Zoetis Inc.
Form 10-K
February 14, 2019
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-K
(Mark One)
x 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
o 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: 001-35797
Zoetis Inc.
(Exact name of registrant as specified in its charter)

Delaware	46-0696167
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
10 Sylvan Way, Parsippany, New Jersey	07054
(Address of principal executive offices)	(Zip Code)

(973) 822-7000
(Registrant's telephone number, including area code)
Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Name of each exchange on which registered
Common Stock, $0.01 par value 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 Securities Act. Yes x 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 x
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 x No ¨
Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes x No ¨
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of the 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. (Check one):

Large accelerated filer x	Accelerated filer ¨	Non-accelerated filer ¨	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 x

The aggregate market value of the voting stock held by nonaffiliates of the registrant as of June 30, 2018, the last business day of the registrant's most recently completed second fiscal quarter, was $41,086 million. The registrant has no non-voting common stock.

The number of shares outstanding of the registrant's common stock as of February 8, 2019 was 478,771,915 shares.

DOCUMENTS INCORPORATED BY REFERENCE:

Portions of the registrant’s Proxy Statement for the 2019 Annual Meeting of Shareholders (hereinafter referred to as the “2019 Proxy Statement”) are incorporated into Part III of this Form 10-K.

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PART I

Item 1. Business.

Overview

Zoetis Inc. is a global leader in the discovery, development, manufacture and commercialization of animal health medicines, vaccines, and diagnostic products with a focus on both livestock and companion animals. We have a diversified business, commercializing products across eight core species: cattle, swine, poultry, fish and sheep (collectively, livestock) and dogs, cats and horses (collectively, companion animals); and within six major product categories: vaccines, anti-infectives, parasiticides, medicated feed additives, animal health diagnostics and other pharmaceutical products. For more than 65 years, we have been committed to enhancing the health of animals and bringing solutions to our customers who raise and care for them.

We were incorporated in Delaware in July 2012 and prior to that the company was a business unit of Pfizer Inc. (Pfizer). The address of our principal executive offices is 10 Sylvan Way, Parsippany, New Jersey 07054. Unless the context requires otherwise, references to “Zoetis,” “the company,” “we,” “us” or “our” in this Annual Report on Form 10-K for the fiscal year ended December 31, 2018 (2018 Annual Report) refer to Zoetis Inc., a Delaware corporation, and its subsidiaries. In addition, unless the context requires otherwise, references to “Pfizer” in this 2018 Annual Report refer to Pfizer Inc., a Delaware corporation, and its subsidiaries.

Operating Segments

The animal health medicines, vaccines and diagnostics market is characterized by meaningful differences in customer needs across different regions. This is due to a variety of factors, including:

- economic differences, such as standards of living in developed markets as compared to emerging markets;
- cultural differences, such as dietary preferences for different animal proteins, pet ownership preferences and pet care standards;
- epidemiological differences, such as the prevalence of certain bacterial and viral strains and disease dynamics;
- treatment differences, such as utilization of different types of medicines and vaccines, as well as the pace of adoption of new technologies;
- environmental differences, such as seasonality, climate and the availability of arable land and fresh water; and
- regulatory differences, such as standards for product approval and manufacturing.

As a result of these differences, among other things, we organize and operate our business in two segments:

- United States with revenue of $2,877 million, or 49% of total revenue for the year ended December 31, 2018; and
- International with revenue of $2,890 million, or 50% of total revenue for the year ended December 31, 2018.

Within each of these operating segments, we offer a diversified product portfolio for both livestock and companion animal customers so that we can capitalize on local trends and customer needs.

In addition, our Client Supply Services (CSS) organization which provides contract manufacturing services to third parties, and our human health diagnostics products, together represented approximately 1% of our total revenue for the year ended December 31, 2018.

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Our 2018 revenue for the United States and key international markets, together with the percentage of revenue attributable to livestock and companion animal products in those markets, is as follows:

(MILLIONS OF DOLLARS)	Revenue	Livestock	Companion Animal
United States	$2,877	44%	56%
Australia	$189	62%	38%
Brazil	$295	77%	23%
Canada	$203	58%	42%
China	$211	60%	40%
France	$130	58%	42%
Germany	$147	48%	52%
Italy	$104	47%	53%
Japan	$149	43%	57%
Mexico	$100	82%	18%
Spain	$110	70%	30%
United Kingdom	$181	42%	58%
Other Developed	$361	64%	36%
Other Emerging	$710	80%	20%

For additional information regarding our performance in each of these operating segments and the impact of foreign exchange rates, see Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations and Item 8. Financial Statements and Supplementary Data:
Notes to Consolidated Financial Statements—Note 4. Revenue and Note 18. Segment Information. Our 2018 reported revenue for each segment, by species, is as follows:

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Products

Over the course of our history, we have focused on developing a diverse portfolio of animal health products, including medicines, vaccines and diagnostics, complemented by biodevices, genetic tests and a range of services. We refer to a single product in all brands, or its dosage forms for all species, as a product line. We have approximately 300 comprehensive product lines, including products for both livestock and companion animals across each of our major product categories.

Our livestock products primarily help prevent or treat diseases and conditions to enable the cost-effective production of safe, high-quality animal protein. Human population growth and increasing standards of living are important long-term growth drivers for our livestock products in three major ways. First, population growth and increasing standards of living drive increased demand for improved nutrition, particularly animal protein. Second, population growth leads to increased natural resource constraints driving a need for enhanced productivity. Finally, as standards of living improve, there is increased focus on food quality and safety. Livestock products represented approximately 54% of our revenue for the year ended December 31, 2018.

Our companion animal products help extend and improve the quality of life for pets; increase convenience and compliance for pet owners; and help veterinarians improve the quality of their care and the efficiency of their businesses. Growth in the companion animal medicines, vaccines and diagnostics sector is driven by economic development, related increases in disposable income and increases in pet ownership and spending on pet care. Companion animals are also living longer, receiving increased medical treatment and benefiting from advances in animal health medicines, vaccines and diagnostics. Companion animal products represented approximately 45% of our revenue for the year ended December 31, 2018.

In addition, our CSS organization, which provides contract manufacturing services to third parties, and our human health diagnostics products, together represented approximately 1% of our total revenue for the year ended December 31, 2018.

In the third quarter of 2018, the company modified the list of major product categories to include a category for animal health diagnostics, which was previously included within other non-pharmaceutical products. The prior period presentation has been revised to reflect the new product categories.

Our major product categories are:

- vaccines: biological preparations that help prevent diseases of the respiratory, gastrointestinal and reproductive tracts or induce a specific immune response;
- other pharmaceutical products: allergy and dermatology, pain and sedation, antiemetic, reproductive, and oncology products;
- anti-infectives: products that prevent, kill or slow the growth of bacteria, fungi or protozoa;
- parasiticides: products that prevent or eliminate external and internal parasites such as fleas, ticks and worms;
- medicated feed additives: products added to animal feed that provide medicines to livestock; and
- animal health diagnostics: portable blood and urine analysis systems and point-of-care diagnostic products, including instruments and reagents, rapid immunoassay tests, reference laboratory kits and blood glucose monitors.

Our remaining revenue is derived from other non-pharmaceutical product categories, such as nutritionals and agribusiness, as well as products and services in complementary areas, including biodevices and genetic tests.

As part of our growth strategy, through our research and development (R&D) group, we focus on the discovery and development of new chemical and biological entities, as well as product lifecycle innovation. Historically, a substantial portion of our products and revenue has been the result of product lifecycle innovation where we actively work to broaden the value of existing products by developing claims in additional species, more convenient formulations and combinations, and by expanding usage into more countries. For example, the first product in our ceftiofur line was an anti-infective approved for treating bovine respiratory disease (BRD) in cattle that was administered via intramuscular injection. Through follow-on studies and reformulations, we have expanded the product line into additional cattle claims and administration routes, as well as other species and regions. The ceftiofur product line currently includes the brands Excede®, Excenel®, Naxcel® and Spectramast®.

The following are examples of our first-in-class and/or best-in-class products that we have launched in recent years and products that we believe may represent platforms for future product lifecycle innovation (listed alphabetically):

- Apoquel®, the first Janus kinase inhibitor for use in veterinary medicine, was approved for the control of pruritus associated with allergic dermatitis and the control of atopic dermatitis in dogs at least 12 months of age. Since January 2014, we launched Apoquel in key markets including the United States, Europe, Japan, Brazil, and Australia;
- Core EQ Innovator™, the first and only vaccine for horses to contain all five core equine disease antigens - West Nile, Eastern and Western Equine encephalomyelitis, tetanus and rabies - in one combination, was approved in the United States in 2018;
- Cytopoint®, the first canine monoclonal antibody to help reduce the clinical signs of atopic dermatitis (such as itching) in dogs of any age, was licensed in the United States in 2016 (and was later granted an expanded indication to treat allergic dermatitis in 2018). Since 2016, the product has been approved in major markets including Canada, the European Union, New Zealand, Australia, Brazil and Mexico. An injection given once every four to eight weeks, Cytopoint neutralizes interleukin - 31, a protein that has been demonstrated to trigger itching in dogs;
- Fostera® PCV MH was introduced in November 2013 in the United States and approved in the European Union in 2015 and Australia in 2017. It was developed to help protect pigs from porcine circovirus-associated disease (PCVAD) and enzootic pneumonia caused by M. hyopneumoniae (M. hyo). The one-bottle formulation of Fostera PCV MH allows the convenience of a one-dose program or the flexibility of a two-dose program. The Fostera franchise also includes Fostera/Suvaxyn® PRRS, which was approved in the United States in 2015 and in Taiwan, Vietnam and European Union countries in 2017. This vaccine offers protection against both the respiratory and reproductive forms of disease caused by porcine reproductive and respiratory syndrome (PRRS) virus. In 2018, Fostera Gold PCV MH was approved in the United States and Canada. This is the only vaccine to contain two PCV2 genotypes and long-lasting M. hyo coverage;

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- Simparica® (sarolaner) Chewables, a monthly chewable tablet for dogs to control fleas and ticks, was approved in the European Union and New Zealand in 2015, the United States, Canada, Australia, and Brazil (Simparic) in 2016, and Japan along with multiple additional European, Latin American and Asia Pacific markets in 2017. Building on this franchise, in 2017, Zoetis received European Commission approval for Stronghold® Plus (selamectin/sarolaner), a topical combination product that treats ticks, fleas, ear mites, lice and gastrointestinal worms and prevents heartworm disease in cats. In 2018, this product was approved in the United States, Japan and Canada (Revolution® Plus);
- Vanguard® is a market leading vaccine line for dogs intended to help prevent a range of diseases. Since 2016, Zoetis has added new and innovative enhancements to its Vanguard line with Vanguard crLyme, Vanguard Rapid Resp Intranasal, Vanguard B Oral, and Vanguard CIV H3N2/H3N8.

We pursue the development of new vaccines for emerging infectious diseases, with an operating philosophy of “first to know and fast to market.” Examples of the successful execution of this strategy include the first equine vaccine for West Nile virus in the United States and European Union; the first swine vaccine for pandemic H1N1 influenza virus in the United States; the first fully licensed vaccine to help reduce disease caused by the Georgia 08 variant of infectious bronchitis virus (IBV) in poultry; a conditionally licensed vaccine to help fight porcine epidemic diarrhea virus (PEDv) in the United States; and the first conditionally licensed vaccine to help prevent the H3N2 type of canine influenza that emerged in the United States. Additionally, the Pharmaq business of Zoetis is the global leader in vaccines and innovation for health products in aquaculture. In 2018, Pharmaq added to its leading Alpha Ject® vaccine line with approval of Alpha Ject Micro 1 Noda vaccine in Spain, Italy, Croatia and Greece. This vaccine helps protect against Viral Nervous Necrosis, the most important viral disease threatening sea bass in the Mediterranean. Also in 2018, the Alpha Ject Panga 2 vaccine was approved in Vietnam. This vaccine helps protect against two types of bacteria (Edwardsiella ictaluri and Aeromonas hydrophila) that cause significant losses in the Vietnamese pangasius industry.

Zoetis enhanced the portfolio of its diagnostic products with the acquisition in 2018 of Abaxis, a leading provider of veterinary point-of-care diagnostic instruments. With this acquisition came the VetScan® portfolio of benchtop and handheld diagnostic instruments and consumables, which serves a large customer base of veterinary practices in North America and is poised for expansion in international markets. Our diagnostic portfolio also includes the Witness®, Serelisa® and ProFlok® lines of immunodiagnostic kits, which provide disease detection capabilities for various species, including dogs, cats, cattle, pigs and poultry.

In 2018, our top two selling products, Apoquel® and Draxxin®, contributed approximately 8%, and 6%, respectively, of our revenue, and combined with our next two top selling products, the ceftiofur line and Revolution® / Stronghold®, these four contributed approximately 25% of our revenue. Our top ten product lines contributed 40% of our revenue.

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Our product lines and products that represented approximately 1% or more of our revenue in 2018, which comprise 59% of our total revenue, are as follows (listed alphabetically):

Livestock products

Product line / product	Description	Primary species
Anti-infectives		
Ceftiofur injectable line	Broad-spectrum cephalosporin antibiotic active against gram-positive and gram-negative bacteria, including ß-lactamase-producing strains, with some formulations producing a single course of therapy in one injection	Cattle, sheep, swine
Draxxin®	Single-dose low-volume antibiotic for the treatment and prevention of bovine and swine respiratory disease, infectious bovine keratoconjunctivitis and bovine foot rot	Cattle, sheep, swine
Spectramast®	Treatment of subclinical or clinical mastitis in dry or lactating dairy cattle, delivered via intramammary infusion; same active ingredient as the ceftiofur line	Cattle
Terramycin® line	Antibiotic for the treatment of susceptible infections	Cattle, poultry, sheep, swine
Vaccines		
Improvac / Improvest / Vivax	Reduces boar taint, as an alternative to surgical castration	Swine
Rispoval® line	Aids in preventing three key viruses involved in cattle pneumonia-BRSV, PI 3 virus and BVD-viruses as well as other respiratory diseases, depending on formulation	Cattle
Suvaxyn® / Fostera®	Aids in preventing or controlling diseases associated with major pig pathogens such as porcine circovirus type 2 (PCV2), porcine reproductive and respiratory syndrome virus (PRRSv) and Mycoplasma hyopneumoniae (M. hyo), depending on formulations	Swine
Parasiticides		
Dectomax®	Injectable or pour-on endectocide, characterized by extended duration of activity, for the treatment and control of internal and external parasite infections	Cattle, swine
Medicated Feed Additives		
Aureomycin®	Provides livestock producers control, treatment and convenience against a wide range of respiratory, enteric and reproductive diseases	Cattle, poultry, sheep, swine
BMD®	Aids in preventing and controlling enteritis; and increases rate of weight gain and improves feed efficiency in poultry and swine	Poultry, swine
Lasalocid line	Controls coccidiosis in poultry (Avatec®) and cattle (Bovatec®) and for increased rate of weight gain and improved feed efficiency in cattle	Poultry, cattle
Lincomycin line	Controls necrotic enteritis; treatment of dysentery (bloody scours), control of ileitis and treatment/reduction in severity of mycoplasmal pneumonia	Swine, poultry
Other		
Embrex® devices		Poultry

	Devices for enhancing hatchery operations' efficiency through in ovo detection and vaccination	
Lutalyse®	For estrus control or in the induction of parturition or abortion	Cattle, swine

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Companion animal products

Product line / product	Description	Primary species
Anti-infectives		
Clavamox® / Synulox®	A broad-spectrum antibiotic and the first and only potentiated penicillin approved for use in dogs and cats	Cats, dogs
Convenia®	Anti-infective for the treatment of common bacterial skin infections that provides a course of treatment in a single injection	Cats, dogs
Vaccines		
Vanguard® L4 (4-way Lepto)	Compatible with the Vanguard line and helps protect against leptospirosis caused by Leptospira canicola, L. grippotyphosa, L. icterohaemorrhagiae and L. pomona	Dogs
Vanguard® line	Aids in preventing canine distemper caused by canine distemper virus; infectious canine hepatitis caused by canine adenovirus type 1; respiratory disease caused by canine adenovirus type 2; canine parainfluenza caused by canine parainfluenza virus; canine parvoviral enteritis caused by canine parvovirus; Lyme disease and subclinical arthritis associated with Borrelia burgdorferi, the causative agent of Lyme disease; and Rapid Resp - a group of three vaccines combating infections in dogs caused by Bordetella bronchiseptica, canine parainfluenza and canine adenovirus; canine influenza vaccines; and an oral vaccine for Bordatella bronchiseptica	Dogs
Parasiticides		
ProHeart®	Prevents heartworm infestation; also for treatment of existing larval and adult hookworm infections	Dogs
Revolution® / Stronghold® line	An antiparasitic for protection against fleas, heartworm disease and ear mites in cats and dogs; sarcoptic mites and American dog tick in dogs and roundworms and hookworms for cats	Cats, dogs
Simparica®	A monthly chewable tablet for dogs to control fleas and ticks	Dogs
Other		
Apoquel®	A selective inhibitor of the Janus Kinase 1 enzyme that controls pruritus associated with allergic dermatitis and control of atopic dermatitis in dogs at least 12 months of age	Dogs
Cerenia®	A medication that prevents and treats acute vomiting in dogs, treats acute vomiting in cats and prevents vomiting due to motion sickness in dogs	Cats, dogs
Cytopoint®	An injectable to help reduce the clinical signs such as itching of atopic dermatitis in dogs of any age	Dogs
Rimadyl®	For the relief of pain and inflammation associated with osteoarthritis and for the control of postoperative pain associated with soft tissue and orthopedic surgeries	Dogs

International Operations

We directly market our products in approximately 45 countries across North America, Europe, Africa, Asia, Australia and South America, and our products are sold in more than 100 countries. Operations outside the United States accounted for 50% of our total revenue for the year ended December 31, 2018. Through our efforts to establish an early and direct presence in many emerging markets, such as Brazil, China and Mexico, emerging markets contributed 23% of our revenue for the year ended December 31, 2018.

Our international businesses are subject, in varying degrees, to a number of risks inherent in carrying on business in other countries. These include, among other things, currency fluctuations, capital and exchange control regulations, expropriation and other restrictive government actions. See Item 1A. Risk Factors— Risks related to operating in foreign jurisdictions.

Sales and Marketing

Our sales organization includes sales representatives and technical and veterinary operations specialists. In markets where we do not have a direct commercial presence, we generally contract with distributors that provide logistics and sales and marketing support for our products.

Our sales representatives visit our customers, including veterinarians and livestock producers, to provide information and to promote and sell our products and services. Our technical and veterinary operations specialists, who generally have advanced veterinary medicine degrees, provide scientific consulting focused on disease management and herd management, training and education on diverse topics, including responsible product use. These direct relationships with customers allow us to understand the needs of our customers. Additionally, our sales representatives and technical and veterinary operations specialists partner with customers to provide training and support in areas of disease awareness and treatment protocols, including through the use of our products. As a result of these relationships, our sales and consulting visits are typically longer, more meaningful and provide us with better access to customer decision makers as compared to human health. As of December 31, 2018, our sales organization consisted of approximately 3,100 employees.

Our livestock and companion animal products are primarily available by prescription through a veterinarian. On a more limited basis, in certain markets, we sell certain products through local agricultural and farming retail outlets, pharmacies and pet stores. We also market our products by advertising to veterinarians, livestock producers and pet owners.

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Customers

We sell our livestock products directly to a diverse set of livestock producers, including beef and dairy farmers as well as pork and poultry operations, and to veterinarians, third-party veterinary distributors and retail outlets that then typically sell the products to livestock producers. We primarily sell our companion animal products to veterinarians or to third-party veterinary distributors that typically then sell our products to veterinarians, and in each case veterinarians then typically sell our products to pet owners. Our two largest customers, both distributors, represented approximately 13% and 7%, respectively, of our revenue for the year ended December 31, 2018, and no other customer represented more than 6% of our revenue for the same period.

Research and Development

Our research and development (R&D) operations are comprised of a dedicated veterinary medicine R&D organization, research alliances and other operations focused on the development, registration and regulatory maintenance of our products. In addition, we have R&D operations focused on diagnostics, data, digital and other technological innovation. We incurred R&D expense of $432 million in 2018, $382 million in 2017 and $376 million in 2016.

Our R&D efforts are comprised of more than 300 programs and reflect our commitment to develop better solutions. We create new insights for preventing and treating disease, and maximizing healthy performance, that result in the development of new platforms of knowledge which become the basis for continuous innovation. Leveraging internal discoveries, complemented by diverse external research collaborations, results in the delivery of novel vaccine, pharmaceutical and biopharmaceutical products to help our customers face their toughest challenges. While the development of new chemical and biological entities through new product R&D plays a critical role in our growth strategies, a significant share of our R&D investment (including regulatory functions) is focused on product lifecycle innovation. A commitment to continuous innovation, based on customer need, ensures we actively work to broaden the value of existing products by developing claims in additional species, more convenient formulations and combinations, and by expanding usage into more countries. We also create opportunities to optimize solutions through our extensive capabilities in biodevice diagnostics and genetics research, ensuring we can help our customers predict, prevent, detect and treat a variety of conditions.

We prioritize our R&D spending on an annual basis with the goal of aligning our research and business objectives, and do not disaggregate our R&D operations by research stage or by therapeutic area for purposes of managing our business. We make our strategic investments in R&D based on four criteria: strategic fit and importance to our current portfolio; technical feasibility of development and manufacture; return on investment; and the needs of customers and the market. A centralized portfolio management function links development plans with financial systems to build a comprehensive view of the status of project progression and spend. This view facilitates our ability to set targets for project timing and goals for investment efficiency. The allocation of our R&D investment between product lifecycle innovation and new product development, in addition to our ability to leverage the discoveries of our existing R&D and other industries, supports a cost-effective, efficient, sustainable and relatively predictable R&D process.

We regularly enter into agreements with external parties that enable us to collaborate on research programs or gain access to substrates and technologies. Some of our external partnerships involve funding from a non-governmental organization or a government grant. We are generally responsible for providing technical direction and supplemental expertise for, as well as investment in, such external partnerships. Depending on the nature of the agreement, we may act as the commercialization partner for discoveries that originate during the period of collaborative research, or we may own or have exclusive rights to any intellectual property that enables the development of proprietary products or models.

As of December 31, 2018, we employed approximately 1,100 employees in our global R&D operations. Our R&D headquarters is located in Kalamazoo, Michigan. We have R&D operations co-located with manufacturing sites in Weibern, Austria; Louvain-la-Neuve, Belgium; Campinas, Brazil; Suzhou, China; Farum, Denmark; Olot, Spain; Union City, California; Kalamazoo, Michigan; Durham, North Carolina; and Lincoln, Nebraska, United States. We co-locate R&D operations with manufacturing sites to facilitate the efficient transfer of production processes from our laboratories to manufacturing. In addition, we maintain R&D operations in Sydney, Australia; Zaventem, Belgium; São Paulo, Brazil; Beijing, China; and Navi Mumbai, India. We also maintain R&D operations in Suzhou, China;

Thanh Binh, Vietnam; Hong Ngu, Vietnam; and Oslo, Norway, related to our acquisition of Pharmaq. Each site is designed to meet the regulatory requirements for working with chemical or infectious disease agents, as appropriate.

Manufacturing and Supply Chain

Our products are manufactured at both sites operated by us and sites operated by third-party contract manufacturing organizations, which we refer to as CMOs. We have a global manufacturing network of 25 sites.

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Our global manufacturing network is comprised of the following sites:

Site	Location	Site	Location
Campinas	Brazil	Medolla	Italy
Catania	Italy	Melbourne	Australia
Charles City	Iowa, U.S.	Olot	Spain
Chicago Heights	Illinois, U.S.	Overhalla	Norway
Durham	North Carolina, U.S.	Salisbury	Maryland, U.S.
Eagle Grove	Iowa, U.S.	San Diego	California, U.S.
Farum	Denmark	Suzhou	China
Jilin	China	Tallaght[(a)]	Ireland
Kalamazoo	Michigan, U.S.	Union City[(b)]	California, U.S.
Klofta	Norway	Wellington	New Zealand
Lincoln	Nebraska, U.S.	White Hall	Illinois, U.S.
London	Ontario, Canada	Willow Island	West Virginia, U.S.
Louvain-la-Neuve	Belgium		

(a) In June 2018, Zoetis acquired a manufacturing facility in Tallaght, Ireland where our teat sealant products are manufactured.

(b) In July 2018, Zoetis completed the acquisition of Abaxis, a leading global provider of veterinary point-of-care diagnostic instruments.

We own the majority of these sites, with the exception of our facilities in Durham (U.S.), Klofta (Norway), London (Canada), Medolla (Italy), Melbourne (Australia), San Diego, California (U.S.) and Union City, California (U.S.), which are leased sites.

Our global manufacturing and supply chain is supported by a network of CMOs. As of December 31, 2018, this network was comprised of approximately 172 CMOs, including those centrally managed as well as local CMOs. We select CMOs based on several factors: (i) their ability to reliably supply products or materials that meet our quality standards at an optimized cost; (ii) their access to niche products and technologies; (iii) capacity; and (iv) financial efficiency analyses. Our regional and global manufacturing teams seek to ensure that all of the CMOs we use adhere to our standards of manufacturing quality.

In addition to our global manufacturing network and our CMOs, Pfizer continues to manufacture products for us at three Pfizer sites pursuant to a master manufacturing and supply agreement.

We purchase certain raw materials necessary for the commercial production of our products from a variety of third-party suppliers. We utilize logistics service providers as a part of our global supply chain, primarily for shipping and logistics support.

We also have a leased site in Tullamore (Ireland) that we acquired in 2017 where we plan to begin commercial production in the near term. In addition, we are currently investing in a manufacturing facility in Rathdrum (Ireland) that we acquired in 2017, and in building a second manufacturing site in Suzhou (China). Both of these sites are owned by us, but are not yet ready for commercial production.

We intend to continue our efficiency improvement programs in our manufacturing and supply chain organization, including Six Sigma and Lean capabilities, which are processes intended to improve manufacturing efficiency. We have strong globally managed and coordinated quality control and quality assurance programs in place at our global manufacturing network sites, and we regularly inspect and audit our global manufacturing network and CMO sites. As a result of a review of our global manufacturing and supply network, we have exited eight manufacturing sites since 2015.

Competition

Although our business is the largest based on revenue in the animal health medicines, vaccines and diagnostics industry, we face competition in the regions in which we compete. Principal drivers of competition vary depending on the particular region, species, product category and individual product, and include new product development, quality, price, service and promotion to veterinary professionals, pet owners and livestock producers.

Our primary competitors include animal health medicines, vaccines and diagnostic companies such as Boehringer Ingelheim Animal Health Inc., the animal health division of Boehringer Ingelheim GmbH; Merck Animal Health, the animal health division of Merck & Co., Inc.; Elanco Animal Health, an independent animal health company as of September 2018, formerly the animal health division of Eli Lilly and Company; Bayer Animal Health, the animal health division of Bayer AG, and IDEXX Laboratories. There are also several new start-up companies working in the animal health area. In addition, we compete with hundreds of other producers of animal health products throughout the world.

The level of competition from generic products varies from market to market. For example, the level of generic competition is higher in Europe and certain emerging markets than in the United States. Unlike in the human health market, there is no large, well-capitalized company focused on generic animal health products that exists as a global competitor in the industry. The reasons for this include the relatively smaller average market size of each product opportunity, the importance of direct distribution and education to veterinarians and livestock producers and the primarily self-pay nature of the business. In addition, companion animal health products are often directly prescribed and dispensed by veterinarians.

The importance of quality and safety concerns to pet owners, veterinarians and livestock producers also contributes to animal health brand loyalty. As a result, we believe that significant brand loyalty to products often continues after the loss of patent-based and regulatory exclusivity.

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Intellectual Property

Our technology, brands and other intellectual property are important elements of our business. We rely on patent, trademark, copyright and trade secret laws, as well as regulatory exclusivity periods and non-disclosure agreements to protect our intellectual property rights. Our policy is to vigorously protect, enforce and defend our rights to our intellectual property, as appropriate.

Our product portfolio enjoys the protection of approximately 5,500 granted patents and 1,650 pending patent applications, filed in more than 60 countries, with a focus on our major markets, including Australia, Brazil, Canada, China, Europe, Japan and the United States, as well as other countries with strong patent systems. Many of the patents and patent applications in our portfolio are the result of our in-house research and development, while other patents and patent applications in our portfolio were wholly or partially developed by third parties and are licensed to Zoetis. Patents for individual products expire at different times based on the date of the patent filing (or sometimes the date of patent grant) and the legal term of patents in the countries where such patents are obtained. The active ingredient of Draxxin, tulathromycin, is covered by both compound and formulation patents in the United States, Europe, Canada, Australia and other key markets, with terms that expire between May 2019 and January 2021 in the United States, between November 2018 and November 2020 in Europe, and between May 2018 and November 2020 in Canada and Australia. Generic tulathromycin products are marketed in countries such as Columbia, Vietnam, Belarus and Russia. Recently marketing authorizations were granted in Europe and there is a pending marketing authorization in Australia. At this time, market entry by generic versions in the U.S. are not anticipated before January 2021. Several patents covering the ceftiofur antibiotic product line (Excede) began expiring in the United States in 2015. However, various formulation and use patents relevant to the product line extend through to 2024. A generic version of Excede has recently entered the swine market in Mexico. At this time, the market entry of a generic version of Excede in the U.S. is not anticipated before 2024. The compound patent for selamectin, the active ingredient in our parasiticide Revolution, expired in 2014. Again, we have formulation patents covering this product which expire in important markets in 2019. Generic versions of selamectin are now authorized in Europe, Australia and South Korea. The market entry of a generic version of selamectin is not anticipated in the U.S. before November 2019. The patent for the active ingredient of Convenia has expired, however, there are formulation patents relevant to the product line which expire between November 2022 and October 2023. The patent for the active ingredient of Cerenia has expired, however, there are formulation patents relevant to the product line which expire between May 2020 and January 2027. A generic version of Cerenia has been registered in Europe and is marketed in the European Union. At this time, there is no indication of market entry of a generic version of Cerenia in the U.S. Zoetis typically enforces its patents whenever appropriate both within and outside the United States, including by filing infringement claims against other parties.

Additionally, many of our vaccine products are based on proprietary master seeds and proprietary or patented adjuvant formulations. We actively seek to protect our proprietary information, including our trade secrets and proprietary know-how, including by seeking to require our employees, consultants, advisors and partners to enter into confidentiality agreements and other arrangements upon the commencement of their employment or engagement. Following our separation from Pfizer, Pfizer licenses to us the right to use certain intellectual property rights in the animal health field. We license to Pfizer the right to use certain of our trademarks and substantially all of our other intellectual property rights in the human health field and all other fields outside of animal health. In addition, Pfizer granted us a perpetual license to use certain of Pfizer's product name trademarks.

We seek to file and maintain trademarks around the world based on commercial activities in most regions where we have, or desire to have, a business presence for a particular product or service. We currently maintain more than 10,000 trademark applications and registrations in major regions, identifying goods and services dedicated to the care of livestock and companion animals.

Regulatory

The sale of animal health products is governed by the laws and regulations specific to each country in which we sell our products. To maintain compliance with these regulatory requirements, we have established processes, systems and dedicated resources with end-to-end involvement from product concept to launch and maintenance in the market. Our regulatory function actively seeks to engage in dialogue with various global agencies regarding their policies that

relate to animal health products. In the majority of our markets, the relevant animal health authority is separate from those governing human medicinal products.

United States

United States Food and Drug Administration (FDA). The regulatory body that is responsible for the regulation of animal health pharmaceuticals in the United States is the Center for Veterinary Medicine (CVM), housed within the FDA. All manufacturers of animal health pharmaceuticals must show their products to be safe, effective and produced by a consistent method of manufacture as defined under the Federal Food, Drug and Cosmetic Act. The FDA's basis for approving a drug application is documented in a Freedom of Information Summary. Post-approval monitoring of products is required by law, with reports being provided to the CVM's Surveillance and Compliance group. Reports of product quality defects, adverse events or unexpected results are produced in accordance with the law. Additionally, we are required to submit all new information for a product, regardless of the source.

United States Department of Agriculture (USDA). The regulatory body in the United States for veterinary vaccines is the USDA. The USDA's Center for Veterinary Biologics is responsible for the regulation of animal health vaccines, including immunotherapeutics. All manufacturers of animal health biologicals must show their products to be pure, safe, effective and produced by a consistent method of manufacture as defined under the Virus Serum Toxin Act. Post-approval monitoring of products is required. Reports of product quality defects, adverse events or unexpected results are produced in accordance with the agency requirements.

Environmental Protection Agency (EPA). The main regulatory body in the United States for veterinary pesticides is the EPA. The EPA's Office of Pesticide Programs is responsible for the regulation of pesticide products applied to animals. All manufacturers of animal health pesticides must show their products will not cause “unreasonable adverse effects to man or the environment” as stated in the Federal Insecticide, Fungicide, and Rodenticide Act. Within the United States, pesticide products that are approved by the EPA must also be approved by individual state pesticide

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authorities before distribution in that state. Post-approval monitoring of products is required, with reports provided to the EPA and some state regulatory agencies.

In addition, the U.S. Foreign Corrupt Practices Act (FCPA) prohibits U.S. corporations and their representatives from offering, promising, authorizing or making payments to any foreign government official, government staff member, political party or political candidate in an attempt to obtain or retain business abroad. The scope of the FCPA includes interactions with certain healthcare professionals in many countries. Other countries have enacted similar anti-corruption laws and/or regulations.

As a result of our acquisition of Abaxis, Inc., our product portfolio now includes human medical diagnostics, which are subject to regulation in the U.S. by the FDA under the Federal Food, Drug, and Cosmetic Act, including the 1976 Medical Device Amendments and the Quality System Regulation, and the Clinical Laboratory Improvement Amendments of 1988, and by the Department of Health and Human Services Office for Civil Rights under the Health Insurance Portability and Accountability Act of 1996.

Outside the United States

European Union (EU). The European Medicines Agency (EMA) is the centralized regulatory agency of the EU, located in London. The agency is responsible for the scientific evaluation of medicines developed by healthcare companies seeking centralized approval for use in the EU. The agency has a veterinary review section distinct from the medical review section. The Committee for Veterinary Medicinal Products (CVMP) is responsible for scientific and technical review of the submissions for innovative pharmaceuticals, biopharmaceuticals and vaccines. After the CVMP issues a positive opinion on the approvability of a product, the EU commission reviews the opinion and, if they agree with the CVMP, they grant the product market authorization. Once granted by the European Commission, a centralized marketing authorization is valid in all EU and European Economic Area-European Free Trade Association states. Products can also be registered in the EU via a decentralized route under the supervision of the Co-ordination Group for Mutual Recognition and Decentralized Procedures - Veterinary (CMDv). This co-ordination group is composed of one representative per member state from each national regulatory agency, including Norway, Iceland and Liechtenstein. The CMDv reviews submissions of pharmaceuticals and vaccines for authorization of a veterinary product in two or more member states in accordance with the mutual recognition or the decentralized procedure. A series of Regulations, Directives, Guidelines and EU Pharmacopeia Monographs provide the requirements for product approval in the EU. In general, these requirements are similar to those in the United States, requiring demonstrated evidence of, safety, efficacy, and quality/consistency of manufacturing processes. We are also subject to the EU General Data Protection Regulation (GDPR) that requires us to meet enhanced requirements regarding the handling of personal data, including its use, protection and the rights of data subjects to request correction or deletion of their personal data.

Brazil. The Ministry of Agriculture, Livestock Production and Supply (MAPA) is the regulatory body in Brazil that is responsible for the regulation and control of pharmaceuticals, biologicals and medicated feed additives for animal use. MAPA's regulatory activities are conducted through the Secretary of Agricultural Defense and its Livestock Products Inspection Department. In addition, regulatory activities are conducted at a local level through the Federal Agriculture Superintendence. These activities include the inspection and licensing of both manufacturing and commercial establishments for veterinary products, as well as the submission, review and approval of pharmaceuticals, biologicals and medicated feed additives. MAPA is one of the most active regulatory agencies in Latin America, having permanent seats at several international animal health forums, such as Codex Alimentarius, World Organization for Animal Health and Committee of Veterinary Medicines for the Americas. MAPA was also invited to be a Latin American representative at meetings of the International Cooperation on Harmonisation of Technical Requirements for Registration of Veterinary Medicinal Products (VICH). Several normative instructions issued by MAPA have set regulatory trends in Latin America.

Australia. The Australian Pesticides and Veterinary Medicines Authority (APVMA) is an Australian government statutory authority established in 1993 to centralize the registration of all agricultural and veterinary products into the Australian marketplace. Previously each State and Territory government had its own system of registration. The APVMA assesses applications from companies and individuals seeking registration so they can supply their product to the marketplace. Applications undergo rigorous assessment using the expertise of the APVMA's scientific staff and

drawing on the technical knowledge of other relevant scientific organizations, Commonwealth government departments and state agriculture departments. If the product works as intended and the scientific data confirms that when used as directed on the product label it will have no harmful or unintended effects on people, animals, the environment or international trade, the APVMA will register the product. As well as registering new agricultural and veterinary products, the APVMA reviews older products that have been on the market for a substantial period of time to ensure they still do the job users expect and are safe to use. The APVMA also reviews registered products when particular concerns are raised about their safety and effectiveness. The review of a product may result in confirmation of its registration, or it may see registration continue with some changes to the way the product can be used. In some cases the review may result in the registration of a product being canceled and the product taken off the market.

Rest of world. Country-specific regulatory laws have provisions that include requirements for certain labeling, safety, efficacy and manufacturers' quality control procedures (to assure the consistency of the products), as well as company records and reports. With the exception of the EU, most other countries' regulatory agencies will generally refer to the FDA, USDA, EU and other international animal health entities, including the World Organization for Animal Health, Codex Alimentarius, in establishing standards and regulations for veterinary pharmaceuticals and vaccines.

Global policy and guidance

Joint FAO/WHO Expert Committee on Food Additives. The Joint FAO/WHO Expert Committee on Food Additives is an international expert scientific committee that is administered jointly by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO). They provide a risk assessment/safety evaluation of residues of veterinary drugs in animal products, exposure and residue definition and maximum residue limit proposals for veterinary drugs. We work with them to establish acceptable safe levels of residual product in food-producing animals after treatment. This in turn enables the calculation of appropriate withdrawal times for our products prior to an animal entering the food chain.

Advertising and promotion review. Promotion of prescription animal health products is controlled by regulations in many countries. These rules generally restrict advertising and promotion to those claims and uses that have been reviewed and endorsed by the applicable agency. We conduct a review of promotion materials for compliance with the local and regional requirements in the markets where we sell animal health products.

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Food Safety Inspection Service/generally recognized as safe. The FDA is authorized to determine the safety of substances (including "generally recognized as safe" substances, food additives and color additives), as well as prescribing safe conditions of use. However, although the FDA has the responsibility for determining the safety of substances, the Food Safety and Inspection Service, the public health agency in the USDA, still retains, under the tenets of the Federal Meat Inspection Act and the Poultry Products Inspection Act and their implementing regulations, the authority to determine that new substances and new uses of previously approved substances are suitable for use in meat and poultry products.

International Cooperation on Harmonisation of Technical Requirements for Registration of Veterinary Medicinal Products (VICH). VICH is a trilateral (EU-Japan-USA) program aimed at harmonizing technical requirements for veterinary product registration. The objectives of the VICH are as follows:

- Establish and implement harmonized technical requirements for the registration of veterinary medicinal products in the VICH regions, which meet high quality, safety and efficacy standards and minimize the use of test animals and costs of product development.
- Provide a basis for wider international harmonization of registration requirements through the VICH Outreach Forum.
- Monitor and maintain existing VICH guidelines, taking particular note of the ICH work program and, where necessary, update these VICH guidelines.
- Ensure efficient processes for maintaining and monitoring consistent interpretation of data requirements following the implementation of VICH guidelines.
- By means of a constructive dialogue between regulatory authorities and industry, provide technical guidance enabling response to significant emerging global issues and science that impact on regulatory requirements within the VICH regions.

Employees

As of December 31, 2018, we had approximately 10,000 employees worldwide, which included approximately 4,500 employees in the United States and approximately 5,500 in other jurisdictions. Some of these employees are members of unions, works councils, trade associations or are otherwise subject to collective bargaining agreements, including approximately 50 union employees in the United States.

Environmental, Health and Safety

We are subject to various federal, state, local and foreign environmental, health and safety laws and regulations. These laws and regulations govern matters such as the emission and discharge of hazardous materials into the ground, air or water; the generation, use, storage, handling, treatment, packaging, transportation, exposure to, and disposal of hazardous and biological materials, including recordkeeping, reporting and registration requirements; and the health and safety of our employees. Due to our operations, these laws and regulations also require us to obtain, and comply with, permits, registrations or other authorizations issued by governmental authorities. These authorities can modify or revoke our permits, registrations or other authorizations and can enforce compliance through fines and injunctions. Certain environmental laws, such as the U.S. Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA), impose joint and several liability, without regard to fault, for cleanup costs on persons who disposed of or released hazardous substances into the environment, including at third-party sites or offsite disposal locations, or that currently own or operate (or formerly owned or operated) sites where such a release occurred. In addition to clean-up actions brought by federal, state, local and foreign governmental entities, private parties could raise personal injury or other claims against us due to the presence of, or exposure to, hazardous materials on, from or otherwise relating to such a property.

We have made, and intend to continue to make, necessary expenditures for compliance with applicable environmental, health and safety laws and regulations. We are also a party to proceedings in which the primary relief sought is the cost of past and/or future remediation, or remedial measures to mitigate or remediate pollution. In connection with such proceedings, and otherwise, we are investigating and cleaning up environmental contamination from past industrial activity at certain sites, or financing other parties' completion of such activities. As a result, we incurred capital and operational expenditures in 2018 for environmental compliance purposes and for the clean-up of certain past industrial activities as follows:

- environmental-related capital expenditures - approximately $5 million; and

- other environmental-related expenditures - approximately $15 million.

However, we may not have identified all of the potential environmental liabilities relating to our current and former properties, or those liabilities associated with off-site disposal locations. Such liability could have a material adverse effect on our operating results and financial condition. Furthermore, regulatory agencies are showing increasing concern over the impact of animal health products and livestock operations on the environment. This increased regulatory scrutiny may necessitate that additional time and resources be spent to address these concerns in both new and existing products.

In connection with past acquisitions and divestitures, we have undertaken certain indemnification obligations that require us, or may require us in the future, to conduct or finance environmental cleanups at sites that we no longer own or operate. We have also entered into indemnification agreements in which we are being indemnified for various environmental cleanups; however, such indemnities are limited in both time and scope and may be further limited in the presence of new information, or may not be available at all.

While we cannot predict with certainty our future capital expenditures or operating costs for environmental compliance or remediation of contaminated sites, we have no reason to believe that they will have a material adverse effect on our operating results or financial condition.

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Available Information

The company's Internet website address is www.zoetis.com. On our website, the company makes available, free of charge, its annual, quarterly and current reports, including amendments to such reports, as soon as reasonably practicable after the company electronically files such material with, or furnishes such material to, the Securities and Exchange Commission (SEC).

Also available on our website is information relating to corporate governance at Zoetis and our Board of Directors, including as follows: our Corporate Governance Principles; Director Qualification Standards; Zoetis Code of Conduct (for all of our employees, including our Chief Executive Officer, Chief Financial Officer, Principal Accounting Officer, and Controller); Code of Business Conduct and Ethics for our Directors; Board Committees and Committee Charters; and ways to communicate by email with our Directors. We will provide any of the foregoing information without charge upon written request to our Corporate Secretary, Zoetis Inc., 10 Sylvan Way, Parsippany, New Jersey 07054. Information relating to shareholder services is also available on our website. We will disclose any future amendments to, or waivers from, provisions of these ethics policies and standards affecting our Chief Executive Officer, Chief Financial Officer, Principal Accounting Officer, and Controller on our website as promptly as practicable, as may be required under applicable SEC and NYSE rules.

We use our website (www.zoetis.com) as a means of disclosing material non-public information and for complying with our disclosure obligations under Regulation Fair Disclosure promulgated by the SEC. These disclosures are included in the “Investors” and “News & Media” sections of our website. Accordingly, investors should monitor these portions of our website, in addition to following our press releases, SEC filings and public conference calls and webcasts.

The information contained on our website does not constitute, and shall not be deemed to constitute, a part of this 2018 Annual Report, or any other report we file with, or furnish to, the SEC. Our references to the URLs for websites are intended to be inactive textual references only.

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Item 1A. Risk Factors.

In addition to the other information set forth in this 2018 Annual Report, any of the factors described below could materially adversely affect our operating results, financial condition and liquidity, which could cause the trading price of our securities to decline.

This report contains “forward-looking” statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements reflect our current views with respect to, among other things, future events and performance. We generally identify forward-looking statements by words such as “anticipate,” “estimate,” “could,” “expect,” “intend,” “project,” “plan,” “predict,” “believe,” “seek,” “continue,” “outlook,” "objective," "target," “may,” “might,” “will,” “have,” “likely” or the negative version of these words or comparable words or by using future dates in connection with any discussion of future performance, actions or events. Forward-looking statements are based on beliefs and assumptions made by management using currently available information. These statements are not guarantees of future performance, actions or events.

In particular, forward-looking statements include statements relating to our 2019 financial guidance, future actions, business plans or prospects, prospective products, product approvals or products under development, product supply disruptions, R&D costs, timing and likelihood of success, future operating or financial performance, future results of current and anticipated products and services, strategies, sales efforts, expenses, production efficiencies, production margins, anticipated timing of generic market entries, integration of acquired businesses, interest rates, tax rates, changes in tax regimes and laws, foreign exchange rates, growth in emerging markets, the outcome of contingencies, such as legal proceedings, plans related to share repurchases and dividends, government regulation and financial results. Forward-looking statements are subject to risks and uncertainties, many of which are beyond our control, and potentially inaccurate assumptions. However, there may also be other risks that we are unable to predict at this time. If one or more of these risks or uncertainties materialize, or if management's underlying beliefs and assumptions prove to be incorrect, actual results may differ materially from those contemplated by a forward-looking statement. You should not put undue reliance on forward-looking statements. Forward-looking statements speak only as of the date on which they are made.

We undertake no obligation to publicly update forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law or by the rules and regulations of the SEC. You are advised, however, to consult any further disclosures we make on related subjects in our Form 10-Q and 8-K reports and our other filings with the SEC. We note these factors for investors as permitted by the Private Securities Litigation Reform Act of 1995. You should understand that it is not possible to predict or identify all such factors. Consequently, you should not consider the following to be a complete discussion of all potential risks or uncertainties.

Risks related to our business and industry

Animal health products are subject to unanticipated safety, quality or efficacy concerns.

Unanticipated safety, quality or efficacy concerns can arise with respect to animal health products, whether or not scientifically or clinically supported, leading to product recalls, withdrawals or suspended or declining sales, as well as product liability and other claims.

Regulatory actions based on these types of safety, quality or efficacy concerns could impact all or a significant portion of a product’s sales and could, depending on the circumstances, materially adversely affect our operating results.

In addition, since we depend on positive perceptions of the safety, quality and efficacy of our products, and animal health products generally, by our customers, veterinarians and end-users, any concerns as to the safety, qualify or efficacy of our products, whether actual or perceived, may harm our reputation. These concerns and the related harm to our reputation could materially adversely affect our operating results and financial condition, regardless of whether such reports are accurate.

Our results of operations are dependent upon the success of our top products.

If any of our top products experience issues, such as loss of patent protection, material product liability litigation, new or unexpected side effects, manufacturing disruptions, regulatory proceedings, labeling changes, negative publicity, changes to veterinarian or customer preferences, and/or disruptive innovations or the introduction of more effective products, our revenues could be negatively impacted, perhaps significantly. Our top four products, Apoquel, Draxxin, the ceftiofur product line, and the Revolution/Stronghold line, contributed approximately 25% of our revenue in

2018. Any issues with these top products would have a more significant impact to our results of operations.

Generic and other products may be viewed as more cost-effective than our products.

We face competition from products produced by other companies, including generic alternatives to our products. We depend on patents and regulatory data exclusivity periods to provide us with exclusive marketing rights for some of our products. Patents for individual products expire at different times based on the date of the patent filing (or sometimes the date of patent grant) and the legal term of patents in the countries where such patents are obtained. The extent of protection afforded by our patents varies from country to country and is limited by the scope of the claimed subject matter of our patents, the term of the patent and the availability and enforcement of legal remedies in the applicable country. As a result, we may face competition from lower-priced generic alternatives to many of our products. Generic competitors are becoming more aggressive in terms of launching at risk before patent rights expire and, because of their pricing, are an increasing percentage of overall animal health sales in certain regions. For example, several companies have launched generic versions of our Rimadyl chewable product. As a result of generic and other competition, sales of our Rimadyl chewable product in the U.S. have declined by approximately 29% in the years since their introduction. Sales of our Clavamox products in the U.S. also continue to be negatively impacted by generic competition. If animal health customers increase their use of new or existing generic products, our operating results and financial condition could be materially adversely affected.

