded within other expense a $2.2 million non-cash asset write-down associated with the discontinued use of certain equipment. During 2016, as part of our 2016 restructuring plan, we recorded within other expense a $4.5 million non-cash asset write-down associated with the discontinued use of certain equipment.

Impairment of Goodwill and Other Intangible Assets: Goodwill and indefinite-lived intangible assets are tested for impairment at least annually, following the completion of our annual budget and long-range planning process, or whenever circumstances indicate that the carrying value of these assets may not be recoverable. Goodwill is tested for impairment at the reporting unit level, which is the same as, or one level below, our operating segments. In January 2017, the FASB issued guidance which removes the second step of the goodwill impairment test. A goodwill impairment charge will now be the amount by which a reporting unit's carrying amount exceeds its fair value, not to exceed the total amount of goodwill allocated to that reporting unit. This guidance is effective for fiscal years, and interim periods within those years, beginning after December 15, 2019. Early adoption is permitted. We adopted this guidance as of January 1, 2017, on a prospective basis. Considerable management judgment is necessary to estimate fair value. Amounts and assumptions used in our goodwill impairment test, such as future sales, future cash flows and long-term growth rates, are consistent with internal projections and operating plans. Amounts and assumptions used in our goodwill impairment test are also largely dependent on the continued sale of drug products delivered by injection and the packaging of drug products, as well as our timeliness and success in new-product innovation or the development and commercialization of proprietary multi-component systems. Changes in the estimate of fair value, including the estimate of future cash flows, could have a material impact on our future results of operations and financial position. Recent accounting guidance also allows entities to first assess qualitative factors, including macroeconomic conditions, industry and market considerations, cost factors, and overall financial performance, to determine whether it is necessary to perform the quantitative goodwill impairment test. As each of our reporting units had a fair value in excess of its carrying value of at least 180% within our 2016 annual impairment test, we elected to follow this guidance for our 2017 and 2018 annual impairment tests. Based upon our assessment, we determined that it was not more likely than not that the fair value of each of our reporting

units was less than its carrying amount and determined that it was not necessary to perform the quantitative goodwill impairment tests in 2017 and 2018.

At December 31, 2015, a trademark had been determined to have an indefinite life and, therefore, was not subject to amortization. During 2016, as part of our 2016 restructuring plan, we recorded within other expense a $10.0 million non-cash asset write-down associated with the discontinued use of this trademark.

Intangible assets with finite lives are amortized using the straight-line method over their estimated useful lives, and reviewed for impairment whenever circumstances indicate that the carrying value of these assets may not be recoverable. During 2016, as part of our 2016 restructuring plan, we recorded within other expense a $2.8 million non-cash asset write-down associated with the discontinued use of a patent.

Employee Benefits: We maintain funded and unfunded defined benefit pension plans in the U.S. and a number of other countries that cover employees who meet eligibility requirements. In addition, we sponsor postretirement benefit plans which provide healthcare benefits for eligible employees who retire or become disabled. The measurement of annual cost and obligations under these defined benefit postretirement plans is subject to a number of assumptions, which are specific for each of our U.S. and foreign plans. The assumptions, which are reviewed at least annually, are relevant to both the plan assets (where applicable) and the obligation for benefits that will ultimately be provided to our employees. Two of the most critical assumptions in determining pension and retiree medical plan expense are the discount rate and expected long-term rate of return on plan assets. Other assumptions reflect demographic factors such as retirement age, rates of compensation increases, mortality and turnover and are evaluated periodically and updated to reflect our actual experience. For our funded plans, we consider the current and expected asset allocations of our plan assets, as well as historical and expected rates of return, in estimating the long-term rate of return on plan assets. Under U.S. GAAP, differences between actual and expected results are generally accumulated in other comprehensive income (loss) as actuarial gains or losses and subsequently amortized into earnings over future periods.

Changes in key assumptions could have a material impact on our future results of operations and financial position. We estimate that every 25-basis point reduction in our long-term rate of return assumption would increase pension expense by $0.5 million, and every 25-basis point reduction in our discount rate would increase pension expense by $0.5 million. A decrease in the discount rate increases the present value of benefit obligations. Our net pension underfunded balance at December 31, 2018 was $52.5 million, compared to $48.5 million at December 31, 2017. Our underfunded balance for other postretirement benefits was $6.0 million at December 31, 2018, compared to $7.1 million at December 31, 2017.

Income Taxes: We estimate income taxes payable based upon current domestic and international tax legislation. In addition, deferred income tax assets and liabilities are established to recognize differences between the tax basis and financial statement carrying values of assets and liabilities. We maintain valuation allowances where it is more likely than not that all or a portion of a deferred tax asset will not be realized. The recoverability of tax assets is subject to our estimates of future profitability, generally at the respective subsidiary company and country level. Changes in tax legislation, business plans and other factors may affect the ultimate recoverability of tax assets or final tax payments, which could result in adjustments to tax expense in the period such change is determined.

When accounting for uncertainty in income taxes recognized in our financial statements, we apply a more-likely-than-not threshold for financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return.

Please refer to Note 1, *Summary of Significant Accounting Policies* and Note 2, *New Accounting Standards*, to our consolidated financial statements for additional information on our significant accounting policies, recently adopted accounting standards, and accounting standards issued but not yet adopted.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Our ongoing business operations expose us to various risks, such as fluctuating interest rates, foreign currency exchange rates and increasing commodity prices. These risk factors can impact our results of operations, cash flows and financial position. To manage these market risks, we periodically enter into derivative financial instruments, such as interest rate swaps, options and foreign exchange contracts for periods consistent with, and for notional amounts equal to or less than, the underlying exposures. We do not purchase or hold any derivative financial instruments for investment or trading purposes.

Foreign Currency Exchange Risk

Sales outside of the U.S. accounted for 55.4% of our consolidated net sales in 2018. Virtually all of these sales and related operating costs are denominated in the currency of the local country and translated into USD for consolidated reporting purposes. Although the majority of the assets and liabilities of these subsidiaries are denominated in the functional currency of the subsidiary, they may also hold assets or liabilities denominated in other currencies. These items may give rise to foreign currency transaction gains and losses. As a result, our results of operations and financial position are exposed to changing currency exchange rates. We periodically use forward exchange contracts to hedge certain transactions or to manage month-end balance sheet exposures on cross-currency intercompany loans.

We have designated our €21.0 million Euro-denominated borrowings under our Credit Facility as a hedge of our net investment in certain European subsidiaries. We also have ¥500.0 million in Yen-denominated borrowings under our Credit Facility, which has been designated as a hedge of our net investment in Daikyo. At December 31, 2018, a cumulative foreign currency translation loss on these hedges of $0.4 million (net of tax of $0.2 million) was recorded within accumulated other comprehensive loss.

Interest Rate Risk

As a result of our normal borrowing activities, we have long-term debt with both fixed and variable interest rates. Long-term debt consists of senior notes and revolving credit facilities. Our exposures to fluctuations in interest rates are managed to the extent considered necessary by entering into interest rate swap agreements.

The following table summarizes our interest rate risk-sensitive instruments (excluding unamortized debt issuance cost):

($ in millions)	2019	2020	2021	2022	2023	Thereafter	Carrying Value	Fair Value
Current Debt:								
U.S. dollar denominated	$ 0.1						$ 0.1	$ 0.1
Average interest rate - variable								
Long-Term Debt:								
U.S. dollar denominated				42.0		126.0	168.0	164.6
Average interest rate - fixed				3.7%		3.9%		
Euro denominated		24.0					24.0	24.0
Average interest rate - variable		1.0%						
Yen denominated		4.6					4.6	4.6
Average interest rate - variable		1.0%						

Commodity Price Risk

Many of our proprietary products are made from synthetic elastomers, which are derived from the petroleum refining process. We purchase the majority of our elastomers via long-term supply contracts, some of which contain clauses that provide for surcharges related to fluctuations in crude oil prices. In recent years, raw material costs have

fluctuated due to crude oil price fluctuations. We expect this volatility to continue. We will continue to pursue pricing and hedging strategies, and ongoing cost control initiatives, to offset the effects on gross profit.

In November 2016, we purchased a series of call options for a total of 96,525 barrels of crude oil to mitigate our exposure to such oil-based surcharges and protect operating cash flows with regards to a portion of our forecasted elastomer purchases through November 2017. In November 2017, we purchased a series of call options for a total of 125,166 barrels of crude oil through May 2019. In April 2018, we purchased a series of call options for a total of 30,612 barrels of crude oil from December 2018 through August 2019.

During 2018, the gain recorded in cost of goods and services sold related to these options was $0.1 million. During 2017, the loss recorded in cost of goods and services sold related to these options was $0.3 million.

As of December 31, 2018, we had outstanding contracts to purchase 47,445 barrels of crude oil from January 2019 to August 2019 at a weighted-average strike price of $76.45 per barrel.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

CONSOLIDATED STATEMENTS OF INCOME

West Pharmaceutical Services, Inc. and Subsidiaries for the years ended December 31, 2018, 2017 and 2016
(in millions, except per share data)

	2018	2017	2016
Net sales	$ 1,717.4	$ 1,599.1	$ 1,509.1
Cost of goods and services sold	1,172.0	1,086.2	1,007.7
Gross profit	545.4	512.9	501.4
Research and development	40.3	39.1	36.8
Selling, general and administrative expenses	262.9	246.0	239.6
Other expense (Note 15)	1.9	2.0	29.8
Operating profit	240.3	225.8	195.2
Interest expense	8.4	7.8	8.1
Interest income	(2.1)	(1.3)	(1.1)
Other nonoperating income	(6.7)	(3.1)	(1.6)
Income before income taxes	240.7	222.4	189.8
Income tax expense	41.4	80.9	54.4
Equity in net income of affiliated companies	(7.6)	(9.2)	(8.2)
Net income	$ 206.9	$ 150.7	$ 143.6
Net income per share:			
Basic	$ 2.80	$ 2.04	$ 1.96
Diluted	$ 2.74	$ 1.99	$ 1.91
Weighted average shares outstanding:			
Basic	73.9	73.9	73.3
Diluted	75.4	75.8	75.0
Dividends declared per share	$ 0.58	$ 0.54	$ 0.50

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

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
West Pharmaceutical Services, Inc. and Subsidiaries for the years ended December 31, 2018, 2017 and 2016
(in millions)

	2018	2017	2016
Net income	$ 206.9	$ 150.7	$ 143.6
Other comprehensive (loss) income, net of tax:			
Foreign currency translation adjustments	(39.2)	68.8	(18.1)
Defined benefit pension and other postretirement plans:			
Prior service (cost) credit arising during period, net of tax of $0, $0 and $1.1	(0.3)	—	1.9
Net actuarial (loss) gain arising during period, net of tax of $(0.2), $1.3 and $(4.8)	(0.7)	6.3	(11.1)
Settlement effects arising during period, net of tax of $1.1	—	—	2.0
Less: amortization of actuarial loss, net of tax of $0.3, $0.5 and $1.2	1.1	3.6	2.2
Less: amortization of prior service credit, net of tax of $(0.5), $(0.5) and $(0.5)	(1.5)	(3.5)	(0.9)
Less: amortization of transition obligation	—	—	0.1
Net loss on investment securities, net of tax of $(0.1), $(2.5) and $(0.1)	(0.1)	(4.7)	(0.2)
Net gain (loss) on derivatives, net of tax of $1.5, $(0.1) and $0.1	3.8	(1.0)	(0.1)
Other comprehensive (loss) income, net of tax	(36.9)	69.5	(24.2)
Comprehensive income	$ 170.0	$ 220.2	$ 119.4

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

CONSOLIDATED BALANCE SHEETS
West Pharmaceutical Services, Inc. and Subsidiaries at December 31, 2018 and 2017
(in millions, except per share data)

	2018	2017
ASSETS		
Current assets:		
Cash and cash equivalents	$ 337.4	$ 235.9
Accounts receivable, net	288.2	253.2
Inventories	214.5	215.2
Other current assets	54.3	39.2
Total current assets	894.4	743.5
Property, plant and equipment	1,752.7	1,745.8
Less: accumulated depreciation and amortization	930.7	890.8
Property, plant and equipment, net	822.0	855.0
Investments in affiliated companies	91.2	85.8
Goodwill	105.8	107.7
Deferred income taxes	24.7	25.7
Intangible assets, net	20.3	21.7
Other noncurrent assets	20.5	23.4
Total Assets	$ 1,978.9	$ 1,862.8
LIABILITIES AND EQUITY		
Current liabilities:		
Notes payable and other current debt	$ 0.1	$ —
Accounts payable	130.4	138.1
Pension and other postretirement benefits	2.3	2.2
Accrued salaries, wages and benefits	64.5	56.2
Income taxes payable	9.8	6.0
Other current liabilities	76.6	77.0
Total current liabilities	283.7	279.5
Long-term debt	196.0	197.0
Deferred income taxes	13.1	10.4
Pension and other postretirement benefits	56.2	53.4
Other long-term liabilities	33.6	42.6
Total Liabilities	582.6	582.9
Commitments and contingencies (Note 17)		
Equity:		
Preferred stock, 3.0 million shares authorized; 0 shares issued and outstanding in 2018 and 2017	—	—
Common stock, par value $.25 per share; 100.0 million shares authorized; shares issued: 75.3 million and 75.2 million in 2018 and 2017; shares outstanding: 74.1 million and 73.9 million in 2018 and 2017	18.8	18.8
Capital in excess of par value	282.0	309.3
Retained earnings	1,353.4	1,178.2
Accumulated other comprehensive loss	(154.2)	(117.3)
Treasury stock, at cost (1.2 million and 1.3 million shares in 2018 and 2017)	(103.7)	(109.1)
Total Equity	1,396.3	1,279.9
Total Liabilities and Equity	$ 1,978.9	$ 1,862.8

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

CONSOLIDATED STATEMENT OF EQUITY

West Pharmaceutical Services, Inc. and Subsidiaries for the years ended December 31, 2018, 2017 and 2016
(in millions)

	Common Shares Issued	Common Stock	Capital in Excess of Par Value	Number of Treasury Shares	Treasury Stock	Retained earnings	Accumulated other comprehensive loss	Total
Balance, December 31, 2015	72.4	$ 18.1	$ 207.8	0.1	$ (4.0)	$ 964.6	$ (162.6)	$ 1,023.9
Net income	—	—	—	—	—	143.6	—	143.6
Stock-based compensation	—	—	17.1	—	0.2	—	—	17.3
Shares issued under stock plans	1.4	0.3	21.0	—	9.9	—	—	31.2
Share purchased under share repurchase program	—	—	—	0.5	(52.2)	—	—	(52.2)
Shares repurchased for employee tax withholdings	(0.1)	—	(3.7)	—	—	—	—	(3.7)
Excess tax benefits from employee stock plans	—	—	18.2	—	—	—	—	18.2
Dividends declared	—	—	—	—	—	(36.6)	—	(36.6)
Other comprehensive loss, net of tax	—	—	—	—	—	—	(24.2)	(24.2)
Balance, December 31, 2016	73.7	18.4	260.4	0.6	(46.1)	1,071.6	(186.8)	1,117.5
Effect of modified retrospective application of a new accounting standard	—	—	—	—	—	(4.1)	—	(4.1)
Net income	—	—	—	—	—	150.7	—	150.7
Stock-based compensation	—	—	6.5	—	7.5	—	—	14.0
Shares issued under stock plans	1.5	0.4	38.0	(0.1)	7.3	—	—	45.7
Share purchased under share repurchase program	—	—	—	0.8	(74.4)	—	—	(74.4)
Shares repurchased for employee tax withholdings	—	—	(0.4)	—	(3.4)	—	—	(3.8)
Dividends declared	—	—	—	—	—	(40.0)	—	(40.0)
Other adjustments to capital in excess of par value	—	—	4.8	—	—	—	—	4.8
Other comprehensive income, net of tax	—	—	—	—	—	—	69.5	69.5
Balance, December 31, 2017	75.2	18.8	309.3	1.3	(109.1)	1,178.2	(117.3)	1,279.9
Effect of modified retrospective application of a new accounting standard (see Note 3)	—	—	—	—	—	11.4	—	11.4
Net income	—	—	—	—	—	206.9	—	206.9
Stock-based compensation	—	—	7.3	—	9.2	—	—	16.5
Shares issued under stock plans	0.1	—	(34.8)	(0.9)	71.6	—	—	36.8
Shares purchased under share repurchase program	—	—	—	0.8	(70.8)	—	—	(70.8)
Shares repurchased for employee tax withholdings	—	—	0.2	—	(4.6)	—	—	(4.4)
Dividends declared	—	—	—	—	—	(43.1)	—	(43.1)
Other comprehensive loss, net of tax	—	—	—	—	—	—	(36.9)	(36.9)
Balance, December 31, 2018	75.3	$ 18.8	$ 282.0	1.2	$ (103.7)	$ 1,353.4	$ (154.2)	$ 1,396.3

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

CONSOLIDATED STATEMENTS OF CASH FLOWS

West Pharmaceutical Services, Inc. and Subsidiaries for the years ended December 31, 2018, 2017 and 2016
(in millions)

