

BALL Corp
Form 10-K
February 22, 2019
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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D. C. 20549

FORM 10-K

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

For the fiscal year ended December 31, 2018

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 001-07349

Ball Corporation

State of Indiana	35-0160610
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

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10 Longs Peak Drive, P.O. Box 5000
Broomfield, Colorado 80021-2510
(Address of registrant's principal executive office) (Zip Code)

Registrant's telephone number, including area code: (303) 469-3131

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

Title of each class	Name of each exchange on which registered
Common Stock, without par value	New York Stock Exchange

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

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

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

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months. YES NO

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

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Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, or a non-accelerated filer. See definitions of “large accelerated filer”, “accelerated filer”, “smaller reporting company” and “emerging growth company” in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer Non-accelerated filer 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 Act). YES NO

The aggregate market value of voting stock held by non-affiliates of the registrant was \$12.3 billion based upon the closing market price and common shares outstanding as of June 30, 2018.

Number of shares and rights outstanding as of the latest practicable date.

Class	Outstanding at February 20, 2019
Common Stock, without par value	334,338,125 shares

DOCUMENTS INCORPORATED BY REFERENCE

1. Proxy statement to be filed with the Commission within 120 days after December 31, 2018, to the extent indicated in Part III.

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Ball Corporation

ANNUAL REPORT ON FORM 10-K

For the year ended December 31, 2018

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PART I.

Item 1. Business

Ball Corporation and its consolidated subsidiaries (collectively, Ball, the company, we or our) is one of the world's leading suppliers of metal packaging to the beverage, personal care and household products industries. The company was organized in 1880 and incorporated in the state of Indiana, United States of America (U.S.), in 1922. Our packaging products are produced for a variety of end uses and are manufactured in facilities around the world. We also provide aerospace and other technologies and services to governmental and commercial customers within our aerospace segment. In 2018, our total consolidated net sales were \$12 billion. Our packaging businesses were responsible for 90 percent of our net sales, with the remaining 10 percent contributed by our aerospace business.

Our largest product line is aluminum beverage containers. We also produce aerosol containers, extruded aluminum aerosol containers and aluminum slugs.

We sell our packaging products mainly to large multinational beverage, personal care and household products companies with which we have developed long-term relationships. This is evidenced by our high customer retention and large number of long-term supply contracts. While we have a diversified customer base, we sell a significant portion of our packaging products to major companies and brands, as well as to numerous regional customers. Our significant customers include: The Coca-Cola Company and its affiliated bottlers, Anheuser-Busch InBev n.v./s.a., Molson Coors Brewing Company and Unilever N.V.

Our aerospace business is a leader in the design, development and manufacture of innovative aerospace systems for civil, commercial and national cyber security aerospace markets. It produces spacecraft, instruments and sensors, radio frequency systems and components, data exploitation solutions and a variety of advanced aerospace technologies and products that enable deep space missions.

We are headquartered in Broomfield, Colorado, and our stock is listed for trading on the New York Stock Exchange under the ticker symbol BLL.

Our Strategy

Our overall business strategy is defined by our Drive for 10 vision, which at its highest level, is a mindset around perfection, with a greater sense of urgency around our future success. Launched in 2011, our Drive for 10 vision encompasses five strategic levers that are key to growing our businesses and achieving long-term success. These five levers are:

- Maximizing value in our existing businesses
- Expanding into new products and capabilities
- Aligning ourselves with the right customers and markets
- Broadening our geographic reach and
- Leveraging our know-how and technological expertise to provide a competitive advantage

We also maintain a clear and disciplined financial strategy focused on improving shareholder returns through:

- Seeking to deliver comparable diluted earnings per share growth of 10 percent to 15 percent per annum over the long-term
- Maximizing free cash flow generation
- Increasing Economic Value Added (EVA®) dollars

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The cash generated by our businesses is used primarily: (1) to finance the company's operations, (2) to fund strategic capital investments, (3) to service the company's debt and (4) to return value to our shareholders via stock buy-backs and dividend payments. From time to time, we have evaluated and expect to continue to evaluate possible transactions that we believe will benefit the company and our shareholders, which may include strategic acquisitions, divestitures of parts of our company or joint ventures. At any time we may be engaged in discussions or negotiations with respect to possible transactions or may have entered into non-binding letters of intent. There can be no assurance if or when we will enter into any such transactions or the terms of such transactions. The compensation of many of our employees is tied directly to the company's performance through our EVA®-based incentive programs.

Sustainability

Sustainability is a key part of our business strategy at Ball. By enhancing the unique sustainability credentials of our products along their life cycles, we position our metal containers as the most sustainable packaging choice and help our customers grow their businesses. Aluminum is an infinitely recyclable material. It also has the highest scrap value of all commonly used packaging substrates. These qualities make cans an increasingly attractive option for sustainability-conscious consumers and brands who acknowledge that metal packaging is a true enabler of a circular economy in terms of economic value, recyclability, real recycling and the avoidance of down cycling. In 2017, Resource Recycling Systems recognized aluminum beverage cans as the most recycled beverage package in the world, with a global weighted average recycling rate for aluminum of 69 percent. This finding solidifies the aluminum can as the leader in real recycling, where the package is collected and then transformed into an item of equal value (product to product or material to material recycling). In comparison, only 43 percent of PET and 46 percent of glass bottles were collected for recycling, although not necessarily recycled.

In some of Ball's markets such as Brazil, China and several European countries, recycling rates for aluminum beverage cans are at or above 90 percent. The most recently available recycling rates for aluminum beverage cans are 97 percent in Brazil in 2017, 74 percent in Europe in 2015, and 49 percent in the U.S. in 2016.

We focus our sustainability efforts on product stewardship, operational excellence, talent management and community engagement. In our global operations, we work on continuous improvement of employee safety, energy and water efficiency, waste generation and air emissions.

Because metal recycling saves resources and uses significantly less energy than primary metal production, the biggest opportunity to further enhance the positive environmental attributes of metal packaging is to increase recycling rates. In markets where recycling rates are below where we believe they should be, we help establish and financially support packaging collection and recycling initiatives. These initiatives typically focus on collaborating with public and private partners to create effective collection and recycling systems, including education of consumers about the sustainability benefits of metal packaging.

Our Reportable Segments

Ball Corporation reports its financial performance in four reportable segments: (1) beverage packaging, North and Central America; (2) beverage packaging, South America; (3) beverage packaging, Europe and (4) aerospace. Ball also has investments in the U.S., Guatemala, Panama, South Korea and Vietnam that are accounted for using the equity method of accounting and, accordingly, those results are not included in segment sales or earnings. Financial information related to each of our segments is included in Note 3 to the consolidated financial statements within Item 8 of this Annual Report on Form 10-K (annual report).

On July 31, 2018, Ball sold its U.S. steel food and steel aerosol packaging business and formed a joint venture, Ball Metalpack. See Note 4 to the consolidated financial statements within Item 8 of this annual report for further information. As a result of the sale, the remaining global aluminum aerosol and Argentine steel aerosol businesses of the legacy food and aerosol packaging segment are now a non-reportable segment that manufactures and sells aerosol containers, extruded aluminum aerosol containers and aluminum slugs (aerosol packaging). For comparative periods, the entire former food and aerosol packaging segment is now presented within other.

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Beverage Packaging, North and Central America, Segment

Beverage packaging, North and Central America is Ball's largest segment, accounting for 40 percent of consolidated net sales in 2018. Metal beverage containers are primarily sold under multi-year supply contracts to fillers of carbonated soft drinks, beer, energy drinks and other beverages.

Metal beverage containers and ends are produced at 17 manufacturing facilities in the U.S., one in Canada and two in Mexico. The beverage packaging, North and Central America, segment also includes interests in three joint ventures that are accounted for using the equity method.

The North American beverage container manufacturing industry is relatively mature. Where growth or contractions are projected in certain markets or for certain products, Ball undertakes selected capacity increases or decreases primarily in its existing facilities to meet market demand. A meaningful portion of the industry-wide reduction in demand for standard 12-ounce aluminum cans for the carbonated soft drink market is being offset with growing demand for specialty container volumes from new and existing customers and consumer demand. During 2016, we began production at our newly constructed beverage can and end manufacturing facility in Monterrey, Mexico. In order to serve growing customer demand for specialty cans in the southwestern U.S., the company constructed a four line beverage packaging facility in Goodyear, Arizona, which began production in the second quarter of 2018.

According to publicly available information and company estimates, the North American beverage container industry represents approximately 112 billion units. Five companies manufacture substantially all of the metal beverage containers in the U.S., Canada and Mexico. Ball produced approximately 46 billion recyclable aluminum beverage containers in North America in 2018, which represented approximately 44 percent of the aggregate production in these countries. Historically, sales volumes of metal beverage containers in North America tend to be highest during the period from April through September. All of the beverage containers produced by Ball in the U.S., Canada and Mexico are made of aluminum. In North and Central America, five suppliers provide the majority of our aluminum can and end sheet requirements.

Beverage containers are sold based on price, quality, service, innovation and sustainability in a highly competitive market, which is relatively capital intensive and characterized by facilities that run more or less continuously in order to operate profitably. In addition, the metal beverage container competes aggressively with other packaging materials which include meaningful industry positions by the glass bottle in the packaged beer industry and the polyethylene terephthalate (PET) bottle in the carbonated soft drink and water industries.

We believe we have limited our exposure to changes in the cost of aluminum ingot as a result of the inclusion of provisions in most metal beverage container sales contracts to pass through aluminum price changes, as well as through the use of derivative instruments.

Our beverage can manufacturing facility in Reidsville, North Carolina, ceased production at the end of June 2017, the Birmingham, Alabama, facility ceased production during the second quarter of 2018 and the Chatsworth, California, and Longview, Texas, facilities ceased production during the third quarter of 2018. These facilities produced beverage cans in a variety of sizes and their customers are now supplied by the company's other U.S. facilities.

Beverage Packaging, South America, Segment

The beverage packaging, South America, segment accounted for 15 percent of Ball's consolidated net sales in 2018. Our operations consist of 12 facilities, 10 in Brazil and one each in Argentina and Chile. For the countries where we operate, the South American beverage container market is approximately 31 billion containers, and we are the largest producer in this region with an estimated 53 percent of South American shipments in 2018. Four companies currently manufacture substantially all of the metal beverage containers in Brazil.

The company's South American beverage facilities produced approximately 16 billion aluminum beverage containers in 2018. Historically, sales volumes of beverage containers in South America tend to be highest during the period from September through December. In South America, two suppliers provide virtually all our aluminum sheet requirements with certain requirements also being imported from Asia.

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In order to support contracted volumes for aluminum beverage packaging across Paraguay, Argentina, Chile and Bolivia, the company is constructing a one-line beverage can and end manufacturing facility in Paraguay and will add capacity to its Buenos Aires, Argentina, and Santiago, Chile, facilities. The Paraguay facility is expected to begin production in the second half of 2019. The company ceased operations at its Cuiabá, Brazil, beverage packaging facility in July 2018 and has relocated equipment from the Cuiabá facility to other existing facilities in South America.

We believe we have limited our exposure to changes in the cost of aluminum ingot as a result of the inclusion of provisions in most metal beverage container sales contracts to pass through aluminum ingot price changes, as well as through the use of derivative instruments.

Beverage Packaging, Europe, Segment

The beverage packaging, Europe, segment accounted for 23 percent of Ball's consolidated net sales in 2018. Our European operations consist of 20 facilities throughout Europe. The European beverage container market is approximately 67 billion containers, including Russia and excluding Turkey, and we are the largest producer with an estimated 43 percent of European shipments. The European market is highly regional in terms of sales growth rates and packaging mix. Four companies manufacture substantially all of the metal beverage containers in Europe. Our European beverage facilities produced 30 billion beverage containers in 2018, the vast majority of which were produced from aluminum.

Historically, sales volumes of metal beverage containers in Europe tend to be highest during the period from May through August with a smaller increase in demand leading up to the winter holiday season in the U.K. offset by much lower demand in Russia. Much like other parts of the world, the metal beverage container competes aggressively with other packaging materials used by the European beer and carbonated soft drink industries. The glass bottle is heavily utilized in the packaged beer industry, while the PET container is utilized in the carbonated soft drink, beer, juice and water industries.

European raw material supply contracts generally have longer term agreements. In Europe, five aluminum suppliers and one steel supplier provide almost all of our requirements. Aluminum is traded primarily in U.S. dollars, while the functional currencies of our European operations are various other currencies. The company minimizes its exchange rate risk using derivative and supply contracts in local currencies. Purchase and sales contracts generally include fixed-price, floating or pass-through aluminum ingot component pricing arrangements.

In order to support growth for beverage cans in the Iberian Peninsula, the company constructed a two-line, aluminum beverage can manufacturing facility near Madrid, Spain, with a majority of the facility's capacity secured under a long-term customer contract. The facility is fully operational and produces multiple can sizes utilizing both lines. In the third quarter of 2017, our beverage packaging container and end production facilities in Recklinghausen,

Germany, ceased production, and the capacity was transitioned to existing European Ball facilities. In December 2018, we closed a one-line beverage packaging facility located in San Martino, Italy.

Aerospace Segment

Ball's aerospace segment, which accounted for 10 percent of consolidated net sales in 2018, includes national defense hardware, antenna and video tactical solutions, civil and operational space hardware and systems engineering services. The segment develops spacecraft, sensors and instruments, radio frequency systems and other advanced technologies for the civil, commercial and national security aerospace markets. The majority of the aerospace business involves work under contracts, generally from one to five years in duration, as a prime contractor or subcontractor for the U.S. Department of Defense (DoD), the National Aeronautics and Space Administration (NASA) and other U.S. government agencies. The company competes against both large and small prime contractors and subcontractors for these contracts. Contracts funded by the various agencies of the federal government represented 99 percent of segment sales in 2018.

Intense competition and long operating cycles are key characteristics of both the company's business and the aerospace and defense industry. It is common in the aerospace and defense industry for work on major programs to be shared among a number of companies. A company competing to be a prime contractor may, upon ultimate award of the contract to a competitor, become a subcontractor for the ultimate prime contracting company. It is not unusual to compete for a contract award with a peer company and, simultaneously, perform as a supplier to or a customer of that same competitor on other contracts, or vice versa.

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Geopolitical events and shifting executive and legislative branch priorities have resulted in an increase in opportunities over the past decade in areas matching our aerospace segment's core capabilities in space hardware. The businesses include hardware and services sold primarily to U.S. customers, with emphasis on space science and exploration, environmental and earth sciences, and defense and intelligence applications. Major activities frequently involve the design, manufacture and testing of satellites, remote sensors and ground station control hardware and software, as well as related services such as launch vehicle integration and satellite operations.

Other hardware activities include target identification, warning and attitude control systems and components; cryogenic systems for reactant storage, and associated sensor cooling devices; star trackers, which are general-purpose stellar attitude sensors; and fast-steering mirrors. Additionally, the aerospace segment provides diversified technical services and products to government agencies, prime contractors and commercial organizations for a broad range of information warfare, electronic warfare, avionics, intelligence, training and space system needs.

Contracted backlog in the aerospace segment was \$2.2 billion and \$1.75 billion at December 31, 2018 and 2017, respectively, and consisted of the aggregate contract value of firm orders, excluding amounts previously recognized as revenue. The 2018 contracted backlog includes \$1.1 billion expected to be recognized in revenues during 2019, with the remainder expected to be recognized in revenues in the years thereafter. Unfunded amounts included in backlog for certain firm government orders, which are subject to annual funding, were \$1.4 billion and \$1.3 billion at December 31, 2018 and 2017, respectively. Year-over-year comparisons of backlog are not necessarily indicative of the trend of future operations due to the nature of varying delivery and milestone schedules on contracts, funding of programs and the uncertainty of timing of future contract awards. Uncertainties in the federal government budgeting process could delay the funding, or even result in cancellation of certain programs currently in our reported backlog.

Other

Other consists of non-reportable segments located in Africa, Middle East and Asia (beverage packaging, AMEA) and Asia Pacific (beverage packaging, Asia Pacific) that manufacture and sell metal beverage containers; a non-reportable segment that manufactures and sells aerosol containers, extruded aluminum aerosol containers and aluminum slugs (aerosol packaging); undistributed corporate expenses; intercompany eliminations and other business activities.

Beverage Packaging, AMEA

Our metal beverage container operations in the AMEA region consist of five aluminum container and end manufacturing facilities—two in India and one each in Egypt, Saudi Arabia and Turkey. The beverage container market in these regions produced 27 billion cans in 2018, and we are one of six major producers in this region with 15 percent of shipments. Our manufacturing facility in Saudi Arabia, Rexam United Arab Can Manufacturing Limited, is a joint venture 51 percent owned by Ball and consolidated in our results. Additionally, Ball has an ownership interest in an equity method joint venture in South Korea.

The company opened a metal beverage container facility in Sri City, India, near Chennai, which began production in the second quarter of 2017.

Beverage Packaging, Asia Pacific

The metal beverage container market in the People's Republic of China (PRC) is 44 billion containers, of which Ball's operations represented an estimated 12 percent in 2018. Our percentage of the industry makes us one of the largest manufacturers of metal beverage containers in the PRC. We, along with five other manufacturers, account for approximately 75 percent of the production. Our operations include the manufacture of aluminum containers and ends in four facilities in the PRC and one aluminum container facility in Myanmar. Our aluminum can and end sheet requirements are provided by several suppliers.

Ball has ownership interests in beverage packaging manufacturing operations in Vietnam and Thailand.

On December 13, 2018, we announced an agreement to sell our beverage packaging facilities in China for upfront consideration of approximately \$225 million plus potential additional consideration related to the future relocation of an existing facility in China. The transaction is subject to customary regulatory approvals and is expected to close during the second half of 2019.

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Aerosol Packaging

Our aerosol packaging operations manufacture and sell extruded aluminum aerosol containers, steel aerosol containers and aluminum slugs, which represented less than 5 percent of Ball's consolidated net sales in 2018. There are 10 manufacturing facilities that manufacture these products – four in Europe, two in Argentina, one each in the U.S., Canada, Mexico and India. The aerosol packaging market in these countries produced approximately 5 billion aluminum aerosol units in 2018 and we are one of the major producers in this combined area with shipments of 1.1 billion aluminum aerosol packaging containers, representing approximately 20 percent of total shipments in these markets. Our aluminum and steel aerosol sheet requirements are provided by several suppliers.

Patents

In the opinion of the company's management, none of our active patents or groups of patents is material to the successful operation of our business as a whole. We manage our intellectual property portfolio to obtain the durations necessary to achieve our business objectives.

Research and Development

Research and development (R&D) efforts in our packaging segments are primarily directed toward packaging innovation, specifically the development of new features, sizes, shapes and types of containers, as well as new uses for existing containers. Other R&D efforts in these segments seek to improve manufacturing efficiencies and the overall sustainability of our products. Our packaging R&D activities are primarily conducted in a technical center located in Westminster, Colorado.

In our aerospace business, we continue to focus our R&D activities on the design, development and manufacture of innovative aerospace products and systems. This includes the production of spacecraft, instruments and sensors, radio frequency and system components, data exploitation solutions and a variety of advanced aerospace technologies and products that enable deep space missions. Our aerospace R&D activities are conducted at various locations in the U.S.

Additional information regarding company R&D activity is contained in Note 1 to the consolidated financial statements within Item 8 of this annual report, as well as in Item 2, "Properties."

Employee Relations

At the end of 2018, the company and its subsidiaries employed approximately 17,500 employees, including approximately 7,300 employees in the U.S. Details of collective bargaining agreements are included within Item 1A, Risk Factors, of this annual report.

Where to Find More Information

Ball Corporation is subject to the reporting and other information requirements of the Securities Exchange Act of 1934, as amended (Exchange Act). Reports and other information filed with the Securities and Exchange Commission (SEC) pursuant to the Exchange Act may be inspected and copied at the public reference facility maintained by the SEC in Washington, D.C. The SEC maintains a website at www.sec.gov containing our reports, proxy materials and other items. The company also maintains a website at www.ball.com/investors on which it provides a link to access Ball's SEC reports free of charge, under the link "Financials."

The company has established written Ball Corporation Corporate Governance Guidelines; a Ball Corporation Executive Officers and Board of Directors Business Ethics Statement; a Business Ethics Code of Conduct; and charters for its Audit Committee, Nominating/Corporate Governance Committee, Human Resources Committee and Finance Committee. These documents are on the company's website at www.ball.com/investors, under the link "Corporate Governance." A copy may also be obtained upon request from the company's corporate secretary. The company's sustainability report and updates on Ball's progress are available at www.ball.com/sustainability.

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The company intends to post on its website the nature of any amendments to the company's codes of ethics that apply to executive officers and directors, including the chief executive officer, chief financial officer and controller, and the nature of any waiver or implied waiver from any code of ethics granted by the company to any executive officer or director. These postings will appear on the company's website at www.ball.com/investors, under the link "Corporate Governance."

Item 1A. Risk Factors

Any of the following risks could materially and adversely affect our business, financial condition or results of operations.

We may not realize all of the anticipated benefits of the acquisition of Rexam, or those benefits may take longer to realize than expected. We may also encounter significant unexpected difficulties in integrating the two businesses.

Our ability to realize the anticipated benefits of the acquisition of Rexam will depend, to a large extent, on our ability to integrate our beverage packaging business with Rexam's business. Combining two independent businesses is a complex, costly and time-consuming process. As a result, we are required to devote significant management attention and resources to integrating the business practices and operations of the company and the Rexam business we acquired. The integration process may disrupt the combined business and, if implemented ineffectively, could preclude the realization of the full benefits of the acquisition that are currently expected. Our failure to meet the challenges involved in integrating the two businesses and to realize the anticipated benefits of the acquisition could cause an interruption of, or a loss of momentum in, the activities of the company and could adversely affect the company's results of operations. In addition, the overall integration of the businesses may result in material unanticipated problems, expenses, liabilities, competitive responses, loss of customer relationships and diversion of management's attention. The possible difficulties of combining the operations of the companies also include, among others:

- difficulties in achieving anticipated cost savings, synergies, business opportunities and growth prospects from combining our business with that of Rexam;
- difficulties in integrating operations, business practices and systems;
- difficulties in assimilating and retaining employees;
- difficulties in managing the expanded operations of a significantly larger and more complex combined company;
- challenges in retaining existing customers and suppliers;
 - challenges in obtaining new customers and suppliers;
- potential unknown liabilities and unforeseen increased expenses associated with the acquisition; and
- challenges in retaining and attracting key personnel.

Many of these factors are or will be outside of our control and any one of them could result in increased costs, decreases in the amount of expected revenues and diversion of management's time and energy, which could materially impact the business, financial condition and results of operations of the company. In addition, even if the operations of the businesses of the company and Rexam are integrated successfully, we may not realize the full benefits of the acquisition, including the synergies, cost savings or sales or growth opportunities that we expect, or the full benefits may not be achieved within the anticipated time frame, or at all. Additional unanticipated costs may be incurred in the integration of the businesses of the company and Rexam. All of these factors could adversely affect the earnings of the company, decrease or delay the expected accretive effect of the acquisition, or negatively impact the price of the company's common stock. As a result, we cannot assure that the combination of the company's and Rexam's beverage packaging businesses will result in the realization of the full benefits anticipated from the acquisition.

In connection with satisfying requirements under the antitrust laws of the U.S., the European Union and Brazil, and obtaining associated approvals and clearances, we were required to effect significant divestitures. As a result of the required divestitures, we may not realize all or a significant portion of the anticipated benefits of the Rexam acquisition, including anticipated synergies, and the company may otherwise suffer other negative consequences that may materially and adversely affect the company's business, financial condition and results of operations and, to the extent that the current price of the company's common stock reflects an assumption that the anticipated benefits of the acquisition will be realized, the price per share for the company's common stock could be negatively impacted.

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We have a significant level of debt that could have important consequences for our business and any investment in our securities.

The company had \$6.7 billion of interest-bearing debt at December 31, 2018. Such indebtedness could have significant consequences for our business and any investment in our securities, including:

- increasing our vulnerability to adverse economic, industry or competitive developments;
- requiring more of our cash flows from operations to be dedicated to the payment of principal and interest on our indebtedness, limiting our cash flow available to fund our operations, capital expenditures and future business opportunities or returning additional cash to our shareholders;
- restricting us from making additional acquisitions;
- limiting our ability to obtain additional financing for working capital, capital expenditures, product development, debt service requirements, acquisitions and general corporate or other purposes; and
 - limiting our flexibility in planning for, or reacting to, changes in our business or market conditions and placing us at a competitive disadvantage compared to our competitors who may be less leveraged and who, therefore, may be able to take advantage of opportunities that our leverage prevents us from exploiting.

Our business, operating results and financial condition are subject to particular risks in certain regions of the world.

We may experience an operating loss in one or more regions of the world for one or more periods, which could have a material adverse effect on our business, operating results or financial condition. Moreover, overcapacity, which often leads to lower prices, exists in certain regions in which we operate and may persist even if demand grows. Our ability to manage such operational fluctuations and to maintain adequate long-term strategies in the face of such developments will be critical to our continued growth and profitability.

The loss of a key customer, or a reduction in its requirements, could have a significant negative impact on our sales.

We sell a majority of our packaging products to a relatively limited number of major beverage, personal care and household product companies, some of which operate in multiple geographical markets we serve.

Although the majority of our customer contracts are long-term, these contracts, unless they are renewed, expire in accordance with their respective terms and are terminable under certain circumstances, such as our failure to meet quality, volume or market pricing requirements. Because we depend on a relatively limited number of major customers, our business, financial condition or results of operations could be adversely affected by the loss of any of these customers, a reduction in the purchasing levels of these customers, a strike or work stoppage by a significant

number of these customers' employees or an adverse change in the terms of the supply agreements with these customers.

The primary customers for our aerospace segment are U.S. government agencies or their prime contractors. Our contracts with these customers are subject to several risks, including funding cuts and delays, technical uncertainties, budget changes, government shutdowns, competitive activity and changes in scope.

We face competitive risks from many sources that may negatively impact our profitability.

