WORTHINGTON INDUSTRIES INC

Form S-8 June 13, 2014

As filed with the Securities and Exchange Commission on June 13, 2014

Registration No. 333-

### **UNITED STATES**

### SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

### FORM S-8

### REGISTRATION STATEMENT

**UNDER** 

THE SECURITIES ACT OF 1933

WORTHINGTON INDUSTRIES, INC.

(Exact name of Registrant as specified in its charter)

Ohio (State or other jurisdiction of

31-1189815 (I.R.S. Employer

incorporation or organization) Identification No.) 200 Old Wilson Bridge Road, Columbus, Ohio 43085

(Address of Principal Executive Offices) (Zip Code)

### TWB Company, LLC Deferred Profit Sharing Plan, as Amended and Restated

(Full title of the plan)

Copy to:

Dale T. Brinkman, Esq.
200 Old Wilson Bridge Road
Columbus, Ohio 43085
(Name and address of agent for service)

Elizabeth Turrell Farrar, Esq. Vorys, Sater, Seymour and Pease LLP 52 East Gay Street Columbus, Ohio 43215

(614) 438-3001

(Telephone number, including area code, of agent for service)

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

Large accelerated filer x

Accelerated filer

Non-accelerated filer " (Do not check if a smaller reporting company) Smaller reporting company "

### **Calculation of Registration Fee**

		Proposed	Proposed	
	Amount	maximum	maximum	
Title of securities	to be	offering price	aggregate	
to be registered (1) Common Shares, without par value	registered (2) 100,000	per share (3) \$41.67	offering price (3) \$4,167,000	Amount of registration fee \$537.00

- (1) In addition, pursuant to Rule 416(c) under the Securities Act of 1933, as amended (the Securities Act ), this Registration Statement on Form S-8 also covers an indeterminate amount of interests to be offered or sold pursuant to the employee benefit plan described herein.
- (2) In addition, pursuant to Rule 416(a) under the Securities Act, this Registration Statement on Form S-8 also covers an indeterminate amount of additional common shares that may become deliverable under the terms of the TWB Company, LLC Deferred Profit Sharing Plan, as Amended and Restated, to prevent dilution resulting from any stock split, stock dividend, recapitalization or other similar transaction or adjustment affecting the common shares of the Registrant.
- (3) Estimated solely for the purpose of computing the aggregate offering price and the registration fee pursuant to Rules 457(c) and 457(h) of the General Rules and Regulations promulgated under the Securities Act and computed on the basis of \$41.67 per share, which is the average of the high and low sales prices of the common shares as reported on the New York Stock Exchange, on June 10, 2014.

#### **PART I**

### INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS

This Registration Statement on Form S-8 (this Registration Statement ) is being filed by Worthington Industries, Inc. (the Registrant ) with respect to the TWB Company, LLC Deferred Profit Sharing Plan, as Amended and Restated (the Plan ). The document(s) containing the information specified in Part I of Form S-8 will be sent or given to participants in the Plan as specified by Rule 428(b)(1) promulgated by the Securities and Exchange Commission (the Commission ) under the Securities Act of 1933, as amended (the Securities Act ). Such documents are not being filed with the Commission either as part of this Registration Statement or as prospectuses or prospectus supplements pursuant to Rule 424 promulgated by the Commission under the Securities Act. Such documents and the documents incorporated by reference in this Registration Statement pursuant to Item 3 of Part II of this Registration Statement, taken together, constitute a prospectus that meets the requirements of Section 10(a) of the Securities Act.

#### **PART II**

### INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

### Item 3. Incorporation of Documents by Reference.

The following documents and information, filed by the Registrant and the Plan with the Commission pursuant to the Securities Exchange Act of 1934, as amended (the Exchange Act ), shall be deemed to be incorporated by reference into this Registration Statement and to be a part hereof:

the Registrant s Annual Report on Form 10-K for the fiscal year ended May 31, 2013;

the Registrant's Quarterly Reports on Form 10-Q for the quarterly periods ended August 31, 2013, November 30, 2013 and February 28, 2014;

the Registrant s Current Reports on Form 8-K filed on June 24, 2013; June 27, 2013 (excluding Item 2.02 and Item 7.01), July 2, 2013 (excluding Item 2.02), July 31, 2013, September 26, 2013 (excluding Item 2.02 and Item 7.01), October 1, 2013 (two reports) (excluding Item 2.02), October 18, 2013, November 13, 2013, December 11, 2013, December 19, 2013 (excluding Item 2.02), December 20, 2013 (excluding Item 2.02), January 7, 2014, January 24, 2014, March 27, 2014 (excluding Item 2.02 and Item 7.01), March 28, 2014, April 1, 2014 (excluding Item 2.02) [as amended by the Registrant s Current Report on Form 8-K/A filed on April 7, 2014 (excluding Item 2.02)], April 7, 2014 and April 15, 2014 [as amended by the Registrant s Current Report on Form 8-K/A filed on April 16, 2014];

the Registrant s definitive proxy statement on Schedule 14A with respect to the Registrant s Annual Meeting of Shareholders held on September 26, 2013;

the Annual Report on Form 11-K of the Plan for the fiscal year ended December 31, 2013 which is being filed concurrently with this Registration Statement; and

the description of the Registrant s common shares contained in the Registrant s Registration Statement on Form 8-A (File No. 001-08399) filed on March 27, 2000, together with any subsequent registration statement or report filed for the purpose of updating such description.

All documents which may be filed with the Commission by the Registrant or the Plan pursuant to Section 13(a), Section 13(c), Section 14 or Section 15(d) of the Exchange Act subsequent to the date hereof and prior to the filing of a post-effective amendment which indicates that all securities offered under the Plan pursuant to this Registration Statement have been sold or delivered or which deregisters all securities then remaining unsold or not delivered, shall also be deemed to be incorporated by reference in this Registration Statement and to be made a part hereof from the date of filing of such documents. To the extent that any information contained in any Current Report on Form 8-K, or any exhibit thereto, was or is furnished to, rather than filed with, the Commission, such information or exhibit is specifically not incorporated by reference into this Registration Statement.

Any statement contained in this Registration Statement or in a document, all or a portion of which is incorporated or deemed to be incorporated by reference in this Registration Statement, shall be deemed to be modified or superseded for purposes of this Registration Statement to the extent that a statement contained in this Registration Statement or in any other subsequently filed document which also is or is deemed to be incorporated by reference in this Registration Statement modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except so as modified or superseded, to constitute a part of this Registration Statement.

### Item 4. Description of Securities.

Not Applicable.

### Item 5. Interests of Named Experts and Counsel.

Not Applicable.

### Item 6. Indemnification of Directors and Officers.

Under Section 1701.13(E) of the Ohio Revised Code (the OGCL ), directors, officers, employees and agents of Ohio corporations have an absolute right to indemnification for expenses (including attorneys fees) actually and reasonably incurred by them in connection with any action, suit or proceeding to the extent they are successful in defense of any action, suit or proceeding, including derivative actions, brought against them, or in defense of any claim, issue or matter asserted in any such action, suit or proceeding. A director, officer, employee or agent is entitled to such indemnification if such person s success is on the merits or otherwise. Directors are entitled to mandatory payment of expenses by the corporation as they are incurred,

in advance of the final disposition of the action, suit or proceeding, provided the director agrees to reasonably cooperate with the corporation concerning the action, suit or proceeding and to repay the amount advanced if it is proved by clear and convincing evidence in a court of competent jurisdiction that the director s action or failure to act was undertaken with deliberate intent to cause injury to the corporation or with reckless disregard for the corporation s best interests.