	2018	2017	2016
Cash flows from operating activities:			
Net income	$ 206.9	$ 150.7	$ 143.6
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation	101.7	94.3	88.1
Amortization	2.7	2.4	2.6
Stock-based compensation	15.1	16.1	19.5
Non-cash restructuring charges	2.2	0.7	17.5
Pension curtailment gain	—	—	(2.1)
Venezuela deconsolidation	—	11.1	—
Contingent consideration payments in excess of acquisition-date liability	(0.6)	—	—
Loss on sales of equipment	1.8	1.6	0.7
Deferred income taxes	0.9	41.7	21.5
Pension and other retirement plans, net	(7.9)	(6.9)	(6.5)
Equity in undistributed earnings of affiliates, net of dividends	(5.9)	(7.0)	(6.8)
Changes in assets and liabilities:			
Increase in accounts receivable	(43.8)	(39.7)	(23.3)
Increase in inventories	(7.0)	(3.6)	(21.2)
(Increase) decrease in other current assets	(6.2)	0.3	(2.4)
Increase in accounts payable	0.4	12.6	6.1
Changes in other assets and liabilities	28.3	(11.0)	(17.9)
Net cash provided by operating activities	288.6	263.3	219.4
Cash flows from investing activities:			
Capital expenditures	(104.7)	(130.8)	(170.2)
Purchase of investment in affiliated companies	—	—	(8.4)
Cash related to deconsolidated Venezuelan subsidiary	—	(6.0)	—
Other, net	3.9	3.2	2.8
Net cash used in investing activities	(100.8)	(133.6)	(175.8)
Cash flows from financing activities:			
Repayments of long-term debt	(0.1)	(34.9)	(69.8)
Dividend payments	(42.1)	(39.1)	(35.8)
Contingent consideration payments up to amount of acquisition-date liability	—	(0.7)	(0.3)
Proceeds from exercise of stock options and stock appreciation rights	31.8	39.5	25.9
Employee stock purchase plan contributions	4.9	4.4	3.8
Excess tax benefits from employee stock plans	—	—	18.2
Shares purchased under share repurchase programs	(70.8)	(74.4)	(52.2)
Shares repurchased for employee tax withholdings	(4.4)	(3.8)	(3.7)
Net cash used in financing activities	(80.7)	(109.0)	(113.9)
Effect of exchange rates on cash	(5.6)	12.2	(1.3)
Net increase (decrease) in cash and cash equivalents	101.5	32.9	(71.6)
Cash, including cash equivalents at beginning of period	235.9	203.0	274.6
Cash, including cash equivalents at end of period	$ 337.4	$ 235.9	$ 203.0
Supplemental cash flow information:			
Interest paid, net of amounts capitalized	$ 8.4	$ 8.0	$ 8.6
Income taxes paid, net	$ 42.0	$ 31.0	$ 48.1
Accrued capital expenditures	$ 15.0	$ 20.1	$ 22.7
Dividends declared, not paid	$ 11.3	$ 10.4	$ 9.5

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

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1: Summary of Significant Accounting Policies

Principles of Consolidation: The consolidated financial statements include the accounts of West after the elimination of intercompany transactions. We have no participation or other rights in variable interest entities. As of April 1, 2017, our consolidated financial statements exclude the results of our Venezuelan subsidiary. Please refer to Note 15, *Other Expense*, for further discussion.

Use of Estimates: The financial statements are prepared in conformity with U.S. GAAP. These principles require management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of contingencies in the financial statements. Actual amounts realized may differ from these estimates.

Cash and Cash Equivalents: Cash equivalents include time deposits, certificates of deposit and all highly liquid debt instruments with maturities of three months or less at the time of purchase.

Accounts Receivable: Our accounts receivable balance was net of an allowance for doubtful accounts of $2.0 million and $0.5 million at December 31, 2018 and 2017, respectively. We record the allowance based on a specific identification methodology.

Inventories: Inventories are valued at the lower of cost (on a first-in, first-out basis) and net realizable value. The following is a summary of inventories at December 31:

($ in millions)	2018	2017
Raw materials	$ 90.4	$ 88.6
Work in process	42.2	31.8
Finished goods	81.9	94.8
	$ 214.5	$ 215.2

Property, Plant and Equipment: Property, plant and equipment assets are carried at cost. Maintenance and minor repairs and renewals are charged to expense as incurred. Costs incurred for computer software developed or obtained for internal use are capitalized for application development activities and immediately expensed for preliminary project activities or post-implementation activities. Upon sale or retirement of depreciable assets, costs and related accumulated depreciation are eliminated, and gains or losses are recognized in other (income) expense. Depreciation and amortization are computed principally using the straight-line method over the estimated useful lives of the assets, or the remaining term of the lease, if shorter.

Impairment of Long-Lived Assets: Long-lived assets, including property, plant and equipment, are tested for impairment whenever circumstances indicate that the carrying value of these assets may not be recoverable. An asset is considered impaired if the carrying value of the asset exceeds the sum of the future expected undiscounted cash flows to be derived from the asset. Once an asset is considered impaired, an impairment loss is recorded within other (income) expense for the difference between the asset's carrying value and its fair value. For assets held and used in the business, management determines fair value using estimated future cash flows to be derived from the asset, discounted to a net present value using an appropriate discount rate. For assets held for sale or for investment purposes, management determines fair value by estimating the proceeds to be received upon sale of the asset, less disposition costs. During 2018, as part of our 2018 restructuring plan, we recorded within other expense a $2.2 million non-cash asset write-down associated with the discontinued use of certain equipment. During 2016, as part of our 2016 restructuring plan, we recorded within other expense a $4.5 million non-cash asset write-down associated with the discontinued use of certain equipment.

Impairment of Goodwill and Other Intangible Assets: Goodwill and indefinite-lived intangible assets are tested for impairment at least annually, following the completion of our annual budget and long-range planning process, or

whenever circumstances indicate that the carrying value of these assets may not be recoverable. Goodwill is tested for impairment at the reporting unit level, which is the same as, or one level below, our operating segments. In January 2017, the FASB issued guidance which removes the second step of the quantitative goodwill impairment test. A goodwill impairment charge will now be the amount by which a reporting unit's carrying amount exceeds its fair value, not to exceed the total amount of goodwill allocated to that reporting unit. This guidance is effective for fiscal years, and interim periods within those years, beginning after December 15, 2019. Early adoption is permitted. We adopted this guidance as of January 1, 2017, on a prospective basis. Recent accounting guidance also allows entities to first assess qualitative factors, including macroeconomic conditions, industry and market considerations, cost factors, and overall financial performance, to determine whether it is necessary to perform the quantitative goodwill impairment test. As each of our reporting units had a fair value in excess of its carrying value of at least 180% within our 2016 annual impairment test, we elected to follow this guidance for our 2017 and 2018 annual impairment tests. Based upon our assessment, we determined that it was not more likely than not that the fair value of each of our reporting units was less than its carrying amount and determined that it was not necessary to perform the quantitative goodwill impairment tests in 2017 and 2018.

At December 31, 2015, a trademark had been determined to have an indefinite life and, therefore, was not subject to amortization. During 2016, as part of our 2016 restructuring plan, we recorded within other expense a $10.0 million non-cash asset write-down associated with the discontinued use of this trademark.

Intangible assets with finite lives are amortized using the straight-line method over their estimated useful lives of 5 to 25 years, and reviewed for impairment whenever circumstances indicate that the carrying value of these assets may not be recoverable. During 2016, as part of our 2016 restructuring plan, we recorded within other expense a $2.8 million non-cash asset write-down associated with the discontinued use of a patent.

Employee Benefits: The measurement of the obligations under our defined benefit pension and postretirement medical plans are subject to a number of assumptions. These include the rate of return on plan assets (for funded plans) and the rate at which the future obligations are discounted to present value. For our funded plans, we consider the current and expected asset allocations of our plan assets, as well as historical and expected rates of return, in estimating the long-term rate of return on plan assets. U.S. GAAP requires the recognition of an asset or liability for the funded status of a defined benefit postretirement plan, as measured by the difference between the fair value of plan assets, if any, and the benefit obligation. For a pension plan, the benefit obligation is the projected benefit obligation; for any other postretirement plan, such as a retiree health plan, the benefit obligation is the accumulated postretirement benefit obligation. Please refer to Note 14, *Benefit Plans*, for a more detailed discussion of our pension and other retirement plans.

Financial Instruments: All derivatives are recognized as either assets or liabilities in the balance sheet and recorded at their fair value. For a derivative designated as hedging the exposure to variable cash flows of a forecasted transaction (referred to as a cash flow hedge), the effective portion of the derivative's gain or loss is initially reported as a component of other comprehensive income ("OCI"), net of tax, and subsequently reclassified into earnings when the forecasted transaction affects earnings. For a derivative designated as hedging the exposure to changes in the fair value of a recognized asset or liability or a firm commitment (referred to as a fair value hedge), the derivative's gain or loss is recognized in earnings in the period of change together with the offsetting loss or gain on the hedged item. For a derivative designated as hedging the foreign currency exposure of a net investment in a foreign operation, the gain or loss is reported in OCI, net of tax, as part of the cumulative translation adjustment. The ineffective portion of any derivative used in a hedging transaction is recognized immediately into earnings. Derivative financial instruments that are not designated as hedges are also recorded at fair value, with the change in fair value recognized immediately into earnings. We do not purchase or hold any derivative financial instrument for investment or trading purposes.

Foreign Currency Translation: Foreign currency transaction gains and losses are recognized in the determination of net income. Foreign currency translation adjustments of subsidiaries and affiliates operating outside of the U.S. are accumulated in other comprehensive loss, a separate component of equity.

Revenue Recognition: Our revenue results from the sale of goods or services and reflects the consideration to which we expect to be entitled in exchange for those goods or services. Revenue is recognized based on a five-step model, in accordance with ASC 606. Following the identification of a contract with a customer, we identify the performance obligations (goods or services) in the contract, determine the transaction price, allocate the transaction price to the performance obligations in the contract, and recognize the revenue when (or as) we satisfy the performance obligations by transferring the promised goods or services to our customers. A good or service is transferred when (or as) the customer obtains control of that good or service. Some customers receive pricing rebates upon attaining established sales volumes. We record rebate costs when sales occur based on our assessment of the likelihood that the required volumes will be attained. We also maintain an allowance for product returns, as we believe that we are able to reasonably estimate the amount of returns based on our substantial historical experience. Please refer to Note 3, *Revenue*, for additional information.

Shipping and Handling Costs: Shipping and handling costs are included in cost of goods and services sold. Shipping and handling costs billed to customers in connection with the sale are included in net sales.

Research and Development: Research and development expenditures are for the creation, engineering and application of new or improved products and processes. Expenditures include primarily salaries and outside services for those directly involved in research and development activities and are expensed as incurred.

Environmental Remediation and Compliance Costs: Environmental remediation costs are accrued when such costs are probable and reasonable estimates are determinable. Cost estimates include investigation, cleanup and monitoring activities; such estimates are adjusted, if necessary, based on additional findings. Environmental compliance costs are expensed as incurred as part of normal operations.

Litigation: From time to time, we are involved in legal proceedings, investigations and claims generally incidental to our normal business activities. In accordance with U.S. GAAP, we accrue for loss contingencies when it is probable that a liability has been incurred and the amount of the loss can be reasonably estimated. These estimates are based on an analysis made by internal and external legal counsel considering information known at the time. Legal costs in connection with loss contingencies are expensed as incurred.

Income Taxes: Deferred income taxes are recognized by applying enacted statutory tax rates, applicable to future years, to temporary differences between the tax basis and financial statement carrying values of our assets and liabilities. Valuation allowances are established when it is more likely than not that all or a portion of a deferred tax asset will not be realized. In response to the 2017 Tax Act, we reevaluated our position regarding permanent reinvestment of foreign subsidiary earnings and profits through 2017 (with the exception of China and Mexico) and decided that those profits were no longer permanently reinvested. As of January 1, 2018, we reasserted indefinite reinvestment related to all post-2017 unremitted earnings in all of our foreign subsidiaries. Please refer to Note 16, *Income Taxes*, for additional information. We recognize interest costs related to income taxes in interest expense and penalties within other (income) expense. The tax law ordering approach is used for purposes of determining whether an excess tax benefit has been realized during the year.

Stock-Based Compensation: Under the fair value provisions of U.S. GAAP, stock-based compensation cost is measured at the grant date based on the value of the award and is recognized as expense over the vesting period. In order to determine the fair value of stock options on the grant date, we use the Black-Scholes valuation model.

Net Income Per Share: Basic net income per share is computed by dividing net income attributable to common shareholders by the weighted average number of shares of common stock outstanding during each period. Net income per share assuming dilution considers the dilutive effect of outstanding stock options and other stock awards based on the treasury stock method. The treasury stock method assumes the use of exercise proceeds to repurchase common stock at the average fair market value in the period.

Note 2: New Accounting Standards

Recently Adopted Standards

In March 2018, the FASB issued guidance which updates the income tax accounting in U.S. GAAP to reflect the SEC's interpretive guidance released on December 22, 2017, when the 2017 Tax Act was signed into law. This guidance was effective immediately upon issuance. Please refer to Note 16, *Income Taxes*, for additional information.

In May 2017, the FASB issued guidance which amends the scope of modification accounting for share-based payment arrangements. The guidance focuses on changes to the terms or conditions of share-based payment awards that would require the application of modification accounting and specifies that an entity would not apply modification accounting if its fair value, vesting conditions and classification of the awards are the same immediately before and after the modification. This guidance was effective for fiscal years, and interim periods within those years, beginning after December 15, 2017. Early adoption was permitted. We adopted this guidance as of January 1, 2018, on a prospective basis. The adoption did not have a material impact on our financial statements.

In March 2017, the FASB issued guidance on the presentation of net periodic pension and postretirement benefit cost (net benefit cost). The guidance requires the bifurcation of net benefit cost. The service cost component will be presented with other employee compensation costs in operating income (or capitalized in assets) and the other components will be reported separately outside of operations, and will not be eligible for capitalization. This guidance was effective for fiscal years, and interim periods within those years, beginning after December 15, 2017. Early adoption was permitted. We adopted this guidance as of January 1, 2018, on a retrospective basis. As a result of this adoption, we reclassified net benefit cost components other than service cost from operating income to outside of operations. Net periodic benefit cost for the year ended December 31, 2018 and 2017 was $4.1 million and $7.3 million, respectively, of which $10.8 million and $10.4 million, respectively, related to service cost and $6.7 million and $3.1 million, respectively, related to net benefit cost components other than service cost. The adoption of this guidance had no impact on net income.

In November 2016, the FASB issued guidance on the classification and presentation of restricted cash in the statement of cash flows. This guidance was effective for fiscal years, and interim periods within those years, beginning after December 15, 2017. Early adoption was permitted. We adopted this guidance as of January 1, 2018, on a retrospective basis. As of December 31, 2018 and 2017, we had no restricted cash.

In August 2016, the FASB issued guidance to reduce the diversity in how certain cash receipts and cash payments are presented and classified in the statement of cash flows. This guidance was effective for fiscal years, and interim periods within those years, beginning after December 15, 2017. Early adoption was permitted. We adopted this guidance as of January 1, 2018, on a retrospective basis. The adoption did not have a material impact on our financial statements.

In January 2016, the FASB issued guidance that addresses certain aspects of recognition, measurement, presentation, and disclosure of financial instruments. This guidance was effective for fiscal years, and interim periods within those years, beginning after December 15, 2017. We adopted this guidance as of January 1, 2018, on a prospective basis. The adoption did not have a material impact on our financial statements.

In May 2014, the FASB issued guidance on the accounting for revenue from contracts with customers, ASC 606, that supersedes most existing revenue recognition guidance, including industry-specific guidance. The core principle requires an entity to recognize revenue to depict the transfer of goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. In addition, ASC 606 requires enhanced disclosures regarding the nature, timing and uncertainty of revenue and cash flows arising from an entity's contracts with customers. The FASB subsequently issued additional clarifying standards to address issues arising from implementation of ASC 606. We adopted ASC 606 as of January 1, 2018, on a modified retrospective basis. Please refer to Note 3, *Revenue*, for additional information.

Standards Issued Not Yet Adopted

In August 2018, the FASB issued guidance to align the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software (and hosting arrangements that include an internal-use software license). The accounting for the service element of a hosting arrangement that is a service contract is not affected by this update. This guidance is effective for fiscal years, and interim periods within those years, beginning after December 15, 2019. Early adoption is permitted, including adoption in any interim period. We are currently evaluating our adoption timing and the impact that this guidance may have on our financial statements.

In August 2018, the FASB issued guidance which modifies the disclosure requirements for defined benefit pension plans and other postretirement plans. The guidance removes disclosures that no longer are considered cost beneficial, clarifies the specific requirements of disclosures, and adds disclosure requirements identified as relevant. This guidance is effective for fiscal years ending after December 15, 2020. Early adoption is permitted. We believe that the adoption of this guidance will not have a material impact on our financial statements.