Competition within the packaging and aerospace industries is intense. Increases in productivity, combined with existing or potential surplus capacity in the industry, have maintained competitive pricing pressures. The principal methods of competition in the general packaging industry are price, innovation, sustainability, service and quality. In the aerospace industry, they are technical capability, cost and schedule. Some of our competitors may have greater financial, technical and marketing resources, and some may currently have excess capacity. Our current or potential competitors may offer products at a lower price or products that are deemed superior to ours. The global economic environment has resulted in reductions in demand for our products in some instances, which, in turn, could increase these competitive pressures.

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We are subject to competition from alternative products, which could result in lower profits and reduced cash flows.

Our metal packaging products are subject to significant competition from substitute products, particularly plastic carbonated soft drink bottles made from PET, single serve beer bottles and other beverage containers made of glass, cardboard or other materials. Competition from plastic carbonated soft drink bottles is particularly intense in the U.S., Europe and the PRC. Certain of our aerospace products are also subject to competition from alternative products and solutions. There can be no assurance that our products will successfully compete against alternative products, which could result in a reduction in our profits or cash flow.

Our packaging businesses have a narrow product range, and our business would suffer if usage of our products decreased or if decreases occur in the demand for the beverages and other goods filled in our products.

The majority of our consolidated net sales were from the sale of beverage containers, and we expect to derive a significant portion of our future revenues and cash flows from the sale of beverage containers. Our business would suffer if the use of beverage containers decreased. Accordingly, broad acceptance by consumers of aluminum containers for a wide variety of beverages is critical to our future success. If demand for glass and PET bottles increases relative to metal containers, or the demand for aluminum containers does not develop as expected, our business, financial condition or results of operations could be materially adversely affected.

Changes in laws and governmental regulations may adversely affect our business and operations.

We and our customers and suppliers are subject to various federal, state, provincial and local laws and regulations, which have been increasing in number and complexity. Each of our, and their, facilities is subject to federal, state, provincial and local licensing and regulation by health, environmental, workplace safety and other agencies in multiple jurisdictions. Requirements of worldwide governmental authorities with respect to manufacturing, manufacturing facility locations within the jurisdiction, product content and safety, climate change, workplace safety and health, environmental, expropriation of assets and other standards could adversely affect our ability to manufacture or sell our products, and the ability of our customers and suppliers to manufacture and sell their products. In addition, we face risks arising from compliance with and enforcement of numerous and complex federal, state, provincial and local laws and regulations.

Enacted regulatory developments regarding the reporting and use of “conflict minerals” mined from the Democratic Republic of the Congo and adjoining countries could affect the sourcing, availability and price of minerals used in the manufacture of certain of our products. As a result, there may only be a limited pool of suppliers who provide conflict-free materials, and we cannot give assurance that we will be able to obtain such products in sufficient quantities or at competitive prices. Also, because our supply chains are complex, we may face reputational challenges with our customers and other stakeholders if we are unable to sufficiently verify the origins of all materials used in the

products that we sell. The compliance and reporting aspects of these regulations may result in incremental costs to the company. While deposit systems and other container-related legislation have been adopted in some jurisdictions, similar legislation has been defeated in public referenda and legislative bodies in many others. We anticipate that continuing efforts will be made to consider and adopt such legislation in the future. The packages we produce are widely used and perform well in U.S. states, Canadian provinces and European countries that have deposit systems, as well as in other countries worldwide.

Significant environmental, employment-related and other legislation and regulatory requirements exist and are also evolving. The compliance costs associated with current and proposed laws and potential regulations could be substantial, and any failure or alleged failure to comply with these laws or regulations could lead to litigation or governmental action, all of which could adversely affect our financial condition or results of operations.

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Our business, financial condition and results of operations are subject to risks resulting from broader geographic operations.

We derived more than 50 percent of our consolidated net sales from outside of the U.S. for the year ended December 31, 2018. The sizeable scope of operations outside of the U.S. may lead to more volatile financial results and make it more difficult for us to manage our business. Reasons for this include, but are not limited to, the following:

- political and economic instability;
- governments' restrictive trade policies;
- the imposition or rescission of duties, taxes or government royalties;
- exchange rate risks;
- difficulties in enforcement of contractual obligations and intellectual property rights; and
- the geographic, language and cultural differences between personnel in different areas of the world.

We are exposed to exchange rate fluctuations.

The financial results of the company are exposed to currency exchange rate fluctuations and an increased proportion of assets, liabilities and earnings denominated in non-U.S. dollar currencies. The company presents its financial statements in U.S. dollars and has a significant proportion of its net assets, debt and income in non-U.S. dollar currencies, primarily the euro, as well as the Russian ruble and other emerging market currencies. The company's financial results and capital ratios are therefore sensitive to movements in foreign exchange rates.

We manage our exposure to currency fluctuations, particularly our exposure to fluctuations in the euro to U.S. dollar exchange rate to attempt to mitigate the effect of cash flow and earnings volatility associated with exchange rate changes. We primarily use forward contracts and options to manage our currency exposures and, as a result, we experience gains and losses on these derivative positions offset, in part, by the impact of currency fluctuations on existing assets and liabilities.

If we fail to retain key management and personnel, we may be unable to implement our key objectives.

We believe our future success depends, in part, on our experienced management team. Unforeseen losses of key members of our management team without appropriate succession and/or compensation planning could make it difficult for us to manage our business and meet our objectives.

Decreases in our ability to develop or apply new technology and know-how may affect our competitiveness.

Our success depends partially on our ability to improve production processes and services. We must also introduce new products and services to meet changing customer needs. If we are unable to implement better production processes or to develop new products through research and development or licensing of new technology, we may not be able to remain competitive with other manufacturers. As a result, our business, financial condition or results of operations could be adversely affected.

Adverse weather and climate changes may result in lower sales.

We manufacture packaging products primarily for beverages. Unseasonably cool weather can reduce demand for certain beverages packaged in our containers. Climate change could have various effects on the demand for our products and the costs of inputs to our production in different regions around the world.

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We are vulnerable to fluctuations in the supply and price of raw materials.

We purchase aluminum, steel and other raw materials and packaging supplies from several sources. While all such materials are available from independent suppliers, raw materials are subject to fluctuations in price and availability attributable to a number of factors, including general economic conditions, commodity price fluctuations (particularly aluminum on the London Metal Exchange), the demand by other industries for the same raw materials and the availability of complementary and substitute materials. Although we enter into commodities purchase agreements from time to time and sometimes use derivative instruments to seek to manage our risk, we cannot ensure that our current suppliers of raw materials will be able to supply us with sufficient quantities at reasonable prices. Economic, operational and financial factors, as well as governmental action, could impact our suppliers, thereby causing supply shortages. Increases in raw material costs, including potential increases due to tariffs, sanctions, or other trade actions, could have a material adverse effect on our business, financial condition or results of operations. In the Americas, Europe and Asia, some contracts do not allow us to pass along increased raw material costs and we generally use derivative agreements to seek to manage this risk. Our hedging procedures may be insufficient and our results could be materially impacted if costs of materials increase. Due to the fixed-price contracts and derivative activities, while increasing raw material costs may not impact our near-term profitability, increased prices could decrease our sales volume over time.

Prolonged work stoppages at facilities with union employees could jeopardize our financial position.

As of December 31, 2018, 14 percent of our North American packaging facility employees and 56 percent of our European employees were covered by collective bargaining agreements. These collective bargaining agreements have staggered expirations during the next several years. Although we consider our employee relations to be generally good, a prolonged work stoppage or strike at any facility with union employees could have a material adverse effect on our business, financial condition or results of operations. In addition, we cannot ensure that upon the expiration of existing collective bargaining agreements, new agreements will be reached without union action or that any such new agreements will be on terms satisfactory to us.

Our aerospace segment is subject to certain risks specific to that business.

In our aerospace business, U.S. government contracts are subject to reduction or modification in the event of changes in requirements, and the government may also terminate contracts at its convenience pursuant to standard termination provisions. In such instances, Ball may be entitled to reimbursement for allowable costs and profits on authorized work that has been performed through the date of termination.

In addition, budgetary constraints and government shutdowns may result in further reductions to projected spending levels by the U.S. government. In particular, government expenditures are subject to the potential for automatic

reductions, generally referred to as “sequestration.” Sequestration may occur in any given year, resulting in significant additional reductions to spending by various U.S government defense and aerospace agencies on both existing and new contracts, as well as the disruption of ongoing programs. Even if sequestration does not occur, we expect that budgetary constraints and ongoing concerns regarding the U.S. national debt will continue to place downward pressure on agency spending levels. Due to these and other factors, overall spending on various programs could decline, which could result in significant reductions to revenue, cash flows, net earnings and backlog primarily in our aerospace segment.

We use estimates in accounting for many of our programs in our aerospace business, and changes in our estimates could adversely affect our future financial results.

We account for sales and profits on a portion of long-term contracts in our aerospace business in accordance with the percentage-of-completion method of accounting, using the cost-to-cost method to account for updates in estimates. The percentage-of-completion method of accounting involves the use of various estimating techniques to project revenues and costs at completion and various assumptions and projections relative to the outcome of future events, including the quantity and timing of product deliveries, future labor performance and rates, and material and overhead costs. These assumptions involve various levels of expected performance improvements. Under the cost-to-cost method, the impact of updates in our estimates related to units shipped to date or progress made to date is recognized immediately.

Because of the significance of the judgments and estimates described above, it is likely that we could record materially different amounts if we used different assumptions or if the underlying circumstances or estimates were to change.

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Our backlog includes both cost-type and fixed-price contracts. Cost-type contracts generally have lower profit margins than fixed-price contracts. Our earnings and margins may vary depending on the types of government contracts undertaken, the nature of the work performed under those contracts, the costs incurred in performing the work, the achievement of other performance objectives and their impact on our ability to receive fees. The fixed-price contracts could subject us to losses if we have cost overruns or if increases in our costs exceed the applicable escalation rate.

As a U.S. government contractor, we could be adversely affected by changes in regulations or any negative findings from a U.S. government audit or investigation.

Our aerospace business operates in a highly regulated environment and is routinely audited and reviewed by the U.S. government and its agencies, such as the Defense Contract Audit Agency (DCAA) and Defense Contract Management Agency (DCMA). These agencies review performance under our contracts, our cost structure and our compliance with applicable laws, regulations and standards, as well as the adequacy of, and our compliance with, our internal control systems and policies. Business systems that are subject to review under the DoD Federal Acquisition Regulation Supplement (DFARS) are purchasing, estimating, material management and accounting, as well as property and earned value management. Any costs ultimately found to be unallowable or improperly allocated to a specific contract will not be reimbursed or must be refunded if already reimbursed. If an audit uncovers improper or illegal activities, we may be subject to civil and criminal penalties, sanctions or suspension or debarment from doing business with the U.S. government. Whether or not illegal activities are alleged, the U.S. government also has the ability to decrease or withhold certain payments when it deems systems subject to its review to be inadequate. If such actions were to result in suspension or debarment, this could have a material adverse effect on our business.

Our business is subject to substantial environmental remediation and compliance costs.

Our operations are subject to federal, state, provincial and local laws and regulations in multiple jurisdictions relating to environmental hazards, such as emissions to air, discharges to water, the handling and disposal of hazardous and solid wastes and the clean-up of hazardous substances. We have been designated, along with numerous other companies, as a potentially responsible party for the clean-up of several hazardous waste sites. Based on available information, we do not believe that any costs incurred in connection with such sites will have a material adverse effect on our financial condition, results of operations, capital expenditures or competitive position. There is increased focus on the regulation of greenhouse gas emissions and other environmental issues worldwide.

Our business faces the potential of increased regulation on some of the raw materials utilized in our packaging operations.

Our operations are subject to federal, state, provincial and local laws and regulations in multiple jurisdictions relating to some of the raw materials, such as epoxy-based coatings utilized in our container making process. Epoxy-based

coatings may contain Bisphenol-A (BPA). Scientific evidence evaluated by regulatory agencies in the U.S., Canada, Europe, Japan, Australia and New Zealand has consistently shown these coatings to be safe for food contact at current levels, and these regulatory agencies have stated that human exposure to BPA from epoxy-based container coatings is well below safe exposure limits set by government bodies worldwide. A significant change in these regulatory agency statements, adverse information concerning BPA, or rulings made within certain federal, state, provincial and local jurisdictions could have a material adverse effect on our business, financial condition or results of operations. Ball recognizes that significant interest exists in non-epoxy based coatings, and we have been proactively working with coatings suppliers and our customers to transition to alternative coatings.

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Net earnings and net assets could be materially affected by an impairment of goodwill.

We have a significant amount of goodwill recorded on the consolidated balance sheet as of December 31, 2018. We are required at least annually to test the recoverability of goodwill. The recoverability test of goodwill is based on the current fair value of our identified reporting units. Fair value measurement requires assumptions and estimates of many critical factors, including revenue and market growth, operating cash flows and discount rates. If general market conditions deteriorate in portions of our business, we could experience a significant decline in the fair value of reporting units. This decline could lead to an impairment of all or a significant portion of the goodwill balance, which could materially affect our U.S. GAAP net earnings and net assets.

We continue to see the industry supply of beverage packaging exceed demand in China, resulting in significant pricing pressure and negative impacts on the profitability of our beverage packaging, Asia Pacific, reporting unit. The worsening business climate in Saudi Arabia has resulted in negative impacts to the profitability of our beverage packaging, AMEA, reporting unit. If it becomes an expectation that these situations will continue for an extended period of time, it may result in a noncash impairment of some or all of the goodwill associated with these reporting units, totaling \$78 million and \$100 million, respectively, at December 31, 2018. The company's annual goodwill impairment test completed in the fourth quarter of 2018 indicated the estimated fair value of the beverage packaging, Asia Pacific, and beverage packaging, AMEA, reporting units exceeded their carrying amounts, including goodwill, by 11 percent and 15 percent, respectively. The goodwill associated with the beverage packaging, Asia Pacific, reporting unit predominantly relates to the China beverage packaging facilities. On December 13, 2018, we announced an agreement to sell our beverage packaging facilities in China. The transaction is expected to close during the second half of 2019.

If the investments in Ball's pension plans, or in the multi-employer pension plans in which Ball participates, do not perform as expected, we may have to contribute additional amounts to the plans, which would otherwise be available for other general corporate purposes.

Ball maintains defined benefit pension plans covering substantially all of its North American employees and a significant portion of United Kingdom employees, which are funded based on certain actuarial assumptions. The plans' assets consist primarily of common stocks, fixed-income securities and, in the U.S., alternative investments. Market declines, longevity increases or legislative changes, such as the Pension Protection Act in the U.S., could result in a prospective decrease in our available cash flow and net earnings over time, and the recognition of an increase in our pension obligations could result in a reduction to our shareholders' equity. Additional risks exist related to the company's participation in multi-employer pension plans. Assets contributed to a multi-employer pension plan by one employer may be used to provide benefits to employees of other participating employers. If a participating employer in a multi-employer pension plan stops contributing to the plan, the unfunded obligations of the plan may be borne by the remaining participants. This could result in increases to our contributions to the plans as well as pension expense.

Restricted access to capital markets could adversely affect our short-term liquidity and prevent us from fulfilling our obligations under the notes issued pursuant to our bond indentures.

A reduction in global market liquidity could:

- restrict our ability to fund working capital, capital expenditures, research and development expenditures and other business activities;
- increase our vulnerability to general adverse economic and industry conditions, including the credit risks stemming from the economic environment;
- limit our flexibility in planning for, or reacting to, changes in our businesses and the industries in which we operate;
- restrict us from making strategic acquisitions or exploiting business opportunities; and
- limit, along with the financial and other restrictive covenants in our debt, among other things, our ability to borrow additional funds, dispose of assets, pay cash dividends or refinance debt maturities.

As market interest rates increase, our variable-rate debt will create higher debt service requirements, which adversely affects our cash flow. While we sometimes enter into agreements limiting our exposure, any such agreements may not offer complete protection from this risk.

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The global credit, financial and economic environment could have a negative impact on our results of operations, financial position or cash flows.

The overall credit, financial and economic environment could have significant negative effects on our operations, including:

- the creditworthiness of customers, suppliers and counterparties could deteriorate resulting in a financial loss or a disruption in our supply of raw materials;
- volatile market performance could affect the fair value of our pension assets, potentially requiring us to make significant additional contributions to our defined benefit pension plans to maintain prescribed funding levels;
- a significant weakening of our financial position or operating results could result in noncompliance with our debt covenants; and
- reduced cash flow from our operations could adversely affect our ability to execute our long-term strategy to increase liquidity, reduce debt, repurchase our stock and invest in our businesses.

Changes in U.S. generally accepted accounting principles (U.S. GAAP) and SEC rules and regulations could materially impact our reported results.

U.S. GAAP and SEC accounting and reporting changes are common and have become more frequent and significant over the past several years. These changes could have significant effects on our reported results when compared to prior periods and other companies and may even require us to retrospectively adjust prior periods. Additionally, material changes to the presentation of transactions in the consolidated financial statements could impact key ratios that analysts and credit rating agencies use to rate Ball and ultimately impact our ability to access the credit markets in an efficient manner.

Earnings and cash flows can be impacted by changes in tax laws.

As a U.S.-based multinational business, the company is subject to income tax in the U.S. and numerous jurisdictions outside the U.S. The relevant tax rules and regulations are complex, often changing and, in some cases, are interdependent. If these or other tax rules and regulations should change, the company's earnings and cash flows could be impacted.

In particular, the U.S. Tax Cuts and Jobs Act (the Act), which was signed into law on December 22, 2017, may continue to result in fluctuations in the company's net earnings and cash flows. The Act introduced major changes to U.S. income tax law that require significant judgment to interpret the impact of the provisions of the Act on the company's financial results.

Due to the timing of its enactment and the complexity associated with the provisions of the Act, the company made reasonable estimates of its effects where possible and recorded provisional estimates in its financial statements for the year ended December 31, 2017. The company has updated these provisional estimates as needed and its financial statements now reflect the final impact of these items based on currently available guidance, including proposed regulations. Given the various uncertainties and ambiguities that still remain with respect to the application of the Act, the Internal Revenue Service and the U.S. Treasury Department may issue subsequent guidance on the provisions of the Act, including final regulations, that differs from our current interpretations. The impact of any adjustments required as a result of such subsequent guidance could materially affect the company's financial results.

The company's worldwide provision for income taxes is determined, in part, through the use of significant estimates and judgments. Numerous transactions arise in the ordinary course of business where the ultimate tax determination is uncertain. The company undergoes tax examinations by various worldwide tax authorities on a regular basis. While the company believes its estimates of its tax obligations are reasonable, the final outcome after the conclusion of any tax examinations and any litigation could be materially different from what has been reflected in the company's historical financial statements.

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Increased information technology (IT) security threats and more sophisticated and targeted computer crime could pose a risk to our systems, networks, products, solutions and services.

The company's IT systems, or any third party's system on which the company relies, could fail on their own accord or may be vulnerable to a variety of interruptions or shutdowns, including interruptions or shutdowns due to natural disasters, power outages or telecommunications failures, terrorist attacks or failures during the process of upgrading or replacing software or hardware. Increased global IT security threats and more sophisticated and targeted computer crime also pose a risk to the security of our systems and networks and the confidentiality, availability and integrity of our data. As a provider of products and services to government and commercial customers, our aerospace business in particular may be the target of cyber-attacks, including attempts to gain unauthorized access to classified or sensitive information and networks. The company has a number of shared service centers where many of the company's IT systems are concentrated and any disruption at such a location could impact the company's business within the operating zones served by the impacted service center.

While we attempt to mitigate all of these risks by employing a number of measures, including employee training, comprehensive monitoring of our networks and systems, and maintenance of backup and protective systems, our systems, networks, products, solutions and services remain potentially vulnerable to advanced persistent threats or other IT disruptions. Depending on their nature and scope, such threats could potentially lead to the compromise of confidential information, improper use of our systems and networks, manipulation and destruction of data, defective products, harm to individuals or property, contractual or regulatory actions and fines, penalties and potential liabilities, production downtimes and operational disruptions, which in turn could adversely affect our reputation, competitiveness and results of operations. Data privacy and protection laws are evolving and present increasing compliance challenges, which may increase our costs, affect our competitiveness and could expose us to substantial fines or other penalties. In addition, a security breach that involves classified or other sensitive government information could subject us to civil or criminal penalties and could result in the loss of our secure facility clearance and other accreditation, loss of our government contracts, loss of access to classified information or debarment as a government contractor.

A material weakness in our internal control over financial reporting could, if not remediated, result in material misstatements in our financial statements.

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rule 13a-15(f) under the Securities Exchange Act. A material weakness is defined as a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of annual or interim financial statements will not be prevented or detected on a timely basis. If a material weakness is identified, management could conclude that internal control over financial reporting is not effective based on criteria set forth by the Committee of Sponsoring Organization of the Treadway Commission in "Internal Control—An Integrated Framework (2013)." If a material weakness is identified, a remediation plan would be designed to address the material weakness. If remedial measures are insufficient to address the material weakness, or if additional material weaknesses in internal control are discovered or occur in the future, our consolidated financial statements may contain material misstatements and we could be required to restate our financial results. As of

December 31, 2018, the company had no material weaknesses.

Significant developments stemming from the U.K.'s referendum on membership in the EU could have a material adverse effect on us.

In June 2016, the U.K. held a referendum and voted in favor of leaving the European Union (EU). This referendum has created political and economic uncertainty, particularly in the U.K. and the EU, and this uncertainty may last for years, particularly as the U.K. and the EU continue to negotiate the terms of withdrawal from the EU. Our business in the U.K., the EU and worldwide could be affected by uncertainty prior to and after the upcoming March 29, 2019, withdrawal date by the impact of the U.K.'s referendum and anticipated withdrawal from the EU. There are many ways in which our business could be affected, only some of which we can identify at the present time, such as supply chain constraints, increased material costs due to rising tariffs, effects on employee mobility and increased costs of doing business in the U.K. These effects could be more severe if the U.K. and the EU fail to reach an agreement prior to the withdrawal date.

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The referendum, and the likely withdrawal of the U.K. from the EU it triggers, has caused and, along with events that could occur in the future as a consequence of the U.K.'s withdrawal, including the possible breakup of the U.K. or the EU, may continue to cause significant volatility in global financial markets, including in global currency and debt markets. A failure by the U.K. and the EU to reach an agreement prior to the U.K.'s departure from the EU, scheduled for March 29, 2019, may increase this volatility. This volatility could cause a slowdown in economic activity in the U.K., Europe or globally, which could adversely affect our operating results and growth prospects. In addition, our business could be negatively affected by new trade agreements between the U.K. and other countries, including the U.S., and by the possible imposition of trade or other regulatory barriers in the U.K. These possible negative impacts, and others resulting from the U.K.'s actual or threatened withdrawal from the EU, may adversely affect our operating results and growth prospects.

Item 1B. Unresolved Staff Comments

There were no matters required to be reported under this item.

Item 2. Properties

The company's properties described below are well maintained, and management considers them to be adequate and utilized for their intended purposes.

Ball's corporate headquarters and the aerospace segment management offices are located in Broomfield, Colorado, U.S. The operations of the aerospace segment occupy a variety of company-owned and leased facilities in Colorado, U.S., which together aggregate 1.8 million square feet of office, laboratory, research and development, engineering and test and manufacturing space. Other aerospace operations carry on business in smaller company owned and leased facilities in other U.S. locations outside of Colorado.

The offices of the company's various beverage packaging, North and Central America, operations are located in Westminster, Colorado, U.S.; the offices for the beverage packaging, Europe, operations are located in Luton, U.K.; the offices for the beverage packaging, AMEA, operations are located in Dubai, United Arab Emirates; the offices for the beverage packaging, Asia Pacific, operations are located in Hong Kong; and the beverage packaging, South America, offices are located in Rio de Janeiro, Brazil. The company's research and development facilities are primarily located in Westminster, Colorado, U.S. The company has shared service centers located in Queretaro, Mexico; Belgrade, Serbia; and São José dos Campos, Brazil.

Information regarding the approximate size of the manufacturing locations for significant packaging operations, which are owned or leased by the company, is set forth below. Facilities in the process of being constructed, or that have ceased production, have been excluded from the list. Where certain locations include multiple facilities, the total approximate size for the location is noted. In addition to the facilities listed, the company leases other warehousing space.

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Plant Location	Approximate Floor Space in Square Feet
Beverage packaging, North and Central America:	
Conroe, Texas	315,000
Fairfield, California	337,000
Findlay, Ohio	733,000
Fort Atkinson, Wisconsin	250,000
Fort Worth, Texas	322,000
Golden, Colorado	509,000
Goodyear, Arizona	495,000
Kapolei, Hawaii	131,000
Kent, Washington	127,000
Monterrey, Mexico	440,000
Monticello, Indiana	356,000
Phoenix, Arizona	106,000
Queretaro, Mexico	253,000
Rome, Georgia	386,000
Saint Paul, Minnesota	165,000
Saratoga Springs, New York	290,000
Tampa, Florida	276,000
Wallkill, New York	312,000
Whitby, Ontario, Canada	205,000
Williamsburg, Virginia	400,000
Beverage packaging, South America:	
Aguas Claras, Brazil	292,000
Brasilia, Brazil	267,000
Buenos Aires, Argentina	272,000
Extrema, Brazil	375,000
Jacarei, Sao Paulo, Brazil	476,000
Manaus, Brazil	303,000
Pouso Alegre, Brazil	430,000
Recife, Brazil	455,000
Santa Cruz, Brazil	311,000
Santiago, Chile	275,000
Simoes Filho, Brazil	96,000
Tres Rios, Rio de Janeiro, Brazil	428,000
Beverage packaging, Europe:	
Argayash, Russia	256,000
Belgrade, Serbia	342,000
Bierne, France	274,000
Cabanillas del Campo, Spain	145,000

Ejpovice, Czech Republic	185,000
Fosie, Sweden	669,000
Fredericia, Denmark	329,000
Gelsenkirchen, Germany	378,000
La Selva, Spain	278,000
Lublin, Poland	280,000
Ludesch, Austria	337,000
Mantsala, Finland	230,000
Milton Keynes, United Kingdom	148,000
Mont, France	45,000
Naro Fominsk, Russia	544,000
Nogara, Italy	122,000
Vsevolozhsk, Russia	316,000
Wakefield, United Kingdom	269,000
Waterford, Ireland	129,000
Widnau, Switzerland	321,000

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Plant Location	Approximate Floor Space in Square Feet
Beverage packaging, AMEA:	
Cairo, Egypt	201,000
Dammam, Saudi Arabia	416,000
Manisa, Turkey	173,000
Mumbai, India	175,000
Sri City, India	215,000
Beverage packaging, Asia Pacific:	
Beijing, PRC	303,000
Hubei (Wuhan), PRC	416,000
Qingdao, PRC	326,000
Sanshui (Foshan), PRC	672,000
Yangon, Myanmar	432,000
Aerosol packaging:	
Ahmedabad, India	58,000
Beaurepaire, France	89,000
Bellegarde, France	124,000
Buenos Aires, Argentina	34,000
Devizes, United Kingdom	110,000
San Luis, Argentina	51,000
San Luis Potosí, Mexico	158,000
Sherbrooke, Quebec, Canada	100,000
Velim, Czech Republic	252,000
Verona, Virginia	72,000

Item 3. Legal Proceedings

Details of the company's legal proceedings are included in Note 23 to the consolidated financial statements within Item 8 of this annual report.