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Over the next several years, several of our products' patents will expire. The active ingredient of Draxxin, tulathromycin, is covered by both compound and formulation patents in the United States, Europe, Canada, Australia and other key markets, with terms that expire between May 2019 and January 2021 in the United States, between November 2018 and November 2020 in Europe, and between May 2018 and November 2020 in Canada and Australia. Generic tulathromycin products are marketed in countries such as Columbia, Vietnam, Belarus and Russia. Recently marketing authorizations were granted in Europe and there is a pending marketing authorization in Australia. At this time, market entry by generic versions in the U.S. are not anticipated before January 2021. Several patents covering the ceftiofur antibiotic product line (Excede) began expiring in the United States in 2015. However, various formulation and use patents relevant to the product line extend through to 2024. A generic version of Excede has recently entered the swine market in Mexico. At this time, the market entry of a generic version of Excede in the U.S. is not anticipated before 2024. The compound patent for selamectin, the active ingredient in our parasiticides Revolution and Stronghold, expired in 2014. Again, we have formulation patents covering these products which expire in important markets in 2019. Generic versions of selamectin are now authorized in Europe, Australia and South Korea. The market entry of a generic version of selamectin is not anticipated in the U.S. before November 2019. The ceftiofur product line, Draxxin and Revolution/Stronghold, contributed approximately 18% of our revenue in 2018. In addition, the patent for the active ingredient of Convenia® has expired, however, there are formulation patents relevant to the product line which expire between November 2022 and October 2023. The patent for the active ingredient of Cerenia has expired, however, there are formulation patents relevant to the product line which expire between May 2020 and January 2027. A generic version of Cerenia has been registered in Europe and is marketed in the European Union. At this time, there is no indication of market entry of a generic version of Cerenia in the U.S. Zoetis typically enforces its patents whenever appropriate both within and outside the United States, including by filing infringement claims against other parties.

The animal health industry is highly competitive.

The animal health industry is highly competitive. We believe many of our competitors are conducting R&D activities in areas served by our products and in areas in which we are developing products. Our competitors include standalone animal health businesses and the animal health businesses of large pharmaceutical companies. There are also several new start-up companies working in the animal health area. In certain markets, we also compete with companies that produce generic products, but the level of competition from generic products varies from market to market. These competitors may have access to greater financial, marketing, technical and other resources. As a result, they may be able to devote more resources to developing, manufacturing, marketing and selling their products, initiating or withstanding substantial price competition or more readily taking advantage of acquisitions or other opportunities. Further, consolidation in the animal health industry could result in existing competitors realizing additional efficiencies or improving portfolio bundling opportunities, thereby potentially increasing their market share and pricing power, which could lead to a decrease in our revenue and profitability and an increase in competition. In addition to competition from established market participants, new entrants to the animal health medicines and vaccines industry could substantially reduce our market share or render our products obsolete.

To the extent that any of our competitors are more successful with respect to any key competitive factor or we are forced to reduce, or are unable to raise, the price of any of our products in order to remain competitive, our operating results and financial condition could be materially adversely affected. Competitive pressure could arise from, among other things, safety and efficacy concerns, limited demand growth or a significant number of additional competitive products being introduced into a particular market, price reductions by competitors, the ability of competitors to capitalize on their economies of scale, the ability of competitors to produce or otherwise procure animal health products at lower costs than us and the ability of competitors to access more or newer technology than us.

Disruptive innovations and advances in medical practices and technologies could negatively affect the market for our products.

The market for our products could be impacted negatively by the introduction and/or broad market acceptance of newly-developed or alternative products that address the diseases and conditions for which we sell products, including “green” or “holistic” health products or specially bred disease-resistant animals. In addition, technological breakthroughs by others may obviate our technology and reduce or eliminate the market for our products. Introduction or acceptance

of such products or technologies could materially adversely affect our operating results and financial condition.

Consolidation of our customers and distributors could negatively affect the pricing of our products.

Veterinarians and livestock producers are our primary customers. In recent years, there has been a trend towards the concentration of veterinarians in large clinics and hospitals. In addition, livestock producers, particularly swine and poultry producers, and our distributors, have seen consolidation in their industries. Furthermore, we have seen the expansion of larger cross-border corporate customers and an increase in the consolidation of buying groups (cooperatives of veterinary practices that leverage volume to pursue discounts from manufacturers). The pace of consolidation and structure of markets varies greatly across geographies. If these trends towards consolidation continue, these customers and distributors could attempt to improve their profitability by leveraging their buying power to obtain favorable pricing. The resulting decrease in our prices could have a material adverse effect on our operating results and financial condition.

Changes in distribution channels for companion animal products could negatively impact our market share, margins and distribution of our products.

In most markets, companion animal owners typically purchase their animal health products directly from veterinarians. Companion animal owners increasingly have the option to purchase animal health products from sources other than veterinarians, such as Internet-based retailers, “big-box” retail stores or other over-the-counter distribution channels. This trend has been demonstrated by the significant shift away from the veterinarian distribution channel in the sale of flea and tick products in recent years. Companion animal owners also could decrease their reliance on, and visits to, veterinarians as they rely more on Internet-based animal health information. Because we market our companion animal prescription products through the veterinarian distribution channel, any decrease in visits to veterinarians by companion animal owners could reduce our market share for such products and materially adversely affect our operating results and financial condition. In addition, companion animal owners may substitute human health products for animal health products if human health products are deemed to be lower-cost alternatives. Legislation has also been proposed in the United States in the past, and may be proposed in the United States or abroad in the future, that could impact the distribution channels for our companion animal products. For example, such legislation may require veterinarians to provide pet owners with written prescriptions and disclosure that the pet owner may fill prescriptions through a third party, which may further reduce the number of pet

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owners who purchase their animal health products directly from veterinarians. Such requirements may lead to increased use of generic alternatives to our products or the increased substitution of our products with other animal health products or human health products if such other products are deemed to be lower-cost alternatives. Many states already have regulations requiring veterinarians to provide prescriptions to pet owners upon request and the American Veterinary Medical Association has long-standing policies in place to encourage this practice.

Over time, these and other competitive conditions may increase our reliance on Internet-based retailers, “big-box” retail stores or other over-the-counter distribution channels to sell our companion animal products. We may be unable to sustain our current margins and we may not be adequately prepared or able to distribute our products if an increased portion of our sales is through these channels. Any of these events could materially adversely affect our operating results and financial condition.

We may not successfully acquire and integrate other businesses, license rights to technologies or products, form and manage alliances or divest businesses.

We pursue acquisitions, technology licensing arrangements, strategic alliances or divestitures of some of our businesses as part of our business strategy. We may not complete these transactions in a timely manner, on a cost-effective basis or at all. In addition, we may be subject to regulatory constraints or limitations or other unforeseen factors that prevent us from realizing the expected benefits. Even if we are successful in making an acquisition, the products and technologies that are acquired may not be successful or may require significantly greater resources and investments than originally anticipated. We may be unable to integrate acquisitions successfully into our existing business, and we may be unable to achieve expected gross margin improvements or efficiencies. We also could incur or assume significant debt and unknown or contingent liabilities. Our reported results of operations could be negatively affected by acquisition or disposition-related charges, amortization of expenses related to intangibles and charges for impairment of long-term assets. We may be subject to litigation in connection with, or as a result of, acquisitions, dispositions, licenses or other alliances, including claims from terminated employees, customers or third parties, and we may be liable for future or existing litigation and claims related to the acquired business, disposition, license or other alliance because either we are not indemnified for such claims or the indemnification is insufficient. These effects could cause us to incur significant expenses and could materially adversely affect our operating results and financial condition.

Restrictions and bans on the use of and consumer preferences regarding antibacterials in food-producing animals may become more prevalent.

The issue of the potential transfer of increased antibacterial resistance in bacteria from food-producing animals to human pathogens, and the causality of that transfer, continue to be the subject of global scientific and regulatory discussion. Antibacterials refer to small molecules that can be used to treat or prevent bacterial infections and are a sub-categorization of the products that make up our anti-infectives and medicated feed additives portfolios. In some countries, this issue has led to government restrictions and bans on the use of specific antibacterials in some food-producing animals, regardless of the route of administration (in feed or injectable). These restrictions are more prevalent in countries where animal protein is plentiful and governments are willing to take action even when there is scientific uncertainty. Our total revenue attributable to antibacterials for livestock was approximately $1.3 billion for the year ended December 31, 2018.

For example, in December 2013, the FDA announced final guidance establishing procedures for the voluntary phase-out in the United States over a three-year period of the use of medically important antibacterials in animal feed for growth promotion in food production animals (medically important antibacterials include classes that are prescribed in animal and human health). The guidance provides for continued use of antibacterials in food producing animals for treatment, control and under certain circumstances for prevention of disease, all under the supervision of a veterinarian. The FDA indicated that it took this action to help preserve the efficacy of medically important antibacterials to treat infections in humans. As part of those efforts, stricter regulations governing the administration of medically important antibiotics are now effective. The use of medically important antibiotics in the water or feed of food production animals now requires written authorization by a licensed veterinarian under the FDA guidance and the related rule known as the Veterinary Feed Directive.

Two new veterinary medicines regulations in the EU were adopted in November 2018 and provide additional restrictions on the use of antibiotics in the EU. The regulations will be fully implemented by the end of 2021.

In addition, other countries, such as France, Germany and Vietnam, have passed restrictions or bans on antibiotic use.

In certain markets, there has been an increase in consumer preference towards proteins produced without the use of antibiotics.

We cannot predict whether antibacterial resistance concerns will result in additional restrictions or bans, expanded regulations, public pressure to discontinue or reduce use of antibacterials in food-producing animals or increased consumer preference for antibiotic-free protein, any of which could materially adversely affect our operating results and financial condition.

Perceived adverse effects on human health linked to the consumption of food derived from animals that utilize our products could cause a decline in the sales of such products.

Our livestock business depends heavily on a healthy and growing livestock industry. If the public perceives a risk to human health from the consumption of the food derived from animals that utilize our products, there may be a decline in the production of such food products and, in turn, demand for our products. For example, livestock producers may experience decreased demand for their products or reputational harm as a result of evolving consumer views of animal rights, nutrition, health-related or other concerns. Any reputational harm to the livestock industry may also extend to companies in related industries, including our company. Adverse consumer views related to the use of one or more of our products in livestock also may result in a decrease in the use of such products and could have a material adverse effect on our operating results and financial condition.

Our business is subject to risk based on global economic conditions.

Macroeconomic, business and financial disruptions could have a material adverse effect on our operating results, financial condition and liquidity. Certain of our customers and suppliers could be affected directly by an economic downturn and could face credit issues or cash flow problems that could give rise to payment delays, increased credit risk, bankruptcies and other financial hardships that could decrease the demand for our products or hinder our ability to collect amounts due from customers. If one or more of our large customers, including distributors, discontinue their relationship

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with us as a result of economic conditions or otherwise, our operating results and financial condition may be materially adversely affected. In addition, economic concerns may cause some pet owners to forgo or defer visits to veterinary practices or could reduce their willingness to treat pet health conditions or even to continue to own a pet. Furthermore, our exposure to credit and collectability risk is higher in certain international markets and our ability to mitigate such risks may be limited. While we have procedures to monitor and limit exposure to credit and collectability risk, there can be no assurances such procedures will effectively limit such risk and avoid losses.

Increased regulation or decreased governmental financial support relating to the raising, processing or consumption of food-producing animals could reduce demand for our livestock products.

Companies in the livestock industries are subject to extensive and increasingly stringent regulations. If livestock producers are adversely affected by new regulations or changes to existing regulations, they may reduce herd sizes or become less profitable and, as a result, they may reduce their use of our products, which may materially adversely affect our operating results and financial condition. Furthermore, new or more stringent regulations could, directly or indirectly, impact the use of one or more of our products. More stringent regulation of the livestock industry or our products could have a material adverse effect on our operating results and financial condition. Also, many food-producing companies, including livestock producers, benefit from governmental subsidies, and if such subsidies were to be reduced or eliminated, these companies may become less profitable and, as a result, may reduce their use of our products.

An outbreak of infectious disease carried by animals could negatively affect the sale and production of our products.

Sales of our livestock products could be materially adversely affected by the outbreak of disease carried by animals, which could lead to the widespread death or precautionary destruction of animals as well as the reduced consumption and demand for animal protein. In addition, outbreaks of disease carried by animals may reduce regional or global sales of particular animal-derived food products or result in reduced exports of such products, either due to heightened export restrictions or import prohibitions, which may reduce demand for our products due to reduced herd or flock sizes. In recent years, outbreaks of various diseases, including African Swine Fever, avian influenza, foot-and-mouth disease, bovine spongiform encephalopathy (otherwise known as BSE or mad cow disease) and porcine epidemic diarrhea virus (otherwise known as PEDv), have impacted the animal health business. The discovery of additional cases of any of these, or new, diseases may result in additional restrictions on animal proteins, reduced herd sizes, or reduced demand for, animal protein, which may have a material adverse effect on our operating results and financial condition. Also, the outbreak of any highly contagious disease near our main production sites could require us to immediately halt production of our products at such sites or force us to incur substantial expenses in procuring raw materials or products elsewhere.

Our business may be negatively affected by weather conditions and the availability of natural resources.

The animal health industry and demand for many of our animal health products in particular regions are affected by weather conditions, as usage of our products follows varying weather patterns and weather-related pressures from pests, such as ticks. As a result, we may experience regional and seasonal fluctuations in our results of operations. In addition, veterinary hospitals and practitioners depend on visits from and access to animals under their care. Veterinarians' patient volume and ability to operate could be adversely affected if they experience prolonged snow, ice or other weather conditions, particularly in regions not accustomed to sustained inclement weather. Furthermore, livestock producers depend on the availability of natural resources, including large supplies of fresh water. Their animals' health and their ability to operate could be adversely affected if they experience a shortage of fresh water due to human population growth or floods, droughts or other weather conditions. In the event of adverse weather conditions or a shortage of fresh water, veterinarians or livestock producers may purchase less of our products. Severe droughts can lead to a decrease in harvested corn and higher corn prices, which may impact the profitability of livestock producers of cattle, pork and poultry. Higher corn prices may contribute to reductions in herd or flock sizes that may result in reduced spending on animal health products. In addition, droughts can lead to reduced availability of grazing pastures, forcing cattle producers to cull their herds. Fewer heads of cattle could result in reduced demand for our products. A prolonged drought could have a material adverse effect on our operating results and financial condition. Heat waves may cause stress in animals and lead to increased vulnerability to disease, reduced fertility rates and reduced milk production. In addition, climate change may increase the prevalence of parasites and diseases that

affect food animals.

Adverse weather conditions may also have a material impact on the aquaculture business. Changes in water temperatures could affect the timing of reproduction and growth of various fish species, as well as trigger the outbreak of certain water borne diseases.

Modification of foreign trade policy by the U.S. or foreign countries or the imposition of tariffs on U.S. or foreign goods may harm our business.

Changes in U.S. laws, agreements and policies governing foreign trade in the territories and countries where our customers do business could negatively impact such customers' businesses and adversely affect our operating results. A number of our customers, particularly U.S.-based livestock producers, benefit from free trade agreements such as the North American Free Trade Agreement (NAFTA). The U.S., Canada and Mexico reached an agreement to replace NAFTA with the United States-Mexico-Canada Agreement (USMCA). Most provisions of the USMCA will not begin until 2020. These new provisions, as well as any other changes to international trade agreements or policies could harm our customers, and as a result, negatively impact our financial condition and results of operations.

Additionally, in response to new U.S. tariffs affecting foreign exports, some foreign governments, including China, have instituted or are considering instituting tariffs on certain U.S. goods. While the scope and duration of these and any future tariffs remains uncertain, tariffs imposed by the U.S. or foreign governments on our products or the active pharmaceutical ingredients or other components thereof could negatively impact our financial condition and results of operations.

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Our business is subject to risk based on customer exposure to rising costs and reduced customer income.

Feed, fuel and transportation and other key costs for livestock producers may increase or animal protein prices or sales may decrease. Either of these trends could cause deterioration in the financial condition of our livestock product customers, potentially inhibiting their ability to purchase our products or pay us for products delivered. Our livestock product customers may offset rising costs by reducing spending on our products, including by switching to lower-cost alternatives to our products. In addition, concerns about the financial resources of pet owners also could cause veterinarians to alter their treatment recommendations in favor of lower-cost alternatives to our products. These shifts could result in a decrease in sales of our companion animal products, especially in developed countries where there is a higher rate of pet ownership.

Our business could be adversely affected by labor disputes, strikes or work stoppages.

Some of our employees are members of unions, works councils, trade associations or are otherwise subject to collective bargaining agreements in certain jurisdictions, including the United States. As a result, we are subject to the risk of labor disputes, strikes, work stoppages and other labor-relations matters. We may be unable to negotiate new collective bargaining agreements on similar or more favorable terms and may experience work stoppages or other labor problems in the future at our sites. We could experience a disruption of our operations or higher ongoing labor costs, which could have a material adverse effect on our operating results and financial condition, potentially resulting in canceled orders by customers, unanticipated inventory accumulation or shortages and reduced revenue and net income. We may also experience difficulty or delays in implementing changes to our workforce in certain markets. In addition, labor problems at our suppliers, CMOs or other service providers could have a material adverse effect on our operating results and financial condition.

Loss of our executive officers or other key personnel could disrupt our operations.

We depend on the efforts of our executive officers and certain key personnel. Our executive officers and other key personnel are not currently, and are not expected to be, subject to non-compete provisions. In addition, we generally do not enter into employment agreements with our executive officers and other key personnel. Any unplanned turnover or our failure to develop an adequate succession plan for one or more of our executive officers or other key positions could deplete our institutional knowledge base and erode our competitive advantage. The loss or limited availability of the services of one or more of our executive officers or other key personnel, or our inability to recruit and retain qualified executive officers or other key personnel in the future, could, at least temporarily, have a material adverse effect on our operating results and financial condition.

We may be required to write down goodwill or identifiable intangible assets.

Under accounting principles generally accepted in the United States of America (U.S. GAAP), if we determine goodwill or identifiable intangible assets are impaired, we will be required to write down these assets and record a non-cash impairment charge. As of December 31, 2018, we had goodwill of $2.5 billion and identifiable intangible assets, less accumulated amortization, of $2.0 billion. Identifiable intangible assets consist primarily of developed technology rights, brands, trademarks, license agreements, patents, acquired customer relationships and in-process R&D.

Determining whether an impairment exists and the amount of the potential impairment involves quantitative data and qualitative criteria that are based on estimates and assumptions requiring significant management judgment. Future events or new information may change management's valuation of an intangible asset in a short amount of time. The timing and amount of impairment charges recorded in our consolidated statements of income and write-downs recorded in our consolidated balance sheets could vary if management's conclusions change. Any impairment of goodwill or identifiable intangible assets could have a material adverse effect on our operating results and financial position.

Risks related to research and development

Our R&D, acquisition and licensing efforts may fail to generate new products and product lifecycle innovations.

Our future success depends on both our existing product portfolio and our pipeline of new products, including new products that we may develop through joint ventures and products that we are able to obtain through license or acquisition. We commit substantial effort, funds and other resources to R&D, both through our own dedicated resources and through collaborations with third parties.

We may be unable to determine with accuracy when or whether any of our products now under development will be approved or launched, or we may be unable to develop, license or otherwise acquire product candidates or products. In addition, we cannot predict whether any products, once launched, will be commercially successful or will achieve sales and revenue that are consistent with our expectations. The animal health industry is subject to regional and local trends and regulations and, as a result, products that are successful in some of our markets may not achieve similar success when introduced into new markets. Furthermore, the timing and cost of our R&D may increase, and our R&D may become less predictable. For example, changes in regulations applicable to our industry may make it more time-consuming and/or costly to research, develop and register products. If we are unable to generate new products or expand the use of our existing products, our business, financial condition and results of operations will be materially adversely affected.

Products in the animal health industry are sometimes derived from molecules and compounds discovered or developed as part of human health research. We have and expect to continue to enter into collaboration or licensing arrangements with third parties, including Pfizer, to provide us with access to compounds and other technology for purposes of our business. Such agreements are typically complex and require time to negotiate and implement. If we enter into these arrangements, we may not be able to maintain these relationships or establish new ones in the future on acceptable terms or at all. In addition, any collaboration that we enter into may not be successful, and the success may depend on the efforts and actions of our collaborators, which we may not be able to control. If we are unable to access human health-generated molecules and compounds to conduct R&D on cost-effective terms, our ability to develop some types of new products could be limited.

Our R&D relies on evaluations in animals, which may become subject to bans or additional restrictive regulations.

As an animal health medicines and vaccines business, the evaluation of our existing and new products in animals is required to register our products. Animal testing in certain industries has been the subject of controversy and adverse publicity. Some organizations and individuals have attempted to ban animal testing or encourage the adoption of additional regulations applicable to animal testing. To the extent that the activities of such

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organizations and individuals are successful, our R&D, and by extension our operating results and financial condition, could be materially adversely affected. In addition, negative publicity about us or our industry could harm our reputation.

Risks related to manufacturing

Manufacturing problems and capacity imbalances may cause product launch delays, inventory shortages, recalls or unanticipated costs.

In order to sell our products, we must be able to produce and ship our products in sufficient quantities. On December 31, 2018, we had a global manufacturing network consisting of 25 manufacturing sites located in 12 countries. We also employ a network of approximately 172 third party CMOs. Many of our products involve complex manufacturing processes and are sole-sourced from certain manufacturing sites.

Minor deviations in our manufacturing or logistical processes, such as temperature excursions or improper package sealing, could result in delays, inventory shortages, unanticipated costs, product recalls, product liability and/or regulatory action. In addition, a number of factors could cause production interruptions, including:

- the failure of us or any of our vendors or suppliers, including logistical service providers, to comply with applicable regulations and quality assurance guidelines, including any changes to Good Manufacturing Practices (GMP);
- mislabeling;
- construction delays;
- equipment malfunctions;
- shortages of materials;
- labor problems;
- delays in receiving any required governmental authorizations, including as a result of any prolonged shutdown of the U.S. government;
- natural disasters;
- power outages;
- criminal and terrorist activities;
- changes in manufacturing production sites and limits to manufacturing capacity due to regulatory requirements, changes in types of products produced, shipping distributions or physical limitations; and
- the outbreak of any highly contagious diseases near our production sites.

These interruptions could result in launch delays, inventory shortages, recalls, unanticipated costs or issues with our agreements under which we supply third parties, which may adversely affect our operating results and financial condition. For example, we experienced challenges in manufacturing Apoquel when it was initially launched in 2015 that impacted our ability to meet customer demand. As a result, we had to place limits on the amounts of this product veterinarians could purchase and delayed the launch of the product in certain markets.

Our manufacturing network may be unable to meet the demand for our products or we may have excess capacity if demand for our products changes. The unpredictability of a product's regulatory or commercial success or failure, the lead time necessary to construct highly technical and complex manufacturing sites, and shifting customer demand (including as a result of market conditions or entry of branded or generic competition) increase the potential for capacity imbalances. In addition, construction of sites is expensive, and our ability to recover costs will depend on the market acceptance and success of the products produced at the new sites, which is uncertain.

We rely on third parties to provide us with materials and services, and are subject to increased labor and material costs and potential disruptions in supply.

The materials used to manufacture our products may be subject to availability constraints and price volatility caused by changes in demand, weather conditions, supply conditions, government regulations, economic climate and other factors. In addition, labor costs may be subject to volatility caused by the supply of labor, governmental regulations, economic climate and other factors. Increases in the demand for, availability or the price of, materials used to manufacture our products and increases in labor costs could increase the costs to manufacture our products, result in product delivery delays or shortages, and impact our ability to launch new products on a timely basis or at all. We may not be able to pass all or a material portion of any higher material or labor costs on to our customers, which could materially adversely affect our operating results and financial condition.

In addition, certain third-party suppliers are the sole or exclusive source of certain materials and services necessary for production of our products. We may be unable to meet demand for certain of our products if any of our third-party suppliers cease or interrupt operations, fail to renew contracts with us or otherwise fail to meet their obligations to us. There may be delays and additional costs due to changes to our existing manufacturing facilities and the construction of new manufacturing plants.

As part of our supply network strategy, we have invested and will continue to invest in improvements to our existing manufacturing facilities and in new manufacturing plants. We are currently investing in two new plants, one in Rathdrum, Ireland for the production of active ingredients for some of our key products and one in Suzhou, China for the research and production of vaccines in China. In addition, certain of our existing manufacturing facilities are in the process of being upgraded. These types of projects are subject to risks of delay or cost overruns inherent in any large construction project, and will require licensure by various regulatory authorities. Significant cost overruns or delays in completing these projects could have an adverse effect on the Company’s return on investment.

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Risks related to legal matters and regulation

Our business is subject to substantial regulation.

As a global company, we are subject to various state, federal and international laws and regulations, including regulations relating to the development, quality assurance, manufacturing, importation, distribution, marketing and sale of our products. In addition, our manufacturing facilities are subject to periodic inspections by regulatory agencies. An inspection may report conditions or practices that indicate possible violations of regulatory requirements. Our failure, or the failure of third parties we rely on, including CMOs, to comply with these regulatory requirements, allegations of such non-compliance or the discovery of previously unknown problems with a product or manufacturer could result in, among other things, inspection observation notices, warning letters or similar regulatory correspondence, fines, a partial or total shutdown of production in one or more of our facilities while an alleged violation is remediated, withdrawals or suspensions of current products from the market, and civil or criminal prosecution, as well as decreased sales as a result of negative publicity and product liability claims. Any one of these consequences could materially adversely affect our operating results and financial condition.

In addition, we will not be able to market new products unless and until we have obtained all required regulatory approvals in each jurisdiction where we propose to market those products. Even after a product reaches market, it may be subject to re-review and may lose its approvals. We have changed, and may in the future change, the locations of where certain of our products are manufactured and, because of these changes, we may be required to obtain new regulatory approvals. Our failure to obtain approvals, delays in the approval process, including any delays resulting from any prolonged shutdown of the U.S. government, or our failure to maintain approvals in any jurisdiction, may prevent us from selling products in that jurisdiction until approval or reapproval is obtained, if ever.

Furthermore, we cannot predict the nature of future laws, regulations, or changes in tax laws and tariffs, nor can we determine the effect that additional laws or regulations or changes in existing laws or regulations could have on our business when and if promulgated, or the impact of changes in the interpretation of these laws and regulations, or of disparate federal, state, local and foreign regulatory schemes. Changes to such laws or regulations may include, among other things, changes to taxation requirements, such as tax-rate changes and changes affecting the taxation by the United States of income earned outside the United States.

Changes in applicable federal, state, local and foreign laws and regulations could have a material adverse effect on our operating results and financial condition.

We may incur substantial costs and receive adverse outcomes in litigation and other legal matters.

Our operating results, financial condition and liquidity could be materially adversely affected by unfavorable results in pending or future litigation matters. These matters include, among other things, allegations of violation of United States and foreign competition laws, labor laws, consumer protection laws, and environmental laws and regulations, as well as claims or litigations relating to product liability, intellectual property, securities, breach of contract and tort. In addition, changes in the interpretations of laws and regulations to which we are subject, or in legal standards in one or more of the jurisdictions in which we operate, could increase our exposure to liability. For example, in the United States, attempts have been made to allow damages for emotional distress and pain and suffering in connection with the loss of, or injury to, a companion animal. If such attempts were successful, our exposure with respect to product liability claims could increase materially.

Litigation matters, regardless of their merits or their ultimate outcomes, are costly, divert management's attention and may materially adversely affect our reputation and demand for our products. We cannot predict with certainty the eventual outcome of pending or future litigation matters. An adverse outcome of litigation or legal matters could result in our being responsible for significant damages. Any of these negative effects resulting from litigation matters could materially adversely affect our operating results and financial condition.

The misuse or off-label use of our products may harm our reputation or result in financial or other damages.

Our products have been approved for use under specific circumstances for the treatment of certain diseases and conditions in specific species. There may be increased risk of product liability claims if veterinarians, livestock producers, pet owners or others attempt to use our products off-label, including the use of our products in species (including humans) for which they have not been approved. For example, Ketamine, the active pharmaceutical ingredient in our Ketaset product (a nonnarcotic agent for anesthetic use in cats), is abused by humans as a

hallucinogen. Furthermore, the use of our products for indications other than those indications for which our products have been approved may not be effective, which could harm our reputation and lead to an increased risk of litigation. If we are deemed by a governmental or regulatory agency to have engaged in the promotion of any of our products for off-label use, such agency could request that we modify our training or promotional materials and practices and we could be subject to significant fines and penalties, and the imposition of these sanctions could also affect our reputation and position within the industry. Any of these events could materially adversely affect our operating results and financial condition.

The illegal distribution and sale by third parties of counterfeit or illegally compounded versions of our products or of stolen, diverted or relabeled products could have a negative impact on our reputation and business.

Third parties may illegally distribute and sell counterfeit or illegally compounded versions of our products that do not meet the exacting standards of our development, manufacturing and distribution processes. Counterfeit or illegally compounded medicines pose a significant risk to animal health and safety because of the conditions under which they are manufactured and the lack of regulation of their contents. Counterfeit or illegally compounded products are frequently unsafe or ineffective and can be potentially life-threatening to animals. Our reputation and business could suffer harm as a result of counterfeit or illegally compounded products which are alleged to be equivalent and/or which are sold under our brand name. We are aware of at least one pharmacy in Brazil that may be engaged in the practice of illegally compounding oclacitinib, the active pharmaceutical ingredient in our Apoquel product. In addition, products stolen or unlawfully diverted from inventory, warehouses, plants or while in transit, which are not properly stored or which have an expired shelf life and which have been repackaged or relabeled and which are sold through unauthorized channels, could adversely impact animal health and safety, our reputation and our business. Public loss of confidence in the integrity of vaccines and/or pharmaceutical products as a result of counterfeiting, illegally compounding or theft could have a material adverse effect on our product sales, business and results of operations.

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We are subject to complex environmental, health and safety laws and regulations.

We are subject to various federal, state, local and foreign environmental, health and safety laws and regulations. These laws and regulations govern matters such as the emission and discharge of hazardous materials into the ground, air or water; the generation, use, storage, handling, treatment, packaging, transportation, exposure to, and disposal of hazardous and biological materials, including recordkeeping, reporting and registration requirements; and the health and safety of our employees. Due to our operations, these laws and regulations also require us to obtain, and comply with, permits, registrations or other authorizations issued by governmental authorities. These authorities can modify or revoke our permits, registrations or other authorizations and can enforce compliance through fines and injunctions. Given the nature of our business, we have incurred, are currently incurring and may in the future incur, liabilities under CERCLA or under other federal, state, local and foreign environmental cleanup laws, with respect to our current or former sites, adjacent or nearby third-party sites, or offsite disposal locations. See Item 1. Business—Environmental, Health and Safety. The costs associated with future cleanup activities that we may be required to conduct or finance could be material. Additionally, we may become liable to third parties for damages, including personal injury and property damage, resulting from the disposal or release of hazardous materials into the environment. Such liability could materially adversely affect our operating results and financial condition. Furthermore, regulatory agencies are showing increasing concern over the impact of animal health products and livestock operations on the environment. This increased regulatory scrutiny may necessitate that additional time and resources be spent to address these concerns in both new and existing products.

A failure to comply with the environmental, health and safety laws and regulations to which we are subject, including any permits issued thereunder, may result in environmental remediation costs, loss of permits, fines, penalties or other adverse governmental or private actions, including regulatory or judicial orders enjoining or curtailing operations or requiring corrective measures, installation of pollution control equipment or remedial measures. We could also be held liable for any and all consequences arising out of human exposure to hazardous materials or environmental damage. Environmental laws and regulations are complex, change frequently, have tended to become more stringent and stringently enforced over time and may be subject to new interpretation. We cannot assure you that our costs of complying with current and future environmental, health and safety laws, and our liabilities arising from past or future releases of, or exposure to, hazardous materials will not materially adversely affect our business, results of operations or financial condition.

Risks related to operating in foreign jurisdictions

A significant portion of our operations are conducted in foreign jurisdictions, including jurisdictions presenting a high risk of bribery and corruption, and are subject to the economic, political, legal and business environments of the countries in which we do business.

Our international operations could be limited or disrupted by any of the following:

- volatility in the international financial markets;
- compliance with governmental controls;
- difficulties enforcing contractual and intellectual property rights;
- parallel trade in our products (importation of our products from European Union countries where our products are sold at lower prices into European Union countries where the products are sold at higher prices);
- compliance with a wide variety of laws and regulations, such as the FCPA and similar non-U.S. laws and regulations;
- compliance with foreign labor laws;
- burdens to comply with multiple and potentially conflicting foreign laws and regulations, including those relating to environmental, health and safety requirements;
- changes in laws, regulations, government controls or enforcement practices with respect to our business and the businesses of our customers, including the imposition of limits on our profitability;
- political and social instability, including crime, civil disturbance, terrorist activities and armed conflicts;
- trade restrictions and restrictions on direct investments by foreign entities, including restrictions administered by the Office of Foreign Assets Control of the U.S. Department of Treasury (OFAC) and the European Union, in relation to our products or the products of farmers and other customers (e.g., restrictions on the importation of agricultural

products from the European Union to Russia);

- government limitations on foreign ownership;
- government takeover or nationalization of business;
- changes in tax laws and tariffs;
- imposition of anti-dumping and countervailing duties or other trade-related sanctions;
- costs and difficulties and compliance risks in staffing, managing and monitoring international operations, including the use of overseas third-party goods and service providers;
- corruption risk inherent in business arrangements and regulatory contacts with foreign government entities;
- longer payment cycles and increased exposure to counterparty risk; and
- additional limitations on transferring personal information between countries or other restrictions on the processing of personal information.

In addition, international transactions may involve increased financial and legal risks due to differing legal systems and customs. Compliance with these requirements may prohibit the import or export of certain products and technologies or may require us to obtain a license before importing or exporting certain products or technology. A failure to comply with any of these laws, regulations or requirements could result in civil or criminal legal proceedings, monetary or non-monetary penalties, or both, disruptions to our business, limitations on our ability to import and export products and services, and damage to our reputation. In addition, variations in the pricing of our products between jurisdictions may result in the unauthorized

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importation or unauthorized re-importation of our products between jurisdictions and may also result in the imposition of anti-dumping and countervailing duties or other trade-related sanctions. While the impact of these factors is difficult to predict, any of them could materially adversely affect our operating results and financial condition. Changes in any of these laws, regulations or requirements, or the political environment in a particular country, may affect our ability to engage in business transactions in certain markets, including investment, procurement and repatriation of earnings.

In June 2016, voters in the United Kingdom (UK) approved an advisory referendum to withdraw from the European Union, commonly referred to as "Brexit." This referendum has created political and economic uncertainty, particularly in the United Kingdom and the European Union, and this uncertainty may persist for years. A withdrawal without a trade agreement in place could significantly disrupt the free movement of goods, services, and people between the United Kingdom and the European Union, and result in increased legal and regulatory complexities, as well as potential higher costs of conducting business in Europe. Additional Brexit-related impacts on our business could include potential inventory shortages in the UK, increased regulatory burdens and costs to comply with UK-specific regulations and higher transportation costs for our products coming into and out of the UK. The United Kingdom's vote to exit the European Union could also result in similar referendums or votes in other European countries in which we do business. On March 29, 2017, United Kingdom Prime Minister Theresa May formally notified the European Council of the UK's intention to withdraw from the European Union under Article 50 of the Treaty of Lisbon. The notice began the two-year negotiation period to establish the withdrawal terms. While no agreement has yet been reached, the UK's separation will still become effective on March 29, 2019, unless the remaining European Union members unanimously agree to an extension. The uncertainty surrounding the terms of the United Kingdom's withdrawal and its consequences could adversely impact consumer and investor confidence, and could affect sales or regulation of our products. Any of these effects, among others, could materially and adversely affect our business, results of operations, and financial condition.

Foreign exchange rate fluctuations and potential currency controls affect our results of operations, as reported in our financial statements.

We conduct operations in many areas of the world, involving transactions denominated in a variety of currencies. In 2018, we generated approximately 47% of our revenue in currencies other than the U.S. dollar, principally the euro, Brazilian real, Chinese renminbi, Canadian dollar, Australian dollar, and U.K. pound. We are subject to currency exchange rate risk to the extent that our costs are denominated in currencies other than those in which we earn revenue. In addition, because our financial statements are reported in U.S. dollars, changes in currency exchange rates between the U.S. dollar and other currencies have had, and will continue to have, an impact on our results of operations.

We also face risks arising from currency devaluations and the imposition of cash repatriation restrictions and exchange controls. Currency devaluations result in a diminished value of funds denominated in the currency of the country instituting the devaluation. Cash repatriation restrictions and exchange controls may limit our ability to convert foreign currencies into U.S. dollars or to remit dividends and other payments by our foreign subsidiaries or businesses located in or conducted within a country imposing restrictions or controls. While we currently have no need, and do not intend, to repatriate or convert cash held in countries that have significant restrictions or controls in place, should we need to do so to fund our operations, we may be unable to repatriate or convert such cash, or be unable to do so without incurring substantial costs. We currently have substantial operations in countries that have cash repatriation restrictions or exchange controls in place, including China, and, if we were to need to repatriate or convert such cash, these controls and restrictions may have a material adverse effect on our operating results and financial condition.

For example, in 2015, we recorded a net remeasurement loss of $89 million on bolivar-denominated net monetary assets, primarily related to cash deposits in Venezuela, as a result of our evaluation of evolving economic conditions in Venezuela, including the devaluation of the Venezuelan bolivar in 2013.

We may not be able to realize the expected benefits of our investments in emerging markets and are subject to certain risks due to our presence in emerging markets, including political or economic instability and failure to adequately comply with legal and regulatory requirements.

We have been taking steps to increase our presence in emerging markets. Failure to continue to maintain and expand our business in emerging markets could materially adversely affect our operating results and financial condition. Some countries within emerging markets may be especially vulnerable to periods of local, regional or global economic, political or social instability or crisis. For example, our sales in certain emerging markets have suffered from extended periods of disruption due to natural disasters. Furthermore, we have also experienced lower than expected sales in certain emerging markets due to local, regional and global restrictions on banking and commercial activities in those countries. In addition, certain emerging markets have currencies that fluctuate substantially, which may impact our financial performance. For example, in the past, our revenue in certain emerging markets in Latin America has been adversely impacted by currency fluctuations and devaluations.

In addition, certain emerging markets have legal systems that are less developed or familiar to us. Other jurisdictions in which we conduct business may have legal and regulatory regimes that differ materially from United States laws and regulations, are continuously evolving or do not include sufficient judicial or administrative guidance to interpret such laws and regulations. Compliance with diverse legal requirements is costly and time-consuming and requires significant resources. In the event we believe or have reason to believe our employees have or may have violated applicable laws or regulations, we may be subject to investigation costs, potential penalties and other related costs which in turn could negatively affect our reputation and our results of operations.

For all these and other reasons, doing business within emerging markets carries significant risks.

Risks related to tax matters

The Company could be subject to changes in its tax rates, the adoption of new U.S. or foreign tax legislation or exposure to additional tax liabilities.

The multinational nature of our business subjects us to taxation in the United States and numerous foreign jurisdictions. Due to economic and political conditions, tax rates in various jurisdictions may be subject to significant change. The company’s future effective tax rates could be affected by changes in the mix of earnings in countries with differing statutory tax rates, changes in the valuation of deferred tax assets and liabilities, or changes in tax laws or their interpretation.

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For example, on June 20, 2016, the Member States of the European Union adopted the anti-tax-avoidance directive proposed on January 28, 2016, which is designed to provide uniform implementation of Base Erosion and Profits Shifting measures and other minimum taxation standards across Member States. The Member States are required to implement all components of the directive by January 1, 2020. Once enacted by the Member States, the results of the directive could have an impact on our effective tax rate. In October 2016, the European Union also introduced a proposal to impose a uniform set of rules on taxing corporate profits, known as the Common Consolidated Corporate Tax Base. This proposal is still under consideration and may have an impact to our effective tax rate, if enacted.

On March 29, 2017, United Kingdom (UK) Prime Minister Theresa May formally notified the European Council of the UK's intention to withdraw from the European Union, commonly referred to as "Brexit", under Article 50 of the Treaty of Lisbon. The notice began the two-year negotiation period to establish the withdrawal terms. While no agreement has yet been reached, the UK's separation will still become effective on March 29, 2019, unless the remaining European Union members unanimously agree to an extension. At this time, the impact of Brexit to our effective tax rate remains uncertain.

On December 22, 2017, President Trump signed into law the Tax Cuts and Jobs Act (the Tax Act) effective January 1, 2018. Some notable provisions of the Tax Act include a reduction of the corporate income tax rate from 35% to 21%, and a change from a worldwide system with deferral to a territorial tax system, which includes a one-time mandatory deemed repatriation tax, payable over eight years, on certain undistributed earnings of non-U.S. subsidiaries. As of December 31, 2018, the cumulative amount of non-U.S. undistributed earnings was approximately $5.1 billion, which includes an allocation of non-U.S. undistributed earnings as a result of the separation from Pfizer on June 24, 2013. The company evaluated the full impact of this new legislation on its consolidated financial statements, and in the fourth quarter of 2017 recorded a provisional net charge of $212 million related to the one-time mandatory deemed repatriation tax, partially offset by the remeasurement of the deferred tax assets and liabilities, as of the date of enactment, due to the reduction in the U.S. federal corporate tax rate. A measurement-period adjustment was recorded in 2018 as a decrease to income tax expense of $45 million. At this time, we are properly reflecting the provision for taxes on income using all current enacted global tax laws in every jurisdiction in which we operate.

In addition, our effective tax rate is subject to potential risks that various taxing authorities may challenge the pricing of our cross-border arrangements and subject us to additional tax, adversely impacting our effective tax rate and our tax liability. The company is also subject to the examination of its tax returns and other tax matters by the Internal Revenue Service and other tax authorities and governmental bodies. The company regularly assesses the likelihood of an adverse outcome resulting from these examinations to determine the adequacy of its provision for taxes. There can be no assurance as to the outcome of these examinations. If the company's effective tax rates were to increase, particularly in the United States or other material foreign jurisdictions, or if the ultimate determination of the company's taxes owed is for an amount in excess of amounts previously accrued, the company's operating results, cash flows and financial condition could be adversely affected.

Risks related to intellectual property

The alleged intellectual property rights of third parties may negatively affect our business.

A third party may sue us, our distributors or licensors, or otherwise make a claim, alleging infringement or other violation of the third-party's patents, trademarks, trade dress, copyrights, trade secrets, domain names or other intellectual property rights. If we do not prevail in this type of dispute, we may be required to:

- pay monetary damages;
- obtain a license in order to continue manufacturing or marketing the affected products, which may not be available on commercially reasonable terms, or at all; or
- stop activities, including any commercial activities, relating to the affected products, which could include a recall of the affected products and/or a cessation of sales in the future.

The costs of defending an intellectual property action are often substantial and could materially adversely affect our operating results and financial condition, even if we successfully defend such action. Moreover, even if we believe that we do not infringe a validly existing third-party patent, we may choose to license such patent, which would result in associated costs and obligations. We may also incur costs in connection with an obligation to compensate a distributor, licensor or other third party. The intellectual property positions of animal health medicines and vaccines

businesses frequently involve complex legal and factual questions, and an issued patent does not provide the right to practice the patented technology or to develop, manufacture or commercialize the patented product. We cannot guarantee that a competitor or other third party does not have or will not obtain rights to intellectual property that, in the absence of a license, may prevent us from manufacturing, developing or marketing certain of our products, regardless of whether we believe such intellectual property rights are valid and enforceable, which may harm our operating results and financial condition.

If our intellectual property rights are challenged or circumvented, competitors may be able to take advantage of our research and development efforts.

Our long-term success largely depends on our ability to market technologically competitive products. We rely and expect to continue to rely on a combination of intellectual property, including patent, trademark, trade dress, copyright, trade secret, data protection, and domain name protection laws, as well as confidentiality and license agreements with our employees and others, to protect our intellectual property and proprietary rights. If we fail to obtain and maintain adequate intellectual property protection, we may not be able to prevent third parties from using our proprietary technologies or from marketing products that are very similar or identical to ours. Our currently pending or future patent applications may not result in issued patents, or be approved on a timely basis, or at all. Similarly, any term extensions that we seek may not be approved on a timely basis, if at all. Our currently pending and granted patents may be challenged in inter partes review or opposition proceedings. In addition, our issued patents may not contain claims sufficiently broad to protect us against third parties with similar technologies or products or provide us with any competitive advantage, including exclusivity in a particular product area. The valid scope of our patent claims also may vary between countries, as individual countries have their own patent laws. For example, some countries only permit the issuance of patents covering a novel chemical compound itself, and its first use, and thus further methods of use for the same compound, may not be patentable. We may be subject to challenges by third parties

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regarding our intellectual property, including claims regarding validity, enforceability, scope and effective term. The validity, enforceability, scope and effective term of patents can be highly uncertain and often involve complex legal and factual questions and proceedings that differ between jurisdictions. Our ability to enforce our patents also depends on the laws of individual countries and each country's practice with respect to enforcement of intellectual property rights. In addition, if we are unable to maintain our existing license agreements or other agreements pursuant to which third parties grant us rights to intellectual property, including because such agreements expire or are terminated, our operating results and financial condition could be materially adversely affected.

Changes in patent law and practice in the United States and other countries may also weaken our ability to enforce our patent rights, or make such enforcement financially unattractive. For instance, U.S. court decisions continue to influence changes to U.S. Patent and Trademark Office Guidelines regarding inventions in the field of products isolated from nature and diagnostic methods which may influence future patenting strategy in these areas. A similar court decision was issued in Australia with regard to the patentability of nucleic acids. Patent law reforms and new case law could result in increased costs to protect our intellectual property and/or limit our ability to adequately patent our products.

Additionally, certain foreign governments have indicated that compulsory licenses to patents may be granted in the case of national emergencies, which could diminish or eliminate sales and profits from those regions and materially adversely affect our operating results and financial condition.

Likewise, in the United States and other countries, we currently hold issued trademark registrations and have trademark applications pending, any of which may be the subject of a governmental or third-party objection, which could prevent the maintenance or issuance of the same and thus create the potential need to rebrand or re-label a product. As our products mature, our reliance on our trademarks to differentiate us from our competitors increases and as a result, if we are unable to prevent third parties from adopting, registering or using trademarks and trade dress that infringe, dilute or otherwise violate our trademark rights, our business could be materially adversely affected.

Many of our vaccine products and other products are based on or incorporate proprietary information, including proprietary master seeds and proprietary or patented adjuvant formulations. We actively seek to protect our proprietary information, including our trade secrets and proprietary know-how, by requiring our employees, consultants, other advisors and other third parties to execute proprietary information and confidentiality agreements upon the commencement of their employment, engagement or other relationship. Despite these efforts and precautions, we may be unable to prevent a third party from copying or otherwise obtaining and using our trade secrets or our other intellectual property without authorization and legal remedies may not adequately compensate us for the damages caused by such unauthorized use. Further, others may independently and lawfully develop substantially similar or identical products that circumvent our intellectual property by means of alternative designs or processes or otherwise.

The misappropriation and infringement of our intellectual property, particularly in foreign countries where the laws may not protect our proprietary rights as fully as in the United States, may occur even when we take steps to prevent it. We are currently, and expect to be in the future, party to patent lawsuits and other intellectual property rights claims that are expensive and time consuming, and if resolved adversely, could have a significant impact on our business and financial condition. In the future, we may not be able to enforce intellectual property that relates to our products for various reasons, including licensor restrictions and other restrictions imposed by third parties, or the cost of enforcing our intellectual property may outweigh the value of doing so; either of which could have a material adverse impact on our business and financial condition.

Risks related to information technology

We may be unable to adequately protect our information technology systems from cyber-attacks, breaches of security or misappropriation of data, which could result in the disclosure of confidential information, damage our reputation, and subject us to significant financial and legal exposure.

Our reputation as a global leader in animal health and our reliance on complex information systems make us inherently vulnerable to malicious cyber intrusion and attack. Cyber-attacks are increasing in their frequency, sophistication and intensity, and have become increasingly difficult to detect. Cyber-attacks could include wrongful conduct by hostile foreign governments, industrial espionage, the deployment of harmful malware, ransomware,

denial-of-service attacks, and other means to threaten data confidentiality, integrity and availability. In addition, despite our efforts to protect sensitive, confidential or personal data or information, we (or our third party partners) may be vulnerable to material security breaches, theft, misplaced or lost data, programming errors, employee errors and/or malfeasance that could potentially lead to the compromise of sensitive, confidential or personal data or information, improper use of our systems or networks, unauthorized access, use, disclosure, modification or destruction of information (including confidential business information, trade secrets, intellectual property and corporate strategic plans), defective products, production downtimes and operational disruptions.

Like other global companies, we have experienced threats to our data and information technology systems. To date, those threats have not had a material impact on our business operations or financial condition. However, although we devote resources to protect our information technology systems, we expect cyber-attacks to continue, and there can be no assurance that our efforts will prevent information security breaches that would result in business, legal or reputational harm to us, or would have a material adverse effect on our operating results and financial condition.

If hackers or cyberthieves gain improper access to our technology systems, networks, or infrastructure, they may be able to access, steal, publish, delete, misappropriate, modify or otherwise disrupt access to confidential data. Moreover, additional harm to customers could be perpetrated by third parties who are given access to the confidential data. A network disruption (including one resulting from a cyberattack) could cause an interruption or degradation of service as well as permit access, theft, publishing, deletion, misappropriation, or modification to or of confidential data. Due to the evolving techniques used in cyberattacks to disrupt or gain unauthorized access to technology networks, we may not be able to anticipate or prevent such disruption or unauthorized access.