Section 1701.13(E) of the OGCL permits a corporation to indemnify directors, officers, employees or agents of the corporation or individuals who are or were serving at the request of the corporation as a director, trustee, officer, employee, member, manager or agent of another corporation or entity in circumstances where indemnification is not mandated by the statute if certain statutory standards are satisfied. A corporation may grant indemnification in any threatened, pending or completed action, suit or proceeding, whether civil, criminal, investigative or administrative, other than derivative actions, if the indemnitee acted in good faith and in a manner the indemnitee reasonably believed to be in, or not opposed to, the best interests of the corporation, and with respect to any criminal action or proceeding, had no reasonable cause to believe the indemnitee s conduct was unlawful. Such indemnification is permitted against expenses (including attorneys fees) as well as judgments, fines and amounts paid in settlement actually and reasonably incurred by the indemnitee in connection with the action, suit or proceeding.

An Ohio corporation may also provide indemnification in derivative actions for attorneys fees and expenses actually and reasonably incurred in connection with the defense or settlement of an action or suit if the officer, director, employee or agent acted in good faith and in a manner such person reasonably believed to be in, or not opposed to, the best interests of the corporation. Ohio law does not expressly authorize indemnification against judgments, fines and amounts paid in settlement of derivative actions. A corporation may not indemnify a director, officer, employee or agent in derivative actions for attorneys fees and expenses if such person is adjudged to be liable for negligence or misconduct in the performance of such person s duties to the corporation unless, and only to the extent that, a court determines that, despite the adjudication of liability, but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity, as the court deems proper. In addition, a corporation may not indemnify a director in any action or suit in which the only liability asserted against the director is for approving unlawful loans, dividends or distributions of assets under Section 1701.95 of the OGCL.

Section 1701.13E of the OGCL permits a corporation to pay expenses (including attorney s fees) incurred by a director, officer, employee or agent as they are incurred, in advance of the final disposition of the action, suit or proceeding, as authorized by the corporation s directors and upon receipt of an undertaking by such person to repay such amount if it is ultimately determined that such person is not entitled to indemnification.

Section 1701.13(E) of the OGCL states that the indemnification provided thereby is not exclusive of, and is in addition to, any other rights granted to persons seeking indemnification under the corporation s articles or regulations, any agreement, a vote of the corporation s shareholders or disinterested directors, or otherwise.

Section 1701.13(E) of the OGCL grants express power to a corporation to purchase and maintain insurance or furnish similar protection, including, but not limited to, trust funds, letters of credit and self-insurance, for director, officer, employee or agent liability, regardless of whether that individual is otherwise eligible for indemnification by the corporation.

The Code of Regulations of the Registrant (the Regulations ) provides for broader indemnification than specifically afforded under Section 1701.13(E) of the OGCL. The Regulations provide that the Registrant must indemnify officers and directors against expenses (including attorneys fees, filing fees, court reporters fees and transcript costs), judgments, fines and amounts paid in settlement actually and reasonably incurred in connection with any pending, threatened or completed action, suit or proceeding (whether criminal, civil, administrative or investigative and whether a derivative suit or not) by reason of the fact that any such individual is or was a director, officer, employee, agent or volunteer of the Registrant or is or was serving at the request of the Registrant as a director, trustee, officer, employee, member, manager, agent or volunteer of another corporation or other entity so long as such individual s act or omission giving rise to the claim for indemnification was not occasioned by such individual s intent to cause injury to, or by such individual s reckless disregard for the best interests of, the Registrant and, with respect to any criminal matter, such individual had no reasonable cause to believe such individual s conduct was unlawful. The Regulations forbid the Registrant from indemnifying an officer or director in a derivation action if such person is adjudged to be liable for an act or omission occasioned by such person s deliberate intent to cause injury to, or by such person s reckless disregard for the best interests of, the Registrant unless and only to the extent the Court of Common Pleas in Franklin County, Ohio, or the court in which the action was brought, despite such adjudication of liability and, in view of all the circumstances, concludes that such person is fairly and reasonably entitled to such indemnity as the court deems proper.

The Regulations recite a presumption (which may only be rebutted by clear and convincing evidence) that no act or omission by a person claiming indemnification was occasioned by an intent to cause injury to, or by a reckless disregard for the best interests of, the Registrant, and with respect to any criminal matter, that such person had no reasonable cause to believe his or her conduct was unlawful. The termination of any action, suit or proceeding by judgment, order, settlement or conviction, or upon a plea of nolo contendre or its equivalent, does not, by itself, rebut this presumption.

The Regulations state that, to the extent an officer or director is successful on the merits or otherwise in defense of any action, suit or proceeding or in defense of any claim, issue or matter therein, such officer or director must be promptly indemnified by the Registrant against expenses (including, without limitation, attorneys fees, filing fees, court reporters fees and transcript costs) actually and reasonably incurred by such person in connection therewith.

The Regulations state that an indemnitee s expenses (including, without limitation, attorneys fees, filing fees, court reporters fees and transcript costs) must be paid by the Registrant in advance of the final disposition of the action, suit or proceeding to and on behalf of the officer or director promptly as such expenses are incurred, but only if such officer or director first agrees, in writing, to repay all amounts so paid in respect of any claim, issue or other matter asserted in such action, suit or proceeding in defense of which such person shall have not been successful on the merits or otherwise, if it is proved by clear and convincing evidence in a court

of competent jurisdiction that, in respect of any such claim, issue or other matter, such person s relevant action or failure to act was occasioned by such person s deliberate intent to cause injury to the Registrant or such person s reckless disregard for the best interests of the Registrant, unless, and only to the extent that, the Court of Common Pleas of Franklin County, Ohio, or the court in which such action or suit was brought determines that, despite such determination and in view of all of the circumstances, such officer or director is fairly and reasonably entitled to all or part of such indemnification.

The Regulations state that the indemnification provided thereby is not exclusive of, and is in addition to, any other rights to which any person seeking indemnification may be entitled under the Registrant s articles or regulations, any agreement, a vote of the Registrant s disinterested directors or otherwise. Additionally, the Regulations provide that the Registrant may purchase and maintain insurance or furnish similar protection on behalf of any person who is or was a director, officer, employee, agent or volunteer of the Registrant, or who is or was serving another entity as a director, trustee, officer, employee, member, manager, agent or volunteer at the request of the Registrant, against any liability asserted against such person and incurred by such person in such capacity, or arising out of such person s status as such, whether or not the Registrant would have the obligation or power to indemnify such person under the Regulations.

The Registrant has entered into indemnification agreements with each of its directors and executive officers. The indemnification agreements generally obligate the Registrant to hold harmless and indemnify such directors and executive officers against specified expenses and liabilities they may incur in the performance of their duties to the greatest extent permitted by Ohio law, provided that (1) such directors and executive officers acted in good faith and in a manner they reasonably believed to be in or not opposed to the best interests of the Registrant and, with respect to any criminal proceeding, had no reasonable cause to believe their conduct was unlawful and (2) with respect to proceedings by or in the right of the Registrant (a) such executive officers were not adjudged to be liable to the Registrant for negligence or misconduct in the performance of their duties to the Registrant or (b) such directors were not adjudged to be liable to the Registrant for (i) an act or omission undertaken with deliberate intent to cause injury to the Registrant or with reckless disregard for the best interests of the Registration or (ii) approving unlawful loans, dividends or distributions of assets under Section 1701.95 of the OCGL. The indemnification agreements also require the Registrant to advance expenses to a director or executive officer prior to the final disposition of a proceeding if specified conditions are satisfied. The indemnification agreements provide procedures for determining a director s or an executive officer s entitlement to indemnification and specify certain remedies relating to indemnification and advancement of expenses. The indemnification agreements do not exclude any other rights to indemnification or advancement of expenses to which a director or an executive officer may be entitled under the Registrant s Amended Articles of Incorporation or Regulations, applicable law (including the OCGL), any insurance policy, any contract or otherwise.