Item 4. Mine Safety Disclosures

Not applicable.

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Part II.

Item 5. Market for the Registrant's Common Stock and Related Stockholder Matters

Ball Corporation common stock (BLL) is listed for trading on the New York Stock Exchange. There were 6,048 common shareholders of record on February 20, 2019.

Common Stock Repurchases

The following table summarizes the company's repurchases of its common stock during the quarter ended December 31, 2018.

Purchases of Securities

(\$ in millions)	Total			
	Number of			
	Shares	Average	Total Number of	Maximum Number of
	Purchased	Price	Shares Purchased as	Shares that May Yet
		Paid per	Part of Publicly	Be Purchased Under
	(a)	Share	Announced Plans or	the Plans or Programs
			Programs (a)	(b)
October 1 to October 31, 2018	1,820,293	\$ 44.84	1,820,293	13,458,171
November 1 to November 31, 2018	2,286,260	49.06	2,286,260	11,171,911
December 1 to December 31, 2018	1,923,374	46.81	1,923,374	9,248,537
Total	6,029,927	47.07	6,029,927	

(a)Includes any open market purchases (on a trade-date basis), share repurchase agreements and/or shares retained by the company to settle employee withholding tax liabilities.

(b)The company has an ongoing repurchase program for which shares are authorized from time to time by Ball's Board of Directors. On January 23, 2019, the Board authorized the repurchase by the company of up to a total of 50 million shares. This repurchase authorization replaced all previous authorizations.

Shareholder Return Performance

The line graph below compares the annual percentage change in Ball Corporation's cumulative total shareholder return on its common stock with the cumulative total return of the Dow Jones Containers & Packaging Index and the S&P Composite 500 Stock Index for the five-year period ended December 31, 2018. It assumes \$100 was invested on December 31, 2013, and that all dividends were reinvested. The Dow Jones Containers & Packaging Index total return has been weighted by market capitalization.

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TOTAL RETURN TO STOCKHOLDERS

(Assumes \$100 investment on 12/31/13)

Total Return Analysis

	12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018
BLL	\$ 100.00	\$ 133.09	\$ 143.05	\$ 148.7	\$ 151.34	\$ 185.62
S&P 500	100.00	111.39	110.58	121.13	144.65	135.63
DJ US Containers & Packaging	100.00	112.91	106.35	123.86	144.55	115.42

Source: Bloomberg L.P.® Charts

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Item 6. Selected Financial Data

Five-Year Review of Selected Financial Data

Ball Corporation

(\$ in millions, except per share amounts)	2018	2017	2016	2015	2014
Net sales	\$ 11,635	\$ 10,983	\$ 9,061	\$ 7,997	\$ 8,570
Earnings before interest and taxes (EBIT)	\$ 935	\$ 802	\$ 463	\$ 606	\$ 839
Total interest expense	(302)	(288)	(338)	(260)	(193)
Earnings before taxes	\$ 633	\$ 514	\$ 125	\$ 346	\$ 646
Net earnings attributable to Ball Corporation (a)	\$ 454	\$ 374	\$ 263	\$ 281	\$ 470
Basic earnings per share (a)	\$ 1.32	\$ 1.07	\$ 0.83	\$ 1.02	\$ 1.70
Weighted average common shares outstanding (000s)	344,796	350,269	316,542	274,600	277,016
Diluted earnings per share (a)	\$ 1.29	\$ 1.05	\$ 0.81	\$ 1.00	\$ 1.65
Diluted weighted average common shares outstanding (000s)	352,321	356,985	322,884	281,968	284,860
Total assets	\$ 16,554	\$ 17,169	\$ 16,173	\$ 9,697	\$ 7,535
Total interest bearing debt and capital lease obligations	\$ 6,729	\$ 6,971	\$ 7,532	\$ 5,051	\$ 3,133
Cash dividends per share	\$ 0.400	\$ 0.365	\$ 0.26	\$ 0.26	\$ 0.26
Total cash provided by operating activities (c)	\$ 1,566	\$ 1,478	\$ 193	\$ 1,037	\$ 1,060

Non-GAAP Measures (b)

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Comparable operating earnings	\$ 1,290	\$ 1,220	\$ 976	\$ 801	\$ 920
Comparable net earnings	\$ 775	\$ 728	\$ 563	\$ 490	\$ 553
Diluted earnings per share (comparable basis)	\$ 2.20	\$ 2.04	\$ 1.74	\$ 1.74	\$ 1.94
Free cash flow (c)	\$ 750	\$ 922	\$ (413)	\$ 509	\$ 669

(a) Includes business consolidation and other activities and other items affecting comparability between years. Additional details regarding the 2018, 2017 and 2016 items are available in Note 6 to the consolidated financial statements within Item 8 of this Annual Report on Form 10-K.

(b) Non-U.S. GAAP measures should not be considered in isolation and should not be considered superior to, or a substitute for, financial measures calculated in accordance with U.S. GAAP. See below for reconciliations of non-U.S. GAAP financial measures to U.S. GAAP measures. Further discussion of non-GAAP financial measures is available in Item 7 of this Annual Report on Form 10-K under Management Performance Measurements and Other Liquidity Measures.

(c) Amounts in 2017, 2016, 2015 and 2014 have been retrospectively adjusted to reflect the adoption of new accounting guidance that was effective January 1, 2018. Cash provided by operating activities was increased by \$30 and \$48 million in 2015 and 2014, respectively, as a result of adopting the new accounting guidance. See Notes 2 and 7 to the consolidated financial statements within Item 8 of this Annual Report on Form 10-K for further details.

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Reconciliations of non-U.S. GAAP financial measures to U.S. GAAP measures are as follows:

(\$ in millions)	2018	2017	2016	2015	2014
Net earnings attributable to Ball Corporation	\$ 454	\$ 374	\$ 263	\$ 281	\$ 470
Add: Net earnings attributable to noncontrolling interests	(1)	6	3	22	28
Net earnings	453	380	266	303	498
Less: Equity in results of affiliates, net of tax	(5)	(31)	(15)	(4)	(2)
Add: Tax provision (benefit)	185	165	(126)	47	150
Earnings before taxes, as reported	633	514	125	346	646
Total interest expense	302	288	338	260	193
Earnings before interest and taxes (EBIT)	935	802	463	606	839
Business consolidation and other activities	191	221	337	195	81
Amortization of acquired Rexam intangibles	164	162	65	—	—
Catch-up depreciation and amortization for 2016 from finalization of Rexam valuation	—	35	—	—	—
Cost of sales associated with Rexam inventory step-up	—	—	84	—	—
Egyptian pound devaluation	—	—	27	—	—
Comparable Operating Earnings	\$ 1,290	\$ 1,220	\$ 976	\$ 801	\$ 920
Net earnings attributable to Ball Corporation, as reported	\$ 454	\$ 374	\$ 263	\$ 281	\$ 470
Business consolidation and other activities	191	221	337	195	81
Amortization of acquired Rexam intangibles	164	162	65	—	—
Catch-up depreciation and amortization for 2016 from finalization of Rexam valuation	—	35	—	—	—
Share of equity method affiliate non-comparable costs	8	—	—	—	—
Cost of sales associated with Rexam inventory step-up	—	—	84	—	—
Egyptian pound devaluation	—	—	27	—	—
Debt refinancing and other costs	1	3	109	117	33
Non-comparable taxes	2	(150)	(322)	(103)	(31)
Impact of U.S. tax reform	(45)	83	—	—	—
Net earnings attributable to Ball Corporation before above transactions (Comparable Net Earnings)	\$ 775	\$ 728	\$ 563	\$ 490	\$ 553
Total cash provided by operating activities (a)(b)	\$ 1,566	\$ 1,478	\$ 193	\$ 1,037	\$ 1,060
Capital expenditures	(816)	(556)	(606)	(528)	(391)
Free cash flow (b)	\$ 750	\$ 922	\$ (413)	\$ 509	\$ 669

(a) Includes payments of costs associated with the acquisition of Rexam and the sale of a business associated with the June 2016 acquisition of Rexam, additional details of which are available in Note 4 to the consolidated financial

statements within Item 8 of this Annual Report on Form 10-K.

- (b) Amounts in 2017, 2016, 2015 and 2014 have been retrospectively adjusted to reflect the adoption of new accounting guidance that was effective January 1, 2018. Cash provided by operating activities was increased by \$30 and \$48 million in 2015 and 2014, respectively, as a result of adopting the new accounting guidance. See Notes 2 and 7 to the consolidated financial statements within Item 8 of this Annual Report on Form 10-K for further details.

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

Management's discussion and analysis should be read in conjunction with the consolidated financial statements and accompanying notes included in Item 8 of this Annual Report on Form 10-K (annual report), which include additional information about our accounting policies, practices and the transactions underlying our financial results. The preparation of our consolidated financial statements in conformity with accounting principles generally accepted in the United States of America (U.S. GAAP) requires us to make estimates and assumptions that affect the reported amounts in our consolidated financial statements and the accompanying notes including various claims and contingencies related to lawsuits, taxes, environmental and other matters arising during the normal course of business. We apply our best judgment, our knowledge of existing facts and circumstances and actions that we may undertake in the future in determining the estimates that affect our consolidated financial statements. We evaluate our estimates on an ongoing basis using our historical experience, as well as other factors we believe appropriate under the circumstances, such as current economic conditions, and adjust or revise our estimates as circumstances change. As future events and their effects cannot be determined with precision, actual results may differ from these estimates. Ball Corporation and its subsidiaries are referred to collectively as "Ball Corporation," "Ball," "the company," "we" or "our" in the following discussion and analysis.

OVERVIEW

Business Overview and Industry Trends

Ball Corporation is one of the world's leading suppliers of metal packaging to the beverage, personal care and household products industries. Our packaging products are produced for a variety of end uses, are manufactured in facilities around the world and are competitive with other substrates, such as plastics and glass. In the rigid packaging industry, sales and earnings can be increased by reducing costs, increasing prices, developing new products, expanding volumes and making strategic acquisitions. We also provide aerospace and other technologies and services to governmental and commercial customers, including national defense hardware, antenna and video tactical solutions, civil and operational space hardware and system engineering services.

We sell our packaging products mainly to large, multinational beverage, personal care and household products companies with which we have developed long-term relationships. This is evidenced by our high customer retention and our large number of long-term supply contracts. While we have a diversified customer base, we sell a significant portion of our packaging products to major companies and brands, as well as to numerous regional customers. The overall global beverage and aerosol metal container industries are growing and are expected to continue to grow in the medium to long term. The primary customers for the products and services provided by our aerospace segment are U.S. government agencies or their prime contractors.

We purchase our raw materials from relatively few suppliers. We also have exposure to inflation, in particular the rising costs of raw materials, as well as other direct cost inputs. We mitigate our exposure to the changes in the costs of metal through the inclusion of provisions in contracts covering the majority of our volumes to pass through metal price changes, as well as through the use of derivative instruments. The pass-through provisions generally result in proportional increases or decreases in sales and costs with a greatly reduced impact, if any, on net earnings. Because of our customer and supplier concentration, our business, financial condition and results of operations could be adversely affected by the loss, insolvency or bankruptcy of a major customer or supplier or a change in a supply agreement with a major customer or supplier, although our contract provisions generally mitigate the risk of customer loss, and our long-term relationships represent a known, stable customer base.

The majority of the aerospace business involves work under contracts, generally from one to five years in duration, as a prime contractor or subcontractor for various U.S. government agencies. Intense competition and long operating cycles are key characteristics of the company's aerospace and defense industry where it is common for work on major programs to be shared among a number of companies. A company competing to be a prime contractor may, upon ultimate award of the contract to a competitor, become a subcontractor for the ultimate prime contracting company.

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Corporate Strategy

Our Drive for 10 vision encompasses five strategic levers that are key to growing our business and achieving long-term success. Since launching Drive for 10 in 2011, we have made progress on each of the levers as follows:

- Maximizing value in our existing businesses by rationalizing standard beverage container and end capacity in North America, South America and Europe, and expanding specialty container production to meet current demand; leveraging plant floor systems in our beverage facilities to improve efficiencies and reduce costs; consolidating and/or closing multiple beverage packaging facilities to gain efficiencies; and in the aerosol business, installing new extruded aluminum aerosol lines in our European, Mexican and Indian facilities while also implementing cost-out and value-in initiatives across all of our businesses;
- Expanding further into new products and capabilities through commercializing extruded aluminum aerosol packaging that utilizes proprietary technology to significantly lightweight the can; and successfully commercializing the next-generation aluminum bottle-shaping technology;
- Aligning ourselves with the right customers and markets by investing capital to meet continued growth for specialty beverage containers throughout our global network, which represent approximately 40 percent of our global beverage packaging mix; aligning with craft brewers, sparkling water fillers, wine producers and other new beverage producers who continue to use beverage containers to grow their business;
- Broadening our geographic reach with our acquisition of Rexam and our new investments in beverage manufacturing facilities in Spain, Mexico, Myanmar and Panama, as well as an extruded aluminum aerosol manufacturing facility in India; and
- Leveraging our technological expertise in packaging innovation, including the introduction of next-generation aluminum bottle-shaping technologies and the increased production of lightweight ReAl® containers, which utilize technology that increases the strength of aluminum used in the manufacturing process while lightweighting the can by up to 20 percent over a standard aluminum aerosol can, as well as our investment in cyber, data analytics and LIDAR capabilities to further enhance our aerospace technical expertise across a broader customer portfolio.

These ongoing business developments and our successful acquisition of Rexam in 2016 help us stay close to our customers while expanding and/or sustaining our industry positions and global reach with major beverage, personal care, household products and aerospace customers.

RESULTS OF OPERATIONS

Management's discussion and analysis for our results of operations on a consolidated and segment basis include a quantification of factors that had a material impact. Other factors that did not have a material impact, but that are significant to understand the results, are qualitatively described.

Consolidated Sales and Earnings

(\$ in millions)	Years Ended December 31,						
	2018		2017		2016		
Net sales	\$	11,635	\$	10,983	\$	9,061	
Net earnings attributable to Ball Corporation		454		374		263	
Net earnings attributable to Ball Corporation as a % of consolidated net sales		4	%	3	%	3	%

Sales in 2018 were \$652 million higher compared to 2017 primarily as a result of increased sales volumes for our South America and Europe segments, pass through of higher metal prices, higher pricing and favorable product mix for our North and Central America segment, favorable foreign exchange rate changes in our Europe segment and increased sales in the aerospace segment driven by significant U.S. national defense contracts.

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Net earnings attributable to Ball Corporation in 2018 were \$80 million higher than 2017 primarily due to increased sales volumes in our Europe and North and Central America segments, favorable manufacturing performance and lower business consolidation and other costs, partially offset by higher tax expense, freight costs and interest expense.

Sales and operating earnings for 2018 were impacted by the loss of sales from our U.S. steel food and steel aerosol business, which was sold on July 31, 2018.

Sales in 2017 were \$1.9 billion higher compared to 2016 primarily as a result of increased sales volumes for our North and Central America, South America and Europe segments, increased pass through of higher metal prices for our North and Central America and South America segments, favorable currency exchange effects for our Europe segment, favorable product mix for our South America segment and increased sales in our aerospace segment. Sales volumes for the year ended December 31, 2017 for our North and Central America, South America and Europe segments were higher compared to the same period in 2016 primarily as a result of 2017 including twelve months of sales volumes from the acquired Rexam business, while 2016 included six months of sales volumes from the acquired Rexam business and six months of sales volumes from the company's legacy business, a significant portion of which was sold in connection with the June 2016 acquisition of Rexam (Divestment Business). The South America segment experienced organic sales growth, and increased sales from significant U.S. national defense contracts drove revenue growth in the aerospace segment.

Net earnings attributable to Ball Corporation in 2017 were \$111 million higher than 2016 primarily due to increased earnings related to higher sales volumes in the South America, Europe and North and Central America beverage can segments, synergy realizations, lower cost of sales in 2017 compared to 2016 which included \$84 million for the step-up of inventory related to the acquired Rexam business, lower debt refinancing and other costs in 2017 and a decrease in business consolidation and other activities in 2017, partially offset by higher incremental depreciation. These impacts on net earnings were partially offset by higher tax expense in 2017, due principally to provisional charges from the U.S. Tax Cuts and Jobs Act which was signed into law on December 22, 2017, income tax benefits in 2016 associated with the restructure of Brazil legal entities as a result of the sale of the Divestment Business, the tax benefit on transaction costs and derivative costs of the Rexam acquisition and sale of the Divestment Business in 2016.

Debt refinancing and other costs in 2016 included costs on debt associated with the Rexam acquisition. See Note 15 located in Item 8 of this annual report for additional information on the activity in debt refinancing and other costs.

Cost of Sales (Excluding Depreciation and Amortization)

Cost of sales, excluding depreciation and amortization, was \$9,329 million in 2018 compared to \$8,717 million in 2017 and \$7,296 million in 2016. These amounts represented 80 percent, 79 percent and 81 percent of consolidated net sales for the years ended 2018, 2017 and 2016, respectively. Cost of sales in 2016 included expense of \$84 million for the step-up of inventory related to the acquired Rexam business.

Depreciation and Amortization

Depreciation and amortization expense was \$702 million in 2018 compared to \$729 million in 2017 and \$453 million in 2016. These amounts represented 6 percent, 7 percent and 5 percent of consolidated net sales for 2018, 2017 and 2016, respectively. The expense was lower in 2018 compared to 2017 due to the absence of catch-up depreciation of fixed assets and amortization of intangible assets following the Rexam acquisition, which was recorded during 2017. The expense was higher in 2017 compared to 2016 due to increased depreciation of fixed assets and amortization of intangible assets related to 2016 following the Rexam acquisition. During 2017, the company finalized the valuation and useful lives of the assets acquired in the Rexam acquisition. As a result, depreciation and amortization expense for 2017 included a cumulative catch-up adjustment of \$35 million related to the last six months of 2016. Amortization expense in 2018, 2017 and 2016 included, \$164 million, \$162 million and \$65 million, respectively, for the amortization of acquired Rexam intangibles.

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Selling, General and Administrative

Selling, general and administrative (SG&A) expenses were \$478 million in 2018 compared to \$514 million in 2017 and \$512 million in 2016. These amounts represented 4 percent, 5 percent and 6 percent of consolidated net sales for those three years, respectively. Contributing to the lower SG&A expenses in 2018 were reduced employee compensation costs, favorable currency exchange rate effects, lower costs due to office closures and other cost-out initiatives implemented by the company in relation to the acquired Rexam business. The lower percentage of SG&A expense in 2017 as compared to 2016 was primarily due to office closures and various other cost-out initiatives implemented by the company in relation to the acquired Rexam business and the lack of foreign exchange losses of \$27 million for the devaluation of the Egyptian pound in the fourth quarter of 2016.

Business Consolidation Costs and Other Activities

Business consolidation and other activities were \$191 million in 2018 compared to \$221 million in 2017 and \$337 million in 2016. These amounts represented 2 percent, 2 percent and 4 percent of consolidated net sales for the three years, respectively.

The year-over-year decrease in business consolidation and other activities in 2018 compared to 2017 was primarily due to lower severance and facility shut down costs, lower costs related to lower settlement charges related to certain Ball U.S. defined pension plans, a gain on Brazilian indirect taxes and a gain on the sale of our former Chatsworth, California, beverage packing facility, partially offset by the loss on sale of the U.S. steel food and steel aerosol business. See Note 6 located in Item 8 of this annual report for additional information on the activity in business consolidation and other activities.

The year-over-year decrease in business consolidation and other activities in 2017 compared to 2016 was primarily due to a decrease of \$322 million in Rexam transaction related costs and \$83 million of Rexam acquisition related compensation arrangements and a decrease of \$173 million in foreign currency exchange losses associated with the Rexam transaction. These impacts were partially offset by a decrease of \$289 million in the gain recognized in connection with the sale of the Ball portion of the Divestment Business, an increase of \$99 million related to completed and pending plant closures, an increase of \$44 million related to the settlement of certain Ball U.S. defined benefit pension plans and an increase of \$34 million for indemnification of certain tax matters provided to the buyer in the sale of the Divestment Business. See Note 6 located in Item 8 of this annual report for additional information on the activity in business consolidation and other activities.

Interest Expense

Total interest expense was \$302 million in 2018 compared to \$288 million in 2017 and \$338 million in 2016. Excluding debt refinancing and other costs, interest expense in 2018 was higher than in 2017 due to higher interest rates, partially offset by lower average debt. Interest expense was higher in 2017 as compared to 2016 as the average level of debt held was higher than the period preceding it. Interest expense, excluding the effect of debt refinancing and other costs, as a percentage of average monthly borrowings was 4 percent in each of the years 2018, 2017 and 2016.

Debt refinancing and other costs were \$1 million for the year ended December 31, 2018, \$3 million for the year ended December 31, 2017, and \$109 million for the year ended December 31, 2016. The amount for the year ended 2016 consisted mainly of costs incurred to fund the Rexam acquisition. See Notes 15 and 21 in Item 8 of this annual report for additional information on these instruments and the transactions flowing through debt refinancing and other costs.

Tax Provision

The effective tax rate is affected by recurring items such as income earned in foreign jurisdictions with tax rates that differ from the U.S. tax rate and by discrete items that may occur in any given year but are not consistent from year to year.

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The 2018 effective income tax rate was 29.2 percent compared to 32.1 percent for 2017. The 2018 effective rate was reduced by 7.2 percent for the final adjustments related to the enactment of U.S. tax reform in 2017, including the impact of the transition tax and remeasurement of the company's net deferred tax asset in the U.S., and increased by 8.8 percent for discrete tax costs associated with certain business dispositions. The effective rate was also increased by 2.4 percent for the new tax on GILTI established with U.S. tax reform. The effective rate was increased by 3.2 percent for the impact of the foreign tax rate differential, net of valuation allowance impact, and tax holidays versus the U.S. tax rate, and further increased by 4.0 percent for the impact of foreign currency fluctuations on the company's deferred tax assets in Brazil. The 2018 effective rate was also reduced by 2.1 percent for the excess tax benefit for stock-based compensation and by 1.2 percent for the impact of the U.S. R&D credit. The impact of U.S. tax reform (excluding GILTI), and discrete tax costs associated with certain business dispositions are primarily related to discrete transactions or changes in tax law that are not expected to recur in future periods.

The 2017 effective income tax rate was 32.1 percent compared to negative 100.8 percent for 2016. The 2017 effective rate was increased by 16.1 percent for U.S. tax reform, including the impact of the transition tax and remeasurement of the company's net deferred tax asset in the U.S., and by 3.5 percent for discrete tax costs associated with certain business dispositions. The effective rate was reduced by 7.2 percent for the impact of the foreign tax rate differential, net of valuation allowance impact, and tax holidays versus the U.S. tax rate and by 5.4 percent for the impact of current year changes in various foreign tax laws including the U.K. The 2017 effective rate was also reduced by 3.1 percent for the discrete tax benefit associated with the adoption in the first quarter of 2017 of amendments to existing accounting guidance for stock-based compensation, by 1.8 percent for the impact of the U.S. R&D credit, and by 1.6 percent for the impact of the U.S. domestic manufacturing deduction.

Further details of taxes on income and the impacts of the U.S. tax reform are included in Note 16 to the consolidated financial statements within Item 8 of this annual report.

RESULTS OF BUSINESS SEGMENTS

Segment Results

Ball's operations are organized and reviewed by management along its product lines and geographical areas and its operating results are presented in the four reportable segments discussed below.

Beverage Packaging, North and Central America

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(\$ in millions)	Years Ended December 31,						
	2018		2017		2016		
Net sales	\$	4,626	\$	4,178	\$	3,612	
Comparable operating earnings		551		533		469	
Business consolidation and other activities (a)		(6)		(47)		(20)	
Amortization of acquired Rexam intangibles		(31)		(32)		(11)	
Catch-up depreciation and amortization for 2016 from finalization of Rexam valuation (b)		—		(6)		—	
Cost of sales associated with Rexam inventory step-up		—		—		(10)	
Total segment earnings	\$	514	\$	448	\$	428	
Comparable operating earnings as a % of segment net sales		12	%	13	%	13	%

-
- (a) Further details of these items are included in Note 6 to the consolidated financial statements within Item 8 of this annual report.
- (b) Catch-up depreciation and amortization of \$6 million related to the six months ended December 31, 2016, was recorded during 2017, as a result of the finalization of fixed asset and intangible asset valuations and useful lives for the Rexam acquisition.