The costs imposed on us as a result of a cyberattack or network disruption could be significant. Among others, such costs could include increased expenditures on cyber security measures, litigation, regulatory investigations, fines, and sanctions, lost revenues from business interruption, damage to the public’s perception regarding our ability to keep our information secure and significant remediation costs. As a result, a cyberattack or network disruption could have a material adverse effect on our business, financial condition, and operating results.

We may be unable to adequately protect our stakeholders' privacy or we may fail to comply with privacy laws.

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The protection of customer, employee, supplier and company data is critical and the regulatory environment surrounding information security, storage, use, processing, disclosure and privacy is demanding, with the frequent imposition of new and changing requirements. In addition, our customers, employees and suppliers expect that we will adequately protect their personal information. Any actual or perceived significant breakdown, intrusion, interruption, cyber-attack or corruption of customer, employee or company data or our failure to comply with federal, state, local and foreign privacy laws, including the EU General Data Protection Regulation (GDPR) and the Health Insurance Portability and Accountability Act, could result in lost sales, remediation costs, and legal liability including severe penalties, regulatory action and reputational harm. For example, the EU's GDPR became effective on May 25, 2018 and requires companies to meet new and enhanced requirements regarding the handling of personal data, including its use, protection and the rights of data subjects to request correction or deletion of their personal data. Failure to meet GDPR requirements could result in penalties of up to 4% of worldwide revenue.

Despite our considerable efforts and investments in technology to secure our computer network, security could be compromised, confidential information could be misappropriated or system disruptions could occur. Failure to comply with the security requirements or rectify a security issue may result in fines and the imposition of restrictions on our ability to accept payment by credit or debit cards. In addition, the payment card industry (PCI) is controlled by a limited number of vendors that have the ability to impose changes in PCI's fee structure and operational requirements on us without negotiation. Such changes in fees and operational requirements may result in our failure to comply with PCI security standards, as well as significant unanticipated expenses. Such failures could materially adversely affect our operating results and financial condition.

We depend on sophisticated information technology and infrastructure.

We rely on the efficient and uninterrupted operation of complex information technology systems to manage our operations, to process, transmit and store electronic and financial information, and to comply with regulatory, legal and tax requirements. We also depend on our information technology infrastructure for digital marketing activities and for electronic communications among our personnel, customers and suppliers around the world. System failures or outages could compromise our ability to perform these functions in a timely manner, which could harm our ability to conduct business, hurt our relationships with our customers, or delay our financial reporting. Such failures could materially adversely affect our operating results and financial condition.

In addition, we depend on third parties and applications on virtualized (cloud) infrastructure to operate and support our information systems. These third parties include large established vendors, as well as many small, privately owned companies. Failure by these providers to adequately support our operations or a change in control or insolvency of these providers could have an adverse effect on our business, which in turn may materially adversely affect our operating results and financial condition.

All information systems, despite implementation of security measures, are vulnerable to disability, failures or unauthorized access. If our information systems were to fail or be breached, such failure or breach could materially adversely affect our ability to perform critical business functions and sensitive and confidential data could be compromised.

We may be unable to successfully manage our online ordering sites.

In many markets around the world, such as the United States and Brazil, we provide online ordering sites to customers, often relying on third parties to host and support the application. The operation of our online business depends on our ability to maintain the efficient and uninterrupted operation of our online order-taking and fulfillment operations. Risks associated with our online business include: disruptions in telephone or internet service or power outages; failures of the information systems that support our website, including inadequate system capacity, computer viruses, human error, changes in programming, security breaches, system upgrades or migration of these services to new systems; reliance on third parties for computer hardware and software as well as delivery of merchandise to our customers; rapid technology changes; credit card fraud; natural disasters or adverse weather conditions; power and network outages; changes in applicable federal and state regulations; liability for online content; and consumer privacy concerns. Problems in any one or more of these areas could have a material adverse effect on our operating results and financial condition and could damage our reputation.

Risks related to our indebtedness

We have substantial indebtedness.

We have a significant amount of indebtedness, which could materially adversely affect our operating results, financial condition and liquidity. As of December 31, 2018, we had approximately $6.4 billion of total unsecured indebtedness outstanding. In addition, we currently have agreements for a multi-year revolving credit facility and a commercial paper program, each with a capacity of up to $1.0 billion. While we currently do not have any amounts drawn under the credit facility nor any commercial paper issued under the commercial paper program, we may incur indebtedness under these arrangements in the future.

We may incur substantial additional debt from time to time to finance working capital, capital expenditures, investments or acquisitions, or for other purposes. If we do so, the risks related to our high level of debt could intensify. Specifically, our high level of debt could have important consequences, including:

- making it more difficult for us to satisfy our obligations with respect to our debt;
- limiting our ability to obtain additional financing to fund future working capital, capital expenditures, business development or other general corporate requirements, including dividends;
- increasing our vulnerability to general adverse economic and industry conditions;
- exposing us to the risk of increased interest rates as certain of our borrowings are and may in the future be at variable rates of interest;
- limiting our flexibility in planning for and reacting to changes in the animal health industry;
- placing us at a competitive disadvantage to other, less leveraged competitors;
- impacting our effective tax rate; and

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- increasing our cost of borrowing.

In addition, the instruments governing our indebtedness contain restrictive covenants that will limit our ability to engage in activities that may be in our long-term best interest. For example, our credit facility contains a financial covenant requiring us to not exceed a maximum total leverage ratio and covenants that, among other things, limit or restrict our and our subsidiaries' ability, subject to certain exceptions, to incur liens, merge, consolidate or sell, transfer or lease assets, transact with affiliates and incur priority indebtedness. Our failure to comply with such covenants could result in an event of default which, if not cured or waived, could result in the acceleration of all our debt.

We also have outstanding floating rate notes due 2021 (the "2021 floating rate notes") that have their interest rate calculated quarterly using three-month LIBOR. The U.K. Financial Conduct Authority (the "FCA"), which regulates LIBOR, announced that the FCA will no longer persuade or compel banks to submit rates for the calculation of LIBOR after 2021, and it appears likely that LIBOR will be discontinued or modified by 2021. The discontinuance or modification of LIBOR, the introduction of alternative reference rates or other reforms to LIBOR could cause the interest rate calculated on our 2021 floating rate notes to be materially different than expected. In addition, if interest rates in general continue to rise, our interest expense related to the 2021 floating rate notes will increase.

We may not be able to generate sufficient cash to service all of our indebtedness and may be forced to take other actions to satisfy our obligations under our indebtedness, which may not be successful.

Our ability to make scheduled payments on or refinance our debt obligations depends on our financial condition and operating performance, which are subject to prevailing economic and competitive conditions and to certain financial, business, legislative, regulatory and other factors beyond our control. We may be unable to maintain a level of cash flows from operating activities sufficient to permit us to pay the principal and interest on our indebtedness.

If our cash flows and capital resources are insufficient to fund our debt service obligations, we could face substantial liquidity problems and could be forced to reduce or delay investments and capital expenditures, or to dispose of material assets or operations, alter our dividend policy, seek additional debt or equity capital or restructure or refinance our indebtedness. We may not be able to effect any such alternative measures on commercially reasonable terms or at all and, even if successful, those alternative actions may not allow us to meet our scheduled debt service obligations. The instruments that will govern our indebtedness may restrict our ability to dispose of assets and may restrict the use of proceeds from those dispositions and may also restrict our ability to raise debt or equity capital to be used to repay other indebtedness when it becomes due. We may not be able to consummate those dispositions or to obtain proceeds in an amount sufficient to meet any debt service obligations when due.

In addition, we conduct our operations through our subsidiaries. Accordingly, repayment of our indebtedness will depend on the generation of cash flow by our subsidiaries, including certain international subsidiaries, and their ability to make such cash available to us, by dividend, debt repayment or otherwise. Our subsidiaries may not have any obligation to pay amounts due on our indebtedness or to make funds available for that purpose. Our subsidiaries may not be able to, or may not be permitted to, make distributions to enable us to make payments in respect of our indebtedness. Each subsidiary is a distinct legal entity, and under certain circumstances, legal, tax and contractual restrictions may limit our ability to obtain cash from our subsidiaries. In the event that we do not receive distributions from our subsidiaries, we may be unable to make required principal and interest payments on our indebtedness.

Our inability to generate sufficient cash flows to satisfy our debt obligations, or to refinance our indebtedness on commercially reasonable terms or at all, may materially adversely affect our operating results, financial condition and liquidity and our ability to satisfy our obligations under our indebtedness or pay dividends on our common stock.

We may not have the funds necessary to finance the change of control offer required by the indenture governing our senior notes.

Upon the occurrence of a change of control of Zoetis and a downgrade below investment grade by Moody's Investor Services, Inc. and Standard & Poor's Rating Services, we will be required to offer to repurchase all of our outstanding senior notes. However, we may not have sufficient funds available at the time of the change of control to finance the required change of control offer or restrictions in our then-existing debt instruments will not allow such repurchases. Our failure to purchase the senior notes as required under the indenture would result in a default under the indenture, which could have material adverse consequences for us and the holders of the senior notes.

Our credit ratings may not reflect all risks of an investment in our senior notes.

The credit ratings assigned to our senior notes are limited in scope, and do not address all material risks relating to an investment in our senior notes, but rather reflect only the view of each rating agency at the time the rating is issued. There can be no assurance that such credit ratings will remain in effect for any given period of time or that a rating will not be lowered, suspended or withdrawn entirely by the applicable rating agencies, if, in such rating agency's judgment, circumstances so warrant. Credit ratings are not a recommendation to buy, sell or hold any security. Each agency's rating should be evaluated independently of any other agency's rating. Actual or anticipated changes or downgrades in our credit ratings, including any announcement that our ratings are under further review for a downgrade, could affect the market prices of our securities and increase our borrowing costs.

Risks related to our relationship with Pfizer

Certain of our directors may have actual or potential conflicts of interest because of their positions with Pfizer.

Certain of our directors are employed or have been employed by Pfizer or may own Pfizer common stock, options to purchase Pfizer common stock or other Pfizer equity awards. Certain of these holdings may be individually significant to these directors as compared with such director's total assets. These directors' positions at Pfizer and the ownership of any Pfizer equity or equity awards may create, or may create the appearance of, conflicts of interest when these directors are faced with decisions that could have different implications for Pfizer than for us.

Pfizer's rights as licensor under the patent and know-how license could limit our ability to develop and commercialize certain products.

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Under the patent and know-how license agreement (Pfizer as licensor) (the Patent and Know-How License Agreement), Pfizer licenses to us certain of its intellectual property. If we fail to comply with our obligations under this license agreement and Pfizer exercises its right to terminate it, our ability to continue to research, develop and commercialize products incorporating that intellectual property will be limited. In addition, in circumstances where Pfizer has an interest in the licensed intellectual property in connection with its human health development programs, our rights to use the licensed intellectual property are restricted and/or, in limited instances, subject to Pfizer's right to terminate such license at will. These limitations and termination rights may make it more difficult, time-consuming or expensive for us to develop and commercialize certain new products, or may result in our products being later to market than those of our competitors.

We are dependent on Pfizer to prosecute, maintain and enforce certain intellectual property.

Under the Patent and Know-How License Agreement, Pfizer is responsible for filing, prosecuting and maintaining patents that Pfizer licenses to us. In the animal health field, Pfizer has the first right, and in some cases the sole right, to enforce such licensed patents, and in the human health field, subject to certain exceptions, Pfizer has the sole right to enforce the licensed patents. If Pfizer fails to fulfill its obligations or chooses to not enforce the licensed patents under this agreement, we may not be able to prevent competitors from making, using and selling competitive products, which could have an adverse effect on our business.

To preserve the tax-free treatment to Pfizer and/or its stockholders of the Exchange Offer and certain related transactions, we may not be able to engage in certain transactions.

On May 22, 2013, Pfizer announced an exchange offer (the Exchange Offer) whereby Pfizer shareholders could exchange a portion of Pfizer common stock for Zoetis common stock. The Exchange Offer was completed on June 24, 2013, resulting in the full separation of Zoetis and the disposal of Pfizer's entire ownership and voting interest in Zoetis. To preserve the tax-free treatment to Pfizer and/or its stockholders of the Exchange Offer and certain related transactions, under the tax matters agreement, we are restricted from taking any action that prevents such transactions from being tax-free for U.S. federal, state, local and foreign income tax purposes. These restrictions may limit our ability to engage in certain transactions, including taking certain actions with respect to our 3.250% Senior Notes due 2023.

If there is a later determination that the Exchange Offer or certain related transactions are taxable for U.S. federal income tax purposes because the facts, assumptions, representations or undertakings underlying the IRS private letter ruling and/or any tax opinion are incorrect or for any other reason, we could incur significant liabilities.

Pfizer has received a private letter ruling from the IRS substantially to the effect that, among other things, the Exchange Offer will qualify as a transaction that is tax-free for U.S. federal income tax purposes under Sections 355 and 368(a)(1)(D) of the U.S. Internal Revenue Code of 1986 (the Code). Completion by Pfizer of the Exchange Offer was conditioned on, among other things, the continuing application of Pfizer's private letter ruling from the IRS and the receipt of an opinion of tax counsel, to the effect that, among other things, the Exchange Offer will qualify as a transaction that is tax-free for U.S. federal income tax purposes under Sections 355 and 368(a)(1)(D) of the Code. The ruling and the opinion rely on certain facts, assumptions, representations and undertakings from Pfizer and us regarding the past and future conduct of the companies' respective businesses and other matters. If any of these facts, assumptions, representations or undertakings are incorrect or not otherwise satisfied, Pfizer and its stockholders may not be able to rely on the ruling or the opinion of tax counsel and could be subject to significant tax liabilities. Notwithstanding the private letter ruling and opinion of tax counsel, the IRS could determine on audit that the Exchange Offer or certain related transactions are taxable if it determines that any of these facts, assumptions, representations or undertakings are not correct or have been violated or if it disagrees with the conclusions in the opinion that are not covered by the private letter ruling, or for other reasons, including as a result of certain significant changes in the stock ownership of Pfizer or us after the Exchange Offer. If the Exchange Offer or certain related transactions are determined to be taxable for U.S. federal income tax purposes, we could incur significant liabilities under applicable law or under the tax matters agreement.

Risks related to our common stock

The price of our common stock may fluctuate substantially, and you could lose all or part of your investment in Zoetis common stock as a result.

Our common stock has a limited trading history and there may be wide fluctuations in the market value of our common stock as a result of many factors. From our IPO through December 31, 2018, the sales price of our common stock as reported by the NYSE has ranged from a low sales price of $28.14 on April 15, 2014 to a high sales price of $96.57 on November 1, 2018. Some factors that may cause the market price of our common stock to fluctuate, in addition to the other risks mentioned in this section and in our 2018 Annual Report, are:

- our operating performance and the performance of our competitors;
- our or our competitors' press releases, other public announcements and filings with the SEC regarding new products or services, enhancements, significant contracts, acquisitions or strategic investments;
- changes in earnings estimates or recommendations by securities analysts, if any, who cover our common stock;
- changes in our investor base;
- failures to meet external expectations or management guidance;
- fluctuations in our financial results or the financial results of companies perceived to be similar to us;
- changes in our capital structure or dividend policy, future issuances of securities, sales of large blocks of common stock by our stockholders or the incurrence of additional debt;
- reputational issues;
- changes in general economic and market conditions in any of the regions in which we conduct our business;
- the arrival or departure of key personnel;
- the actions of speculators and financial arbitrageurs (such as hedge funds);
- changes in applicable laws, rules or regulations and other dynamics; and

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- other developments or changes affecting us, our industry or our competitors.

In addition, if the market for stocks in our industry or industries related to our industry, or the stock market in general, experiences a loss of investor confidence, the trading price of our common stock could decline for reasons unrelated to our business, financial condition and results of operations. If any of the foregoing occurs, it could cause our stock price to fall and may expose us to lawsuits that, even if unsuccessful, could be costly to defend and a distraction to management.

While we currently pay a quarterly cash dividend to our common stockholders, we may change our dividend policy at any time.

On December 12, 2018, our Board of Directors declared the 2019 first quarter dividend of $0.164 per share to be paid on March 1, 2019, to holders of record on January 18, 2019; and on February 12, 2019, our Board of Directors declared the 2019 second quarter dividend of $0.164 per share to be paid on June 3, 2019, to holders of record on April 18, 2019. Although we currently pay a quarterly cash dividend to our common stockholders, we have no obligation to do so, and our dividend policy may change at any time without notice to our stockholders. Returns on stockholders' investments will primarily depend on the appreciation, if any, in the price of our common stock. We anticipate that we will retain most of our future earnings, if any, for use in the development and expansion of our business, repayment of indebtedness and for general corporate purposes. The declaration and payment of dividends is at the discretion of our Board of Directors in accordance with applicable law after taking into account various factors, including our financial condition, operating results, current and anticipated cash needs, cash flows available in the United States, impact on our effective tax rate, indebtedness, legal requirements and other factors that our Board of Directors deems relevant.

Provisions in our restated certificate of incorporation, amended and restated by-laws, and Delaware law may prevent or delay an acquisition of us, which could decrease the trading price of our common stock.

Our amended and restated certificate of incorporation, which we refer to as “our certificate of incorporation,” and our amended and restated by-laws, which we refer to as “our by-laws,” contain provisions that are intended to deter coercive takeover practices and inadequate takeover bids and to encourage prospective acquirers to negotiate with our Board of Directors rather than to attempt a hostile takeover. These provisions include:

- a Board of Directors that is divided into three classes with staggered terms;
- rules regarding how our stockholders may present proposals or nominate directors for election at stockholder meetings;
- the right of our Board of Directors to issue preferred stock without stockholder approval; and
- limitations on the right of stockholders to remove directors.

In addition, Delaware law also imposes some restrictions on mergers and other business combinations between us and any holder of 15% or more of our outstanding common stock. These provisions apply even if the offer may be considered beneficial by some stockholders and could delay or prevent an acquisition that our Board of Directors determines is not in our and our stockholders' best interests.

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Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

We have 151 owned and leased properties, amounting to approximately 10.7 million square feet, around the world for sales and marketing, customer service, regulatory compliance, R&D, manufacturing and distribution, and administrative support functions. In many locations, operations are co-located to achieve synergies and operational efficiencies. Our largest R&D facility is our owned U.S. research and development site located in Kalamazoo, Michigan, which represents approximately 1.5 million square feet. None of our other non-manufacturing sites are more than 0.2 million square feet. The largest manufacturing site in our global manufacturing network is our manufacturing site located in Kalamazoo, Michigan, which represents approximately 0.6 million square feet. No other site in our global manufacturing network is more than 0.6 million square feet. In addition, our global manufacturing network will continue to be supplemented by approximately 172 CMOs.

Our corporate headquarters are located at 10 Sylvan Way, Parsippany, New Jersey 07054. Our operations extend internationally to approximately 58 countries.

We believe that our existing properties, as supplemented by sites operated by CMOs, are adequate for our current requirements and for our operations in the foreseeable future.

Item 3. Legal Proceedings.

We are from time to time subject to claims and litigation arising in the ordinary course of business. These claims and litigation may include, among other things, allegations of violation of U.S. and foreign competition law, labor laws, consumer protection laws, and environmental laws and regulations, as well as claims or litigation relating to product liability, intellectual property, securities, breach of contract and tort. We operate in multiple jurisdictions and, as a result, a claim in one jurisdiction may lead to claims or regulatory penalties in other jurisdictions. We intend to defend vigorously against any pending or future claims and litigation.

At this time, in the opinion of management, the likelihood is remote that the impact of such proceedings, either individually or in the aggregate, would have a material adverse effect on our consolidated results of operations, financial condition or cash flows. However, one or more unfavorable outcomes in any claim or litigation against us could have a material adverse effect for the period in which they are resolved. In addition, regardless of their merits or their ultimate outcomes, such matters are costly, divert management's attention and may materially adversely affect our reputation, even if resolved in our favor.

Certain legal proceedings in which we are involved are discussed in Notes to Consolidated Financial Statements— Note 17. Commitments and Contingencies, and are incorporated by reference from such discussion.

Item 4. Mine Safety Disclosures.

Not applicable.

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PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Our shares of common stock have been listed on the NYSE (symbol ZTS) since February 1, 2013. Prior to that time, there was no public market for our stock.

As of February 8, 2019, there were 478,771,915 shares of our common stock outstanding, held by 1,846 shareholders of record.

Additional information relating to our common stock is included in this Annual Report on Form 10-K in Notes to Consolidated Financial Statements— Note 15. Stockholders' Equity.

Purchases of Equity Securities by the Issuer

On December 6, 2016, our Board of Directors authorized the repurchase of $1.5 billion of our outstanding common stock in a multi-year share repurchase program. This program was substantially completed as of December 31, 2018 and is expected to be completed in the first half of 2019. On December 12, 2018, we announced that our Board of Directors authorized a multi-year share repurchase program of up to an additional $2.0 billion of our outstanding common stock.

These programs do not have a stated expiration date. Purchases of Zoetis shares may be made at the discretion of management, depending on market conditions and business needs. We repurchase shares pursuant to Rules 10b5-1 and 10b-18 under the Securities Exchange Act of 1934, as amended, through repurchase agreements established with several brokers.

Issuer purchases of equity securities for the three months ended December 31, 2018 were as follows:

	Issuer Purchases of Equity Securities			
	Total Number of Shares Purchased[(a)]	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Programs	Approximate Dollar Value of Shares that May Yet Be Purchased Under Plans or Programs
October 1 - October 31, 2018	677,263	$90.73	665,039	$391,029,156
November 1 - November 30, 2018	677,899	$91.17	663,298	$330,543,493
December 1 - December 31, 2018	331,680	$88.06	331,076	$2,301,146,377
Total	1,686,842	$90.38	1,659,413	$2,301,146,377

(a) The company repurchased 27,429 shares during the three-month period ended December 31, 2018, that were not part of the publicly announced share repurchase authorization. These shares were purchased from employees to satisfy tax withholding requirements on the vesting of restricted shares from equity-based awards.

Dividend Policy, Declaration and Payment

The declaration and payment of dividends to holders of our common stock will be at the discretion of our Board of Directors in accordance with applicable law after taking into account various factors, including our financial condition, operating results, current and anticipated cash needs, cash flows available in the United States, impact on our effective tax rate, indebtedness, legal requirements and other factors that our Board of Directors deems relevant. In addition, the instruments governing our indebtedness may limit our ability to pay dividends. Therefore, no assurance is given that we will pay any dividends to our common stockholders or as to the amount of any such dividends if our Board of Directors determines to do so.

Because we are a holding company, our ability to pay cash dividends on our common stock will depend on the receipt of dividends or other distributions from certain of our subsidiaries.

Stock Performance Graph[(a)]

The graph below compares the cumulative total shareholder return on an investment in our common stock, the S&P 500 Index and the S&P 500 Pharmaceuticals Index for the five fiscal years beginning with the close of trading on

December 31, 2013 and ending December 31, 2018. The shareholder return shown on the graph is not necessarily indicative of future performance, and we do not make or endorse any predictions as to future shareholder returns. The graph assumes the investment of $100 on December 31, 2013, in our common stock, the S&P 500 Index and the S&P 500 Pharmaceuticals Index and assumes dividends, if any, are reinvested.

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COMPARISON OF CUMULATIVE TOTAL RETURN

Among Zoetis Inc., the S&P 500 Index and the S&P 500 Pharmaceuticals Index

	December 31, 2013	December 31, 2014	December 31, 2015	December 31, 2016	December 31, 2017	December 31, 2018
Zoetis Inc.	$100	$132.80	$148.97	$167.80	$227.46	$271.69
S&P 500	$100	$113.69	$115.26	$129.05	$157.22	$150.33
S&P 500 Pharmaceuticals Index	$100	$122.22	$129.29	$127.27	$143.27	$154.86

(a) This section is not “soliciting material,” is not deemed “filed” with the SEC and is not to be incorporated by reference in any filing of Zoetis under the Securities Act of 1933, as amended, or the Exchange Act whether made before or after the date hereof and irrespective of any general incorporation language contained in any such filing.

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Item 6. Selected Financial Data.

The following table sets forth our selected historical consolidated and combined financial data for the periods indicated.

The selected consolidated statements of income data for the years ended December 31, 2018, 2017 and 2016, and the selected consolidated balance sheet data as of December 31, 2018 and 2017 presented below have been derived from our audited consolidated financial statements included in Item 8. Financial Statements and Supplementary Data. The selected historical consolidated statements of income data for the years ended December 31, 2015 and 2014, and the selected historical consolidated balance sheet data as of December 31, 2016, 2015 and 2014 presented below has been derived from our audited financial statements not included in this 2018 Annual Report.

You should read the selected historical consolidated and combined financial data set forth below in conjunction with Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations and our consolidated financial statements and notes thereto included in Item 8. Financial Statements and Supplementary Data.

	Year Ended December 31,[a]				
(MILLIONS, EXCEPT PER SHARE AMOUNTS)	2018	2017	2016	2015	2014
Statement of income data:					
Revenue	$5,825	$5,307	$4,888	$4,765	$4,785
Net income attributable to Zoetis	1,428	864	821	339	583
Balance sheet data:					
Total assets	$10,777	$8,586	$7,649	$7,913	$6,588
Long-term obligations	6,443	4,953	4,468	4,463	3,624
Other data (unaudited):					
Adjusted net income[b]	$1,525	$1,185	$975	$889	$790
Earnings per share attributable to Zoetis Inc. stockholders:					
Basic	$2.96	$1.76	$1.66	$0.68	$1.16
Diluted	$2.93	$1.75	$1.65	$0.68	$1.16
Dividends declared per common share	$0.542	$0.441	$0.390	$0.344	$0.299
Weighted average shares outstanding (in thousands):					
Basic	483,063	489,918	495,715	499,707	501,055
Diluted	486,898	493,161	498,225	502,019	502,025

Certain amounts may reflect rounding adjustments.

(a) Starting in August 2018, includes the acquisition of Abaxis. Starting in February 2015, includes the acquisition of certain assets from Abbott Animal Health and starting in November 2015, includes the acquisition of Pharmaq.

(b) Adjusted net income (a non-GAAP financial measure) is defined as reported net income attributable to Zoetis excluding purchase accounting adjustments, acquisition-related costs and certain significant items. Management uses adjusted net income, among other factors, to set performance goals and to measure the performance of the overall company, as described in Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Non-GAAP financial measures and Adjusted net income. We believe that investors' understanding of our performance is enhanced by disclosing this performance measure. Reconciliations of U.S. GAAP reported net income attributable to Zoetis to non-GAAP adjusted net income for the years ended December 31, 2018, 2017 and 2016 are provided in Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Adjusted net income. The adjusted net income measure is not, and should not be viewed as, a substitute for U.S. GAAP reported net income attributable to Zoetis.

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Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

Introduction

Our management's discussion and analysis of financial condition and results of operations (MD&A) is provided to assist readers in understanding our performance, as reflected in the results of our operations, our financial condition and our cash flows. This MD&A should be read in conjunction with our consolidated financial statements and notes to consolidated financial statements included in Item 8. Financial Statements and Supplementary Data. The discussion in this MD&A contains forward-looking statements that involve substantial risks and uncertainties. Our future results could differ materially from historical performance and from those anticipated in the forward-looking statements as a result of various factors such as those discussed in Item 1A. Risk Factors and Forward-looking statements and factors that may affect future results sections of this MD&A.

Overview of our business

We are a global leader in the discovery, development, manufacture and commercialization of animal health medicines, vaccines, and diagnostic products with a focus on both livestock and companion animals. For more than 65 years we have been committed to enhancing the health of animals and bringing solutions to our customers who raise and care for them.

We manage our operations through two geographic operating segments: the United States (U.S.) and International. Within each of these operating segments, we offer a diversified product portfolio for both livestock and companion animal customers in order to capitalize on local and regional trends and customer needs. See Notes to Consolidated Financial Statements—Note 18. Segment Information.

We directly market our products to veterinarians and livestock producers located in approximately 45 countries across North America, Europe, Africa, Asia, Australia and South America, and are a market leader in nearly all of the major regions in which we operate. Through our efforts to establish an early and direct presence in many emerging markets, such as Brazil, China and Mexico, we believe we are one of the largest animal health medicines and vaccines business as measured by revenue across emerging markets as a whole. In markets where we do not have a direct commercial presence, we generally contract with distributors that provide logistics and sales and marketing support for our products.

We believe our investments in one of the industry's largest sales organizations, including our extensive network of technical and veterinary operations specialists, our high-quality manufacturing and reliability of supply, and our long track record of developing products that meet customer needs, has led to enduring and valued relationships with our customers. Our research and development (R&D) efforts enable us to deliver innovative products to address unmet needs and evolve our product lines so they remain relevant for our customers.

A summary of our 2018 performance compared with the comparable 2017 and 2016 periods follows:

	Years Ended December 31,			% Change	
(MILLIONS OF DOLLARS)	2018	2017	2016	18/17	17/16
Revenue	$5,825	$5,307	$4,888	10	9
Net income attributable to Zoetis	1,428	864	821	65	5
Adjusted net income[(a)]	1,525	1,185	975	29	22

(a) Adjusted net income is a non-GAAP financial measure. See the Non-GAAP financial measures and Adjusted net income sections of this MD&A for more information.

Our operating environment

Industry

The animal health industry, which focuses on both livestock and companion animals, is a growing industry that impacts billions of people worldwide. The primary livestock species for the production of animal protein are cattle (both beef and dairy), swine, poultry, fish and sheep. Livestock health and production are essential to meeting the growing demand for animal protein of a global population. Factors influencing growth in demand for livestock medicines and vaccines include:

- human population growth and increasing standards of living, particularly in many emerging markets;
- increasing demand for improved nutrition, particularly animal protein;

- natural resource constraints, such as scarcity of arable land, fresh water and increased competition for cultivated land, resulting in fewer resources that will be available to meet an increasing demand for animal protein;
- increasing urbanization; and
- increased focus on food safety and food security.

The primary companion animal species are dogs, cats and horses. Factors influencing growth in demand for companion animal medicines, vaccines and diagnostics include:

- economic development and related increases in disposable income, particularly in many emerging markets;
- increasing pet ownership;
- companion animals living longer;
- increasing medical treatment of companion animals; and
- advances in companion animal medicines, vaccines and diagnostics.

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Product development initiatives

Our future success depends on both our existing product portfolio and our pipeline of new products, including new products that we may develop through joint ventures and products that we are able to obtain through license or acquisition. We believe we are an industry leader in animal health R&D, with a track record of generating new products and product lifecycle innovation. The majority of our R&D programs focus on product lifecycle innovation, which is defined as R&D programs that leverage existing animal health products by adding new species or claims, achieving approvals in new markets or creating new combinations and reformulations.

Perceptions of product quality, safety and reliability

We believe that animal health customers value high-quality manufacturing and reliability of supply. The importance of quality and safety concerns to pet owners, veterinarians and livestock producers also contributes to animal health brand loyalty, which we believe often continues after the loss of patent-based and regulatory exclusivity. We depend on positive perceptions of the safety and quality of our products by our customers, veterinarians and end-users.

In addition, negative beliefs about animal health products generally could impact demand for our products. For example, the issue of the potential transfer of increased antibacterial resistance in bacteria from food-producing animals to human pathogens, and the causality of that transfer, continue to be the subject of global scientific and regulatory discussion. Antibacterials refer to small molecules that can be used to treat or prevent bacterial infections and are a sub-categorization of the products that make up our anti-infectives and medicated feed additives portfolios. In some countries, this issue has led to government restrictions and bans on the use of specific antibacterials in some food-producing animals, regardless of the route of administration (in feed or injectable). These restrictions are more prevalent in countries where animal protein is plentiful and governments are willing to take action even when there is scientific uncertainty. Our total revenue attributable to antibacterials for livestock was approximately $1.3 billion for the year ended December 31, 2018.

We cannot predict whether antibacterial resistance concerns will result in additional restrictions or bans, expanded regulations, public pressure to discontinue or reduce use of antibacterials in food-producing animals or increased consumer preference for antibiotic-free protein.

The overall economic environment

In addition to industry-specific factors, we, like other businesses, face challenges related to global economic conditions. Growth in both the livestock and companion animal sectors is driven by overall economic development and related growth, particularly in many emerging markets. In the past, certain of our customers and suppliers have been affected directly by economic downturns, which decreased the demand for our products and, in some cases, hindered our ability to collect amounts due from customers.

The cost of medicines and vaccines to our livestock producer customers is small relative to other production costs, including feed, and the use of these products is intended to improve livestock producers' economic outcomes. As a result, demand for our products has historically been more stable than demand for other production inputs. Similarly, industry sources have reported that pet owners indicated a preference for reducing spending on other aspects of their lifestyle, including entertainment, clothing and household goods, before reducing spending on pet care. While these factors have mitigated the impact of prior downturns in the global economy, future economic challenges could increase cost sensitivity among our customers, which may result in reduced demand for our products, which could have a material adverse effect on our operating results and financial condition.

Competition

The animal health industry is competitive. Although our business is the largest by revenue in the animal health medicines, vaccines and diagnostics industry, we face competition in the regions in which we operate. Principal methods of competition vary depending on the particular region, species, product category or individual product. Some of these methods include new product development, quality, price, service and promotion to veterinary professionals, pet owners and livestock producers. Our competitors include standalone animal health businesses and the animal health businesses of large pharmaceutical companies. In recent years, there has been an increase in consolidation in the animal health industry. There are also several new start-up companies working in the animal health area. In addition to competition from established market participants, there could be new entrants to the animal health medicines, vaccines and diagnostics industry in the future. In certain markets, we also compete with companies

that produce generic products, but the level of competition from generic products varies from market to market. For example, the level of generic competition is higher in Europe and certain emerging markets than in the United States.

Weather conditions and the availability of natural resources

The animal health industry and demand for many of our animal health products in a particular region are affected by weather conditions, as usage of our products follows varying weather patterns and weather-related pressures from pests, such as ticks. As a result, we may experience regional and seasonal fluctuations in our results of operations.

In addition, veterinary hospitals and practitioners depend on visits from and access to the animals under their care. Veterinarians' patient volume and ability to operate could be adversely affected if they experience prolonged snow, ice or other severe weather conditions, particularly in regions not accustomed to sustained inclement weather.

Furthermore, livestock producers depend on the availability of natural resources, including large supplies of fresh water. Their animals' health and their ability to operate could be adversely affected if they experience a shortage of fresh water due to human population growth or floods, droughts or other weather conditions. In the event of adverse weather conditions or a shortage of fresh water, veterinarians and livestock producers may purchase less of our products.

For example, drought conditions could negatively impact, among other things, the supply of corn and the availability of grazing pastures. A decrease in harvested corn results in higher corn prices, which could negatively impact the profitability of livestock producers of cattle, pork and poultry. Higher corn prices and reduced availability of grazing pastures contribute to reductions in herd or flock sizes that in turn result in less spending on animal health products. As such, a prolonged drought could have a material adverse impact on our operating results and financial condition. Factors influencing the magnitude and timing of effects of a drought on our performance include, but may not be limited to, weather patterns and herd management decisions.

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Adverse weather conditions may also impact the aquaculture business. Changes in water temperatures could affect the timing of reproduction and growth of various fish species, as well as trigger the outbreak of certain water borne diseases.

Disease outbreaks

Sales of our livestock products could be adversely affected by the outbreak of disease carried by animals. Outbreaks of disease may reduce regional or global sales of particular animal-derived food products or result in reduced exports of such products, either due to heightened export restrictions or import prohibitions, which may reduce demand for our products. Also, the outbreak of any highly contagious disease near our main production sites could require us to immediately halt production of our products at such sites or force us to incur substantial expenses in procuring raw materials or products elsewhere. Alternatively, sales of products that treat specific disease outbreaks may increase.

Manufacturing and supply

In order to sell our products, we must be able to produce and ship our products in sufficient quantities. Many of our products involve complex manufacturing processes and are sole-sourced from certain manufacturing sites. Minor deviations in our manufacturing or logistical processes, such as temperature excursions or improper package sealing, could result in delays, inventory shortages, unanticipated costs, product recalls, product liability and/or regulatory action. In addition, a number of factors could cause production interruptions that could result in launch delays, inventory shortages, recalls, unanticipated costs or issues with our agreements under which we supply third parties. Our manufacturing network may be unable to meet the demand for our products or we may have excess capacity if demand for our products changes. The unpredictability of a product's regulatory or commercial success or failure, the lead time necessary to construct highly technical and complex manufacturing sites, and shifting customer demand increase the potential for capacity imbalances.

Foreign exchange rates

Significant portions of our revenue and costs are exposed to changes in foreign exchange rates. Our products are sold in more than 100 countries and, as a result, our revenue is influenced by changes in foreign exchange rates. For the year ended December 31, 2018, approximately 47% of our revenue was denominated in foreign currencies. We seek to manage our foreign exchange risk, in part, through operational means, including managing same-currency revenue in relation to same-currency costs and same-currency assets in relation to same-currency liabilities. As we operate in multiple foreign currencies, including the euro, Brazilian real, Chinese renminbi, Canadian dollar, Australian dollar, U.K. pound and other currencies, changes in those currencies relative to the U.S. dollar will impact our revenue, cost of goods and expenses, and consequently, net income. Exchange rate fluctuations may also have an impact beyond our reported financial results and directly impact operations. These fluctuations may affect the ability to buy and sell our goods and services between markets impacted by significant exchange rate variances. For the year ended December 31, 2018, approximately 53% of our total revenue was in U.S. dollars. Our year-over-year total revenue growth did not have a net impact from changes in foreign currency values relative to the U.S. dollar.

Our growth strategies

We seek to enhance the health of animals and to bring solutions to our customers who raise and care for them. We have a global presence in both developed and emerging markets and we intend to grow our business by pursuing the following core strategies:

- bring innovative new products and services to market — We seek to deliver more innovations across core areas of vaccines, pharmaceuticals, diagnostics and the complementary spaces we have been adding over time such as genetics, biodevices, digital and data analytics;
- maintain a diversified, market-leading portfolio — We believe our diversity across species, geographies and therapeutic areas balances economic cycles and regulatory changes, while minimizing dependency in any one area;
- maximize opportunities in fast-growing international markets — We seek to maximize our presence where economic development is driving increased demand for animal protein and increased demand for and spending on companion animals. We intend to capitalize on investments we have made in high-growth markets such as China and Brazil;
- develop more data analytics and digital solutions — We believe that healthcare insights enabled by data and digital technology and complemented with our portfolio of vaccines, therapeutics, and diagnostics will be critical in enhancing care for animals and improving livestock productivity;

- support our customers' direct engagement with pet owners and consumers — We believe that we have an important role to play in supporting our veterinary customers' engagement with pet owners, who are increasingly influencing care decisions for their animals, and consumers, who are demanding more transparency about where their food comes from and how it is produced; and
- enhance our capabilities across the continuum of care — We are focused on providing greater value to our customers through the integration of our portfolio that spans from disease prediction and prevention to detection and treatment.

Components of revenue and costs and expenses

Our revenue, costs and expenses are reported for the year ended December 31 for each year presented, except for operations outside the United States, for which the financial information is included in our consolidated financial statements for the fiscal year ended November 30 for each year presented.

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Revenue

Our revenue is primarily derived from our diversified product portfolio of medicines, vaccines and diagnostic products used to treat and protect livestock and companion animals. Generally, our products are promoted to veterinarians and livestock producers by our sales organization which includes sales representatives and technical and veterinary operations specialists, and then sold directly by us or through distributors. The depth of our product portfolio enables us to address the varying needs of customers in different species and geographies. In 2018, our top two selling products, Apoquel and Draxxin, contributed approximately 8% and 6%, respectively, of our revenue, and combined with our next two top selling products, the ceftiofur line and Revolution/Stronghold, these four contributed approximately 25% of our revenue. Our top ten product lines contributed 40% of our revenue. For additional information regarding our products, including descriptions of our product lines that each represented approximately 1% or more of our revenue in 2018, see Item 1. Business—Products.

Costs and expenses

Costs of sales consist primarily of cost of materials, facilities and other infrastructure used to manufacture our medicine and vaccine products and royalty expenses associated with the intellectual property of our products, when relevant.

Selling, general and administrative (SG&A) expenses consist of, among other things, the internal and external costs of marketing, promotion, advertising and shipping and handling as well as certain costs related to business technology, facilities, legal, finance, human resources, business development, public affairs and procurement.

Research and development (R&D) expenses consist primarily of project costs specific to new product R&D and product lifecycle innovation, overhead costs associated with R&D operations and investments that support local market clinical trials for approved indications and expenses related to regulatory approvals for our products. We do not disaggregate R&D expenses by research stage or by therapeutic area for purposes of managing our business.

Amortization of intangible assets consists primarily of the amortization expense for identifiable finite-lived intangible assets that have been acquired through business combinations. These assets consist of, but are not limited to, developed technology, brands and trademarks.

Restructuring charges and certain acquisition-related costs consist of all restructuring charges (those associated with acquisition activity and those associated with cost reduction/productivity initiatives), as well as costs associated with acquiring and integrating businesses. Restructuring charges are associated with employees, assets and activities that will not continue in the company. Acquisition-related costs are associated with acquiring and integrating acquired businesses, such as Abaxis in 2018, and Pharmaq Holding AS and Abbott Animal Health (AAH) both acquired in 2015, and may include transaction costs and expenditures for consulting and the integration of systems and processes.

Other (income)/deductions—net consist primarily of various items including net (gains)/losses on asset disposals, royalty-related income, foreign exchange translation (gains)/losses and certain asset impairment charges.

Significant accounting policies and application of critical accounting estimates

In presenting our financial statements in conformity with U.S. GAAP, we are required to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue, costs and expenses and related disclosures. For a description of our significant accounting policies, see Notes to Consolidated Financial Statements— Note 3. Significant Accounting Policies.

We believe that the following accounting policies are critical to an understanding of our consolidated financial statements as they require the application of the most difficult, subjective and complex judgments and, therefore, could have the greatest impact on our financial statements: (i) fair value; (ii) revenue; (iii) asset impairment reviews; and (iv) contingencies.

Below are some of our more critical accounting estimates. See also Notes to Consolidated Financial Statements— Note 3. Significant Accounting Policies: Estimates and Assumptions for a discussion about the risks associated with estimates and assumptions.

Fair value

For a discussion about the application of fair value to our long-term debt and financial instruments, see Notes to Consolidated Financial Statements—Note 9. Financial Instruments.

For a discussion about the application of fair value to our business combinations, see Notes to Consolidated Financial Statements— Note 3. Significant Accounting Policies: Fair Value.

For a discussion about the application of fair value to our asset impairment reviews, see Asset impairment reviews below.

Revenue

Our gross product revenue is subject to deductions that are generally estimated and recorded in the same period that the revenue is recognized and primarily represents sales returns and revenue incentives. For example:

- for sales returns, we perform calculations in each market that incorporate the following, as appropriate: local returns policies and practices; returns as a percentage of revenue; an understanding of the reasons for past returns; estimated shelf life by product; an estimate of the amount of time between shipment and return or lag time; and any other factors that could impact the estimate of future returns, product recalls, discontinuation of products or a changing competitive environment; and
- for revenue incentives, we use our historical experience with similar incentives programs to estimate the impact of such programs on revenue.

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If any of our ratios, factors, assessments, experiences or judgments are not indicative or accurate predictors of our future experience, our results could be materially affected. Although the amounts recorded for these revenue deductions are dependent on estimates and assumptions, historically our adjustments to actual results have not been material. The sensitivity of our estimates can vary by program, type of customer and geographic location.

Amounts recorded for revenue deductions can result from a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions. For further information about the risks associated with estimates and assumptions, see Notes to Consolidated Financial Statements— Note 3. Significant Accounting Policies: Estimates and Assumptions.

Asset impairment reviews

We review all of our long-lived assets for impairment indicators throughout the year and we perform detailed testing whenever impairment indicators are present. In addition, we perform impairment testing for goodwill and indefinite-lived intangible assets at least annually. When necessary, we record charges for impairments of long-lived assets for the amount by which the fair value is less than the carrying value of these assets.

Our impairment review processes are described below and in Notes to Consolidated Financial Statements— Note 3. Significant Accounting Policies: Amortization of Intangible Assets, Depreciation and Certain Long-Lived Assets and, for deferred tax assets, in Note 3. Significant Accounting Policies: Deferred Tax Assets and Liabilities and Income Tax Contingencies.

Examples of events or circumstances that may be indicative of impairment include:

- a significant adverse change in the extent or manner in which an asset is used. For example, restrictions imposed by the regulatory authorities could affect our ability to manufacture or sell a product, and
- a projection or forecast that demonstrates losses or reduced profits associated with an asset. This could result, for example, from the introduction of a competitor’s product that results in a significant loss of market share or the inability to achieve the previously projected revenue growth, or from the lack of acceptance of a product by customers.

For finite-lived identifiable intangible assets, such as developed technology rights, and for other long-lived assets, such as property, plant and equipment, whenever impairment indicators are present, we calculate the undiscounted value of the projected cash flows associated with the asset, or asset group, and compare this estimated amount to the carrying amount. If the carrying amount is found to be greater, we record an impairment loss for the excess of book value over fair value. In addition, in all cases of an impairment review, we re-evaluate the remaining useful lives of the assets and modify them, as appropriate.

Our impairment reviews of most of our long-lived assets depend on the determination of fair value, as defined by U.S. GAAP, and these judgments can materially impact our results of operations. A single estimate of fair value can result from a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions. For information about the risks associated with estimates and assumptions, see Notes to Consolidated Financial Statements—Note 3. Significant Accounting Policies: Estimates and Assumptions.

Intangible assets other than goodwill

We test indefinite-lived intangible assets for impairment at least annually, or more frequently if impairment indicators exist, by first assessing qualitative factors to determine whether it is more likely than not that the fair value of the indefinite-lived intangible asset is less than its carrying amount. If we conclude it is more likely than not that the fair value is less than the carrying amount, a quantitative test that compares the fair value of the indefinite-lived intangible asset with its carrying value is performed. If the fair value is less than the carrying amount, an impairment loss is recognized. Impairments of identifiable intangible assets other than goodwill, are recorded in Restructuring charges and certain acquisition-related costs and Other (income)/deductions—net, as applicable. We did not have any significant intangible asset impairment charges for the years ended December 31, 2018, 2017 and 2016.

When we are required to determine the fair value of intangible assets other than goodwill, we use an income approach, specifically the multi-period excess earnings method, also known as the discounted cash flow method. We start with a forecast of all the expected net cash flows associated with the asset, which includes the application of a terminal value for indefinite-lived assets, and then we apply an asset-specific discount rate to arrive at a net present value amount. Some of the more significant estimates and assumptions inherent in this approach include: the amount and timing of

the projected net cash flows, which includes the expected impact of competitive, legal and/or regulatory forces on the projections, the impact of technological risk associated with IPR&D assets, as well as the selection of a long-term growth rate; the discount rate, which seeks to reflect the risks inherent in the projected cash flows; foreign currency fluctuations; and the effective tax rate, which seeks to incorporate the geographic diversity of the projected cash flows. While all identifiable intangible assets can be impacted by events and thus lead to impairment, in general, identifiable intangible assets that are at the highest risk of impairment include IPR&D assets (approximately $197 million as of December 31, 2018). IPR&D assets are higher-risk assets because R&D is an inherently risky activity.

For a description of our accounting policy, see Notes to Consolidated Financial Statements—Note 3. Significant Accounting Policies: Amortization of Intangible Assets, Depreciation and Certain Long-Lived Assets.

Goodwill

Goodwill represents the excess of the consideration transferred over the fair value of net assets of businesses purchased and is assigned to reporting units. We test goodwill for impairment on at least an annual basis, or more frequently if impairment indicators exist, either by assessing qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount or by performing a quantitative assessment.

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Factors considered in the qualitative assessment include general macroeconomic conditions, conditions specific to the industry and market, cost factors which could have a significant effect on earnings or cash flows, the overall financial performance of the reporting unit and whether there have been sustained declines in our share price. Additionally, we evaluate the extent to which the fair value exceeded the carrying value of the reporting unit at the date of the last quantitative assessment performed.

When performing a quantitative assessment to test for goodwill impairment we utilize the income approach, which is forward-looking, and relies primarily on internal forecasts. Within the income approach, the method that we use is the discounted cash flow method. We start with a forecast of all the expected net cash flows associated with the reporting unit, which includes the application of a terminal value, and then apply a reporting unit-specific discount rate to arrive at a net present value. Some of the more significant estimates and assumptions inherent in this approach include: the amount and timing of the projected net cash flows, which includes the expected impact of technological risk and competitive, legal and/or regulatory forces on the projections, as well as the selection of a long-term growth rate; the discount rate, which seeks to reflect the various risks inherent in the projected cash flows; and the effective tax rate, which seeks to incorporate the geographic diversity of the projected cash flows.

In 2018, we performed a quantitative impairment assessment as of September 30, 2018, which did not result in the impairment of goodwill associated with any of our reporting units.

In 2017, we performed both qualitative and select quantitative impairment assessments as of October 1, 2017, which did not result in the impairment of goodwill associated with any of our reporting units.