The Board of Directors of the Registrant maintains, and in the future may continue to maintain, insurance policies to insure the Registrant s present or former directors, officers and employees, with the limits and subject to the limitations of such policies, against liabilities and expenses arising out of any claim or breach of duty, error, misstatement, misleading statement, omission or other acts done by reasons of their being such directors, officers or employees of the Registrant.

# Item 7. Exemption from Registration Claimed.

Not Applicable.

# Item 8. Exhibits.

(a) Exhibits. The following exhibits are filed herewith and made a part hereof:

Exhibit No.	Description
4.1	Amended Articles of Incorporation of the Registrant, as filed with the Ohio Secretary of State on October 13, 1998 (Incorporated herein by reference to Exhibit 3(a) to the Registrant s Quarterly Report on Form 10-Q for the quarterly period ended August 31, 1998 (SEC File No. 0-4016))
4.2	Code of Regulations of the Registrant (reflecting all amendments) [for SEC reporting compliance purposes only] (Incorporated herein by reference to Exhibit 3(b) to the Registrant s Quarterly Report on Form 10-Q for the quarterly period ended August 31, 2000 (SEC File No. 1-8399))
10.1	TWB Company, LLC Deferred Profit Sharing Plan, as Amended and Restated (Effective as of January 1, 2009, except where separately stated, and executed on December 30, 2009) (Filed herewith)
10.2	Amendment to the TWB Company, LLC Deferred Profit Sharing Plan, as Amended and Restated (executed December 30, 2013 and effective on and after January 1, 2014) (Filed herewith)
23.1	Consent of KPMG LLP, independent registered public accounting firm (Filed herewith)
23.2	Consent of KPMG LLP, independent auditor, with respect to consolidated financial statements of Worthington Armstrong Venture (Filed herewith)
23.3	Consent of Meaden & Moore, Ltd., independent registered public accounting firm, in respect of the TWB Company, LLC Deferred Profit Sharing Plan, as Amended and Restated (Filed herewith)
24.1	Powers of Attorney of Directors and certain Executive Officers of Worthington Industries, Inc. (Filed herewith)

(b) In accordance with Item 8 of Form S-8, this Registration Statements does not include Exhibit 5 Opinion regarding legality for plans subject to the requirements of ERISA as the Registrant undertakes that, as applicable, the Plan and any amendments thereto have been or will be submitted to the Internal Revenue Service (the IRS) in a timely manner and all changes required by the IRS in order to qualify the Plan under Section 401 of the Internal Revenue Code of 1986, as amended (the Code), have been or will be made.

### Item 9. Undertakings.

- (a) The undersigned Registrant hereby undertakes:
- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement:
  - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act;
  - (ii) To reflect in the prospectus any facts or events arising after the effective date of the Registration Statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the Registration Statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20% change in the maximum aggregate offering price set forth in the Calculation of Registration Fee table in the effective registration statement;
  - (iii) To include any material information with respect to the plan of distribution not previously disclosed in the Registration Statement or any material change to such information in the Registration Statement;

provided, however, that the undertakings set forth in paragraphs (a)(1)(i) and (a)(1)(ii) of this section do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the Registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act that are incorporated by reference in this Registration Statement.

- (2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- (b) The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the Registrant s annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act (and each filing of the annual report of the TWB Company, LLC Deferred Profit Sharing Plan, as Amended and Restated, pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in the Registration Statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- (c) Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Registrant pursuant to the provisions described in Item 6 of this Part II, or otherwise, the Registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

[Remainder of page intentionally left blank;

signatures begin on following page]

#### **SIGNATURES**

**The Registrant.** Pursuant to the requirements of the Securities Act, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Columbus, State of Ohio, on June 13, 2014.

### WORTHINGTON INDUSTRIES, INC.

By: /s/ John P. McConnell John P. McConnell, Chairman of the Board and Chief Executive Officer

Pursuant to the requirements of the Securities Act, this Registration Statement has been signed by the following persons in the capacities indicated on June 13, 2014.

Signature

/s/ John P. McConnell Director, Chairman of the Board and Chief Executive

John P. McConnell Officer (Principal Executive Officer)

/s/ B. Andrew Rose Vice President and Chief Financial Officer

B. Andrew Rose (Principal Financial Officer)

/s/ Richard G. Welch Controller (Principal Accounting Officer)

Richard G. Welch

/s/ John B. Blystone \* Lead Director

John B. Blystone

/s/ Kerrii B. Anderson \* Director

Kerri B. Anderson

/s/ Mark C. Davis \* Director

Mark C. Davis

Signature	Title
/s/ Michael J. Endres *	Director
Michael J. Endres	
/s/ Ozey K. Horton, Jr. *	Director
Ozey K. Horton, Jr.	
/s/ Peter Karmanos, Jr. *	Director
Peter Karmanos, Jr.	
/s/ Carl A. Nelson, Jr. *	Director
Carl A. Nelson, Jr.	
/s/ Sidney A. Ribeau *	Director
Sidney A. Ribeau	
/s/ Mary Schiavo *	Director
Mary Schiavo	

<sup>\*</sup> The undersigned, by signing his name hereto, does hereby sign and execute this Registration Statement on behalf of each of the directors of the Registrant identified above pursuant to powers of attorney executed by the directors identified above, which powers of attorney are filed with this Registration Statement as Exhibit 24.1.

<sup>\*</sup> By: /s/ John P. McConnell Date: June 13, 2014 John P. McConnell, Attorney-in-Fact

**The Plan.** Pursuant to the requirements of the Securities Act of 1933, the trustees (or other persons who administer the employee benefit plan) have duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Monroe, State of Michigan, on June 13, 2014.

TWB COMPANY, LLC DEFERRED PROFIT SHARING PLAN, AS AMENDED AND RESTATED

By: Administrative Committee, Plan Administrator

By /s/ C. Michael Lowrey
Printed Name: C. Michael Lowrey

Title: Administrative Committee Member

#### INDEX TO EXHIBITS

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Barrier Booster Notes Linked to the Lesser Performing of Two Equity Indices, Due June 30, 2022 Royal Bank of Canada

will be less than if the internal funding rate was used. The Notes are not designed to be short-term trading instruments. Accordingly, you should be able and willing to hold your Notes to maturity.

The Initial Estimated Value of the Notes on the Cover Page of this Pricing Supplement Is an Estimate Only, Calculated as of the Time the Terms of the Notes Were Set — The initial estimated value of the Notes is based on the value of our obligation to make the payments on the Notes, together with the mid-market value of the derivative embedded in the terms of the Notes. See "Structuring the Notes" below. Our estimate is based on a variety of assumptions, including our credit spreads, expectations as to dividends, interest rates and volatility, and the expected term of the Notes. These assumptions are based on certain forecasts about future events, which may prove to be incorrect. Other entities may value the Notes or similar securities at a price that is significantly different than we do. The value of the Notes at any time after the Pricing Date will vary based on many factors, including changes in market conditions, and cannot be predicted with accuracy. As a result, the actual value you would receive if you sold the Notes in any secondary market, if any, should be expected to differ materially from the initial estimated value of your Notes.