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The beverage packaging, North and Central America, segment consists of operations located in the U.S., Canada and Mexico that manufacture aluminum containers used in beverage packaging. In order to serve growing customer demand for specialty cans in the southwestern U.S., the company constructed a four-line beverage packaging facility in Goodyear, Arizona, which began production in the second quarter of 2018. Our Birmingham, Alabama, facility ceased production during the second quarter of 2018 and the Chatsworth, California, and Longview, Texas, facilities ceased production during the third quarter of 2018. Our beverage can manufacturing facility in Reidsville, North Carolina, ceased production at the end of June 2017. The company's Bristol, Virginia, beverage end-making facility ceased production at the end of June 2016, and its capacity was transitioned to existing North American Ball end-making facilities. These facilities produced beverage cans and ends in a variety of sizes and their customers are now supplied by the company's other U.S. facilities. During the first quarter of 2016, our beverage manufacturing facility in Monterrey, Mexico, began production.

Segment sales in 2018 were \$448 million higher compared to 2017. The increase in 2018 was primarily due to higher metal input prices of \$285 million, higher pricing, favorable sales mix, and other pass-through items. We cannot predict the impact on sales that will result from future changes in metal input prices.

Segment sales in 2017 were \$566 million higher compared to 2016. The increase in 2017 was primarily due to \$350 million of higher volumes, primarily attributed to the Rexam acquisition, and \$176 million from the pass through of higher metal prices. Sales in 2017 included twelve months of sales volumes from the acquired Rexam business compared to 2016 which included six months of sales volumes from the acquired Rexam business.

Comparable operating earnings in 2018 were \$18 million higher compared to 2017 primarily due to favorable sales mix, higher pricing and savings from plant closures, partially offset by higher freight charges, costs associated with our multi-plant network optimization program, costs associated with a U.S. aluminum can sheet quality issue and plant start-up costs.

Comparable operating earnings in 2017 were \$64 million higher compared to 2016 primarily due to higher sales volume, largely attributed to the Rexam acquisition, favorable product mix, cost savings from the closure of the Reidsville facility and other synergy-related activities, partially offset by higher freight costs and increased depreciation. Earnings in 2017 included twelve months of sales volumes from the acquired Rexam business compared to 2016 which included six months of sales volumes from the acquired Rexam business.

Beverage Packaging, South America

(\$ in millions)	Years Ended December 31,		
	2018	2017	2016

Net sales	\$ 1,701	\$ 1,692	\$ 1,014
Comparable operating earnings	313	333	185
Business consolidation and other activities (a)	11	(5)	(15)
Amortization of acquired Rexam intangibles	(56)	(56)	(17)
Catch-up depreciation and amortization for 2016 from finalization of Rexam valuation (b)	—	(14)	—
Cost of sales associated with Rexam inventory step-up	—	—	(20)
Total segment earnings	\$ 268	\$ 258	\$ 133
Comparable operating earnings as a % of segment net sales	18 %	20 %	18 %

(a) Further details of these items are included in Note 6 to the consolidated financial statements within Item 8 of this annual report.

(b) Catch-up depreciation and amortization of \$14 million related to the six months ended December 31, 2016, was recorded during 2017, as a result of the finalization of fixed asset and intangible asset valuations and useful lives for the Rexam acquisition.

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The beverage packaging, South America, segment consists of operations located in Brazil, Argentina and Chile that manufacture aluminum containers used in beverage packaging in most countries in South America. To support contracted volumes for aluminum beverage packaging across Paraguay, Argentina and Bolivia, the company is constructing a one-line beverage can and end manufacturing facility in Paraguay, and is adding capacity to our Buenos Aires, Argentina, and Santiago, Chile, facilities. The Paraguay facility is expected to begin production in the second half of 2019. The company ceased operations at its Cuiabá, Brazil, beverage packaging facility in July 2018 and has relocated equipment from the Cuiabá facility to other existing facilities in South America.

Segment sales in 2018 were \$9 million higher compared to 2017. The increase in 2018 was primarily related to higher can volumes and favorable product mix, partially offset by loss of certain business and the loss of several days of sales resulting from a Brazilian trucking labor strike.

Comparable operating earnings in 2018 were \$20 million lower compared to 2017 primarily related to the conclusion of the end sales agreement with the business divested in 2016, regional pricing pressures and the loss of sales resulting from the Brazilian trucking labor strike, offset by an increase in can volumes and favorable manufacturing performance.

Segment sales and comparable operating earnings in 2017 included twelve months of sales volumes from the acquired Rexam business compared to 2016 which included six months of sales volumes from the acquired Rexam business and six months of sales volumes from the company's legacy business, the significant portion of which was sold with the Divestment Business.

Segment sales in 2017 were \$678 million higher compared to 2016. The increase in 2017 was primarily due to \$545 million in higher volumes, largely attributed to the Rexam acquisition, to organic growth and to additional revenue from the end sales agreement with a business associated with the June 2016 acquisition of Rexam that transitioned to the divested business during the first half of 2018. The higher sales also included \$158 million from the pass-through of higher metal prices.

Comparable operating earnings in 2017 were \$148 million higher compared to 2016 primarily due to higher sales volumes, largely attributed to the Rexam acquisition, the end sales agreement with a business associated with the June 2016 acquisition of Rexam, and favorable product mix.

Beverage Packaging, Europe

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(\$ in millions)	Years Ended December 31,						
	2018		2017		2016		
Net sales	\$	2,619	\$	2,360	\$	1,915	
Comparable operating earnings		282		233		217	
Business consolidation and other activities (a)		(49)		(89)		(24)	
Amortization of acquired Rexam intangibles		(70)		(67)		(31)	
Catch-up depreciation and amortization for 2016 from finalization of Rexam valuation (b)		—		(19)		—	
Cost of sales associated with Rexam inventory step-up		—		—		(47)	
Total segment earnings	\$	163	\$	58	\$	115	
Comparable operating earnings as a % of segment net sales		11	%	10	%	11	%

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- (a) Further details of these items are included in Note 6 to the consolidated financial statements within Item 8 of this annual report.
- (b) Catch-up depreciation and amortization of \$19 million related to the six months ended December 31, 2016, was recorded during 2017, as a result of the finalization of fixed asset and intangible asset valuations and useful lives for the Rexam acquisition.

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The beverage packaging, Europe, segment includes the manufacture and sale of metal beverage containers in facilities located throughout Europe, including Russia. To support growth for beverage cans in the Iberian Peninsula, the company constructed a two-line, aluminum beverage can manufacturing facility near Madrid, Spain, with a majority of the facility's capacity secured under a long-term customer contract. The facility is fully operational and produces multiple can sizes utilizing both lines. In the third quarter of 2017, our beverage packaging container and end production facilities in Recklinghausen, Germany, ceased production. In December 2018, we closed our beverage packaging facility located in San Martino, Italy.

Segment sales in 2018 were \$259 million higher compared to 2017. The increase in 2018 was primarily due to increased sales volumes of \$189 million and favorable currency exchange rates, partially offset by a continuation of previously contracted price decreases.

Comparable operating earnings in 2018 were \$49 million higher compared to 2017 primarily due to increased sales volumes, cost savings from the closure of the Recklinghausen, Germany, facility and other synergy-related and production efficiency activities.

Segment sales and comparable operating earnings in 2017 included twelve months of sales volumes from the acquired Rexam business compared to 2016 which included six months of sales volumes from the acquired Rexam business and six months of sales volumes from the company's legacy European business, the significant portion of which was sold with the Divestment Business.

Segment sales in 2017 were \$445 million higher compared to 2016. The increase in 2017 was primarily due to \$388 million from increased sales volumes, largely attributed to the Rexam acquisition, and favorable currency exchange effects.

Comparable operating earnings in 2017 were \$16 million higher compared to 2016 primarily due to increased sales volumes largely attributed to the Rexam acquisition, cost savings from the closure of the Recklinghausen, Germany, facility and other synergy-related and production efficiency activities, partially offset by increased incremental depreciation related to the finalization of the fixed asset valuations and useful lives for the Rexam acquisition.

Aerospace

(\$ in millions)	Years Ended December 31,		
	2018	2017	2016
Net sales	\$ 1,196	\$ 991	\$ 818

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Comparable operating earnings	113		98		88
Comparable operating earnings as a % of segment net sales	9	%	10	%	11 %

The aerospace segment consists of the manufacture and sale of aerospace and other related products and services provided for the defense, civil space and commercial space industries.

Segment sales in 2018 were \$205 million higher compared to 2017, and comparable operating earnings were \$15 million higher. The increase in sales and operating earnings for 2018 was primarily the result of increases from significant U.S. national defense contracts.

Segment sales in 2017 were \$173 million higher compared to 2016, and comparable operating earnings were \$10 million higher. The increase in sales and operating earnings for 2017 was primarily the result of increases from significant U.S. national defense contracts.

Sales to the U.S. government, either directly as a prime contractor or indirectly as a subcontractor, represented 99 percent of segment sales in 2018 compared to 98 percent of segment sales in 2017 and 97 percent in 2016. The aerospace contract mix in 2018 consisted of 67 percent cost-type contracts, which are billed at our costs plus an agreed upon and/or earned profit component, and 30 percent fixed-price contracts. The remaining sales were for time and materials contracts.

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Contracted backlog for the aerospace segment at December 31, 2018 and 2017, was \$2.2 billion and \$1.75 billion, respectively. The year-over-year increase reflects several major contract awards during 2018. The segment has numerous outstanding bids for future contract awards. The backlog at December 31, 2018, consisted of 70 percent cost-type contracts. Comparisons of backlog are not necessarily indicative of the trend of future operations due to the nature of varying delivery and milestone schedules on contracts, funding of programs and the uncertainty of timing of future contract awards.

Additional Segment Information

For additional information regarding our segments, see the business segment information in Note 3 accompanying the consolidated financial statements within Item 8 of this annual report. The charges recorded for business consolidation and other activities were based on estimates by Ball management and were developed from information available at the time. If actual outcomes vary from the estimates, the differences will be reflected in current period earnings in the consolidated statement of earnings and identified as business consolidation gains and losses. Additional details about our business consolidation and other activities are provided in Note 6 accompanying the consolidated financial statements within Item 8 of this annual report.

Management Performance Measures

Management internally uses various measures to evaluate company performance such as comparable operating earnings (earnings before interest, taxes and business consolidation and other non-comparable costs); comparable net earnings (earnings before business consolidation costs and other non-comparable costs after tax); return on average invested capital (net operating earnings after tax over the relevant performance period divided by average invested capital over the same period); economic value added (EVA®) dollars (net operating earnings after tax less a capital charge on average invested capital employed); earnings before interest and taxes (EBIT); earnings before interest, taxes, depreciation and amortization (EBITDA); and diluted earnings per share. Management also uses free cash flow (generally defined by the company as cash flow from operating activities less capital expenditures) as a measure to evaluate the company's liquidity. We believe this information is also useful to investors as it provides insight into the earnings and cash flow criteria management uses to make strategic decisions. These financial measures may be adjusted at times for items that affect comparability between periods such as business consolidation costs and gains or losses on acquisitions and dispositions.

Nonfinancial measures in the packaging businesses include production efficiency and spoilage rates; quality control figures; environmental, health and safety statistics; production and sales volumes; asset utilization rates; and measures of sustainability. Additional measures used to evaluate financial performance in the aerospace segment include contract revenue realization, award and incentive fees realized, proposal win rates and backlog (including awarded, contracted and funded backlog).

Many of the above noted financial measurements are on a non-U.S. GAAP basis and should be considered in connection with the consolidated financial statements within Item 8 of this annual report. Non-U.S. GAAP measures should not be considered in isolation and should not be considered superior to, or a substitute for, financial measures calculated in accordance with U.S. GAAP. A presentation of earnings in accordance with U.S. GAAP is available in Item 8 of this annual report.

Based on the above definitions, our calculations of comparable operating earnings and comparable net earnings are summarized in the tables included within Item 6 of this Annual Report on Form 10-K.

CRITICAL AND SIGNIFICANT ACCOUNTING POLICIES AND NEW ACCOUNTING PRONOUNCEMENTS

For information regarding the company's critical and significant accounting policies, as well as recent accounting pronouncements, see Notes 1 and 2 to the consolidated financial statements within Item 8 of this annual report.

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FINANCIAL CONDITION, LIQUIDITY AND CAPITAL RESOURCES

Cash Flows and Capital Expenditures

Our primary sources of liquidity are cash provided by operating activities and external committed borrowings. We believe that cash flows from operations and cash provided by short-term, long-term and committed revolver borrowings, when necessary, will be sufficient to meet our ongoing operating requirements, scheduled principal and interest payments on debt, dividend payments and anticipated capital expenditures. The following table summarizes our cash flows:

(\$ in millions)	Years Ended December 31,		
	2018	2017	2016
Cash flows provided by (used in) operating activities (a)	\$ 1,566	\$ 1,478	\$ 193
Cash flows provided by (used in) investing activities	(206)	(545)	(1,283)
Cash flows provided by (used in) financing activities	(1,040)	(1,073)	(387)

(a) Amounts in 2017 and 2016 have been retrospectively adjusted to reflect the adoption of new accounting guidance that was effective January 1, 2018. See Notes 2 and 7 to the consolidated financial statements within Item 8 of this Annual Report on Form 10-K for further details.

Cash flows provided by operations were higher in 2018 compared to 2017, primarily due to higher earnings and lower pension contributions, partially offset by lower working capital inflows. Excluding the impact of the new revenue recognition standard and the sale of the U.S. steel food and steel aerosol packaging business, the impact of a reduction of days sales outstanding from 45 to 32 days, a reduction of inventory days on hand from 61 to 58 days and an increase in days payable outstanding from 110 to 112 days was partially offset by increases in other receivables.

Cash flows from operations in 2017 were higher compared to 2016 primarily due to improved earnings and working capital. Working capital changes in 2017 included a decrease in inventory days on hand from 68 to 61 days, a decrease in days sales outstanding from 46 to 45 days and an increase in days payable outstanding from 97 to 110 days. The continuing increase in days payable outstanding is a result of longer negotiated contractual terms with suppliers.

We have entered into several regional committed and uncommitted accounts receivable factoring programs with various financial institutions for certain of our accounts receivable. Programs accounted for as true sales of the receivables, without recourse to Ball, had combined limits of approximately \$1.2 billion and \$1.0 billion at December 31, 2018, and December 31, 2017, respectively. A total of \$178 million and \$439 million were available for sale under these programs at December 31, 2018 and 2017, respectively.

As of December 31, 2018, approximately \$717 million of our cash was held outside of the U.S. In the event that we would need to utilize any of the cash held outside of the U.S. for purposes within the U.S., there are no material legal or other economic restrictions regarding the repatriation of cash from any of the countries outside the U.S. where we have cash, other than market liquidity constraints that limit the ability to convert Egyptian pounds held by the company in Egypt with a U.S. dollar equivalent value of \$56 million into other currencies. The company believes its U.S. operating cash flows, as well as availability under its long-term, revolving credit facilities, uncommitted short-term credit facilities and committed and uncommitted accounts receivable factoring programs will be sufficient to meet the cash requirements of the U.S. portion of our ongoing operations, scheduled principal and interest payments on U.S. debt, dividend payments, capital expenditures and other U.S. cash requirements. If foreign funds would be needed for our U.S. cash requirements and we are unable to provide the funds through intercompany financing arrangements, we would be required to repatriate funds from foreign locations where the company has previously asserted indefinite reinvestment of funds outside the U.S.

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Due to the U.S. tax status of certain Ball subsidiaries in Canada and the PRC, the company annually provides U.S. taxes on foreign earnings in those subsidiaries, net of any estimated foreign tax credits or deductions for foreign taxes. Current taxes are also provided on certain other undistributed earnings that are currently taxable in the U.S. Management's intention is to indefinitely reinvest the undistributed earnings of Ball's other foreign subsidiaries. The indefinite reinvestment assertion is supported by both long-term and short-term forecasts and U.S. financial requirements, including, but not limited to, operating cash flows, capital expenditures, debt maturities and dividends. As a result, the company has not provided deferred taxes on earnings in certain non-U.S. subsidiaries because such earnings are intended to be indefinitely reinvested in its international operations. Retained earnings in non-U.S. subsidiaries were \$3.2 billion as of December 31, 2018. Although \$2.0 billion of such earnings have been subjected to U.S. federal income tax, incremental foreign and U.S. state income tax may be due upon distribution. At present, it is not practical to estimate the additional taxes that may become payable upon the eventual remittance of these foreign earnings to the U.S.; however, repatriation of these earnings could result in a material increase in the company's effective tax rate.

Share Repurchases

The company's share repurchases, net of issuances, totaled \$711 million in 2018, \$76 million in 2017 and \$59 million in 2016. The repurchases were completed using cash on hand and available borrowings. Additional details about our share repurchase activities are provided in Note 18 to the consolidated financial statements within Item 8 of this annual report.

Debt Facilities and Refinancing

Given our cash flow projections and unused credit facilities that are available until 2021, our liquidity is strong and is expected to meet our ongoing cash and debt service requirements. Total interest-bearing debt was \$6.7 billion at December 31, 2018, compared to \$7.0 billion at December 31, 2017.

In March 2018, Ball issued \$750 million of 4.875 percent senior notes and used the proceeds to repay \$315 million of its Term A loan, as well as outstanding multi-currency revolver and short-term credit facility borrowings.

At December 31, 2018, taking into account outstanding letters of credit, approximately \$1.5 billion was available under the company's long-term, multi-currency committed revolving credit facilities, which are available until March 2021. In addition to these facilities, the company had \$1 billion of short-term uncommitted credit facilities available at December 31, 2018, of which \$211 million was outstanding and due on demand. At December 31, 2017, the company had \$340 million outstanding under short-term uncommitted credit facilities.

While ongoing financial and economic conditions in certain areas may raise concerns about credit risk with counterparties to derivative transactions, the company mitigates its exposure by allocating the risk among various counterparties and limiting exposure to any one party. We also monitor the credit ratings of our suppliers, customers, lenders and counterparties on a regular basis.

We were in compliance with all loan agreements at December 31, 2018, and for all prior years presented, and have met all debt payment obligations. The U.S. note agreements and bank credit agreement contain certain restrictions relating to dividends, investments, financial ratios, guarantees and the incurrence of additional indebtedness. The most restrictive of the company's debt covenants requires the company to maintain a leverage ratio (as defined) of no greater than 4.25 times at December 31, 2018. The company was in compliance with all loan agreements and debt covenants at December 31, 2018 and 2017, and we have met all debt payment obligations. As of December 31, 2018, approximately \$1.7 billion of the amounts disclosed as available under the company's long-term multi-currency committed revolving facilities and short-term uncommitted credit facilities are available without violating our existing debt covenants. Additional details about our debt are available in Note 15 to the consolidated financial statements within Item 8 of this annual report.

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Other Liquidity Measures

Free Cash Flow

Management internally uses a free cash flow measure to: (1) evaluate the company's liquidity, (2) evaluate strategic investments, (3) plan stock buyback and dividend levels and (4) evaluate the company's ability to incur and service debt. Free cash flow is not a defined term under U.S. GAAP, and it should not be inferred that the entire free cash flow amount is available for discretionary expenditures. The company defines free cash flow as cash flow from operating activities less capital expenditures. Free cash flow is typically derived directly from the company's consolidated statement of cash flows; however, it may be adjusted for items that affect comparability between periods.

Based on the above definition, our consolidated free cash flow is summarized as follows:

(\$ in millions)	Years Ended December 31,		
	2018	2017	2016
Total cash provided by operating activities (a)	\$ 1,566	\$ 1,478	\$ 193
Capital expenditures	(816)	(556)	(606)
Free cash flow (a)	\$ 750	\$ 922	\$ (413)

(a) Amounts in 2017 and 2016 have been retrospectively adjusted to reflect the adoption of new accounting guidance that was effective January 1, 2018. See Notes 2 and 7 to the consolidated financial statements within Item 8 of this Annual Report on Form 10-K for further details.

Based on information currently available, we estimate cash flows from operating activities for 2019 to be in excess of \$1.6 billion, capital expenditures to be approximately \$600 million and free cash flow to exceed \$1 billion. In 2019, we intend to utilize our operating cash flow to service debt and to fund our growth capital projects, dividend payments, stock buybacks and, to the extent available, acquisitions that meet our criteria. Of the total 2019 estimated capital expenditures, approximately \$250 million was contractually committed as of December 31, 2018.

Commitments

Cash payments required for long-term debt maturities, rental payments under noncancellable operating leases, purchase obligations and other commitments in effect at December 31, 2018, are summarized in the following table:

(\$ in millions)	Payments Due By Period (a)				More than 5 Years
	Total	Less than 1 Year	1-3 Years	3-5 Years	
Long-term debt, including capital leases (b)	\$ 6,572	\$ 8	\$ 2,262	\$ 2,552	\$ 1,750
Interest payments on long-term debt (c)	1,260	294	477	330	159
Purchase obligations (d)	11,305	4,592	5,497	1,208	8
Operating leases	305	66	93	59	87
Total payments on contractual obligations	\$ 19,442	\$ 4,960	\$ 8,329	\$ 4,149	\$ 2,004

(a) Amounts reported in local currencies have been translated at year end 2018 exchange rates.

(b) Amounts represent future cash payments due and exclude future amortization of debt issuance costs of \$54 million at December 31, 2018.

(c) For variable rate facilities, amounts are based on interest rates in effect at year end and do not contemplate the effects of any hedging instruments utilized by the company.

(d) The company's purchase obligations include capital expenditures and contracted amounts for aluminum, steel and other direct materials. Also included are commitments for purchases of natural gas and electricity, expenses related to aerospace and technologies contracts and other less significant items. In cases where variable prices and/or usage are involved, management's best estimates have been used. Depending on the circumstances, early termination of the contracts may or may not result in penalties and, therefore, actual payments could vary significantly.

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The table above does not include \$80 million of uncertain tax positions, the timing of resolution of which is unknown at this time.

Contributions to the company's defined benefit pension plans are expected to be in the range of \$92 million in 2019. This estimate may change based on changes in the Pension Protection Act, actual plan asset performance and available company cash flow, among other factors. Benefit payments related to these plans are expected to be \$395 million, \$390 million, \$395 million, \$400 million and \$406 million for the years ending December 31, 2019 through 2023, respectively, and a total of \$2.1 billion for the years ending December 31, 2024 through 2028.

Based on changes in return on asset and discount rate assumptions, as well as revisions based on plan experience studies, total pension expense in 2019, excluding settlement and curtailment losses, is anticipated to be approximately \$20 million lower than in 2018. A reduction of the expected return on pension assets assumption by one quarter of a percentage point would result in an estimated \$13 million increase in the 2019 pension expense, while a quarter of a percentage point reduction in the discount rate applied to the pension liability would result in an estimated \$3 million reduction of pension expense in 2019. Additional details about our defined benefit pension plans are available in Note 17 to the consolidated financial statements within Item 8 of this annual report.

Contingencies

The company is routinely subject to litigation incident to operating its businesses, and has been designated by various federal and state environmental agencies as a potentially responsible party, along with numerous other companies, for the clean-up of several hazardous waste sites, including in respect of sites related to alleged activities of certain Rexam subsidiaries. The company believes the matters identified will not have a material adverse effect upon its liquidity, results of operations or financial condition. Details of the company's legal proceedings are included in Note 23 to the consolidated financial statements within Item 8 of this annual report.

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FORWARD-LOOKING STATEMENTS

This report contains “forward-looking” statements concerning future events and financial performance. Words such as “expects,” “anticipates,” “estimates,” “believes,” “targets,” “likely,” “positions” and similar expressions typically identify forward-looking statements, which are generally any statements other than statements of historical fact. Such statements are based on current expectations or views of the future and are subject to risks and uncertainties, which could cause actual results or events to differ materially from those expressed or implied. Readers of this report should therefore not place undue reliance upon any forward-looking statements and any of such statements should be read in conjunction with, and, qualified in their entirety by, the cautionary statements referenced below. The company undertakes no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. Key factors, risks and uncertainties that could cause actual outcomes and results to be different are summarized in filings with the Securities and Exchange Commission, including Exhibit 99 in our Form 10-K, which are available on our website and at www.sec.gov. Some factors that could cause the company’s actual results or outcomes to differ materially from those discussed include, but are not limited to the following: a) in our packaging segments: product demand fluctuations; availability/cost of raw materials and logistics; competitive packaging, pricing and substitution; changes in climate and weather; competitive activity; footprint adjustments and other manufacturing changes; failure to achieve synergies, productivity improvements or cost reductions; mandatory deposit or other restrictive packaging laws; customer and supplier consolidation, power and supply chain influence; changes in major customer or supplier contracts or a loss of a major customer or supplier; political instability and sanctions; currency controls; and changes in foreign exchange or tax rates, including due to the effects of the 2017 U.S. Tax Cuts and Jobs Act; and tariffs or other governmental actions in any country affecting goods produced by us or in our supply chain, including imported raw materials, such as pursuant to section 232 of the U.S. Trade Expansion Act of 1962; b) in our aerospace segment: funding, authorization, availability and returns of government and commercial contracts; and delays, extensions and technical uncertainties affecting segment contracts; c) in the company as a whole, those listed plus: changes in senior management; regulatory action or issues including tax, environmental, health and workplace safety, including U.S. FDA and other actions or public concerns affecting products filled in our containers, or chemicals or substances used in raw materials or in the manufacturing process; technological developments and innovations; litigation; strikes; labor cost changes; rates of return on assets of the company’s defined benefit retirement plans; pension changes; uncertainties surrounding geopolitical events and governmental policies both in the U.S. and in other countries, including the U.S. government elections, budget, sequestration and debt limit, including the partial government shutdown; reduced cash flow; interest rates affecting our debt; and successful or unsuccessful joint ventures, acquisitions and divestitures, including with respect to the Rexam PLC acquisition and its integration, or the associated divestiture; the effect of the acquisition or the divestiture on our business relationships, operating results and business generally.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Financial Instruments and Risk Management

The company employs established risk management policies and procedures which seek to reduce the company’s commercial risk exposure to fluctuations in commodity prices, interest rates, currency exchange rates and prices of the

company's common stock with regard to common share repurchases and the company's deferred compensation stock plan. However, there can be no assurance that these policies and procedures will be successful. Although the instruments utilized involve varying degrees of credit, market and interest risk, the counterparties to the agreements are expected to perform fully under the terms of the agreements. The company monitors counterparty credit risk, including lenders, on a regular basis, but Ball cannot be certain that all risks will be discerned or that its risk management policies and procedures will always be effective. Additionally, in the event of default under the company's master derivative agreements, the non-defaulting party has the option to set off any amounts owed with regard to open derivative positions.