In August 2018, the FASB issued guidance which modifies the disclosure requirements on fair value measurements by removing, modifying, or adding certain disclosures. This guidance is effective for fiscal years, and interim periods within those years, beginning after December 15, 2019. Early adoption is permitted. We believe that the adoption of this guidance will not have a material impact on our financial statements.

In June 2018, the FASB issued guidance which expands the scope of accounting for share-based payment arrangements to include share-based payment transactions for acquiring goods and services from nonemployees. This guidance is effective for fiscal years, and interim periods within those years, beginning after December 15, 2018. Early adoption was permitted. We believe that the adoption of this guidance will not have a material impact on our financial statements.

In February 2018, the FASB issued guidance to address a specific consequence of the 2017 Tax Act by allowing a reclassification from accumulated other comprehensive income (loss) to retained earnings for stranded tax effects resulting from the 2017 Tax Act's reduction of the U.S. federal corporate income tax rate. This guidance is effective for fiscal years, and interim periods within those years, beginning after December 15, 2018. Early adoption was permitted. We are currently evaluating our adoption timing and the impact that this guidance may have on our financial statements.

In August 2017, the FASB issued guidance which expands and refines hedge accounting for both nonfinancial and financial risk components and aligns the recognition and presentation of the effects of the hedging instrument and the hedged item in the financial statements. This guidance is effective for fiscal years, and interim periods within those years, beginning after December 15, 2018. Early adoption was permitted. We believe that the adoption of this guidance will not have a material impact on our financial statements.

In February 2016, the FASB issued guidance on the accounting for leases. This guidance requires lessees to recognize lease assets and lease liabilities on the balance sheet and to expand disclosures about leasing arrangements, both qualitative and quantitative. In terms of transition, the guidance requires adoption based upon a modified retrospective approach. This guidance is effective for fiscal years, and interim periods within those years, beginning after December 15, 2018. We continue to review the impact that the adoption of this guidance will have on our financial statement disclosures, accounting policies, business processes, and internal controls. As of December 31, 2018 and 2017, future minimum rental payments under non-cancelable operating leases were $81.5 million and $79.1 million, respectively.

Note 3: Revenue

Adoption of ASC 606

On January 1, 2018, we adopted ASC 606, on a modified retrospective basis, applied to those contracts which were not completed as of January 1, 2018. As a result of our adoption, we recorded a cumulative-effect adjustment of $11.4 million within retained earnings in our consolidated balance sheet as of January 1, 2018, to reflect a change in the timing of revenue recognition under ASC 606, from point in time to over time, on our Contract-Manufactured Products product sales, certain Proprietary Products product sales, development and tooling agreements, as well as an acceleration on a portion of the remaining unearned income from a nonrefundable customer payment.

Results for reporting periods beginning after January 1, 2018 are presented under ASC 606, while prior period amounts are not adjusted and continue to be reported under the accounting standards in effect for those periods.

The cumulative effect of the changes made to our consolidated January 1, 2018 balance sheet for the adoption of ASC 606 was as follows:

($ in millions)	Balance at December 31, 2017	Adjustments Due to ASC 606	Balance at January 1, 2018
Assets:			
Accounts receivable, net	$ 253.2	$ 25.0	$ 278.2
Inventories	215.2	(20.8)	194.4
Other current assets	39.2	(8.4)	30.8
Liabilities and Equity:			
Other current liabilities	$ 77.0	$ (13.7)	$ 63.3
Deferred income taxes	10.4	3.0	13.4
Other long-term liabilities	42.6	(4.9)	37.7
Retained earnings	1,178.2	11.4	1,189.6

The impact of the adoption of ASC 606 on our consolidated income statement for 2018 was as follows:

($ in millions)	As Reported	Balances without Adoption of ASC 606	Effects of Change (Lower)/Higher
Net sales	$ 1,717.4	$ 1,720.9	$ (3.5)
Cost of goods and services sold	1,172.0	1,172.0	—
Other expense	1.9	1.2	0.7
Income tax expense	41.4	42.6	(1.2)
Net income	$ 206.9	$ 209.9	$ (3.0)

The impact of the adoption of ASC 606 on our consolidated balance sheet as of December 31, 2018 was as follows:

($ in millions)	As Reported	Balances without Adoption of ASC 606	Effects of Change Higher/(Lower)
Assets:			
Accounts receivable, net	$ 288.2	$ 264.3	$ 23.9
Inventories	214.5	234.4	(19.9)
Other current assets	54.3	63.4	(9.1)
Liabilities and Equity:			
Other current liabilities	$ 76.6	$ 87.7	$ (11.1)
Deferred income taxes	13.1	11.3	1.8
Other long-term liabilities	33.6	37.8	(4.2)
Retained earnings	1,353.4	1,345.0	8.4

Revenue Recognition

Our revenue results from the sale of goods or services and reflects the consideration to which we expect to be entitled in exchange for those goods or services. We record revenue based on a five-step model, in accordance with ASC 606. Following the identification of a contract with a customer, we identify the performance obligations (goods or services) in the contract, determine the transaction price, allocate the transaction price to the performance obligations in the contract, and recognize the revenue when (or as) we satisfy the performance obligations by transferring the promised goods or services to our customers. A good or service is transferred when (or as) the customer obtains control of that good or service.

We recognize the majority of our revenue, primarily relating to Proprietary Products product sales, at a point in time, following the transfer of control of our products to our customers, which typically occurs upon shipment or delivery, depending on the terms of the related agreements.

We recognize revenue relating to our Contract-Manufactured Products product sales and certain Proprietary Products product sales over time, as our performance does not create an asset with an alternative use to us and we have an enforceable right to payment for performance completed to date.

We recognize revenue relating to our development and tooling agreements over time, as our performance creates or enhances an asset that the customer controls as the asset is created or enhanced.

For revenue recognized over time, revenue is recognized by applying a method of measuring progress toward complete satisfaction of the related performance obligation. When selecting the method for measuring progress, we select the method that best depicts the transfer of control of goods or services promised to our customers.

Revenue for our Contract-Manufactured Products product sales, certain Proprietary Products product sales, and our development and tooling agreements is recorded under an input method, which recognizes revenue on the basis of our efforts or inputs to the satisfaction of a performance obligation (for example, resources consumed, labor hours expended, costs incurred, time elapsed, or machine hours used) relative to the total expected inputs to the satisfaction of that performance obligation. The input method that we use is based on costs incurred.

The majority of the performance obligations within our contracts are satisfied within one year or less. Performance obligations satisfied beyond one year include those relating to a nonrefundable customer payment of $20.0 million received in June 2013 in return for the exclusive use of the SmartDose technology platform within a specific therapeutic area. As of December 31, 2018, there was $6.5 million of unearned income related to this payment, of which $0.9 million was included in other current liabilities and $5.6 million was included in other long-term

liabilities. The unearned income is being recognized as income on a straight-line basis over the remaining term of the agreement. The agreement does not include a future minimum purchase commitment from the customer.

Our revenue can be generated from contracts with multiple performance obligations. When a sales agreement involves multiple performance obligations, each obligation is separately identified and the transaction price is allocated based on the amount of consideration we expect to be entitled in exchange for transferring the promised good or service to the customer.

Some customers receive pricing rebates upon attaining established sales volumes. We record rebate costs when sales occur based on our assessment of the likelihood that the required volumes will be attained. We also maintain an allowance for product returns, as we believe that we are able to reasonably estimate the amount of returns based on our substantial historical experience.

The following table presents the approximate percentage of our net sales by market group:

	2018	2017 [1]
Biologics	21%	23%
Generics	21%	20%
Pharma	34%	34%
Contract-Manufactured Products	24%	23%
	100%	100%

(1) As noted above, prior period amounts have not been adjusted under the modified retrospective method.

The following table presents the approximate percentage of our net sales by product category:

	2018	2017 [1]
High-Value Components	41%	41%
Standard Packaging	32%	32%
Delivery Devices	3%	4%
Contract-Manufactured Products	24%	23%
	100%	100%

(1) As noted above, prior period amounts have not been adjusted under the modified retrospective method.

The following table presents the approximate percentage of our net sales by geographic location:

	2018	2017 [1]
Americas	48%	51%
Europe, Middle East, Africa	44%	42%
Asia Pacific	8%	7%
	100%	100%

(1) As noted above, prior period amounts have not been adjusted under the modified retrospective method.

Contract Assets and Liabilities

Contract assets or liabilities result from transactions with revenue recorded over time. If the measure of remaining rights exceeds the measure of the remaining performance obligations, we record a contract asset. Contract assets are recorded on the consolidated balance sheet in accounts receivable, net, and other assets (current and noncurrent portions, respectively). Contract assets included in accounts receivable, net, relate to the unbilled amounts of our product sales for which we have recognized revenue over time. Contract assets included in other assets represent the remaining performance obligations of our development and tooling agreements. Conversely, if the measure of the

remaining performance obligations exceeds the measure of the remaining rights, we record a contract liability. Contract liabilities are recorded on the consolidated balance sheet in other liabilities (current and noncurrent portions, respectively) and represent cash payments received in advance of our performance.

The following table summarizes our contract assets and liabilities, excluding contract assets included in accounts receivable, net:

	($ in millions)
Contract assets, December 31, 2017	$ 7.5
Contract assets, December 31, 2018	9.1
Change in contract assets - increase (decrease)	$ 1.6
Deferred income, December 31, 2017	$ (33.6)
Deferred income, December 31, 2018	(33.4)
Change in deferred income - decrease (increase)	$ 0.2

The decrease in deferred income during 2018 was primarily due to the recognition of revenue of $111.1 million, including $28.9 million of revenue that was included in deferred income at the beginning of the year (of which $18.6 million was recognized in the cumulative-effect adjustment as of January 1, 2018), partially offset by additional cash payments of $109.8 million received in advance of satisfying future performance obligations along with $1.1 million in other adjustments.

Practical Expedients and Exemptions

We have elected to disregard the effects of a significant financing component, as we expect, at the inception of our contracts, that the period between when we transfer a promised good or service to the customer and when the customer pays for that good or service will be one year or less.

In addition, we have elected to omit the disclosure of the majority of our remaining performance obligations, which are satisfied within one year or less.

Supply Chain Financing

We have entered into supply chain financing agreements with certain banks, pursuant to which we offer for sale certain accounts receivable to such banks from time to time, subject to the terms of the applicable agreements. These transactions result in a reduction in accounts receivable, as the agreements transfer effective control over, and credit risk related to, the receivables to the banks. These agreements do not allow for recourse in the event of uncollectibility, and we do not retain any interest in the underlying accounts receivable once sold. As of December 31, 2018, we derecognized $5.7 million of accounts receivable under these agreements. Discount fees related to the sale of such accounts receivable on our consolidated income statement for 2018 were not material.

Voluntary Recall

On January 24, 2019, we issued a voluntary recall of our Vial2Bag product line due to reports of potential unpredictable or variable dosing under certain conditions. Our 2018 results included an $11.3 million provision for product returns, recorded as a reduction of sales. Our inventory balance for these devices was $6.5 million at December 31, 2018, which included estimated in-transit inventory being returned by our customers. We are working to develop the support required to get the products back on the market, and we currently believe the returned inventory will be saleable in 2019.

Note 4: Net Income Per Share

The following table reconciles the shares used in the calculation of basic net income per share to those used for diluted net income per share:

(in millions)	2018	2017	2016
Net income	$ 206.9	$ 150.7	$ 143.6
Weighted average common shares outstanding	73.9	73.9	73.3
Dilutive effect of equity awards, based on the treasury stock method	1.5	1.9	1.7
Weighted average shares assuming dilution	75.4	75.8	75.0

During 2018, 2017 and 2016, there were 0.4 million, 0.4 million, and 0.1 million shares, respectively, from stock-based compensation plans not included in the computation of diluted net income per share because their impact was antidilutive.

In February 2018, we announced a share repurchase program for calendar-year 2018 authorizing the repurchase of up to 800,000 shares of our common stock from time to time on the open market or in privately-negotiated transactions as permitted under the Securities Exchange Act of 1934 Rule 10b-18. The number of shares repurchased and the timing of such transactions depended on a variety of factors, including market conditions. During 2018, we purchased 800,000 shares of our common stock under the program at a cost of $70.8 million, or an average price of $88.51 per share. Please refer to Note 19, *Subsequent Events*, for discussion of our share repurchase program for calendar-year 2019.

Note 5: Property, Plant and Equipment

A summary of gross property, plant and equipment at December 31 is presented in the following table:

($ in millions)	Expected useful lives (years)	2018	2017
Land		$ 20.9	$ 21.4
Buildings and improvements	5-50	569.1	539.2
Machinery and equipment	10-15	806.7	793.4
Molds and dies	4-7	115.8	114.5
Computer hardware and software	3-10	151.1	144.6
Construction in progress		89.1	132.7
		$ 1,752.7	$ 1,745.8

Depreciation expense for the years ended December 31, 2018, 2017 and 2016 was $101.7 million, $94.3 million and $88.1 million, respectively.

There were no capitalized leases included in buildings and improvements and machinery and equipment at December 31, 2018 and 2017.

We capitalize interest on borrowings during the active construction period of major capital projects. Capitalized interest is added to the cost of the underlying assets and is amortized over the useful lives of the assets. Capitalized interest for the years ended December 31, 2018, 2017 and 2016 was $0.9 million, $2.7 million and $3.6 million, respectively.

During 2018, as part of our 2018 restructuring plan, we recorded within other expense a $2.2 million non-cash asset write-down associated with the discontinued use of certain equipment. During 2016, as part of our 2016 restructuring plan, we recorded within other expense a $4.5 million non-cash asset write-down associated with the discontinued use of certain equipment.

Note 6: Affiliated Companies

At December 31, 2018, the following affiliated companies were accounted for under the equity method:

	Location	Ownership interest
The West Company Mexico, S.A. de C.V.	Mexico	49%
Aluplast S.A. de C.V.	Mexico	49%
Pharma Tap S.A. de C.V.	Mexico	49%
Pharma Rubber S.A. de C.V.	Mexico	49%
Daikyo	Japan	25%

Unremitted income of affiliated companies included in consolidated retained earnings amounted to $75.8 million, $69.9 million and $63.0 million at December 31, 2018, 2017 and 2016, respectively. Dividends received from affiliated companies were $1.7 million in 2018, $2.2 million in 2017 and $1.4 million in 2016.

Our equity in net unrealized gains of Daikyo's investment securities and derivative instruments, as well as pension adjustments, included in accumulated other comprehensive loss was $0.4 million, $0.5 million and $5.3 million at December 31, 2018, 2017 and 2016, respectively.

Our purchases from, and royalty payments made to, affiliates totaled $86.3 million, $86.7 million and $94.5 million, respectively, in 2018, 2017 and 2016, of which $12.9 million and $12.4 million was due and payable as of December 31, 2018 and 2017, respectively. The majority of these transactions related to a distributorship agreement with Daikyo that allows us to purchase and re-sell Daikyo products. Sales to affiliates were $9.6 million, $8.1 million and $6.8 million, respectively, in 2018, 2017 and 2016, of which $1.6 million and $1.3 million was receivable as of December 31, 2018 and 2017, respectively.

At December 31, 2018 and 2017, the aggregate carrying amount of our investment in affiliated companies that are accounted for under the equity method was $77.8 million and $72.4 million, respectively. At December 31, 2018 and 2017, the aggregate carrying amount of our investment in affiliated companies that are not accounted for under the equity method was $13.4 million. We have elected to record these investments, for which fair value was not readily determinable, at cost, less impairment, adjusted for subsequent observable price changes. We test these investments for impairment whenever circumstances indicate that the carrying value of the investments may not be recoverable.

Note 7: Goodwill and Intangible Assets

The changes in the carrying amount of goodwill by reportable segment were as follows:

($ in millions)	Proprietary Products	Contract-Manufactured Products	Total
Balance, December 31, 2016	$ 73.7	$ 29.3	$ 103.0
Foreign currency translation	3.9	0.8	4.7
Balance, December 31, 2017	77.6	30.1	107.7
Foreign currency translation	(1.6)	(0.3)	(1.9)
Balance, December 31, 2018	$ 76.0	$ 29.8	$ 105.8

As of December 31, 2018, we had no accumulated goodwill impairment losses.

Intangible assets and accumulated amortization as of December 31 were as follows:

	2018			2017		
($ in millions)	Cost	Accumulated Amortization	Net	Cost	Accumulated Amortization	Net
Patents and licensing	$ 19.6	$ (15.1)	$ 4.5	$ 18.2	$ (14.1)	$ 4.1
Technology	3.3	(1.2)	2.1	3.3	(1.0)	2.3
Trademarks	2.0	(1.8)	0.2	2.0	(1.7)	0.3
Customer relationships	29.3	(20.0)	9.3	29.3	(19.1)	10.2
Customer contracts	11.0	(6.8)	4.2	11.1	(6.3)	4.8
	$ 65.2	$ (44.9)	$ 20.3	$ 63.9	$ (42.2)	$ 21.7

The cost basis of intangible assets includes a foreign currency translation loss of $0.3 million and a foreign currency translation gain of $0.9 million for the years ended December 31, 2018 and 2017, respectively. Amortization expense for the years ended December 31, 2018, 2017 and 2016 was $2.7 million, $2.4 million and $2.6 million, respectively. Estimated annual amortization expense for the next five years is as follows: 2019 - $2.6 million, 2020 - $2.6 million, 2021 - $2.1 million, 2022 - $2.1 million and 2023 - $2.1 million. During 2016, as part of our 2016 restructuring plan, we recorded within other expense a $2.8 million non-cash asset write-down associated with the discontinued use of a patent and a $10.0 million non-cash asset write-down associated with the discontinued use of an indefinite-lived trademark.