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An Investment in the Notes Is Subject to Risks Relating to Non-U.S. Securities Markets – Because foreign companies or foreign equity securities included in the SX5E are publicly traded in the applicable foreign countries and are denominated in euro, an investment in the securities involves particular risks. For example, the non-U.S. securities markets may be more volatile than the U.S. securities markets, and market developments may affect these markets differently from the U.S. or other securities markets. Direct or indirect government intervention to stabilize the securities markets outside the U.S., as well as cross-shareholdings in certain companies, may affect trading prices and trading volumes in those markets. Also, the public availability of information concerning the foreign issuers may vary depending on their home jurisdiction and the reporting requirements imposed by their respective regulators. In addition, the foreign issuers may be subject to accounting, auditing and financial reporting standards and requirements that differ from those applicable to U.S. reporting companies.

The securities included in the SX5E are issued by companies located within the Eurozone, which is and has been undergoing severe financial stress, and the political, legal and regulatory ramifications are impossible to predict. Changes within the Eurozone could have a material adverse effect on the performance of the SX5E and, consequently, on the value of the Notes.

Inconsistent Research — Royal Bank or its affiliates may issue research reports on securities that are, or may become, components of the Reference Assets. We may also publish research from time to time on financial markets and other matters that may influence the levels of the Reference Assets or the value of the Notes, or express opinions or provide recommendations that may be inconsistent with purchasing or holding the Notes or with the investment view implicit in the Notes or the Reference Assets. You should make your own independent investigation of the merits of investing in the Notes and the Reference Assets.

Market Disruption Events and Adjustments – The Redemption Amount and the Valuation Date are subject to adjustment as to each Reference Asset as described in the product prospectus supplement. For a description of what constitutes a market disruption event as well as the consequences of that market disruption event, see "General Terms of the Notes—Market Disruption Events" in the product prospectus supplement.

P-7 RBC Capital Markets, LLC

Barrier Booster Notes Linked to the Lesser Performing of Two Equity Indices, Due June 30, 2022 Royal Bank of Canada

#### INFORMATION REGARDING THE REFERENCE ASSETS

All disclosures contained in this pricing supplement regarding the Reference Assets, including, without limitation, their make up, method of calculation, and changes in their components, have been derived from publicly available sources. The information reflects the policies of, and is subject to change by the applicable index sponsor. Each of these sponsors has no obligation to continue to publish, and may discontinue publication of, the applicable Reference Asset. The consequences of an index sponsor discontinuing publication of a Reference Asset are discussed in the section of the product prospectus supplement entitled "General Terms of the Notes— Unavailability of the Level of the Reference Asset." Neither we nor RBCCM accepts any responsibility for the calculation, maintenance or publication of either Reference Asset or any successor index.

We obtained the information regarding the historical performance of each Reference Asset set forth below from Bloomberg Financial Markets.

S&P 500® Index ("SPX")

The SPX is intended to provide an indication of the pattern of common stock price movement. The calculation of the level of the SPX is based on the relative value of the aggregate market value of the common stocks of 500 companies as of a particular time compared to the aggregate average market value of the common stocks of 500 similar companies during the base period of the years 1941 through 1943.

S&P calculates the SPX by reference to the prices of the constituent stocks of the SPX without taking account of the value of dividends paid on those stocks. As a result, the return on the Notes will not reflect the return you would realize if you actually owned the SPX constituent stocks and received the dividends paid on those stocks.

Effective with the September 2015 rebalance, consolidated share class lines will no longer be included in the SPX. Each share class line will be subject to public float and liquidity criteria individually, but the company's total market capitalization will be used to evaluate each share class line. This may result in one listed share class line of a company being included in the SPX while a second listed share class line of the same company is excluded.

### Computation of the SPX

While S&P currently employs the following methodology to calculate the SPX, no assurance can be given that S&P will not modify or change this methodology in a manner that may affect the Payment at Maturity.

Historically, the market value of any component stock of the SPX was calculated as the product of the market price per share and the number of then outstanding shares of such component stock. In March 2005, S&P began shifting the SPX halfway from a market capitalization weighted formula to a float-adjusted formula, before moving the SPX to full float adjustment on September 16, 2005. S&P's criteria for selecting stocks for the SPX did not change with the shift to float adjustment. However, the adjustment affects each company's weight in the SPX.

Under float adjustment, the share counts used in calculating the SPX reflect only those shares that are available to investors, not all of a company's outstanding shares. Float adjustment excludes shares that are closely held by control groups, other publicly traded companies or government agencies.

In September 2012, all shareholdings representing more than 5% of a stock's outstanding shares, other than holdings by "block owners," were removed from the float for purposes of calculating the SPX. Generally, these "control holders" will include officers and directors, private equity, venture capital and special equity firms, other publicly traded companies that hold shares for control, strategic partners, holders of restricted shares, ESOPs, employee and family trusts, foundations associated with the company, holders of unlisted share classes of stock, government entities at all levels (other than government retirement/pension funds) and any individual person who controls a 5% or greater stake in a company as reported in regulatory filings. However, holdings by block owners, such as depositary banks, pension funds, mutual funds and ETF providers, 401(k) plans of the company, government retirement/pension funds, investment funds of insurance companies, asset managers and investment funds, independent foundations and savings and investment plans, will ordinarily be considered part of the float.

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Treasury stock, stock options equity participation units, warrants, preferred stock, convertible stock, and rights are not part of the float. Shares held in a trust to allow investors in countries outside the country of domicile, such as depositary shares and Canadian exchangeable shares are normally part of the float unless those shares form a control block.

For each stock, an investable weight factor ("IWF") is calculated by dividing the available float shares by the total shares outstanding. Available float shares are defined as the total shares outstanding less shares held by control holders. This calculation is subject to a 5% minimum threshold for control blocks. For example, if a company's officers and directors hold 3% of the company's shares, and no other control group holds 5% of the company's shares, S&P would assign that company an IWF of 1.00, as no control group meets the 5% threshold. However, if a company's officers and directors hold 3% of the company's shares and another control group holds 20% of the company's shares, S&P would assign an IWF of 0.77, reflecting the fact that 23% of the company's outstanding shares are considered to be held for control. As of July 31, 2017, companies with multiple share class lines are no longer eligible for inclusion in the Reference Asset. Constituents of the Reference Asset prior to July 31, 2017 with multiple share class lines will be grandfathered in and continue to be included in the Reference Asset. If a constituent company of the Reference Asset reorganizes into a multiple share class line structure, that company will remain in the Reference Asset at the discretion of the S&P Index Committee in order to minimize turnover.

The SPX is calculated using a base-weighted aggregate methodology. The level of the SPX reflects the total market value of all 500 component stocks relative to the base period of the years 1941 through 1943. An indexed number is used to represent the results of this calculation in order to make the level easier to use and track over time. The actual total market value of the component stocks during the base period of the years 1941 through 1943 has been set to an indexed level of 10. This is often indicated by the notation 1941-43 = 10. In practice, the daily calculation of the SPX is computed by dividing the total market value of the component stocks by the "index divisor." By itself, the index divisor is an arbitrary number. However, in the context of the calculation of the SPX, it serves as a link to the original base period level of the SPX. The index divisor keeps the SPX comparable over time and is the manipulation point for all adjustments to the SPX, which is index maintenance.