We have estimated our market risk exposure using sensitivity analysis. Market risk exposure has been defined as the changes in fair value of derivative instruments, financial instruments and commodity positions. To test the sensitivity of our market risk exposure, we have estimated the changes in fair value of market risk sensitive instruments assuming a hypothetical 10 percent adverse change in market prices or rates. The results of the sensitivity analyses are summarized below.

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Commodity Price Risk

Aluminum

We manage commodity price risk in connection with market price fluctuations of aluminum ingot through two different methods. First, we enter into container sales contracts that include aluminum ingot-based pricing terms that generally reflect the same price fluctuations included in commercial purchase contracts for aluminum sheet. The terms include fixed, floating or pass-through aluminum ingot component pricing. Second, we use derivative instruments such as option and forward contracts as economic and cash flow hedges of commodity price risk where there are material differences between sales and purchase contracted pricing and volume.

Considering the effects of derivative instruments, the company's ability to pass through certain raw material costs through contractual provisions, the market's ability to accept price increases and the company's commodity price exposures under its contract terms, a hypothetical 10 percent adverse change in the company's aluminum prices would result in an estimated \$8 million after-tax reduction in net earnings over a one-year period. Additionally, the company has currency exposures on raw materials and the effect of a 10 percent adverse change is included in the total currency exposure discussed below. Actual results may vary based on actual changes in market prices and rates.

Interest Rate Risk

Our objective in managing exposure to interest rate changes is to minimize the impact of interest rate changes on earnings and cash flows and to minimize our overall borrowing costs. To achieve these objectives, we may use a variety of interest rate swaps, collars and options to manage our mix of floating and fixed-rate debt. Interest rate instruments held by the company at December 31, 2018, included pay-fixed interest rate swaps which effectively convert variable rate obligations to fixed-rate instruments.

Based on our interest rate exposure at December 31, 2018, assumed floating rate debt levels throughout the next 12 months and the effects of our existing derivative instruments, a 100-basis point increase in interest rates would result in an estimated \$2 million after tax reduction in net earnings over a one-year period. Actual results may vary based on actual changes in market prices and rates and the timing of these changes.

Currency Exchange Rate Risk

Our objective in managing exposure to currency fluctuations is to limit the exposure of cash flows and earnings from changes associated with currency exchange rate changes through the use of various derivative contracts. In addition, at times Ball manages earnings translation volatility through the use of currency option strategies, and the change in the fair value of those options is recorded in the company's net earnings. Our currency translation risk results from the currencies in which we transact business. The company faces currency exposures in our global operations as a result of various factors including intercompany currency denominated loans, selling our products in various currencies, purchasing raw materials and equipment in various currencies and tax exposures not denominated in the functional currency. Sales contracts are negotiated with customers to reflect cost changes and, where there is not an exchange pass-through arrangement, the company may use forward and option contracts to manage significant currency exposures.

Considering the company's derivative financial instruments outstanding at December 31, 2018, and the various currency exposures, a hypothetical 10 percent reduction (U.S. dollar strengthening, mainly against the Russian ruble) in currency exchange rates compared to the U.S. dollar would result in an estimated \$15 million after tax reduction in net earnings over a one-year period. This hypothetical adverse change in currency exchange rates would also reduce our forecasted average debt balance by \$127 million and increase our forecasted cross currency swap value by \$119 million. Actual changes in market prices or rates may differ from hypothetical changes.

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Item 8. Financial Statements and Supplementary Data

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Ball Corporation

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Ball Corporation and its subsidiaries (the “Company”) as of December 31, 2018 and 2017, and the related consolidated statements of earnings, comprehensive earnings (loss), shareholders’ equity and cash flows for each of the three years in the period ended December 31, 2018, including the related notes (collectively referred to as the “consolidated financial statements”). We also have audited the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

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

Change in Accounting Principles

As discussed in Note 2 to the consolidated financial statements, in 2018 the Company changed the manner in which it accounts for revenues from contracts with customers and the manner in which it accounts for restricted cash.

Basis for Opinions

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

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

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

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Definition and Limitations of Internal Control over Financial Reporting

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

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

/s/ PricewaterhouseCoopers LLP

Denver, Colorado

February 22, 2019

We have served as the Company's auditor since at least 1962. We have not been able to determine the specific year we began serving as auditor of the Company.

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Consolidated Statements of Earnings

Ball Corporation

(\$ in millions, except per share amounts)	Years Ended December 31,		
	2018	2017	2016
Net sales	\$ 11,635	\$ 10,983	\$ 9,061
Costs and expenses			
Cost of sales (excluding depreciation and amortization)	(9,329)	(8,717)	(7,296)
Depreciation and amortization	(702)	(729)	(453)
Selling, general and administrative	(478)	(514)	(512)
Business consolidation and other activities	(191)	(221)	(337)
	(10,700)	(10,181)	(8,598)
Earnings before interest and taxes	935	802	463
Interest expense	(301)	(285)	(229)
Debt refinancing and other costs	(1)	(3)	(109)
Total interest expense	(302)	(288)	(338)
Earnings before taxes	633	514	125
Tax (provision) benefit	(185)	(165)	126
Equity in results of affiliates, net of tax	5	31	15
Net earnings	453	380	266
Net (earnings) loss attributable to noncontrolling interests	1	(6)	(3)
Net earnings attributable to Ball Corporation	\$ 454	\$ 374	\$ 263
Earnings per share:			
Basic	\$ 1.32	\$ 1.07	\$ 0.83
Diluted	\$ 1.29	\$ 1.05	\$ 0.81
Weighted average shares outstanding: (000s)			
Basic	344,796	350,269	316,542
Diluted	352,321	356,985	322,884

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

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Consolidated Statements of Comprehensive Earnings (Loss)

Ball Corporation

(\$ in millions)	Years Ended December 31,		
	2018	2017	2016
Net earnings	\$ 453	\$ 380	\$ 266
Other comprehensive earnings (loss):			
Foreign currency translation adjustment	(197)	38	(160)
Pension and other postretirement benefits	122	296	(178)
Effective financial derivatives	(86)	17	9
Total other comprehensive earnings (loss)	(161)	351	(329)
Income tax (provision) benefit	(18)	(65)	27
Total other comprehensive earnings (loss), net of tax	(179)	286	(302)
Total comprehensive earnings (loss)	274	666	(36)
Comprehensive (earnings) loss attributable to noncontrolling interests	1	(7)	(2)
Comprehensive earnings (loss) attributable to Ball Corporation	\$ 275	\$ 659	\$ (38)

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

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Consolidated Balance Sheets

Ball Corporation

(\$ in millions)	December 31,	
	2018	2017
Assets		
Current assets		
Cash and cash equivalents	\$ 721	\$ 448
Receivables, net	1,802	1,634
Inventories, net	1,271	1,526
Other current assets	146	150
Total current assets	3,940	3,758
Noncurrent assets		
Property, plant and equipment, net	4,542	4,610
Goodwill	4,475	4,933
Intangible assets, net	2,188	2,462
Other assets	1,409	1,406
Total assets	\$ 16,554	\$ 17,169
Liabilities and Shareholders' Equity		
Current liabilities		
Short-term debt and current portion of long-term debt	\$ 219	\$ 453
Accounts payable	3,095	2,762
Accrued employee costs	289	352
Other current liabilities	492	540
Total current liabilities	4,095	4,107
Noncurrent liabilities		
Long-term debt	6,510	6,518
Employee benefit obligations	1,455	1,463
Deferred taxes	645	695
Other liabilities	287	340
Total liabilities	12,992	13,123
Shareholders' equity		
Common stock (673,236,720 shares issued - 2018; 670,576,215 shares issued - 2017)	1,157	1,084
Retained earnings	5,341	4,987
Accumulated other comprehensive earnings (loss)	(835)	(656)
Treasury stock, at cost (337,978,571 shares - 2018; 320,694,598 shares - 2017)	(2,205)	(1,474)
Total Ball Corporation shareholders' equity	3,458	3,941
Noncontrolling interests	104	105
Total shareholders' equity	3,562	4,046
Total liabilities and shareholders' equity	\$ 16,554	\$ 17,169

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

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Consolidated Statements of Cash Flows

Ball Corporation

(\$ in millions)	Years Ended December 31,		
	2018	2017	2016
Cash Flows from Operating Activities			
Net earnings	\$ 453	\$ 380	\$ 266
Adjustments to reconcile net earnings to cash provided by (used in) continuing operating activities:			
Depreciation and amortization	702	729	453
Business consolidation and other activities	191	221	337
Deferred tax provision (benefit)	35	82	(293)
Other, net	95	(268)	(57)
Working capital changes, excluding effects of acquisitions and dispositions (a):			
Receivables	(17)	(189)	(53)
Inventories	(248)	(66)	30
Other current assets	(47)	21	61
Accounts payable	592	639	(55)
Accrued employee costs	(77)	5	(14)
Other current liabilities	(140)	(28)	(481)
Other, net	27	(48)	(1)
Total cash provided by (used in) operating activities	1,566	1,478	193
Cash Flows from Investing Activities			
Capital expenditures	(816)	(556)	(606)
Business acquisitions, net of cash acquired (b)	—	—	(3,368)
Proceeds from business dispositions, net of cash sold	539	(2)	2,938
Settlement of Rexam acquisition related derivatives	—	—	(252)
Other, net	71	13	5
Cash provided by (used in) investing activities (b)	(206)	(545)	(1,283)
Cash Flows from Financing Activities			
Long-term borrowings	1,475	765	4,370
Repayments of long-term borrowings	(1,533)	(1,810)	(4,624)
Net change in short-term borrowings	(120)	184	23
Proceeds from issuances of common stock	28	27	48
Acquisitions of treasury stock	(739)	(103)	(107)
Common dividends	(137)	(129)	(83)
Other, net	(14)	(7)	(14)
Cash provided by (used in) financing activities	(1,040)	(1,073)	(387)
Effect of exchange rate changes on cash	(51)	(8)	(299)
Change in cash, cash equivalents and restricted cash (b)	269	(148)	(1,776)
Cash, cash equivalents and restricted cash – beginning of year (b)	459	607	2,383

Cash, cash equivalents and restricted cash – end of year (b)	\$ 728	\$ 459	\$ 607
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- (a) Includes payments of costs associated with the acquisition of Rexam and the sale of a business associated with the June 2016 acquisition of Rexam. See Note 4 for further details.
- (b) Amounts in 2017 and 2016 have been retrospectively adjusted to reflect the adoption of new accounting guidance that was effective January 1, 2018. See Notes 2 and 7 for further details.

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

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Consolidated Statements of Shareholders' Equity

Ball Corporation

(\$ in millions; share amounts in thousands)	Ball Corporation and Subsidiaries Common Stock		Treasury Stock		Retained Earnings	Accumulated Other Comprehensive Earnings (Loss)	Noncontrolling Interest	Total Shareholders' Equity
	Number of Shares	Amount	Number of Shares	Amount				
Balance at December 31, 2015	665,298	\$ 962	(380,718)	\$ (3,628)	\$ 4,557	\$ (640)	\$ 10	\$ 1,261
Net earnings	—	—	—	—	263	—	3	266
Other comprehensive earnings (loss), net of tax	—	—	—	—	—	(301)	(1)	(302)
Common dividends, net of tax benefits	—	—	—	—	(81)	—	—	(81)
Treasury stock purchases	—	—	(3,198)	(107)	—	—	—	(107)
Treasury shares reissued	—	—	640	23	—	—	—	23
Shares issued and stock compensation for stock options and other stock plans, net of shares exchanged	3,206	54	—	—	—	—	—	54
Tax benefit on option exercises	—	22	—	—	—	—	—	22
Acquisition of Rexam	—	—	64,502	2,302	—	—	94	2,396
Other activity	—	—	—	9	—	—	—	9
Balance at December 31, 2016	668,504	1,038	(318,774)	(1,401)	4,739	(941)	106	3,541

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Net earnings	—	—	—	—	374	—	6	380
Other comprehensive earnings (loss), net of tax	—	—	—	—	—	285	1	286
Common dividends, net of tax benefits	—	—	—	—	(126)	—	—	(126)
Treasury stock purchases	—	—	(2,552)	(103)	—	—	—	(103)
Treasury shares reissued	—	—	631	22	—	—	—	22
Shares issued and stock compensation for stock options and other stock plans, net of shares exchanged	2,072	46	—	—	—	—	—	46
Dividends paid to noncontrolling interests	—	—	—	—	—	—	(5)	(5)
Other activity	—	—	—	8	—	—	(3)	5
Balance at December 31, 2017	670,576	1,084	(320,695)	(1,474)	4,987	(656)	105	4,046
Impact of adopting new revenue recognition accounting standard	—	—	—	—	37	1	—	38
Balance at December 31, 2017, as adjusted	670,576	1,084	(320,695)	(1,474)	5,024	(655)	105	4,084
Net earnings	—	—	—	—	454	—	(1)	453
Other comprehensive earnings (loss), net of tax	—	—	—	—	—	(179)	—	(179)
Common dividends, net of tax benefits	—	—	—	—	(138)	—	—	(138)
Treasury stock purchases	—	—	(18,021)	(755)	—	—	—	(755)
Treasury shares reissued	—	—	737	23	—	—	—	23

Shares issued and stock compensation for stock options and other stock plans, net of shares exchanged	2,661	73	—	—	—	—	—	73
Other activity	—	—	—	1	1	(1)	—	1
Balance at December 31, 2018	673,237	\$ 1,157	(337,979)	\$ (2,205)	\$ 5,341	\$ (835)	\$ 104	\$ 3,562

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

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Ball Corporation

Notes to the Consolidated Financial Statements

1. Critical and Significant Accounting Policies

The preparation of Ball Corporation's (collectively, Ball, the company, we or our) consolidated financial statements in conformity with accounting principles generally accepted in the United States of America (U.S. GAAP) requires Ball's management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent liabilities at the date of the financial statements and reported amounts of revenues and expenses during the reporting periods. These estimates are based on historical experience and various assumptions believed to be reasonable under the circumstances. Ball's management evaluates these estimates on an ongoing basis and adjusts or revises the estimates as circumstances change. As future events and their impacts cannot be determined with precision, actual results may differ from these estimates. In the opinion of management, the financial statements reflect all adjustments necessary to fairly present the results of the periods presented.

Critical Accounting Policies

The company considers certain accounting policies to be critical, as their application requires management's judgment about the impacts of matters that are inherently uncertain. Detailed below is a discussion of the accounting policies the company considers critical to our consolidated financial statements.

Acquisitions

The company records acquisitions resulting in the consolidation of an enterprise using the purchase method of accounting. Under this method, the acquiring company records the assets acquired, including intangible assets that can be identified and named, and liabilities assumed based on their estimated fair values at the date of acquisition. The purchase price in excess of the fair value of the assets acquired and liabilities assumed is recorded as goodwill. If the assets acquired, net of liabilities assumed, are greater than the purchase price paid, then a bargain purchase has occurred and the company will recognize the gain immediately in earnings. Among other sources of relevant information, the company uses independent appraisals and actuarial or other valuations to assist in determining the estimated fair values of the assets and liabilities. Various assumptions are used in the determination of these estimated fair values including discount rates, market and volume growth rates, product selling prices, production costs and other prospective financial information. Transaction costs associated with acquisitions are expensed as incurred and included in the business consolidation and other activities line of the consolidated statement of earnings.

For acquisitions where the company already owns an equity investment in the acquired company, the company will recognize in earnings, upon the completion of the acquisition, a gain or loss related to the company's existing equity investment. This gain or loss is calculated based on the fair value of the equity investment as compared to the carrying value of the existing equity investment on the date of acquisition.

When the company purchases additional interests of consolidated subsidiaries that does not result in a change in control, the difference between the fair value and carrying value of the noncontrolling interests acquired is accounted for in the common stock line within shareholders' equity.

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Ball Corporation

Notes to the Consolidated Financial Statements

Exit and Other Closure Costs (Business Consolidation Costs)

The company estimates its liabilities for business closure activities by accumulating detailed estimates of costs and asset sale proceeds, if any, for each business consolidation initiative. This includes the estimated costs of employee severance, pension and related benefits; impairment of property and equipment and other assets, including estimates of net realizable value; accelerated depreciation; termination payments for contracts and leases; contractual obligations; and any other qualifying costs related to the exit plan. These estimated costs are grouped by specific projects within the overall exit plan and are then monitored on a monthly basis. Such charges represent management's best estimates, however, they require assumptions about the plans that may change over time. Changes in estimates for individual locations and other matters are evaluated periodically to determine if a change in estimate is required for the overall restructuring plan. Subsequent changes to the original estimates are included in current earnings and identified as business consolidation gains or losses.

Recoverability of Goodwill

On an annual basis and at interim periods when circumstances require, the company tests the recoverability of its goodwill. The company compares the carrying value of each identified reporting unit to its fair value. If the carrying value of the reporting unit is greater than its fair value, the company recognizes an impairment charge for the amount by which the carrying value exceeds the fair value. The company estimates fair value for each reporting unit primarily using the income approach. Under the income approach, fair value is estimated as the present value of estimated future cash flows of each reporting unit. The projected cash flows incorporate various assumptions related to weighted average cost of capital (WACC) and growth rates that are specific to each reporting unit. The company corroborates the results of its income approach using the market approach. Under the market approach, the company uses available information regarding multiples used in any recent market transactions involving transfer of controlling interests as well as publicly available trading multiples based upon the enterprise value of companies in either the packaging or aerospace and defense industries. The appropriate multiple is applied to forecasted EBITDA (a non-GAAP measure defined by the company as earnings before interest, taxes, depreciation and amortization) of each reporting unit to estimate fair value.

Defined Benefit Pension Plans and Other Employee Benefits

The company has defined benefit plans and postretirement plans that provide certain medical benefits and life insurance for retirees and eligible dependents and, to a lesser extent, participates in multi-employer defined benefit

plans for which Ball is not the sponsor. For the company-sponsored plans, the relevant accounting guidance requires that management make certain assumptions relating to the long-term rate of return on plan assets, discount rates used to determine the present value of future obligations and expenses, salary inflation rates, health care cost trend rates, mortality rates and other assumptions. The company believes the accounting estimates related to our pension and postretirement plans are critical accounting estimates because they are highly susceptible to change from period to period based on the performance of plan assets, actuarial valuations, market conditions and contracted benefit changes. The selection of assumptions is based on historical trends and known economic and market conditions at the time of valuation, as well as independent studies of trends performed by the company's actuaries. However, actual results may differ substantially from the estimates that were based on the critical assumptions.

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Ball Corporation

Notes to the Consolidated Financial Statements

The company recognizes the funded status of each defined benefit pension plan and other postretirement benefit plans in the consolidated balance sheet. Each overfunded plan is recognized as an asset, and each underfunded plan is recognized as a liability. Pension plan obligations are revalued annually, or when an event occurs that requires remeasurement, based on updated assumptions and information about the individuals covered by the plan. For pension plans, accumulated actuarial gains and losses in excess of a 10 percent corridor and the prior service cost are amortized on a straight-line basis from the date recognized over the average remaining service period of active participants or the average life expectancy for plans with significant inactive participants. For other postemployment benefits, the 10 percent corridor is not used. Costs related to defined benefit and other postretirement plans are included in cost of sales and selling, general and administrative expenses, while settlement and curtailment expenses are included in business consolidation expenses.

Income Taxes

Deferred income taxes reflect the future tax consequences of differences between the tax bases of assets and liabilities and their financial reporting amounts at each balance sheet date, based upon enacted income tax laws and tax rates. Income tax expense or benefit is provided based on earnings reported in the financial statements. The provision for income tax expense or benefit differs from the amounts of income taxes currently payable because certain items of income and expense included in the consolidated financial statements are recognized in different time periods by taxing authorities.

Deferred tax assets, including operating loss, capital loss and tax credit carryforwards, are reduced by a valuation allowance when, in the opinion of management, it is more likely than not that any portion of these tax attributes will not be realized. In addition, from time to time, management must assess the need to accrue or disclose uncertain tax positions for proposed adjustments from various federal, state and foreign tax authorities who regularly audit the company in the normal course of business. In making these assessments, management must often analyze complex tax laws of multiple jurisdictions, including many foreign jurisdictions. The accounting guidance prescribes a recognition threshold and measurement attribute for the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return. The company records the related interest expense and penalties, if any, as tax expense in the tax provision.

Derivative Financial Instruments

The company uses derivative financial instruments for the purpose of hedging commercial risk exposures to fluctuations in interest rates, currency exchange rates, raw material costs and common share prices. The company's derivative instruments are recorded in the consolidated balance sheets at fair value. The company values each derivative financial instrument either by using a single valuation technique based on observable market inputs performed internally or by obtaining valuation information from a reliable and observable market source. For a derivative designated as a cash flow hedge, the derivative's mark to fair value is initially recorded as a component of accumulated other comprehensive earnings and subsequently reclassified into earnings when the hedged item affects earnings, unless it is probable that the forecasted transaction will not occur. Derivatives that do not qualify for hedge accounting are marked to fair value with gains and losses immediately recorded in earnings. In the consolidated statements of cash flows, derivative activities are classified based on the cash flows of the items being hedged, except for those activities that are hedging the effect of exchange rate changes on cash, which are presented in investing activities.

Realized gains and losses from hedges are classified in the consolidated statements of earnings consistent with the accounting treatment of the items being hedged. Upon the dedesignation of an effective derivative contract, the gains or losses are deferred in accumulated other comprehensive earnings until the originally hedged item affects earnings unless it is probable the hedged item will not occur at which time it is recognized immediately. Any gains or losses incurred after the dedesignation date are recorded in earnings immediately.

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Notes to the Consolidated Financial Statements

Contingencies

The company is subject to various legal proceedings and claims, including those that arise in the ordinary course of business. The company records loss contingencies when it determines the outcome of the future event is probable of occurring and the amount of the loss can be reasonably estimated. Gain contingencies are recognized in the financial statements when they are realized or realizable.

The determination of a reserve for a loss contingency is based on management's judgment of probability and estimates with respect to the likelihood of an outcome and valuation of the future event. Liabilities are recorded or adjusted when events or circumstances cause these judgments or estimates to change. In assessing whether a loss is probable, Ball may consider the following factors, among others: the nature of the litigation, claim or assessment; available information, opinions or views of legal counsel and other advisors; and the experience gained from similar cases by the company and others. The company provides disclosures for material contingencies when there is a reasonable possibility that a loss or an additional loss may be incurred. Actual amounts realized upon settlement of contingencies may be different than amounts recorded and disclosed, and such adjustments could have a significant impact on the company's consolidated financial statements.

Significant Accounting Policies

Principles of Consolidation and Basis of Presentation

The consolidated financial statements include the accounts of Ball, its consolidated subsidiaries, and variable interest entities in which the company is considered to be the primary beneficiary. Equity investments in which the company exercises significant influence but does not control and is not the primary beneficiary are accounted for using the equity method of accounting. Investments in which the company neither exercises significant influence over the investee, nor is the primary beneficiary of the investment, are accounted for using the cost method of accounting. Intercompany transactions are eliminated in consolidation.

Reclassifications

Certain prior year amounts have been reclassified in order to conform to the current year presentation.

Cash and Cash Equivalents

Cash and cash equivalents include cash on hand and highly liquid investments with original maturities of three months or less.

Inventories

Inventories are stated at the lower of cost or market using either the first-in, first-out (FIFO) cost method of accounting or the average cost method. Inventory cost is calculated for each inventory component taking into consideration the appropriate cost factors including fixed and variable overhead, material price volatility and production levels.

Impairment of Long-Lived Assets

We review long-lived assets for impairment when circumstances indicate the carrying amount of an asset or asset group may not be recoverable based on the undiscounted future cash flows of the asset. We review long-lived assets for impairment at the individual asset or the asset group level for which the lowest level of independent cash flows can be identified. If the carrying amount of the asset or asset group is determined not to be recoverable, a write-down to fair value is recorded. Fair values are determined based on quoted market values, discounted cash flows or with the assistance of external appraisals, as applicable.

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Notes to the Consolidated Financial Statements

Depreciation and Amortization

Property, plant and equipment are carried at the cost of acquisition or construction. Repairs and maintenance costs, including labor and material costs for major improvements such as annual production line overhauls, are expensed as incurred, unless those costs substantially increase the useful lives or capacity of the existing assets. Assets are depreciated and amortized using the straight-line method over their estimated useful lives, generally 5 to 40 years for buildings and improvements and 2 to 20 years for machinery and equipment. Finite-lived intangible assets, excluding capitalized software costs, are generally amortized over their estimated useful lives of 3 to 18 years. Capitalized software is generally amortized over estimated useful lives of 3 to 7 years. The company periodically reviews these estimated useful lives and when appropriate, changes are made prospectively.

For certain business consolidation activities, accelerated depreciation may be required for the revised remaining useful life for assets designated to be scrapped or abandoned. The accelerated depreciation related to such activities is disclosed as part of business consolidation and other activities in the appropriate period.

Environmental Reserves

The company estimates its liability for environmental matters based on, among other factors, the degree of probability of an unfavorable outcome and the ability to make a reasonable estimate of the amount of loss. The company records the best estimate of a loss when the loss is considered probable. As additional information becomes available, the company reassesses the potential liability related to pending matters and revises the estimates.

Revenue Recognition in the Packaging Segments

The company recognizes sales of products in its packaging segments when a customer obtains control of promised goods or services, which generally occurs upon shipment or delivery of goods. On January 1, 2018, Ball adopted the new revenue accounting standard and all related amendments. Further details of the new guidance and its adoption are included in Notes 2 and 5.