For all of our reporting units, there are a number of future events and factors that may impact future results and that could potentially have an impact on the outcome of subsequent goodwill impairment testing. For a list of these factors, see Forward-looking statements and factors that may affect future results.

For a description of our accounting policy, see Notes to Consolidated Financial Statements— Note 3. Significant Accounting Policies: Amortization of Intangible Assets, Depreciation and Certain Long-Lived Assets.

Contingencies

For a discussion about income tax contingencies, see Notes to Consolidated Financial Statements— Note 8D. Tax Matters: Tax Contingencies.

For a discussion about legal contingencies, guarantees and indemnifications, see Notes to Consolidated Financial Statement— Note 17. Commitments and Contingencies.

Non-GAAP financial measures

We report information in accordance with U.S. generally accepted accounting principles (GAAP). Management also measures performance using non-GAAP financial measures that may exclude certain amounts from the most directly comparable GAAP measure. Despite the importance of these measures to management in goal setting and performance measurement, non-GAAP financial measures have no standardized meaning prescribed by U.S. GAAP and, therefore, have limits in their usefulness to investors and may not be comparable to the calculation of similar measures of other companies. We present certain identified non-GAAP measures solely to provide investors with useful information to more fully understand how management assesses performance.

Operational Growth

We believe that it is important to not only understand overall revenue and earnings growth, but also “operational growth.” Operational growth is a non-GAAP financial measure defined as revenue or earnings growth excluding the impact of foreign exchange. This measure provides information on the change in revenue and earnings as if foreign currency exchange rates had not changed between the current and prior periods to facilitate a period-to-period comparison. We believe this non-GAAP measure provides a useful comparison to previous periods for the company and investors, but should not be viewed as a substitute for U.S. GAAP reported growth.

Adjusted Net Income and Adjusted Earnings Per Share

Adjusted net income and the corresponding adjusted earnings per share (EPS) are non-GAAP financial measures of performance used by management. We believe these financial measures are useful supplemental information to investors when considered together with our U.S. GAAP financial measures. We report adjusted net income to portray the results of our major operations, and the discovery, development, manufacture and commercialization of our products, prior to considering certain income statement elements. We define adjusted net income and adjusted EPS as

net income attributable to Zoetis and EPS before the impact of purchase accounting adjustments, acquisition-related costs and certain significant items.

We recognize that, as an internal measure of performance, the adjusted net income and adjusted EPS measures have limitations, and we do not restrict our performance management process solely to these metrics. A limitation of the adjusted net income and adjusted EPS measures is that they provide a view of our operations without including all events during a period, such as the effects of an acquisition or amortization of purchased intangibles, and do not provide a comparable view of our performance to other companies. The adjusted net income and adjusted EPS measures are not, and should not be viewed as, a substitute for U.S. GAAP reported net income attributable to Zoetis and reported EPS. See the Adjusted Net Income section below for more information.

Analysis of the consolidated statements of income

The following discussion and analysis of our consolidated statements of income should be read along with our consolidated financial statements, and the notes thereto.

	Year Ended December 31,			% Change	
(MILLIONS OF DOLLARS)	2018	2017	2016	18/17	17/16
Revenue	$5,825	$5,307	$4,888	10	9
Costs and expenses:					
Cost of sales[(a)]	1,911	1,775	1,666	8	7
% of revenue	33 %	33 %	34 %		
Selling, general and administrative expenses[(a)]	1,484	1,334	1,364	11	(2)
% of revenue	25 %	25 %	28 %		
Research and development expenses[(a)]	432	382	376	13	2
% of revenue	7 %	7 %	8 %		
Amortization of intangible assets[(a)]	117	91	85	29	7
Restructuring charges and certain acquisition-related costs	68	19	5	*	*
Interest expense, net of capitalized interest	206	175	166	18	5
Other (income)/deductions—net	(83)	6	(2)	*	*
Income before provision for taxes on income	1,690	1,525	1,228	11	24
% of revenue	29 %	29 %	25 %		
Provision for taxes on income	266	663	409	(60)	62
Effective tax rate	15.7 %	43.5 %	33.3 %		
Net income before allocation to noncontrolling interests	1,424	862	819	65	5
Less: Net income attributable to noncontrolling interests	(4)	(2)	(2)	100	—
Net income attributable to Zoetis	$1,428	$864	$821	65	5
% of revenue	25 %	16 %	17 %		

* Calculation not meaningful.

Certain amounts and percentages may reflect rounding adjustments.

[(a)] Amortization expense related to finite-lived acquired intangible assets that contribute to our ability to sell, manufacture, research, market and distribute products, compounds and intellectual property is included in Amortization of intangible assets as these intangible assets benefit multiple business functions. Amortization expense related to finite-lived acquired intangible assets that are associated with a single function is included in Cost of sales, Selling, general and administrative expenses or Research and development expenses, as appropriate.

Revenue

Total revenue by operating segment was as follows:

	Year Ended December 31,			% Change	
(MILLIONS OF DOLLARS)	2018	2017	2016	18/17	17/16
U.S.	$2,877	$2,620	$2,447	10	7
International	2,890	2,643	2,390	9	11
Total operating segments	5,767	5,263	4,837	10	9
Contract manufacturing & human health diagnostics	58	44	51	32	(14)
Total Revenue	$5,825	$5,307	$4,888	10	9

Certain amounts and percentages may reflect rounding adjustments.

On a global basis, the mix of revenue between livestock and companion animal products was as follows:

	Year Ended December 31,			% Change	
(MILLIONS OF DOLLARS)	2018	2017	2016	18/17	17/16
Livestock	$3,154	$3,037	$2,881	4	5
Companion animal	2,613	2,226	1,956	17	14

Contract manufacturing & human health diagnostics	58	44	51	32	(14)
Total Revenue	$5,825	$5,307	$4,888	10	9

Certain amounts and percentages may reflect rounding adjustments.

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2018 vs. 2017

Total revenue increased by $518 million, or 10%, in 2018 compared with 2017 reflecting operational revenue growth of $521 million, or 10%. Operational revenue growth (a non-GAAP financial measure) is defined as revenue growth excluding the impact of foreign exchange. Operational revenue growth was primarily due to the following:

- price growth of approximately 3%;
- increased volume from in-line products of approximately 3%, including 2% from our key dermatology products;
- the acquisition of Abaxis which contributed approximately 2%; and
- volume growth from new products of approximately 2%.

2017 vs. 2016

Total revenue increased by $419 million, or 9%, in 2017 compared with 2016, reflecting operational revenue growth of $406 million, or 8%. Operational revenue growth was primarily due to the following:

- increased sales of our dermatology portfolio and new product launches, which contributed approximately 7%; and
- growth of our in-line products, which contributed approximately 2%, of which volume comprised 1% and price comprised 1%,

partially offset by:

- product rationalizations as part of the operational efficiency initiative, which resulted in a decline of approximately 1%.

Foreign exchange reduced our reported revenue growth by approximately 1%.

Costs and Expenses

Cost of sales

	Year Ended December 31,			% Change	
(MILLIONS OF DOLLARS)	2018	2017	2016	18/17	17/16
Cost of sales	$1,911	$1,775	$1,666	8	7
% of revenue	33 %	33 %	34 %		

Certain amounts and percentages may reflect rounding adjustments.

2018 vs. 2017

Cost of sales as a percentage of revenue remained flat at 33% in 2018 compared with 2017, primarily as a result of:

- continued cost improvements and efficiencies in our manufacturing network,

offset by:

- the inclusion of Abaxis, including charges reflecting fair value adjustments to the inventory acquired; and
- unfavorable foreign exchange.

2017 vs. 2016

Cost of sales as a percentage of revenue decreased from 34% to 33% in 2017 compared with 2016, primarily as a result of:

- a decrease in inventory obsolescence, scrap and other charges;
- the nonrecurrence of charges reflecting fair value adjustments to inventory related to the acquisition of Pharmaq; and
- favorable product mix,

partially offset by:

- an increase in manufacturing and supply costs; and
- unfavorable foreign exchange.

Selling, general and administrative expenses

	Year Ended December 31,			% Change	
(MILLIONS OF DOLLARS)	2018	2017	2016	18/17	17/16
Selling, general and administrative expenses	$1,484	$1,334	$1,364	11	(2)
% of revenue	25 %	25 %	28 %		

Certain amounts and percentages may reflect rounding adjustments.

2018 vs. 2017

SG&A expenses increased $150 million, or 11%, in 2018 compared with 2017, primarily as a result of:

- the inclusion of Abaxis;
- an increase in certain compensation-related expenses; and

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- higher professional services and consulting charges.

2017 vs. 2016

SG&A expenses decreased $30 million, or 2%, in 2017 compared with 2016, primarily as a result of:

- the nonrecurrence of additional costs related to becoming an independent public company;
- a reduction in marketing and general and administrative expense driven by our operational efficiency initiative; and
- a reduction in consulting charges relating to our operational efficiency initiative,

partially offset by:

- higher advertising and promotional spending associated with new products and Apoquel®.

Research and development expenses

	Year Ended December 31,			% Change	
(MILLIONS OF DOLLARS)	2018	2017	2016	18/17	17/16
Research and development expenses	$432	$382	$376	13	2
% of revenue	7 %	7 %	8 %		

Certain amounts and percentages may reflect rounding adjustments.

2018 vs. 2017

R&D expenses increased $50 million, or 13%, in 2018 compared with 2017, primarily as a result of:

- increased spending driven by project investments;
- an increase in certain compensation-related expenses;
- the inclusion of Abaxis; and
- unfavorable foreign exchange.

2017 vs. 2016

R&D expenses increased $6 million, or 2%, in 2017 compared with 2016, primarily as a result of:

- the inclusion of a veterinary diagnostics business acquired in 2016 and an Irish biologic therapeutics company in 2017,

partially offset by:

- a reduction in spending driven by our operational efficiency initiative.

Amortization of intangible assets

	Year Ended December 31,			% Change	
(MILLIONS OF DOLLARS)	2018	2017	2016	18/17	17/16
Amortization of intangible assets	$117	$ 91	$ 85	29	7

Certain amounts and percentages may reflect rounding adjustments.

2018 vs. 2017

Amortization of intangible assets increased $26 million, or 29%, in 2018 compared with 2017, primarily as a result of certain intangible assets acquired in July 2018 as part of the acquisition of Abaxis.

2017 vs. 2016

Amortization of intangible assets increased $6 million, or 7%, in 2017 compared with 2016, primarily as a result of certain intangible assets, acquired in November 2015 as part of the Pharmaq acquisition, being placed into service during the first quarter of 2017.

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Restructuring charges and certain acquisition-related costs

(MILLIONS OF DOLLARS)	Year Ended December 31, 2018	2017	2016	% Change 18/17	17/16
Restructuring charges and certain acquisition-related costs	$68	$ 19	$ 5	*	*

* Calculation not meaningful.

Certain amounts and percentages may reflect rounding adjustments.

During 2015, we launched a comprehensive operational efficiency program and a supply network strategy initiative. These initiatives have focused on reducing complexity in our product portfolios, changing our selling approach in certain markets, reducing our presence in certain countries, and planning to sell or exit 10 manufacturing sites over a long term period. As part of these initiatives, we have reduced certain positions through divestitures, normal attrition and involuntary terminations. The comprehensive operational efficiency program is substantially complete and we have exited eight of the ten manufacturing sites as part of the supply network strategy initiative, which we expect to complete over the next several years.

Our acquisition-related costs primarily relate to restructuring charges for employees, assets and activities that will not continue in the future, as well as integration costs. The majority of these net restructuring charges are related to termination costs, but we also exited a number of distributor and other contracts and performed certain facility rationalization efforts. Our integration costs are generally comprised of consulting costs related to the integration of systems and processes, as well as product transfer costs.

For additional information regarding restructuring charges and acquisition-related costs, see Notes to Consolidated Financial Statements— Note 6. Restructuring Charges and Other Costs Associated with Acquisitions and Cost-Reduction/Productivity Initiatives.

2018 vs. 2017

Restructuring charges and certain acquisition-related costs increased by $49 million in 2018 compared with 2017, primarily as a result of:

- transaction costs, integration costs and employee termination costs incurred as a result of the acquisition of Abaxis in July 2018; and
- employee termination costs incurred in 2018 as a result of initiatives to better align our organizational structure in Europe.

2017 vs. 2016

Restructuring charges and certain acquisition-related costs increased by $14 million in 2017 compared with 2016, primarily as a result of:

- employee termination costs incurred in 2017 as a result of (i) the acquisition of an Irish biologic therapeutics company in the third quarter of 2017, (ii) initiatives to better align our organizational structure in Europe, and (iii) our operational efficiency initiative and supply network strategy initiative; and
- integration costs incurred in 2017 as a result of (i) the acquisition of an Irish biologic therapeutics company in the third quarter of 2017, and (ii) the acquisition of Pharmaq in 2015.

Interest expense, net of capitalized interest

(MILLIONS OF DOLLARS)	Year Ended December 31, 2018	2017	2016	% Change 18/17	17/16
Interest expense, net of capitalized interest	$206	$175	$166	18	5

Certain amounts and percentages may reflect rounding adjustments.

2018 vs. 2017

Interest expense, net of capitalized interest, increased by $31 million, or 18%, in 2018 compared with 2017, as a result of the issuance of $1.5 billion aggregate principal amount of our senior notes in August 2018.

2017 vs. 2016

Interest expense, net of capitalized interest, increased by $9 million, or 5%, in 2017 compared with 2016, as a result of the issuance of $1.25 billion of our senior notes in September 2017.

Other (income)/deductions—net

	Year Ended December 31,			% Change	
(MILLIONS OF DOLLARS)	2018	2017	2016	18/17	17/16
Other (income)/deductions—net	$ (83)	$ 6	$ (2)	*	*

* Calculation not meaningful.

Certain amounts and percentages may reflect rounding adjustments.

2018 vs. 2017

The change in Other (income)/deductions—net from net other income of $83 million in 2018 compared with net other deductions of $6 million in 2017, is primarily a result of:

- a gain of $42 million in 2018 on the divestiture of certain agribusiness products within our International segment;
- higher interest income in 2018 due to higher cash balances; and

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- a net gain of $18 million in 2018 related to the relocation of a manufacturing site in China.

2017 vs. 2016

The change in Other (income)/deductions—net from net other deductions of $6 million in 2017 to net other income of $2 million in 2016, is primarily a result of:

- a net loss of $11 million in 2017 related to sales of certain manufacturing sites and products, including the disposal of our manufacturing site in Guarulhos, Brazil, in the fourth quarter of 2017, compared with a net gain of $26 million in 2016 related to sales of certain manufacturing sites and products; and
- lower royalty income,

partially offset by:

- lower foreign currency losses, primarily driven by costs related to hedging and exposures to certain emerging market currencies; and
- income of $8 million in 2017 due to an insurance recovery related to commercial settlements in Mexico, as well as a favorable patent infringement settlement, compared with a charge of $14 million in 2016 related to a commercial settlement in Mexico.

Provision for taxes on income

	Year Ended December 31,			% Change	
(MILLIONS OF DOLLARS)	2018	2017	2016	18/17	17/16
Provision for taxes on income	$266	$663	$409	(60)	62
Effective tax rate	15.7 %	43.5 %	33.3 %		

Certain amounts and percentages may reflect rounding adjustments.

The income tax provision in the consolidated statements of income includes tax costs and benefits, such as uncertain tax positions, repatriation decisions and audit settlements, among others.

On December 22, 2017, the Tax Cuts and Jobs Act (the Tax Act) was enacted, which, among other changes, reduced the U.S. federal corporate tax rate from 35% to 21%, effective January 1, 2018. The Tax Act made broad and complex changes to the U.S. tax code. Based on the information available at that time, for the year ended December 31, 2017, the company calculated a reasonable estimate and recorded an initial provisional net tax expense of $212 million related to the one-time mandatory deemed repatriation tax, payable over eight years, partially offset by the remeasurement of the deferred tax assets and liabilities, due to the reduction in the U.S. federal corporate tax rate. Pursuant to the Staff Accounting Bulletin published by the Securities and Exchange Commission on December 22, 2017, addressing the challenges in accounting for the effects of the Tax Act in the period of enactment, companies reported provisional amounts for those specific income tax effects of the Tax Act for which the accounting was incomplete but a reasonable estimate could be determined. Those provisional amounts were subject to adjustment during a measurement period of up to one year from the enactment date (measurement-period adjustment). Pursuant to this guidance, the estimated impact of the Tax Act was based on a preliminary review of the new tax law, projected future financial results and was subject to revision based upon further analysis, interpretation of the Tax Act and to the extent that actual results differed from projections available at that time.

In 2018, we refined our initial reasonable estimate and adjusted the provisional net tax expense of $212 million. On the basis of revised computations that were calculated during the reporting period, we recognized a measurement-period adjustment of $45 million, as a decrease to the one-time mandatory deemed repatriation tax obligation, with a corresponding adjustment to income tax benefit during the period.

For more information, see Notes to Consolidated Financial Statements— Note 8A. Tax Matters: Taxes on Income.

2018 vs. 2017

The lower effective tax rate in 2018 compared with 2017 is primarily due to the following components:

- the reduction of the U.S. federal corporate income tax rate, from 35% to 21%, effective January 1, 2018, pursuant to the Tax Act;
- a $45 million net tax benefit recorded in 2018, associated with a measurement-period adjustment to the one-time mandatory deemed repatriation tax on the company’s undistributed non-U.S. earnings pursuant to the Tax Act;
-

changes in the jurisdictional mix of earnings, which includes the impact of the location of earnings from operations and repatriation costs. The jurisdictional mix of earnings can vary as a result of repatriation decisions, operating fluctuations in the normal course of business, the impact of non-deductible items, and the extent and location of other income and expense items, such as gains and losses on asset divestitures;

- a $23 million discrete tax benefit recorded in 2018 related to the favorable impact of certain tax accounting method changes;
- an additional $6 million discrete tax benefit related to the excess tax benefits for share-based compensation payments; and
- a $5 million discrete tax benefit recorded in 2018 related to a remeasurement of deferred tax assets and liabilities as a result of a change in non-U.S. statutory tax rates.

2017 vs. 2016

The higher effective tax rate in 2017 compared with 2016 is primarily due to the following components:

- a $212 million net discrete provisional tax expense recorded in the fourth quarter of 2017, related to the impact of the Tax Act enacted on December 22, 2017, including a one-time mandatory deemed repatriation tax, partially offset by a net tax benefit related to the remeasurement of the deferred tax assets and liabilities, as of the date of enactment, due to the reduction in the U.S. federal corporate tax rate;

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- changes in valuation allowances and resolution of other tax items; and
- tax expense related to changes in uncertain tax positions, see Notes to Consolidated Financial Statements— Note 8D. Tax Matters: Tax Contingencies,

partially offset by:

- changes in the jurisdictional mix of earnings, which includes the impact of the location of earnings from operations and repatriation costs. The jurisdictional mix of earnings can vary as a result of repatriation decisions and operating fluctuations in the normal course of business and the impact of non-deductible items;
- a $15 million discrete tax benefit recorded in the fourth quarter of 2017 related to the effective settlement of certain issues with U.S. and non-U.S. tax authorities;
- an additional $2 million discrete tax benefit related to the excess tax benefits for share-based compensation payments; and
- a $3 million discrete tax benefit recorded in the first quarter of 2017 related to a remeasurement of deferred tax assets and liabilities as a result of a change in non-U.S. statutory tax rates.

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Operating Segment Results

We believe that it is important to not only understand overall revenue and earnings growth, but also "operational growth." Operational growth is defined as revenue or earnings growth excluding the impact of foreign exchange.

In the first quarter of 2018, the company realigned certain management responsibilities. These changes did not impact the determination of our operating segments, however they resulted in the reallocation of certain costs between segments. These changes primarily include the following: i) R&D costs related to our aquaculture business which were previously reported in Other business activities are now reported in the International operating segment results, and ii) certain other miscellaneous costs which were previously reported in Corporate are now reported in the International operating segment results.

On a global basis, the mix of revenue between livestock and companion animal products was as follows:

				% Change 18/17			% Change 17/16		
	Year Ended December 31,				Related to Foreign			Related to Foreign	
(MILLIONS OF DOLLARS)	2018	2017	2016	Total	Exchange	Operational	Total	Exchange	Operational
U.S.									
Livestock	$1,269	$1,244	$1,227	2	—	2	1	—	1
Companion animal	1,608	1,376	1,220	17	—	17	13	—	13
	2,877	2,620	2,447	10	—	10	7	—	7
International									
Livestock	1,885	1,793	1,654	5	(1)	6	8	1	7
Companion animal	1,005	850	736	18	1	17	15	(1)	16
	2,890	2,643	2,390	9	—	9	11	1	10
Total									
Livestock	3,154	3,037	2,881	4	—	4	5	—	5
Companion animal	2,613	2,226	1,956	17	—	17	14	—	14
Contract manufacturing & human health diagnostics	58	44	51	32	1	31	(14)	1	(15)
	$5,825	$5,307	$4,888	10	—	10	9	1	8

Certain amounts and percentages may reflect rounding adjustments.

Earnings by segment and the operational and foreign exchange changes versus the comparable prior year period were as follows:

				% Change 18/17			% Change 17/16		
	Year Ended December 31,				Related to Foreign			Related to Foreign	
(MILLIONS OF DOLLARS)	2018	2017	2016	Total	Exchange	Operational	Total	Exchange	Operational
U.S.	$1,815	$1,637	$1,508	11	—	11	9	—	9
International	1,399	1,240	1,054	13	—	13	18	1	17
Total reportable segments	3,214	2,877	2,562	12	—	12	12	—	12
Other business activities	(337)	(313)	(309)	8			1		
Reconciling Items:									
Corporate	(666)	(625)	(684)	7			(9)		
Purchase accounting adjustments	(162)	(88)	(99)	84			(11)		
Acquisition-related costs	(63)	(10)	(4)	*			*		
Certain significant items	43	(25)	(57)	*			(56)		
Other unallocated	(339)	(291)	(181)	16			61		

Income before income taxes	$1,690	$1,525	$1,228	11	24

* Calculation not meaningful.
Certain amounts and percentages may reflect rounding adjustments.

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2018 vs. 2017

U.S. operating segment

U.S. segment revenue increased by $257 million, or 10%, in 2018 compared with 2017, of which approximately $25 million resulted from growth in livestock products and approximately $232 million resulted from growth in companion animal products.

- Companion animal revenue growth was driven primarily by increased sales of the key dermatology portfolio, the acquisition of Abaxis as well as new products including Simparica®. Growth was tempered by lower sales of certain in-line products due to anticipated competition.
- Livestock revenue increased primarily due to higher sales across species, with growth in poultry, swine and cattle products. For poultry, growth was driven by increased sales of alternatives to antibiotic medicated feed additive products. Swine growth was primarily due to new product launches and promotional activities. Cattle growth was mainly from our premium products, partially offset by unfavorable market conditions in dairy.

U.S. segment earnings increased by $178 million, or 11%, in 2018 compared with 2017, primarily due to revenue growth and improved gross margin, partially offset by higher operating expenses related to the Abaxis acquisition.

International operating segment

International segment revenue increased by $247 million, or 9%, in 2018 compared with 2017. Operational revenue increased $250 million, or 9%, reflecting growth of approximately $107 million in livestock products and growth of approximately $143 million in companion animal products.

- Companion animal revenue growth resulted primarily from increased sales across multiple international markets of the key dermatology portfolio, in addition to new products, primarily Simparica®, and the acquisition of Abaxis.
- Livestock growth was driven primarily by increased sales of cattle, poultry, swine and fish products. Growth in cattle was due to biological and parasiticide products. Growth in poultry sales was driven by increased sales of vaccines and medicated feed additives. Swine growth was primarily due to new vaccine products. Fish growth was due to increased sales in the vaccines portfolio.

International segment earnings increased by $159 million, or 13%, in 2018 compared with 2017. Operational earnings growth was $165 million, or 13%, primarily due to higher revenue and improved gross margin.

2017 vs. 2016

U.S. operating segment

U.S. segment revenue increased by $173 million, or 7%, in 2017 compared with 2016, of which approximately $17 million resulted from growth in livestock products and approximately $156 million resulted from growth in companion animal products.

- Livestock revenue increased primarily due to cattle and poultry products, partly offset by swine products. Cattle experienced growth across our portfolio, while poultry growth was due to increased sales of medicated feed additives. Certain medicated feed additive products for both cattle and swine were negatively impacted by livestock producers' implementation of the Veterinary Feed Directive. In addition, swine declined due to vaccine competition.
- Companion animal revenue growth was driven primarily by our dermatology portfolio, in addition to new products, particularly Simparica®. Growth was tempered by the prior year's initial sales of certain products into expanded distribution relationships, as well as lower sales due to competition for our pain and anti-infective products.

U.S. segment earnings increased by $129 million, or 9%, in 2017 compared with 2016, primarily due to revenue growth and improved gross margin, partially offset by higher operating expenses related to promotional activity for new products and Apoquel®.

International operating segment

International segment revenue increased by $253 million, or 11%, in 2017 compared with 2016. Operational revenue increased $240 million, or 10%, reflecting growth of approximately $125 million in livestock products and growth of approximately $115 million in companion animal products.

- Livestock growth was driven primarily by increased sales of cattle, swine and fish products. Growth of cattle products was driven by Latin American markets, while swine was driven by new product launches primarily in Europe and Asia, as well as growth in China. Growth of fish products was driven by new products and in-line product growth across various markets. Livestock growth was partially offset by product rationalizations, primarily impacting poultry

and swine product sales.

- Companion animal revenue growth resulted primarily from increased sales of our dermatology portfolio, in addition to new products, primarily Simparica®. Sales also benefited from increased demand in China due to field force expansions and increasing medicalization rates.

Segment revenue was favorably impacted by foreign exchange, which increased revenue by approximately 1%, primarily driven by the appreciation of the Brazilian real, partly offset by the depreciation of the U.K. pound and Egyptian pound.

International segment earnings increased by $186 million, or 18%, in 2017 compared with 2016. Operational earnings growth was $183 million, or 17%, primarily due to higher revenue and improved gross margin.

Other business activities

Other business activities includes our CSS contract manufacturing results, our human health diagnostics business and expenses associated with our dedicated veterinary medicine R&D organization, research alliances, U.S. regulatory affairs and other operations focused on the development of our products. Other R&D-related costs associated with non-U.S. market and regulatory activities are generally included in the International segment.

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2018 vs. 2017

Other business activities net loss increased by $24 million, or 8%, in 2018 compared with 2017, reflecting an increase in R&D project investments, compensation-related costs, the inclusion of Abaxis expenses and unfavorable foreign exchange, partially offset by revenue from the acquired Abaxis human health diagnostics business.

2017 vs. 2016

Other business activities net loss increased by $4 million, or 1%, in 2017 compared with 2016, reflecting the inclusion of the veterinary diagnostics business acquired in 2016 and the Irish biologic therapeutics company acquired in 2017.

Reconciling items

Reconciling items include certain costs that are not allocated to our operating segments results, such as costs associated with the following:

- Corporate, which includes certain costs associated with business technology, facilities, legal, finance, human resources, business development and communications, among others. These costs also include certain compensation costs, certain procurement costs, and other miscellaneous operating expenses that are not charged to our operating segments, as well as interest income and expense;
- Certain transactions and events such as (i) Purchase accounting adjustments, which includes expenses associated with the amortization of fair value adjustments to inventory, intangible assets and property, plant and equipment; (ii) Acquisition-related activities, which includes costs for acquisition and integration; and (iii) Certain significant items, which includes non-acquisition-related restructuring charges, certain asset impairment charges, stand-up costs, certain legal and commercial settlements, and costs associated with cost reduction/productivity initiatives; and
- Other unallocated, which includes (i) certain overhead expenses associated with our global manufacturing operations not charged to our operating segments; (ii) certain costs associated with business technology and finance that specifically support our global manufacturing operations; (iii) certain supply chain and global logistics costs; and (iv) certain procurement costs.

2018 vs. 2017

Corporate expenses increased by $41 million, or 7%, in 2018 compared with 2017, primarily due to an increase in certain compensation costs not allocated to our operating segments, expenses related to the acquisition of Abaxis and project spending, partially offset by favorable foreign exchange.

Other unallocated expenses increased by $48 million, or 16%, in 2018 compared with 2017, primarily due to the unfavorable impact of foreign exchange and higher global manufacturing and supply costs, partially offset by continued cost improvements and efficiencies in our manufacturing network.

See Notes to Consolidated Financial Statements— Note 18. Segment Information for further information.

2017 vs. 2016

Corporate expenses decreased by $59 million, or 9%, in 2017 compared with 2016, primarily due to the favorable impact of foreign exchange, reduction in expenses driven by our operational efficiency initiative and a decrease in certain compensation costs not allocated to our operating segments, partially offset by higher interest expense, net of capitalized interest associated with the additional debt issued in September 2017.

Other unallocated expenses increased by $110 million, or 61%, in 2017 compared with 2016, primarily due to higher global manufacturing and supply costs and unfavorable foreign exchange, partially offset by a decrease in inventory obsolescence, scrap and other charges.

See Notes to Consolidated Financial Statements— Note 18. Segment Information for further information.

Adjusted net income

General description of adjusted net income (a non-GAAP financial measure)

Adjusted net income is an alternative view of performance used by management, and we believe that investors' understanding of our performance is enhanced by disclosing this performance measure. The adjusted net income measure is an important internal measurement for us. Additionally, we measure our overall performance on this basis in conjunction with other performance metrics. The following are examples of how the adjusted net income measure is utilized:

- senior management receives a monthly analysis of our operating results that is prepared on an adjusted net income basis;

- our annual budgets are prepared on an adjusted net income basis; and
- other goal setting and performance measurements.

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Purchase accounting adjustments

Adjusted net income is calculated prior to considering certain significant purchase accounting impacts that result from business combinations and net asset acquisitions. These impacts, primarily associated with the acquisition of Abaxis (acquired in July 2018), the Pharmaq business (acquired in November 2015), certain assets of Abbott Animal Health (acquired in February 2015), KAH (acquired in 2011), FDAH (acquired in 2009), and Pharmacia Animal Health business (acquired in 2003), include amortization related to the increase in fair value of the acquired finite-lived intangible assets and depreciation related to the increase/decrease to fair value of the acquired fixed assets. Therefore, the adjusted net income measure includes the revenue earned upon the sale of the acquired products without considering the aforementioned significant charges.

While certain purchase accounting adjustments can occur through 20 or more years, this presentation provides an alternative view of our performance that is used by management to internally assess business performance. We believe the elimination of amortization attributable to acquired intangible assets provides management and investors an alternative view of our business results by providing a degree of parity to internally developed intangible assets for which R&D costs previously have been expensed.

A completely accurate comparison of internally developed intangible assets and acquired intangible assets cannot be achieved through adjusted net income. These components of adjusted net income are derived solely from the impact of the items listed above. We have not factored in the impact of any other differences in experience that might have occurred if we had discovered and developed those intangible assets on our own, and this approach does not intend to be representative of the results that would have occurred in those circumstances. For example, our R&D costs in total, and in the periods presented, may have been different; our speed to commercialization and resulting revenue, if any, may have been different; or our costs to manufacture may have been different. In addition, our marketing efforts may have been received differently by our customers. As such, in total, there can be no assurance that our adjusted net income amounts would have been the same as presented had we discovered and developed the acquired intangible assets.

Acquisition-related costs

Adjusted net income is calculated prior to considering transaction and integration costs associated with significant business combinations or net asset acquisitions because these costs are unique to each transaction and represent costs that were incurred to acquire and integrate certain businesses as a result of the acquisition decision. We have made no adjustments for the resulting synergies.

We believe that viewing income prior to considering these charges provides investors with a useful additional perspective because the significant costs incurred in a business combination result primarily from the need to eliminate duplicate assets, activities or employees—a natural result of acquiring a fully integrated set of activities. For this reason, we believe that the costs incurred to convert disparate systems, to close duplicative facilities or to eliminate duplicate positions (for example, in the context of a business combination) can be viewed differently from those costs incurred in the ordinary course of business.

The integration costs associated with a business combination may occur over several years, with the more significant impacts generally ending within three years of the transaction. Because of the need for certain external approvals for some actions, the span of time needed to achieve certain restructuring and integration activities can be lengthy. For example, due to the regulated nature of the animal health medicines and vaccines business, the closure of excess facilities can take several years, as all manufacturing changes are subject to extensive validation and testing and must be approved by the FDA and/or other regulatory authorities.

Certain significant items

Adjusted net income is calculated excluding certain significant items. Certain significant items represent substantive, unusual items that are evaluated on an individual basis. Such evaluation considers both the quantitative and the qualitative aspect of their unusual nature. Unusual, in this context, may represent items that are not part of our ongoing business; items that, either as a result of their nature or size, we would not expect to occur as part of our normal business on a regular basis; items that would be nonrecurring; or items that relate to products that we no longer sell. While not all-inclusive, examples of items that could be included as certain significant items would be costs related to becoming an independent public company; a major non-acquisition-related restructuring charge and

associated implementation costs for a program that is specific in nature with a defined term, such as those related to our non-acquisition-related cost-reduction and productivity initiatives; amounts related to disposals of products or facilities that do not qualify as discontinued operations as defined by U.S. GAAP; certain intangible asset impairments; adjustments related to the resolution of certain tax positions; significant currency devaluation; the impact of adopting certain significant, event-driven tax legislation; or charges related to legal matters. See Notes to Consolidated Financial Statements— Note 17. Commitments and Contingencies. Our normal, ongoing defense costs or settlements of and accruals on legal matters made in the normal course of our business would not be considered certain significant items.

Reconciliation

A reconciliation of net income attributable to Zoetis, as reported under U.S. GAAP, to adjusted net income follows:

	Year Ended December 31,			% Change	
(MILLIONS OF DOLLARS)	2018	2017	2016	18/17	17/16
GAAP reported net income attributable to Zoetis	$1,428	$864	$821	65	5
Purchase accounting adjustments—net of tax	119	51	60	*	(15)
Acquisition-related costs—net of tax	50	7	4	*	75
Certain significant items—net of tax	(72)	263	90	*	*
Non-GAAP adjusted net income[(a)]	$1,525	$1,185	$975	29	22

* Calculation not meaningful.

Certain amounts and percentages may reflect rounding adjustments.

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(a) The effective tax rate on adjusted pretax income is 18.8%, 28.2% and 29.9% for full year 2018, 2017 and 2016, respectively. The lower effective tax rate in 2018 compared to 2017 is primarily due to (i) the reduction of the U.S. federal corporate income tax rate from 35% to 21%, effective January 1, 2018, pursuant to the Tax Act, (ii) changes in the jurisdictional mix of earnings, which includes the impact of the location of earnings as well as repatriation costs, (iii) a $23 million discrete tax benefit recorded in 2018 related to the favorable impact of certain tax accounting method changes, and (iv) an additional $6 million discrete tax benefit related to the excess tax benefits for share-based compensation payments. The lower effective tax rate in 2017 compared to 2016 is primarily due to changes in the jurisdictional mix of earnings, which includes the impact of the location of earnings as well as repatriation costs, a $15 million discrete tax benefit recorded in the fourth quarter of 2017 related to the effective settlement of certain issues with U.S. and non-U.S. tax authorities, and an additional $2 million discrete tax benefit related to the excess tax benefits for share-based compensation payments.

A reconciliation of reported diluted earnings per share (EPS), as reported under U.S. GAAP, to non-GAAP adjusted diluted EPS follows:

	Year Ended December 31,			% Change	
	2018	2017	2016	18/17	17/16
Earnings per share—diluted[a][b]:					
GAAP reported EPS attributable to Zoetis—diluted	$2.93	$1.75	$1.65	67	6
Purchase accounting adjustments—net of tax	0.24	0.10	0.12	*	(17)
Acquisition-related costs—net of tax	0.10	0.01	0.01	*	—
Certain significant items—net of tax	(0.14)	0.54	0.18	*	*
Non-GAAP adjusted EPS—diluted	$3.13	$2.40	$1.96	30	22

* Calculation not meaningful.

Certain amounts and percentages may reflect rounding adjustments.

(a) Diluted earnings per share was computed using the weighted-average common shares outstanding during the period plus the common stock equivalents related to stock options, restricted stock units, performance-vesting restricted stock units and deferred stock units.

(b) EPS amounts may not add due to rounding.

Adjusted net income includes the following charges for each of the periods presented:

	Year Ended December 31,		
(MILLIONS OF DOLLARS)	2018	2017	2016
Interest expense, net of capitalized interest	$206	$175	$166
Interest income	31	13	8
Income taxes	351	465	415
Depreciation	146	136	133
Amortization	19	18	16

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Adjusted net income, as shown above, excludes the following items:

(MILLIONS OF DOLLARS)	Year Ended December 31, 2018	2017	2016
Purchase accounting adjustments:			
Amortization and depreciation[a]	$135	$81	$76
Cost of sales[b]	27	7	23
Total purchase accounting adjustments—pre-tax	162	88	99
Income taxes[c]	43	37	39
Total purchase accounting adjustments—net of tax	119	51	60
Acquisition-related costs:			
Integration costs	21	6	3
Transaction costs	21	—	—
Restructuring charges[d]	21	4	—
Other	—	—	1
Total acquisition-related costs—pre-tax	63	10	4
Income taxes[c]	13	3	—
Total acquisition-related costs—net of tax	50	7	4
Certain significant items:			
Operational efficiency initiative[e]	(1)	5	(9)
Supply network strategy[e]	10	15	19
Other restructuring charges and cost-reduction/productivity initiatives[f]	7	4	(1)
Certain asset impairment charges	—	—	1
Gain on sale of assets[g]	(42)	—	—
Stand-up costs[h]	—	3	23
Other[i]	(17)	(2)	24
Total certain significant items—pre-tax	(43)	25	57
Income taxes[c]	29	(238)	(33)
Total certain significant items—net of tax	(72)	263	90
Total purchase accounting adjustments, acquisition-related costs, and certain significant items—net of tax	$97	$321	$154

Certain amounts may reflect rounding adjustments.

(a) Amortization and depreciation expenses related to Purchase accounting adjustments with respect to identifiable intangible assets and property, plant and equipment.

(b) Amortization and depreciation expense, as well as fair value adjustments to acquired inventory.

(c) Income taxes include the tax effect of the associated pre-tax amounts, calculated by determining the jurisdictional location of the pre-tax amounts and applying that jurisdiction's applicable tax rate.

Income taxes in Purchase accounting adjustments also includes:

•For 2018, a remeasurement of deferred taxes as a result of a change in non-U.S. statutory tax rates.

•For 2017, (i) a provisional tax benefit of approximately $17 million related to the remeasurement of the company’s deferred taxes due to the reduction in the U.S. federal corporate tax rate as provided by the Tax Act enacted on December 22, 2017, (ii) remeasurement of deferred taxes as a result of a change in non-U.S. statutory tax rates, and (iii) a net tax charge related to prior period tax adjustments.

•For 2016, a tax benefit related to the remeasurement of deferred taxes as a result of a change in tax rates.

Income taxes in Acquisition-related costs also includes:

•For 2018, a tax charge related to the non-deductibility of certain costs associated with the acquisition of Abaxis.

•For 2016, a tax charge related to the acquisition of certain assets of Abbott Animal Health.

Income taxes in Certain significant items also includes:

•For 2018, a net tax benefit of $45 million related to a measurement-period adjustment to the one-time mandatory deemed repatriation tax on the company's undistributed non-U.S. earnings, pursuant to the Tax Act.
•For 2017, (i) a provisional net tax charge of approximately $229 million related to the impact of the Tax Act enacted on December 22, 2017, including a one-time mandatory deemed repatriation tax on the company’s undistributed non-U.S. earnings, partially offset by a net tax benefit related to the remeasurement of the company’s deferred tax assets and liabilities, as of the date of enactment, due to the reduction in the U.S. federal corporate tax rate, (ii) a net tax charge of approximately $3 million as a result of the implementation of certain operational changes, and (iii) a tax charge of approximately $2 million related to the disposal of certain assets.
•For 2016, (i) a net tax charge of approximately $20 million recorded in the second half of 2016, as a result of the implementation of certain operational changes, which represents an increase to current income tax expense of approximately $22 million, offset by a $2 million tax benefit related to a remeasurement of the company’s deferred tax assets and liabilities using the tax rates expected to be in place going forward, and (ii) a net tax charge of approximately $35 million mainly recorded in the first half of 2016, related to the impact of the European Commission’s negative decision on the excess profits rulings in Belgium which represents the recovery of prior tax benefits for the periods 2013 through 2015, offset by the remeasurement of the company’s

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deferred tax assets and liabilities, using the rates expected to be in place at the time of the reversal and without consideration of implementation of any future operational changes, and does not include any benefits associated with a successful appeal of the decision.

(d) Represents employee termination costs related to the 2018 acquisition of Abaxis and the 2017 acquisition of an Irish biologic therapeutics company.

(e) Represents adjustments to inventory reserves and accelerated depreciation, consulting fees and product transfer costs, employee termination costs and exit costs, and net (gains)/losses on sales of certain manufacturing sites and products, related to cost-reduction and productivity initiatives.

(f) Represents employee termination costs/(reversals) in Europe as a result of initiatives to better align our organizational structure.

(g) For 2018, represents a net gain related to the divestiture of certain agribusiness products within our International segment.

(h) Represents certain non-recurring costs related to becoming an independent public company, such as the creation of standalone systems and infrastructure, site separation, new branding (including changes to the manufacturing process for required new packaging), and certain legal registration and patent assignment costs.

(i) For 2018, primarily represents a net gain related to the relocation of a manufacturing site in China. For 2017, primarily represents costs associated with changes to our operating model. For 2016, represents costs associated with changes to our operating model and a charge associated with a commercial settlement in Mexico.

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The classification of the above items excluded from adjusted net income are as follows:

	Year Ended December 31,		
(MILLIONS OF DOLLARS)	2018	2017	2016
Cost of sales:			
Purchase accounting adjustments	$27	$7	$23
Accelerated depreciation	—	2	6
Inventory write-offs	1	(2)	5
Consulting fees	8	6	6
Stand-up costs	—	3	1
Other	(1)	(2)	1
Total Cost of sales	35	14	42
Selling, general & administrative expenses:			
Purchase accounting adjustments	32	5	5
Accelerated depreciation	—	—	1
Consulting fees	—	2	14
Stand-up costs	—	—	22
Other	2	2	10
Total Selling, general & administrative expenses	34	9	52
Research & development expenses:			
Purchase accounting adjustments	2	2	2
Total Research & development expenses	2	2	2
Amortization of intangible assets:			
Purchase accounting adjustments	101	74	69
Total Amortization of intangible assets	101	74	69
Restructuring (benefits)/charges and certain acquisition-related costs:			
Integration costs	21	6	3
Transaction costs	21	—	—
Employee termination costs	25	10	(2)
Exit costs	1	3	4
Total Restructuring (benefits)/charges and certain acquisition-related costs	68	19	5
Other (income)/deductions—net:			
Net (gain)/loss on sale of assets	(40)	10	(26)
Acquisition-related costs	—	—	1
Asset impairments	—	—	1
Other	(18)	(5)	14
Total Other (income)/deductions—net	(58)	5	(10)
Provision for taxes on income	85	(198)	6
Total purchase accounting adjustments, acquisition-related costs, and certain significant items—net of tax	$97	$321	$154

Certain amounts may reflect rounding adjustments.

Analysis of the consolidated statements of comprehensive income

Substantially all changes in other comprehensive income for the periods presented are related to foreign currency translation adjustments. These changes result from the strengthening or weakening of the U.S. dollar as compared to the currencies in the countries in which we do business. The gains and losses associated with these changes are deferred on the balance sheet in Accumulated other comprehensive loss until realized.

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Analysis of the consolidated balance sheets
December 31, 2018 vs. December 31, 2017

For a discussion about the changes in Cash and cash equivalents and Long-term debt, net of discount and issuance costs, see "Analysis of financial condition, liquidity and capital resources" below.

Short-term investments increased as a result of short-term investments in debt securities acquired with the acquisition of Abaxis.

Inventories decreased primarily due to the impact of foreign exchange, partially offset by the acquisition of Abaxis and a manufacturing business in Ireland. See Notes to Consolidated Financial Statements— Note 5. Acquisitions and Divestitures and Note 10. Inventories.

Other current assets increased primarily as a result of the timing of income tax payments, and the acquisition of Abaxis.

Property, plant and equipment, less accumulated depreciation increased primarily as a result of capital spending and the acquisitions of Abaxis and a manufacturing business in Ireland, partially offset by depreciation expense and the impact of foreign exchange.

Goodwill and Identifiable intangible assets, less accumulated amortization increased as a result of the acquisitions of Abaxis and a manufacturing business in Ireland, partially offset by the impact of foreign exchange. See Notes to Consolidated Financial Statements— Note 5. Acquisitions and Divestitures and Note 12. Goodwill and Other Intangible Assets.

The net changes in Noncurrent deferred tax assets, Noncurrent deferred tax liabilities, Income taxes payable and Other taxes payable primarily reflect the tax impacts of the acquisitions of Abaxis and a manufacturing business in Ireland, the adjustments to the accrual for the income tax provision, and the impact of the remeasurement of deferred taxes as a result of a change in tax rates. See Notes to Consolidated Financial Statements— Note 8. Tax Matters.

Other noncurrent assets increased primarily as a result of the fair value of certain derivative instruments.

Accounts payable increased as a result of the timing of payments.

Dividends payable increased as a result of an increase in the dividend rate for the first quarter 2019 dividend, which was declared on December 12, 2018.

Accrued expenses increased primarily due to an increase in accrued interest expense as a result of the issuance of $1.5 billion aggregate principal amount of our senior notes in August 2018, and higher contract rebate accruals. See Notes to Consolidated Financial Statements— Note 9. Financial Instruments.

Other noncurrent liabilities decreased as a result of a reduction in accrued liabilities associated with the relocation of a manufacturing site in China.

For an analysis of the changes in Total Equity, see the Consolidated Statements of Equity and Notes to Consolidated Financial Statements— Note 15. Stockholders' Equity.

Analysis of the consolidated statements of cash flows

	Year Ended December 31,			% Change	
(MILLIONS OF DOLLARS)	2018	2017	2016	18/17	17/16
Net cash provided by (used in):					
Operating activities	$1,790	$1,346	$713	33	89
Investing activities	(2,259)	(270)	(214)	*	26
Financing activities	533	(251)	(903)	*	(72)
Effect of exchange-rate changes on cash and cash equivalents	(26)	12	(23)	*	*
Net increase/(decrease) in cash and cash equivalents	$38	$837	$(427)	(95)	*

* Calculation not meaningful.

Certain amounts and percentages may reflect rounding adjustments.

Operating activities
2018 vs. 2017

Net cash provided by operating activities was $1,790 million in 2018 compared with $1,346 million in 2017. The increase in operating cash flows was primarily attributable to higher income before allocation of noncontrolling interests, the timing of receipts and payments in the ordinary course of business, and lower inventory levels.

2017 vs. 2016

Net cash provided by operating activities was $1,346 million in 2017 compared with $713 million in 2016. The increase in operating cash flows was primarily attributable to higher income before allocation of noncontrolling interests, lower employee termination payments related to our operational efficiency initiative and supply network strategy initiative, the timing of receipts and payments in the ordinary course of business, and lower inventory levels.

Investing activities

2018 vs. 2017

Net cash used in investing activities was $2,259 million in 2018 compared with $270 million in 2017. The net cash used in investing activities for 2018 was primarily attributable to the acquisitions of Abaxis and a manufacturing business in Ireland, and purchases of property, plant and equipment. The net cash used in investing activities for 2017 was primarily attributable to capital expenditures and the acquisitions of an Irish biologic therapeutics company and a Norwegian fish vaccination company, partially offset by the proceeds from the sale of a manufacturing site in Guarulhos, Brazil.

2017 vs. 2016

Net cash used in investing activities was $270 million in 2017 compared with $214 million in 2016. The net cash used in investing activities for 2017 was primarily attributable to capital expenditures and the acquisitions of an Irish biologic therapeutics company and a Norwegian fish vaccination company, partially offset by the proceeds from the sale of a manufacturing site in Guarulhos, Brazil. The net cash used in investing activities in 2016 was primarily attributable to capital expenditures and the acquisition of a veterinary diagnostics business in Denmark, partially offset by proceeds from the sales of certain manufacturing sites and products as part of the operational efficiency initiative.

Financing activities

2018 vs. 2017

Net cash provided by financing activities was $533 million in 2018 compared with net cash used in financing activities of $251 million in 2017. The net cash provided by financing activities for 2018 was primarily attributable to the proceeds received from the issuance of senior notes in August 2018, partially offset by the purchase of treasury shares and the payment of dividends. The net cash used in financing activities for 2017 was primarily attributable to the senior note payment in October 2017, the purchase of treasury shares, and the payment of dividends, partially offset by the proceeds received from the issuance of senior notes in September 2017.

2017 vs. 2016

Net cash used in financing activities was $251 million in 2017 compared with $903 million in 2016. The net cash used in financing activities for 2017 was primarily attributable to the senior note payment in October 2017, the purchase of treasury shares, and the payment of dividends, partially offset by the proceeds received from the issuance of senior notes in September 2017. The net cash used in financing activities for 2016 was primarily attributable to the senior note payment in February 2016, the purchase of treasury shares and the payment of dividends.