#### Index Maintenance

Index maintenance includes monitoring and completing the adjustments for company additions and deletions, share changes, stock splits, stock dividends, and stock price adjustments due to company restructuring or spinoffs. Some corporate actions, such as stock splits and stock dividends, require changes in the common shares outstanding and the stock prices of the companies in the SPX, and do not require index divisor adjustments.

To prevent the level of the SPX from changing due to corporate actions, corporate actions which affect the total market value of the SPX require an index divisor adjustment. By adjusting the index divisor for the change in market value, the level of the SPX remains constant and does not reflect the corporate actions of individual companies in the SPX. Index divisor adjustments are made after the close of trading and after the calculation of the SPX closing level.

Changes in a company's shares outstanding and IWF due to its acquisition of another public company are made as soon as reasonably possible. At S&P's discretion, de minimis merger and acquisition share changes are accumulated and implemented with the quarterly share rebalancing.

All other changes of less than 5% are accumulated and made quarterly on the third Friday of March, June, September, and December.

Changes in a company's total shares outstanding of 5% or more due to public offerings are made as soon as reasonably possible. Other changes of 5% or more (for example, due to tender offers, Dutch auctions, voluntary exchange offers, company stock repurchases, private placements, acquisitions of private companies or non-index companies that do not trade on a major exchange, redemptions, exercise of options, warrants, conversion of preferred stock, notes, debt, equity participations, at-the-market stock offerings or other recapitalizations) are made weekly, and are generally announced on Fridays for implementation after the close of trading the following Friday (one week later). If a 5% or more share change causes a company's IWF to change by five percentage points or more, the IWF is updated at the same time as the share change. IWF changes resulting from partial tender offers are considered on a case-by-case basis.

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### **Historical Information**

The graph below sets forth the information relating to the historical performance of the SPX. In addition, below the graph is a table setting forth the intra-day high, intra-day low and period-end closing levels of this Reference Asset. We obtained the information regarding the historical performance of the SPX in the chart below from Bloomberg Financial Markets.

We have not independently verified the accuracy or completeness of the information obtained from Bloomberg Financial Markets. The historical performance of the SPX should not be taken as an indication of its future performance, and no assurance can be given as to the Final Level of the SPX. We cannot give you assurance that the performance of the SPX will result in any positive return on your initial investment. S&P 500® Index ("SPX")

PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE RESULTS.