Note 8: Other Current Liabilities

Other current liabilities as of December 31 included the following:

($ in millions)	2018	2017
Deferred income	$ 25.5	$ 18.4
Other accrued expenses	26.2	27.7
Dividends payable	11.3	10.4
Restructuring obligations	3.3	2.1
Other	10.3	18.4
Total other current liabilities	$ 76.6	$ 77.0

Other consisted primarily of value-added taxes payable and accrued taxes other than income.

Note 9: Debt

The following table summarizes our long-term debt obligations, net of unamortized debt issuance costs and current maturities, at December 31. The interest rates shown in parentheses are as of December 31, 2018.

($ in millions)	2018	2017
Note payable, due December 31, 2019	$ 0.1	$ 0.1
Credit Facility, due October 15, 2020 (1.00%)	28.6	29.6
Series A notes, due July 5, 2022 (3.67%)	42.0	42.0
Series B notes, due July 5, 2024 (3.82%)	53.0	53.0
Series C notes, due July 5, 2027 (4.02%)	73.0	73.0
	196.7	197.7
Less: unamortized debt issuance costs	0.6	0.7
Total debt	196.1	197.0
Less: current portion of long-term debt	0.1	—
Long-term debt, net	$ 196.0	$ 197.0

Credit Facility

In October 2015, we entered into the Credit Facility, that replaced our prior revolving credit facility, which was scheduled to expire in April 2017. The Credit Facility, which expires in October 2020, contains a $300.0 million credit facility, which may be increased from time to time by up to $100.0 million in the aggregate, subject to the satisfaction of certain conditions and upon approval by the banks. Up to $30.0 million of the Credit Facility is available for swing-line loans and up to $30.0 million is available for the issuance of standby letters of credit. Borrowings under the Credit Facility bear interest at either the base rate or at the applicable LIBOR rate, plus a tiered margin based on the ratio of our total debt to modified earnings before interest, taxes, depreciation and amortization, ranging from 0 to 75 basis points for base rate loans and 100 to 175 basis points for LIBOR rate loans. Consistent with our previous revolving credit facility, the Credit Facility contains representations and covenants that require compliance with, among other restrictions, a maximum leverage ratio and a minimum interest coverage ratio. The Credit Facility also contains usual and customary default provisions, and limitations on liens securing indebtedness, asset sales, distributions and acquisitions. As of December 31, 2018 and 2017, total unamortized debt issuance costs of $0.6 million and $1.0 million, respectively, were recorded in other noncurrent assets and are being amortized as additional interest expense over the term of the Credit Facility. A portion of these costs relate to our prior credit facility.

At December 31, 2018, we had $28.6 million in outstanding long-term borrowings under the Credit Facility, of which $4.6 million was denominated in Yen and $24.0 million in Euro. These borrowings, together with outstanding letters of credit of $2.5 million, resulted in a borrowing capacity available under the Credit Facility of $268.9 million at December 31, 2018. Please refer to Note 10, *Derivative Financial Instruments*, for a discussion of the foreign currency hedges associated with this facility.

Private Placement

In 2012, we concluded a private placement issuance of $168.0 million in senior unsecured notes. The total amount of the private placement issuance was divided into three tranches - $42.0 million 3.67% Series A Notes due July 5, 2022, $53.0 million 3.82% Series B Notes due July 5, 2024, and $73.0 million 4.02% Series C Notes due July 5, 2027 (the “Notes”). The Notes rank pari passu with our other senior unsecured debt. The weighted average of the coupon interest rates on the Notes is 3.87%. As of December 31, 2018 and 2017, there were unamortized debt issuance costs remaining of $0.6 million and $0.7 million, respectively, which are being amortized as additional interest expense over the term of the Notes.

Covenants

Pursuant to the financial covenants in our debt agreements, we are required to maintain established interest coverage ratios and to not exceed established leverage ratios. In addition, the agreements contain other customary covenants, none of which we consider restrictive to our operations. At December 31, 2018, we were in compliance with all of our debt covenants, and we expect to continue to be in compliance with the terms of these agreements throughout 2019.

Interest costs incurred during 2018, 2017 and 2016 were $9.3 million, $10.5 million and $11.7 million, respectively. The aggregate annual maturities of long-term debt, excluding unamortized debt issuance costs, were as follows: 2019 - $0.1 million, 2020 - $28.6 million, none in 2021, 2022 - $42.0 million, none in 2023, and thereafter - $126.0 million.

Note 10: Derivative Financial Instruments

Our ongoing business operations expose us to various risks, such as fluctuating interest rates, foreign currency exchange rates and increasing commodity prices. To manage these market risks, we periodically enter into derivative financial instruments, such as interest rate swaps, options and foreign exchange contracts for periods consistent with, and for notional amounts equal to or less than, the related underlying exposures. We do not purchase or hold any derivative financial instruments for investment or trading purposes. All derivatives are recorded on the balance sheet at fair value.

Interest Rate Risk

At December 31, 2016, we had a $34.9 million forward-start interest rate swap outstanding that hedged the variability in cash flows due to changes in the applicable interest rate of our variable-rate five-year term loan. Under this swap, we received variable interest rate payments based on one-month LIBOR plus a margin in return for making monthly fixed interest payments at 5.41%. We designated this swap as a cash flow hedge.

On October 2, 2017, we paid the $33.1 million outstanding to extinguish the term loan and terminated the interest-rate swap agreement.

Foreign Exchange Rate Risk

We have entered into forward exchange contracts, designated as fair value hedges, to manage our exposure to fluctuating foreign exchange rates on cross-currency intercompany loans. As of December 31, 2018, the total amount of these forward exchange contracts was €10.0 million, SGD 601.5 million and $13.4 million. As of December 31, 2017, the total amount of these forward exchange contracts was €12.0 million, SGD 171.0 million and $13.4 million.

In addition, we have entered into several foreign currency contracts, designated as cash flow hedges, for periods of up to eighteen months, intended to hedge the currency risk associated with a portion of our forecasted transactions denominated in foreign currencies. As of December 31, 2018, we had outstanding foreign currency contracts to purchase and sell certain pairs of currencies, as follows:

(in millions)		Sell	
Currency	**Purchase**	**USD**	**Euro**
USD	32.9	—	27.8
Yen	5,602.7	27.3	20.4
SGD	42.4	20.0	9.5

At December 31, 2018, a portion of our debt consisted of borrowings denominated in currencies other than USD. We have designated our €21.0 million ($24.0 million) Euro-denominated borrowings under our Credit Facility as a hedge of our net investment in certain European subsidiaries. A cumulative foreign currency translation loss of $0.2 million pre-tax ($0.1 million after tax) on this debt was recorded within accumulated other comprehensive loss as of December 31, 2018. We have also designated our ¥500.0 million ($4.6 million) Yen-denominated borrowings under our Credit Facility as a hedge of our net investment in Daikyo. At December 31, 2018, there was a cumulative foreign currency translation loss of $0.4 million pre-tax ($0.3 million after tax) on this Yen-denominated debt, which was also included within accumulated other comprehensive loss.

Commodity Price Risk

Many of our proprietary products are made from synthetic elastomers, which are derived from the petroleum refining process. We purchase the majority of our elastomers via long-term supply contracts, some of which contain clauses that provide for surcharges related to fluctuations in crude oil prices. The following economic hedges did not qualify for hedge accounting treatment since they did not meet the highly effective requirement at inception.

In November 2016, we purchased a series of call options for a total of 96,525 barrels of crude oil to mitigate our exposure to such oil-based surcharges and protect operating cash flows with regards to a portion of our forecasted elastomer purchases through November 2017. In November 2017, we purchased a series of call options for a total of 125,166 barrels of crude oil through May 2019. In April 2018, we purchased a series of call options for a total of 30,612 barrels of crude oil from December 2018 through August 2019.

During 2018, the gain recorded in cost of goods and services sold related to these options was $0.1 million. During 2017, the loss recorded in cost of goods and services sold related to these options was $0.3 million.

As of December 31, 2018, we had outstanding contracts to purchase 47,445 barrels of crude oil from January 2019 to August 2019 at a weighted-average strike price of $76.45 per barrel.

Effects of Derivative Instruments on Financial Position and Results of Operations

Please refer to Note 11, *Fair Value Measurements*, for the balance sheet location and fair values of our derivative instruments as of December 31, 2018 and 2017.

The following table summarizes the effects of derivative instruments designated as hedges on OCI and earnings, net of tax, for the year ended December 31:

	Amount of Gain (Loss) Recognized in OCI		Amount of Loss (Gain) Reclassified from Accumulated OCI into Income		Location of Loss (Gain) Reclassified from Accumulated OCI into Income
($ in millions)	2018	2017	2018	2017	
Cash Flow Hedges:					
Foreign currency hedge contracts	$ 0.4	$ (1.7)	$ 0.6	$ 1.1	Net sales
Foreign currency hedge contracts	2.2	(2.0)	0.3	0.8	Cost of goods and services sold
Interest rate swap contracts	—	0.1	—	0.5	Interest expense
Forward treasury locks	—	—	0.3	0.2	Interest expense
Total	$ 2.6	$ (3.6)	$ 1.2	$ 2.6	
Net Investment Hedges:					
Foreign currency-denominated debt	$ 0.8	$ (2.4)	$ —	$ —	Other expense
Total	$ 0.8	$ (2.4)	$ —	$ —	

During 2018 and 2017, there was no material ineffectiveness related to our hedges.

Note 11: Fair Value Measurements

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. The following fair value hierarchy classifies the inputs to valuation techniques used to measure fair value into one of three levels:

- Level 1: Unadjusted quoted prices in active markets for identical assets or liabilities.
- Level 2: Inputs other than quoted prices that are observable for the asset or liability, either directly or indirectly. These include quoted prices for similar assets or liabilities in active markets and quoted prices for identical or similar assets or liabilities in markets that are not active.
- Level 3: Unobservable inputs that reflect the reporting entity's own assumptions.

The following tables present the assets and liabilities recorded at fair value on a recurring basis:

($ in millions)	Balance at December 31, 2018	Basis of Fair Value Measurements		
		Level 1	Level 2	Level 3
Assets:				
Deferred compensation assets	$ 8.7	$ 8.7	$ —	$ —
Foreign currency contracts	6.5	—	6.5	—
	$ 15.2	$ 8.7	$ 6.5	$ —
Liabilities:				
Contingent consideration	$ 1.7	$ —	$ —	$ 1.7
Deferred compensation liabilities	9.8	9.8	—	—
Foreign currency contracts	0.2	—	0.2	—
	$ 11.7	$ 9.8	$ 0.2	$ 1.7

($ in millions)	Balance at December 31, 2017	Basis of Fair Value Measurements		
		Level 1	Level 2	Level 3
Assets:				
Deferred compensation assets	$ 8.9	$ 8.9	$ —	$ —
Foreign currency contracts	0.5	—	0.5	—
	$ 9.4	$ 8.9	$ 0.5	$ —
Liabilities:				
Contingent consideration	$ 4.9	$ —	$ —	$ 4.9
Deferred compensation liabilities	9.9	9.9	—	—
Foreign currency contracts	5.1	—	5.1	—
	$ 19.9	$ 9.9	$ 5.1	$ 4.9

Deferred compensation assets are included within other noncurrent assets and are valued using a market approach based on quoted market prices in an active market. The fair value of our foreign currency contracts, included within other current assets and other current liabilities, is valued using an income approach based on quoted forward foreign exchange rates and spot rates at the reporting date. The fair value of our contingent consideration, included within other current and other long-term liabilities, is discussed further in the section related to Level 3 fair value

measurements. The fair value of deferred compensation liabilities is based on quoted prices of the underlying employees' investment selections and is included within other long-term liabilities. Please refer to Note 10, *Derivative Financial Instruments*, for further discussion of our derivatives.

Level 3 Fair Value Measurements

The fair value of the contingent consideration liability related to the SmartDose technology platform (the "SmartDose contingent consideration") was initially determined using a probability-weighted income approach, and is revalued at each reporting date or more frequently if circumstances dictate. Changes in the fair value of this obligation are recorded as income or expense within other (income) expense in our consolidated statements of income. The significant unobservable inputs used in the fair value measurement of the SmartDose contingent consideration are the sales projections, the probability of success factors, and the discount rate. Significant increases or decreases in any of those inputs in isolation would result in a significantly lower or higher fair value measurement. As development and commercialization of the SmartDose technology platform progresses, we may need to update the sales projections, the probability of success factors, and the discount rate used. This could result in a material increase or decrease to the SmartDose contingent consideration.

The following table provides a summary of changes in our Level 3 fair value measurements:

	($ in millions)
Balance, December 31, 2016	$ 8.0
Decrease in fair value recorded in earnings	(2.4)
Payments	(0.7)
Balance, December 31, 2017	4.9
Decrease in fair value recorded in earnings	(2.6)
Payments	(0.6)
Balance, December 31, 2018	$ 1.7

Other Financial Instruments

We believe that the carrying amounts of our cash and cash equivalents and accounts receivable approximate their fair values due to their near-term maturities.

The estimated fair value of long-term debt is based on quoted market prices for debt issuances with similar terms and maturities and is classified as Level 2 within the fair value hierarchy. At December 31, 2018, the estimated fair value of long-term debt was $192.6 million compared to a carrying amount of $196.0 million. At December 31, 2017, the estimated fair value of long-term debt was $201.5 million and the carrying amount was $197.0 million.

Note 12: Accumulated Other Comprehensive Loss

The following table presents the changes in the components of accumulated other comprehensive loss, net of tax:

($ in millions)	Losses on cash flow hedges	Unrealized gains on investment securities	Defined benefit pension and other postretirement plans	Foreign currency translation	Total
Balance, December 31, 2016	$ (3.2)	$ 5.2	$ (45.4)	$ (143.4)	$ (186.8)
Other comprehensive (loss) income before reclassifications	(3.6)	(4.7)	6.3	68.8	66.8
Amounts reclassified out	2.6	—	0.1	—	2.7
Other comprehensive (loss) income, net of tax	(1.0)	(4.7)	6.4	68.8	69.5
Balance, December 31, 2017	(4.2)	0.5	(39.0)	(74.6)	(117.3)
Other comprehensive income (loss) before reclassifications	2.6	(0.1)	(1.0)	(39.2)	(37.7)
Amounts reclassified out	1.2	—	(0.4)	—	0.8
Other comprehensive income (loss), net of tax	3.8	(0.1)	(1.4)	(39.2)	(36.9)
Balance, December 31, 2018	$ (0.4)	$ 0.4	$ (40.4)	$ (113.8)	$ (154.2)

A summary of the reclassifications out of accumulated other comprehensive loss is presented in the following table ($ in millions):

Detail of components	2018	2017	Location on Statement of Income
Losses on cash flow hedges:			
Foreign currency contracts	$ (0.7)	$ (1.3)	Net sales
Foreign currency contracts	(0.5)	(1.2)	Cost of goods and services sold
Interest rate swap contracts	—	(0.7)	Interest expense
Forward treasury locks	(0.4)	(0.4)	Interest expense
Total before tax	(1.6)	(3.6)	
Tax expense	0.4	1.0	
Net of tax	$ (1.2)	$ (2.6)	
Amortization of defined benefit pension and other postretirement plans:			
Prior service credit	2.0	2.1	(a)
Actuarial losses	(1.4)	(2.3)	(a)
Total before tax	0.6	(0.2)	
Tax expense	(0.2)	0.1	
Net of tax	$ 0.4	$ (0.1)	
Total reclassifications for the period, net of tax	$ (0.8)	$ (2.7)	

(a) These components are included in the computation of net periodic benefit cost. Please refer to Note 14, *Benefit Plans*, for additional details.

Note 13: Stock-Based Compensation

The West Pharmaceutical Services, Inc. 2016 Omnibus Incentive Compensation Plan (the "2016 Plan") provides for the granting of stock options, stock appreciation rights, restricted stock awards and performance awards to

employees and non-employee directors. A committee of the Board of Directors determines the terms and conditions of awards to be granted. Vesting requirements vary by award. At December 31, 2018, there were 3,710,483 shares remaining in the 2016 Plan for future grants.

Stock options and stock appreciation rights reduce the number of shares available by one share for each award granted. All other awards under the 2016 Plan will reduce the total number of shares available for grant by an amount equal to 2.5 times the number of shares awarded. If awards made under previous plans would entitle a plan participant to an amount of West stock in excess of the target amount, the additional shares (up to a maximum threshold amount) will be distributed under the 2016 Plan.