Analysis of financial condition, liquidity and capital resources

While we believe our cash and cash equivalents on hand, our operating cash flows and our existing financing arrangements will be sufficient to support our future cash needs, this may be subject to the environment in which we operate. Risks to our meeting future funding requirements include global economic conditions described in the following paragraph.

Global financial markets may be impacted by macroeconomic, business and financial volatility. As markets change, we will continue to monitor our liquidity position, but there can be no assurance that a challenging economic environment or an economic downturn will not impact our liquidity or our ability to obtain future financing.

Selected measures of liquidity and capital resources

Certain relevant measures of our liquidity and capital resources follow:

(MILLIONS OF DOLLARS)	December 31, 2018	December 31, 2017
Cash and cash equivalents	$ 1,602	$ 1,564
Accounts receivable, net[(a)]	1,036	998
Long-term debt	6,443	4,953
Working capital	3,176	3,123
Ratio of current assets to current liabilities	3.60:1	3.85:1

(a) Accounts receivable are usually collected over a period of 45 to 75 days. For the year ended December 31, 2018, compared to the year ended December 31, 2017, the number of days that accounts receivables are outstanding remained approximately the same. We regularly monitor our accounts receivable for collectability, particularly in

markets where economic conditions remain uncertain. We believe that our allowance for doubtful accounts is appropriate. Our assessment is based on such factors as past due aging, historical and expected collection patterns, the financial condition of our customers, the robust nature of our credit and collection practices and the economic environment.

For additional information about the sources and uses of our funds, see the Analysis of the consolidated balance sheets and Analysis of the consolidated statements of cash flows sections of this MD&A.

Credit facility and other lines of credit

In December 2016, we entered into an amended and restated revolving credit agreement with a syndicate of banks providing for a multi-year $1.0 billion senior unsecured revolving credit facility (the credit facility). In December 2018, the maturity for the amended and restated credit facility was extended through December 2023. Subject to certain conditions, we have the right to increase the credit facility to up to $1.5 billion. The credit facility contains a financial covenant requiring us to not exceed a maximum total leverage ratio (the ratio of consolidated net debt as of the end of the

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period to consolidated Earnings Before Interest, Income Taxes, Depreciation and Amortization (EBITDA) for such period) of 3.50:1. Upon entering into a material acquisition, the maximum total leverage ratio increases to 4.00:1, and extends until the fourth full consecutive fiscal quarter ended immediately following the consummation of a material acquisition.

The credit facility also contains a clause which adds back to Adjusted Consolidated EBITDA, any operational efficiency restructuring charge (defined as charges recorded by the company during the period commencing on October 1, 2016 and ending December 31, 2019, related to operational efficiency initiatives), provided that for any twelve month period such charges added back to Adjusted Consolidated EBITDA shall not exceed $100 million in the aggregate.

The credit facility also contains a financial covenant requiring that we maintain a minimum interest coverage ratio (the ratio of EBITDA at the end of the period to interest expense for such period) of 3.50:1. In addition, the credit facility contains other customary covenants.

We were in compliance with all financial covenants as of December 31, 2018 and December 31, 2017. There were no amounts drawn under the credit facility as of December 31, 2018 or December 31, 2017.

We have additional lines of credit and other credit arrangements with a group of banks and other financial intermediaries for general corporate purposes. We maintain cash and cash equivalent balances in excess of our outstanding short-term borrowings. As of December 31, 2018, we had access to $77 million of lines of credit which expire at various times through 2019, and are generally renewed annually. We had $9 million of borrowings outstanding related to these facilities as of December 31, 2018.

Domestic and international short-term funds

Many of our operations are conducted outside the United States. The amount of funds held in the United States will fluctuate due to the timing of receipts and payments in the ordinary course of business and due to other reasons, such as business development activities. As part of our ongoing liquidity assessments, we regularly monitor the mix of U.S. and international cash flows (both inflows and outflows). Actual repatriation of overseas funds can result in additional U.S and local income taxes, such as U.S. state income taxes, local withholding taxes, and taxes on currency gains and losses. In addition, the recent changes imposed by the Tax Act resulted in a one-time deemed repatriation tax of previously untaxed accumulated and current earnings and profits of our foreign subsidiaries, which is payable over eight years, with the first installment due in 2019. See Notes to Consolidated Financial Statements— Note 8. Tax Matters.

Global economic conditions

Challenging economic conditions in recent years have not had, nor do we anticipate that it will have, a significant impact on our liquidity. Due to our operating cash flows, financial assets, access to capital markets and available lines of credit and revolving credit agreements, we continue to believe that we have the ability to meet our liquidity needs for the foreseeable future. As markets change, we continue to monitor our liquidity position. There can be no assurance that a challenging economic environment or a further economic downturn would not impact our ability to obtain financing in the future.

Contractual obligations

Payments due under contractual obligations as of December 31, 2018, are set forth below:

(MILLIONS OF DOLLARS)	Total	2019	2020-2021	2022-2023	There-after
Long-term debt, including interest obligations[a]	$9,851	$247	$1,575	$1,751	$6,278
Other liabilities reflected on our consolidated balance sheets under U.S. GAAP[b]	98	33	22	12	31
Operating lease commitments	173	38	54	36	45
Purchase obligations[c]	434	179	184	54	17
Benefit plans - continuing service credit obligations[d]	15	4	7	4	—
Uncertain tax positions[e]	—	—	—	—	—

Certain amounts may reflect rounding adjustments.

(a)

Long-term debt consists of senior notes and other notes. Our calculations of expected interest payments incorporate only current period assumptions for interest rates, foreign currency translation rates and Zoetis hedging strategies. See Notes to Consolidated Financial Statements— Note 9A. Financial Instruments: Debt.

(b) Includes expected employee termination payments that represent contractual obligations, expected payments related to our unfunded U.S. supplemental (non-qualified) savings plans, deferred compensation and expected payments relating to our future benefit payments net of plan assets (included in the determination of the projected benefit obligation) for pension plans that are dedicated to Zoetis employees and those transferred to us from Pfizer. See Notes to Consolidated Financial Statements— Note 5. Acquisitions and Divestitures, Note 6. Restructuring Charges and Other Costs Associated with Acquisitions and Cost-Reduction/Productivity Initiatives and Note 13. Benefit Plans. Excludes approximately $94 million of noncurrent liabilities related to legal and environmental accruals, certain employee termination and exit costs, deferred income and other accruals, most of which do not represent contractual obligations. See Notes to Consolidated Financial Statements— Note 6. Restructuring Charges and Other Costs Associated with Acquisitions and Cost-Reduction/Productivity Initiatives and Note 17. Commitments and Contingencies.

(c) Includes agreements to purchase goods and services that are enforceable and legally binding and includes amounts relating to advertising, contract manufacturing, and information technology services.

(d) Includes the cost of service credit continuation for certain Zoetis employees in the Pfizer U.S. qualified defined benefit pension and U.S. retiree medical plans, in accordance with the employee matters agreement. See Notes to Consolidated Financial Statements— Note 13. Benefit Plans.

(e) Except for amounts reflected in Income taxes payable, we are unable to predict the timing of tax settlements, as tax audits can involve complex issues and the resolution of those issues may span multiple years, particularly if subject to negotiation or litigation.

The table above excludes amounts for potential milestone payments unless the payments are deemed reasonably likely to occur. Payments under these agreements generally become due and payable only upon the achievement of certain development, regulatory and/or commercialization

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milestones, which may span several years and/or which may never occur. Our contractual obligations in the table above are not necessarily indicative of our contractual obligations in the future.

Debt

On August 20, 2018, we issued $1.5 billion aggregate principal amount of our senior notes (2018 senior notes), with an original issue discount of $4 million. These notes are comprised of $300 million aggregate principal amount of floating rate senior notes due 2021 (the "2018 floating rate senior notes"), and $300 million aggregate principal amount of 3.250% senior notes due 2021, $500 million aggregate principal amount of 3.900% senior notes due 2028 and $400 million aggregate principal amount of 4.450% senior notes due 2048 (collectively, the "2018 fixed rate senior notes"). Net proceeds from this offering were partially used to pay down and terminate a revolving credit agreement and repay outstanding commercial paper, which were borrowed to finance a portion of the cash consideration for the acquisition of Abaxis (see Notes to Condensed Consolidated Financial Statements— Note 5. Acquisitions and Divestitures). The remainder of the net proceeds will be used for general corporate purposes.

On September 12, 2017, we issued $1.25 billion aggregate principal amount of our senior notes (2017 senior notes), with an original issue discount of $7 million. These notes are comprised of $750 million aggregate principal amount of 3.000% senior notes due 2027 and $500 million aggregate principal amount of 3.950% senior notes due 2047. Net proceeds from this offering were partially used in October 2017 to repay, prior to maturity, the aggregate principal amount of $750 million, and a make-whole amount and accrued interest of $4 million, of our 1.875% senior notes due 2018. The remainder of the net proceeds were used for general corporate purposes.

On November 13, 2015, we issued $1.25 billion aggregate principal amount of our senior notes (2015 senior notes), with an original issue discount of $2 million. On January 28, 2013, we issued $3.65 billion aggregate principal amount of our senior notes (2013 senior notes) in a private placement, with an original issue discount of $10 million.

The 2013, 2015, 2017 and 2018 senior notes are governed by an indenture and supplemental indenture (collectively, the indenture) between us and Deutsche Bank Trust Company Americas, as trustee. The indenture contains certain covenants, including limitations on our and certain of our subsidiaries' ability to incur liens or engage in sale lease-back transactions. The indenture also contains restrictions on our ability to consolidate, merge or sell substantially all of our assets. In addition, the indenture contains other customary terms, including certain events of default, upon the occurrence of which (if not cured or waived), the 2013, 2015, 2017 and 2018 senior notes may be declared immediately due and payable.

Pursuant to the indenture, we are able to redeem the 2013, 2015 and 2017 senior notes and the 2018 fixed rate senior notes of any series, in whole or in part, at any time by paying a “make whole” premium, plus accrued and unpaid interest to, but excluding, the date of redemption. Pursuant to our tax matters agreement with Pfizer, we will not be permitted to redeem the 2013 senior notes due 2023 pursuant to this optional redemption provision, except under limited circumstances. Upon the occurrence of a change of control of us and a downgrade of the 2013, 2015, 2017 and 2018 senior notes below an investment grade rating by each of Moody's Investors Service, Inc. and Standard & Poor's Ratings Services, we are, in certain circumstances, required to make an offer to repurchase all of the outstanding 2013, 2015, 2017 and 2018 senior notes at a price equal to 101% of the aggregate principal amount of the 2013, 2015, 2017 and 2018 senior notes together with accrued and unpaid interest to, but excluding, the date of repurchase.

The components of our long-term debt follow:

Description	Principal Amount	Interest Rate	Terms
2015 Senior Notes due 2020	$500 million	3.450%	Interest due semi annually, not subject to amortization, aggregate principal due on November 13, 2020
2018 Floating Rate Senior Notes due 2021	$300 million	Three-month USD LIBOR plus 0.44%	Interest due quarterly, not subject to amortization, aggregate principal due on August 20, 2021
2018 Senior Notes due 2021	$300 million	3.250%	Interest due semi annually, not subject to amortization, aggregate principal due on August 20, 2021

2013 Senior Notes due 2023	$1,350 million	3.250%	Interest due semi annually, not subject to amortization, aggregate principal due on February 1, 2023
2015 Senior Notes due 2025	$750 million	4.500%	Interest due semi annually, not subject to amortization, aggregate principal due on November 13, 2025
2017 Senior Notes due 2027	$750 million	3.000%	Interest due semi annually, not subject to amortization, aggregate principal due on September 12, 2027
2018 Senior Notes due 2028	$500 million	3.900%	Interest due semi annually, not subject to amortization, aggregate principal due on August 20, 2028
2013 Senior Notes due 2043	$1,150 million	4.700%	Interest due semi annually, not subject to amortization, aggregate principal due on February 1, 2043
2017 Senior Notes due 2047	$500 million	3.950%	Interest due semi annually, not subject to amortization, aggregate principal due on September 12, 2047
2018 Senior Notes due 2048	$400 million	4.450%	Interest due semi annually, not subject to amortization, aggregate principal due on August 20, 2048

Credit ratings

Two major corporate debt-rating organizations, Moody's and S&P, assign ratings to our short-term and long-term debt. A security rating is not a recommendation to buy, sell or hold securities and the rating is subject to revision or withdrawal at any time by the rating organization. Each rating should be evaluated independently of any other rating.

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The following table provides the current ratings assigned by these rating agencies to our commercial paper and senior unsecured non-credit-enhanced long-term debt:

	Commercial Paper	Long-term Debt		Date of
Name of Rating Agency	Rating	Rating	Outlook	Last Action
Moody’s	P-2	Baa1	Stable	August 2017
S&P	A-2	BBB	Stable	December 2016

Pension obligations

Our employees ceased to participate in the Pfizer U.S. qualified defined benefit and U.S. retiree medical plans effective December 31, 2012, and liabilities associated with our employees under these plans were retained by Pfizer. As part of the separation from Pfizer, Pfizer is continuing to credit certain employees' service with Zoetis generally through December 31, 2017 (or termination of employment from Zoetis, if earlier), for certain early retirement benefits with respect to Pfizer's U.S. defined benefit pension and retiree medical plans. In connection with the employee matters agreement, Zoetis will be responsible for payment of three-fifths of the total cost of the service credit continuation (approximately $38 million) for these plans. The amount of the service cost continuation payment to be paid by Zoetis to Pfizer was determined and fixed based on an actuarial assessment of the value of the grow-in benefits and will be paid in equal installments over a period of 10 years. As of December 31, 2018, the remaining payments due to Pfizer (approximately $15 million in the aggregate) are to be paid over the next four years.

As part of the separation from Pfizer, Pfizer transferred to us the net pension obligations associated with certain international defined benefit plans. We expect to contribute a total of approximately $5 million to these plans in 2019. As of December 31, 2018, the supplemental savings plan liability was approximately $35 million.

For additional information, see Notes to Consolidated Financial Statements— Note 13. Benefit Plans.

Share repurchase program

In December 2016, the company's Board of Directors authorized a $1.5 billion share repurchase program. As of December 31, 2018, there was approximately $300 million remaining under this authorization. In December 2018, the company's Board of Directors authorized an additional $2.0 billion share repurchase program. Purchases of Zoetis shares may be made at the discretion of management, depending on market conditions and business needs. Share repurchases may be executed through various means, including open market or privately negotiated transactions. During 2018, approximately 8 million shares were repurchased.

Off-balance sheet arrangements

In the ordinary course of business and in connection with the sale of assets and businesses, we may indemnify our counterparties against certain liabilities that may arise in connection with a transaction or that are related to activities prior to a transaction. These indemnifications typically pertain to environmental, tax, employee and/or product-related matters, and patent-infringement claims. If the indemnified party were to make a successful claim pursuant to the terms of the indemnification, we would be required to reimburse the loss. These indemnifications are generally subject to threshold amounts, specified claim periods and other restrictions and limitations. Historically, we have not paid significant amounts under these provisions and, as of December 31, 2018 and December 31, 2017, recorded amounts for the estimated fair value of these indemnifications are not significant.

New accounting standards

For discussion of our new accounting standards, see Notes to Consolidated Financial Statements—Note 3. Significant Accounting Policies—New Accounting Standards.

Recently Issued Accounting Standards, Not Adopted as of December 31, 2018

In August, 2018, the FASB issued an accounting standards update which expands the scope of costs associated with cloud computing arrangements that must be capitalized. Under the new guidance, costs associated with implementing a cloud computing arrangement that is a service contract must be capitalized and expensed over the term of the hosting arrangement. The provisions of the update are effective beginning January 1, 2020 for interim and annual periods with early adoption permitted for any interim period after issuance of the update. We are currently assessing the timing of our adoption as well as the potential impact that the standard will have on our consolidated financial

statements.

In February 2018, the FASB issued an accounting standards update which permits companies to reclassify from accumulated other comprehensive income to retained earnings stranded tax effects resulting from the new federal corporate income tax rate. In the period of adoption, a company may choose to either apply the amendments retrospectively to each period in which the effect of the change in federal income tax rate is recognized or to apply the amendments in that reporting period. We will adopt this guidance as of January 1, 2019, the required effective date. Adoption of this standard will not have a significant impact on our consolidated financial statements.

In February 2016, the FASB issued an accounting standards update which requires lessees to recognize most leases on the balance sheet with a corresponding right of use asset. Leases will be classified as financing or operating which will drive the expense recognition pattern. For lessees, the income statement presentation and expense recognition pattern for financing and operating leases is similar to the current model for capital and operating leases, respectively. Companies may elect to exclude short-term leases. The update also requires additional disclosures that will better enable users of financial statements to assess the amount, timing, and uncertainty of cash flows arising from leases. We plan to adopt this guidance as of January 1, 2019, using the effective date as the date of initial application. As permitted, utilizing an optional transition method, a cumulative-effect adjustment to the opening balance of retained earnings will be recognized in the period of adoption, and financial information and disclosure for

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periods prior to the date of initial application will not be updated. We have substantially completed our implementation of a lease accounting system and our evaluation of lease contracts, accounting policy elections and the impact of adoption on our consolidated financial statements. We do not expect the total of right of use assets and corresponding lease liabilities, recorded in conjunction with adoption, to exceed $200 million each. Adoption of the standard will not have a significant impact on our consolidated statements of income.

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Forward-looking statements and factors that may affect future results

This report contains “forward-looking” statements. We generally identify forward-looking statements by using words such as “anticipate,” “estimate,” “could,” “expect,” “intend,” “project,” “plan,” “predict,” “believe,” “seek,” “continue,” “outlo "target," “may,” “might,” “will,” “should,” “can have,” “likely” or the negative version of these words or comparable words or using future dates in connection with any discussion of future performance, actions or events.

In particular, forward-looking statements include statements relating to our 2019 financial guidance, future actions, business plans or prospects, prospective products, product approvals or products under development, product supply disruptions, R&D costs, timing and likelihood of success, future operating or financial performance, future results of current and anticipated products and services, strategies, sales efforts, expenses, production efficiencies, production margins, anticipated timing of generic market entries, integration of acquired businesses, interest rates, tax rates, changes in tax regimes and laws, foreign exchange rates, growth in emerging markets, the outcome of contingencies, such as legal proceedings, plans related to share repurchases and dividends, government regulation and financial results. These statements are not guarantees of future performance, actions or events. Forward-looking statements are subject to risks and uncertainties, many of which are beyond our control, and are based on assumptions that could prove to be inaccurate. Among the factors that could cause actual results to differ materially from past results and future plans and projected future results are the following:

- unanticipated safety, quality or efficacy concerns about our products;
- issues with any of our top products;
- failure of our R&D, acquisition and licensing efforts to generate new products and product lifecycle innovations;
- the possible impact and timing of competing products, including generic alternatives, on our products and our ability to compete against such products;
- disruptive innovations and advances in medical practices and technologies;
- consolidation of our customers and distributors;
- changes in the distribution channel for companion animal products;
- failure to successfully acquire businesses, license rights or products, integrate businesses, form and manage alliances or divest businesses;
- restrictions and bans on the use of and consumer preferences regarding antibacterials in food-producing animals;
- perceived adverse effects on human health linked to the consumption of food derived from animals that utilize our products;
- adverse global economic conditions;
- increased regulation or decreased governmental support relating to the raising, processing or consumption of food-producing animals;
- fluctuations in foreign exchange rates and potential currency controls;
- changes in tax laws and regulations;
- legal factors, including product liability claims, antitrust litigation and governmental investigations, including tax disputes, environmental concerns, commercial disputes and patent disputes with branded and generic competitors, any of which could preclude commercialization of products or negatively affect the profitability of existing products;
- failure to protect our intellectual property rights or to operate our business without infringing the intellectual property rights of others;
- product launch delays, inventory shortages, recalls or unanticipated costs caused by manufacturing problems and capacity imbalances;
- an outbreak of infectious disease carried by animals;
- adverse weather conditions and the availability of natural resources;
- the economic, political, legal and business environment of the foreign jurisdictions in which we do business;
- a cyber-attack, information security breach or other misappropriation of our data;
- quarterly fluctuations in demand and costs;
- governmental laws and regulations affecting domestic and foreign operations, including without limitation, tax obligations and changes affecting the tax treatment by the United States of income earned outside the United States that may result from pending and possible future proposals; and

- governmental laws and regulations affecting our interactions with veterinary healthcare providers.

However, there may also be other risks that we are unable to predict at this time. These risks or uncertainties may cause actual results to differ materially from those contemplated by a forward-looking statement. You should not put undue reliance on forward-looking statements. Forward-looking statements speak only as of the date on which they are made. We undertake no obligation to publicly update forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law or by the rules and regulations of the SEC. You are advised, however, to consult any further disclosures we make on related subjects in our Form 10-Q and 8-K reports and our other filings with the SEC. You should understand that it is not possible to predict or identify all such factors. Consequently, you should not consider the above to be a complete discussion of all potential risks or uncertainties.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

A significant portion of our revenue and costs are exposed to changes in foreign exchange rates. In addition, our outstanding borrowings may be subject to risk from changes in interest rates and foreign exchange rates. The overall objective of our financial risk management program is to seek to minimize the impact of foreign exchange rate movements and interest rate movements on our earnings. We manage these financial exposures through operational means and by using certain financial instruments. These practices may change as economic conditions change.

Foreign exchange risk

Our primary net foreign currency translation exposures are the Australian dollar, Brazilian real, Canadian dollar, Chinese renminbi, euro, and U.K. pound. We seek to manage our foreign exchange risk, in part, through operational means, including managing same-currency revenue in relation to same-currency costs and same-currency assets in relation to same-currency liabilities.

Foreign exchange risk is also managed through the use of foreign currency forward-exchange contracts. These contracts are used to offset the potential earnings effects from mostly intercompany short-term foreign currency assets and liabilities that arise from operations.

Our financial instrument holdings at December 31, 2018, were analyzed to determine their sensitivity to foreign exchange rate changes. The fair values of these instruments were determined using Level 2 inputs. For additional details, see Notes to Consolidated Financial Statements— Note 3. Significant Accounting Policies: Fair Value. The sensitivity analysis of changes in the fair value of all foreign currency forward-exchange contracts at December 31, 2018, indicates that if the U.S. dollar were to appreciate against all other currencies by 10%, the fair value of these contracts would increase by $20 million, and if the U.S. dollar were to weaken against all other currencies by 10%, the fair value of these contracts would decrease by $24 million. For additional details, see Notes to Consolidated Financial Statements— Note 9C. Financial Instruments: Derivative Financial Instruments.

Interest rate risk

Our outstanding debt balances are predominantly fixed rate debt. While changes in interest rates will have no impact on the interest we pay on our fixed rate debt, interest on our $300 million aggregate principal amount of 2018 Floating Rate Senior Notes due 2021, as well as interest on our commercial paper and revolving credit facility will be exposed to interest rate fluctuations. At December 31, 2018, there were no commercial paper borrowings outstanding and no outstanding principal balance under our revolving credit facility. See Notes to Consolidated Financial Statements— Note 9. Financial Instruments.

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Item 8. Financial Statements and Supplementary Data.
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Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Zoetis Inc.:

Opinion on the Consolidated Financial Statements
We have audited the accompanying consolidated balance sheets of Zoetis Inc. and subsidiaries (the "Company") as of December 31, 2018 and 2017, the related consolidated statements of income, comprehensive income, equity, and cash flows for each of the years in the three year period ended December 31, 2018, and the related notes and financial statement schedule II - Valuation and Qualifying Accounts (collectively, the "consolidated financial statements"). In our opinion, the consolidated financial statements 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 years in the three year period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.
We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), 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, and our report dated February 14, 2019 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.
Basis for Opinion
These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the 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 audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits 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. We believe that our audits provide a reasonable basis for our opinion.
/s/ KPMG LLP

We have served as the Company's auditor since 2011.
Short Hills, New Jersey
February 14, 2019

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Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Zoetis Inc.:

Opinion on Internal Control Over Financial Reporting
We have audited Zoetis Inc. and subsidiaries' (the "Company") 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. 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 Committee of Sponsoring Organizations of the Treadway Commission.
We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated balance sheets of the Company as of December 31, 2018 and 2017, the related consolidated statements of income, comprehensive income, equity, and cash flows for each of the years in the three-year period ended December 31, 2018, and the related notes and financial statement schedule II - Valuation and Qualifying Accounts (collectively, the "consolidated financial statements"), and our report dated February 14, 2019 expressed an unqualified opinion on those consolidated financial statements.
On July 31, 2018, the Company completed the acquisition of Abaxis, Inc. (Abaxis) and management excluded from its assessment of the effectiveness of the Company's internal control over financial reporting as of December 31, 2018, Abaxis's internal control over financial reporting associated with approximately 3% of the Company's consolidated total assets and approximately 2% of the Company's consolidated total revenues as of and for the year ended December 31, 2018 (excluding acquired goodwill and intangible assets which are included within the scope of the Company's assessment). Our audit of internal control over financial reporting of the Company also excluded an evaluation of the internal control over financial reporting of Abaxis (excluding acquired goodwill and intangibles assets which are included within the scope of our assessment).
Basis for Opinion
The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the 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 audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. 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 audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.
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 (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) 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 (3) 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/ KPMG LLP
Short Hills, New Jersey
February 14, 2019

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ZOETIS INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF INCOME

	Year Ended December 31,		
(MILLIONS OF DOLLARS AND SHARES, EXCEPT PER SHARE DATA)	2018	2017	2016
Revenue	$5,825	$5,307	$4,888
Costs and expenses:			
Cost of sales[(a)]	1,911	1,775	1,666
Selling, general and administrative expenses[(a)]	1,484	1,334	1,364
Research and development expenses[(a)]	432	382	376
Amortization of intangible assets	117	91	85
Restructuring charges and certain acquisition-related costs	68	19	5
Interest expense, net of capitalized interest	206	175	166
Other (income)/deductions—net	(83)	6	(2)
Income before provision for taxes on income	1,690	1,525	1,228
Provision for taxes on income	266	663	409
Net income before allocation to noncontrolling interests	1,424	862	819
Less: Net loss attributable to noncontrolling interests	(4)	(2)	(2)
Net income attributable to Zoetis	$1,428	$864	$821
Earnings per share attributable to Zoetis Inc. stockholders:			
Basic	$2.96	$1.76	$1.66
Diluted	$2.93	$1.75	$1.65
Weighted-average common shares outstanding:			
Basic	483.063	489.918	495.715
Diluted	486.898	493.161	498.225
Dividends declared per common share	$0.542	$0.441	$0.390

(a) Exclusive of amortization of intangible assets, except as disclosed in Note 3. Significant Accounting Policies—Amortization of Intangible Assets, Depreciation and Certain Long-Lived Assets.

See Notes to Consolidated Financial Statements, which are an integral part of these statements.

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ZOETIS INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(MILLIONS OF DOLLARS)	Year Ended December 31, 2018	2017	2016
Net income before allocation to noncontrolling interests	$ 1,424	$ 862	$ 819
Other comprehensive income/(loss), net of tax and reclassification adjustments:			
Unrealized (loss)/gain on derivatives, net[(a)]	(1)	(11)	10
Foreign currency translation adjustments, net	(125)	98	17
Benefit plans:			
Actuarial gain/(loss), net[(a)]	2	8	(6)
Total other comprehensive income/(loss), net of tax	(124)	95	21
Comprehensive income before allocation to noncontrolling interests	1,300	957	840
Comprehensive loss attributable to noncontrolling interests	(4)	—	(3)
Comprehensive income attributable to Zoetis	$ 1,304	$ 957	$ 843

(a) Presented net of reclassification adjustments and tax impacts, which are not significant in any period presented. Reclassification adjustments related to benefit plans are generally reclassified, as part of net periodic pension cost, into Cost of sales, Selling, general and administrative expenses, and/or Research and development expenses, as appropriate, in the consolidated statements of income.

See Notes to Consolidated Financial Statements, which are an integral part of these statements.

ZOETIS INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS

(MILLIONS OF DOLLARS, EXCEPT PER SHARE DATA)	December 31, 2018	December 31, 2017
Assets		
Cash and cash equivalents[(a)]	$ 1,602	$ 1,564
Short-term investments	99	—
Accounts receivable, less allowance for doubtful accounts of $24 in 2018 and $25 in 2017	1,036	998
Inventories	1,391	1,427
Other current assets	271	228
Total current assets	4,399	4,217
Property, plant and equipment, less accumulated depreciation of $1,599 in 2018 and $1,471 in 2017	1,658	1,435
Goodwill	2,519	1,510
Identifiable intangible assets, less accumulated amortization	2,046	1,269
Noncurrent deferred tax assets	61	80
Other noncurrent assets	94	75
Total assets	$ 10,777	$ 8,586
Liabilities and Equity		
Short-term borrowings	$ 9	$ —
Accounts payable	313	261
Dividends payable	79	61
Accrued expenses	487	432
Accrued compensation and related items	266	236
Income taxes payable	35	60
Other current liabilities	34	44
Total current liabilities	1,223	1,094
Long-term debt, net of discount and issuance costs	6,443	4,953
Noncurrent deferred tax liabilities	474	380
Other taxes payable	265	172
Other noncurrent liabilities	187	201
Total liabilities	8,592	6,800
Commitments and contingencies (Note 17)		
Stockholders' equity:		
Preferred stock, $0.01 par value; 1,000,000,000 authorized, none issued	—	—
Common stock, $0.01 par value: 6,000,000,000 authorized, 501,891,243 and 501,891,243 shares issued; 479,562,326 and 486,130,461 shares outstanding at December 31, 2018 and 2017, respectively	5	5
Treasury stock, at cost, 22,328,917 and 15,760,782 shares of common stock at December 31, 2018 and 2017, respectively	(1,487)	(852)
Additional paid-in capital	1,026	1,013
Retained earnings	3,270	2,109
Accumulated other comprehensive loss	(629)	(505)
Total Zoetis Inc. equity	2,185	1,770
Equity attributable to noncontrolling interests	—	16
Total equity	2,185	1,786
Total liabilities and equity	$ 10,777	$ 8,586

(a) As of December 31, 2018, and December 31, 2017, includes $5 million and $6 million, respectively, of restricted cash.

See Notes to Consolidated Financial Statements, which are an integral part of these statements.

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ZOETIS INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF EQUITY

(MILLIONS OF DOLLARS)	Zoetis Common Stock	Treasury Stock[a]	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Equity Attributable to Noncontrolling Interests	Total Equity
Balance, December 31, 2015	$5	$(203)	$1,012	$876	$(622)	$23	$1,091
Net income/(loss)	—	—	—	821	—	(2)	819
Other comprehensive income/(loss)	—	—	—	—	22	(1)	21
Share-based compensation awards[b]	—	82	9	(27)	—	—	64
Treasury stock acquired[c]	—	(300)	—	—	—	—	(300)
Employee benefit plan contribution from Pfizer Inc.[d]	—	—	3	—	—	—	3
Divestitures[e]	—	—	—	—	2	(8)	(6)
Dividends declared	—	—	—	(193)	—	—	(193)
Balance, December 31, 2016	$5	$(421)	$1,024	$1,477	$(598)	$12	$1,499
Net income/(loss)	—	—		864	—	(2)	862
Other comprehensive income	—	—	—	—	93	2	95
Consolidation of a noncontrolling interest[f]	—	—	—	—	—	18	18
Purchases of shares from a noncontrolling interest[g]	—	—	(29)		—	(14)	(43)
Share-based compensation awards[b]	—	69	15	(16)	—	—	68
Treasury stock acquired[c]	—	(500)	—	—	—	—	(500)
Employee benefit plan contribution from Pfizer Inc.[d]	—	—	3	—	—	—	3
Dividends declared	—	—	—	(216)	—	—	(216)
Balance, December 31, 2017	$5	$(852)	$1,013	$2,109	$(505)	$16	$1,786
Net income/(loss)	—	—	—	1,428	—	(4)	1,424
Other comprehensive loss	—	—	—	—	(124)	—	(124)
Acquisition of a noncontrolling interest[f]	—	—	(14)	—	—	(12)	(26)
Share-based compensation awards[b]	—	63	24	(6)	—	—	81
Treasury stock acquired[c]	—	(698)	—	—	—	—	(698)
Employee benefit plan contribution from Pfizer Inc.[d]	—	—	3	—	—	—	3
Dividends declared	—	—	—	(261)	—	—	(261)
Balance, December 31, 2018	$5	$(1,487)	$1,026	$3,270	$(629)	$—	$2,185

(a) As of December 31, 2018 and 2017, respectively, there were 479,562,326 and 486,130,461 outstanding shares of common stock and 22,328,917 and 15,760,782 shares or treasury stock. Treasury stock is recognized at the cost to reacquire the shares. For additional information, see Note 15. Stockholders' Equity.

(b) Includes the issuance of shares of Zoetis Inc. common stock and the reacquisition of shares of treasury stock associated with exercises of employee share-based awards. Also includes the reacquisition of shares of treasury stock associated with the vesting of employee share-based awards to satisfy tax withholding requirements. For additional information, see Note 14. Share-Based Payments and Note 15. Stockholders' Equity.

(c) Reflects the acquisition of treasury shares in connection with the share repurchase program. For additional information, see Note 15. Stockholders' Equity.

(d)

(e) Represents contributed capital from Pfizer Inc. associated with service credit continuation for certain Zoetis Inc. employees in Pfizer Inc.'s U.S. qualified defined benefit and U.S. retiree medical plans. See Note 13. Benefit Plans.

(e) Reflects the divestiture of our share of our Taiwan joint venture. See Note 5B. Acquisitions and Divestitures: Divestitures.

(f) For the twelve months ended December 31, 2018 and 2017, represents the acquisition and consolidation of a European livestock monitoring company.

(g) Represents the acquisition of the remaining 55 percent noncontrolling interest in Jilin Zoetis Guoyuan Animal Health Co., Ltd., a variable interest entity previously consolidated by Zoetis as the primary beneficiary.

See Notes to Consolidated Financial Statements, which are an integral part of these statements.

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ZOETIS INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS

(MILLIONS OF DOLLARS)	Year Ended December 31, 2018	2017	2016
Operating Activities			
Net income before allocation to noncontrolling interests	$1,424	$862	$819
Adjustments to reconcile net income before noncontrolling interests to net cash provided by operating activities:			
Depreciation and amortization expense	308	242	240
Share-based compensation expense	53	44	37
Asset write-offs and asset impairments	4	3	5
Net (gain)/loss on sales of assets	(42)	11	(26)
Provision for losses on inventory	54	54	105
Deferred taxes[(a)]	(112)	127	(55)
Employee benefit plan contribution from Pfizer Inc.	3	3	3
Other non-cash adjustments	(14)	10	19
Other changes in assets and liabilities, net of acquisitions and divestitures			
Accounts receivable	(67)	(50)	15
Inventories	61	19	(101)
Other assets	(42)	(16)	(50)
Accounts payable	37	(10)	(28)
Other liabilities	56	(38)	(290)
Other tax accounts, net	67	85	20
Net cash provided by operating activities	1,790	1,346	713
Investing Activities			
Capital expenditures	(338)	(224)	(216)
Acquisition of Abaxis, net of cash acquired	(1,884)	—	—
Other acquisitions	(114)	(82)	(88)
Net proceeds from sales of assets	56	37	90
Proceeds from maturities and redemptions of investments	28	—	—
Other investing activities	(7)	(1)	—
Net cash used in investing activities	(2,259)	(270)	(214)
Financing Activities			
Increase/(decrease) in short-term borrowings, net	8	—	(5)
Principal payments on long-term debt	—	(750)	(400)
Proceeds from issuance of long-term debt—senior notes, net of discount and fees	1,485	1,231	—
Payment of contingent consideration related to previously acquired assets	(12)	(7)	(32)
Share-based compensation-related proceeds, net of taxes paid on withholding shares and excess tax benefits	19	24	25
Purchases of treasury stock	(698)	(500)	(300)
Cash dividends paid	(243)	(206)	(188)
Acquisition of a noncontrolling interest	(26)	(43)	—
Payment of debt issuance costs	—	—	(3)
Net cash provided by/(used in) financing activities	533	(251)	(903)
Effect of exchange-rate changes on cash and cash equivalents	(26)	12	(23)
Net increase/(decrease) in cash and cash equivalents	38	837	(427)
Cash and cash equivalents at beginning of period	1,564	727	1,154
Cash and cash equivalents at end of period	$1,602	$1,564	$727

See Notes to Consolidated Financial Statements, which are an integral part of these statements.

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Supplemental cash flow information			
Cash paid during the period for:			
Income taxes	$336	$455	$408
Interest, net of capitalized interest	190	167	165
Non-cash transactions:			
Capital expenditures	$7	$5	$8
Contingent purchase price consideration	—	29	27
Dividends declared, not paid	79	61	52

(a) Reflects the reclassification of the one-time deemed repatriation tax from Noncurrent deferred tax liabilities to Income taxes payable and Other taxes payable to properly reflect the liability, which became a fixed obligation in 2018, payable over eight years.

See Notes to Consolidated Financial Statements, which are an integral part of these statements.

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ZOETIS INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Business Description

Zoetis Inc. (including its subsidiaries, collectively, Zoetis, the company, we, us or our) is a global leader in the discovery, development, manufacture and commercialization of animal health medicines, vaccines and diagnostic products with a focus on both livestock and companion animals. We organize and operate our business in two geographic regions: the United States (U.S.) and International.

We directly market our products in approximately 45 countries across North America, Europe, Africa, Asia, Australia and South America. Our products are sold in more than 100 countries, including developed markets and emerging markets. We have a diversified business, marketing products across eight core species: cattle, swine, poultry, sheep and fish (collectively, livestock) and dogs, cats and horses (collectively, companion animals); and within six major product categories: anti-infectives, vaccines, parasiticides, medicated feed additives, animal health diagnostics and other pharmaceuticals.

We were incorporated in Delaware in July 2012 and prior to that the company was a business unit of Pfizer Inc. (Pfizer).

2. Basis of Presentation

The consolidated financial statements were prepared in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP). For subsidiaries operating outside the United States, the consolidated financial information is included as of and for the fiscal year ended November 30 for each year presented. All significant intercompany balances and transactions between the legal entities that comprise Zoetis have been eliminated. For those subsidiaries included in these consolidated financial statements where our ownership is less than 100%, including a variable interest entity consolidated by Zoetis as the primary beneficiary, the noncontrolling interests have been shown in equity as Equity attributable to noncontrolling interests.

3. Significant Accounting Policies

Recently Adopted Accounting Standards

In March 2018, the Financial Accounting Standards Board (FASB) issued an accounting standards update to align existing guidance on accounting for income taxes, pursuant to guidance provided by a Staff Accounting Bulletin published by the SEC on December 22, 2017. The update addresses the challenges in accounting for the effects of the Tax Cuts and Jobs Act (the Tax Act), enacted on December 22, 2017, in the period of enactment and required companies to report provisional amounts for those specific income tax effects of the Tax Act for which the accounting was incomplete but a reasonable estimate could be determined. Provisional amounts were subject to adjustment during a measurement period of up to one year from the enactment date. For additional information, see Note 8. Tax Matters.

In August 2017, the FASB issued an accounting standards update which amends the hedge accounting recognition and presentation requirements
and is intended to better align hedge accounting with companies' risk management strategies. The standard eliminates the requirement to separately measure and report hedge ineffectiveness and generally requires that the entire change in fair value of a hedging instrument be presented in the same income statement line item as the respective hedged item. The standard also modifies certain disclosure requirements. The provisions of the update are effective beginning January 1, 2019 for interim and annual periods with early adoption permitted for any interim period after issuance of the update. We elected to early adopt this guidance as of April 1, 2018. There were no hedging contracts in effect as of the date of adoption.

In March 2017, the FASB issued an accounting standards update to simplify and improve the reporting of net periodic pension benefit cost by requiring only present service cost to be presented in the same line item as other current employee compensation costs while remaining components of net periodic benefit cost would be presented within Other (income)/deductions— net outside of operations. We adopted this guidance as of January 1, 2018, the required effective date. The new standard did not have a significant impact on our consolidated financial statements.

In October 2016, the FASB issued an accounting standards update that requires the recognition of the income tax consequences of an intra-entity asset transfer, other than inventory, when the transfer occurs as opposed to when the asset is sold to an outside third party. We adopted this guidance as of January 1, 2018, the required effective date. The new standard did not have a significant impact on our consolidated financial statements.

In May 2014, the FASB issued an accounting standards update that outlines a new, single comprehensive model for companies to use in accounting for revenue arising from contracts with customers. The core principle of the new guidance is that an entity should 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. We adopted this guidance as of January 1, 2018, the required effective date, using the modified retrospective adoption method. Prior period amounts have not been adjusted and continue to be reported in accordance with our historic accounting policies. Application of the standard using the modified retrospective method did not require an adjustment to opening retained earnings. For additional information, see Note 4. Revenue.

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Recently Issued Accounting Standards

In August 2018, the FASB issued an accounting standards update which expands the scope of costs associated with cloud computing arrangements that must be capitalized. Under the new guidance, costs associated with implementing a cloud computing arrangement that is a service contract must be capitalized and expensed over the term of the hosting arrangement. The provisions of the update are effective beginning January 1, 2020 for interim and annual periods with early adoption permitted for any interim period after issuance of the update. We are currently assessing the timing of our adoption as well as the potential impact that the standard will have on our consolidated financial statements.

In February 2018, the FASB issued an accounting standards update which permits companies to reclassify from accumulated other comprehensive income to retained earnings stranded tax effects resulting from the new federal corporate income tax rate. In the period of adoption, a company may choose to either apply the amendments retrospectively to each period in which the effect of the change in federal income tax rate is recognized or to apply the amendments in that reporting period. We will adopt this guidance as of January 1, 2019, the required effective date. Adoption of this standard will not have a significant impact on our consolidated financial statements.

In February 2016, the FASB issued an accounting standards update which requires lessees to recognize most leases on the balance sheet with a corresponding right of use asset. Leases will be classified as financing or operating which will drive the expense recognition pattern. For lessees, the income statement presentation and expense recognition pattern for financing and operating leases is similar to the current model for capital and operating leases, respectively. Companies may elect to exclude short-term leases. The update also requires additional disclosures that will better enable users of financial statements to assess the amount, timing, and uncertainty of cash flows arising from leases. We plan to adopt this guidance as of January 1, 2019, using the effective date as the date of initial application. As permitted, utilizing an optional transition method, a cumulative-effect adjustment to the opening balance of retained earnings will be recognized in the period of adoption, and financial information and disclosure for periods prior to the date of initial application will not be updated. We have substantially completed our implementation of a lease accounting system and our evaluation of lease contracts, accounting policy elections and the impact of adoption on our consolidated financial statements. We do not expect the total of right of use assets and corresponding lease liabilities, recorded in conjunction with adoption, to exceed $200 million each. Adoption of the standard will not have a significant impact on our consolidated statements of income.

Estimates and Assumptions

In preparing the consolidated financial statements, we use certain estimates and assumptions that affect reported amounts and disclosures, including amounts recorded in connection with acquisitions. These estimates and underlying assumptions can impact all elements of our consolidated financial statements. For example, in the consolidated statements of income, estimates are used when accounting for deductions from revenue (such as rebates, sales allowances, product returns and discounts), determining cost of sales, allocating cost in the form of depreciation and amortization, and estimating restructuring charges and the impact of contingencies. On the consolidated balance sheets, estimates are used in determining the valuation and recoverability of assets, such as accounts receivables, inventories, fixed assets, goodwill and other identifiable intangible assets, and estimates are used in determining the reported amounts of liabilities, such as taxes payable, benefit obligations, the impact of contingencies, deductions from revenue and restructuring reserves, all of which also impact the consolidated statements of income.

Our estimates are often based on complex judgments, probabilities and assumptions that we believe to be reasonable but that can be inherently uncertain and unpredictable. If our estimates and assumptions are not representative of actual outcomes, our results could be materially impacted.

As future events and their effects cannot be determined with precision, our estimates and assumptions may prove to be incomplete or inaccurate, or unanticipated events and circumstances may occur that might cause us to change those estimates and assumptions. We are subject to risks and uncertainties that may cause actual results to differ from estimated amounts, such as changes in competition, litigation, legislation and regulations. We regularly evaluate our estimates and assumptions using historical experience and expectations about the future. We adjust our estimates and assumptions when facts and circumstances indicate the need for change. Those changes generally will be reflected in our consolidated financial statements on a prospective basis unless they are required to be treated retrospectively

under relevant accounting standards. It is possible that others, applying reasonable judgment to the same facts and circumstances, could develop and support a range of alternative estimated amounts.

Acquisitions

Our consolidated financial statements include the operations of acquired businesses from the date of acquisition. We account for acquired businesses using the acquisition method of accounting, which requires, among other things, that most assets acquired and liabilities assumed be recognized at their estimated fair values as of the acquisition date and that the fair value of acquired in-process research and development (IPR&D) be recorded on the balance sheet. Transaction costs are expensed as incurred. Any excess of the consideration transferred over the assigned values of the net assets acquired is recorded as goodwill. When we acquire net assets that do not constitute a business as defined in U.S. GAAP, no goodwill is recognized.

Amounts recorded for acquisitions can result from a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions. For information about the risks associated with estimates and assumptions, see Estimates and Assumptions.

Foreign Currency Translation

For most of our international operations, local currencies have been determined to be the functional currencies. We translate functional currency assets and liabilities to their U.S. dollar equivalents at exchange rates in effect at the balance sheet date and we translate functional currency income and expense amounts to their U.S. dollar equivalents at average exchange rates for the period. The U.S. dollar effects that arise from changing translation rates are recorded in Other comprehensive income/(loss), net of tax. The effects of converting non-functional currency assets and liabilities into the functional currency are recorded in Other (income)/deductions—net. For operations in highly inflationary economies, we translate monetary items at rates in effect at the balance sheet date, with translation adjustments recorded in Other (income)/deductions—net, and we translate non-monetary items at historical rates.

Revenue, Deductions from Revenue and the Allowance for Doubtful Accounts

We recognize revenue from product sales when control of the goods has transferred to the customer, which is typically once the goods have shipped and the customer has assumed title. Revenue reflects the total consideration to which we expect to be entitled (i.e., the transaction price), in

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exchange for products sold, after considering various types of variable consideration including rebates, sales allowances, product returns and discounts.

Variable consideration is estimated and recorded at the time that related revenue is recognized. Our estimates reflect the amount by which we expect variable consideration to impact revenue recognized and are generally based on contractual terms or historical experience, adjusted as necessary to reflect our expectations about the future. Our customer payment terms generally range from 45 to 75 days.

Estimates of variable consideration utilize a complex series of judgments and assumptions to determine the amount by which we expect revenue to be reduced, for example;

- for sales returns, we perform calculations in each market that incorporate the following, as appropriate: local returns policies and practices; historic returns as a percentage of revenue; estimated shelf life by product; an estimate of the amount of time between shipment and return or lag time; and any other factors that could impact the estimate of future returns, product recalls, discontinuation of products or a changing competitive environment; and
- for revenue incentives, we use our historical experience with similar incentives programs to estimate the impact of such programs on revenue for the current period.

Although the amounts recorded for these deductions from revenue are dependent on estimates and assumptions, historically our adjustments to actual results have not been material. The sensitivity of our estimates can vary by program, type of customer and geographic location.

As of December 31, 2018, and 2017, accruals for deductions from revenue included in Accrued expenses are approximately $146 million and $141 million, respectively.

A deferral of revenue may be required in the event that we have not satisfied all customer obligations for which we have been compensated. The transaction price is allocated to the individual performance obligations on the basis of relative stand-alone selling price, which is typically based on actual sales prices. Revenue associated with unsatisfied performance obligations are contract liabilities, is recorded within Other current liabilities and Other noncurrent liabilities, and is recognized once control of the underlying products has transferred to the customer. Contract liabilities reflected within Other current liabilities as of the adoption date and subsequently recognized as revenue during 2018 were approximately $2 million. Contract liabilities as of December 31, 2018 were approximately $9 million.

We do not disclose the transaction price allocated to unsatisfied performance obligations related to contracts with an original expected duration of one year or less, or for contracts for which we recognize revenue in line with our right to invoice the customer. Estimated future revenue expected to be generated from long-term contracts with unsatisfied performance obligations as of December 31, 2018 is not material.

Taxes collected from customers relating to product sales and remitted to governmental authorities are excluded from Revenue. Shipping and handling costs incurred after control of the purchased product has transferred to the customer are accounted for as a fulfillment cost, within Selling, general and administrative expenses.

We also record estimates for bad debts. We periodically assess the adequacy of the allowance for doubtful accounts by evaluating the collectability of outstanding receivables based on factors such as past due history, historical and expected collection patterns, the financial condition of our customers, the robust nature of our credit and collection practices and the economic environment.

Amounts recorded for sales deductions and bad debts can result from a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions. For information about the risks associated with estimates and assumptions, see Estimates and Assumptions.

Cost of Sales and Inventories

Inventories are carried at the lower of cost or net realizable value. The cost of finished goods, work-in-process and raw materials is determined using average actual cost. We regularly review our inventories for impairment and adjustments are recorded when necessary.

Selling, General and Administrative Expenses

Selling, general and administrative costs are expensed as incurred. Among other things, these expenses include the internal and external costs of marketing, advertising, and shipping and handling as well as certain costs related to business technology, facilities, legal, finance, human resources, business development, public affairs and procurement,

among others.