For sales recognized in 2017 and 2016, the company recognized sales of products in the packaging segments when the four basic criteria of revenue recognition were met: delivery had occurred, title had transferred, there was persuasive evidence of an agreement or arrangement and the price was fixed or determinable and collection was reasonably assured.

Revenue Recognition in the Aerospace Segment

Sales under long-term contracts in the aerospace segment are primarily recognized using percentage-of-completion accounting under the cost-to-cost method. On January 1, 2018, Ball adopted the new revenue accounting standard and all related amendments. Further details of the new guidance and its adoption are included in Notes 2 and 5.

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Notes to the Consolidated Financial Statements

Fair Value Measurements

Generally accepted accounting principles define fair value as the price that would be received to sell an asset or be paid to transfer a liability in an orderly transaction between market participants at the measurement date (exit price) and such principles also establish a fair value hierarchy that prioritizes the inputs used to measure fair value using the following definitions (from highest to lowest priority):

- Level 1—Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities.
- Level 2—Observable inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly, including quoted prices for similar assets and liabilities in active markets; quoted prices for identical or similar assets and liabilities in markets that are not active; or other inputs that are observable or can be corroborated by observable market data by correlation or other means.
- Level 3—Prices or valuation techniques requiring inputs that are both significant to the fair value measurement and unobservable.

Stock-Based Compensation

Ball has a variety of restricted stock, stock option, and stock-settled appreciation rights (SSARs) plans, and the related stock-based compensation is primarily reported as part of selling, general and administrative expenses in the consolidated statements of earnings. The compensation expense associated with restricted stock grants is calculated using the fair value at the date of grant (closing stock price) and is amortized over the restriction period. For stock options and SSARs, the company has elected to use the Black-Scholes valuation model and amortizes the estimated fair value, determined at the date of grant, on a straight-line basis over the requisite service period (generally the vesting period). The company's deferred compensation stock program is subject to variable plan accounting and, accordingly, is valued at the closing price of the company's common stock at the end of each reporting period.

Research and Development Costs

Research and development costs are expensed as incurred in connection with the company's programs for the development of products and processes. Costs incurred in connection with these programs, the majority of which are included in cost of sales, amounted to \$32 million, \$27 million and \$28 million for the years ended December 31, 2018, 2017 and 2016, respectively.

Currency Translation

Assets and liabilities of foreign operations with a functional currency other than the U.S. dollar are translated using period-end exchange rates, and revenues and expenses are translated using average exchange rates during each period. Translation gains and losses are reported in accumulated other comprehensive earnings (loss) as a component of shareholders' equity.

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Ball Corporation

Notes to the Consolidated Financial Statements

2. Accounting Pronouncements

Recently Adopted Accounting Standards

Revenue from Contracts with Customers

On January 1, 2018, Ball adopted the new revenue accounting standard and all related amendments. The company elected to apply the modified retrospective method to all contracts that were not completed as of January 1, 2018. The cumulative effect of initially applying the new revenue standard was recognized as an adjustment to the company's retained earnings balance as of January 1, 2018. Comparative periods have not been restated and continue to be reported under the accounting standards in effect for those periods.

The cumulative effect of the changes made to the company's January 1, 2018, consolidated balance sheet for the adoption of the new revenue standard is as follows:

(\$ in millions)	Balance at December 31, 2017	Adjustments Due to Adoption	Balance at January 1, 2018
Assets			
Receivables, net	\$ 1,634	\$ 307	\$ 1,941
Inventories, net	1,526	(241)	1,285
Other current assets	150	(4)	146
Liabilities			
Other current liabilities	540	17	557
Deferred taxes	695	7	702
Shareholders' equity			
Retained earnings	4,987	37	5,024
Accumulated other comprehensive earnings (loss)	(656)	1	(655)

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In accordance with the disclosure requirements of the new revenue standard, the impact of adoption on our 2018 consolidated statement of earnings and balance sheet as of December 31, 2018, was as follows:

(\$ in millions, except per share amounts)	Year Ended December 31, 2018		
	As Reported	Balances Without Adoption	Effect of Change Higher (Lower)
Net sales	\$ 11,635	\$ 11,614	\$ 21
Cost of sales (excluding depreciation and amortization)	(9,329)	(9,313)	(16)
Earnings before interest and taxes	935	930	5
Tax (provision) benefit	(185)	(184)	(1)
Net earnings attributable to Ball Corporation	454	450	4
Basic earnings per share	1.32	1.31	0.01
Diluted earnings per share	1.29	1.28	0.01

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Ball Corporation

Notes to the Consolidated Financial Statements

(\$ in millions)	December 31, 2018		
	As Reported	Balances Without Adoption	Effect of Change Higher/(Lower)
Assets			
Receivables, net	\$ 1,802	\$ 1,485	\$ 317
Inventories, net	1,271	1,518	(247)
Other current assets	146	153	(7)
Liabilities			
Other current liabilities	492	477	15
Deferred taxes	645	639	6
Shareholders' equity			
Retained earnings	5,341	5,300	41
Accumulated other comprehensive earnings (loss)	(835)	(836)	1

The following summarizes the significant impacts to the company's consolidated statement of earnings and consolidated balance sheet as a result of the new revenue standard adopted on January 1, 2018, as compared to how sales would have been recognized under the previous revenue recognition guidance:

- For the metal beverage packaging segments and, to a lesser extent, in our non-reportable segment that manufactures aerosol packaging, the new revenue standard accelerated the recognition of certain sales to be over time such that a portion of sales is now recognized prior to shipment or delivery of goods. The accelerated recognition of sales also caused the company's inventory to decrease with an offsetting increase to unbilled receivables to the extent the amounts had not yet been invoiced to the customer and right to payment was unconditional.
- For the aerospace segment, sales from the majority of the company's contracts continue to be recognized over time under the cost-to-cost method based on the continuous transfer of control to the customer, which is consistent with how sales were recognized under previous revenue recognition guidance; therefore, no cumulative effect adjustment was required to be made upon adoption for such sales.
- In circumstances where the customer's payment, or Ball's unconditional right to that consideration, preceded the company's performance, we recognized a contract liability.

Pension and Postretirement Benefit Costs

In March 2017, amendments to existing accounting guidance were issued to change the presentation of net periodic pension cost and net periodic postretirement benefit cost. Employers are now required to report the service cost component in the same line item as other compensation costs arising from services rendered by the associated employees during the period. The other components of net periodic pension cost and net periodic postretirement benefit cost are required to be presented in the income statement separately from the service cost component and outside a subtotal of income from operations, if one is presented. The amendments also permit only the service cost component of net benefit cost to be eligible for capitalization. This guidance was adopted by the company on January 1, 2018, and the capitalization of the service cost component was applied on a prospective basis; no service costs capitalized in a prior period were taken to earnings as a result of this adoption. Curtailment and settlement losses are reported by the company in business consolidation and other activities. All other non-service components are immaterial and are presented in selling, general and administrative (SG&A) expenses beginning in 2018. These non-service costs were reported in both cost of sales and SG&A in prior periods; however, due to immateriality in all prior periods presented, no retrospective adjustments were considered necessary. Such non-service costs were \$21 million and \$15 million for 2017 and 2016, respectively.

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Ball Corporation

Notes to the Consolidated Financial Statements

Definition of a Business

In January 2017, amendments to existing accounting guidance were issued to further clarify the definition of a business in determining whether or not a company has acquired or sold a business. The guidance was applied prospectively for Ball on January 1, 2018, and did not have an impact on the company's consolidated financial statements.

Statement of Cash Flows

In November 2016, accounting guidance was issued requiring companies to reconcile the change in the total of cash, cash equivalents and restricted cash or restricted cash equivalents in the statement of cash flows. This guidance was applied retrospectively on January 1, 2018, and the impact on the 2017 statement of cash flow was not material. The impact on the 2016 statement of cash flows was material due to approximately \$2 billion of restricted cash held in an acquisition escrow account by the company at December 31, 2015. In July 2016, the funds in the escrow account were used to pay a portion of the cash component of the acquisition price of Rexam.

In August 2016, accounting guidance was issued addressing eight specific cash flow issues. This guidance was applied retrospectively on January 1, 2018, and did not have a material impact on the company's consolidated statement of cash flows.

Intra-Entity Transfers

In October 2016, amendments to existing accounting guidance were issued which require entities to recognize the income tax consequences of an intra-entity transfer of an asset other than inventory when the transfer occurs, as opposed to when the asset is sold to an unrelated third party. The amendments also eliminate the exception for an intra-entity transfer of an asset other than inventory. This guidance was applied on a modified retrospective basis on January 1, 2018, and did not have a material impact on the company's consolidated financial statements.

New Accounting Guidance

Cloud Computing Arrangements

In August 2018, amendments to existing accounting guidance were issued to clarify the accounting for implementation costs for cloud computing arrangements. The amendments specify that existing guidance for capitalizing implementation costs incurred to develop or obtain internal-use software also applies to implementation costs incurred in a hosting arrangement that is a service contract. The guidance is effective for Ball on January 1, 2020, and the company is currently assessing the impact that the adoption of this new guidance will have on its consolidated financial statements.

Fair Value Measurements and Pension and Postretirement Benefit Costs

In August 2018, amendments to existing accounting guidance were issued to simplify financial statement disclosures related to defined benefit plans and fair value measurements. This guidance is effective for Ball on January 1, 2020, and is not expected to have a material effect on the company's consolidated financial statements.

Stranded Tax Effects

In February 2018, accounting guidance was issued to permit the reclassification from accumulated other comprehensive earnings to retained earnings of stranded tax effects resulting from the U.S. Tax Cuts and Jobs Act signed into law in December 2017. The guidance is effective for Ball on January 1, 2019, and the company is currently assessing how to adopt the new guidance and the associated impact on its consolidated financial statements.

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Ball Corporation

Notes to the Consolidated Financial Statements

Financial Assets

In June 2016, amendments to existing guidance were issued requiring financial assets or a group of financial assets measured at amortized cost basis to be presented at the net amount expected to be collected when finalized. The allowance for credit losses is a valuation account that will be deducted from the amortized cost basis of the financial asset to present the net carrying value at the amount expected to be collected on the financial asset. This guidance affects loans, debt securities, trade receivables, net investments in leases, off-balance-sheet credit exposures, reinsurance receivables and any other financial assets not excluded from the scope that have the contractual right to receive cash. The guidance is effective for Ball on January 1, 2020. The company is currently assessing the impact that the adoption of this new guidance will have on its consolidated financial statements.

Lease Accounting

In February 2016, lease accounting guidance was issued which, for operating leases, will require a lessee to recognize a right-of-use asset and a lease liability, initially measured at the present value of the lease payments, on its balance sheet. The guidance will also require a lessee to recognize a single lease cost, calculated so that the cost of the lease is allocated over the lease term, generally on a straight-line basis.

In July 2018, targeted improvements were issued to provide an additional optional transition method that will allow entities to adopt the new leases standard by recognizing a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. This option is in addition to the existing modified retrospective transition method that requires entities to apply the new standard at the beginning of the earliest period presented in the financial statements. Ball is electing this additional transition approach and will apply the new standard as of January 1, 2019, rather than as of the earliest comparative period presented. Additionally, the recent amendments include a lessor-specific practical expedient, by underlying asset class, to not separate nonlease components from the associated lease components. Codification improvements were also issued on a variety of topics within the new leases standard, which represent minor corrections or improvements and are not expected to have a significant impact on our accounting practices.

We have established a cross-functional implementation team related to this new lease standard, which includes representatives from all of our business segments. We are utilizing a bottoms-up approach to analyze the impact of the new standard by reviewing our current lease population, including completeness, to identify potential accounting, data and other operational changes that might be required under the new guidance. In addition, we are implementing the

required changes to our business processes, systems and controls to support recognition and disclosure upon adoption. This implementation effort includes enhancing processes and controls for identifying leases, centralizing the accounting for leases, and implementing a system to calculate the accounting impact for the lease standard. The guidance is effective for Ball on January 1, 2019, and there is a material amount of lease assets and liabilities that will be recorded on our consolidated balance sheet. We expect to elect the following practical expedients: (1) the package of three, which allows us to not reassess (a) whether a contract is or contains a lease, (b) lease classification and (c) initial direct costs; and (2) the land easements expedient, which allows us to not reassess certain land easements. We will adopt the standard for the period beginning January 1, 2019, and our processes, systems and internal controls will be in a position to report under the new accounting standard in the first quarter of 2019.

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3. Business Segment Information

Ball's operations are organized and reviewed by management along its product lines and geographical areas and presented in the four reportable segments outlined below:

Beverage packaging, North and Central America: Consists of operations in the U.S., Canada and Mexico that manufacture and sell metal beverage containers throughout those countries.

Beverage packaging, South America: Consists of operations in Brazil, Argentina and Chile that manufacture and sell metal beverage containers throughout most of South America.

Beverage packaging, Europe: Consists of operations in numerous countries in Europe, including Russia, that manufacture and sell metal beverage containers throughout most of Europe.

Aerospace: Consists of operations that manufacture and sell aerospace and other related products and provide services used in the defense, civil space and commercial space industries.

As presented in the tables below, Other consists of non-reportable segments located in Africa, Middle East and Asia (beverage packaging, AMEA) and Asia Pacific (beverage packaging, Asia Pacific) that manufacture and sell metal beverage containers; a non-reportable segment that manufactures and sells aerosol containers, extruded aluminum aerosol containers and aluminum slugs (aerosol packaging); undistributed corporate expenses; intercompany eliminations and other business activities.

The accounting policies of the segments are the same as those in the consolidated financial statements, as discussed in Note 1. The company also has investments in operations in Guatemala, Panama, South Korea, the U.S. and Vietnam that are accounted for under the equity method of accounting and, accordingly, those results are not included in segment sales or earnings.

On July 31, 2018, Ball sold its U.S. steel food and steel aerosol packaging business and formed a joint venture, Ball Metalpack. After the sale, Ball's 49 percent ownership interest in Ball Metalpack's financial results is reported in equity in results of affiliates, net of tax, within Ball's consolidated statements of earnings. The financial results of Ball's remaining non-reportable aerosol packaging segment are reported within Other in the segment tables below. In addition, as a result of the July 2018 sale of the U.S. steel food and steel aerosol business, the results of operations for 2018 and prior year comparative periods of the company's entire former food and aerosol packaging reportable segment are reported within Other in the segment tables below as a non-reportable segment.

Major Customers

Net sales to major customers, as a percentage of consolidated net sales, were as follows:

	2018		2017		2016	
Anheuser-Busch InBev and affiliates	13	%	14	%	7	%
Coca-Cola Bottlers' Sales & Services Company LLC and affiliates	12	%	11	%	9	%
U.S. Government	10	%	9	%	9	%
Molson Coors Brewing Company and affiliates	7	%	7	%	9	%

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Summary of Net Sales by Geographic Area (a)

(\$ in millions)	U.S.	Brazil	Other	Consolidated
2018	\$ 5,783	\$ 1,380	\$ 4,472	\$ 11,635
2017	5,496	1,427	4,060	10,983
2016	4,929	904	3,228	9,061

(a) Revenue is attributed based on origin of sale and includes intercompany eliminations.

Summary of Net Long-Lived Assets by Geographic Area (a)

(\$ in millions)	U.S.	Brazil	U.K.	Other	Consolidated
As of December 31, 2018	\$ 1,708	\$ 865	\$ 701	\$ 2,677	\$ 5,951
As of December 31, 2017	1,852	876	659	2,629	6,016

(a) Long-lived assets exclude goodwill and intangible assets.

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Summary of Business by Segment

(\$ in millions)	Years Ended December 31,		
	2018	2017	2016
Net sales			
Beverage packaging, North and Central America	\$ 4,626	\$ 4,178	\$ 3,612
Beverage packaging, South America	1,701	1,692	1,014
Beverage packaging, Europe	2,619	2,360	1,915
Aerospace	1,196	991	818
Reportable segment sales	10,142	9,221	7,359
Other	1,493	1,762	1,702
Net sales	\$ 11,635	\$ 10,983	\$ 9,061
Comparable operating earnings			
Beverage packaging, North and Central America	\$ 551	\$ 533	\$ 469
Beverage packaging, South America	313	333	185
Beverage packaging, Europe	282	233	217
Aerospace	113	98	88
Reportable segment comparable operating earnings	1,259	1,197	959
Reconciling items			
Other (a)	31	23	17
Business consolidation and other activities	(191)	(221)	(337)
Amortization of acquired Rexam intangibles	(164)	(162)	(65)
Catch-up depreciation and amortization for 2016 from finalization of Rexam valuation	—	(35)	—
Cost of sales associated with Rexam inventory step-up	—	—	(84)
Egyptian pound devaluation	—	—	(27)
Earnings before interest and taxes	935	802	463
Interest expense	(301)	(285)	(229)
Debt refinancing and other costs	(1)	(3)	(109)
Total interest expense	(302)	(288)	(338)
Earnings before taxes	633	514	125

(a) Includes undistributed corporate expenses, net, of \$85 million, \$128 million and \$110 million for the years ended December 2018, 2017 and 2016, respectively.

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(\$ in millions)	Years Ended December 31,		
	2018	2017	2016
Depreciation and amortization (a)			
Beverage packaging, North and Central America	\$ 184	\$ 179	\$ 117
Beverage packaging, South America	131	144	78
Beverage packaging, Europe	238	254	121
Aerospace	33	31	30
Reportable segment depreciation and amortization	586	608	346
Other	116	121	107
Depreciation and amortization	\$ 702	\$ 729	\$ 453
Capital expenditures			
Beverage packaging, North and Central America	\$ 322	\$ 283	\$ 234
Beverage packaging, South America	106	36	33
Beverage packaging, Europe	194	81	126
Aerospace	130	70	41
Reportable segment capital expenditures	752	470	434
Other	64	86	172
Capital expenditures	\$ 816	\$ 556	\$ 606

(a) Includes amortization of acquired Rexam intangibles.

The company does not disclose total assets by segment as it is not provided to the chief operating decision maker.

4. Acquisitions and Dispositions

Beverage Packaging China

In December 2018, the company announced an agreement to sell its metal beverage packaging business in China for consideration of approximately \$225 million, plus potential additional consideration related to the relocation of an existing facility in China over the next several years. The transaction is subject to customary regulatory approvals and is expected to close during the second half of 2019. The assets and liabilities of the China beverage packaging business have not been presented as held for sale in the company's December 31, 2018, consolidated balance sheet given the uncertainty of pending regulatory approvals associated with this transaction. Given the contingent nature of the

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transaction, the company similarly has not provided any deferred tax impact in the financial statements for the income tax consequences that may arise if and when the sale is completed in a future reporting period.

U.S. Steel Food and Steel Aerosol Business

On July 31, 2018, Ball sold its U.S. steel food and steel aerosol packaging business and formed a joint venture, Ball Metalpack. In exchange for the sale of this business, Ball received approximately \$600 million of cash proceeds, subject to customary closing adjustments completed as of December 31, 2018, as well as a 49 percent ownership interest in Ball Metalpack. This investment is reported in other assets as an equity method investment on Ball's consolidated balance sheet. This transaction enhances our ability to return additional value to shareholders via share repurchases.

Ball recorded a loss of \$41 million upon completion of the sale. This loss was recorded in business consolidation and other activities in the company's consolidated statement of earnings.

The assets of the sold business included nine plants that manufacture and sell steel food and steel aerosol containers. The manufacturing plants were located in Canton and Columbus, Ohio; Milwaukee and Deforest, Wisconsin; Chestnut Hill, Tennessee; Horsham, Pennsylvania; Springdale, Arkansas; and Oakdale, California.

In connection with the sale of the U.S. steel food and steel aerosol business, the company entered into an agreement to supply metal to Ball Metalpack through December 31, 2018, and agreements to provide transition and other services to Ball Metalpack. During 2018, Ball Metalpack purchased \$163 million of steel from Ball, which was equivalent to Ball's cost; as such, the arrangement generated no profit for Ball, and Ball's steel sales to Ball Metalpack are offset against the cost of Ball's related metal purchases in the company's consolidated statements of earnings. At December 31, 2018, Ball is owed \$170 million and Ball owes \$34 million related to the above agreements, which are reported in receivables, net and accounts payable, respectively, on Ball's consolidated balance sheets.

Rexam

On June 30, 2016, Ball acquired 100 percent of the outstanding shares of Rexam, a U.K.-based beverage container manufacturer, for the purchase price of £2.9 billion (\$3.8 billion) in cash, and 64.5 million treasury shares of Ball Corporation common stock (valued at \$35.70 per share for a total share consideration of \$2.3 billion). Additionally, the company recorded \$24 million of consideration for stock-based compensation. The common shares were valued using the price on the date of acquisition and presented as a reduction of treasury stock. The cash portion of the acquisition price was paid in July 2016 using proceeds from restricted cash held in escrow and borrowings under the \$1.4 billion and €1.1 billion Term A loan facilities obtained in March 2016.

The consummation of the acquisition was subject to, among other things, approval from Ball's shareholders, approval from Rexam's shareholders, certain regulatory approvals and satisfaction of other customary closing conditions. In order to satisfy certain regulatory requirements, the company was required to sell a portion of Ball's existing beverage packaging business and select beverage can assets of Rexam (the Divestment Business). The sale of the Divestment Business to Ardagh Group S.A. (Ardagh) was completed concurrently on June 30, 2016, for \$3.42 billion, subject to customary closing adjustments and certain transaction service arrangements between Ball and Ardagh during a transition period. The sale agreement with Ardagh in respect of the Divestment Business contains customary representations, warranties, covenants and provisions allocating liabilities, as well as indemnification obligations to and from Ardagh, pursuant to which claims may be made when applicable. A pretax gain on sale \$344 million for the year ended December 31, 2016, was recorded within business consolidation and other activities and was subject to finalization of working capital and other items. The company also entered into a supply agreement with Ardagh to manufacture and sell can ends to the Divestment Business in Brazil in exchange for proceeds of \$103 million. In 2017, the company finalized the Ardagh closing adjustments and other ancillary matters and recorded an additional gain on sale of \$55 million.

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In connection with the sale of the Divestment Business to Ardagh on June 30, 2016, the company provided indemnifications for the uncertain tax positions of the Divestment Business sold to Ardagh. These indemnifications were accounted for as guarantees and the company initially recognized a liability equal to the fair value of the indemnities. There are no limitations on the maximum potential future payments the company could be obligated to make and, based on the nature of the indemnified items, the company is unable to reasonably estimate its potential exposure under these items in excess of liabilities recorded. During 2017, the company recorded \$34 million in business consolidation and other activities for an increase in the estimated amount of the claims covered by indemnifications for tax matters provided to the buyer in relation to the Divestment Business. The estimated value of the claims under these indemnities was \$55 million at December 31, 2017, of which \$45 million was paid during 2018.

The portion of the Divestment Business composed of Ball's legacy beverage packaging businesses had 2016 earnings before taxes as shown below. These earnings before taxes may not be indicative of the earnings before taxes that would be generated by these components of the Divestment Business in future periods. Additionally, due to complexities associated with how Ball's legacy beverage packaging businesses included in the Divestment Business were integrated into Ball Corporation in historical periods, these earnings before taxes may not be indicative of the earnings before taxes of these Divestment Business components had they been operated as a stand-alone business or businesses.

(\$ in millions)	Year Ended December 31, 2016
Earnings before taxes	\$ 104
Earnings before taxes attributable to Ball Corporation	104

The Rexam portion of the Divestment Business is not included in the table above as such financial results were never included in Ball's historical results.

A total of 54 manufacturing facilities were acquired from Rexam, including 17 in North America, 20 in Europe, 12 in South America and five in the AMEA region. A total of 22 manufacturing facilities were sold as part of the Divestment Business, including 12 Ball facilities and 10 Rexam facilities. Of these 22 facilities, eight are located in North America, 12 are located in Europe and two are located in Brazil. The company had a total of 75 beverage manufacturing facilities and joint ventures after the completion of the Rexam acquisition and sale of the Divestment

Business.

The Rexam acquisition aligns with Ball's Drive for 10 vision, including the company's long-standing capital allocation strategy and EVA philosophy. The combination created the world's largest supplier of beverage containers allowing the company to better serve its customers with its enhanced geographic footprint and innovative product offerings. In particular, Ball expects the acquisition to continue to deliver long-term shareholder value through optimizing global sourcing, reducing general and administrative expenses, sharing best practices to improve production efficiencies and leveraging its footprint to lower freight, logistics and warehousing costs. In addition, further value can continue to be created through balance sheet improvements with a focus on working capital and inventory management and sustainability priorities as a result of the larger plant network.

The Rexam acquisition was accounted for as a business combination and its results of operations have been included in the company's consolidated statements of earnings and cash flows from the date of acquisition. In total, pretax charges of \$216 million were incurred for transaction costs associated with the acquisition which, in accordance with current accounting guidance, were expensed as incurred. The transaction costs are included in the business consolidation and other activities line in the company's consolidated statement of earnings.

In connection with the acquisition, Ball assumed Rexam debt of approximately \$2.8 billion, of which approximately \$2.7 billion was extinguished during 2016. The proceeds from the sale of the Divestment Business were partially used to extinguish the assumed Rexam debt.

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During the second quarter of 2017, the company finalized the allocation of the purchase price for the Rexam acquisition. The measurement period adjustments to the acquisition fair values and useful lives for acquired identifiable intangible assets and fixed assets were due to the refinement of our valuation models, assumptions and inputs. The updated assumptions and inputs incorporated additional information obtained subsequent to the closing of the transaction related to facts and circumstances that existed as of the acquisition date. The final purchase price allocation changes during the second quarter of 2017 included an increase of \$590 million in the value of intangible assets, an increase of \$31 million in the value of investments in affiliates and a decrease of \$384 million in the value of goodwill. Net long-term deferred tax liabilities also increased by \$244 million primarily due to the tax effect of these changes to the final purchase price allocation. The company recorded an additional charge of \$35 million in 2017 in relation to the year ended December 31, 2016, for incremental depreciation and amortization related to the finalization of Rexam asset values and useful lives.