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Date   Date   Reference Asset   Reference Asset   I/I/2008   3/31/2008   1,471.77   1,256.98   1,322.70   1,280.00   1,471.77   1,272.00   1,280.00   1,272.00   1,280.00   1,166.36   1,011/2008   1,271/2008   1,313.15   1,106.39   1,166.36   1,11/2009   3/31/2009   943.85   666.79   797.87   4/1/2009   3/31/2009   943.85   666.79   797.87   4/1/2009   6/30/2009   956.23   783.32   919.32   1,057.08   1,071/2009   1,271/2009   1,800.15   869.32   1,057.08   1,071/2009   1,271/2009   1,301.38   1,019.95   1,126.42   1/1/2010   3/31/2010   1,180.69   1,044.50   1,169.43   4/1/2010   6/30/2010   1,157.16   1,010.91   1,141.20   1,030.71   1,271/2010   9/30/2011   1,341.407   1,249.05   1,325.83   1,172/2011   3/31/2011   1,340.77   1,249.05   1,325.83   1,172/2011   3/31/2011   1,370.58   1,258.07   1,320.64   1/1/2011   3/31/2011   1,356.48   1,101.54   1,131.42   10/1/2011   12/31/2012   1,419.15   1,258.86   1,408.47   4/1/2012   3/31/2012   1,419.15   1,258.86   1,408.47   4/1/2012   3/31/2012   1,449.15   1,258.86   1,408.47   4/1/2012   3/31/2012   1,470.96   1,345.31   1,426.19   1,140.67   1/1/2013   3/31/2013   1,570.28   1,426.19   1,569.19   4/1/2013   3/31/2013   1,570.28   1,426.19   1,569.19   4/1/2013   3/31/2013   1,570.28   1,426.19   1,569.19   4/1/2013   3/31/2013   1,570.28   1,426.19   1,569.19   4/1/2013   3/31/2013   1,570.28   1,426.19   1,569.19   4/1/2014   3/31/2014   1,883.97   1,737.92   1,872.34   4/1/2014   4/1/2014   4/1/2014   4/1/2014   4/1/2014   4/1/2014   4/1/2014   4/1/2014   4/1/2014   4/1/2014   4/1/2014   4/1/2014   4/1/2015   4/1/2015   4/1/2015   4/1/2015   4/1/2015   4/1/2015   4/1/2015   4/1/2015   4/1/2015   4/1/2015   4/1/2015   4/1/2015   4/1/2015   4/1/2016   4/1	Period-Start	Period-End	High Intra-Day Level of this	Low Intra-Day Level of this	Period-End Closing Level of this
11/12/2008   3/31/2008   1,471,77   1,256,98   1,322,70   1,280,00   1,313,15   1,106,39   1,166,36   1/1/2008   1,271,2008   1,313,15   1,106,39   1,166,36   1/1/2009   3/31/2009   943,85   666,79   797,87   1/1/2009   6/30/2009   956,23   783,32   919,32   1,057,08   10/1/2009   1,080,15   869,32   1,057,08   10/1/2009   1,2731/2009   1,080,15   869,32   1,057,08   10/1/2010   3/31/2010   1,180,69   1,044,50   1,169,43   1,109,10   1,180,69   1,044,50   1,169,43   1,109,10   1,180,69   1,044,50   1,169,43   1,109,10   1,17/2010   3/31/2010   1,157,16   1,010,91   1,141,20   1,17/2010   1,2731/2010   1,252,60   1,31,87   1,257,88   1/1/2011   3/31/2011   1,344,07   1,249,05   1,325,83   1/1/2011   3/31/2011   1,356,48   1,101,54   1,131,42   10/1/2011   3/31/2011   1,356,48   1,101,54   1,131,42   10/1/2011   3/31/2012   1,419,15   1,258,86   1,408,47   4/1/2012   6/30/2012   1,474,51   1,258,86   1,408,47   4/1/2012   6/30/2012   1,474,51   1,355,41   1,440,67   1/1/2013   3/31/2013   1,570,28   1,255,41   1,440,67   1/1/2013   3/31/2013   1,570,28   1,426,19   1,569,19   1/1/2013   1/2/31/2013   1,849,44   1,646,47   1,848,36   1/1/2014   3/31/2013   1,849,44   1,646,47   1,848,36   1/1/2014   3/31/2013   1,849,44   1,646,47   1,848,36   1/1/2014   3/31/2013   1,849,44   1,646,47   1,848,36   1/1/2014   3/31/2013   1,849,44   1,646,47   1,848,36   1/1/2014   3/31/2013   1,849,44   1,646,47   1,848,36   1/1/2014   3/31/2014   1,883,97   1,737,92   1,872,34   1,472,34			- ·		_
4/1/2008         6/30/2008         1,440.24         1,272.00         1,280.00           7/1/2008         9/30/2008         1,167.03         741.02         890.64           1/1/2009         3/31/2009         943.85         666.79         797.87           4/1/2009         6/30/2009         956.23         783.32         919.32           7/1/2009         9/30/2009         1,080.15         869.32         1,057.08           10/1/2010         3/31/2010         1,180.69         1,044.50         1,169.43           1/1/2010         6/30/2010         1,157.16         1,010.91         1,141.20           1/1/2011         3/31/2011         1,344.07         1,249.05         1,325.83           1/1/2011         3/31/2011         1,344.07         1,249.05         1,325.83           1/1/2011         3/31/2011         1,355.88         1,258.07         1,320.64           1/1/2011         3/31/2012         1,419.15         1,258.86         1,404.84           1/1/2012         3/31/2012         1,419.15         1,258.86         1,408.47           1/1/2012         3/31/2012         1,470.96         1,343.35         1,426.19           1/1/2012         3/31/2013         1,579.28         1,267.91 <td></td> <td></td> <td></td> <td></td> <td></td>					
7/1/2008 9/30/2008 1,313.15 1,106.39 1,166.36 10/1/2008 12/31/2008 1,167.03 741.02 890.64 11/1/2009 3/31/2009 9/3.85 666.79 797.87 41/1/2009 6/30/2009 9/3.85 869.32 1,057.08 10/1/2009 1/2/31/2009 1,130.38 1,019.95 1,126.42 11/1/2010 3/31/2010 1,180.69 1,044.50 1,169.43 41/2010 6/30/2010 1,219.80 1,028.33 1,030.71 1/1/2010 9/30/2010 1,157.16 1,010.91 1,141.20 10/1/2010 12/31/2010 1,262.60 1,131.87 1,257.88 11/1/2011 6/30/2011 1,344.07 1,249.05 1,325.83 1/1/2011 6/30/2011 1,356.48 1,101.54 1,131.42 10/1/2011 9/30/2011 1,356.48 1,101.54 1,131.42 10/1/2012 6/30/2012 1,422.38 1,258.07 1,250.64 1,108.47 1,12012 6/30/2012 1,422.38 1,266.74 1,362.16 1,010.91 1/1/2012 1/2/31/2011 1,350.85 1,258.86 1,408.47 4/1/2012 6/30/2012 1,470.96 1,343.35 1,426.19 1/1/2013 3/31/2013 1,570.28 1,426.19 1,569.19 4/1/2013 9/30/2013 1,570.28 1,426.19 1,569.19 1,569.19 1,17/2013 9/30/2013 1,789.44 1,646.47 1,848.36 1/1/2014 6/30/2014 1,988.17 1,586.18 1,536.03 1,606.28 1/1/2014 9/30/2014 1,988.17 1,737.92 1,872.34 1,140.67 1/1/2014 9/30/2014 1,988.17 1,814.36 1,960.23 1/1/2014 9/30/2014 2,019.26 1,904.78 1,972.29 1,972.2					-
101/12008   12/31/2008   1,167.03   741.02   890.64   1/1/2009   3/31/2009   93.05   666.79   797.87					
11/1/2009   3/31/2009   943.85   666.79   797.87					
4/1/2009         6/30/2009         956.23         783.32         919.32           7/1/2009         9/30/2009         1,080.15         869.32         1,057.08           10/1/2009         1,231/2009         1,130.88         1,019.95         1,126.42           1/1/2010         3/31/2010         1,180.69         1,044.50         1,169.43           4/1/2010         6/30/2010         1,219.80         1,028.33         1,030.71           7/1/2010         9/30/2010         1,157.16         1,010.91         1,141.20           10/1/2011         1/31/2011         1,326.60         1,131.87         1,257.88           1/1/2011         3/31/2011         1,344.07         1,249.05         1,325.83           4/1/2011         9/30/2011         1,356.48         1,101.54         1,311.42           1/1/2011         9/30/2011         1,356.48         1,101.54         1,131.42           1/1/2012         3/31/2012         1,419.15         1,258.86         1,408.47           4/1/2012         6/30/2012         1,424.38         1,266.74         1,362.16           7/1/2012         9/30/2012         1,474.51         1,325.41         1,40.67           101/2013         3/31/2013         1,570.28					