Advertising expenses relating to production costs are expensed as incurred, and the costs of space in publications are expensed when the related advertising occurs. Advertising and promotion expenses totaled approximately $158 million in 2018, $154 million in 2017 and $119 million in 2016.

Shipping and handling costs totaled approximately $56 million in 2018, $53 million in 2017 and $51 million in 2016.

Research and Development Expenses

Research and development (R&D) costs are expensed as incurred. Research is the effort associated with the discovery of new knowledge that will be useful in developing a new product or in significantly improving an existing product. Development is the implementation of the research findings. Before a compound receives regulatory approval, we record upfront and milestone payments made by us to third parties under licensing arrangements as expense. Upfront payments are recorded when incurred, and milestone payments are recorded when the specific milestone has been achieved. Once a compound receives regulatory approval in a major market, we record any milestone payments in Identifiable intangible assets, less accumulated amortization and, unless the assets are determined to have an indefinite life, we amortize them on a straight-line basis over the remaining agreement term or the expected product life cycle, whichever is shorter.

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Amortization of Intangible Assets, Depreciation and Certain Long-Lived Assets

Long-lived assets include:

- Goodwill—goodwill represents the excess of the consideration transferred for an acquired business over the assigned values of its net assets. Goodwill is not amortized.
- Identifiable intangible assets, less accumulated amortization—these acquired assets are recorded at our cost. Identifiable intangible assets with finite lives are amortized on a straight-line basis over their estimated useful lives. Identifiable intangible assets with indefinite lives that are associated with marketed products are not amortized until a useful life can be determined. Identifiable intangible assets associated with IPR&D projects are not amortized until regulatory approval is obtained. The useful life of an amortizing asset generally is determined by identifying the period in which substantially all of the cash flows are expected to be generated.
- Property, plant and equipment, less accumulated depreciation—these assets are recorded at our cost and are increased by the cost of any significant improvements after purchase. Property, plant and equipment assets, other than land and construction-in-progress, are depreciated on a straight-line basis over the estimated useful life of the individual assets. Depreciation begins when the asset is ready for its intended use. For tax purposes, accelerated depreciation methods are used as allowed by tax laws.

Amortization expense related to finite-lived identifiable intangible assets that contribute to our ability to sell, manufacture, research, market and distribute products, compounds and intellectual property are included in Amortization of intangible assets as they benefit multiple business functions. Amortization expense related to intangible assets that are associated with a single function and depreciation of property, plant and equipment are included in Cost of sales, Selling, general and administrative expenses and Research and development expenses, as appropriate.

We review all of our long-lived assets for impairment indicators throughout the year and we perform detailed testing whenever impairment indicators are present. In addition, we perform impairment testing for goodwill and indefinite-lived assets at least annually. When necessary, we record charges for impairments. Specifically:

- For finite-lived identifiable intangible assets, such as developed technology rights, and for other long-lived assets, such as property, plant and equipment, whenever impairment indicators are present, we calculate the undiscounted value of the projected cash flows associated with the asset, or asset group, and compare this estimated amount to the carrying amount. If the carrying amount is found to be greater, we record an impairment loss for the excess of book value over fair value. In addition, in all cases of an impairment review, we re-evaluate the remaining useful lives of the assets and modify them, as appropriate.
- For indefinite-lived identifiable intangible assets, such as brands and IPR&D assets, we test for impairment at least annually, or more frequently if impairment indicators exist, by first assessing qualitative factors to determine whether it is more likely than not that the fair value of the indefinite-lived intangible asset is less than its carrying amount. If we conclude it is more likely than not that the fair value is less than the carrying amount, a quantitative test that compares the fair value of the indefinite-lived intangible asset with its carrying value is performed. If the fair value is less than the carrying amount, an impairment loss is recognized. We record an impairment loss, if any, for the excess of book value over fair value. In addition, in all cases of an impairment review other than for IPR&D assets, we re-evaluate whether continuing to characterize the asset as indefinite-lived is appropriate.
- For goodwill, we test for impairment on at least an annual basis, or more frequently if impairment indicators exist, either by assessing qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount, or by performing a quantitative assessment. If we choose to perform a qualitative analysis and conclude it is more likely than not that the fair value of a reporting unit is less than its carrying amount, a quantitative fair value test is performed. We determine the implied fair value of goodwill by subtracting the fair value of all the identifiable net assets other than goodwill from the fair value of the reporting unit and record an impairment loss for the excess, if any, of book value of goodwill over the implied fair value. In 2018, we performed a quantitative impairment assessment as of September 30, 2018, which did not result in the impairment of goodwill associated with any of our reporting units. In 2017, we performed both qualitative and select quantitative impairment assessments as of October 1, 2017, which did not result in the impairment of goodwill associated with any of our reporting units.

Impairment reviews can involve a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions. For information about the risks associated with estimates and assumptions, see Estimates and Assumptions.

Software Capitalization and Depreciation

We capitalize certain costs incurred in connection with obtaining or developing internal-use software, including payroll and payroll-related costs for employees who are directly associated with the internal-use software project, external direct costs of materials and services and interest costs while developing the software. Capitalized software costs are included in Property, plant and equipment and are amortized using the straight-line method over the estimated useful life of five to ten years. Capitalization of such costs ceases when the project is substantially complete and ready for its intended purpose. Costs incurred during the preliminary project and post-implementation stages, as well as software maintenance and training costs, are expensed in the period in which they are incurred. The company capitalized $18 million and $8 million of internal-use software for the years ended December 31, 2018, and 2017, respectively. Depreciation expense for capitalized software was $23 million in 2018, $21 million in 2017 and $19 million in 2016.

Restructuring Charges and Certain Acquisition-Related Costs

We may incur restructuring charges in connection with acquisitions when we implement plans to restructure and integrate the acquired operations or in connection with cost-reduction and productivity initiatives. Included in Restructuring charges and certain acquisition-related costs are all restructuring charges and certain costs associated with acquiring and integrating an acquired business. Transaction costs and integration costs are expensed as incurred. Termination costs are a significant component of restructuring charges and are generally recorded when the actions are probable and estimable.

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Amounts recorded for restructuring charges and other associated costs can result from a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions. For information about the risks associated with estimates and assumptions, see Estimates and Assumptions.

Earnings per Share

Basic earnings per share is computed by dividing net income attributable to Zoetis by the weighted-average number of common shares outstanding during the period. Diluted earnings per share adjusts the weighted-average number of common shares outstanding for the potential dilution that could occur if common stock equivalents (stock options, restricted stock units, and performance-vesting restricted stock units) were exercised or converted into common stock, calculated using the treasury stock method.

Cash Equivalents

Cash equivalents include items almost as liquid as cash, such as certificates of deposit and time deposits with maturity periods of three months or less when purchased.

Fair Value

Certain assets and liabilities are required to be measured at fair value, either upon initial recognition or for subsequent accounting or reporting. For example, we use fair value extensively in the initial recognition of net assets acquired in a business combination. Fair value is estimated using an exit price approach, which requires, among other things, that we determine the price that would be received to sell an asset or paid to transfer a liability in an orderly market. The determination of an exit price is considered from the perspective of market participants, considering the highest and best use of assets and, for liabilities, assuming that the risk of non-performance will be the same before and after the transfer.

When estimating fair value, depending on the nature and complexity of the asset or liability, we may use one or all of the following approaches:

- Income approach, which is based on the present value of a future stream of net cash flows.
- Market approach, which is based on market prices and other information from market transactions involving identical or comparable assets or liabilities.
- Cost approach, which is based on the cost to acquire or construct comparable assets less an allowance for functional and/or economic obsolescence.

These fair value methodologies depend on the following types of inputs:

- Quoted prices for identical assets or liabilities in active markets (Level 1 inputs).
- Quoted prices for similar assets or liabilities in active markets or quoted prices for identical or similar assets or liabilities in markets that are not active or are directly or indirectly observable (Level 2 inputs).
- Unobservable inputs that reflect estimates and assumptions (Level 3 inputs).

A single estimate of fair value can result from a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions. For information about the risks associated with estimates and assumptions, see Estimates and Assumptions.

Accounts Receivable

The recorded amounts of accounts receivable approximate fair value because of their relatively short-term nature. As of December 31, 2018, and 2017, Accounts receivable, less allowance for doubtful accounts, of $1,036 million and $998 million, respectively, includes approximately $41 million and $62 million, respectively, of other receivables, such as trade notes receivable and royalty receivables, among others.

Deferred Tax Assets and Liabilities and Income Tax Contingencies

Deferred tax assets and liabilities are recognized for the expected future tax consequences of differences between the financial reporting and tax bases of assets and liabilities using enacted tax rates and laws. We provide a valuation allowance when we believe that our deferred tax assets are not recoverable based on an assessment of estimated future taxable income that incorporates ongoing, prudent and feasible tax planning strategies.

We account for income tax contingencies using a benefit recognition model. If we consider that a tax position is more likely than not to be sustained upon audit, based solely on the technical merits of the position, we recognize the benefit. We measure the benefit by determining the amount that is greater than 50% likely of being realized upon settlement, presuming that the tax position is examined by the appropriate taxing authority that has full knowledge of

all relevant information. Under the benefit recognition model, if the initial assessment fails to result in the recognition of a tax benefit, we regularly monitor our position and subsequently recognize the tax benefit: (i) if there are changes in tax law, analogous case law or there is new information that sufficiently raise the likelihood of prevailing on the technical merits of the position to more likely than not; (ii) if the statute of limitations expires; or (iii) if there is a completion of an audit resulting in a favorable settlement of that tax year with the appropriate agency. We regularly re-evaluate our tax positions based on the results of audits of federal, state and foreign income tax filings, statute of limitations expirations, changes in tax law or receipt of new information that would either increase or decrease the technical merits of a position relative to the “more-likely-than-not” standard. Liabilities associated with uncertain tax positions are classified as current only when we expect to pay cash within the next 12 months. Interest and penalties, if any, are recorded in Provision for taxes on income and are classified on our consolidated balance sheet with the related tax liability.

Amounts recorded for valuation allowances and income tax contingencies can result from a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions. For information about the risks associated with estimates and assumptions, see Estimates and Assumptions.

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Benefit Plans

All dedicated benefit plans are pension plans. For our dedicated benefit plans, we recognize the overfunded or underfunded status of defined benefit plans as an asset or liability on the consolidated balance sheets and the obligations generally are measured at the actuarial present value of all benefits attributable to employee service rendered, as provided by the applicable benefit formula. Pension obligations may include assumptions such as long-term rate of return on plan assets, expected employee turnover, participant mortality, and future compensation levels. Plan assets are measured at fair value. Net periodic benefit costs are recognized, as required, into Cost of sales, Selling, general and administrative expenses and Research and development expenses, as appropriate.

Amounts recorded for benefit plans can result from a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions. For information about the risks associated with estimates and assumptions, see Estimates and Assumptions.

Asset Retirement Obligations

We record accruals for the legal obligations associated with the retirement of tangible long-lived assets, including obligations under the doctrine of promissory estoppel and those that are conditioned upon the occurrence of future events. These obligations generally result from the acquisition, construction, development and/or normal operation of long-lived assets. We recognize the fair value of these obligations in the period in which they are incurred by increasing the carrying amount of the related asset. Over time, we recognize expense for the accretion of the liability and for the amortization of the asset.

As of December 31, 2018 and 2017, accruals for asset retirement obligations are $22 million and $19 million, respectively, and are primarily included in Other noncurrent liabilities.

Amounts recorded for asset retirement obligations can result from a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions. For information about the risks associated with estimates and assumptions, see Estimates and Assumptions.

Legal and Environmental Contingencies

We are subject to numerous contingencies arising in the ordinary course of business, such as product liability and other product-related litigation, commercial litigation, patent litigation, environmental claims and proceedings, government investigations and guarantees and indemnifications. We record accruals for these contingencies to the extent that we conclude that a loss is both probable and reasonably estimable. If some amount within a range of loss appears to be a better estimate than any other amount within the range, we accrue that amount. Alternatively, when no amount within a range of loss appears to be a better estimate than any other amount, we accrue the lowest amount in the range. We record anticipated recoveries under existing insurance contracts when recovery is assured.

Amounts recorded for contingencies can result from a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions. For information about the risks associated with estimates and assumptions, see Estimates and Assumptions.

Share-Based Payments

Our compensation programs can include share-based payment plans. All grants under share-based payment programs are accounted for at fair value and such amounts generally are amortized on a straight-line basis over the vesting term to Cost of sales, Selling, general and administrative expenses, and Research and development expenses, as appropriate. We include the impact of estimated forfeitures when determining share-based compensation expense.

Amounts recorded for share-based compensation can result from a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions. For information about the risks associated with estimates and assumptions, see Estimates and Assumptions.

4. Revenue

A. Revenue from Product Sales

We offer a diversified portfolio of products which allows us to capitalize on local and regional customer needs. Generally, our products are promoted to veterinarians and livestock producers by our sales organization which includes sales representatives and technical and veterinary operations specialists, and then sold directly by us or through distributors. The depth of our product portfolio enables us to address the varying needs of customers in different species and geographies. Many of our top selling product lines are distributed across both of our operating

segments, leveraging our R&D operations and manufacturing and supply chain network.

Over the course of our history, we have focused on developing a diverse portfolio of animal health products, including medicines, vaccines and diagnostics, complemented by biodevices, genetic tests and a range of services. We refer to a single product in all brands, or its dosage forms for all species, as a product line. We have approximately 300 comprehensive product lines, including products for both livestock and companion animals across each of our major product categories.

In the third quarter of 2018, the company modified the list of major product categories to include a category for animal health diagnostics, which was previously included within other non-pharmaceutical products. The prior period presentation has been revised to reflect the new product categories.

Our major product categories are:

- vaccines: biological preparations that help prevent diseases of the respiratory, gastrointestinal and reproductive tracts or induce a specific immune response;
- other pharmaceutical products: allergy and dermatology, pain and sedation, antiemetic, reproductive, and oncology products;
- anti-infectives: products that prevent, kill or slow the growth of bacteria, fungi or protozoa;
- parasiticides: products that prevent or eliminate external and internal parasites such as fleas, ticks and worms;

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- medicated feed additives: products added to animal feed that provide medicines to livestock; and
- animal health diagnostics: portable blood and urine analysis systems and point-of-care diagnostic products, including instruments and reagents, rapid immunoassay tests, reference laboratory kits and blood glucose monitors.

Our remaining revenue is derived from other non-pharmaceutical product categories, such as nutritionals and agribusiness, as well as products and services in complementary areas, including biodevices and genetic tests.

Our livestock products primarily help prevent or treat diseases and conditions to enable the cost-effective production of safe, high-quality animal protein. Human population growth and increasing standards of living are important long-term growth drivers for our livestock products in three major ways. First, population growth and increasing standards of living drive increased demand for improved nutrition, particularly animal protein. Second, population growth leads to increased natural resource constraints driving a need for enhanced productivity. Finally, as standards of living improve, there is increased focus on food quality and safety.

Our companion animal products help extend and improve the quality of life for pets; increase convenience and compliance for pet owners; and help veterinarians improve the quality of their care and the efficiency of their businesses. Growth in the companion animal medicines, vaccines and diagnostics sector is driven by economic development, related increases in disposable income and increases in pet ownership and spending on pet care. Companion animals are also living longer, receiving increased medical treatment and benefiting from advances in animal health medicines and vaccines.

The following tables present our revenue disaggregated by geographic area, species, and major product category.

Revenue by geographic area

	Year Ended December 31,		
(MILLIONS OF DOLLARS)	2018	2017	2016
United States	$2,877	$2,620	$2,447
Australia	189	176	157
Brazil	295	300	245
Canada	203	184	173
China	211	174	145
France	130	121	117
Germany	147	137	125
Italy	104	89	83
Japan	149	138	127
Mexico	100	86	76
Spain	110	93	82
United Kingdom	181	149	151
Other developed markets	361	339	302
Other emerging markets	710	657	607
	5,767	5,263	4,837
Contract manufacturing & human health diagnostics	58	44	51
Total Revenue	$5,825	$5,307	$4,888

Certain amounts may reflect rounding adjustments.

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Revenue exceeded $100 million in ten countries outside the United States in 2018 and eight countries outside the United States in 2017 and 2016. The United States was the only country to contribute more than 10% of total revenue in each year.

Revenue by major species

	Year Ended December 31,		
(MILLIONS OF DOLLARS)	2018	2017	2016
U.S.			
Livestock	$1,269	$1,244	$1,227
Companion animal	1,608	1,376	1,220
	2,877	2,620	2,447
International			
Livestock	1,885	1,793	1,654
Companion animal	1,005	850	736
	2,890	2,643	2,390
Total			
Livestock	3,154	3,037	2,881
Companion animal	2,613	2,226	1,956
Contract manufacturing & human health diagnostics	58	44	51
Total Revenue	$5,825	$5,307	$4,888

Certain amounts may reflect rounding adjustments.

Revenue by species

	Year Ended December 31,		
(MILLIONS OF DOLLARS)	2018	2017	2016
Livestock:			
Cattle	$1,754	$1,735	$1,653
Swine	663	621	602
Poultry	522	479	457
Fish	132	118	90
Other	83	84	79
	3,154	3,037	2,881
Companion Animal:			
Horses	168	151	150
Dogs and Cats	2,445	2,075	1,806
	2,613	2,226	1,956
Contract manufacturing & human health diagnostics	58	44	51
Total Revenue	$5,825	$5,307	$4,888

Certain amounts may reflect rounding adjustments.

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Revenue by product category

	Year Ended December 31,		
(MILLIONS OF DOLLARS)	2018	2017	2016
Vaccines	$1,488	$1,373	$1,245
Other pharmaceuticals	1,372	1,181	988
Anti-infectives	1,280	1,253	1,255
Parasiticides	836	763	659
Medicated feed additives	485	475	500
Animal health diagnostics	136	44	38
Other non-pharmaceuticals	170	174	152
	5,767	5,263	4,837
Contract manufacturing & human health diagnostics	58	44	51
Total Revenue	$5,825	$5,307	$4,888

Certain amounts may reflect rounding adjustments.

B. Other Revenue Information

Significant Customers

We sell our livestock products primarily to veterinarians and livestock producers as well as third-party veterinary distributors, and retail outlets who generally sell the products to livestock producers. We sell our companion animal products primarily to veterinarians who then sell the products to pet owners. Sales to our largest customer, a U.S. veterinary distributor, represented approximately 13%, 14% and 13% of total revenue for 2018, 2017, and 2016, respectively.

5. Acquisitions and Divestitures

A. Acquisitions

Acquisition of Abaxis, Inc.

On July 31, 2018, we completed the acquisition of Abaxis, Inc. (Abaxis), a California corporation and a leader in the development, manufacture and marketing of diagnostic instruments for veterinary point-of-care services. We acquired all of the outstanding common shares of Abaxis for $83.00 per share in cash resulting in Abaxis becoming our wholly owned subsidiary. The acquisition enhances our presence in animal health diagnostics.

The acquisition date fair value of the consideration transferred was approximately $1,962 million, which consisted of the following:

(MILLIONS OF DOLLARS)	Amounts
Cash paid to Abaxis' shareholders[(a)]	$ 1,898
Cash paid for equity awards attributable to pre-merger services[(b)]	54
Fair value of Zoetis equity awards issued in exchange for outstanding Abaxis equity awards pertaining to pre-merger service[(c)]	10
Total consideration	$ 1,962

(a) Represents cash paid for cancellation and conversion of each outstanding share of Abaxis' common stock at the acquisition date.

(b) Represents cash paid for cancellation and settlement of restricted stock awards that fully vested in July 2018 as a result of service or pre-existing change-in-control provisions and termination provisions. Includes certain awards that will be settled in cash during 2019, reflected in Other current liabilities within the condensed consolidated balance sheet.

(c) Represents the fair value of replacement awards issued for Abaxis equity awards outstanding immediately before the acquisition and attributable to the service period prior to the acquisition. The previous Abaxis equity awards were converted into the Zoetis equity awards at an exchange ratio based on the closing prices of shares of Zoetis Common Stock and Abaxis Common Stock for ten full trading days before the closing of the acquisition.

The acquisition has been accounted for as a business combination with the assets acquired and liabilities assumed measured at estimated fair values as of the acquisition date, primarily using Level 3 inputs, except for investments in debt securities which were valued using Level 2 inputs.

During the three months ended December 31, 2018, the company recorded measurement period adjustments to reflect the facts and circumstances in existence as of the acquisition date. These adjustments primarily include an increase to Property, plant and equipment of $5 million, a reduction to Identifiable intangible assets of $3 million, an increase to Other current liabilities of $4 million, and a corresponding decrease to Goodwill of $6 million. These measurement period adjustments primarily related to changes in preliminary valuation assumptions, including market participant estimates of cash flows, as well as other initial estimates. The fair values in the table below, which presents the preliminary fair values allocated to Abaxis' assets and liabilities as of the acquisition date, have been updated to reflect these measurement period adjustments.

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(MILLIONS OF DOLLARS)	Amounts
Cash and cash equivalents	$ 64
Short term investments[(a)]	107
Accounts receivable[(b)]	30
Inventories[(c)]	79
Other current assets	6
Property, plant and equipment[(d)]	54
Identifiable intangible assets[(e)]	895
Other noncurrent assets	29
Accounts payable	(21)
Accrued compensation and related items	(10)
Other current liabilities	(22)
Other noncurrent liabilities	(11)
Noncurrent deferred tax liabilities[(f)]	(215)
Total net assets acquired	985
Goodwill[(g)]	977
Total consideration	$ 1,962

(a) Short term investments include investments in debt securities that are classified as available-for-sale and measured at fair value.

(b) The fair value approximates the gross contractual amount of accounts receivable. The contractual amount not expected to be collected is immaterial.

(c) Acquired inventory is comprised of finished goods, work in process and raw materials. The preliminary estimate of fair value of finished goods was determined based on net realizable value adjusted for the costs of the selling effort, a reasonable profit allowance for the selling effort, and estimated holding costs. The preliminary estimate of fair value of work in process was determined based on net realizable value adjusted for costs to complete the manufacturing process, costs of the selling effort, a reasonable profit allowance for the remaining manufacturing and selling effort, and an estimate of holding costs. The fair value of raw materials was determined to approximate book value.

(d) Property, plant and equipment is comprised of machinery and equipment, furniture and fixtures, computer equipment, leasehold improvements and construction in progress. The preliminary estimated fair value was primarily determined using a reproduction/replacement cost approach which measures the value of an asset by estimating the cost to acquire or construct comparable assets adjusted for age and condition of the asset.

(e) Identifiable intangible assets primarily consist of developed technology rights, customer relationships, and trademarks and tradenames. The preliminary estimate of fair value of identifiable intangible assets is determined using the income approach, which includes a forecast of expected future cash flows. For additional information regarding identifiable intangible assets, see Note 11. Goodwill and Other Intangible Assets.

(f) The acquisition was structured as a stock purchase and therefore we assumed the historical tax basis of Abaxis' assets and liabilities. The preliminary estimate of deferred tax effects resulting from the acquisition include the expected federal, state, and foreign tax consequences associated with temporary differences between the preliminary fair values of the assets acquired and liabilities assumed and the respective tax basis. The components of the Abaxis net deferred tax liability are included within amounts reported in Note 8. Tax Matters.

(g) Goodwill represents the excess of consideration transferred over the preliminary estimate of fair values of the assets acquired and liabilities assumed. It is allocated to our existing reportable segments and is primarily attributable to the future potential of the technology platforms, as well as cost and revenue synergies including market share capture, elimination of cost redundancies and gain of cost efficiencies, and intangible assets such as assembled workforce which are not separately recognizable. The primary strategic purpose of the acquisition was to enhance the company’s existing product portfolio by strengthening Zoetis’ presence in veterinary diagnostics. The goodwill recorded is not deductible for tax purposes. The allocation of goodwill to the reporting units is preliminary and will be completed as the company obtains the information necessary to complete the analysis, but

no later than one year from the date of the acquisition.

The preliminary fair values are substantially complete subject to finalization of legal entity fair values (which may impact the fair values of identifiable intangible assets, deferred taxes and goodwill) and tax returns for the pre-acquisition period (which may impact the fair values of deferred taxes, income taxes payable and goodwill). Adjustments to the preliminary purchase price allocation identified during the measurement period, which will not exceed one year from the acquisition date, will be accounted for prospectively.

The Company incurred acquisition-related costs of approximately $61 million for the year ended December 31, 2018, which are included within Restructuring charges and certain acquisition-related costs on our condensed consolidated statements of income.

The following table presents information for Abaxis' operations from the acquisition date through December 31, 2018 which are included in our condensed consolidated statements of income for the year ended December 31, 2018:

(MILLIONS OF DOLLARS)	July 31 - December 31, 2018
Revenue	$ 107
Net loss attributable to Zoetis Inc.[(a)]	$ 68

(a) Included in the net loss are (i) $18 million of cost of goods sold related to the preliminary fair value adjustment for acquisition date inventory estimated to have been sold during the period ended December 31, 2018, (ii) $53 million of amortization expense related to the preliminary fair value of identifiable intangible assets recognized at the acquisition date, (iii) $1 million of depreciation expense related to the preliminary fair value adjustment of property, plant, and equipment recognized at the acquisition date, (iv) $18 million of severance costs directly related to the acquisition, and (v) the applicable tax impact of above adjustments based on the statutory tax rates in the various jurisdictions where the adjustments are expected to be incurred.

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Supplemental Pro Forma Information (Unaudited):

The following table provides unaudited supplemental pro forma financial information as if the acquisition of Abaxis had occurred on January 1, 2017.

	Year Ended December 31,	
(MILLIONS OF DOLLARS, EXCEPT PER SHARE DATA)	2018	2017
Revenue	$5,980	$5,542
Net income attributable to Zoetis Inc.	1,402	706

The supplemental pro forma financial information has been prepared using the acquisition method of accounting and is based on the historical financial information of Zoetis and Abaxis. The supplemental pro forma financial information does not necessarily represent what the combined company's revenue or results of operations would have been had the acquisition been completed on January 1, 2017, nor do they intend to be a projection of future operating results of the combined company. It also does not reflect any operating efficiencies or potential cost savings that might be achieved from synergies of combining Zoetis and Abaxis.

The unaudited supplemental pro forma financial information reflects primarily the following pro forma adjustments:

- Acquisition-related costs incurred by Zoetis and Abaxis of $82 million have been removed for the year ended December 31, 2018. Acquisition-related costs of $60 million are assumed to be have been incurred during the year ended December 31, 2017.
- Additional amortization expense of $77 million for the year ended December 31, 2018, and $130 million for the year ended December 31, 2017, related to the preliminary fair value estimate of identified intangible assets acquired.
- Additional depreciation expense of $2 million for the year ended December 31, 2018, and $3 million for the year ended December 31, 2017, related to the preliminary estimate of fair value adjustments to property, plant and equipment acquired.
- Adjustment related to the preliminary estimate of the non-recurring fair value adjustment to acquisition date inventory estimated to have been sold, resulting in $18 million removed for the year ended December 31, 2018, and $33 million added for the year ended December 31, 2017.
- Additional interest expense and amortization of debt issuance costs for the debt issuance to finance the acquisition, resulting in $36 million added for the year ended December 31, 2018, and $57 million added for the year ended December 31, 2017.
- Adjustments related to the post merger share-based compensation expense of the replacement awards are $4 million for the year ended December 31, 2018, and $13 million for the year ended December 31, 2017.
- Applicable tax impact of the above adjustments based on the statutory tax rates in the various jurisdictions where the adjustments are expected to be incurred.

Other Acquisitions

During 2018, we completed the acquisition of a manufacturing business in Ireland and the noncontrolling interest of a European livestock monitoring company. These transactions did not have a significant impact on our consolidated financial statements.

During 2017, we completed the acquisitions of the remaining 55 percent noncontrolling interest in Jilin Zoetis Guoyuan Animal Health Co., Ltd. (a variable interest entity previously consolidated by Zoetis as the primary beneficiary), an Irish biologic therapeutics company, and a Norwegian fish vaccination company. In addition, we also consolidated a European livestock monitoring company, a variable interest entity of which Zoetis is the primary beneficiary. These transactions did not have a significant impact on our consolidated financial statements.

B. Divestitures

In September 2018, we received total cash proceeds of approximately $47 million related to the divestiture of certain agribusiness products within our international segment. During the fourth quarter of 2018, we recorded a net pre-tax gain of approximately $42 million within Other (income)/deductions— net, related to this divestiture.

On November 14, 2017, as part of our supply network strategy, we completed the sale of our manufacturing site in Guarulhos, Brazil to Uniao Quimica (UQ), a Brazilian-based pharmaceutical company. In conjunction with the sale,

we also entered into a five-year manufacturing and supply agreement with UQ, commencing upon completion of the sale. We received $41 million in cash at closing, and an additional $8 million subsequent to the closing in December 2017. Additionally, we recorded a net pre-tax loss of approximately $9 million, inclusive of charges of $5 million recorded during the third quarter of 2017, within Other (income)/deductions—net.

On May 11, 2017, we completed the sale of our manufacturing site in Shenzhou, China. We had previously exited operations at this site during the second quarter of 2015 as part of our operational efficiency program. We received total cash proceeds of approximately $3 million and recorded a net pre-tax gain of approximately $2 million within Other (income)/deductions—net.

Additionally, in the second quarter of 2017, we recorded a $4 million expense within Other (income)/deductions—net related to the February 12, 2016 sale of two of our manufacturing sites in the United States, Laurinburg, North Carolina, and Longmont, Colorado, to Huvepharma NV, a European animal health company.

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6. Restructuring Charges and Other Costs Associated with Acquisitions and Cost-Reduction/Productivity Initiatives

In connection with our cost-reduction/productivity initiatives, we typically incur costs and charges associated with site closings and other facility rationalization actions, workforce reductions and the expansion of shared services, including the development of global systems. In connection with our acquisition activity, we typically incur costs and charges associated with executing the transactions, integrating the acquired operations, which may include expenditures for consulting and the integration of systems and processes, product transfers and restructuring the consolidated company, which may include charges related to employees, assets and activities that will not continue in the consolidated company. All operating functions can be impacted by these actions, including sales and marketing, manufacturing and R&D, as well as functions such as business technology, shared services and corporate operations.

During 2015, we launched a comprehensive operational efficiency program and a supply network strategy initiative. These initiatives have focused on reducing complexity in our product portfolios, changing our selling approach in certain markets, reducing our presence in certain countries, and planning to sell or exit 10 manufacturing sites over a long term period. As part of these initiatives, we have reduced certain positions through divestitures, normal attrition and involuntary terminations. The comprehensive operational efficiency program is substantially complete and we have exited eight of the ten manufacturing sites as part of the supply network strategy initiative, which we expect to complete over the next several years.

The components of costs incurred in connection with restructuring initiatives, acquisitions and cost-reduction/productivity initiatives are as follows:

	Year Ended December 31,		
(MILLIONS OF DOLLARS)	2018	2017	2016
Restructuring charges and certain acquisition-related costs:			
Integration costs[a]	$21	$ 6	$ 3
Transaction costs[b]	21	—	—
Restructuring charges[c][d]:			
Employee termination costs/(reversals)	25	10	(2)
Exit costs	1	3	4
Total Restructuring charges and certain acquisition-related costs	$68	$ 19	$ 5

(a) Integration costs represent external, incremental costs directly related to integrating acquired businesses and primarily include expenditures for consulting and the integration of systems and processes, as well as product transfer costs.

(b) Transaction costs represent external costs directly related to acquiring businesses and primarily include expenditures for banking, legal, accounting and other similar services.

(c) The restructuring charges for the year ended December 31, 2018, are primarily related to:

- employee termination costs of $7 million in Europe as a result of initiatives to better align our organizational structure;
- employee termination costs of $21 million related to the acquisition of Abaxis; and
- a net reversal of employee termination costs of $3 million, and exit costs of $1 million as a result of our operational efficiency initiative and supply network strategy initiative.

The restructuring charges for the year ended December 31, 2017, are primarily related to:

- a net increase in employee termination costs of $2 million related to the operational efficiency initiative and supply network strategy initiative;
- employee termination costs of $4 million related to the acquisition of an Irish biologic therapeutics company in the third quarter of 2017, and
- employee termination costs of $4 million in Europe, as a result of initiatives to better align our organizational structure.

The restructuring charges for the years ended December 31, 2016 primarily relate to our operational efficiency initiative and supply network strategy.

(d) The restructuring charges are associated with the following:

- For the year ended December 31, 2018, International of $7 million and Manufacturing/research/corporate of $19 million.
- For the year ended December 31, 2017, International of $2 million, and Manufacturing/research/corporate of a $11 million.
- For the year ended December 31, 2016, U.S. of $1 million, International of a $13 million reversal and Manufacturing/research/corporate of $14 million.

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The components of, and changes in, our restructuring accruals are as follows:

(MILLIONS OF DOLLARS)	Employee Termination Costs	Exit Costs	Accrual
Balance, December 31, 2015	$ 221	$ 1	$ 222
Provision	(2)	4	2
Utilization and other[a]	(129)	(5)	(134)
Balance, December 31, 2016	$ 90	$ —	$ 90
Provision	10	3	13
Utilization and other[a]	(59)	(3)	(62)
Balance, December 31, 2017[b]	$ 41	$ —	$ 41
Provision	25	1	26
Utilization and other[a]	(21)	(1)	(22)
Balance, December 31, 2018[b]	$ 45	$ —	$ 45

(a) Includes adjustments for foreign currency translation.

(b) At December 31, 2018 and 2017, included in Accrued Expenses ($27 million and $19 million, respectively) and Other noncurrent liabilities ($18 million and $22 million, respectively).

7. Other (Income)/Deductions—Net

The components of Other (income)/deductions—net follow:

	Year Ended December 31,		
(MILLIONS OF DOLLARS)	2018	2017	2016
Royalty-related income[a]	$(28)	$(12)	$(30)
Interest income	(31)	(13)	(8)
Identifiable intangible asset impairment charges	—	—	1
Net (gain)/loss on sale of assets[b]	(40)	11	(26)
Certain legal and other matters, net[c]	—	(8)	14
Foreign currency loss[d]	31	29	49
Other, net[e]	(15)	(1)	(2)
Other (income)/deductions—net	$(83)	$6	$(2)

(a) For 2017, includes an adjustment to our royalty income.

(b) For 2018, represents a gain on the divestiture of certain agribusiness products within our International segment, and a net loss related to sales of certain manufacturing sites and products as part of our supply network strategy initiative. For 2017, primarily represents a net loss related to sales of certain manufacturing sites and products, including our manufacturing site in Guarulhos, Brazil, as part of our operational efficiency initiative and supply network strategy. For 2016, represents a net gain on the sale of certain manufacturing sites and products, partially offset by the loss on the sale of our share of our Taiwan joint venture, as part of our operational efficiency initiative.

(c) In July 2014 and December 2016, we reached commercial settlements with several large poultry customers in Mexico associated with specific lots of a Zoetis poultry vaccine. Although there have been no quality or efficacy issues with the manufacturing of this vaccine, certain shipments from several lots in Mexico may have experienced an issue in storage with a third party in Mexico that could have impacted their efficacy. We issued a recall of these lots in July 2014 and the product is currently unavailable in Mexico. For 2017, includes income associated with an insurance recovery related to these commercial settlements, as well as a favorable outcome on a patent infringement settlement. For 2016, represents a charge related to the commercial settlement in Mexico for these products.

(d) Primarily driven by costs related to hedging and exposures to certain emerging market currencies. For 2016, also includes losses related to the depreciation of the Egyptian pound in the fourth quarter of 2016.

(e) For 2018, primarily includes a net gain related to the relocation of a manufacturing site in China.

8. Tax Matters

A. Taxes on Income

The income tax provision in the consolidated statements of income includes tax costs and benefits, such as uncertain tax positions, repatriation decisions and audit settlements, among others.

On December 22, 2017, the Tax Cuts and Jobs Act (the Tax Act) was enacted, which, among other changes, reduced the U.S. federal corporate tax rate from 35% to 21%, effective January 1, 2018. The Tax Act made broad and complex changes to the U.S. tax code. Based on the information available at that time, for the year ended December 31, 2017, the company calculated a reasonable estimate and recorded a provisional net tax expense of $212 million related to the one-time mandatory deemed repatriation tax, payable over eight years, partially offset by the remeasurement of the deferred tax assets and liabilities due to the reduction in the U.S. federal corporate tax rate. Pursuant to the Staff Accounting Bulletin published by the Securities and Exchange Commission on December 22, 2017, addressing the challenges in accounting for the effects of the Tax Act in the period of enactment, companies reported provisional amounts for those specific income tax effects of the Tax Act for which the accounting was incomplete

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but a reasonable estimate could be determined. Those provisional amounts were subject to adjustment during a measurement period of up to one year from the enactment date (measurement-period adjustment). Pursuant to this guidance, the estimated impact of the Tax Act was based on a preliminary review of the new tax law, projected future financial results and was subject to revision based upon further analysis, interpretation of the Tax Act and to the extent that actual results differed from projections available at that time.

In 2018, we refined our initial reasonable estimate and adjusted the provisional tax expense of $212 million. We recorded a measurement-period adjustment of $45 million as a net tax benefit related to the following:

- One-Time Mandatory Deemed Repatriation Tax: The one-time mandatory deemed repatriation tax is imposed on previously untaxed accumulated and current earnings and profits of our foreign subsidiaries. We were able to reasonably estimate the one-time mandatory deemed repatriation tax and recorded a provisional tax obligation, with a corresponding adjustment to income tax expense for the year ended December 31, 2017. On the basis of revised computations determined during the reporting period, we recognized a measurement-period adjustment of $45 million in 2018, as a decrease to the one-time mandatory deemed repatriation tax obligation, with a corresponding adjustment to income tax benefit during the period. The effect of the measurement-period adjustment to the 2018 effective tax rate was a reduction to the rate of approximately 2.7%. In addition, we reclassified the one-time mandatory deemed repatriation tax from Noncurrent deferred tax liabilities to Income taxes payable and Other taxes payable. Our accounting for this element of the Tax Act is complete.
- Reduction of U.S. Federal Corporate Tax Rate: The Tax Act reduced the corporate tax rate to 21%, effective January 1, 2018. Consequently, we recorded a decrease related to deferred tax assets and liabilities with a corresponding net adjustment to deferred income tax benefit for the year ended December 31, 2017. We did not make any measurement-period adjustments related to this item in 2018. Our accounting for this element of the Tax Act is complete.
- Valuation Allowances: The company must assess whether its valuation allowance analyses are affected by the various aspects of the Tax Act (e.g., one-time mandatory deemed repatriation tax, global intangible low-taxed income inclusions, and new categories of foreign tax credits). We did not make any measurement-period adjustments related to this item in 2018. Our accounting for this element of the Tax Act is complete.
- Global Intangible Low-Taxed Income (GILTI) Policy Election: The GILTI provisions of the Tax Act do not apply to the company until 2019, due to the fact that the non-U.S. subsidiaries are on a fiscal year ending November 30. The FASB allows companies to adopt an accounting policy to either recognize deferred taxes for GILTI or treat such tax cost as a current-period expense when incurred. We have adopted an accounting policy to treat the taxes due on GILTI as a current-period expense.

The components of Income before provision for taxes on income follow:

	Year Ended December 31,		
(MILLIONS OF DOLLARS)	2018	2017	2016
United States	$937	$897	$723
International	753	628	505
Income before provision for taxes on income	$1,690	$1,525	$1,228

The components of Provision for taxes on income based on the location of the taxing authorities follow:

	Year Ended December 31,		
(MILLIONS OF DOLLARS)	2018	2017	2016
United States:			
Current income taxes:			
Federal	$199	$384	$281
State and local	32	25	3
Deferred income taxes:			
Federal	(107)	113	(38)
State and local	3	2	11

Total U.S. tax provision	127	524	257
International:			
Current income taxes	148	126	179
Deferred income taxes	(9)	13	(27)
Total international tax provision	139	139	152
Provision for taxes on income[a][b][c]	$266	$663	$409

[a] In 2018, the Provision for taxes on income reflects the following:

- the change in the jurisdictional mix of earnings, which includes the impact of the location of earnings from operations and repatriation costs. The jurisdictional mix of earnings can vary as a result of repatriation decisions, operating fluctuations in the normal course of business, the impact of non-deductible items, and the extent and location of other income and expense items, such as gains and losses on asset divestitures;

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- the reduction of the U.S. federal corporate income tax rate, from 35% to 21%, effective January 1, 2018, pursuant to the Tax Act;
- a $45 million net tax benefit recorded in 2018, associated with a measurement-period adjustment to the one-time mandatory deemed repatriation tax on the company's undistributed non-U.S. earnings pursuant to the Tax Act;
- a $23 million discrete tax benefit recorded in 2018 related to the favorable impact of certain tax accounting method changes;
- a $15 million discrete tax benefit recorded in 2018 related to the excess tax benefits for share-based compensation payments;
- a $5 million discrete tax benefit recorded in 2018 related to a remeasurement of deferred tax assets and liabilities as a result of a change in non-U.S. statutory tax rates;
- U.S. tax benefit related to U.S. Research and Development Tax Credit;
- tax expense related to the changes in valuation allowances and the resolution of other tax items; and
- tax expense related to changes in uncertain tax positions (see D. Tax Contingencies).

(b) In 2017, the Provision for taxes on income reflects the following:

- the change in the jurisdictional mix of earnings, which includes the impact of the location of earnings from (i) operations and (ii) restructuring charges related to the operational efficiency initiative and supply network strategy, as well as repatriation costs. The jurisdictional mix of earnings can vary as a result of repatriation decisions and as a result of operating fluctuations in the normal course of business, the impact of non-deductible items and the extent and location of other income and expense items, such as restructuring charges/(benefits), asset impairments and gains and losses on asset divestitures;
- a $212 million net discrete provisional tax expense recorded in the fourth quarter of 2017, related to the impact of the Tax Act enacted on December 22, 2017, including a one-time mandatory deemed repatriation tax, partially offset by a net tax benefit related to the remeasurement of the deferred tax assets and liabilities, as of the date of enactment, due to the reduction in the U.S. federal corporate tax rate;
- U.S. tax benefit related to U.S. Research and Development Tax Credit and the U.S. Domestic Production Activities deduction;
- a $15 million discrete tax benefit recorded in the fourth quarter of 2017 related to the effective settlement of certain issues with U.S. and non-U.S. tax authorities;
- a $9 million discrete tax benefit recorded in 2017 related to the excess tax benefits for share-based compensation payments;
- a $3 million discrete tax benefit recorded in the first quarter of 2017 related to a remeasurement of the company's deferred tax assets and liabilities using the tax rates expected to be in place going forward;
- tax expense related to the changes in valuation allowances and the resolution of other tax items; and
- tax expense related to changes in uncertain tax positions (see D. Tax Contingencies).

(c) In 2016, the Provision for taxes on income reflects the following:

- the change in the jurisdictional mix of earnings, which includes the impact of the location of earnings from (i) operations and (ii) restructuring charges related to the operational efficiency initiative and supply network strategy initiative, as well as repatriation costs. The jurisdictional mix of earnings can vary as a result of repatriation decisions and as a result of operating fluctuations in the normal course of business, the impact of non-deductible items and the extent and location of other income and expense items, such as restructuring charges/(benefits), asset impairments and gains and losses on asset divestitures;
- U.S. tax benefit related to U.S. Research and Development Tax Credit and the U.S. Domestic Production Activities deduction;
- a $15 million discrete tax benefit recorded in the fourth quarter of 2016 related to prior period tax adjustments;
- a $10 million discrete tax benefit recorded in the first quarter of 2016 related to a remeasurement of deferred taxes as a result of a change in statutory tax rates;
- a $7 million discrete tax benefit recorded in 2016 related to the excess tax benefits for share-based compensation payments;
-

a $2 million discrete tax benefit related to a remeasurement of the company's deferred tax assets and liabilities using the tax rates expected to be in place going forward;

- a net tax expense of approximately $35 million mainly recorded in the first half of 2016 related to the impact of the European Commission's negative decision on the excess profits rulings in Belgium. This net charge represents the recovery of prior tax benefits for the periods 2013 through 2015 offset by the remeasurement of the company's deferred tax assets and liabilities using the rates expected to be in place at the time of the reversal and without consideration of implementation of any future operational changes, and does not include any benefits associated with a successful appeal of the decision;
- tax expense related to the changes in valuation allowances and the resolution of other tax items; and
- tax expense related to changes in uncertain tax positions (see D. Tax Contingencies).

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Tax Rate Reconciliation

The reconciliation of the U.S. statutory income tax rate to our effective tax rate follows:

	Year Ended December 31,		
	2018	2017	2016
U.S. statutory income tax rate	21 %	35 %	35 %
State and local taxes, net of federal benefits	1.8	0.7	0.8
Unrecognized tax benefits and tax settlements and resolution of certain tax positions[a]	1.2	6.0	0.4
Impact of the Tax Act[b]	(3.9)	7.7	—
Impact of Tax Accounting Method Changes	(1.3)	—	—
U.S. Research and Development Tax Credit and U.S. Domestic Production Activities deduction[c]	(0.5)	(1.3)	(1.4)
Share-based compensation	(0.8)	(0.5)	(0.5)
Non-deductible / non-taxable items	(1.6)	0.5	0.2
Taxation of non-U.S. operations[d][e]	(0.3)	(3.9)	(3.0)
Annulment of Belgium Excess Profit Ruling[f]	—	—	2.9
All other—net	0.1	(0.7)	(1.1)
Effective tax rate	15.7 %	43.5 %	33.3 %

(a) For a discussion about unrecognized tax benefits and tax settlements and resolution of certain tax positions, see A. Taxes on Income and D. Tax Contingencies.

(b) In 2018, the rate impact related to the Tax Act was a decrease to our effective tax rate. This tax benefit represents the measurement-period adjustment related to the one-time mandatory deemed repatriation tax on the company's undistributed non-U.S. earnings. In 2017, the rate impact related to the Tax Act was an increase to our effective tax rate. The provisional net tax charge represented the amount related to the one-time mandatory deemed repatriation tax on the company's undistributed non-U.S. earnings, partially offset by a net tax benefit related to the remeasurement of the company's deferred tax assets and liabilities due to the reduction in the U.S. federal corporate tax rate.

(c) In all years, the decrease in the rate was due to the benefit associated with the U.S. Research and Development Tax Credit. In 2017 and 2016, the decrease in the rate was also due to the benefit associated with the U.S. Domestic Production Activities deduction.

(d) The rate impact of taxation of non-U.S. operations was a decrease to our effective tax rate in 2016 through 2018 due to the jurisdictional mix of earnings.

(e) In all years, the impact to the rate due to increases in uncertain tax positions was more than offset by the jurisdictional mix of earnings and other U.S. tax implications of our foreign operations described in the above footnotes.

(f) The rate impact related to the European Commission's negative decision on the excess profits rulings in Belgium was an increase to our effective tax rate in 2016. This net charge represents the recovery of prior tax benefits for the periods 2013 through 2015, offset by the remeasurement of the company's deferred tax assets and liabilities using the rates expected to be in place at the time of the reversal and without consideration of implementation of any future operational changes, and does not include any benefits associated with a successful appeal of the decision.

B. Tax Matters Agreement

In connection with the separation from Pfizer in 2013, we entered into a tax matters agreement with Pfizer that governs the parties' respective rights, responsibilities and obligations with respect to tax liabilities and benefits, tax attributes, the preparation and filing of tax returns, the control of audits and other tax proceedings and other matters regarding taxes.

In general, under the agreement:

- Pfizer will be responsible for any U.S. federal, state, local or foreign income taxes and any U.S. state or local non-income taxes (and any related interest, penalties or audit adjustments and including those taxes attributable to our business) reportable on a consolidated, combined or unitary return that includes Pfizer or any of its subsidiaries (and

us and/or any of our subsidiaries) for any periods or portions thereof ending on or prior to December 31, 2012. We will be responsible for the portion of any such taxes for periods or portions thereof beginning on or after January 1, 2013, as would be applicable to us if we filed the relevant tax returns on a standalone basis.

- We will be responsible for any U.S. federal, state, local or foreign income taxes and any U.S. state or local non-income taxes (and any related interest, penalties or audit adjustments) that are reportable on returns that include only us and/or any of our subsidiaries, for all tax periods whether before or after the completion of the separation from Pfizer.
- Pfizer will be responsible for certain specified foreign taxes directly resulting from certain aspects of the separation from Pfizer.

We will not generally be entitled to receive payment from Pfizer in respect of any of our tax attributes or tax benefits or any reduction of taxes of Pfizer. Neither party's obligations under the agreement will be limited in amount or subject to any cap. The agreement also assigns responsibilities for administrative matters, such as the filing of returns, payment of taxes due, retention of records and conduct of audits, examinations or similar proceedings. In addition, the agreement provides for cooperation and information sharing with respect to tax matters.

Pfizer is primarily responsible for preparing and filing any tax return with respect to the Pfizer affiliated group for U.S. federal income tax purposes and with respect to any consolidated, combined, unitary or similar group for U.S. state or local or foreign income tax purposes or U.S. state or local non-income tax purposes that includes Pfizer or any of its subsidiaries, including those that also include us and/or any of our subsidiaries. We are generally responsible for preparing and filing any tax returns that include only us and/or any of our subsidiaries.