The following table summarizes our stock-based compensation expense recorded within selling, general and administrative expenses for the years ended December 31:

($ in millions)	2018	2017	2016
Stock option and appreciation rights	$ 8.6	$ 7.8	$ 8.6
Performance share units, stock-settled	2.5	4.1	6.7
Performance share units, cash-settled	—	0.1	0.1
Performance share units, dividend equivalents	0.1	0.1	0.2
Employee stock purchase plan	0.9	0.8	0.7
Deferred compensation plans	3.0	3.2	3.2
Total stock-based compensation expense	$ 15.1	$ 16.1	$ 19.5

In addition, we recorded a $0.2 million charge during 2016 as part of our restructuring plan, which was recorded within other expense. Please refer to Note 15, *Other Expense*, for further discussion of the 2016 restructuring plan.

The amount of unrecognized compensation expense for all non-vested awards as of December 31, 2018 was approximately $19.1 million, which is expected to be recognized over a weighted average period of 1.7 years.

Stock Options

Stock options granted to employees vest in equal increments. All awards expire 10 years from the date of grant. Upon the exercise of stock options, shares are issued in exchange for the exercise price of the options.

The following table summarizes changes in outstanding options:

(in millions, except per share data)	2018	2017	2016
Options outstanding, January 1	3.5	4.5	5.0
Granted	0.5	0.5	0.7
Exercised	(1.0)	(1.5)	(1.1)
Forfeited	—	—	(0.1)
Options outstanding, December 31	3.0	3.5	4.5
Options exercisable, December 31	1.7	1.9	2.7

Weighted Average Exercise Price	2018	2017	2016
Options outstanding, January 1	$ 48.76	$ 38.11	$ 31.77
Granted	90.36	84.09	61.98
Exercised	35.95	26.15	22.50
Forfeited	75.32	60.92	45.91
Options outstanding, December 31	$ 58.93	$ 48.76	$ 38.11
Options exercisable, December 31	$ 45.32	$ 35.44	$ 27.17

As of December 31, 2018, the weighted average remaining contractual life of options outstanding and of options exercisable was 6.4 years and 5.2 years, respectively.

As of December 31, 2018, the aggregate intrinsic value of total options outstanding was $117.5 million, of which $89.3 million represented vested options.

The fair value of the options was estimated on the date of grant using a Black-Scholes option valuation model that used the following weighted average assumptions in 2018, 2017 and 2016: a risk-free interest rate of 2.7%, 2.0%, and 1.4%, respectively; stock volatility of 19.8%, 19.9%, and 20.4%, respectively; and dividend yields of 0.7%, 0.7%, and 0.9%, respectively. Stock volatility is estimated based on historical data and the impact from expected future trends. Expected lives, which are based on prior experience, averaged 6 years for 2018, 2017 and 2016. The weighted average grant date fair value of options granted in 2018, 2017 and 2016 was $20.16, $18.08 and $12.12, respectively. Stock option expense is recognized over the vesting period, net of forfeitures.

For the years ended December 31, 2018, 2017 and 2016, the intrinsic value of options exercised was $61.3 million, $91.7 million and $49.4 million, respectively. The grant date fair value of options vested during those same periods was $8.3 million, $6.7 million and $5.8 million, respectively.

Stock Appreciation Rights

Stock appreciation rights ("SARs") granted to eligible international employees vest in equal annual increments over 4 years of continuous service. All awards expire 10 years from the date of grant. The fair value of each cash-settled SAR is adjusted at the end of each reporting period, with the resulting change reflected in expense. As of December 31, 2018, SARs outstanding were 39,819, of which 25,659 were cash-settled and 14,160 were stock-settled. Upon exercise of a cash-settled SAR, the employee receives cash for the difference between the grant date price and the fair market value of the Company's stock on the date of exercise. As a result of the cash settlement feature, cash-settled SARs are recorded within other long-term liabilities. Upon exercise of a stock-settled SAR, shares are issued in exchange for the exercise price of the stock-settled SAR. As a result of the stock settlement feature, stock-settled SARs are recorded within equity.

The following table summarizes changes in outstanding SARs:

	2018	2017	2016
SARs outstanding, January 1	51,368	116,087	232,930
Granted	3,480	2,792	3,368
Exercised	(14,629)	(67,511)	(114,976)
Forfeited	(400)	—	(5,235)
SARs outstanding, December 31	39,819	51,368	116,087
SARs exercisable, December 31	30,285	39,769	71,701

Weighted Average Exercise Price	2018	2017	2016
SARs outstanding, January 1	$ 38.55	$ 31.13	$ 27.79
Granted	89.64	83.47	68.40
Exercised	28.45	27.65	24.95
Forfeited	63.43	—	42.28
SARs outstanding, December 31	$ 46.48	$ 38.55	$ 31.13
SARs exercisable, December 31	$ 36.91	$ 30.77	$ 26.65

Performance Awards

In addition to stock options and SAR awards, we grant performance share unit ("PSU") awards to eligible employees. These awards are earned based on the Company's performance against pre-established targets, including annual growth rate of revenue and return on invested capital, over a specified performance period. Depending on the achievement of the targets, recipients of stock-settled PSU awards are entitled to receive a certain number of shares of common stock, whereas recipients of cash-settled PSU awards are entitled to receive a payment in cash per unit based on the fair market value of a share of our common stock at the end of the performance period.

The following table summarizes changes in our outstanding stock-settled PSU awards:

	2018	2017	2016
Non-vested stock-settled PSU awards, January 1	341,944	378,062	422,726
Granted at target level	102,307	92,045	115,035
Adjustments above/(below) target	(2,284)	(11,369)	19,339
Vested and converted	(121,984)	(116,684)	(173,364)
Forfeited	(23,946)	(110)	(5,674)
Non-vested stock-settled PSU awards, December 31	296,037	341,944	378,062

Weighted Average Grant Date Fair Value	2018	2017	2016
Non-vested stock-settled PSU awards, January 1	$ 64.38	$ 54.47	$ 45.60
Granted at target level	90.45	84.01	60.47
Adjustments above/(below) target	33.86	42.85	38.71
Vested and converted	93.00	50.06	59.64
Forfeited	68.65	73.64	49.86
Non-vested stock-settled PSU awards, December 31	$ 76.84	$ 64.38	$ 54.47

Shares earned under PSU awards may vary from 0% to 200% of an employee's targeted award. The fair value of stock-settled PSU awards is based on the market price of our stock at the grant date and is recognized as expense over the performance period, adjusted for estimated target outcomes and net of forfeitures. The weighted average grant date fair value of stock-settled PSU awards granted during the years 2018, 2017 and 2016 was $90.45, $84.01 and $60.47, respectively. Including forfeiture and above-target achievement expectations, we expect that the stock-settled PSU awards will convert to 108,626 shares to be issued over an average remaining term of one year.

The fair value of cash-settled PSU awards is also based on the market price of our stock at the grant date. These awards are revalued at the end of each quarter based on changes in our stock price. As a result of the cash settlement feature, cash-settled PSU awards are recorded within other long-term liabilities.

The following table summarizes changes in our outstanding cash-settled PSU awards:

	2018	2017	2016
Non-vested cash-settled PSU awards, January 1	1,972	2,451	29,196
Granted at target level	560	598	419
Adjustments above/(below) target	(30)	(107)	2,858
Vested and converted	(910)	(970)	(29,032)
Forfeited	—	—	(990)
Non-vested cash-settled PSU awards, December 31	1,592	1,972	2,451

Weighted Average Grant Date Fair Value	2018	2017	2016
Non-vested cash-settled PSU awards, January 1	$ 92.25	$ 25.28	$ 32.07
Granted at target level	89.64	83.47	59.64
Adjustments above/(below) target	41.53	66.61	30.80
Vested and converted	93.00	86.93	59.64
Forfeited	—	—	50.55
Non-vested cash-settled PSU awards, December 31	$ 79.48	$ 92.25	$ 25.28

Employee Stock Purchase Plan

We also offer an Employee Stock Purchase Plan ("ESPP"), which provides for the sale of our common stock to eligible employees at 85% of the current market price on the last trading day of each quarterly offering period. Payroll deductions are limited to 25% of the employee's base salary, not to exceed $25,000 in any one calendar year. In addition, employees may not buy more than 2,000 shares during any offering period (8,000 shares per year). Purchases under the ESPP were 55,669 shares, 56,218 shares and 60,839 shares for the years 2018, 2017 and 2016, respectively. At December 31, 2018, there were approximately 3.9 million shares available for issuance under the ESPP.

Deferred Compensation Plans

Our deferred compensation plans include a Non-Qualified Deferred Compensation Plan for Non-Employee Directors, under which non-employee directors may defer all or part of their annual cash retainers. The deferred fees may be credited to a stock-equivalent account. Amounts credited to this account are converted into deferred stock units based on the fair market value of one share of our common stock on the last day of the quarter. For deferred stock units ultimately paid in cash, a liability is calculated at an amount determined by multiplying the number of units by the fair market value of our common stock at the end of each reporting period. In addition, deferred stock awards are granted on the date of our annual meeting, and are distributed in shares of common stock. In 2018, we granted 18,824 deferred stock awards, with a grant date fair value of $87.69. Similarly, a non-qualified deferred compensation plan for eligible employees provides for the conversion of compensation into deferred stock units. As of December 31, 2018, the two deferred compensation plans held a total of 429,777 deferred stock units, including 24,296 units to be paid in cash.

In addition, during 2018, we granted 15,942 restricted share awards at a weighted grant-date fair value of $96.77 per share to new executive officers under the 2016 Plan. There were no grants of restricted share awards in 2017. During 2016, we granted 1,393 restricted share awards at a weighted grant-date fair value of $71.79 per share to new executive officers under the 2016 Plan. The fair value of these awards is based on the market price of our stock at the grant date and is recognized as expense over the vesting period.

Annual Incentive Plan

Under our annual incentive plan, participants are paid bonuses on the attainment of certain financial goals, which they can elect to receive in either cash or shares of our common stock. If the employee elects payment in shares,

they are also given a restricted incentive stock award equal to one share for each four bonus shares issued. The incentive stock awards vest at the end of four years provided that the participant has not made a disqualifying disposition of their bonus shares. Incentive stock award grants were 1,500 shares, 1,800 shares and 2,400 shares in 2018, 2017 and 2016, respectively. Incentive stock forfeitures of 200 shares, 800 shares and 800 shares occurred in 2018, 2017 and 2016, respectively. Compensation expense is recognized over the vesting period based on the fair market value of common stock on the award date: $93.00 per share granted in 2018, $86.93 per share granted in 2017 and $59.64 per share granted in 2016.

Note 14: Benefit Plans

Certain of our U.S. and international subsidiaries sponsor defined benefit pension plans. In addition, we provide minimal death benefits for certain U.S. retirees and pay a portion of healthcare costs for retired U.S. salaried employees and their dependents. Benefits for participants are coordinated with Medicare and the plan mandates Medicare risk ("HMO") coverage wherever possible and caps the total contribution for non-HMO coverage. We also sponsor a defined contribution plan for certain salaried and hourly U.S. employees. Our 401(k) plan contributions were $6.5 million for 2018, $5.7 million for 2017 and $4.9 million for 2016.

Pension and Other Retirement Benefits

The components of net periodic benefit cost and other amounts recognized in OCI were as follows:

	Pension benefits			Other retirement benefits		
($ in millions)	2018	2017	2016	2018	2017	2016
Net periodic benefit cost:						
Service cost	$ 10.8	$ 10.4	$ 10.2	$ —	$ —	$ 0.5
Interest cost	9.4	9.8	10.5	0.2	0.3	0.5
Expected return on assets	(15.7)	(13.5)	(12.6)	—	—	—
Amortization of prior service credit	(1.3)	(1.3)	(1.4)	(0.7)	(0.7)	—
Amortization of transition obligation	—	—	0.1	—	—	—
Amortization of actuarial loss (gain)	3.8	4.9	4.8	(2.4)	(2.6)	(1.4)
Curtailment	—	—	(2.1)	—	—	—
Net periodic benefit cost	$ 7.0	$ 10.3	$ 9.5	$ (2.9)	$ (3.0)	$ (0.4)
Other changes in plan assets and benefit obligations recognized in OCI, pre-tax:						
Net loss (gain) arising during period	$ 3.5	$ (9.0)	$ 19.2	$ (1.4)	$ (1.1)	$ (0.1)
Prior service credit arising during period	0.3	—	—	—	—	(3.0)
Amortization of prior service credit	1.3	1.3	1.4	0.7	0.7	—
Amortization of transition obligation	—	—	(0.1)	—	—	—
Amortization of actuarial (loss) gain	(3.8)	(4.9)	(4.8)	2.4	2.6	1.4
Curtailment	—	—	(3.1)	—	—	—
Foreign currency translation	(1.2)	2.6	(3.2)	—	—	—
Total recognized in OCI	$ 0.1	$(10.0)	$ 9.4	$ 1.7	$ 2.2	$ (1.7)
Total recognized in net periodic benefit cost and OCI	$ 7.1	$ 0.3	$ 18.9	$ (1.2)	$ (0.8)	$ (2.1)

Net periodic benefit cost by geographic location is as follows:

	Pension benefits			Other retirement benefits		
($ in millions)	2018	2017	2016	2018	2017	2016
U.S. plans	$ 4.8	$ 7.3	$ 7.1	$ (2.9)	$ (3.0)	$ (0.4)
International plans	2.2	3.0	2.4	—	—	—
Net periodic benefit cost	$ 7.0	$ 10.3	$ 9.5	$ (2.9)	$ (3.0)	$ (0.4)

In March 2017, the FASB issued guidance on the presentation of net periodic pension and postretirement benefit cost (net benefit cost). We adopted this guidance as of January 1, 2018, on a retrospective basis. Please refer to Note 2, *New Accounting Standards*, for additional information.

Effective January 1, 2019, except for interest crediting, benefit accruals under our U.S. qualified and non-qualified defined benefit pension plans will cease.

During 2016, we recorded a pension curtailment gain of $2.1 million in connection with our decision to freeze both our U.S. qualified and non-qualified defined benefit pension plans as of January 1, 2019.

The following table presents the changes in the benefit obligation and the fair value of plan assets, as well as the funded status of the plans:

	Pension benefits		Other retirement benefits	
($ in millions)	2018	2017	2018	2017
Change in benefit obligation:				
Benefit obligation, January 1	$ (288.0)	$ (262.2)	$ (7.1)	$ (8.0)
Service cost	(10.8)	(10.4)	—	—
Interest cost	(9.4)	(9.8)	(0.2)	(0.3)
Participants' contributions	(0.6)	(0.7)	(0.6)	(0.5)
Actuarial (loss) gain	20.4	(11.8)	1.4	1.2
Amendments/transfers in	(0.3)	—	—	—
Benefits/expenses paid	18.0	14.2	0.5	0.5
Foreign currency translation	3.7	(7.3)	—	—
Benefit obligation, December 31	$ (267.0)	$ (288.0)	$ (6.0)	$ (7.1)
Change in plan assets:				
Fair value of assets, January 1	$ 239.5	$ 192.4	$ —	$ —
Actual return on assets	(8.3)	34.4	—	—
Employer contribution	2.7	23.2	(0.1)	—
Participants' contributions	0.6	0.7	0.6	0.5
Benefits/expenses paid	(18.0)	(14.2)	(0.5)	(0.5)
Foreign currency translation	(2.0)	3.0	—	—
Fair value of assets, December 31	$ 214.5	$ 239.5	$ —	$ —
Funded status at end of year	$ (52.5)	$ (48.5)	$ (6.0)	$ (7.1)

International pension plan assets, at fair value, included in the preceding table were $33.4 million and $34.7 million at December 31, 2018 and 2017, respectively.

Amounts recognized in the balance sheet were as follows:

	Pension benefits		Other retirement benefits	
($ in millions)	2018	2017	2018	2017
Current liabilities	$ (1.6)	$ (1.5)	$ (0.7)	$ (0.7)
Noncurrent liabilities	(50.9)	(47.0)	(5.3)	(6.4)
	$ (52.5)	$ (48.5)	$ (6.0)	$ (7.1)

The amounts in accumulated other comprehensive loss, pre-tax, consisted of:

	Pension benefits		Other retirement benefits	
($ in millions)	2018	2017	2018	2017
Net actuarial loss (gain)	$ 73.0	$ 74.5	$ (9.4)	$ (10.4)
Prior service cost (credit)	0.9	(0.8)	(1.7)	(2.4)
Total	$ 73.9	$ 73.7	$ (11.1)	$ (12.8)

The net actuarial loss and prior service credit for the defined benefit pension plans that will be amortized from accumulated other comprehensive loss into net periodic benefit cost over the next fiscal year are $2.1 million and $0.1 million, respectively. The net actuarial gain and prior service credit for the other retirement benefits plan that will be amortized from accumulated other comprehensive loss into net periodic benefit cost over the next fiscal year is $2.1 million and $0.7 million.

The accumulated benefit obligation for all defined benefit pension plans was $263.0 million and $283.7 million at December 31, 2018 and 2017, respectively, including $64.0 million and $67.3 million, respectively, for international pension plans.