The following unaudited pro forma consolidated results of operations (pro forma information) have been prepared as if the acquisition of Rexam and the sale of the Divestment Business had occurred as of January 1, 2016. The pro forma information combines the historical results of Ball and Rexam. The pro forma information is not necessarily indicative of the actual results that would have occurred had the acquisition been in effect for the periods presented, nor is it necessarily indicative of the results that may be obtained in the future.

	Year Ended December 31, 2016
(\$ in millions, except per share amounts)	
Net sales (a)	\$ 10,455
Net earnings attributable to Ball Corporation (b)	227
Basic earnings per share	0.65
Diluted earnings per share	0.64

(a) Net sales were adjusted to include net sales of Rexam. The company also excluded the net sales attributable to the Divestment Business.

(b) Pro forma adjustments to net earnings attributable to Ball Corporation were adjusted as follows:

- Excludes acquisition-related transaction costs and debt refinancing costs incurred in the year ended December 31, 2016, pro forma statements of earnings.
- Includes interest expense associated with the new debt utilized to finance the acquisition.
- Includes depreciation and amortization expense based on the final fair value of property, plant and equipment and amortizable intangible assets acquired.
- Removes the charge to cost of sales of \$84 million for the year ended December 31, 2016 related to the step-up value of inventory.

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- Excludes net earnings attributable to the Divestment Business for the year ended December 31, 2016.
- Excludes the gain on sale of the Divestment Business for the year ended December 31, 2016.
- Includes the effect of final measurement period adjustments for the year ended December 31, 2016.

All of the above pro forma adjustments were adjusted for the applicable income tax impacts. Ball applied enacted statutory tax rates in the U.K. during the periods indicated above. Ball used a tax rate of 20 percent and 20.25 percent to calculate the financing, acquisition and divestment business-related adjustments for the year ended December 31, 2016. However, the tax impact on acquisition-related transaction costs was recorded at a U.S. statutory rate of approximately 37 percent as these transaction costs were incurred in the U.S. These rates may not be reflective of Ball's effective tax rate for future periods after the Rexam acquisition and sale of the Divestment Business.

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5. Revenue from Contracts with Customers

Disaggregation of Sales

The company disaggregates net sales by reportable segments as disclosed in Note 3, and based on the timing of transfer of control for goods and services as explained below. The transfer of control for goods and services may occur at a point in time or over time; in other words, sales may be recognized over the course of the underlying contract, or they may occur at a single point in time based upon the transfer of control. This distinction is discussed in further detail below. The company determined that disaggregating sales into these categories achieves the disclosure objective to depict how the nature, amount, timing, and uncertainty of sales and cash flows are affected by economic factors. As disclosed in Note 3, the company's business consists of four reportable segments, which encompass disaggregated product lines and geographical areas: (1) beverage packaging, North and Central America; (2) beverage packaging, South America; (3) beverage packaging, Europe; and (4) aerospace.

The following table disaggregates the company's net sales based on the timing of transfer of control:

(\$ in millions)	Year Ended December 31, 2018		
	Point in Time	Over Time	Total
Total net sales	\$ 2,634	\$ 9,001	\$ 11,635

Contract Balances

The company enters into contracts to sell beverage packaging, aerosol packaging, and aerospace products. The payment terms and conditions in customer contracts vary. Those customers that prepay are represented by the contract liabilities shown in the table below, until the company's performance obligations are satisfied. Contract assets would exist when sales have been recorded (i.e., control of the goods or services has been transferred to the customer) but customer payment is contingent on a future event beyond the passage of time (i.e., satisfaction of additional performance obligations). The company did not have any contract assets at either December 31, 2018, or December 31, 2017. Unbilled receivables, which are not classified as contract assets, represent arrangements in which sales have

been recorded prior to billing and right to payment is unconditional. The opening and closing balances of the company's current and noncurrent contract liabilities are as follows:

(\$ in millions)	Contracts Liabilities (Current)	Contract Liabilities (Noncurrent)
Balance at December 31, 2017	\$ 45	\$ —
Increase	—	8
Balance at December 31, 2018	\$ 45	\$ 8

During the year ended December 31, 2018, contract liabilities increased by \$8 million, which is net of cash received of \$224 million and amounts recognized as sales of \$216 million, all of which related to current contract liabilities. The amount of sales recognized during the year ended December 31, 2018, that were included in the company's opening contract liabilities balance was \$45 million, all of which related to current contract liabilities. The difference between the opening and closing balances of the company's contract liabilities primarily results from timing differences between the company's performance and the customer's payment. Current contract liabilities are classified within other current liabilities on the consolidated balance sheet and noncurrent contract liabilities are classified within other liabilities.

The company also recognized sales of \$18 million during the year ended December 31, 2018, from performance obligations satisfied (or partially satisfied) in prior periods. These sales amounts are the result of changes in the transaction price of the company's contracts with customers.

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Contract Costs

The company has determined there are no material costs that meet the capitalization criteria for costs to obtain or fulfill a contract.

Practical Expedients

For contracts that have an original duration of one year or less, the company has elected the practical expedient applicable to such contracts and has not disclosed the transaction price for future performance obligations as of the end of each reporting period or when the company expects to recognize sales.

The company has also elected the sales tax practical expedient; therefore, sales and other taxes assessed by a governmental authority that are collected concurrent with revenue-producing activities are excluded from the transaction price.

For shipping and handling activities performed after a customer obtains control of the goods, the company has elected to account for these costs as activities to fulfill the promise to transfer the goods; therefore, these activities are not assessed as separate performance obligations.

The company has also elected the significant financing component practical expedient which allows us to not assess whether the contract has a significant financing component in circumstances where, at contract inception, the expected contract duration is less than one year.

Beverage and Aerosol Packaging

Performance Obligations

At contract inception, the company assesses the goods and services promised in its contracts with customers and identifies a performance obligation for each promise to transfer goods or services to the customer. The performance obligation may be represented by a good or service (or a series of goods or services) that is distinct, or by a series of distinct goods or services that are substantially the same and have the same pattern of transfer to the customer. In each instance, the company treats the promise to transfer the customer goods or services as a single performance obligation.

To identify its performance obligations, the company considers all of the goods or services promised in the contract, regardless of whether they are explicitly stated or are implied by customary business practices.

The company has determined that the following distinct goods and services represent separate performance obligations:

- Manufacture of beverage cans, which may be generic or unique;
- Manufacture of aerosol containers, which may be generic or unique; and
- Manufacture of beverage and aerosol lids and ends, which may be generic or unique.

Performance obligations for products with no alternative use are recognized over time when the company has manufactured a unique item and has an enforceable right to payment. Conversely, generic products with alternative use are recognized at a point in time. Contracts may be short-term or long-term, with varying payment terms. Ball's payment terms vary by the type and location of the customer and the products or services offered. Customers pay in accordance with negotiated terms, which are typically triggered upon ownership transfer. All payment terms are less than one year. For all contracts, the transaction price is determined upon establishment of the contract that contains the final terms of the sale, including the description, quantity, and price of each product or service purchased.

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Transaction Price Allocated to Remaining Performance Obligations

In the context of the revenue recognition standard, enforceable contracts are those that have an enforceable right to payment, which Ball typically has once a binding forecast or purchase order (or similar evidence) is in place and Ball produces under the contract. Within Ball's packaging segments, enforceable contracts as defined all have a duration of less than one year. Contracts that have an original duration of less than one year are excluded from the requirement to disclose remaining performance obligations, based on the company's election to use the practical expedient. The nature of the remaining performance obligations within these contracts, as well as the nature of the variability and how it will be resolved, are described in the section below.

Significant Judgments

Timing of Recognition

Within the company's beverage and aerosol operations, performance obligations are recognized both over time and at a point in time. The determination that sales should be recognized at a point in time most often results from the existence of an alternative use for the product. Cans and ends that are not customized for a customer prior to delivery are considered to have an alternative use, and sales are recognized at the point of control transfer. Determining when control transfer occurs requires management to make judgments that affect the timing of when sales are recognized. The new revenue accounting standard provides five indicators that a customer has obtained control of an asset: 1) present right to payment; 2) transfer of legal title; 3) physical possession; 4) significant risks and rewards of ownership; and 5) customer acceptance. The company considers control to have transferred for these products upon shipment or delivery, depending on the legal terms of the contract, because the company has a present right to payment at that time, the customer has legal title to the asset, the company has transferred physical possession of the asset and/or the customer has significant risks and rewards of ownership of the asset. The company determines that control transfers to a customer as described above and provides a faithful depiction of the transfer of goods.

For performance obligations related to products that are specialized with no alternative use (e.g., specialized sizes or customer-specific materials, or labeled with customer-specific artwork), the company transfers control and records sales over time. The recognition of sales occurs over time as goods are manufactured and Ball has an enforceable right to payment for those goods, which is an output method. Determining a measure of progress requires management to make judgments that impact the timing of when sales are recognized. The company has determined the above provides a faithful depiction of the transfer of goods to the customer. The number of units manufactured that have an

enforceable right to payment is the best measure of depicting the company's performance as control is transferred. The customer obtains value as each unit is produced against a binding contract.

The enforceable right to payment may be explicit or implied in the contract. If the enforceable right to payment is not explicit in the contract, Ball must consider if there is an implied right based on customer relationships or previous business practices and applicable law. Typically, Ball has an enforceable right to payment of costs plus a reasonable margin once a binding forecast or purchase order (or similar evidence) is in place and Ball produces under the contract.

Determining the Transaction Price including Variable Consideration

In making its determination of stand-alone selling price, Ball maximizes its use of observable inputs. Stand-alone selling price is then used to allocate total consideration proportionally to the various performance obligations within a contract.

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To estimate variable consideration, we may apply both the “expected value” method and “most likely amount” method based on the form of variable consideration, after considering which method would provide the best prediction of consideration to be received from our customers. The expected value method involves a probability-weighted determination of the expected amount, whereas the most likely amount method identifies the single most likely outcome in a range of possible amounts. In certain cases, both methods may be used within a single contract if multiple forms of variable consideration exist. However, once a method has been applied to one form of variable consideration, it is applied consistently throughout the contract term.

The primary types of variable consideration present in the company’s contracts are per-unit price changes, volume discounts and rebates. Once variable consideration has been estimated, it will be constrained if a significant reversal of the cumulative amounts of sales is probable in the context of the contract.

Aerospace

Performance Obligations

At contract inception, the company assesses the goods and services promised in its contracts with customers and identifies a performance obligation for each promise to transfer goods or services to the customer. The performance obligation may be represented by a good or service (or a series of goods or services) that is distinct, or by a series of distinct goods or services that are substantially the same and have the same pattern of transfer to the customer. In each of these scenarios, the company treats the promise to transfer the customer goods or services as a single performance obligation.

To identify its performance obligations, the company considers all of the goods or services promised in the contract, regardless of whether they are explicitly stated or are implied by customary business practices.

The company has determined that the following distinct goods and services represent separate performance obligations:

- Manufacture and delivery of distinct spacecraft and/or hardware components;
- Research reports, for contracts where such reports are the sole or primary deliverable;
- Design, add-on, or special studies for contracts where such studies have stand-alone value or a material right exists due to discounted pricing; and
- Warranty and performance guarantees beyond standard repair/replacement.

Performance obligations with no alternative use are recognized over time, when the company has an enforceable right to payment for efforts completed to-date. Because of sales contract payment schedules, limitations on funding, and contract terms, our sales and accounts receivable generally include amounts that have been earned but not yet billed. Our payment terms vary by the type and location of our customer and the products or services offered. All payment terms are less than one year.

Contracts are often modified to account for changes in contract specifications and requirements. We consider contract modifications to exist when the modification either creates new or revised enforceable rights and obligations. Most of our contract modifications are for goods or services that are not distinct from the existing contract due to the significant integration service provided in the context of the contract, and such contract modifications are accounted for as if they were part of that existing contract. The effect of a contract modification on the transaction price, and our measure of progress for the performance obligation to which it relates, is recognized as an adjustment to sales (either as an increase or reduction of sales) on a cumulative catch-up basis.

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Transaction Price Allocated to Remaining Performance Obligations

The table below discloses: (1) the aggregate amount of the transaction price allocated to performance obligations that are unsatisfied (or partially unsatisfied) as of the end of the reporting period, for those contracts with an original duration of at least one year, and (2) when the company expects to record sales on these multi-year contracts.

(\$ in millions)	Next Twelve Months	Thereafter	Total
Sales expected to be recognized on multi-year contracts in place as of December 31, 2018	\$ 1,048	\$ 1,119	\$ 2,167

The contracts with an original duration of less than one year, which are excluded from the table above based on the company's election of the practical expedient, are primarily related to contracts where control will be fully transferred to the customers in less than one year. The nature of the remaining performance obligations within these contracts, as well as the nature of the variability and how it will be resolved, are described in the section below.

Significant Judgments

Timing of Recognition

Within the aerospace segment, performance obligations are recognized over time. Aerospace contracts involve specialized and unique products that are tailored to the specific needs of the customer, such as a spacecraft or other hardware conforming to the specifications required by the customer, and as such, no alternative use exists. When there is an enforceable right to payment at cost plus reasonable margin for performance completed to date, the sales are recorded over time as the goods are manufactured or services are performed. Determining a measure of progress requires management to make judgments that affect the timing of recording sales. Sales under long-term contracts in the aerospace segment are primarily recognized using percentage-of-completion accounting under the cost-to-cost method, which is an input method. Under this method, the extent of progress towards completion is measured based on the ratio of costs incurred to date versus the total estimated costs upon completion of the performance obligation.

The cost-to-cost method best depicts the transfer of assets to the customer as we incur costs on our contracts. The percentage-of-completion method of accounting involves the use of various estimating techniques to project revenues and costs at completion and various assumptions and projections relative to the outcome of future events, including the quantity and timing of product deliveries, future labor performance and rates, and material and overhead costs. Throughout the period of contract performance, the company regularly evaluates and, if necessary, revises estimates of total contract revenue, total contract cost, and extent of progress toward completion.

The two primary types of long-term sales contracts utilized are cost-type contracts, which are agreements to perform for cost plus an agreed-upon profit component, and fixed price sales contracts, which are completed for a fixed price. Cost-type sales contracts can have different types of fee arrangements, including fixed-fee, cost, milestone and performance incentive fees, award fees or a combination thereof. At the inception of contract performance, we estimate sales associated with base, incentive and other fees exclusive of any constraint. In other words, we estimate sales to the extent that it is not probable a significant reversal will occur over the period of contract performance. The company has determined that the above provides a faithful depiction of the transfer of goods to the customer and is the best measure of depicting the company's performance as control is transferred to customers.

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Determining the Transaction Price including Variable Consideration

Due to the unique and customized nature of deliverables within aerospace contracts, a readily observable selling price for a similar good is not typically available; therefore, in making its determination of stand-alone selling price, the company generally applies the “expected cost plus a margin” approach (whereby the transaction price is allocated based on the relative amount of costs plus an appropriate margin). Use of the expected cost plus a margin approach requires Ball to determine the expected costs for each performance obligation, as well as an appropriate margin (i.e., cost-to-cost percentage of completion). The calculation is made at contract inception to determine the allocation of consideration.

Uncertainty as to the total amount that will be paid by the customer (such as the exact amount of costs that will be incurred and fees that will be earned by us to satisfy the contractual requirements) gives rise to variable consideration. To estimate variable consideration, we apply the “most likely amount” method or the “expected value” method depending on the nature of the variable consideration. In certain cases, both methods may be used within a single contract if multiple forms of variable consideration exist. However, once a method has been applied to one form of variable consideration, it is applied consistently throughout the contract term.

The primary types of variable consideration present in the company’s contracts are cost reimbursements, performance award fees, incremental funding and finalization of government rates. These types of arrangements are most commonly (though not exclusively) estimated based on the “most likely” method. Once variable consideration has been estimated, it will be constrained if a significant reversal of the cumulative amount of sales is probable in the context of the contract.

6. Business Consolidation and Other Activities

Following is a summary of business consolidation and other activity (charges) income included in the consolidated statements of earnings:

(\$ in millions)	Years Ended December 31,		
	2018	2017	2016

Beverage packaging, North and Central America	\$ (6)	\$ (47)	\$ (20)
Beverage packaging, South America	11	(5)	(15)
Beverage packaging, Europe	(49)	(89)	(24)
Other	(147)	(80)	(278)
	\$ (191)	\$ (221)	\$ (337)

2018

Beverage Packaging, North and Central America

During 2018, the company recorded \$12 million of expense for employee severance and benefits, facility shutdown costs, asset impairment, accelerated depreciation and other costs in connection with the previously announced closures of its beverage can manufacturing facilities in Chatsworth, California, and Longview, Texas, and its beverage end manufacturing facility in Birmingham, Alabama. The Birmingham facility ceased production during the second quarter of 2018, and the Chatsworth and Longview facilities ceased production during the third quarter of 2018. Ball sold the Chatsworth facility during the fourth quarter of 2018 and recorded a gain of \$18 million.

The company recorded charges of \$2 million in 2018 related to the closure of its Reidsville, North Carolina, facility, which ceased production in 2017.

Other income and charges in 2018 included \$10 million of expense for individually insignificant activities.

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Beverage Packaging, South America

During 2018, the company recorded an \$18 million gain related to indirect tax contingencies in Brazil as these amounts have now been realized. Our Brazilian subsidiaries filed lawsuits in 2014 and 2015 to challenge the Brazilian tax authorities regarding the computation of certain indirect taxes, claiming amounts were overpaid to the tax authorities as a result of a tax on a tax being charged. As these cases are resolved and the amounts claimed become realizable, the company will record gains, which may result in material reimbursements to the company that cannot be estimated at this time.

The company recorded charges of \$4 million in 2018 related to employee severance and benefits, facility shutdown costs, asset impairment, accelerated depreciation and other costs related to restructuring activities, including the Cuiabá, Brazil facility closure.

Other charges in 2018 included \$3 million of expense for individually insignificant activities.

Beverage Packaging, Europe

During 2018, the company recorded charges of \$18 million for employee benefits, severance, facility shutdown costs and other costs in connection with the closure of its Recklinghausen, Germany, facility which ceased production during the third quarter of 2017.

In the fourth quarter of 2018, the company closed its beverage packaging manufacturing facility in San Martino, Italy and recorded charges of \$26 million related to employee severance and benefits, facility shutdown costs, asset impairment, accelerated depreciation and other costs.

Other charges in 2018 included \$5 million of expense for individually insignificant activities.

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Other

During 2018, the company recorded the following amounts:

- A \$41 million loss on the sale of the U.S. steel food and steel aerosol packaging business.
- A pension settlement loss of \$36 million primarily related to the purchase of non-participating group annuity contracts to settle a portion of the projected pension benefit obligations in certain Ball U.S. defined benefit pension plans and to lump sums paid to certain retirees.
- Expense of \$23 million for long-term incentive and other compensation arrangements associated with the Rexam acquisition.
- Expense of \$15 million for professional services and other costs associated with the sale of the U.S. steel food and steel aerosol packaging business and the proposed sale of the beverage packaging China business.
- Expense of \$4 million for employee severance and benefits, accelerated depreciation and inventory impairment related to manufacturing cost rationalization in the former food and aerosol packaging segment.
- Expense of \$2 million for the estimated amount of claims covered by the indemnification for certain tax matters provided to the buyer in the sale of the Divestment Business.
- Expense of \$26 million for individually insignificant activities.

2017

Beverage Packaging, North and Central America

During 2017, the company recorded charges of \$29 million for employee severance and benefits and \$4 million for facility shutdown costs, asset impairment, accelerated depreciation and other costs in connection with the announced closures of its beverage can manufacturing facilities in Chatsworth, California, and Longview, Texas, and its beverage end manufacturing facility in Birmingham, Alabama. All three locations ceased production during 2018.

During 2017, the company recorded charges of \$9 million for employee severance and benefits, facility shutdown costs, asset impairment, accelerated depreciation and other costs related to the closure of its Reidsville, North Carolina, facility.

Other charges in 2017 included \$5 million of individually insignificant activities.

Beverage Packaging, South America

Charges in 2017 included \$3 million of professional services and other costs associated with the acquisition of Rexam and \$2 million for individually insignificant activities.

Beverage Packaging, Europe

During 2017, the company recorded charges of \$59 million for employee severance and benefits and \$22 million for facility shutdown costs, asset impairment, accelerated depreciation and other costs in connection with the closure of its Recklinghausen, Germany, facility, which ceased production during the third quarter of 2017.

During 2017, the company recorded charges of \$4 million for professional services and other costs associated with the acquisition of Rexam.

Other charges in 2017 included \$4 million for individually insignificant activities.

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Other

During 2017, the company recorded the following amounts:

- A settlement loss of \$44 million primarily related to the purchase of non-participating group annuity contracts to settle a portion of the projected pension benefit obligations in certain Ball U.S. defined benefit pension plans, which triggered settlement accounting. The settlement loss primarily represented a pro rata portion of the aggregate unamortized actuarial loss in these pension plans.
- Expense of \$34 million for the estimated amount of claims covered by the indemnification for certain tax matters provided to the buyer in the sale of the Divestment Business.
- Expense of \$25 million for long-term incentive and other compensation arrangements associated with the Rexam acquisition.
- A \$55 million gain recognized in connection with the sale of the Ball portion of the Divestment Business.
- Expense of \$12 million for professional services and other costs associated with the acquisition of Rexam.
- Expense of \$7 million for facility shutdown costs and accelerated depreciation for the closure of its food and aerosol packaging facility located in Weirton, West Virginia, which ceased production during the second quarter of 2017.
- A gain of \$15 million related to the sale of its food and aerosol packaging paint and general line can facility in Hubbard, Ohio during the first quarter of 2017.
- Expense of \$28 million for individually insignificant activities.

2016

Beverage Packaging, North and Central America

During 2016, the company recorded charges of \$4 million for professional services and other costs associated with the acquisition of Rexam.

During 2016, the company recorded charges of \$4 million related to the facility closure in Bristol, Virginia, announced in 2015.

In 2016, the company announced the planned closure of its beverage packaging facility in Reidsville, North Carolina, which ceased production in 2017. Charges in 2016 of \$9 million were comprised of employee severance, pension and other benefits, asset impairments, and facility shut down and disposal costs.

Other charges in 2016 included \$3 million of individually insignificant activities.

Beverage Packaging, South America

During 2016, the company recorded charges of \$14 million for professional services and other costs associated with the acquisition of Rexam.

Other charges in 2016 included \$1 million of individually insignificant activities.

Beverage Packaging, Europe

During 2016, the company recorded charges of \$22 million for professional services and other costs associated with the acquisition of Rexam.

Other charges in 2016 included \$2 million of individually insignificant activities.

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Other

During 2016, the company recorded the following charges:

- Expense of \$301 million for professional services and other costs associated with the acquisition of Rexam.
- Foreign currency losses of \$173 million from the revaluation of foreign currency denominated restricted cash and intercompany loans related to the cash component of the Rexam acquisition purchase price, the sale of the Divestment Business and the revaluation of the euro-denominated debt issuance obtained in December 2015.
- Expense of \$108 million for long-term incentive and other compensation arrangements associated with the Rexam acquisition.
- A gain of \$344 million in connection with the sale of the Ball portion of the Divestment Business.
- Expense of \$18 million for facility shutdown costs and accelerated depreciation for the closure of its food and aerosol packaging facility located in Weirton, West Virginia, which ceased production during the second quarter of 2017.
- Gain of \$9 million related to the sale of its specialty tin manufacturing facility in Baltimore, Maryland.
- Charges of \$10 million related to rationalization of certain manufacturing equipment of the legacy food and aerosol packaging segment to align production capacity with its customer requirements. The charges included accelerated depreciation of the rationalized equipment and write-offs of costs associated with relocated assets
- Expense of \$21 million for individually insignificant activities.

Following is a summary by segment of the restructuring liabilities recorded in other current liabilities and accrued employee costs in connection with business consolidation activities discussed above:

(\$ in millions)	Beverage Packaging, North & Central America	Beverage Packaging, Europe	Other	Total
Balance at December 31, 2017	\$ 26	\$ 41	\$ 1	\$ 68
Charges (credits) in earnings	(6)	13	—	7
Cash payments and other activity	(12)	(44)	—	(56)
Balance at December 31, 2018	\$ 8	\$ 10	\$ 1	\$ 19

7. Supplemental Cash Flow Statement Disclosures

(\$ in millions)	December 31,	
	2018	2017
Beginning of period:		
Cash and cash equivalents	\$ 448	\$ 597
Current restricted cash (included in other current assets)	10	9
Noncurrent restricted cash (included in other assets)	1	1
Total cash, cash equivalents and restricted cash	\$ 459	\$ 607
End of period:		
Cash and cash equivalents	\$ 721	\$ 448
Current restricted cash (included in other current assets)	7	10
Noncurrent restricted cash (included in other assets)	—	1
Total cash, cash equivalents and restricted cash	\$ 728	\$ 459

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The company's restricted cash is primarily related to receivables factoring programs and represents amounts collected from customers but not yet remitted to the banks as of the end of the reporting period.

Noncash investing activities include the acquisition of property, plant and equipment (PP&E) for which payment has not been made. These noncash capital expenditures are excluded from the statement of cash flows. The PP&E acquired but not yet paid for amounted to \$127 million and \$124 million at December 31, 2018 and 2017, respectively. Noncash financing activities in 2018 include the unsettled acquisitions of treasury stock totaling \$16 million for which payment had not been made as of December 31, 2018.

In connection with the sale of a business associated with the June 2016 acquisition of Rexam, the company provided indemnifications for uncertain tax positions associated with the business. During 2018, the company made payments of \$45 million in relation to these liabilities and reported them within investing activities in the consolidated statement of cash flows.