The party responsible for preparing and filing a given tax return will generally have exclusive authority to control tax contests related to any such tax return.

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C. Deferred Taxes

Deferred taxes arise as a result of basis differentials between financial statement accounting and tax amounts. The components of our deferred tax assets and liabilities follow:

	As of December 31,	
	2018	2017
(MILLIONS OF DOLLARS)	Assets (Liabilities)	
Prepaid/deferred items	$34	$54
Inventories	(2)	8
Intangibles	(370)	(170)
Property, plant and equipment	(114)	(80)
Employee benefits	54	53
Restructuring and other charges	5	4
Legal and product liability reserves	12	14
Net operating loss/credit carryforwards	128	137
Unremitted earnings	(5)	(148)
All other	—	(2)
Subtotal	(258)	(130)
Valuation allowance	(155)	(170)
Net deferred tax liability[a][b]	$(413)	$(300)

(a) The increase in the total net deferred tax liability from December 31, 2017 to December 31, 2018 is primarily attributable to an increase in deferred tax liabilities related to intangibles and property, plant and equipment recorded as a result of the acquisition of Abaxis, partially offset by a decrease in deferred tax liabilities related to unremitted earnings, due to a reclass of the one-time mandatory deemed repatriation tax from Noncurrent deferred tax liabilities to Income taxes payable and Other taxes payable to reflect the liability, which became a fixed obligation in 2018, payable over eight years. In addition, the increase in the total net deferred tax liability was also attributable to a decrease in deferred tax assets related to prepaid/deferred items, inventory, net operating loss/credit carryforwards, partially offset by a decrease in valuation allowances representing the amounts determined to be unrecoverable.

(b) In 2018, included in Noncurrent deferred tax assets ($61 million) and Noncurrent deferred tax liabilities ($474 million). In 2017, included in Noncurrent deferred tax assets ($80 million) and Noncurrent deferred tax liabilities ($380 million).

We have carryforwards, primarily related to net operating losses, which are available to reduce future foreign, U.S. federal, and U.S. state income taxes payable with either an indefinite life or expiring at various times from 2019 to 2038.

Valuation allowances are provided when we believe that our deferred tax assets are not recoverable based on an assessment of estimated future taxable income that incorporates ongoing, prudent and feasible tax planning strategies. On the basis of this evaluation, as of December 31, 2018 and December 31, 2017, a valuation allowance of $155 million and $170 million, respectively, has been recorded to record only the portion of the deferred tax asset that is more likely than not to be realized. The amount of the deferred tax asset considered realizable, however, could be adjusted if estimates of future taxable income during the carryforward period are reduced or increased or if objective negative evidence in the form of cumulative losses is no longer present and additional weight may be given to subjective evidence such as projections for growth.

In general, it is our practice and intention to permanently reinvest the majority of the earnings of the company’s non-U.S. subsidiaries. As of December 31, 2018, the cumulative amount of such undistributed earnings was approximately $5.1 billion, for which we have not provided U.S. and local income taxes, such as U.S. state income taxes, local withholding taxes, and taxes on currency gains and losses. Since these earnings are intended to be indefinitely reinvested overseas as of December 31, 2018, we cannot predict the time or manner of a potential

repatriation. As such, other than the deferred tax liability associated with the one-time mandatory deemed repatriation tax on such undistributed earnings imposed by the Tax Act, it is not practicable to estimate the additional deferred tax liability associated with the potential repatriation of the unremitted earnings due to the complexity of the hypothetical calculation.

D. Tax Contingencies

We are subject to income tax in many jurisdictions, and a certain degree of estimation is required in recording the assets and liabilities related to income taxes. All of our tax positions are subject to audit by the local taxing authorities in each tax jurisdiction. These tax audits can involve complex issues, interpretations and judgments and the resolution of matters may span multiple years, particularly if subject to negotiation or litigation. Our assessments are based on estimates and assumptions that have been deemed reasonable by management, but our estimates of unrecognized tax benefits and potential tax benefits may not be representative of actual outcomes, and variation from such estimates could materially affect our financial statements in the period of settlement or when the statute of limitations expire. We treat these events as discrete items in the period of resolution.

For a description of our accounting policies associated with accounting for income tax contingencies, see Note 3. Significant Accounting Policies: Deferred Tax Assets and Liabilities and Income Tax Contingencies. For a description of the risks associated with estimates and assumptions, see Note 3. Significant Accounting Policies: Estimates and Assumptions.

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Uncertain Tax Positions

As tax law is complex and often subject to varied interpretations, it is uncertain whether some of our tax positions will be sustained upon audit. As of December 31, 2018, 2017 and 2016, we had approximately $182 million, $161 million and $65 million, respectively, in net liabilities associated with uncertain tax positions, excluding associated interest:

- Tax assets associated with uncertain tax positions primarily represent our estimate of the potential tax benefits in one tax jurisdiction that could result from the payment of income taxes in another tax jurisdiction. These potential benefits generally result from cooperative efforts among taxing authorities, as required by tax treaties to minimize double taxation, commonly referred to as the competent authority process. The recoverability of these assets, which we believe to be more likely than not, is dependent upon the actual payment of taxes in one tax jurisdiction and, in some cases, the successful petition for recovery in another tax jurisdiction. As of December 31, 2018, 2017 and 2016, we had approximately $3 million, $3 million and $3 million, respectively, in assets associated with uncertain tax positions recorded in Other noncurrent assets.
- Tax liabilities associated with uncertain tax positions represent unrecognized tax benefits, which arise when the estimated benefit recorded in our financial statements differs from the amounts taken or expected to be taken in a tax return because of the uncertainties described above. These unrecognized tax benefits relate primarily to issues common among multinational corporations. Substantially all of these unrecognized tax benefits, if recognized, would impact our effective income tax rate.

The reconciliation of the beginning and ending amounts of gross unrecognized tax benefits follows:

(MILLIONS OF DOLLARS)	2018	2017	2016
Balance, January 1	$(164)	$(68)	$(61)
Increases based on tax positions taken during a prior period[a][b]	(24)	(4)	(48)
Decreases based on tax positions taken during a prior period[a][c]	6	12	2
Increases based on tax positions taken during the current period[a][d]	(11)	(107)	(9)
Settlements[e]	6	—	46
Lapse in statute of limitations	2	3	2
Balance, December 31[f]	$(185)	$(164)	$(68)

(a) Primarily included in Provision for taxes on income.

(b) In 2018, the increases are primarily related to the impact of the Tax Act and movements on prior year positions. In 2017, the increases are primarily related to movements on prior year positions, including movements in foreign translation adjustments on prior year positions. In 2016, the increases are primarily related to the impact of the European Commission's negative decision on the excess profits rulings in Belgium. See A. Taxes on Income.

(c) In 2018, the decreases are primarily related to movements on prior year positions and closure of audits with U.S. and non-U.S. tax authorities, including movements in foreign translation adjustments on prior year positions. In 2017, the decreases are primarily related to movements on prior year positions and effective settlement of certain issues with U.S. and non-U.S. tax authorities. In 2016, the decreases are primarily related to movements on prior year positions. See A. Taxes on Income.

(d) In 2017, the increases are primarily related to the impact of the Tax Act. See A. Taxes on Income.

(e) In 2018, the decreases are due to settlements with U.S. and non-U.S. tax authorities. In 2016, the decreases are due to cash payments related to the impact of the European Commission's negative decision on the excess profits rulings in Belgium. See A. Taxes on Income.

(f) In 2018, included in Noncurrent deferred tax assets ($3 million) and Other taxes payable ($182 million). In 2017, included in Noncurrent deferred tax assets ($3 million) and Other taxes payable ($161 million). In 2016, included in Noncurrent deferred tax assets ($3 million) and Other taxes payable ($65 million).

- Interest related to our unrecognized tax benefits is recorded in accordance with the laws of each jurisdiction and is recorded in Provision for taxes on income in our consolidated statements of income. In 2018, we recorded a net interest expense of $1 million; in 2017, we recorded a net interest expense of $1 million; and in 2016, we recorded a net interest expense of $2 million. Gross accrued interest totaled $8 million, $7 million and $6 million as of December 31, 2018, 2017 and 2016, respectively, and were included in Other taxes payable. Gross accrued penalties totaled $3 million, $4 million and $4 million as of December 31, 2018, 2017 and 2016, respectively, and were

included in Other taxes payable.

Status of Tax Audits and Potential Impact on Accruals for Uncertain Tax Positions

We are subject to taxation in the United States including various states, and foreign jurisdictions. The United States is one of our major tax jurisdictions, and we are currently under audit for tax years 2015 and 2016. For U.S. Federal and state tax purposes, the tax years 2013 through 2018 are open for examination (see B. Tax Matters Agreement for years prior to 2013).

In addition to the open audit years in the United States, we have open audit years in other major foreign tax jurisdictions, such as Canada (2014-2018), Asia-Pacific (2011-2018, primarily reflecting Australia, China and Japan), Europe (2012-2018, primarily reflecting France, Germany, Italy, Spain and the United Kingdom) and Latin America (2005-2018, primarily reflecting Brazil and Mexico).

Any settlements or statute of limitations expirations could result in a significant decrease in our uncertain tax positions. We do not expect that within the next twelve months any of our gross unrecognized tax benefits, exclusive of interest, could significantly decrease as a result of settlements with taxing authorities or the expiration of the statutes of limitations. Our assessments are based on estimates and assumptions that have been deemed reasonable by management, but our estimates of unrecognized tax benefits and potential tax benefits may not be representative of actual outcomes, and any variation from such estimates could materially affect our financial statements in the period of settlement or when the statutes of limitations expire, as we treat these events as discrete items in the period of resolution. Finalizing audits with the relevant taxing authorities can include formal

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administrative and legal proceedings, and, as a result, it is difficult to estimate the timing and range of possible change related to our uncertain tax positions, and such changes could be significant.

9. Financial Instruments

A. Debt

Credit Facilities

In December 2016, we entered into an amended and restated revolving credit agreement with a syndicate of banks providing for a multi-year $1.0 billion senior unsecured revolving credit facility (the credit facility). In December 2018, the maturity for the amended and restated credit facility was extended through December 2023. Subject to certain conditions, we have the right to increase the credit facility to up to $1.5 billion. The credit facility contains a financial covenant requiring us to not exceed a maximum total leverage ratio (the ratio of consolidated net debt as of the end of the period to consolidated Earnings Before Interest, Income Taxes, Depreciation and Amortization (EBITDA) for such period) of 3.50:1. Upon entering into a material acquisition, the maximum total leverage ratio increases to 4.00:1, and extends until the fourth full consecutive fiscal quarter ended immediately following the consummation of a material acquisition. The credit facility also contains a clause which adds back to Adjusted Consolidated EBITDA, any operational efficiency restructuring charge (defined as charges recorded by the company during the period commencing on October 1, 2016 and ending December 31, 2019, related to operational efficiency initiatives), provided that for any twelve-month period such charges added back to Adjusted Consolidated EBITDA shall not exceed $100 million in the aggregate.

The credit facility also contains a financial covenant requiring that we maintain a minimum interest coverage ratio (the ratio of EBITDA at the end of the period to interest expense for such period) of 3.50:1. In addition, the credit facility contains other customary covenants.

We were in compliance with all financial covenants as of December 31, 2018 and December 31, 2017. There were no amounts drawn under the credit facility as of December 31, 2018 or December 31, 2017.

We have additional lines of credit and other credit arrangements with a group of banks and other financial intermediaries for general corporate purposes. We maintain cash and cash equivalent balances in excess of our outstanding short-term borrowings. As of December 31, 2018, we had access to $77 million of lines of credit which expire at various times through 2019, and are generally renewed annually. We had $9 million borrowings outstanding related to these facilities as of December 31, 2018.

Commercial Paper Program and Other Short-Term Borrowings

In February 2013, we entered into a commercial paper program with a capacity of up to $1.0 billion. As of December 31, 2018, and 2017, there was no commercial paper outstanding under this program. As of December 31, 2018, we had $9 million short-term borrowings outstanding. As of December 31, 2017, we did not have any short-term borrowings outstanding.

Senior Notes and Other Long-Term Debt

On August 20, 2018, we issued $1.5 billion aggregate principal amount of our senior notes (2018 senior notes), with an original issue discount of $4 million. These notes are comprised of $300 million aggregate principal amount of floating rate senior notes due 2021 (the "2018 floating rate senior notes"), and $300 million aggregate principal amount of 3.250% senior notes due 2021, $500 million aggregate principal amount of 3.900% senior notes due 2028 and $400 million aggregate principal amount of 4.450% senior notes due 2048 (collectively, the "2018 fixed rate senior notes"). Net proceeds from this offering were partially used to pay down and terminate a revolving credit agreement and repay outstanding commercial paper, which were borrowed to finance a portion of the cash consideration for the acquisition of Abaxis (see Note 5. Acquisitions and Divestitures). The remainder of the net proceeds will be used for general corporate purposes.

On September 12, 2017, we issued $1.25 billion aggregate principal amount of our senior notes (2017 senior notes), with an original issue discount of $7 million. These notes are comprised of $750 million aggregate principal amount of 3.000% senior notes due 2027 and $500 million aggregate principal amount of 3.950% senior notes due 2047. Net proceeds from this offering were partially used in October 2017 to repay, prior to maturity, the aggregate principal amount of $750 million, and a make-whole amount and accrued interest of $4 million, of our 1.875% senior notes due 2018. The remainder of the net proceeds were used for general corporate purposes.

On November 13, 2015, we issued $1.25 billion aggregate principal amount of our senior notes (2015 senior notes), with an original issue discount of $2 million. On January 28, 2013, we issued $3.65 billion aggregate principal amount of our senior notes (the 2013 senior notes offering) in a private placement, with an original issue discount of $10 million.

The 2013, 2015, 2017 and 2018 senior notes are governed by an indenture and supplemental indenture (collectively, the indenture) between us and Deutsche Bank Trust Company Americas, as trustee. The indenture contains certain covenants, including limitations on our and certain of our subsidiaries' ability to incur liens or engage in sale-leaseback transactions. The indenture also contains restrictions on our ability to consolidate, merge or sell substantially all of our assets. In addition, the indenture contains other customary terms, including certain events of default, upon the occurrence of which the 2013, 2015, 2017 and 2018 senior notes may be declared immediately due and payable.

Pursuant to the indenture, we are able to redeem the 2013, 2015 and 2017 senior notes and the 2018 fixed rate senior notes of any series, in whole or in part, at any time by paying a “make whole” premium, plus accrued and unpaid interest to, but excluding, the date of redemption. The 2018 floating rate senior notes are not redeemable at our option prior to their maturity date. Pursuant to our tax matters agreement with Pfizer, we will not be permitted to redeem the 2013 senior notes due 2023 pursuant to this optional redemption provision, except under limited circumstances. Upon the occurrence of a change of control of us and a downgrade of the 2013, 2015, 2017 and 2018 senior notes below an investment grade rating by each of Moody's Investors Service, Inc. and Standard & Poor's Ratings Services, we are, in certain circumstances, required to make an offer to repurchase all of the outstanding 2013, 2015, 2017 and 2018 senior notes at a price equal to 101% of the aggregate principal amount of the 2013, 2015, 2017 and 2018 senior notes together with accrued and unpaid interest to, but excluding, the date of repurchase.

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The components of our long-term debt are as follows:

	As of December 31,	
(MILLIONS OF DOLLARS)	2018	2017
3.450% 2015 senior notes due 2020	$500	$500
2018 floating rate (three-month USD LIBOR plus 0.44%) senior notes due 2021	300	—
3.250% 2018 senior notes due 2021	300	—
3.250% 2013 senior notes due 2023	1,350	1,350
4.500% 2015 senior notes due 2025	750	750
3.000% 2017 senior notes due 2027	750	750
3.900% 2018 senior notes due 2028	500	—
4.700% 2013 senior notes due 2043	1,150	1,150
3.950% 2017 senior notes due 2047	500	500
4.450% 2018 senior notes due 2048	400	—
	6,500	5,000
Unamortized debt discount / debt issuance costs	(57)	(47)
Long-term debt, net of discount and issuance costs	$6,443	$4,953

The fair value of our long-term debt was $6,474 million and $5,291 million as of December 31, 2018, and December 31, 2017, respectively, and has been determined using a third-party matrix-pricing model that uses significant inputs derived from, or corroborated by, observable market data and Zoetis' credit rating (Level 2 inputs). See Note 3. Significant Accounting Policies— Fair Value.

The principal amount of long-term debt outstanding as of December 31, 2018, matures in the following years:

(MILLIONS OF DOLLARS)	2019	2020	2021	2022	2023	After 2023	Total
Maturities	$—	$500	$600	$—	$1,350	$4,050	$6,500

Interest Expense

Interest expense, net of capitalized interest, was $206 million for 2018, $175 million for 2017 and $166 million for 2016. Capitalized interest expense was $9 million for 2018, $4 million for 2017, and $3 million for 2016.

B. Investments

As part of the acquisition of Abaxis, we acquired short and long-term investments in debt securities (see Note 5. Acquisitions and Divestitures). These investments are classified as available-for-sale securities and, therefore, are measured at fair value at each reporting date. The changes in fair value are recognized in Accumulated other comprehensive income/(loss). We utilized Level 2 inputs such as observable quoted prices for similar assets and liabilities in active markets and observable quoted prices for identical or similar assets in markets that are not very active. See Note 3. Significant Accounting Policies— Fair Value.

At December 31, 2018, the investment securities portfolio consisted of debt securities that were virtually all investment-grade. Information on investments in the debt securities at December 31, 2018, including the contractual maturities, or as necessary, the estimated maturities, of the available-for-sale securities is as follows:

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(MILLIONS OF DOLLARS)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value	Maturities by Period[a] Within 1 year	Over 1 to 5 years	Over 5 years	Total
Available-for-sale debt securities								
Municipal Bonds	$1	$ —	$ —	$ 1	$1	$ —	$ —	$1
Corporate Bonds	100	—	—	100	98	2	—	100
Total debt securities	$101	$ —	$ —	$ 101	$99	$ 2	$ —	$101

[a] Long term investments are included in Other noncurrent assets.

C. Derivative Financial Instruments

Foreign Exchange Risk

A significant portion of our revenue, earnings and net investment in foreign affiliates is exposed to changes in foreign exchange rates. We seek to manage our foreign exchange risk, in part, through operational means, including managing same-currency revenue in relation to same-currency costs and same-currency assets in relation to same-currency liabilities. Depending on market conditions, foreign exchange risk is also managed through the use of various derivative financial instruments. These derivative financial instruments serve to manage the exposure of our net investment in certain foreign operations to changes in foreign exchange rates and protect net income against the impact of translation into U.S. dollars of certain foreign exchange-denominated transactions.

All derivative financial instruments used to manage foreign currency risk are measured at fair value and are reported as assets or liabilities on the condensed consolidated balance sheet. The derivative financial instruments primarily offset exposures in the Australian dollar, Brazilian real, British pound, Canadian dollar, Chinese renminbi, euro, and Norwegian krone. Changes in fair value are reported in earnings or in Accumulated other comprehensive income/(loss), depending on the nature and purpose of the financial instrument, as follows:

- For foreign exchange contracts not designated as hedging instruments, we recognize the gains and losses on forward-exchange contracts that are used to offset the same foreign currency assets or liabilities immediately into earnings along with the earnings impact of the items they generally offset. These contracts essentially take the opposite currency position of that reflected in the month-end balance sheet to counterbalance the effect of any currency movement. The aggregate notional amount of foreign exchange derivative financial instruments offsetting foreign currency exposures was $1.3 billion and $1.4 billion, as of December 31, 2018, and December 31, 2017, respectively. The vast majority of the foreign exchange derivative financial instruments mature within 60 days and all mature within one year.
- For cross-currency interest rate swaps, which are designated as a hedge against our net investment in foreign operations, changes in the fair value are deferred as a component of cumulative translation adjustment within Accumulated other comprehensive loss and reclassified into earnings when the foreign investment is sold or substantially liquidated. Gains and losses excluded from the assessment of hedge effectiveness are recognized in earnings (Interest expense—net of capitalized interest). The impact of the periodic exchange of interest payments is reflected within the operating section of our consolidated statement of cash flows. The aggregate notional amount of cross-currency interest rate swap contracts was 400 million euro as of December 31, 2018, with a term of up to seven years. We did not have any cross-currency interest rate swap contracts as of December 31, 2017.

Interest Rate Risk

The company may use interest rate swap contracts on certain investing and borrowing transactions to manage its net exposure to interest rates and to reduce its overall cost of borrowing. In anticipation of issuing fixed-rate debt, we may use forward-starting interest rate swaps that are designated as cash flow hedges to hedge against changes in interest rates that could impact expected future issuances of debt. Unrealized gains or losses on the forward-starting interest rate swaps are reported in Accumulated other comprehensive loss and are recognized in earnings over the life of the future fixed-rate notes. When the company discontinues hedge accounting because it is no longer probable that an anticipated transaction will occur within the originally expected period of execution, or within an additional two-month period thereafter, changes to fair value accumulated in other comprehensive income are recognized immediately in earnings.

During 2018 and 2017, we entered into forward starting interest rate swaps with an aggregate notional value of $350 million and $500 million, respectively. In addition, we entered into treasury lock trades with an aggregate notional value of $350 million and $500 million, respectively. We designated these swaps and treasury locks (contracts) as cash flow hedges against interest rate exposure related principally to the issuance of fixed-rate debt to be used primarily to fund the acquisition of Abaxis in 2018 and to refinance our 1.875% 2013 senior notes due 2018. Upon issuance of our 2018 senior notes, we terminated the contracts we entered into in 2018 and paid $2 million in cash to the counterparties for settlement. Upon issuance of our 2017 senior notes, we terminated the contracts entered into in 2017 and paid $3 million in cash to the counterparties for settlement. See A. Debt: Senior Notes and Other Long-Term Debt. There was $0.1 million of ineffectiveness related to the forward interest rate swaps entered into in 2017 through the date of settlement which was immediately recognized as a loss within Interest expense—net of capitalized interest. In addition, in previous years we had entered into various forward-starting interest rate swap contracts that were designated as cash flow hedges and that were terminated upon issuance of fixed-rate notes. The settlement amounts, which represent the fair value of the contracts at the time of termination, were recorded in Accumulated other comprehensive loss, and will be amortized into income over the life of the 2018 and 2017 senior notes.
There were no outstanding interest rate swap contracts as of December 31, 2018 and December 31, 2017.

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Fair Value of Derivative Instruments

The classification and fair values of derivative instruments are as follows:

(MILLIONS OF DOLLARS)	Balance Sheet Location	Fair Value of Derivatives As of December 31, 2018	2017
Derivatives Not Designated as Hedging Instruments:			
Foreign currency forward-exchange contracts	Other current assets	$6	$10
Foreign currency forward-exchange contracts	Other current liabilities	(7)	(9)
Total derivatives not designated as hedging instruments		(1)	1
Derivatives Designated as Hedging Instruments:			
Cross-currency interest rate swap contracts	Other current assets	3	—
Cross-currency interest rate swap contracts	Other non-current assets	8	—
Total derivatives designated as hedging instruments		11	—
Total derivatives		$10	$1

The company's cross-currency interest rate swaps are subject to master netting arrangements to mitigate credit risk by permitting net settlement of transactions with the same counterparty. We may also enter into collateral security arrangements with certain of our counterparties to exchange cash collateral when the net fair value of certain derivative instruments fluctuates from contractually established thresholds. At December 31, 2018, there was no collateral posted related to our derivatives.

We use a market approach in valuing financial instruments on a recurring basis. Our derivative financial instruments are measured at fair value on a recurring basis using Level 2 inputs in the calculation of fair value. See Note 3. Significant Accounting Policies— Fair Value.

The amounts of net gains/(losses) on derivative instruments not designated as hedging instruments, recorded in Other (income)/deductions, are as follows:

(MILLIONS OF DOLLARS)	Year Ended December 31, 2018	2017
Foreign currency forward-exchange contracts	$6	$(33)

These amounts were substantially offset in Other (income)/deductions—net by the effect of changing exchange rates on the underlying foreign currency exposures.

The amounts of unrecognized net gains/(losses) on derivative instruments designated as cash flow hedges, recorded, net of tax, in Other comprehensive income/(loss), are as follows:

(MILLIONS OF DOLLARS)	Year Ended December 31, 2018	2017
Interest rate swaps	$—	$(11)

The amounts of unrecognized net gains/(losses) on cross-currency interest rate swap contracts, recorded, net of tax, in Accumulated other comprehensive income/(loss), are as follows:

(MILLIONS OF DOLLARS)	Year Ended December 31, 2018	2017
Cross-currency interest rate swap contracts	$ 9	$ —

Gains/(losses) on cross-currency interest rate swap contracts, recognized within Interest expense, net of capitalized interest, are as follows:

(MILLIONS OF DOLLARS)	Year Ended December 31, 2018	2017
Cross-currency interest rate swap contracts	$ 6	$ —

The net amount of deferred gains/(losses) related to derivative instruments designated as cash flow hedges that is expected to be reclassified from Accumulated other comprehensive loss into earnings over the next 12 months is insignificant.

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10. Inventories

The components of inventory follow:

	As of December 31,	
(MILLIONS OF DOLLARS)	2018	2017
Finished goods	$744	$788
Work-in-process	481	484
Raw materials and supplies	166	155
Inventories	$1,391	$1,427

11. Property, Plant and Equipment

The components of property, plant and equipment follow:

	Useful Lives	As of December 31,	
(MILLIONS OF DOLLARS)	(Years)	2018	2017
Land	—	$22	$22
Buildings	33 1/3 - 50	929	934
Machinery, equipment and fixtures	3 - 20	1,852	1,696
Construction-in-progress	—	454	254
		3,257	2,906
Less: Accumulated depreciation		1,599	1,471
Property, plant and equipment		$1,658	$1,435

Depreciation expense was $152 million in 2018, $142 million in 2017 and $145 million in 2016.

12. Goodwill and Other Intangible Assets

A. Goodwill

The components of, and changes in, the carrying amount of goodwill follow:

(MILLIONS OF DOLLARS)	U.S.	International	Total
Balance, December 31, 2016	$661	$ 820	$1,481
Additions / Adjustments[a]	10	7	17
Other[b]	—	12	12
Balance, December 31, 2017	$671	$ 839	$1,510
Additions / Adjustments [a]	594	431	1,025
Other[b]	—	(16)	(16)
Balance, December 31, 2018	$1,265	$ 1,254	$2,519

(a) For 2018, primarily includes a $977 million purchase price allocation associated with the acquisition of Abaxis and $48 million related to the acquisition of a manufacturing business in Ireland. See Note 5. Acquisitions and Divestitures.

For 2017, primarily represents $9 million related to the acquisition of an Irish biologic therapeutics company in the third quarter of 2017, as well as $10 million related to the consolidation of a European livestock monitoring company, a variable interest entity of which Zoetis is the primary beneficiary, in the first quarter of 2017, partially offset by a $2 million reduction to the consolidation of a European livestock monitoring company in the third quarter of 2017.

(b) Includes adjustments for foreign currency translation. For 2018, also includes $2 million related to the divestiture of certain agribusiness products within our International segment.

For 2017, also includes $3 million related to the sale of our manufacturing site in Guarulhos, Brazil.

The gross goodwill balance was $3,055 million as of December 31, 2018, and $2,046 million as of December 31, 2017. Accumulated goodwill impairment losses (generated entirely in fiscal 2002) was $536 million as of December 31, 2018, and December 31, 2017.

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B. Other Intangible Assets

The components of identifiable intangible assets follow:

	As of December 31, 2018			As of December 31, 2017		
(MILLIONS OF DOLLARS)	Gross Carrying Amount	Accumulated Amortization	Identifiable Intangible Assets, Less Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization	Identifiable Intangible Assets, Less Accumulated Amortization
Finite-lived intangible assets:						
Developed technology rights[a][b][c]	$1,854	$ (523)	$ 1,331	$1,185	$ (428)	$ 757
Brands	212	(154)	58	213	(143)	70
Trademarks and tradenames[c]	166	(51)	115	62	(47)	15
Other[c][d]	412	(178)	234	234	(143)	91
Total finite-lived intangible assets	2,644	(906)	1,738	1,694	(761)	933
Indefinite-lived intangible assets:						
Brands	37	—	37	37	—	37
Trademarks and trade names	67	—	67	67	—	67
In-process research and development[b][e]	197	—	197	224	—	224
Product rights	7	—	7	8	—	8
Total indefinite-lived intangible assets	308	—	308	336	—	336
Identifiable intangible assets	$2,952	$ (906)	$ 2,046	$2,030	$ (761)	$ 1,269

(a) Includes intangible assets associated with the acquisitions of a European livestock monitoring company and a Norwegian fish vaccination company.

(b) In the first quarter of 2017, certain intangible assets, acquired in 2015 as part of the Pharmaq acquisition, were placed into service.

(c) In connection with the acquisition of Abaxis, the company recorded $895 million of intangible assets, as shown in the table below, representing the preliminary fair value at the acquisition date. See Note 5. Acquisitions and Divestitures for additional information.

(MILLIONS OF DOLLARS)	Gross Carrying Amount	Weighted-average Life (years)
Finite-lived intangible assets:		
Developed technology rights	$ 611	10
Trademarks and tradenames	104	20
Other	180	4
Total	$ 895	

(d) Includes the acquisition of land use rights in China in the fourth quarter of 2017.

(e) Includes the intangible assets related to the acquisition of an Irish biologic therapeutics company in the third quarter of 2017.

Developed Technology Rights

Developed technology rights represent the amortized cost associated with developed technology, which has been acquired from third parties and which can include the right to develop, use, market, sell and/or offer for sale the product, compounds and intellectual property that we have acquired with respect to products, compounds and/or processes that have been completed. These assets include technologies related to the care and treatment of cattle, swine, poultry, sheep, fish, dogs, cats and horses.

Brands

Brands represent the amortized or unamortized cost associated with product name recognition, as the products themselves do not receive patent protection. The more significant finite-lived brands are Excenel, Lutalyse and

Spirovac and the more significant indefinite-lived brands are the Linco family products and Mastitis.

Trademarks and Tradenames

Trademarks and tradenames represent the amortized or unamortized cost associated with legal trademarks and tradenames. The more significant components of indefinite-lived trademarks and tradenames are indefinite-lived trademarks and tradenames acquired from SmithKlineBeecham. The more significant finite-lived trademarks and tradenames are finite-lived trademarks and tradenames for vaccines acquired from CSL Animal Health.

In-Process Research and Development

IPR&D assets represent R&D assets that have not yet received regulatory approval in a major market. The majority of these IPR&D assets were acquired in connection with our acquisition of Pharmaq.

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IPR&D assets are required to be classified as indefinite-lived assets until the successful completion or abandonment of the associated R&D effort. Accordingly, during the development period after the date of acquisition, these assets will not be amortized until approval is obtained in a major market, typically either the United States or the EU, or in a series of other countries, subject to certain specified conditions and management judgment. At that time, we will determine the useful life of the asset, reclassify the asset out of IPR&D and begin amortization. If the associated R&D effort is abandoned, the related IPR&D assets will be written-off, and we will record an impairment charge.
There can be no certainty that IPR&D assets ultimately will yield a successful product.

Product Rights

Product rights represent product registration and application rights that were acquired from Pfizer in 2014.

C. Amortization

The weighted average life of our total finite-lived intangible assets is approximately 10 years. Total amortization expense for finite-lived intangible assets was $157 million in 2018, $100 million in 2017, and $95 million in 2016.
The annual amortization expense expected for the years 2019 through 2023 is as follows:

(MILLIONS OF DOLLARS)	2019	2020	2021	2022	2023
Amortization expense	$231	$211	$182	$172	$162

D. Impairments

For information about intangible asset impairments, see Note 7. Other (Income)/Deductions—Net.

13. Benefit Plans

Our employees ceased to participate in the Pfizer U.S. qualified defined benefit and U.S. retiree medical plans effective December 31, 2012, and liabilities associated with our employees under these plans were retained by Pfizer. Pfizer continued to credit certain employees' service with Zoetis generally through December 31, 2017 (or termination of employment from Zoetis, if earlier) for certain early retirement benefits with respect to Pfizer's U.S. defined benefit pension and retiree medical plans. In connection with an employee matters agreement between Pfizer and Zoetis, Zoetis is responsible for payment of three-fifths of the total cost of the service credit continuation (approximately $38 million) for these plans and Pfizer is responsible for the remaining two-fifths of the total cost (approximately $25 million). The $25 million capital contribution from Pfizer and corresponding contra-equity account (which is being reduced as the service credit continuation is incurred) is included in Employee benefit plan contribution from Pfizer Inc. in the consolidated statement of equity. The balance in the contra-equity account was approximately $10 million and $13 million as of December 31, 2018 and 2017, respectively. The amount of the service cost continuation payment to be paid by Zoetis to Pfizer was determined and fixed based on an actuarial assessment of the value of the grow-in benefits and is being paid in equal installments over a period of 10 years. Pension and postretirement benefit expense associated with the extended service for certain employees in the U.S. plans totaled approximately $6 million per year in 2018 and 2017.
Pension expense associated with the U.S. and certain significant international locations (inclusive of service cost grow-in benefits discussed above) totaled approximately $14 million in 2018, $15 million in 2017, and $14 million in 2016.

A. International Pension Plans

Information about the dedicated pension plans, including the plans transferred to us as part of the separation from Pfizer, is provided in the tables below.

Obligations and Funded Status—Dedicated Plans

The following table provides an analysis of the changes in the benefit obligations, plan assets and funded status of our dedicated pension plans (including those transferred to us):

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(MILLIONS OF DOLLARS)	As of and for the Year Ended December 31, 2018	2017
Change in benefit obligation:		
Projected benefit obligation, beginning	$129	$130
Service cost	7	7
Interest cost	3	3
Plan combinations	—	(1)
Changes in actuarial assumptions and other	(4)	(6)
Settlements and curtailments	(6)	(10)
Benefits paid	—	(5)
Adjustments for foreign currency translation	(5)	11
Other—net	(1)	—
Benefit obligation, ending	123	129
Change in plan assets:		
Fair value of plan assets, beginning	69	68
Plan combinations	—	(1)
Actual return on plan assets	(1)	5
Company contributions	5	6
Settlements and curtailments	(5)	(10)
Adjustments for foreign currency translation	(2)	5
Other—net	(1)	(4)
Fair value of plan assets, ending	65	69
Funded status—Projected benefit obligation in excess of plan assets at end of year[a]	$(58)	$(60)

[a] Included in Other noncurrent liabilities.

Actuarial losses were approximately $21 million ($13 million net of tax) at December 31, 2018, and $22 million ($14 million net of tax) at December 31, 2017. The actuarial gains and losses primarily represent the cumulative difference between the actuarial assumptions and actual return on plan assets, changes in discount rates and changes in other assumptions used in measuring the benefit obligations. These actuarial gains and losses are recognized in Accumulated other comprehensive income/(loss). The actuarial losses will be amortized into net periodic benefit costs over an average period of 12.3 years.

The estimated net actuarial loss that will be amortized from Accumulated other comprehensive loss into 2019 net periodic benefit cost is insignificant.

Information related to the funded status of selected plans follows:

(MILLIONS OF DOLLARS)	As of December 31, 2018	2017
Pension plans with an accumulated benefit obligation in excess of plan assets:		
Fair value of plan assets	$ 56	$ 58
Accumulated benefit obligation	95	97
Pension plans with a projected benefit obligation in excess of plan assets:		
Fair value of plan assets	60	67
Projected benefit obligation	118	128

Net Periodic Benefit Costs—Dedicated Plans

The following table provides the net periodic benefit cost associated with dedicated pension plans (including those transferred to us):

	Year Ended December 31,		
(MILLIONS OF DOLLARS)	2018	2017	2016
Service cost	$7	$ 7	$ 9
Interest cost	3	3	3
Expected return on plan assets	(3)	(3)	(3)
Amortization of net (gains) / losses	1	1	1
Settlement and curtailments (gains) / losses	(1)	1	(2)
Net periodic benefit cost	$7	$ 9	$ 8

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Actuarial Assumptions—Dedicated Plans

The following table provides the weighted average actuarial assumptions for the dedicated pension plans (including those transferred to us):

	As of December 31,		
(PERCENTAGES)	2018	2017	2016
Weighted average assumptions used to determine benefit obligations:			
Discount rate	2.3 %	2.2 %	2.1 %
Rate of compensation increase	3.0 %	3.0 %	3.1 %
Weighted average assumptions used to determine net benefit cost for the year ended December 31:			
Discount rate	2.2 %	2.1 %	2.5 %
Expected return on plan assets	4.4 %	3.9 %	4.1 %
Rate of compensation increase	3.0 %	3.2 %	2.9 %

The assumptions above are used to develop the benefit obligations at the end of the year and to develop the net periodic benefit cost for the following year. Therefore, the assumptions used to determine the net periodic benefit cost for each year are established at the end of each previous year, while the assumptions used to determine the benefit obligations are established at each year-end. The net periodic benefit cost and the benefit obligations are based on actuarial assumptions that are reviewed on an annual basis. The assumptions are revised based on an annual evaluation of long-term trends, as well as market conditions that may have an impact on the cost of providing retirement benefits.

Actuarial and other assumptions for pension plans can result from a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions. For a description of the risks associated with estimates and assumptions, see Note 3. Significant Accounting Policies—Estimates and Assumptions.

Plan Assets—Dedicated Plans

The components of plan assets follow:

	As of December 31,	
(MILLIONS OF DOLLARS)	2018	2017
Cash and cash equivalents	$ 1	$ 1
Equity securities: Equity commingled funds	25	26
Debt securities: Government bonds	31	32
Other investments	8	10
Total[(a)]	$ 65	$ 69

(a) Fair values are determined based on valuation inputs categorized as Level 1, 2 or 3 (see Note 3. Significant Accounting Policies—Fair Value). Investment plan assets are valued using Level 1 or Level 2 inputs.

A single estimate of fair value can result from a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions. For information about the risks associated with estimates and assumptions, see Note 3. Significant Accounting Policies—Estimates and Assumptions.

Specifically, the following methods and assumptions were used to estimate the fair value of our pension assets:

- Equity commingled funds—observable market prices.
- Government bonds and other investments—principally observable market prices.

The long-term target asset allocations and the percentage of the fair value of plans assets for dedicated benefit plans follow:

	As of December 31,		
	Target allocation percentage	Percentage of Plan Assets	
(PERCENTAGES)	2018	2018	2017

Cash and cash equivalents	0-10%	0.9 %	1.0 %
Equity securities	0-60%	43.0 %	41.9 %
Debt securities	15-100%	46.5 %	45.9 %
Other investments	0-100%	9.6 %	11.2 %
Total	100 %	100 %	100 %

Zoetis utilizes long-term asset allocation ranges in the management of our plans' invested assets. Long-term return expectations are developed with input from outside investment consultants based on the company's investment strategy, which takes into account historical experience, as well as the impact of portfolio diversification, active portfolio management, and the investment consultant's view of current and future economic and financial market conditions. As market conditions and other factors change, the targets may be adjusted accordingly and actual asset allocations may vary from the target allocations.

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The long-term asset allocation ranges reflect the asset class return expectations and tolerance for investment risk within the context of the respective plans' long-term benefit obligations. These ranges are supported by an analysis that incorporates historical and expected returns by asset class, as well as volatilities and correlations across asset classes and our liability profile. This analysis, referred to as an asset-liability analysis, also provides an estimate of expected returns on plan assets, as well as a forecast of potential future asset and liability balances.

The investment consultants review investment performance with Zoetis on a quarterly basis in total, as well as by asset class, relative to one or more benchmarks.

Cash Flows—Dedicated Plans

Our plans are generally funded in amounts that are at least sufficient to meet the minimum requirements set forth in applicable employee benefit laws and local tax and other laws.

We expect to contribute approximately $5 million to our dedicated pension plans in 2019. Benefit payments are expected to be approximately $3 million for 2019, $4 million for 2020, $3 million for 2021, and $5 million for 2022 and $5 million for 2023. Benefit payments are expected to be approximately $31 million in the aggregate for the five years thereafter. These expected benefit payments reflect the future plan benefits subsequent to 2019 projected to be paid from the plans or from the general assets of Zoetis entities under the current actuarial assumptions used for the calculation of the projected benefit obligation and, therefore, actual benefit payments may differ from projected benefit payments.

B. Postretirement Plans

As discussed above, Pfizer continued to credit certain United States employees' service with Zoetis generally through December 31, 2017 (or termination of employment from Zoetis, if earlier), for certain early retirement benefits with respect to Pfizer's U.S. retiree medical plans. Postretirement benefit expense associated with these U.S. retiree medical plans totaled approximately $4 million per year in 2018, 2017 and 2016 (inclusive of service cost grow-in benefits discussed above). The expected benefit payments for each of the next four years is approximately $4 million per year.

Employees in the United States who meet certain eligibility requirements participate in a supplemental (non-qualified) savings plan sponsored by Zoetis. The cost of the supplemental savings plan was $2 million and $7 million in 2018 and 2017, respectively.

C. Defined Contribution Plans

Zoetis has a voluntary defined contribution plan (Zoetis Savings Plan) that allows participation by substantially all U. S. employees. Zoetis matches 100% of employee contributions, up to a maximum of 5% of each employee's eligible compensation. The Zoetis Savings Plan also includes a profit-sharing feature that provides for an additional contribution ranging between 0 and 8 percent of each employee's eligible compensation. All eligible employees receive the profit-sharing contribution regardless of the amount they choose to contribute to the Zoetis Savings Plan. The profit-sharing contribution is a discretionary amount provided by Zoetis and is determined on an annual basis.

Employees can direct their contributions and the company's matching and profit-sharing contributions into any of the funds offered. These funds provide participants with a cross section of investing options, including the Zoetis stock fund. The matching and profit-sharing contributions are cash funded.

Employees are permitted to diversify all or any portion of their company matching or profit-sharing contribution. Once the contributions have been paid, Zoetis has no further payment obligations. Contribution expense, associated with the U.S. defined contribution plans, totaled approximately $43 million in 2018, $38 million in 2017 and $40 million in 2016.

14. Share-Based Payments

The Zoetis 2013 Equity and Incentive Plan (Equity Plan) provides long-term incentives to our employees and non-employee directors. The principal types of share-based awards available under the Equity Plan may include, but are not limited to, stock options, restricted stock and restricted stock units (RSUs), deferred stock units (DSUs), performance-vesting restricted stock units (PSUs), and other equity-based or cash-based awards.

Twenty-five million shares of stock were approved and registered with the Securities and Exchange Commission for grants to participants under the Equity Plan. The shares reserved may be used for any type of award under the Equity Plan. At December 31, 2018, the aggregate number of remaining shares available for future grant under the Equity Plan was approximately 12 million shares.

A. Share-Based Compensation Expense

In connection with the acquisition of Abaxis, in August 2018, the company issued 502,766 restricted stock units (replacement awards) with a weighted average grant date fair value of $85.26 per RSU, per the terms of the merger agreement between Zoetis and Abaxis, in connection with unvested Abaxis employee equity awards. The Abaxis unvested equity awards were canceled and exchanged for the replacement awards using a conversion ratio stated in the merger agreement. The grant date fair value of the replacement awards that is attributable to pre merger service is $10 million and is part of the consideration transferred in exchange for the acquisition of Abaxis. The fair value of the replacement awards attributable to post merger service is $33 million and will be recorded over future vesting periods. The replacements awards vest over varying terms of continuous service up to four years from the grant date and the values are amortized on a straight-line basis over the vesting term. For additional information see Note 5. Acquisitions and Divestitures.

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The components of share-based compensation expense follow:

	Year Ended December 31,		
(MILLIONS OF DOLLARS)	2018	2017	2016
Stock options / stock appreciation rights	$10	$ 10	$ 10
RSUs / DSUs[a]	34	26	22
PSUs	9	8	5
Share-based compensation expense—total[b]	$53	$ 44	$ 37
Tax benefit for share-based compensation expense	(7)	(13)	(10)
Share-based compensation expense, net of tax	$46	$ 31	$ 27

(a) For the year ended December 31, 2018, includes share-based compensation expense of $7 million related to the acquisition of Abaxis, for the post-merger service period. For additional details see Note 5. Acquisitions and Divestitures.

(b) For each of the years ended December 31, 2018, 2017 and 2016, we capitalized approximately $1 million of share-based compensation expense to inventory.

B. Stock Options

Stock options represent the right to purchase shares of our common stock within a specified period of time at a specified price. The exercise price for a stock option will be not less than 100% of the fair market value of the common stock on the date of grant. Stock options granted may include those intended to be “incentive stock options” within the meaning of Section 422 of the U.S. Internal Revenue Code of 1986 (the Code).

Stock options are accounted for using a fair-value-based method at the date of grant in the consolidated statement of income. The values determined through this fair-value-based method generally are amortized on a straight-line basis over the vesting term.

Eligible employees may receive Zoetis stock option awards. Zoetis stock option awards generally vest after three years of continuous service from the date of grant and have a contractual term of 10 years.

The fair-value-based method for valuing each Zoetis stock option grant on the grant date uses the Black-Scholes-Merton option-pricing model, which incorporates a number of valuation assumptions noted in the following table, shown at their weighted-average values:

	Year Ended December 31,		
	2018	2017	2016
Expected dividend yield[a]	0.69 %	0.76 %	0.89 %
Risk-free interest rate[b]	2.74 %	2.29 %	1.57 %
Expected stock price volatility[c]	23.61%	23.26%	26.70%
Expected term[d] (years)	6.5	6.5	6.5

(a) Determined using a constant dividend yield during the expected term of the Zoetis stock option.

(b) Determined using the interpolated yield on U.S. Treasury zero-coupon issues.

(c) Determined using an equal weighting between historical volatility of the Zoetis stock price and implied volatility. The selection of the blended historical and implied volatility approach was based on our assessment that this calculation of expected volatility is more representative of future stock price trends.

(d) Determined using expected exercise and post-vesting termination patterns.

The following table provides an analysis of stock option activity for the year ended December 31, 2018:

	Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (Years)	Aggregate Intrinsic Value[a] (MILLIONS)
Outstanding, December 31, 2017	4,905,884	$ 37.10		
Granted	538,820	73.32		

Exercised	(1,185,867)	30.38		
Forfeited	(101,708)	49.46		
Outstanding, December 31, 2018	4,157,129	$ 43.41	6.5	$ 175
Exercisable, December 31, 2018	2,198,213	$ 32.90	5.1	$ 116

[a] Market price of underlying Zoetis common stock less exercise price.

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As of December 31, 2018, there was approximately $8 million of unrecognized compensation costs related to nonvested stock options, which will be recognized over an expected remaining weighted-average period of 1.0 years.
The following table summarizes data related to stock option activity:

	Year Ended/As of December 31,		
(MILLIONS OF DOLLARS, EXCEPT PER STOCK OPTION AMOUNTS)	2018	2017	2016
Weighted-average grant date fair value per stock option	$20.30	$14.31	$11.34
Aggregate intrinsic value on exercise	66	32	23
Cash received upon exercise	36	35	36
Tax benefits realized related to exercise	23	16	15

C. Restricted Stock Units (RSUs)

Restricted stock units represent the right to receive a share of our common stock that is subject to a risk of forfeiture until the restrictions lapse at the end of the vesting period subject to the recipient's continued employment. RSUs accrue dividend equivalent units and are paid in shares of our common stock upon vesting (or cash determined by reference to the value of our common stock).

RSUs are accounted for using a fair-value-based method that utilizes the closing price of Zoetis common stock on the date of grant. Zoetis RSUs generally vest after three years of continuous service from the grant date and the values are amortized on a straight-line basis over the vesting term.

The following table provides an analysis of RSU activity for the year ended December 31, 2018:

	RSUs	Weighted-Average Grant Date Fair Value
Nonvested, December 31, 2017	1,661,500	$ 47.45
Granted	438,283	73.55
Replacement awards	502,766	85.26
Vested	(556,066)	48.97
Reinvested dividend equivalents	9,640	52.74
Forfeited	(80,464)	51.77
Nonvested, December 31, 2018	1,975,659	$ 62.28

As of December 31, 2018, there was approximately $58 million of unrecognized compensation costs related to nonvested RSUs, which will be recognized over an expected remaining weighted-average period of 1.3 years.

D. Deferred Stock Units (DSUs)

Deferred stock units, which were granted to non-employee compensated Directors in 2013 and 2014, represent the right to receive shares of our common stock at a future date. The DSU awards will be automatically settled and paid in shares within 60 days following the Director’s separation from service on the Board of Directors.

DSUs are accounted for using a fair-value-based method that utilizes the closing price of Zoetis common stock on the date of grant. DSUs vested immediately as of the grant date and the values were expensed at the time of grant into Selling, general and administrative expenses.

For the years ended December 31, 2018 and 2017, there were no DSUs granted. As of December 31, 2018 and 2017, there were 73,802 and 73,359 DSUs outstanding, respectively, including dividend equivalents.

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E. Performance-Vesting Restricted Stock Units (PSUs)

Performance-vesting restricted stock units, which are granted to eligible senior management, represent the right to receive a share of our common stock that is subject to a risk of forfeiture until the restrictions lapse, which include continued employment through the end of the vesting period and the attainment of performance goals. PSUs represent the right to receive shares of our common stock in the future (or cash determined by reference to the value of our common stock).