All of the defined benefit pension plans have projected benefit obligations and accumulated benefit obligations in excess of plan assets as of December 31, 2018 and 2017.

Benefit payments expected to be paid under our defined benefit pension and other retirement benefit plans in the next ten years are as follows:

($ in millions)	Domestic	International	Total
2019	$ 13.6	$ 2.1	$ 15.7
2020	14.6	2.7	17.3
2021	14.1	2.2	16.3
2022	14.7	2.9	17.6
2023	14.9	2.3	17.2
2024 to 2028	69.3	16.9	86.2
	$ 141.2	$ 29.1	$ 170.3

In 2019, we expect to contribute $3.2 million to pension plans, of which $2.3 million is for international plans. In addition, we expect to contribute $0.7 million for other retirement benefits in 2019. We periodically consider additional, voluntary contributions depending on the investment returns generated by pension plan assets, changes in benefit obligation projections and other factors.

Weighted average assumptions used to determine net periodic benefit cost were as follows:

	Pension benefits			Other retirement benefits		
	2018	2017	2016	2018	2017	2016
Discount rate	2.91%	3.48%	3.99%	3.45%	3.90%	4.30%
Rate of compensation increase	4.00%	4.01%	4.04%	—	—	—
Long-term rate of return on assets	6.71%	6.47%	6.95%	—	—	—

Weighted average assumptions used to determine the benefit obligations were as follows:

	Pension benefits		Other retirement benefits	
	2018	2017	2018	2017
Discount rate	3.76%	3.14%	4.20%	3.45%
Rate of compensation increase	4.01%	3.80%	—	—

The discount rate used to determine the benefit obligations for U.S. pension plans was 4.30% and 3.65% as of December 31, 2018 and 2017, respectively. The weighted average discount rate used to determine the benefit obligations for all international plans was 2.19% and 1.62% as of December 31, 2018 and 2017, respectively. The rate of compensation increase for U.S. plans was 4.25% for 2018 and 2017, while the weighted average rate for all international plans was 2.60% for 2018 and 2.44% for 2017. Other retirement benefits were only available to U.S. employees. The expected long-term rate of return for U.S. plans, which accounts for 84.45% of global plan assets, was 7.00% for 2018, 7.00% for 2017 and 7.25% for 2016.

The assumed healthcare cost trend rate used to determine benefit obligations was 6.25% for all participants in 2018, decreasing to 5.00% by 2024. A change in the assumed healthcare cost trend rate by one percentage point would have an immaterial impact in the postretirement obligation. The assumed healthcare cost trend rate used to determine net periodic benefit cost was 6.60% for all participants in 2018, decreasing to 5.00% by 2022. The effect of a one percentage point increase or decrease in the rate would have an immaterial impact in the aggregate service and interest cost components.

The weighted average asset allocations by asset category for our pension plans, at December 31, were as follows:

	2018	2017
Equity securities	23%	63%
Debt securities	74%	37%
Other	3%	—%
	100%	100%

Our U.S. pension plan is managed as a balanced portfolio comprised of two components: equity and fixed income debt securities. Equity investments are used to maximize the long-term real growth of fund assets, while fixed income investments are used to generate current income, provide for a more stable periodic return, and provide some protection against a prolonged decline in the market value of equity investments. Temporary funds may be held as cash. We maintain a long-term strategic asset allocation policy which provides guidelines for ensuring that the fund's investments are managed with the short-term and long-term financial goals of the fund, while allowing the flexibility to react to unexpected changes in capital markets.

Diversification across and within asset classes is the primary means by which we mitigate risk. We maintain guidelines for all asset and sub-asset categories in order to avoid excessive investment concentrations. Fund assets are monitored on a regular basis. If at any time the fund asset allocation is not within the acceptable allocation range, funds will be reallocated. We also review the fund on a regular basis to ensure that the investment returns received are consistent with the short-term and long-term goals of the fund and with comparable market returns. We are

prohibited from pledging fund securities and from investing pension fund assets in our own stock, securities on margin or derivative securities.

During the three months ended December 31, 2018, in anticipation of benefit accruals under our U.S. qualified and non-qualified defined benefit pension plans ceasing effective January 1, 2019, except for interest crediting, we changed the U.S. target asset allocations from 65% equity securities and 35% debt securities to 30% equity securities and 70% debt securities.

The following are the U.S. target asset allocations and acceptable allocation ranges:

	Target allocation	Allocation range
Equity securities	30%	27% - 33%
Debt securities	70%	67% - 73%
Other	—%	0% - 3%

The following tables present the fair value of our pension plan assets, utilizing the fair value hierarchy discussed in Note 11, *Fair Value Measurements*. In accordance with U.S. GAAP, certain pension plan assets measured at net asset value ("NAV") have not been classified in the fair value hierarchy.

	Balance at December 31,	**Basis of Fair Value Measurements**		
($ in millions)	2018	Level 1	Level 2	Level 3
Cash	$ 1.7	$ 1.7	$ —	$ —
Equity securities:				
International mutual funds	17.7	17.7	—	—
Fixed income securities:				
Mutual funds	13.9	13.9	—	—
Pension plan assets in the fair value hierarchy	$ 33.3	$ 33.3	$ —	$ —
Pension plan assets measured at NAV	181.2			
Pension plan assets at fair value	$ 214.5			

	Balance at December 31,	**Basis of Fair Value Measurements**		
($ in millions)	2017	Level 1	Level 2	Level 3
Cash	$ 1.6	$ 1.6	$ —	$ —
Equity securities:				
International mutual funds	15.5	15.5	—	—
Fixed income securities:				
Mutual funds	17.5	17.5	—	—
Pension plan assets in the fair value hierarchy	$ 34.6	$ 34.6	$ —	$ —
Pension plan assets measured at NAV	204.9			
Pension plan assets at fair value	$ 239.5			

Note 15: Other Expense

Other expense consisted of:

($ in millions)	2018	2017	2016
Restructuring and related charges:			
Severance and post-employment benefits	$ 3.1	$ —	$ 8.9
Asset-related charges	2.2	—	17.3
Other charges	3.8	—	0.2
Total restructuring and related charges	$ 9.1	$ —	$ 26.4
Argentina currency devaluation	1.1	—	—
Venezuela deconsolidation	—	11.1	—
Venezuela currency devaluation	—	—	2.7
Development and licensing income	(0.9)	(10.6)	(1.5)
Contingent consideration	(2.6)	(2.4)	2.3
Other items	(4.8)	3.9	(0.1)
Total other expense	$ 1.9	$ 2.0	$ 29.8

Restructuring and Related Charges

In February 2018, our Board of Directors approved a restructuring plan designed to realign our manufacturing capacity with demand. These changes are expected to be implemented over the following twelve to twenty-four months. The plan will require restructuring and related charges in the range of $8.0 million to $13.0 million and capital expenditures in the range of $9.0 million to $14.0 million.

During 2018, we recorded $8.8 million in restructuring and related charges associated with this plan, consisting of $3.1 million for severance charges, $2.2 million for non-cash asset write-downs associated with the discontinued use of certain equipment, and $3.5 million for other charges.

The following table presents activity related to our restructuring obligations related to our 2018 restructuring plan:

($ in millions)	Severance and benefits	Asset-related charges	Other charges	Total
Balance, December 31, 2017	$ —	$ —	$ —	$ —
Charges	3.1	2.2	3.5	8.8
Cash payments	(0.8)	—	—	(0.8)
Non-cash asset write-downs	—	(2.2)	(3.5)	(5.7)
Balance, December 31, 2018	$ 2.3	$ —	$ —	$ 2.3

On February 15, 2016, our Board of Directors approved a restructuring plan designed to repurpose several of our production facilities in support of growing high-value proprietary products and to realign operational and commercial activities to meet the needs of our new market-focused commercial organization. During 2018, we recorded $0.3 million in additional charges related to this restructuring plan. Our remaining restructuring obligations related to our 2016 restructuring plan as of December 31, 2018 were $1.0 million.

Other Items

During 2018, we recorded a charge of $1.1 million related to the classification of Argentina's economy as highly inflationary under U.S. GAAP as of July 1, 2018.

On February 17, 2016, the Venezuelan government announced a devaluation of the Bolivar, from the previously-prevailing official exchange rate of 6.3 Bolivars to USD to 10.0 Bolivars to USD, and streamlined the previous three-tiered currency exchange mechanism into a dual currency exchange mechanism. As a result, during 2016, we recorded a $2.7 million charge. In 2017, as a result of the continued deterioration of conditions in Venezuela as well as our continued reduced access to USD settlement controlled by the Venezuelan government, we recorded a charge of $11.1 million related to the deconsolidation of our Venezuelan subsidiary, following our determination that we no longer met the U.S. GAAP criteria for control of that subsidiary. This charge included the derecognition of the carrying amounts of our Venezuelan subsidiary's assets and liabilities, as well as the write-off of our investment in our Venezuelan subsidiary, related unrealized translation adjustments and the elimination of intercompany accounts. As of April 1, 2017, our consolidated financial statements exclude the results of our Venezuelan subsidiary.

During 2018, 2017 and 2016, we recorded development income of $0.9 million, $1.5 million and $1.5 million, respectively, related to a nonrefundable customer payment of $20.0 million received in June 2013 in return for the exclusive use of the SmartDose technology platform within a specific therapeutic area. Please refer to Note 3, *Revenue*, for additional information. In addition, during 2017, we recorded income of $9.1 million attributable to the reimbursement of certain costs related to a technology that we subsequently licensed to a third party. The license of technology to the third party may result in additional income in the future, contingent on commercialization of the related product.

Contingent consideration represents changes in the fair value of the SmartDose contingent consideration. Please refer to Note 11, *Fair Value Measurements*, for additional details.

Other items consist of foreign exchange transaction gains and losses, gains and losses on the sale of fixed assets, and miscellaneous income and charges. Other items changed in 2018 as a result of foreign exchange transaction gains of $5.5 million in 2018, as compared to foreign exchange transaction losses of $2.1 million in 2017, and a $1.1 million gain on the sale of fixed assets as a result of our restructuring plans.

Note 16: Income Taxes

As a global organization, we and our subsidiaries file income tax returns in the U.S. federal jurisdiction and various state and foreign jurisdictions. During 2018, the statute of limitations for the 2014 U.S. federal tax year lapsed, leaving tax years 2015 through 2018 open to examination. For U.S. state and local jurisdictions, tax years 2014 through 2018 are open to examination. We are also subject to examination in various foreign jurisdictions for tax years 2011 through 2018.

A reconciliation of the beginning and ending amount of the liability for unrecognized tax benefits is as follows:

($ in millions)	2018	2017
Balance at January 1	$ 3.2	$ 6.2
Increase due to current year position	0.8	0.4
Increase due to prior year position	0.4	0.1
Reduction for expiration of statute of limitations/audits	(0.5)	(3.5)
Balance at December 31	$ 3.9	$ 3.2

In addition, we had balances in accrued liabilities for interest and penalties of $0.2 million and $0.1 million at December 31, 2018 and 2017, respectively. As of December 31, 2018, we had $3.9 million of total gross unrecognized tax benefits, which, if recognized, would favorably impact the effective income tax rate. It is reasonably possible that, due to the expiration of statutes and the closing of tax audits, the amount of gross unrecognized tax benefits may be reduced by approximately $0.4 million during the next twelve months, which would favorably impact our effective tax rate.

The components of income before income taxes are:

($ in millions)	2018	2017	2016
U.S. operations	$ 132.9	$ 96.5	$ 84.5
International operations	107.8	125.9	105.3
Total income before income taxes	$ 240.7	$ 222.4	$ 189.8

The related provision for income taxes consists of:

($ in millions)	2018	2017	2016
Current:			
Federal	$ 2.1	$ 2.1	$ 2.5
State	3.3	0.1	1.0
International	35.1	37.0	29.4
Current income tax provision	40.5	39.2	32.9
Deferred:			
Federal and state	1.4	41.8	21.8
International	(0.5)	(0.1)	(0.3)
Deferred income tax provision	0.9	41.7	21.5
Income tax expense	$ 41.4	$ 80.9	$ 54.4

Deferred income taxes result from temporary differences between the amount of assets and liabilities recognized for financial reporting and tax purposes.

The significant components of our deferred tax assets and liabilities at December 31 are:

($ in millions)	2018	2017
Deferred tax assets		
Net operating loss carryforwards	$ 18.4	$ 19.7
Tax credit carryforwards	10.5	13.7
Restructuring and impairment charges	—	0.1
Pension and deferred compensation	27.2	28.3
Other	11.4	14.3
Valuation allowance	(16.0)	(20.9)
Total deferred tax assets	51.5	55.2
Deferred tax liabilities:		
Accelerated depreciation	31.3	26.3
Tax on undistributed earnings of subsidiaries	6.6	9.8
Other	2.0	3.8
Total deferred tax liabilities	39.9	39.9
Net deferred tax asset	$ 11.6	$ 15.3

A reconciliation of the U.S. federal corporate tax rate to our effective consolidated tax rate on income before income taxes follows:

	2018	2017	2016
U.S. federal corporate tax rate	21.0%	35.0%	35.0%
Tax on international operations other than U.S. tax rate	4.8	(4.5)	(2.9)
Reversal of prior valuation allowance	—	(0.5)	(0.3)
Adjustments to reserves for unrecognized tax benefits	0.2	(0.2)	(0.6)
U.S. tax on international earnings, net of foreign tax credits	(0.2)	0.1	(1.3)
State income taxes, net of federal tax effect	2.3	0.2	0.8
U.S. research and development credits	(0.9)	(0.8)	(0.8)
Excess tax benefits on share-based payments	(6.0)	(14.1)	—
Impact of 2017 Tax Act	(2.9)	15.9	—
Tax on undistributed earnings of subsidiaries	(1.3)	4.4	—
Venezuela deconsolidation	—	1.7	—
Other business credits and Section 199 Deduction	—	(0.6)	(1.1)
Other	0.2	(0.2)	(0.1)
Effective tax rate	17.2%	36.4%	28.7%

During 2018, we recorded a net tax benefit of $2.5 million for the impact of tax law changes, including the 2017 Tax Act, and a tax benefit of $14.3 million associated with our adoption in 2017 of guidance issued by the FASB regarding share-based payment transactions.

During 2017, we recorded a discrete tax charge of $48.8 million related to the 2017 Tax Act and the impact of changes in enacted international tax rates on previously-recorded deferred tax asset and liability balances, as well as a tax benefit of $33.1 million associated with our adoption of the guidance issued by the FASB regarding share-based payment transactions.

The 2017 Tax Act, which was signed into law on December 22, 2017, has resulted in significant changes to the U.S. corporate income tax system. These changes include, but are not limited to, a federal statutory rate reduction from 35.0% to 21.0% effective for tax years beginning after December 31, 2017. Changes in tax rates and tax laws are accounted for in the period of enactment. As a result, during the year ended December 31, 2017, we recorded a discrete charge based upon our understanding of the 2017 Tax Act and the guidance available as of the date of that filing. A significant portion of the discrete tax liability was attributable to a one-time mandatory deemed repatriation tax of post-1986 undistributed foreign subsidiary earnings and profits (the “Transition Toll Tax”) of $27.9 million. Additionally, due to the reduction of the federal statutory rate, we revalued our deferred assets and liabilities and recorded a provisional $11.4 million federal tax expense, net of state tax impact, during the year ended December 31, 2017.

On December 22, 2017, the SEC staff issued Staff Accounting Bulletin No. 118 to address the application of U.S. GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the 2017 Tax Act. We recognized the provisional tax impacts related to deemed repatriated earnings and the revaluation of deferred tax assets and liabilities and included these amounts in our consolidated financial statements for the year ended December 31, 2017. As of December 31, 2018, we finalized our calculations and tax positions used in our analysis of the impact of the 2017 Tax Act in consideration of proposed regulations and other guidance issued during 2018. As a result, we recorded a $7.5 million tax benefit related to a reduction of the Transition Toll Tax and an incremental tax expense of $4.0 million related to other adjustments. The final measurement reduced the Transition Toll Tax expense to $20.4 million from $27.9 million. The net impact of these adjustments resulted in a benefit of 1.45% to the 2018 effective tax rate.

The 2017 Tax Act created a provision known as global intangible low-tax income ("GILTI") that imposes a U.S. tax on certain earnings of controlled foreign subsidiaries. We made an accounting policy election to reflect GILTI taxes, if any, as a current income tax expense in the period incurred.

During 2016, we recorded a tax benefit of $9.0 million in connection with restructuring and related charges of $26.4 million, a discrete tax charge of $0.8 million related to the pension curtailment gain of $2.1 million, and a discrete tax charge of $1.0 million resulting from the impact of changes in enacted tax rates on our previously-recorded deferred tax asset and liability balances.