8. Receivables, Net

(\$ in millions)	December 31,	
	2018	2017
Trade accounts receivable	\$ 812	\$ 1,206
Unbilled receivables	478	147
Less allowance for doubtful accounts	(10)	(10)
Net trade accounts receivable	1,280	1,343
Other receivables	522	291
	\$ 1,802	\$ 1,634

Unbilled receivables at December 31, 2018, include the effect of adopting new revenue recognition accounting guidance as of January 1, 2018. Further details of the new guidance and its adoption are included in Notes 2 and 5.

Net accounts receivable under long-term contracts, due primarily from agencies of the U.S. government and their prime contractors, were \$240 million and \$214 million at December 31, 2018 and 2017, respectively, and included

\$164 million and \$147 million at each period end, respectively, representing the recognized sales value of performance that was not yet billable to customers. The average length of the long-term contracts is approximately 2.6 years, and the average length remaining on those contracts at December 31, 2018, was one year. At December 31, 2018, \$240 million of net accounts receivables is expected to be collected within the next year and is related to customary fees and cost withholdings that will be paid upon milestone or contract completions, as well as final overhead rate settlements.

Other receivables include income and sales tax receivables, certain vendor rebate receivables, related party receivables and other miscellaneous receivables. See Note 4 for further details of related party receivables.

The company has entered into several regional uncommitted and committed accounts receivable factoring programs with various financial institutions for certain receivables of the company. Programs accounted for as true sales of the receivables, without recourse to Ball, had combined limits of approximately \$1.2 billion and \$1.0 billion at December 31, 2018 and 2017, respectively. A total of \$178 million and \$439 million were available for sale under these programs as of December 31, 2018 and 2017, respectively.

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9. Inventories, Net

(\$ in millions)	December 31,	
	2018	2017
Raw materials and supplies	\$ 727	\$ 691
Work-in-process and finished goods	614	902
Less inventory reserves	(70)	(67)
	\$ 1,271	\$ 1,526

Finished goods inventory at December 31, 2018, includes the effect of adopting new revenue recognition accounting guidance as of January 1, 2018. Further details of the new guidance and its adoption are included in Notes 2 and 5.

10. Property, Plant and Equipment, Net

(\$ in millions)	December 31,	
	2018	2017
Land	\$ 159	\$ 172
Buildings	1,359	1,390
Machinery and equipment	5,250	5,282
Construction-in-progress	509	542
	7,277	7,386
Accumulated depreciation	(2,735)	(2,776)
	\$ 4,542	\$ 4,610

Property, plant and equipment are stated at historical or acquired cost. Depreciation expense amounted to \$498 million, \$509 million and \$349 million for the years ended December 31, 2018, 2017 and 2016, respectively. During 2017, cumulative catch-up depreciation recorded as a result of changes in the values and useful lives of fixed assets

associated with the finalization of the valuation for the Rexam acquisition was \$19 million.

11. Goodwill

(\$ in millions)	Beverage Packaging, North & Central America	Beverage Packaging, South America	Beverage Packaging, Europe	Aerospace	Other	Total
Balance at December 31, 2016	\$ 1,614	\$ 970	\$ 1,632	\$ 40	\$ 839	\$ 5,095
Opening balance sheet adjustments	(339)	329	(274)	—	(68)	(352)
Business dispositions	—	—	—	—	(9)	(9)
Effects of currency exchange	—	—	173	—	26	199
Balance at December 31, 2017	\$ 1,275	\$ 1,299	\$ 1,531	\$ 40	\$ 788	\$ 4,933
Opening balance sheet adjustments	—	—	4	—	—	4
Business dispositions	—	—	—	—	(354)	(354)
Effects of currency exchange	—	—	(100)	—	(8)	(108)
Balance at December 31, 2018	\$ 1,275	\$ 1,299	\$ 1,435	\$ 40	\$ 426	\$ 4,475

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During the third quarter of 2018, the company sold its U.S. steel food and steel aerosol business, which resulted in a \$354 million decrease in goodwill. During the second quarter of 2017, the company finalized the allocation of the purchase price for the Rexam acquisition. The \$352 million decrease in goodwill is a result of the finalization of fair values and useful lives of fixed assets and identifiable intangibles acquired in the Rexam acquisition.

The company's annual goodwill impairment test completed in the fourth quarter of 2018 indicated that the fair value of the metal beverage packaging, Asia Pacific (beverage Asia Pacific), and beverage packaging, AMEA (beverage AMEA), reporting units exceeded their carrying amounts by approximately 11 percent and 15 percent, respectively. The current supply of metal beverage packaging exceeds demand in China, resulting in pricing pressure and negative impacts on the profitability of our beverage Asia Pacific reporting unit. The worsening business climate in Saudi Arabia has resulted in negative impacts to the profitability of our beverage AMEA reporting unit. If it becomes an expectation that these situations will continue for an extended period of time, the company may be required to record noncash impairment charges for some or all of the goodwill associated with the beverage Asia Pacific and beverage AMEA reporting units, the total balances of which were \$78 million and \$100 million, respectively, at December 31, 2018. The goodwill associated with the beverage packaging, Asia Pacific, reporting unit predominantly relates to the China beverage packaging facilities. On December 13, 2018, we announced an agreement to sell our beverage packaging facilities in China. The transaction is expected to close during the second half of 2019.

12. Intangible Assets, Net

(\$ in millions)	December 31,	
	2018	2017
Acquired Rexam intangibles (net of accumulated amortization of \$399 million at December 31, 2018, and \$246 million at December 31, 2017)	\$ 2,073	\$ 2,303
Capitalized software (net of accumulated amortization of \$148 million at December 31, 2018, and \$129 million at December 31, 2017)	82	84
Other intangibles (net of accumulated amortization of \$112 million at December 31, 2018, and \$163 million at December 31, 2017)	33	75
	\$ 2,188	\$ 2,462

Acquired Rexam intangibles are comprised of customer relationships and trademarks. Total amortization expense of intangible assets amounted to \$204 million, \$220 million and \$104 million for the years ended December 31, 2018, 2017 and 2016, respectively, including \$164 million in 2018, \$162 million in 2017 and \$65 million in 2016 of amortization expense related to the acquired intangible assets from Rexam. Based on intangible asset values and

currency exchange rates as of December 31, 2018, total annual intangible asset amortization expense is expected to be \$180 million, \$170 million, \$159 million, \$155 million and \$149 million for the years ending December 31, 2019 through 2023, respectively, and approximately \$1.4 billion combined for all years thereafter.

13. Other Assets

(\$ in millions)	December 31,	
	2018	2017
Long-term deferred tax assets	\$ 237	\$ 325
Long-term pension assets	559	504
Investments in affiliates	302	274
Company and trust-owned life insurance	152	160
Other	159	143
	\$ 1,409	\$ 1,406

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Investments in affiliates primarily includes the company's 40 percent ownership interest in an entity in South Korea, a 50 percent ownership interest in an entity in Guatemala, a 50 percent ownership interest in an entity in Panama, a 50 percent ownership interest in an entity in Vietnam, and ownership interests of 50 percent and 49 percent in entities in the U.S.

See Notes 16 and 17 for further details related to the company's long-term deferred tax assets and pension assets, respectively.

14. Leases

The company leases office, warehousing and manufacturing space and certain equipment in the packaging segments and office and technical space in the aerospace segment. Total noncancellable operating leases in effect at December 31, 2018, require rental payments of \$66 million, \$52 million, \$41 million, \$34 million and \$25 million for the years 2019 through 2023, respectively, and \$87 million combined for all years thereafter. Lease expense for all operating leases was \$108 million, \$77 million and \$57 million in 2018, 2017 and 2016, respectively.

15. Debt and Interest Costs

Long-term debt and interest rates in effect consisted of the following:

(\$ in millions)	December 31,	
	2018	2017
Senior Notes		
5.25% due July 2025	\$ 1,000	\$ 1,000
4.375% due December 2020	1,000	1,000
4.00% due November 2023	1,000	1,000
4.375%, euro denominated, due December 2023	803	840
5.00% due March 2022	750	750
4.875% due March 2026	750	—

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3.50%, euro denominated, due December 2020	459	480
Senior Credit Facilities (at variable rates)		
Term A loan, due June 2021 (4.02% - 2018; 3.32% - 2017)	797	1,313
Multi-currency, U.S. dollar revolver, due March 2021 (3.34% - 2017)	—	285
Other (including debt issuance costs)	(41)	(37)
	6,518	6,631
Less: Current portion of long-term debt	(8)	(113)
	\$ 6,510	\$ 6,518

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Following is a summary of debt refinancing and other costs included in the consolidated statements of earnings:

(\$ in millions)	Year Ended December 31,		
	2018	2017	2016
Debt Refinancing and Other Costs:			
Interest expense on 3.5% and 4.375% senior notes	\$ —	\$ —	\$ (49)
Refinance revolving credit facilities	—	—	(30)
Economic hedge - interest rate risk	—	—	(20)
Amortization of unsecured, committed bridge facility financing fees	—	—	(7)
Individually insignificant items	(1)	(3)	(3)
	\$ (1)	\$ (3)	\$ (109)

The company's senior credit facilities include long-term, multi-currency committed revolving credit facilities that provide up to the U.S. dollar equivalent of \$1.5 billion. At December 31, 2018, taking into account outstanding letters of credit, substantially the entire balance was available under these revolving credit facilities. In addition, the company had \$1.0 billion of short-term uncommitted credit facilities available at December 31, 2018, of which \$211 million was outstanding and due on demand. At December 31, 2017, the company had \$340 million outstanding under short-term uncommitted credit facilities. The weighted average interest rate of the outstanding short-term facilities was 3.55 percent at December 31, 2018, and 2.31 percent at December 31, 2017.

The fair value of Ball's long-term debt was estimated to be \$6.6 billion at December 31, 2018, which approximated its carrying value of \$6.5 billion. The fair value was estimated to be \$7.0 billion at December 31, 2017, which approximated its carrying value of \$6.6 billion. The fair value reflects the market rates at each period end for debt with credit ratings similar to the company's ratings and is classified as Level 2 within the fair value hierarchy. Rates currently available to the company for loans with similar terms and maturities are used to estimate the fair value of long-term debt, based on discounted cash flows.

Long-term debt obligations outstanding at December 31, 2018, have maturities (excluding unamortized debt issuance costs of \$54 million) of \$8 million, \$1.5 billion, \$797 million, \$750 million and \$1.8 billion in the years ending 2019 through 2023, respectively, and \$1.8 billion thereafter.

Ball provides letters of credit in the ordinary course of business to secure liabilities recorded in connection with certain self-insurance arrangements. Letters of credit outstanding at December 31, 2018 and 2017, were \$28 million and \$33 million, respectively.

Interest payments were \$304 million, \$287 million and \$190 million in 2018, 2017 and 2016, respectively.

The company's senior notes and senior credit facilities are guaranteed on a full, unconditional and joint and several basis by certain of its material subsidiaries. Each of the guarantor subsidiaries is 100 percent owned by Ball Corporation. These guarantees are required in support of these notes and credit facilities, are coterminous with the terms of the respective note indentures and would require performance upon certain events of default referenced in the respective guarantees. Notes 24 and 25 provide further details about the company's debt guarantees, and Note 25 includes the required condensed consolidating financial information for the company, segregating the guarantor and non-guarantor subsidiaries as defined in the debt agreements.

The U.S. note agreements and bank credit agreement contain certain restrictions relating to dividend payments, share repurchases, investments, financial ratios, guarantees and the incurrence of additional indebtedness. The most restrictive of the company's debt covenants requires the company to maintain a leverage ratio (as defined) of no greater than 4.25 times at December 31, 2018. The company was in compliance with all loan agreements and debt covenants at December 31, 2018 and 2017, and has met all debt payment obligations.

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16. Taxes on Income

The amount of earnings (loss) before income taxes is:

(\$ in millions)	Years Ended December 31,		
	2018	2017	2016
U.S.	\$ 193	\$ 147	\$ (381)
Foreign	440	367	506
	\$ 633	\$ 514	\$ 125

The provision (benefit) for income tax expense is:

(\$ in millions)	Years Ended December 31,		
	2018	2017	2016
Current			
U.S.	\$ 30	\$ 6	\$ (3)
State and local	5	—	27
Foreign	115	77	143
Total current	150	83	167
Deferred			
U.S.	21	92	(67)
State and local	9	7	(17)
Foreign	5	(17)	(209)
Total deferred	35	82	(293)
Tax provision (benefit)	\$ 185	\$ 165	\$ (126)

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The income tax provision recorded within the consolidated statements of earnings differs from the provision determined by applying the U.S. statutory tax rate to pretax earnings as a result of the following:

(\$ in millions)	Years Ended December 31,		
	2018	2017	2016
Statutory U.S. federal income tax	\$ 133	\$ 180	\$ 44
Increase (decrease) due to:			
Foreign tax rate differences including tax holidays	(11)	(52)	(71)
Foreign tax law and rate changes	—	(28)	—
U.S. tax reform (a)	(45)	83	—
Foreign exchange loss on revaluation of Brazilian deferred tax balances	26	—	—
Global intangible low-taxed income (GILTI)	15	—	—
Permanent differences on business dispositions	56	18	(62)
Foreign subsidiaries restructuring	—	—	(145)
Non-deductible transaction costs	—	—	52
U.S. state and local taxes, net	13	3	6
U.S. taxes on foreign earnings, net of tax deductions and credits	(9)	(6)	21
U.S. manufacturing deduction	—	(8)	—
U.S. research and development tax credits	(7)	(9)	(9)
Uncertain tax positions, including interest	(1)	(3)	3
Company and trust-owned life insurance	(1)	(7)	(6)
Change in valuation allowances	31	15	46
Benefit from equity compensation	(14)	(16)	(5)
Other, net	(1)	(5)	—
Provision (benefit) for taxes	\$ 185	\$ 165	\$ (126)
Effective tax rate expressed as a percentage of pretax earnings	29.2 %	32.1 %	(100.8) %

(a) Includes 2018 adjustments required to record the final impact of the implications of the Act signed into law in 2017.

The 2018 effective income tax rate was 29.2 percent compared to 32.1 percent for 2017. The 2018 effective rate was reduced by 7.2 percent for the final adjustments related to the enactment of U.S. tax reform in 2017, including the impact of the transition tax and remeasurement of the company's net deferred tax asset in the U.S., and increased by 8.8 percent for discrete tax costs associated with certain business dispositions. The effective rate was also increased by 2.4 percent for the new tax on GILTI established with U.S. tax reform. The effective rate was increased by 3.2 percent for the impact of the foreign tax rate differential, net of valuation allowance impact, and tax holidays versus the U.S. tax rate, and further increased by 4.0 percent for the impact of foreign currency fluctuations on the company's deferred tax assets in Brazil. The 2018 effective rate was also reduced by 2.1 percent for the excess tax benefit for stock-based

compensation and by 1.2 percent for the impact of the U.S. R&D credit. The impact of U.S. tax reform (excluding GILTI), and discrete tax costs associated with certain business dispositions are primarily related to discrete transactions or changes in tax law that are not expected to recur in future periods.

The 2017 effective income tax rate was 32.1 percent compared to negative 100.8 percent for 2016. The 2017 effective rate was increased by 16.1 percent for U.S. tax reform, including the impact of the transition tax and remeasurement of the company's net deferred tax asset in the U.S., and by 3.5 percent for discrete tax costs associated with certain business dispositions. The effective rate was reduced by 7.2 percent for the impact of the foreign tax rate differential, net of valuation allowance impact, and tax holidays versus the U.S. tax rate, and by 5.4 percent for the impact of current year changes in various foreign tax laws, including the U.K. The 2017 effective rate was also reduced by 3.1 percent for the discrete tax benefit associated with the adoption in the first quarter of 2017 of amendments to existing accounting guidance for stock-based compensation, by 1.8 percent for the impact of the U.S. R&D credit, and by 1.6 percent for the impact of the U.S. domestic manufacturing deduction.

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On December 22, 2017, the U.S. Tax Cuts and Jobs Act was signed into law. The Act significantly changed U.S. income tax law by, among other things, reducing the U.S. federal income tax rate from 35 percent to 21 percent, transitioning from a global tax system to a modified territorial tax system, eliminating the domestic manufacturing deduction, providing for immediate expensing of certain qualified capital expenditures and limiting the tax deductions for interest expense and executive compensation. In the fourth quarter of 2017, the company recorded tax expense of \$83 million for the estimated impact of the mandatory deemed repatriation of its foreign earnings and revaluation of its U.S. deferred tax assets and liabilities. The company's review of the implications of the Act continued throughout the measurement period and adjustments required to record the final impact of these items reduced tax expense by \$45 million and were recorded during the fourth quarter of 2018. The original provisional estimates recorded in 2017, along with the required final adjustments recorded during 2018, are as follows:

- Reduction of U.S. federal corporate tax rate: The company recorded a provisional increase to tax expense of \$52 million in 2017 for the estimated impact of revaluing its net deferred tax asset position in the U.S. at the new 21 percent corporate tax rate. In 2018, tax expense was decreased by \$52 million to adjust the provisional estimate for the final impact of the revaluation. This change was largely driven by the company's decision, in connection with the filing of its U.S. federal income tax return in the current reporting period, to utilize its net operating loss in 2017 against the income generated by the transition tax which accounted for \$48 million of the total required final adjustments recorded during 2018;
- Transition tax: The company recorded a provisional increase in 2017 to tax expense of \$31 million to reflect the impact of the tax on accumulated untaxed earnings and profits (E&P) of certain foreign affiliates. To determine the amount of the transition tax, the amount of the post-1986 E&P and the amount of non-U.S. income taxes paid on such earnings were calculated for all relevant foreign affiliates. With the determination of the final impact of the transition tax, the company has recorded additional tax expense of \$7 million in 2018 to account for the gross tax cost of the transition tax less all related current and anticipated future foreign tax credits;
- Valuation allowances: With the company's accounting for the impacts of the various aspects of the Act now complete, the corresponding impacts from changes in valuation allowances are now considered final as well;
- Cost recovery: The company made a provisional estimate of the impact on its current tax expense and deferred tax liabilities associated with the new immediate expensing provisions for certain qualifying expenditures made after September 27, 2017. The necessary computations were completed with respect to the full inventory of all qualifying 2017 expenditures and the impact on the company's current tax expense and deferred tax liabilities is now final;
- Global intangible low-tax income (GILTI): The company recorded a net increase of \$15 million of tax expense for the current year impact of the new tax on GILTI; and
- Foreign derived intangible income (FDII): The 2018 impact of FDII on the company's provision was insignificant.

Based on a detailed analysis of its global income and other tax attributes that was concluded in the second quarter of 2018, the company made an accounting policy election in that reporting period to treat taxes due for GILTI and the base erosion anti-abuse tax (BEAT) as a current-period expense as incurred.

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Due to the U.S. tax status of certain Ball subsidiaries in Canada and the PRC, the company annually provides U.S. taxes on foreign earnings in those subsidiaries, net of any estimated foreign tax credits or deductions for foreign taxes. Current taxes are also provided on certain other undistributed earnings that are currently taxable in the U.S. Management's intention is to indefinitely reinvest the undistributed earnings of Ball's other foreign subsidiaries. The indefinite reinvestment assertion is supported by both long-term and short-term forecasts and U.S. financial requirements, including, but not limited to, operating cash flows, capital expenditures, debt maturities and dividends. As a result, the company has not provided deferred taxes on earnings in certain non-U.S. subsidiaries because such earnings are intended to be indefinitely reinvested in its international operations. Retained earnings in non-U.S. subsidiaries totaled \$3.2 billion as of December 31, 2018. Although \$2.0 billion of such earnings have been subjected to U.S. federal income tax, incremental foreign and U.S. state income tax may be due upon distribution. At present, it is not practical to estimate the additional taxes that may become payable upon the eventual remittance of these foreign earnings to the U.S.; however, repatriation of these earnings could result in a material increase in the company's effective tax rate.

Ball's Serbian subsidiary was granted tax relief equal to 80 percent of local investments over a ten-year period that will expire in 2022. The tax relief may be used to offset tax on earnings and has \$9 million remaining as of December 31, 2018. Ball's Polish subsidiary was granted a tax holiday in 2014 based on new capital investment. The holiday provides up to \$34 million of tax relief over a ten-year period of which \$29 million remained as of December 31, 2018. Several of Ball's Brazilian subsidiaries benefit from various tax holidays with expiration dates ranging from 2020 to 2030. These tax holidays reduced income tax by \$63 million, \$47 million and \$20 million, respectively, for 2018, 2017 and 2016.

Net income tax payments were \$143 million, \$107 million and \$68 million in 2018, 2017 and 2016, respectively.

The significant components of deferred tax assets and liabilities are as follows:

(\$ in millions)	December 31,	
	2018	2017
Deferred tax assets:		
Deferred compensation	\$ 73	\$ 71
Accrued employee benefits	100	104
Deferred revenue	3	14
Accrued pensions	179	164

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Inventory and other reserves	41	42
Net operating losses, foreign tax credits and other tax attributes	390	369
Unrealized losses on currency exchange and derivative transactions	26	5
Goodwill and other intangible assets	64	98
Other	107	30
Total deferred tax assets	983	897
Valuation allowance	(224)	(165)
Net deferred tax assets	759	732
Deferred tax liabilities:		
Property, plant and equipment	(336)	(334)
Goodwill and other intangible assets	(621)	(697)
Pension assets	(90)	(56)
Other	(120)	(15)
Total deferred tax liabilities	(1,167)	(1,102)
Net deferred tax asset (liability)	\$ (408)	\$ (370)

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The net deferred tax asset (liability) was included in the consolidated balance sheets as follows:

(\$ in millions)	December 31,	
	2018	2017
Other assets	\$ 237	\$ 325
Deferred taxes	(645)	(695)
Net deferred tax asset (liability)	\$ (408)	\$ (370)

At December 31, 2018, Ball has recorded deferred tax assets related to federal and foreign net operating and capital loss carryforwards of \$261 million, U.S. foreign tax, research and development, and alternative minimum tax credit carryforwards of \$81 million and state net operating loss carryforwards of \$48 million. These attributes are spread across the regions in which the company operates, including Europe, North and Central America, Asia and South America, and generally have expiration periods beginning in 2019 to indefinite, with the largest portion carried forward indefinitely. Each has been assessed for realization as of December 31, 2018.

In 2018, the company's overall valuation allowances increased by a net \$59 million. The increase to the valuation allowance was primarily due to nondeductible U.K. interest expense and operating losses incurred primarily in various foreign jurisdictions, neither of which are expected to be utilized in future periods. Ball's 2018 effective tax rate was impacted by \$31 million of the net change in the valuation allowance.

In 2017, the company's overall valuation allowances decreased by a net \$18 million. Decreases to the valuation allowance were primarily due to the release of the company's \$46 million valuation allowance on its foreign tax credit carryforwards that will be realized against a portion of the transition tax incurred as a result of the Act and a net decrease of \$6 million related to the law change in the U.K., including valuation allowances established against nondeductible interest expense. These items all had an impact on Ball's effective rate and are included as components of U.S. tax reform, foreign tax law changes and foreign tax rate differences in the rate reconciliation. This net decrease was offset by increases for recording additional valuation allowances of \$19 million related to the 2016 acquisition of Rexam and for unusable 2017 losses of \$15 million incurred in various jurisdictions. The increase in unusable losses had a tax rate impact which is reflected in the valuation allowance line of the rate reconciliation.

In 2016, the company's overall valuation allowances increased by \$93 million. The net increase was primarily due to valuation allowances recorded on net operating and capital losses of acquired Rexam subsidiaries in the U.K., France, and for U.S. state tax purposes, as well as for current year U.S. state net operating losses at Ball's U.S. subsidiaries,

partially offset by the release of valuation allowances on net operating losses for Ball's Canadian subsidiaries, and by a release of valuation allowances on net operating losses due to dispositions of certain European subsidiaries.

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A roll forward of the company's unrecognized tax benefits, as included in other noncurrent liabilities, related to uncertain income tax positions at December 31 follows:

(\$ in millions)	2018	2017	2016
Balance at January 1	\$ 84	\$ 77	\$ 51
Additions related to acquisitions	—	—	55
Additions based on tax positions related to the current year	14	18	18
Additions for tax positions of prior years	—	1	6
Reductions related to Divestment Business	—	—	(30)
Reductions for tax positions from prior years	(4)	—	(5)
Reductions for settlements	—	(7)	—
Reductions due to lapse of statute of limitations	(10)	(12)	(16)
Effect of foreign currency exchange rates	(4)	7	(2)
Balance at December 31	\$ 80	\$ 84	\$ 77

The annual provisions for income taxes included a tax benefit related to uncertain tax positions, including interest and penalties, of \$1 million in 2018, a tax benefit of \$3 million in 2017 and tax expense of \$3 million in 2016.

At December 31, 2018, the amounts of unrecognized tax benefits that, if recognized, would reduce tax expense were \$94 million. The company and its subsidiaries file income tax returns in the U.S. federal, various state, local and foreign jurisdictions. The U.S. federal statute of limitations is closed for years prior to 2014. With a few exceptions, the company is no longer subject to examination by state and local tax authorities for years prior to 2011. The company's significant non-U.S. filings are in Germany, France, the U.K., Spain, the Netherlands, Poland, Serbia, Switzerland, Sweden, Russia, Turkey, Egypt, Saudi Arabia, the PRC, Canada, Brazil, the Czech Republic, Mexico, Chile and Argentina. The company's foreign statutes of limitation are generally open for years after 2012. At December 31, 2018, the company is either under examination or has been notified of a pending examination by tax authorities in the U.S., Germany, the U.K., Netherlands, France, the PRC, Saudi Arabia, India, Egypt, Brazil and various U.S. states.

The company recognizes the accrual of interest and penalties related to unrecognized tax benefits in income tax expense. Ball recognized \$1 million of tax benefit, \$4 million of tax benefit and \$3 million of tax expense in 2018, 2017 and 2016, respectively, for potential interest on these items. At December 31, 2018, 2017 and 2016, the accrual for uncertain tax positions included potential interest expense of \$6 million, \$7 million and \$10 million, respectively. The company has accrued penalties of \$9 million in 2018, and \$10 million in both 2017 and 2016.

17. Employee Benefit Obligations

December
31,