PSUs are accounted for using a Monte Carlo simulation model. The units underlying the PSUs will be earned and vested over a three-year performance period, based upon the total shareholder return of the company in comparison to the total shareholder return of the companies comprising the S&P 500 index at the start of the performance period, excluding companies that during the performance period are acquired or are no longer publicly traded (Relative TSR). The weighted-average fair value was estimated based on volatility assumptions of Zoetis common stock and an average of peer companies, which were 21.9% and 25.1%, respectively, in 2018, and 23.1% and 25.5%, respectively, in 2017. Depending on the company's Relative TSR performance at the end of the performance period, the recipient may earn between 0% and 200% of the target number of units. Vested units, including dividend equivalent units, are paid in shares of the company's common stock. PSU values are amortized on a straight-line basis over the vesting term.

The following table provides an analysis of PSU activity for the year ended December 31, 2018:

	PSUs	Weighted-Average Grant Date Fair Value
Nonvested, December 31, 2017	408,742	$ 61.53
Granted	109,574	100.34
Vested	(110,158)	63.01
Reinvested dividend equivalents	2,579	68.41
Forfeited	(19,896)	63.58
Nonvested, December 31, 2018	390,841	$ 71.93
Shares issued, December 31, 2018	182,983	$ 63.14

As of December 31, 2018, there was approximately $12 million of unrecognized compensation costs related to nonvested PSUs, which will be recognized over an expected remaining weighted-average period of 1.0 years.

F. Other Equity-Based or Cash-Based Awards.

Our Compensation Committee is authorized to grant awards in the form of other equity-based awards or other cash-based awards, as deemed to be consistent with the purposes of the Equity Plan.

15. Stockholders' Equity

Zoetis is authorized to issue 6,000,000,000 shares of common stock and 1,000,000,000 shares of preferred stock.

In December 2016, the company's Board of Directors authorized a $1.5 billion share repurchase program. As of December 31, 2018, there was approximately $300 million remaining under this authorization. In December 2018, the company's Board of Directors authorized an additional $2.0 billion share repurchase program. Purchases of Zoetis shares may be made at the discretion of management, depending on market conditions and business needs.

Changes in common shares and treasury stock were as follows:

(MILLIONS OF SHARES)	Common Shares Issued[a]	Treasury Stock[a]
Balance, December 31, 2015	501.81	4.41
Share-based compensation[b]	0.08	(1.72)
Share repurchase program	—	6.34
Balance, December 31, 2016	501.89	9.04
Share-based compensation[b]	—	(1.55)
Share repurchase program	—	8.28
Balance, December 31, 2017	501.89	15.76
Share-based compensation[b]	—	(1.66)
Share repurchase program	—	8.23

Balance, December 31, 2018	501.89	22.33

(a) Shares may not add due to rounding.

(b) Includes the issuance of shares of common stock and, beginning in the first quarter of 2016, the reissuance of shares from treasury stock in connection with the vesting of employee share-based awards. Treasury stock also includes the reacquisition of shares associated with the vesting of employee share-based awards to satisfy tax withholding requirements. For additional information regarding share-based compensation, see Note 14. Share-Based Payments.

Upon reissuance of treasury stock, differences between the proceeds from reissuance and the cost of the treasury stock that result in gains are recorded in Additional paid-in capital. Losses are recorded in Additional paid-in capital to the extent that they can offset previously recorded gains. If no such credit exists, the differences are recorded in Retained earnings.

Accumulated other comprehensive income/(loss)

Changes, net of tax, in accumulated other comprehensive loss, excluding noncontrolling interest, follow:

(MILLIONS OF DOLLARS)	Derivatives Net Unrealized (Losses)/Gains	Currency Translation Adjustment Net Unrealized (Losses)/Gains	Benefit Plans Actuarial (Losses)/Gains	Accumulated Other Comprehensive (Loss)/Income
Balance, December 31, 2015	$ (2)	$ (604)	$ (16)	$ (622)
Other comprehensive gain/(loss), net of tax	10	19	(7)	22
Divestiture of noncontrolling interest[a]	—	2	—	2
Balance, December 31, 2016	8	(583)	(23)	(598)
Other comprehensive (loss)/gain, net of tax	(11)	96	8	93
Balance, December 31, 2017	(3)	(487)	(15)	(505)
Other comprehensive (loss)/gain, net of tax	(1)	(124)	1	(124)
Balance, December 31, 2018	$ (4)	$ (611)	$ (14)	$ (629)

[a] Reflects the divestiture of our share of a Taiwan joint venture.

16. Earnings per Share

The following table presents the calculation of basic and diluted earnings per share:

(MILLIONS OF DOLLARS AND SHARES, EXCEPT PER SHARE DATA)	Year Ended December 31, 2018	2017	2016
Numerator			
Net income before allocation to noncontrolling interests	$1,424	$ 862	$ 819
Less: net loss attributable to noncontrolling interests	(4)	(2)	(2)
Net income attributable to Zoetis Inc.	$1,428	$ 864	$ 821
Denominator			
Weighted-average common shares outstanding	483.063	489.918	495.715
Common stock equivalents: stock options, RSUs, DSUs and PSUs	3.835	3.243	2.510
Weighted-average common and potential dilutive shares outstanding	486.898	493.161	498.225
Earnings per share attributable to Zoetis Inc. stockholders—basic	$2.96	$ 1.76	$ 1.66
Earnings per share attributable to Zoetis Inc. stockholders—diluted	$2.93	$ 1.75	$ 1.65

The number of stock options outstanding under the company's Equity Plan that were excluded from the computation of diluted earnings per share, as the effect would have been antidilutive, were de minimis as of December 31, 2018, and approximately 1 million shares as of each year ended December 31, 2017 and 2016.

17. Commitments and Contingencies

We and certain of our subsidiaries are subject to numerous contingencies arising in the ordinary course of business. For a discussion of our tax contingencies, see Note 8. Tax Matters.

A. Legal Proceedings

Our non-tax contingencies include, among others, the following:

- Product liability and other product-related litigation, which can include injury, consumer, off-label promotion, antitrust and breach of contract claims.
- Commercial and other matters, which can include product-pricing claims and environmental claims and proceedings.
- Patent litigation, which typically involves challenges to the coverage and/or validity of our patents or those of third parties on various products or processes.
-

Government investigations, which can involve regulation by national, state and local government agencies in the United States and in other countries.

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Certain of these contingencies could result in losses, including damages, fines and/or civil penalties, and/or criminal charges, which could be substantial.

We believe that we have strong defenses in these types of matters, but litigation is inherently unpredictable and excessive verdicts do occur. We do not believe that any of these matters will have a material adverse effect on our financial position. However, we could incur judgments, enter into settlements or revise our expectations regarding the outcome of certain matters, and such developments could have a material adverse effect on our results of operations or cash flows in the period in which the amounts are paid.

We have accrued for losses that are both probable and reasonably estimable. Substantially all of these contingencies are subject to significant uncertainties and, therefore, determining the likelihood of a loss and/or the measurement of any loss can be complex. Consequently, we are unable to estimate the range of reasonably possible loss in excess of amounts accrued. Our assessments are based on estimates and assumptions that have been deemed reasonable by management, but the assessment process relies on estimates and assumptions that may prove to be incomplete or inaccurate, and unanticipated events and circumstances may occur that might cause us to change those estimates and assumptions.

Amounts recorded for legal and environmental contingencies can result from a complex series of judgments about future events and uncertainties and can rely on estimates and assumptions.

The principal matters to which we are a party are discussed below. In determining whether a pending matter is significant for financial reporting and disclosure purposes, we consider both quantitative and qualitative factors in order to assess materiality, such as, among other things, the amount of damages and the nature of any other relief sought in the proceeding, if such damages and other relief are specified; our view of the merits of the claims and of the strength of our defenses; whether the action purports to be a class action and our view of the likelihood that a class will be certified by the court; the jurisdiction in which the proceeding is pending; any experience that we or, to our knowledge, other companies have had in similar proceedings; whether disclosure of the action would be important to a reader of our financial statements, including whether disclosure might change a reader’s judgment about our financial statements in light of all of the information about the company that is available to the reader; the potential impact of the proceeding on our reputation; and the extent of public interest in the matter. In addition, with respect to patent matters, we consider, among other things, the financial significance of the product protected by the patent.

Ulianopolis, Brazil

In February 2012, the Municipality of Ulianopolis (State of Para, Brazil) filed a complaint against Fort Dodge Saúde Animal Ltda. (FDSAL), a Zoetis entity, and five other large companies alleging that waste sent to a local waste incineration facility for destruction, but that was not ultimately destroyed as the facility lost its operating permit, caused environmental impacts requiring cleanup.

The Municipality is seeking recovery of cleanup costs purportedly related to FDSAL's share of all waste accumulated at the incineration facility awaiting destruction, and compensatory damages to be allocated among the six defendants. We believe we have strong arguments against the claim, including defense strategies against any claim of joint and several liability.

At the request of the Municipal prosecutor, in April 2012, the lawsuit was suspended for one year. Since that time, the prosecutor has initiated investigations into the Municipality's actions in the matter as well as the efforts undertaken by the six defendants to remove and dispose of their individual waste from the incineration facility. On October 3, 2014, the Municipal prosecutor announced that the investigation remained ongoing and outlined the terms of a proposed Term of Reference (a document that establishes the minimum elements to be addressed in the preparation of an Environmental Impact Assessment), under which the companies would be liable to withdraw the waste and remediate the area. On March 5, 2015, we presented our response to the prosecutor’s proposed Term of Reference, arguing that the proposed terms were overly general in nature and expressing our interest in discussing alternatives to address the matter. The prosecutor agreed to consider our request to engage a technical consultant to conduct an environmental diagnostic of the contaminated area. On May 29, 2015, we, in conjunction with the other defendant companies, submitted a draft cooperation agreement to the prosecutor, which outlined the proposed terms and conditions for the engagement of a technical consultant to conduct the environmental diagnostic. On August 19, 2016, the parties and the prosecutor agreed to engage the services of a third-party consultant to conduct a limited environmental assessment

of the site. The site assessment was conducted during June 2017, and a written report summarizing the results of the assessment was provided to the parties and the prosecutor in November 2017. The report noted that waste is still present on the site and that further environmental assessments are needed before a plan to manage that remaining waste can be prepared. We have not received any further communication from the prosecutor in response to the report.

Lascadoil Contamination in Animal Feed

An investigation by the U.S. Food and Drug Administration (FDA) and the Michigan Department of Agriculture is ongoing to determine how lascadoil, oil for industrial use, made its way into the feed supply of certain turkey and hog feed mills in Michigan. The contaminated feed is believed to have caused the deaths of approximately 50,000 turkeys and the contamination (but not death) of at least 20,000 hogs in August 2014. While it remains an open question as to how the lascadoil made its way into the animal feed, the allegations are that lascadoil intended to be sold for reuse as biofuel was inadvertently sold to producers of soy oil, who in turn, unknowingly sold the contaminated soy oil to fat recycling vendors, who then sold the contaminated soy oil to feed mills for use in animal feed. Indeed, related to the FDA investigation, Shur-Green Farms LLC, a producer of soy oil, recalled certain batches of soy oil allegedly contaminated with lascadoil on October 13, 2014.

During the course of its investigation, the FDA identified the process used to manufacture Zoetis' Avatec® (lasalocid sodium) and Bovatec® (lasalocid sodium) products as one possible source of the lascadoil, since lascadoil contains small amounts of lasalocid, the active ingredient found in both products. Zoetis has historically sold any and all industrial lascadoil byproduct to an environmental company specializing in waste disposal. The environmental company is contractually obligated to incinerate the lascadoil or resell it for use in biofuel. Under the terms of the agreement, the environmental company is expressly prohibited from reselling the lascadoil to be used as a component in food. The FDA inspected the Zoetis site where Avatec and Bovatec are manufactured, and found no evidence that Zoetis was involved in the contamination of the animal feed.

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On March 10, 2015, plaintiffs Restaurant Recycling, LLC (Restaurant Recycling) and Superior Feed Ingredients, LLC (Superior), both of whom are in the fat recycling business, filed a complaint in the Seventeenth Circuit Court for the State of Michigan against Shur-Green Farms alleging negligence and breach of warranty claims arising from their purchase of soy oil allegedly contaminated with lascadoil. Plaintiffs resold the allegedly contaminated soy oil to turkey feed mills for use in feed ingredient. Plaintiffs also named Zoetis as a defendant in the complaint alleging that Zoetis failed to properly manufacture its products and breached an implied warranty that the soy oil was fit for use at turkey and hog mills. Zoetis was served with the complaint on June 3, 2015, and we filed our answer, denying all allegations, on July 15, 2015. On August 10, 2015, several of the turkey feed mills filed a joint complaint against Restaurant Recycling, Superior, Shur-Green Farms and others, alleging claims for negligence, misrepresentation, and breach of warranty, arising out of their alleged purchase and use of the contaminated soy oil. The complaint raises only one count against Zoetis for negligence. We filed an answer to the complaint on November 2, 2015, denying the allegation. On May 16, 2016, two additional turkey producers filed a complaint in the Seventeenth Circuit Court for the State of Michigan against the company, Restaurant Recycling, Superior, Shur-Green Farms and others, alleging claims for negligence and breach of warranties. We filed an answer to the complaint on June 20, 2016, denying the allegations. The Court has consolidated all three cases in Michigan for purposes of discovery and disposition. On July 28, 2017, we filed a motion for summary disposition on the grounds that no genuine issues of material fact exist and that Zoetis is entitled to judgment as a matter of law. On October 19, 2017, the Court granted our motion and dismissed all claims against Zoetis. On October 31, 2017, the plaintiffs filed motions for reconsideration of the Court’s decision granting summary disposition. The Court denied all such motions on December 6, 2017, for the same reasons cited in the Court’s original decision. On December 27, 2017, the plaintiffs filed a request with the Michigan Court of Appeals seeking an interlocutory (or interim) appeal of the lower Court’s decision, which we opposed on January 17, 2018. On July 5, 2018, the Court of Appeals denied the plaintiffs’ request for an interlocutory appeal. The case has been remanded back to the lower Court, where it will proceed to trial (unless settled) without Zoetis. The plaintiffs will have the option to seek an appeal of the lower Court’s decision granting Zoetis’ motion for summary disposition after the final adjudication of the case.

Other Matters

The European Commission published a decision on alleged competition law infringements by several human health pharmaceutical companies on June 19, 2013. One of the involved legal entities is Alpharma LLC (previously having the name Zoetis Products LLC). Alpharma LLC’s involvement is solely related to its human health activities prior to Pfizer's acquisition of King/Alpharma. Zoetis paid a fine in the amount of Euro 11 million (approximately $14 million) and was reimbursed in full by Pfizer in accordance with the Global Separation Agreement between Pfizer and Zoetis, which provides that Pfizer is obligated to indemnify Zoetis for any liabilities arising out of claims not related to its animal health assets. We filed an appeal of the decision on September 6, 2013 to the General Court of the European Union. On September 8, 2016, the General Court upheld the decision of the European Commission. On November 25, 2016, we filed an appeal to the Court of Justice of the European Union. On January 24, 2019, the Court heard oral argument on the merits of the appeal, and we now await the Court’s decision.

B. Guarantees and Indemnifications

In the ordinary course of business and in connection with the sale of assets and businesses, we indemnify our counterparties against certain liabilities that may arise in connection with the transaction or related to activities prior to the transaction. These indemnifications typically pertain to environmental, tax, employee and/or product-related matters and patent-infringement claims. If the indemnified party were to make a successful claim pursuant to the terms of the indemnification, we would be required to reimburse the loss. These indemnifications are generally subject to threshold amounts, specified claim periods and other restrictions and limitations. Historically, we have not paid significant amounts under these provisions and, as of December 31, 2018, recorded amounts for the estimated fair value of these indemnifications were not significant.

C. Purchase Commitments

As of December 31, 2018, we have agreements totaling $434 million to purchase goods and services that are enforceable and legally binding and include amounts relating to contract manufacturing, information technology services and potential milestone payments deemed reasonably likely to occur.

D. Commitments under Operating Leases

We have facilities, vehicles and office equipment under various non-cancellable operating leases with third parties. Total rent expense, net of sublease rental income, was approximately $45 million in 2018, $27 million in 2017 and $25 million in 2016.

Future minimum lease payments under non-cancellable operating leases as of December 31, 2018, follow:

(MILLIONS OF DOLLARS)	2019	2020	2021	2022	2023	After 2023	Total
Maturities	$ 38	$ 30	$ 24	$ 21	$ 15	$ 45	$ 173

18. Segment Information

A. Segment Information

We manage our operations through two geographic regions. Each operating segment has responsibility for its commercial activities. Within each of these operating segments, we offer a diversified product portfolio, including vaccines, parasiticides, anti-infectives, medicated feed additives, animal health diagnostics and other pharmaceuticals, for both livestock and companion animal customers.

Operating Segments

Our operating segments are the United States and International. Our chief operating decision maker uses the revenue and earnings of the two operating segments, among other factors, for performance evaluation and resource allocation.

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Other Costs and Business Activities

Certain costs are not allocated to our operating segment results, such as costs associated with the following:

- Other business activities, includes our CSS contract manufacturing results, our human health diagnostics business, and expenses associated with our dedicated veterinary medicine research and development organization, research alliances, U.S. regulatory affairs and other operations focused on the development of our products. Other R&D-related costs associated with non-U.S. market and regulatory activities are generally included in the international commercial segment.
- Corporate, includes platform functions such as business technology, facilities, legal, finance, human resources, business development, and communications, among others. These costs also include compensation costs and other miscellaneous operating expenses not charged to our operating segments, as well as interest income and expense.
- Certain transactions and events such as (i) Purchase accounting adjustments, where we incur expenses associated with the amortization of fair value adjustments to inventory, intangible assets and property, plant and equipment; (ii) Acquisition-related activities, where we incur costs associated with acquiring and integrating newly acquired businesses, such as transaction costs and integration costs; and (iii) Certain significant items, which comprise substantive, unusual items that, either as a result of their nature or size, would not be expected to occur as part of our normal business on a regular basis, such as certain costs related to becoming an independent public company, restructuring charges and implementation costs associated with our cost-reduction/productivity initiatives that are not associated with an acquisition, certain asset impairment charges, certain legal and commercial settlements and the impact of divestiture-related gains and losses.
- Other unallocated includes (i) certain overhead expenses associated with our global manufacturing operations not charged to our operating segments; (ii) certain costs associated with business technology and finance that specifically support our global manufacturing operations; (iii) certain supply chain and global logistics costs; and (iv) procurement costs.

Segment Assets

We manage our assets on a total company basis, not by operating segment. Therefore, our chief operating decision maker does not regularly review any asset information by operating segment and, accordingly, we do not report asset information by operating segment. Total assets were approximately $10.8 billion and $8.6 billion at December 31, 2018 and 2017, respectively.

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Selected Statement of Income Information

	Earnings			Depreciation and Amortization[a]		
	Year Ended December 31,			Year Ended December 31,		
(MILLIONS OF DOLLARS)	2018	2017	2016	2018	2017	2016
U.S.						
Revenue	$2,877	$2,620	$2,447			
Cost of Sales	606	565	551			
Gross Profit	2,271	2,055	1,896			
Gross Margin	78.9 %	78.4 %	77.5 %			
Operating Expenses	456	421	388			
Other (income)/deductions	—	(3)	—			
U.S. Earnings	1,815	1,637	1,508	$34	$29	$27
International						
Revenue[b]	2,890	2,643	2,390			
Cost of Sales	929	889	833			
Gross Profit	1,961	1,754	1,557			
Gross Margin	67.9 %	66.4 %	65.1 %			
Operating Expenses	559	515	501			
Other (income)/deductions	3	(1)	2			
International Earnings	1,399	1,240	1,054	48	44	44
Total operating segments	3,214	2,877	2,562	82	73	71
Other business activities	(337)	(313)	(309)	23	23	25
Reconciling Items:						
Corporate	(666)	(625)	(684)	59	52	45
Purchase accounting adjustments	(162)	(88)	(99)	143	88	84
Acquisition-related costs	(63)	(10)	(4)	—	—	—
Certain significant items[c]	43	(25)	(57)	—	—	7
Other unallocated	(339)	(291)	(181)	1	6	8
Total Earnings[d]	$1,690	$1,525	$1,228	$308	$242	$240

(a) Certain production facilities are shared. Depreciation and amortization is allocated to the reportable operating segments based on estimates of where the benefits of the related assets are realized.

(b) Revenue denominated in euros was $745 million in 2018, $660 million in 2017, and $632 million in 2016.

(c) For 2018, certain significant items primarily includes: (i) a net gain of $42 million related to the divestiture of certain agribusiness products within our International segment, (ii) a net gain of $18 million related to the relocation of a manufacturing site in China, (iii) charges related to our operational efficiency initiative and supply network strategy initiative of $9 million; and (iv) employee termination costs in Europe of $7 million.

For 2017, certain significant items primarily includes: (i) charges related to our operational efficiency initiative and supply network strategy initiative of $20 million; (ii) Zoetis stand-up costs of $3 million; (iii) employee termination costs in Europe of $4 million, (iv) income related to a commercial settlement in Mexico recorded in 2014 and 2016 of $5 million; and (iv) charges of $3 million associated with changes to our operating model.

For 2016, certain significant items primarily includes: (i) Zoetis stand-up costs of $23 million; (ii) charges related to our operational efficiency initiative and supply network strategy initiative of $10 million; (iii) charges related to a commercial settlement in Mexico of $14 million; and (iv) charges of $10 million associated with changes to our operating model.

(d) Defined as income before provision for taxes on income.

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B. Geographic Information

Property, plant and equipment, less accumulated depreciation, by geographic region follow:

	As of December 31,	
(MILLIONS OF DOLLARS)	2018	2017
U.S.	$1,188	$1,047
International	470	388
Property, plant and equipment, less accumulated depreciation	$1,658	$1,435

19. Selected Quarterly Financial Data (Unaudited)

(MILLIONS OF DOLLARS, EXCEPT PER COMMON SHARE DATA)	FIRST	SECOND	THIRD	FOURTH
2018				
Revenue	$1,366	$ 1,415	$1,480	$ 1,564
Costs and expenses[(a)]	947	973	1,015	1,132
Restructuring charges and certain acquisition-related costs	2	5	47	14
Income before provision for taxes on income	417	437	418	418
Provision for taxes on income	67	55	71	73
Net income before allocation to noncontrolling interests	350	382	347	345
Net loss attributable to noncontrolling interests	(2)	(2)	—	—
Net income attributable to Zoetis	$352	$ 384	$347	$ 345
Earnings per common share--basic	$0.72	$ 0.79	$0.72	$ 0.72
Earnings per common share--diluted	$0.72	$ 0.79	$0.71	$ 0.71
2017				
Revenue	$1,231	$ 1,269	$1,347	$ 1,460
Costs and expenses[(a)]	895	924	926	1,018
Restructuring (reversals)/charges and certain acquisition-related costs	(1)	—	8	12
Income before provision for taxes on income	337	345	413	430
Provision for taxes on income[(b)]	98	98	117	350
Net income before allocation to noncontrolling interests	239	247	296	80
Net income/(loss) attributable to noncontrolling interests	1	—	(2)	(1)
Net income attributable to Zoetis	$238	$ 247	$298	$ 81
Earnings per common share--basic	$0.48	$ 0.50	$0.61	$ 0.17
Earnings per common share--diluted	$0.48	$ 0.50	$0.61	$ 0.16

(a) Costs and expenses in the fourth quarter reflect seasonal trends.

(b) For the fourth quarter of 2017, includes a provisional net tax charge related to the impact of the Tax Act enacted on December 22, 2017. See Note 8. Tax Matters.

Basic and diluted EPS are computed independently for each of the periods presented. Accordingly, the sum of the quarterly EPS amounts may not agree to the total for the year.

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20. Subsequent Events

On February 14, 2019, the General Court of the European Union annulled the January 11, 2016 decision of the European Commission (EC) that selective tax advantages granted by Belgium under its "excess profit" tax scheme constitute illegal state aid. The EC has two months in which to appeal the decision of the General Court of the European Union. The company is reviewing the decision and assessing its potential impact. The company has not reflected any potential benefits in its consolidated financial statements as of December 31, 2018 associated with the decision of the General Court of the European Union.

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Zoetis Inc. and Subsidiaries
Schedule II—Valuation and Qualifying Accounts

(MILLIONS OF DOLLARS)	Balance, Beginning of Period	Additions	Deductions	Balance, End of Period
Year Ended December 31, 2018				
Allowance for doubtful accounts	$ 25	$ 2	$ (3)	$ 24
Year Ended December 31, 2017				
Allowance for doubtful accounts	$ 30	$ 3	$ (8)	$ 25
Year Ended December 31, 2016				
Allowance for doubtful accounts	$ 34	$ 7	$ (11)	$ 30

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Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures

Disclosure Controls and Procedures

An evaluation was carried out under the supervision and with the participation of the company's management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934). Based upon that evaluation as of December 31, 2018, the company's Chief Executive Officer and Chief Financial Officer concluded that the company's disclosure controls and procedures are effective at a reasonable level of assurance in alerting them in a timely manner to material information required to be disclosed in our periodic reports filed with the SEC.

Management's Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined under Rule 13a-15(f) and 15d-15(f) of the Securities Exchange Act of 1934. Under the supervision and with the participation of management, including the company's Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on our evaluation under the framework in Internal Control - Integrated Framework, our management concluded that our internal control over financial reporting was effective as of December 31, 2018. The effectiveness of our internal control over financial reporting as of December 31, 2018, has been audited by KPMG LLP, an independent registered public accounting firm, as stated in its report included herein.

On July 31, 2018, Zoetis completed the acquisition of Abaxis, Inc. (Abaxis). While Zoetis has extended its oversight and monitoring processes that support our internal control over financial reporting, as well as its disclosure controls and procedures, we continue to integrate the acquired operations of Abaxis. As such, we have excluded Abaxis from our evaluation of internal control over financial reporting. This exclusion is in accordance with the U.S. Securities and Exchange Commission's general guidance that a recently acquired business may be omitted from the assessment scope for up to one year from the date of acquisition. Abaxis is a wholly-owned subsidiary with total assets (excluding acquired goodwill and intangible assets which are included within the scope of this assessment) that represented approximately 3% of Zoetis’s consolidated total assets, and total revenue that represented approximately 2% of Zoetis’s consolidated revenue, as of and for the year ended December 31, 2018.

Changes in Internal Controls

During our most recent fiscal quarter, there has not been any change in our internal control over financial reporting (as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Securities Exchange Act of 1934) that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information.

None.

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PART III

Item 10. Directors, Executive Officers and Corporate Governance.

Information about our directors is incorporated by reference from the discussion under the heading Item 1-Election of Directors in our 2019 Proxy Statement. Information about compliance with Section 16(a) of the Exchange Act is incorporated by reference from the discussion under the heading Ownership of Our Common Stock in our 2019 Proxy Statement. Information about the Zoetis Code of Conduct governing our employees, including our Chief Executive Officer, Chief Financial Officer Principal Accounting Officer and Controller, and the Code of Business Conduct and Ethics for members of our Board of Directors, is incorporated by reference from the discussions under the headings Corporate Governance at Zoetis in our 2019 Proxy Statement. Information regarding the procedures by which our stockholders may recommend nominees to our Board of Directors is incorporated by reference from the discussion under the heading Corporate Governance at Zoetis 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 Corporate Governance at Zoetis in our 2019 Proxy Statement.

Executive Officers

Juan Ramón Alaix

Age 67

Chief Executive Officer and Director

Mr. Alaix has served as our Chief Executive Officer and Director since July 2012. From 2006 to 2012, he served as President of Pfizer Animal Health, our predecessor company, and was responsible for its overall strategic direction and financial performance. Under his leadership, the company grew to become a $4.3 billion enterprise in 2012. Mr. Alaix has more than 35 years' experience in finance and management, including 20 years in the pharmaceutical industry. He joined Pfizer in 2003 and held various positions, including Regional President of Central/Southern Europe for Pfizer's pharmaceutical business. Prior to that, Mr. Alaix held various positions with Pharmacia, including as Country President of Spain, from 1998 until Pharmacia's acquisition by Pfizer in 2003. Earlier in his career he served in general management with Rhône-Poulenc Rorer in Spain and Belgium. In 2013, Mr. Alaix completed a two-year term as President of the International Federation for Animal Health ("IFAH"), now known as HealthforAnimals, and he continues to serve as a member of its board and executive committee. HealthforAnimals represents manufacturers of veterinary medicines, vaccines and other animal health products in both developed and emerging markets. In 2018, he was awarded the Deming Cup for Operational Excellence from the Columbia Business School for his achievements as CEO of Zoetis. A native of Spain, Mr. Alaix received a graduate degree in economics from the Universidad de Madrid.

Glenn David

Age 47

Executive Vice President and Chief Financial Officer

Mr. David has served as our Executive Vice President and Chief Financial Officer since August 2016. With more than 20 years of experience in finance and operations, Mr. David has played a key role in leading the financial operations for Zoetis since its initial public offering in 2013. He served as our Senior Vice President of Finance Operations from 2013 to 2016 and as acting Chief Financial Officer from April 2014 through August 2014. Mr. David joined Pfizer in 1999 and held various financial roles, including Vice President of Global Finance for Pfizer Animal Health, our predecessor company, and Vice President of Finance for the U.S. Primary Care franchise.

Heidi C. Chen

Age 52

Executive Vice President, General Counsel and Corporate Secretary

Ms. Chen has served as our Executive Vice President and General Counsel since October 2012, and as our Corporate Secretary since July 2012. Prior to that, Ms. Chen was Vice President and Chief Counsel of Pfizer Animal Health, our predecessor company, from 2009 to 2012. Ms. Chen joined Pfizer in 1998 and held various legal and compliance positions of increasing responsibility, including lead counsel for Pfizer's Established Products (generics) business.

Andrew Fenton

Age 55

Executive Vice President and Chief Digital and Technology Officer
Mr. Fenton has served as our Executive Vice President and Chief Digital and Technology Officer since December 2018, having previously served as Executive Vice President and Chief Information Officer (CIO) from August 2016 to December 2018 and having joined Zoetis as Senior Vice President and CIO in 2014. From November 2013 to September 2014, Mr. Fenton was a partner and principal with EY in the Life Sciences practice supporting CIO Transformation Services, and from October 2005 to November 2013, he was Senior Vice President and CIO of Warner Chilcott. He has also held senior positions at IBM Global Services and at PricewaterhouseCoopers in the Pharmaceutical Practice.
Catherine A. Knupp
Age 58
Executive Vice President and President of Research and Development

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Dr. Knupp has served as our Executive Vice President and President of Research and Development since October 2012. From 2005 to 2012, she served as Vice President of Pfizer's Veterinary Medicine Research and Development business unit. Dr. Knupp joined Pfizer in July 2001 and held various positions, including Vice President of Pfizer's Michigan laboratories for Pharmacokinetics, Dynamics and Metabolism.

Roxanne Lagano

Age 54

Executive Vice President, Chief Human Resources Officer and Communications

Ms. Lagano has served as our Executive Vice President and Chief Human Resources Officer since November 2012 and was given responsibility for corporate communications in 2015. Prior to joining Zoetis, Ms. Lagano was Senior Vice President, Global Compensation, Benefits and Wellness for Pfizer. Ms. Lagano joined Pfizer in 1997 and held various positions, including Senior Director, Business Transactions, Pfizer Worldwide Human Resources.

Clinton A. Lewis, Jr.

Age 52

Executive Vice President and Group President, International Operations, Commercial Development, Global Genetics, Aquatic Health and Human Medical Diagnostics

Mr. Lewis has served as our Executive Vice President and Group President, International Operations, Commercial Development, Global Genetics and Aquatic Health since March 2018, and was given responsibility for Human Medical Diagnostics in January 2019. He previously served as our Executive Vice President and President, International Operations from May 2015 to February 2018. From October 2012 through April 2015, he served as our Executive Vice President and President of U.S. Operations, and from 2007 to 2012, he was President of U.S. Operations for Pfizer Animal Health, our predecessor company. Mr. Lewis joined Pfizer in 1988 and held various positions across sales, marketing and general management, including Senior Vice President of Sales, U.S.; General Manager, Pfizer Caribbean; and General Manager, U.S. Anti-Infectives.

Kristin C. Peck

Age 47

Executive Vice President and Group President, U.S. Operations, Business Development and Strategy

Ms. Peck has served as our Executive Vice President and Group President, U.S. Operations, Business Development and Strategy since March 2018, having previously served as our Executive Vice President and President, U.S. Operations from May 2015 to February 2018. From October 2012 through April 2015, she served as our Executive Vice President and Group President. Ms. Peck joined Pfizer in 2004 and held various positions, including Executive Vice President, Worldwide Business Development and Innovation; Senior Vice President, Worldwide Business Development, Strategy and Innovation; Vice President, Strategic Planning; Chief of Staff to the Vice Chairman; and Senior Director, Strategic Planning. Ms. Peck also served as a member of Pfizer's Executive Leadership Team.

Roman Trawicki

Age 55

Executive Vice President and President of Global Manufacturing and Supply

Mr. Trawicki has served as our Executive Vice President and President, Global Manufacturing and Supply since May 2015. He joined Zoetis in January 2015 as President, Global Manufacturing and Supply. From 2009 to 2014, he was GE Healthcare's General Manager of Global Supply Chain for Medical Diagnostics, where he focused on diagnostics, injectable contrast media and nuclear medicines.

Item 11. Executive Compensation.

Information about director compensation is incorporated by reference from the discussion under the heading Corporate Governance at Zoetis in our 2019 Proxy Statement. Information about executive compensation is incorporated by reference from the discussion under the heading 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 Ownership of Our Common Stock in our 2019 Proxy Statement.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

Information about certain relationships and transactions with related parties is incorporated by reference from the discussion under the heading Transactions with Related Persons in our 2019 Proxy Statement. Information about director independence is incorporated by reference from the discussion under the heading Corporate Governance at Zoetis-Corporate Governance Principles and Practices-Director Independence in our 2019 Proxy Statement.

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Item 14. Principal Accounting Fees and Services.

Information about the fees for professional services rendered by our independent registered public accounting firm in 2018 and 2017 is incorporated by reference from the discussion under the heading Item 3—Ratification of Appointment of KPMG as our Independent Registered Public Accounting Firm for 2019 in our 2019 Proxy Statement. Our Audit Committee's policy on pre-approval of audit and permissible non-audit services of our independent registered public accounting firm is incorporated by reference from the discussion under the heading Item 3—Ratification of Appointment of KPMG as our Independent Registered Public Accounting Firm for 2019 in our 2019 Proxy Statement.

See Notes to Consolidated Financial Statements, which are an integral part of these statements.

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PART IV

Item 15. Exhibits, Financial Statement Schedules.

The following entire exhibits are included:

A. (1) The financial statements and notes to financial statements are filed as part of this report in Item 8. Financial Statements and Supplementary Data.

(2) The financial statement schedule is listed in the Index to Financial Statements.

(3) The exhibits are listed in the Index to Exhibits.

Item 16. Form 10-K Summary.

None.

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EXHIBITS

The exhibits listed below and designated with a † are filed with this report. The exhibits listed below and not so designated are incorporated by reference to the documents following the descriptions of the exhibits.

Exhibit 2.1	Agreement and Plan of Merger, dated as of May 15, 2018, by and among Zoetis Inc., Zeus Merger Sub, Inc. and Abaxis, Inc. (incorporated by reference to Exhibit 2.1 to Zoetis Inc.'s Current Report on Form 8-K filed on May 16, 2018 (File No. 001-35797))
Exhibit 3.1	Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to Zoetis Inc.'s Quarterly Report on Form 10-Q filed on November 10, 2014 (File No. 001-35797))
Exhibit 3.2	By-laws of the Registrant, amended and restated as of February 19, 2016 (incorporated by reference to Exhibit 3.2 to Zoetis Inc.’s 2015 Annual Report on Form 10-K filed on February 24, 2016 (File No. 001-35797))
Exhibit 4.1	Specimen Class A Common Stock Certificate (incorporated by reference to Exhibit 4.1 of Zoetis Inc.’s registration statement on Form S-1 (File No. 333-183254))
Exhibit 4.2	Indenture, dated as of January 28, 2013, between Zoetis Inc. and Deutsche Bank Trust Company Americas, as trustee (incorporated by reference to Zoetis Inc.'s registration statement on Form S-1 (File No. 333-183254))
Exhibit 4.3	First Supplemental Indenture, dated as of January 28, 2013, between Zoetis Inc. and Deutsche Bank Trust Company Americas, as trustee (incorporated by reference to Exhibit 4.3 of Zoetis Inc.'s registration statement on Form S-1 (File No. 333-183254))
Exhibit 4.4	Second Supplemental Indenture, dated November 13, 2015, between Zoetis Inc. and Deutsche Bank Trust Company Americas, as trustee (incorporated by reference to Exhibit 4.2 to Zoetis Inc.’s Current Report on Form 8-K filed on November 13, 2015 (File No. 001-35797))
Exhibit 4.5	Third Supplemental Indenture, dated September 12, 2017, between Zoetis Inc. and Deutsche Bank Trust Company Americas, as trustee (incorporated by reference to Exhibit 4.2 to Zoetis Inc.’s Current Report on Form 8-K filed on September 12, 2017 (File No. 001-35797))
Exhibit 4.6	Fourth Supplemental Indenture, dated August 20, 2018, between Zoetis Inc. and Deutsche Bank Trust Company Americas, as trustee (incorporated by reference to Exhibit 4.2 to Zoetis Inc.’s Current Report on Form 8-K filed on August 20, 2018 (File No. 001-35797))
Exhibit 4.7	Form of 3.450% Senior Notes due 2020 (incorporated by reference to Exhibit 4.2 to Zoetis Inc.’s Current Report on Form 8-K filed on November 13, 2015 (File No. 001-35797))
Exhibit 4.8	Form of 3.250% Senior Notes due 2023 (incorporated by reference to Exhibit 4.3 of Zoetis Inc.'s registration statement on Form S-1 (File No. 333-183254))
Exhibit 4.9	Form of 4.500% Senior Notes due 2025 (incorporated by reference to Exhibit 4.2 to Zoetis Inc.’s Current Report on Form 8-K filed on November 13, 2015 (File No. 001-35797))

Exhibit 4.10	Form of 4.700% Senior Notes due 2043 (incorporated by reference to Exhibit 4.3 of Zoetis Inc.'s registration statement on Form S-1 (File No. 333-183254))
Exhibit 4.11	Form of 3.000% Senior Notes due 2027 (incorporated by reference to Exhibit 4.2 to Zoetis Inc.'s Current Report on Form 8-K filed on September 12, 2017 (File No. 001-35797))
Exhibit 4.12	Form of 3.950% Senior Notes due 2027 (incorporated by reference to Exhibit 4.2 to Zoetis Inc.'s Current Report on Form 8-K filed on September 12, 2017 (File No. 001-35797))
Exhibit 4.13	Form of Floating Rate Senior Notes due 2021 (incorporated by reference to Exhibit 4.2 to Zoetis Inc.'s Current Report on Form 8-K filed on August 20, 2018 (File No. 001-35797))
Exhibit 4.14	Form of 3.250% Senior Notes due 2021 (incorporated by reference to Exhibit 4.2 to Zoetis Inc.'s Current Report on Form 8-K filed on August 20, 2018 (File No. 001-35797))
Exhibit 4.15	Form of 3.900% Senior Notes due 2028 (incorporated by reference to Exhibit 4.2 to Zoetis Inc.'s Current Report on Form 8-K filed on August 20, 2018 (File No. 001-35797))
Exhibit 4.16	Form of 4.450% Senior Notes due 2048 (incorporated by reference to Exhibit 4.2 to Zoetis Inc.'s Current Report on Form 8-K filed on August 20, 2018 (File No. 001-35797))
Exhibit 10.1	Global Separation Agreement, dated February 6, 2013, by and between Zoetis Inc. and Pfizer Inc. (incorporated by reference to

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	Exhibit 10.1 to Zoetis Inc.'s 2012 Annual Report on Form 10-K filed on March 28, 2013 (File No. 001-35797))
Exhibit 10.2	Tax Matters Agreement, dated February 6, 2013, by and between Zoetis Inc. and Pfizer Inc. (incorporated by reference to Exhibit 10.3 to Zoetis Inc.'s 2012 Annual Report on Form 10-K filed on March 28, 2013 (File No. 001-35797))
Exhibit 10.3	Research and Development Collaboration and License Agreement, dated February 6, 2013, by and between Zoetis Inc. and Pfizer Inc. (incorporated by reference to Exhibit 10.4 to Zoetis Inc.'s 2012 Annual Report on Form 10-K filed on March 28, 2013 (File No. 001-35797))
Exhibit 10.4	Pfizer Inc. 2004 Stock Plan, as Amended and Restated (incorporated by reference to Exhibit 10.6 of Zoetis Inc.'s registration statement on Form S-1 (File No. 333-183254))*
Exhibit 10.5	Patent and Know-How License Agreement (Zoetis as licensor), dated February 6, 2013, by and between Zoetis Inc. and Pfizer Inc. (incorporated by reference to Exhibit 10.8 to Zoetis Inc.'s 2012 Annual Report on Form 10-K filed on March 28, 2013 (File No. 001-35797))
Exhibit 10.6	Patent and Know-How License Agreement (Pfizer as licensor), dated February 6, 2013, by and between Zoetis Inc. and Pfizer Inc. (incorporated by reference to Exhibit 10.9 to Zoetis Inc.'s 2012 Annual Report on Form 10-K filed on March 28, 2013 (File No. 001-35797))
Exhibit 10.7	Trademark and Copyright License Agreement, dated February 6, 2013, by and between Zoetis Inc. and Pfizer Inc. (incorporated by reference to Exhibit 10.10 to Zoetis Inc.'s 2012 Annual Report on Form 10-K filed on March 28, 2013 (File No. 001-35797))
Exhibit 10.8	Environmental Matters Agreement, dated February 6, 2013, by and between Zoetis Inc. and Pfizer Inc. (incorporated by reference to Exhibit 10.13 to Zoetis Inc.'s 2012 Annual Report on Form 10-K filed on March 28, 2013) (File No. 001-35797))
Exhibit 10.9	Zoetis Inc. 2013 Equity and Incentive Plan (incorporated by reference to Exhibit 10.16 to Zoetis Inc.'s 2012 Annual Report on Form 10-K filed on March 28, 2013 (File No. 001-35797))*
Exhibit 10.10	Sale of Business Severance Plan (incorporated by reference to Exhibit 10.17 to Zoetis Inc.'s 2012 Annual Report on Form 10-K filed on March 28, 2013 (File No. 001-35797))*
Exhibit 10.11	Revolving Credit Agreement, dated as of December 21, 2016, among Zoetis Inc., the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent (incorporated by reference to Exhibit 10.1 of Zoetis Inc.'s Current Report on Form 8-K filed on December 21, 2016 (File No. 001-35797))
Exhibit 10.11.1	Extension Agreement to Revolving Credit Agreement, dated as of December 21, 2017, among Zoetis Inc., the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent (incorporated by reference to Exhibit 10.16.1 to Zoetis Inc.'s 2017 Annual Report on Form 10-K filed on February 15, 2018 (File No. 001-35797))

Exhibit 10.11.2	Extension Agreement to Revolving Credit Agreement, dated as of December 21, 2018, among Zoetis Inc., the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent†
Exhibit 10.12	Form of Indemnification Agreement for directors and officers (incorporated by reference to Exhibit 10.19 of Zoetis Inc.'s registration statement on Form S-1 (File No. 333-183254))
Exhibit 10.13	Form of Restricted Stock Unit Award agreement (incorporated by reference to Exhibit 10.21 to Zoetis Inc.’s 2012 Annual Report on Form 10-K filed on March 28, 2013 (File No. 001-35797))*
Exhibit 10.14	Form of Stock Option Award agreement (incorporated by reference to Exhibit 10.22 to Zoetis Inc.’s 2012 Annual Report on Form 10-K filed on March 28, 2013 (File No. 001-35797))*
Exhibit 10.15	Form of Non-Employee Director Deferred Stock Unit Award agreement (incorporated by reference to Exhibit 10.23 on Form 10-K filed on March 28, 2013 (File No. 001-35797))*
Exhibit 10.16	Form of Cash Award agreement (incorporated by reference to Exhibit 10.24 to Zoetis Inc.’s 2012 Annual Report on Form 10-K filed on March 28, 2013 (File No. 001-35797))*
Exhibit 10.17	Form of Performance Restricted Stock Unit Award Agreement, effective as of February 27, 2015 (incorporated by reference to Exhibit 99.1 to Zoetis Inc.’s Current Report on Form 8-K filed on March 4, 2015 (File No. 001-35797))*
Exhibit 10.18	Form of Restricted Stock Unit Award Agreement, effective as of February 27, 2015 (incorporated by reference to Exhibit 99.2 to Zoetis Inc.’s Current Report on Form 8-K filed on March 4, 2015 (File No. 001-35797))*
Exhibit 10.19	Form of Stock Option Award Agreement, effective as of February 27, 2015 (incorporated by reference to Exhibit 99.3 to Zoetis Inc.’s Current Report on Form 8-K filed on March 4, 2015 (File No. 001-35797))*
Exhibit 10.20	Form of Cash Award Agreement, effective as of February 27, 2015 (incorporated by reference to Exhibit 99.4 to Zoetis Inc.’s Current Report on Form 8-K filed on March 4, 2015 (File No. 001-35797))*

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Exhibit 10.21	Zoetis Amended and Restated Non-Employee Director Deferred Compensation Plan (incorporated by reference to Exhibit 10.1 to Zoetis Inc.'s Quarterly Report on Form 10-Q filed on November 1, 2018 (File No. 001-35797))*
Exhibit 10.22	Zoetis Executive Severance Plan (incorporated by reference to Exhibit 10.1 to Zoetis Inc.'s Quarterly Report on Form 10-Q filed on August 14, 2013 (File No. 001-35797))*
Exhibit 10.23	Zoetis Supplemental Savings Plan, as amended and restated, effective September 15, 2014 (incorporated by reference to Exhibit 10.4 to Zoetis Inc.'s Quarterly Report on Form 10-Q filed on November 10, 2014 (File No. 001-35797))*
Exhibit 10.24	Zoetis Equity Deferral Plan, effective November 1, 2014 (incorporated by reference to Exhibit 10.5 to Zoetis Inc.'s Quarterly Report on Form 10-Q filed on November 10, 2014 (File No. 001-35797))*
Exhibit 10.25	364-Day Revolving Credit Agreement, dated as of July 27, 2018, among Zoetis Inc., the lenders party thereto and Barclays Bank PLC, as administrative agent (incorporated by reference to Exhibit 10.1 to Zoetis Inc.'s Quarterly Report on Form 10-Q filed on August 2, 2018 (File No. 001-35797))
Exhibit 21.1	Subsidiaries of the Registrant †
Exhibit 23.1	Consent of KPMG LLP †
Exhibit 24.1	Power of Attorney (included as part of signature page) †
Exhibit 31.1	Certification by the Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 †
Exhibit 31.2	Certification by the Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 †
Exhibit 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 †
Exhibit 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 †
EX-101.INS	INSTANCE DOCUMENT
EX-101.SCH	SCHEMA DOCUMENT
EX-101.CAL	CALCULATION LINKBASE DOCUMENT
EX-101.LAB	LABELS LINKBASE DOCUMENT
EX-101.PRE	PRESENTATION LINKBASE DOCUMENT
EX-101.DEF	DEFINITION LINKBASE DOCUMENT

† Filed herewith

* Management contracts or compensatory plans or arrangements

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SIGNATURES

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

Dated: February 14, 2019

Zoetis Inc.

By: /S/ JUAN RAMÓN ALAIX
Juan Ramón Alaix
Chief Executive Officer and Director

We, the undersigned directors and officers of Zoetis Inc., hereby severally constitute Juan Ramón Alaix and Heidi Chen, and each of them singly, our true and lawful attorneys with full power to them and each of them to sign for us, in our names in the capacities indicated below, any and all amendments to this Annual Report on Form 10-K filed with the Securities and Exchange Commission.

Under the requirements of the Securities Exchange Act of 1934, this report was signed by the following persons on behalf of the Registrant and in the capacities and on the date indicated.

Name	Title	Date
/S/ JUAN RAMÓN ALAIX Juan Ramón Alaix	Chief Executive Officer and Director (Principal Executive Officer)	February 14, 2019
/S/ GLENN DAVID Glenn David	Executive Vice President and Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	February 14, 2019
/S/ MICHAEL B. MCCALLISTER Michael B. McCallister	Chairman and Director	February 14, 2019
/S/ PAUL M. BISARO Paul M. Bisaro	Director	February 14, 2019
/S/ FRANK A. D'AMELIO Frank A. D’Amelio	Director	February 14, 2019
/S/ SANJAY KHOSLA Sanjay Khosla	Director	February 14, 2019
/s/ GREGORY NORDEN Gregory Norden	Director	February 14, 2019
/S/ LOUISE M. PARENT Louise M. Parent	Director	February 14, 2019
/S/ WILLIE M. REED Willie M. Reed	Director	February 14, 2019
/S/ LINDA RHODES Linda Rhodes	Director	February 14, 2019

/s/ ROBERT W. SCULLY Robert W. Scully	Director	February 14, 2019
/S/ WILLIAM C. STEERE, JR. William C. Steere, Jr.	Director	February 14, 2019