As of December 31, 2018, we have fully utilized all of our U.S. federal net operating loss carryforwards. State operating loss carryforwards of $233.5 million created a deferred tax asset of $15.6 million, while foreign operating loss carryforwards of $23.2 million created a deferred tax asset of $2.8 million. Management estimates that certain state and foreign operating loss carryforwards are unlikely to be utilized and the associated deferred tax assets have been fully reserved. State loss carryforwards expire as follows: $11.6 million in 2019 and $221.9 million thereafter. Foreign loss carryforwards will begin to expire in 2025, while $20.2 million of the total $23.2 million will not expire.

As of December 31, 2018, we have utilized all available foreign tax credit carryforwards against the Transition Toll Tax. We have U.S. federal and state research and development credit carryforwards of $5.6 million and $2.6 million, respectively. The $5.6 million of U.S. federal research and development credits expire as follows: $1.5 million expire in 2037, $1.8 million expire in 2038, and $2.3 million expire in 2039. The $2.6 million of state research and development credits expire as follows: $0.6 million expire in 2022, $0.5 million expire in 2023, and $1.5 million expire after 2023. Additionally, we have available other state tax credits of $0.1 million which expire in 2020.

In response to the 2017 Tax Act, we reevaluated our position regarding permanent reinvestment of foreign subsidiary earnings and profits through 2017 (with the exception of China and Mexico) and decided that those profits were no longer permanently reinvested. As of January 1, 2018, we reasserted indefinite reinvestment related to all post-2017 unremitted earnings in all of our foreign subsidiaries. In general, it is our practice and intention to permanently reinvest the earnings of our foreign subsidiaries and repatriate earnings only when the tax impact is de minimis, and that position has not changed subsequent to the one-time transition tax under the 2017 Tax Act, except as noted above. Accordingly, no deferred taxes have been provided for withholding taxes or other taxes that would result upon repatriation of approximately $79.7 million of undistributed earnings from foreign subsidiaries to the U.S., as those earnings continue to be permanently reinvested. Further, it is impracticable for us to estimate any future tax costs for any unrecognized deferred tax liabilities associated with our indefinite reinvestment assertion, because the actual tax liability, if any, would be dependent on complex analysis and calculations considering various tax laws, exchange rates, circumstances existing when there is a repatriation, sale, or liquidation, or other factors.

Note 17: Commitments and Contingencies

At December 31, 2018, we were obligated under various operating lease agreements. Rental expense in 2018, 2017 and 2016 was $14.5 million, $13.3 million and $11.7 million, respectively.

At December 31, 2018, future minimum rental payments under non-cancelable operating leases were:

Year	($ in millions)
2019	$ 13.0
2020	10.5
2021	7.8
2022	6.9
2023	5.5
Thereafter	37.8
Total	$ 81.5

At December 31, 2018, outstanding unconditional contractual commitments for the purchase of raw materials and finished goods amounted to $72.7 million, of which $14.0 million is due to be paid in 2019.

We have letters of credit totaling $2.5 million supporting the reimbursement of workers' compensation and other claims paid on our behalf by insurance carriers. Our accrual for insurance obligations was $3.4 million at December 31, 2018, of which $0.9 million is in excess of our deductible and, therefore, is reimbursable by the insurance company.

Our SmartDose contingent consideration is payable to the selling shareholders based upon a percentage of product sales over the life of the underlying product patent, with no cap on total payments. Given the length of the earnout period and the uncertainty in forecasted product sales, we do not believe it is meaningful to estimate the upper end of the range over the entire period. However, our estimated probable range which could become payable over the next five years is between zero and $2.1 million.

Note 18: Segment Information

Our business operations are organized into two reportable segments, Proprietary Products and Contract-Manufactured Products. Our Proprietary Products reportable segment offers proprietary packaging, containment and drug delivery products, along with analytical lab services, to biologic, generic and pharmaceutical drug customers. Our Contract-Manufactured Products reportable segment serves as a fully integrated business, focused on the design, manufacture, and automated assembly of complex devices, primarily for pharmaceutical, diagnostic, and medical device customers.

We evaluate the performance of our segments based upon, among other things, segment net sales and operating profit. Segment operating profit excludes general corporate costs, which include executive and director compensation, stock-based compensation, adjustments to annual incentive plan expense for over- or under-attainment of targets, certain pension and other retirement benefit costs, and other corporate facilities and administrative expenses not allocated to the segments. Also excluded are items that we consider not representative of ongoing operations. Such items are referred to as other unallocated items and generally include restructuring and related charges, certain asset impairments and other specifically-identified income or expense items.

The following table presents information about our reportable segments, reconciled to consolidated totals:

($ in millions)	2018	2017	2016
Net sales:			
Proprietary Products	$ 1,308.6	$ 1,236.9	$ 1,189.9
Contract-Manufactured Products	409.1	362.5	320.2
Intersegment sales elimination	(0.3)	(0.3)	(1.0)
Consolidated net sales	$ 1,717.4	$ 1,599.1	$ 1,509.1

The intersegment sales elimination, which is required for the presentation of consolidated net sales, represents the elimination of components sold between our segments.

We do not have any customers accounting for greater than 10% of consolidated net sales.

The following table presents net sales and property, plant and equipment, net, by the country in which the legal subsidiary is domiciled and assets are located:

	Net Sales			Property, Plant and Equipment, Net		
($ in millions)	2018	2017	2016	2018	2017	2016
United States	$ 766.1	$ 734.6	$ 738.3	$ 315.3	$ 323.8	$ 329.3
Germany	235.9	226.4	200.6	99.3	108.8	96.8
France	127.5	125.6	116.3	42.5	43.1	37.1
Other European countries	386.1	318.5	268.3	232.5	244.9	192.3
Other	201.8	194.0	185.6	132.4	134.4	122.8
	$ 1,717.4	$ 1,599.1	$ 1,509.1	$ 822.0	$ 855.0	$ 778.3

The following tables provide summarized financial information for our segments:

($ in millions)	Proprietary Products	Contract-Manufactured Products	Corporate and Elimination	Consolidated
2018				
Net sales	$ 1,308.6	$ 409.1	$ (0.3)	$ 1,717.4
Operating profit	$ 266.4	$ 44.3	$ (70.4)	$ 240.3
Interest expense	—	—	8.4	8.4
Interest income	—	—	(2.1)	(2.1)
Other nonoperating income	—	—	(6.7)	(6.7)
Income before income taxes	$ 266.4	$ 44.3	$ (70.0)	$ 240.7
Segment assets	$ 1,342.3	$ 301.4	$ 335.2	$ 1,978.9
Capital expenditures	77.0	20.7	7.0	104.7
Depreciation and amortization expense	83.9	17.2	3.3	104.4
2017				
Net sales	$ 1,236.9	$ 362.5	$ (0.3)	$ 1,599.1
Operating profit	$ 243.8	$ 48.3	$ (66.3)	$ 225.8
Interest expense	—	—	7.8	7.8
Interest income	—	—	(1.3)	(1.3)
Other nonoperating income	—	—	(3.1)	(3.1)
Income before income taxes	$ 243.8	$ 48.3	$ (69.7)	$ 222.4
Segment assets	$ 1,321.3	$ 286.4	$ 255.1	$ 1,862.8
Capital expenditures	107.2	18.6	5.0	130.8
Depreciation and amortization expense	77.1	16.4	3.2	96.7
2016				
Net sales	$ 1,189.9	$ 320.2	$ (1.0)	$ 1,509.1
Operating profit	$ 243.1	$ 38.2	$ (86.1)	$ 195.2
Interest expense	—	—	8.1	8.1
Interest income	—	—	(1.1)	(1.1)
Other nonoperating income	—	—	(1.6)	(1.6)
Income before income taxes	$ 243.1	$ 38.2	$ (91.5)	$ 189.8
Segment assets	$ 1,173.9	$ 261.1	$ 281.7	$ 1,716.7
Capital expenditures	133.2	34.0	3.0	170.2
Depreciation and amortization expense	71.7	14.9	4.1	90.7

Note 19: Subsequent Events

In January 2019, we entered into an agreement to acquire the business of our distributor in South Korea. The transaction is expected to close in April 2019.

In February 2019, we announced a share repurchase program for calendar-year 2019 authorizing the repurchase of up to 800,000 shares of our common stock from time to time on the open market or in privately-negotiated transactions as permitted under the Securities Exchange Act of 1934 Rule 10b-18. The number of shares to be repurchased and the timing of such transactions will depend on a variety of factors, including market conditions. This share repurchase program is expected to be completed by December 31, 2019. Our previously-authorized share repurchase program expired on December 31, 2018.

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of West Pharmaceutical Services, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of West Pharmaceutical Services, Inc. and its subsidiaries as of December 31, 2018 and 2017, and the related consolidated statements of income, comprehensive income, equity and cash flows for each of the three years in the period ended December 31, 2018, including the related notes and schedule of valuation and qualifying accounts for each of the three years in the period ended December 31, 2018 appearing under Item 15(a)(2) (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017**,** and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for revenues from contracts with customers in 2018 and the manner in which it accounts for share-based compensation award-related income tax effects in 2017.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ PricewaterhouseCoopers LLP
Philadelphia, Pennsylvania
February 27, 2019

We have served as the Company's auditor since 1963.

Quarterly Operating and Per Share Data (Unaudited)

($ in millions, except per share data)	First Quarter (1)	Second Quarter (2)	Third Quarter (3)	Fourth Quarter (4)	Full Year
2018					
Net sales	$ 415.7	$ 447.5	$ 431.7	$ 422.5	$ 1,717.4
Gross profit	134.4	142.2	135.6	133.2	545.4
Net income	43.6	56.1	55.2	52.0	206.9
Net income per share:					
Basic	$ 0.59	$ 0.76	$ 0.75	$ 0.70	$ 2.80
Diluted	$ 0.58	$ 0.75	$ 0.73	$ 0.69	$ 2.74
2017					
Net sales	$ 387.7	$ 397.6	$ 398.2	$ 415.6	$ 1,599.1
Gross profit	134.2	125.0	125.1	128.6	512.9
Net income	60.9	38.8	51.0	—	150.7
Net income per share:					
Basic	$ 0.83	$ 0.53	$ 0.69	$ —	$ 2.04
Diluted	$ 0.81	$ 0.51	$ 0.67	$ —	$ 1.99

The sum of the quarterly amounts may not equal full year due to rounding.

Factors affecting the comparability of the information reflected in the quarterly data:

(1) Net income for the first quarter of 2018 included the impact of restructuring and related charges of $2.7 million ($0.03 per diluted share), a net tax charge of $0.3 million ($0.01 per diluted share) for the estimated impact of the 2017 Tax Act, and a tax benefit of $2.1 million ($0.03 per diluted share) associated with our adoption of the guidance issued by the FASB regarding share-based payment transactions. Net income for the first quarter of 2017 included the impact of a tax benefit of $15.9 million ($0.21 per diluted share) associated with our adoption of the guidance issued by the FASB regarding share-based payment transactions.

(2) Second quarter 2018 net income included the impact of restructuring and related charges of $1.6 million ($0.01 per diluted share), a net tax benefit of $4.8 million ($0.06 per diluted share) for the estimated impact of the 2017 Tax Act, and a tax benefit of $3.4 million ($0.04 per diluted share) associated with our adoption of the guidance issued by the FASB regarding share-based payment transactions. Second quarter 2017 net income included the impact of a tax benefit of $9.6 million ($0.13 per diluted share) associated with our adoption of the guidance issued by the FASB regarding share-based payment transactions and a charge of $11.1 million ($0.15 per diluted share) related to the deconsolidation of our Venezuelan subsidiary.

(3) Net income for the third quarter of 2018 included the impact of restructuring and related charges of $0.9 million ($0.01 per diluted share), a net tax charge of $0.4 million for the estimated impact of the 2017 Tax Act, a tax benefit of $7.7 million ($0.10 per diluted share) associated with our adoption of the guidance issued by the FASB regarding share-based payment transactions, and a charge of $1.1 million ($0.02 per diluted share) related to the classification of Argentina's economy as highly inflationary under U.S. GAAP as of July 1, 2018. Net income for the third quarter of 2017 included the impact of a tax benefit of $4.8 million ($0.06 per diluted share) associated with our adoption of the guidance issued by the FASB regarding share-based payment transactions.

(4) Fourth quarter 2018 net income included the impact of restructuring and related charges of $2.1 million ($0.02 per diluted share), a gain on the sale of fixed assets as a result of our restructuring plans of $0.9 million ($0.01 per diluted share), a net tax charge of $1.6 million ($0.03 per diluted share) for the impact of tax law changes,

including the 2017 Tax Act, and a tax benefit of $1.1 million ($0.02 per diluted share) associated with our adoption in 2017 of guidance issued by the FASB regarding share-based payment transactions. Fourth quarter 2017 net income included the impact of a discrete tax charge of $48.8 million ($0.64 per diluted share) related to the 2017 Tax Act and the impact of changes in enacted international tax rates on previously-recorded deferred tax asset and liability balances and a tax benefit of $2.8 million ($0.04 per diluted share) associated with our adoption of the guidance issued by the FASB regarding share-based payment transactions.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

Disclosure controls are controls and procedures designed to reasonably ensure that information required to be disclosed in our reports filed under the Exchange Act, such as this annual report, is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Disclosure controls include, without limitation, controls and procedures designed to ensure that information required to be disclosed in our reports filed under the Securities Exchange Act of 1934, as amended, is accumulated and communicated to our management, including our CEO and Chief Financial Officer ("CFO"), or persons performing similar functions, as appropriate, to allow timely decisions regarding required disclosure. Our disclosure controls include some, but not all, components of our internal control over financial reporting.

Evaluation of Disclosure Controls and Procedures
An evaluation was performed under the supervision and with the participation of our management, including our CEO and CFO, of the effectiveness of our disclosure controls and procedures (as defined in Rule 13a-15(e) under the Securities Exchange Act of 1934), as of the end of the period covered by this Form 10-K. Based on this evaluation, our CEO and CFO have concluded that, as of December 31, 2018, our disclosure controls and procedures are effective.

Management's Report on Internal Control over Financial Reporting
Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rule 13a-15(f) under the Securities Exchange Act of 1934. Our internal control over financial reporting is a process designed under the supervision of our CEO and CFO to provide reasonable assurance regarding the reliability of financial reporting and the preparation of our financial statements for external reporting purposes in accordance with U.S. generally accepted accounting principles.

Management assessed the effectiveness of our internal control over financial reporting as of December 31, 2018 based on the framework established in "Internal Control-Integrated Framework (2013)" issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this assessment, management has determined that our internal control over financial reporting was effective as of December 31, 2018.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. No evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within West have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of simple error or mistake. Controls can also be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. The design of any system of controls is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Also projections of any evaluation of effectiveness to future periods are subject to the risks that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

The effectiveness of our internal control over financial reporting as of December 31, 2018 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report, which is included herein.

Changes in Internal Controls

During the fourth quarter ended December 31, 2018, there have been no changes to our internal control over financial reporting that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

On January 1, 2018, we adopted ASC 606. Although our adoption of ASC 606 resulted in no change to our internal control over financial reporting that materially affected, or is reasonably likely to materially affect, our internal control over financial reporting, we did implement changes to our internal controls relating to revenue. These changes included the development of new policies based on a five-step model provided in ASC 606, enhanced contract review requirements, and other ongoing monitoring activities. These controls were designed to provide assurance at a reasonable level of the fair presentation of our consolidated financial statements and related disclosures.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information about our directors is incorporated by reference from the discussion under the heading *Board of Directors Nominee Information - Proposal 1 - Election of Directors* in our 2019 Proxy Statement. Information about our Code of Business Conduct is incorporated by reference from the discussion under the heading *Corporate Governance Documents - Code of Business Conduct* in our 2019 Proxy Statement. Information regarding the procedures by which our shareholders may recommend nominees to our Board of Directors is incorporated by reference from the discussion under the heading *Voting and Other Information - 2020 Shareholder Proposals or Nominations* included in our 2019 Proxy Statement. Information about our Audit Committee, including the members of the committee, and our Audit Committee financial experts, is incorporated by reference from the discussion under the heading *Board and Director Information and Policies - Committees - Audit Committee* in our 2019 Proxy Statement. The balance of the information required by this item is contained in the discussion entitled *Executive Officers of the Company* in Part I of this Form 10-K.

ITEM 11. EXECUTIVE COMPENSATION

Information about director and executive compensation is incorporated by reference from the discussion under the headings *Director Compensation* and *Executive Compensation* in our 2019 Proxy Statement.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information required by this Item is incorporated by reference from the discussion under the heading *Stock Ownership - Current Stock Ownership by Officers and Directors* in our 2019 Proxy Statement.

Equity Compensation Plan Information Table

The following table sets forth information about the grants of stock options, restricted stock or other rights under all of the Company's equity compensation plans as of the close of business on December 31, 2018. The table does not include information about tax-qualified plans such as the West 401(k) Plan or the West Contract Manufacturing Savings and Retirement Plan.