7/1/2009         9/30/2009         1,080.15         869.32         1,057.08           10/1/2009         12/31/2009         1,130.38         1,019.95         1,126.42           1/1/2010         6/30/2010         1,180.69         1,044.50         1,169.43           4/1/2010         6/30/2010         1,219.80         1,028.33         1,030.71           7/1/2010         9/30/2010         1,157.16         1,010.91         1,141.20           10/1/2011         3/31/2011         1,344.07         1,249.05         1,325.83           1/1/2011         6/30/2011         1,335.648         1,101.54         1,131.42           10/1/2011         1/33/2011         1,335.648         1,101.54         1,131.42           10/1/2012         3/31/2012         1,491.15         1,258.86         1,408.47           4/1/2012         6/30/2012         1,474.51         1,325.41         1,406.67           10/1/2012         1/30/2012         1,474.51         1,325.41         1,406.67           10/1/2013         3/31/2013         1,570.28         1,426.19         1,569.19           1/1/2013         3/31/2013         1,570.28         1,426.19         1,569.19           1/1/2013         3/30/2013         1,570.28					
101/1/2009   12/31/2009   1,130.38   1,019.95   1,126.42   1/1/2010   3/31/2010   1,180.69   1,044.50   1,169.43   4/1/2010   6/30/2010   1,219.80   1,028.33   1,030.71   1,141.20   1,172010   12/31/2010   1,262.60   1,131.87   1,257.88   1/1/2011   3/31/2011   1,344.07   1,249.05   1,325.83   4/1/2011   6/30/2011   1,356.48   1,258.07   1,320.64   7/1/2011   9/30/2011   1,356.48   1,101.54   1,131.42   10/1/2011   12/31/2011   1,292.66   1,074.77   1,257.61   1/1/2012   3/31/2012   1,419.15   1,258.86   1,408.47   4/1/2012   6/30/2012   1,472.38   1,266.74   1,362.16   7/1/2012   9/30/2012   1,474.51   1,325.41   1,440.67   1/1/2013   3/31/2012   1,470.96   1,343.35   1,426.19   1/1/2013   3/31/2013   1,570.28   1,426.19   1,569.19   4/1/2013   6/30/2013   1,687.18   1,536.03   1,606.28   7/1/2013   12/31/2013   1,849.44   1,646.47   1,848.36   1/1/2014   3/31/2014   1,883.97   1,737.92   1,872.34   4/1/2014   3/31/2014   1,883.97   1,737.92   1,872.34   4/1/2014   3/31/2014   1,988.17   1,814.36   1,960.23   7/1/2014   3/31/2014   2,093.55   1,820.66   2,058.90   1/1/2015   3/31/2015   2,119.59   1,980.90   2,067.89   4/1/2015   6/30/2015   2,134.72   2,048.38   2,063.11   7/1/2016   3/31/2016   2,193.81   2,074.02   2,168.27   1,011/2016   3/31/2016   2,193.81   2,074.02   2,168.27   1,011/2016   3/31/2016   2,193.81   2,074.02   2,168.27   1,011/2016   3/31/2016   2,120.55   1,991.68   2,098.86   7/1/2016   9/30/2016   2,120.55   1,991.68   2,098.86   7/1/2016   9/30/2016   2,193.81   2,074.02   2,168.27   1,011/2016   3/31/2017   2,409.98   2,245.13   2,362.72   4/1/2017   3/31/2017   2,409.98   2,245.13   2,362.72   4/1/2017   3/31/2017   2,409.98   2,245.13   2,362.72   4/1/2017   9/30/2017   2,453.82   2,328.95   2,423.41   1,1/2017   9/30/2017   2,594.97   2,552.69   2,640.87   1,011/2017   2/31/2017   2,694.97   2,552.69   2,640.87   1,011/2017   2/31/2017   2,694.97   2,552.69   2,640.87   1,011/2017   2/31/2017   2,694.97   2,552.69   2,640.87   1,011/2017   2/31/2017   2,694.97   2,552.69   2,640					
1/1/2010   3/31/2010   1,180.69   1,044.50   1,169.43   4/1/2010   6/30/2010   1,219.80   1,028.33   1,030.71   7/1/2010   9/30/2010   1,157.16   1,010.91   1,141.20   10/1/2010   12/31/2010   1,262.60   1,131.87   1,257.88   1/1/2011   3/31/2011   1,344.07   1,249.05   1,325.83   4/1/2011   6/30/2011   1,370.58   1,258.07   1,320.64   7/1/2011   9/30/2011   1,356.48   1,101.54   1,131.42   10/1/2011   1/31/2011   1,292.66   1,074.77   1,257.61   1/1/2012   3/31/2012   1,419.15   1,258.86   1,408.47   4/1/2012   6/30/2012   1,422.38   1,266.74   1,362.16   1/1/2012   9/30/2012   1,474.51   1,325.41   1,440.67   10/1/2012   1/2/31/2012   1,470.96   1,343.35   1,426.19   1/1/2013   3/31/2013   1,570.28   1,426.19   1,569.19   4/1/2013   6/30/2013   1,587.18   1,536.03   1,606.28   1/1/2013   1/3/31/2013   1,887.18   1,536.03   1,606.28   1/1/2013   1/3/31/2014   1,883.97   1,737.92   1,872.34   4/1/2014   6/30/2014   1,968.17   1,814.36   1,960.23   1/1/2014   9/30/2014   2,019.26   1,904.78   1,902.29   10/1/2014   1/2/31/2014   2,019.26   1,904.78   1,972.29   10/1/2014   1/2/31/2015   2,134.72   2,048.38   2,063.11   7/1/2015   9/30/2015   2,134.72   2,048.38   2,063.11   7/1/2015   9/30/2015   2,134.72   2,048.38   2,063.11   7/1/2016   9/30/2016   2,193.81   2,074.02   2,168.27   10/1/2016   9/30/2016   2,193.81   2,074.02   2,168.27   10/1/2016   6/30/2016   2,120.55   1,991.68   2,098.86   7/1/2016   9/30/2016   2,120.55   1,991.68   2,098.86   7/1/2016   9/30/2016   2,120.55   1,991.68   2,098.86   7/1/2016   9/30/2016   2,120.55   1,991.68   2,098.86   7/1/2016   9/30/2017   2,453.82   2,328.95   2,423.41   1/1/2017   9/30/2017   2,453.82   2,328.95   2,423.41   1/1/2017   9/30/2017   2,453.82   2,328.95   2,423.41   1/1/2017   9/30/2017   2,453.82   2,328.95   2,423.41   1/1/2017   9/30/2017   2,453.82   2,328.95   2,423.41   1/1/2017   9/30/2017   2,453.82   2,328.95   2,423.41   1/1/2017   1/2/31/2017   2,460.98   2,245.13   2,362.72   4/1/2017   4/1/2017   2/31/2017   2,460.98   2,245.13   2,326.72					
4/1/2010         6/30/2010         1,219.80         1,028.33         1,030.71           7/1/2010         9/30/2010         1,157.16         1,010.91         1,141.20           10/1/2010         12/31/2010         1,262.60         1,131.87         1,257.88           1/1/2011         3/31/2011         1,344.07         1,249.05         1,325.83           4/1/2011         6/30/2011         1,370.58         1,258.07         1,320.64           7/1/2011         9/30/2011         1,356.48         1,101.54         1,131.42           10/1/2011         12/31/2011         1,292.66         1,074.77         1,257.61           1/1/2012         3/31/2012         1,419.15         1,258.86         1,408.47           4/1/2012         6/30/2012         1,474.51         1,325.41         1,440.67           1/1/2012         9/30/2012         1,474.51         1,325.41         1,440.67           1/1/2012         9/30/2013         1,570.28         1,426.19         1,569.19           4/1/2013         3/31/2013         1,570.28         1,426.19         1,569.19           4/1/2013         9/30/2013         1,687.18         1,536.03         1,681.55           10/1/2013         3/31/2014         1,883.97					
7/1/2010 9/30/2010 1,157.16 1,010.91 1,141.20 10/1/2010 12/31/2010 1,262.60 1,131.87 1,257.88 1/1/2011 3/31/2011 1,344.07 1,249.05 1,325.83 4/1/2011 6/30/2011 1,370.58 1,258.07 1,320.64 1/1/2011 9/30/2011 1,356.48 1,101.54 1,131.42 10/1/2011 12/31/2011 1,292.66 1,074.77 1,257.61 1/1/2012 3/31/2012 1,419.15 1,258.86 1,408.47 4/1/2012 6/30/2012 1,422.38 1,266.74 1,362.16 1,408.47 1/1/2012 9/30/2012 1,474.51 1,325.41 1,440.67 10/1/2012 12/31/2012 1,470.96 1,343.35 1,426.19 1/1/2013 3/31/2013 1,570.28 1,426.19 1,1/2013 3/31/2013 1,570.28 1,426.19 1,569.19 4/1/2013 6/30/2013 1,687.18 1,536.03 1,606.28 1/1/2013 9/30/2013 1,849.44 1,646.47 1,848.36 1/1/2014 3/31/2014 1,883.97 1,737.92 1,872.34 4/1/2014 6/30/2014 1,968.17 1,814.36 1,960.23 7/1/2014 9/30/2014 2,019.26 1,904.78 1,972.29 10/1/2014 12/31/2015 2,119.59 1,980.90 2,067.89 4/1/2015 6/30/2015 2,134.72 2,048.38 2,063.11 1/1/2015 9/30/2015 2,134.72 2,048.38 2,063.11 1/1/2015 9/30/2015 2,134.72 2,048.38 2,063.11 1/1/2016 3/31/2016 2,072.21 1,810.10 2,059.74 4/1/2016 6/30/2016 2,120.55 1,991.68 2,098.86 7/1/2016 9/30/2016 2,120.55 1,991.68 2,098.86 7/1/2016 9/30/2016 2,120.55 1,991.68 2,098.86 7/1/2016 9/30/2017 2,453.82 2,328.95 2,423.41 1/1/2017 9/30/2017 2,453.82 2,328.95 2,423.41 1/1/2017 9/30/2017 2,453.82 2,328.95 2,423.41 1/1/2017 9/30/2017 2,453.82 2,328.95 2,423.41 1/1/2017 12/31/2017 2,694.97 2,520.40 2,673.61 1/1/2017 12/31/2017 2,694.97 2,520.40 2,673.61 1/1/2017 12/31/2017 2,694.97 2,520.40 2,673.61 1/1/2017 12/31/2017 2,694.97 2,520.40 2,673.61 1/1/2017 12/31/2017 2,694.97 2,520.40 2,673.61 1/1/2018 3/31/2018 2,872.87 2,532.69 2,640.87					