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights (a)	Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights (b)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Columns (a)) (c)
Equity compensation plans approved by security holders	3,642,288 [1]	$ 58.74 [2]	7,591,586 [3]
Equity compensation plans not approved by security holders	—	—	—
Total	3,642,288	$ 58.74	7,591,586

[1] Includes 935,878 outstanding stock options, 185,253 restricted performance share units, 17,904 restricted retention share units, 67,797 deferred stock-equivalents units and 584 restricted stock-equivalents units granted to directors under the 2016 Plan. Includes 1,864,237 outstanding stock options, 14,160 outstanding stock-settled stock appreciation rights, 94,746 restricted performance share units, 24,062 restricted retention share units and 171,422 deferred stock-equivalents units under the 2011 Plan (which was terminated in 2016). Includes 193,722 outstanding stock options and 72,523 deferred stock-equivalents units granted to directors under the Non-Qualified Deferred Compensation Plan for Non-Employee Directors under the 2007 Omnibus Incentive Compensation Plan (which was terminated in 2011). The average term of remaining options and stock-settled stock appreciation rights granted is 6.4 years. No future grants or awards may be made under the terminated plans. The total includes restricted performance share units at 100% of grant. The restricted performance share unit payouts were at 96.6%, 89.8%, and 110.6% in 2018, 2017 and 2016, respectively. The total does not include stock-equivalent units granted or credited to directors under the Non-Qualified Deferred Compensation Plan for Non-Employee Directors to be settled only in cash.

[2] Restricted performance share and deferred stock-equivalent units are excluded when determining the weighted-average exercise price of outstanding options.

[3] Represents 3,881,103 shares reserved under the Company's Employee Stock Purchase Plan and 3,710,483 shares remaining available for issuance under the 2016 Plan. The estimated number of shares that could be issued for 2018 from the Employee Stock Purchase Plan is 300,852. This number of shares is calculated by multiplying the 244 shares per offering period per participant limit by 1,233, the number of current participants in the plan.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Information called for by this Item is incorporated by reference from the discussion under the heading *Corporate Governance Documents - Related Person Transactions and Procedures* in our 2019 Proxy Statement. Information about director independence is incorporated by reference from the discussion under the heading *Corporate Governance Documents - Director Independence* in our 2019 Proxy Statement.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Information about the fees for professional services rendered by our independent auditors in 2018 and 2017 is incorporated by reference from the discussion under the heading *Independent Auditors and Fees - Fees Paid to*

PricewaterhouseCoopers LLP in our 2019 Proxy Statement. Our Audit Committee's policy on pre-approval of audit and permissible non-audit services of our independent auditors is incorporated by reference from the section captioned *Independent Auditors and Fees - Audit Committee Policy on Pre-Approval of Audit and Permissible Non-Audit Services* in our 2019 Proxy Statement.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) 1. Financial Statements

The following documents are included in Part II, Item 8:

Consolidated Statements of Income for the years ended December 31, 2018, 2017 and 2016
Consolidated Statements of Comprehensive Income for the years ended December 31, 2018, 2017 and 2016
Consolidated Balance Sheets at December 31, 2018 and 2017
Consolidated Statement of Equity for the years ended December 31, 2018, 2017 and 2016
Consolidated Statements of Cash Flows for the years ended December 31, 2018, 2017 and 2016
Notes to Consolidated Financial Statements
Report of Independent Registered Public Accounting Firm

(a) 2. Financial Statement Schedules

Schedule II - Valuation and Qualifying Accounts

($ in millions)	Balance at beginning of period	Charged to costs and expenses	Deductions (1)	Balance at end of period
For the year ended December 31, 2018				
Allowances deducted from assets:				
Deferred tax asset valuation allowance	$ 20.9	$ (3.0)	$ (1.9)	$ 16.0
Allowance for doubtful accounts	0.5	0.7	0.8	2.0
Total allowances deducted from assets	$ 21.4	$ (2.3)	$ (1.1)	$ 18.0
For the year ended December 31, 2017				
Allowances deducted from assets:				
Deferred tax asset valuation allowance	$ 18.7	$ 2.5	$ (0.3)	$ 20.9
Allowance for doubtful accounts	0.4	(0.2)	0.3	0.5
Total allowances deducted from assets	$ 19.1	$ 2.3	$ —	$ 21.4
For the year ended December 31, 2016				
Allowances deducted from assets:				
Deferred tax asset valuation allowance	$ 20.1	$ (1.3)	$ (0.1)	$ 18.7
Allowance for doubtful accounts	0.6	—	(0.2)	0.4
Total allowances deducted from assets	$ 20.7	$ (1.3)	$ (0.3)	$ 19.1

(1) Includes accounts receivable written off, the write-off or write-down of valuation allowances, and translation adjustments.

All other schedules are omitted because they are either not applicable, not required or because the information required is contained in the consolidated financial statements or notes thereto.

(a) 3. Exhibits - An index of the exhibits included in this Form 10-K is contained on pages F-1 through F-3 and is incorporated herein by reference.
(b) See subsection (a) 3. above.
(c) Financial Statements of affiliates are omitted because they do not meet the tests of a significant subsidiary at the 20% level.

ITEM 16. FORM 10-K SUMMARY

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, West Pharmaceutical Services, Inc. has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

WEST PHARMACEUTICAL SERVICES, INC.
(Registrant)

By: /s/ Bernard J. Birkett
Bernard J. Birkett
Senior Vice President, Chief Financial Officer and Treasurer

February 27, 2019

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of West Pharmaceutical Services, Inc. in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Eric M. Green Eric M. Green	Director, President and Chief Executive Officer (Principal Executive Officer)	February 27, 2019
/s/ Bernard J. Birkett Bernard J. Birkett	Senior Vice President, Chief Financial Officer and Treasurer (Principal Financial Officer)	February 27, 2019
/s/ Daniel Malone Daniel Malone	Vice President and Controller (Principal Accounting Officer)	February 27, 2019
/s/ Mark A. Buthman Mark A. Buthman	Director	February 19, 2019
/s/ William F. Feehery, Ph.D. William F. Feehery, Ph.D.	Director	February 19, 2019
/s/ Thomas W. Hofmann Thomas W. Hofmann	Director	February 19, 2019
/s/ Paula A. Johnson, M.D., MPH Paula A. Johnson, M.D., MPH	Director	February 19, 2019
/s/ Deborah L.V. Keller Deborah L.V. Keller	Director	February 19, 2019
/s/ Myla P. Lai-Goldman, M.D. Myla P. Lai-Goldman, M.D.	Director	February 19, 2019
/s/ Douglas A. Michels Douglas A. Michels	Director	February 19, 2019
/s/ Paolo Pucci Paolo Pucci	Director	February 19, 2019
/s/ John H. Weiland John H. Weiland	Director	February 19, 2019
/s/ Patrick J. Zenner Patrick J. Zenner	Director and Chairman of the Board	February 19, 2019

EXHIBIT INDEX

Exhibit Number	Description
3.1	Our Amended and Restated Articles of Incorporation are incorporated by reference from our Form 10-Q report for the quarter ended March 31, 2015.
3.2	Our Bylaws, as amended through May 5, 2015, are incorporated by reference from our Form 10-Q report for the quarter ended March 31, 2015.
4.1	Form of stock certificate for common stock is incorporated by reference from our 1998 Form 10-K.
4.2	Article 5, 6, 8(c) and 9 of our Amended and Restated Articles of Incorporation are incorporated by reference from our Form 10-Q report for the quarter ended March 31, 2015.
4.3	Article I and V of our Bylaws, as amended through May 5, 2015, are incorporated by reference from our Form 10-Q report for the quarter ended March 31, 2015.
4.4 (1)	Instruments defining the rights of holders of long-term debt securities of West and its subsidiaries have been omitted.
10.1	Credit Agreement, dated as of October 15, 2015, between West, certain of its subsidiaries, the lenders party thereto from time to time, PNC Bank, National Association, as Administrative Agent and PNC Capital Markets, LLC, as Sole Lead Arranger and Sole Bookrunner, is incorporated by reference from our Form 8-K dated October 15, 2015.
10.2	Note Purchase Agreement, dated July 5, 2012, among the Company and the Purchasers named therein is incorporated by reference from our Form 8-K filed on July 10, 2012.
10.3 (2)	2015 Long-Term Incentive Plan Award, dated as of June 30, 2015, between us and Patrick Zenner, is incorporated by reference from our Form 10-Q report for the quarter ended June 30, 2015.
10.4 (2)	Employment Agreement, dated as of April 13, 2015, between us and Eric M. Green, is incorporated by reference from our Form 8-K dated April 15, 2015.
10.5 (2)	Indemnification Agreement, dated as of April 24, 2015, between us and Eric M. Green, is incorporated by reference from our Form 8-K dated April 30, 2015.
10.6 (2)	Sign-On Retention Award Notice, dated as of April 24, 2015, from us to Eric M. Green, is incorporated by reference from our Form 8-K dated April 30, 2015.
10.7 (2)	Employment Agreement, dated May 29, 2018, between us and Bernard J. Birkett, is incorporated by reference from our Form 8-K dated June 21, 2018.
10.8 (2)	Employment Agreement, dated August 28, 2016, between David Montecalvo and us, incorporated by reference from our Form 10-Q report for the quarter ended September 30, 2016.
10.9 (2)	Supplemental Employees' Retirement Plan, as amended and restated effective January 1, 2008, is incorporated by reference from our 2008 Form 10-K report.
10.10 (2)	Non-Qualified Deferred Compensation Plan for Designated Employees, as amended and restated effective December 1, 2018.
10.11 (2)	Deferred Compensation Plan for Outside Directors, as amended and restated effective June 30, 2013, is incorporated by reference from our 2013 Form 10-K report.
10.12 (2)	West Pharmaceutical Services, Inc. 2011 Omnibus Incentive Compensation Plan is incorporated by reference from our Form 8-K filed on May 6, 2011.
10.13 (2)	2007 Omnibus Incentive Compensation Plan effective as of May 1, 2007, is incorporated by reference to Exhibit 99.1 of the Company's Form 8-K dated May 4, 2007.
10.14 (2)	Form of Executive 2006 Non-Qualified Stock Option Award is incorporated by reference from our Form 10-Q report for the quarter ended March 31, 2006.
10.15 (2)	Form of Director 2006 Non-Qualified Stock Option Award Notice is incorporated by reference from our Form 10-Q report for the quarter ended June 30, 2006.
10.16 (2)	Form of Director 2006 Stock Unit Award Notice is incorporated by reference from our Form 10-Q report for the quarter ended June 30, 2006.
10.17 (2)	Form of 2007 Non-Qualified Stock Option and Performance-Vesting Share Unit Award, issued pursuant to the 2004 Stock-Based Compensation Plan, is incorporated by reference from our Form 10-Q report for the quarter ended March 31, 2007.

Exhibit Number	Description
10.18 [2]	Form of Director 2007 Deferred Stock Award, issued pursuant to the 2007 Omnibus Incentive Compensation Plan, is incorporated by reference from our Form 10-Q report for the quarter ended June 30, 2007.
10.19 [2]	Form of 2008 Non-Qualified Stock Option and Performance-Vesting Share Unit Award, issued pursuant to the 2007 Omnibus Incentive Compensation Plan, is incorporated by reference from our Form 10-Q report for the quarter ended March 31, 2008.
10.20 [2]	Form of Director 2008 Deferred Stock Award, issued pursuant to the 2007 Omnibus Incentive Compensation Plan, is incorporated by reference from our 2008 Form 10-K report.
10.21 [2]	Form of 2009 Supplemental Long-Term Incentive Award, is incorporated by reference from our Form 10-Q report for the quarter ended September 30, 2009.
10.22 [2]	Form of 2014 Long-Term Incentive Plan Award is incorporated by reference from our Form 10-Q report for the quarter ended March 31, 2014.
10.23 [2]	Form of 2014 Stock-Settled Restricted Stock Unit Award is incorporated by reference from our Form 10-Q report for the quarter ended June 30, 2014.
10.24	Indemnification agreements between us and each of our directors in the form of Exhibit 10.1 to our Form 8-K report dated January 6, 2009, which is incorporated by reference.
10.25 [2]	Form of Change-in-Control Agreement between us and certain of our executive officers, is incorporated by reference from our Form 10-Q report for the quarter ended September 30, 2017.
10.26 [3]	Agreement, effective as of January 1, 2005, between us and The Goodyear Tire & Rubber Company is incorporated by reference from our Form 10-Q report for the quarter ended June 30, 2005.
10.27 [3]	First Agreement to Amend to Agreement, effective as of July 1, 2008, between us and The Goodyear Tire & Rubber Company is incorporated by reference from our Form 10-Q report for the quarter ended March 31, 2009.
10.28 [3]	Distributorship Agreement, dated and effective January 18, 2017, between Daikyo Seiko, Ltd. and us is incorporate by reference from our 2016 Form 10-K report.
10.29 [3]	Amended and Restated Technology Exchange and Cross License Agreement, dated and effective January 18, 2017, between Daikyo Seiko, Ltd. and us, incorporated by reference from our 2016 Form 10-K report.
10.30 [3]	Amended Agreement, dated and effective July 2, 2018, between Daikyo Seiko, Ltd. and us, is incorporated by reference from Form 10-Q report for the quarter ended June 30, 2018.
10.31 [3]	Global Supply Agreement by and between ExxonMobil Chemical Company and us, entered into on August 11, 2014, and effective January 1, 2014 through December 31, 2018 is incorporated by reference from our Form 8-K report filed on August 15, 2014.
10.32 [3]	Amendment by and between ExxonMobil Chemical Company and us, incorporated by reference from our Form 10-Q report for the quarter ended June 30, 2016.
10.33 [3]	Agreement, dated August 16, 2016, to amend Agreement by and between the Goodyear Tire & Rubber Company and us, incorporated by reference from our Form 10-Q report for the quarter ended September 30, 2016.
21.	Subsidiaries of the Company.
23.	Consent of Independent Registered Public Accounting Firm.
31.1	Certification by the Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification by the Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certification by the Chief Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2*	Certification by the Chief Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document

Exhibit Number	Description
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document

(1) We agree to furnish to the SEC, upon request, a copy of each instrument with respect to issuances of long-term debt of the Company and its subsidiaries.

(2) Management compensatory plan.

(3) Certain portions of this exhibit have been omitted and filed separately with the SEC pursuant to a confidential treatment order of the SEC.

* Furnished, not filed.

Written Affirmation
On May 22, 2018, Eric M. Green, West's President & Chief Executive Officer, submitted to the NYSE the Written Affirmation required by the rules of the NYSE certifying that he was not aware of any violations by the Company of NYSE Corporate Governance listing standards.

Section 302 and 906 Certifications
The certifications of Mr. Green and Bernard J. Birkett, West's Chief Financial Officer, made pursuant to Section 302 and Section 906 of the Sarbanes-Oxley Act of 2002 regarding the quality of the Company's public disclosures, have been filed as exhibits to West's 2018 Form 10-K.

Dividends
West Pharmaceutical Services has paid 193 consecutive quarterly common stock cash dividends since becoming a public company in 1970. Dividends usually are declared by the Board during the last month of each calendar quarter and, if approved, typically are paid on the first Wednesday of February, May, August and November to shareholders of record two weeks prior to the payment date.

Publications
To receive copies of press releases or quarterly and annual reports filed with the United States Securities and Exchange Commission, write to Investor Relations at global headquarters, call 888-594-3222, or send a message through West's website, westpharma.com.

Dividend Reinvestment Plan
The West Pharmaceutical Services Dividend Reinvestment Plan for all registered shareholders is a convenient and economical way for shareholders to increase their investment in West through the purchase of additional shares with dividends and voluntary cash payments. All brokerage commissions and costs of administering the plan are paid by West. For details of the plan and an enrollment form, please contact the Dividend Reinvestment Department of Broadridge Corporate Issuer Solutions (see Transfer Agent and Registrar).

Investor Online
http://investor.westpharma.com

Trademarks
Daikyo Crystal Zenith® is a registered trademark of Daikyo Seiko, Ltd. Crystal Zenith technology is licensed from Daikyo Seiko, Ltd.

West without Borders is not affiliated with Doctors Without Borders®, which is a registered service mark of Bureau International de Medecins San Frontieres.

West

INVESTOR INFORMATION

Stock Listing
NYSE symbol: WST

Shareholders of Record
As of December 31, 2018: 810

Average Daily Trading Volume 2018
First Quarter: 407,454 shares
Second Quarter: 375,459 shares
Third Quarter: 354,748 shares
Fourth Quarter: 358,727 shares

Global Headquarters
West Pharmaceutical Services, Inc.
530 Herman O. West Drive
Exton, PA 19341 | USA
610-594-2900
www.westpharma.com

Annual Meeting
Tuesday, May 7, 2019, 9:30 a.m. Exton, PA

Code of Business Conduct
Available at http://investor.westpharma.com

Investor Relations Contact
Quintin J. Lai, Ph.D.
Vice President, Corporate Development, Strategy & Investor Relations
610-594-3318
Quintin.Lai@westpharma.com

Transfer Agent and Registrar
Broadridge Financial Solutions, Inc.
51 Mercedes Way
Edgewood, NY 11717
877-830-4936
shareholder@broadridge.com

West Pharmaceutical Services, Inc.
530 Herman O. West Drive
Exton, PA 19341 | USA
610.594.2900
www.westpharma.com

11009 • 0319

West®
By your side
for a healthier world™