10/1/2010   12/31/2010   1,262.60   1,131.87   1,257.88   1/1/2011   3/31/2011   1,344.07   1,249.05   1,325.83   4/1/2011   6/30/2011   1,370.58   1,258.07   1,320.64   7/1/2011   9/30/2011   1,356.48   1,101.54   1,131.42   10/1/2011   12/31/2011   1,292.66   1,074.77   1,257.61   1/1/2012   3/31/2012   1,419.15   1,258.86   1,408.47   4/1/2012   6/30/2012   1,422.38   1,266.74   1,362.16   7/1/2012   9/30/2012   1,474.51   1,325.41   1,440.67   10/1/2012   12/31/2012   1,470.96   1,343.35   1,426.19   1/1/2013   3/31/2013   1,570.28   1,426.19   1,569.19   4/1/2013   6/30/2013   1,729.86   1,604.57   1,681.55   10/1/2013   12/31/2013   1,849.44   1,646.47   1,848.36   1/1/2014   3/31/2014   1,883.97   1,737.92   1,872.34   4/1/2014   6/30/2014   1,968.17   1,814.36   1,960.23   1/1/2014   9/30/2014   2,019.26   1,904.78   1,972.29   10/1/2014   12/31/2014   2,093.55   1,820.66   2,058.90   1/1/2015   3/31/2015   2,119.59   1,980.90   2,067.89   4/1/2015   6/30/2015   2,134.72   2,048.38   2,063.11   7/1/2015   3/31/2015   2,119.59   1,980.90   2,067.89   4/1/2015   3/31/2015   2,113.82   1,867.01   1,920.03   10/1/2015   12/31/2015   2,134.72   2,048.38   2,063.11   7/1/2016   3/31/2016   2,072.21   1,810.10   2,059.74   4/1/2016   6/30/2016   2,193.81   2,074.02   2,168.27   1/1/2016   6/30/2016   2,120.55   1,991.68   2,098.86   7/1/2016   6/30/2016   2,120.55   1,991.68   2,098.86   7/1/2016   6/30/2016   2,120.55   1,991.68   2,098.86   7/1/2016   6/30/2016   2,120.55   1,991.68   2,098.86   7/1/2016   12/31/2016   2,277.53   2,083.79   2,238.83   1/1/2017   3/31/2017   2,400.98   2,245.13   2,362.72   4/1/2017   6/30/2017   2,453.82   2,328.95   2,423.41   1/1/2017   3/31/2017   2,594.47   2,592.40   2,673.61   1/1/2018   3/31/2018   2,872.87   2,532.69   2,640.87					-
1/1/2011   3/31/2011   1,344.07   1,249.05   1,325.83   4/1/2011   6/30/2011   1,370.58   1,258.07   1,320.64   1,101.54   1,131.42   10/1/2011   12/31/2011   1,292.66   1,074.77   1,257.61   1/1/2012   3/31/2012   1,419.15   1,258.86   1,408.47   4/1/2012   6/30/2012   1,422.38   1,266.74   1,362.16   1,074.77   1,001/2012   1,271/2012   1,470.96   1,343.35   1,426.19   1,170.012   1,271/2012   1,470.96   1,343.35   1,426.19   1,170.013   3/31/2013   1,570.28   1,426.19   1,569.19   4/1/2013   6/30/2013   1,687.18   1,536.03   1,606.28   7/1/2013   3/31/2013   1,379.86   1,604.57   1,681.55   1,0/1/2013   1,31/2014   1,883.97   1,737.92   1,872.34   4/1/2014   6/30/2014   1,968.17   1,814.36   1,960.23   1,91/2014   1,972.29   1,0/1/2014   1,271/2014   2,093.55   1,820.66   2,058.90   1/1/2015   3/31/2015   2,119.59   1,980.90   2,067.89   4/1/2015   6/30/2015   2,134.72   2,048.38   2,063.11   7/1/2015   6/30/2016   2,072.21   1,810.10   2,059.74   4/1/2016   6/30/2016   2,072.21   1,810.10   2,059.74   4/1/2016   6/30/2016   2,120.55   1,991.68   2,098.86   7/1/2016   6/30/2017   2,453.82   2,328.95   2,423.41   7/1/2017   6/30/2017   2,453.82   2,328.95   2,423.41   7/1/2017   6/30/2017   2,453.82   2,328.95   2,423.41   7/1/2017   7/3/2017   2,694.97   2,520.40   2,673.61   1/1/2018   3/31/2017   2,694.97   2,520.40   2,673.61   1/1/2018   3/31/2017   2,694.97   2,520.40   2,673.61   1/1/2018   3/31/2018   2,872.87   2,532.69   2,640.87					
4/1/2011         6/30/2011         1,370.58         1,258.07         1,320.64           7/1/2011         9/30/2011         1,356.48         1,101.54         1,131.42           10/1/2012         13/12012         1,419.15         1,258.86         1,408.47           4/1/2012         6/30/2012         1,422.38         1,266.74         1,362.16           7/1/2012         9/30/2012         1,474.51         1,325.41         1,440.67           10/1/2012         12/31/2012         1,470.96         1,343.35         1,426.19           1/1/2013         3/31/2013         1,570.28         1,426.19         1,569.19           4/1/2013         6/30/2013         1,687.18         1,536.03         1,606.28           7/1/2013         9/30/2013         1,729.86         1,604.57         1,681.55           10/1/2014         3/31/2014         1,883.97         1,737.92         1,872.34           4/1/2014         6/30/2014         1,968.17         1,814.36         1,960.23           7/1/2014         9/30/2014         2,019.26         1,904.78         1,972.29           10/1/2014         1/31/2014         2,093.55         1,820.66         2,058.90           1/1/2015         3/31/2015         2,119.59					
7/1/2011         9/30/2011         1,356.48         1,101.54         1,131.42           10/1/2011         12/31/2011         1,292.66         1,074.77         1,257.61           1/1/2012         3/31/2012         1,419.15         1,258.86         1,408.47           4/1/2012         6/30/2012         1,422.38         1,266.74         1,362.16           7/1/2012         9/30/2012         1,474.51         1,325.41         1,440.67           10/1/2013         12/31/2012         1,470.96         1,343.35         1,426.19           1/1/2013         3/31/2013         1,570.28         1,426.19         1,569.19           4/1/2013         9/30/2013         1,687.18         1,536.03         1,606.28           7/1/2013         9/30/2013         1,729.86         1,604.57         1,681.55           10/1/2013         12/31/2013         1,849.44         1,646.47         1,848.36           1/1/2014         3/31/2014         1,883.97         1,737.92         1,872.34           4/1/2014         6/30/2014         2,019.26         1,904.78         1,972.29           10/1/2014         12/31/2015         2,119.59         1,980.90         2,067.89           4/1/2015         6/30/2015         2,134.72 <td></td> <td></td> <td></td> <td></td> <td></td>					
10/1/2011   12/31/2011   1,292.66   1,074.77   1,257.61     1/1/2012   3/31/2012   1,419.15   1,258.86   1,408.47     4/1/2012   6/30/2012   1,422.38   1,266.74   1,362.16     7/1/2012   9/30/2012   1,474.51   1,325.41   1,440.67     10/1/2012   12/31/2012   1,470.96   1,343.35   1,426.19     1/1/2013   3/31/2013   1,570.28   1,426.19   1,569.19     4/1/2013   6/30/2013   1,687.18   1,536.03   1,606.28     7/1/2013   9/30/2013   1,729.86   1,604.57   1,681.55     10/1/2013   12/31/2013   1,849.44   1,646.47   1,848.36     1/1/2014   3/31/2014   1,883.97   1,737.92   1,872.34     4/1/2014   6/30/2014   1,968.17   1,814.36   1,960.23     7/1/2014   9/30/2014   2,019.26   1,904.78   1,972.29     10/1/2015   3/31/2015   2,119.59   1,980.90   2,067.89     4/1/2015   6/30/2015   2,134.72   2,048.38   2,063.11     7/1/2015   9/30/2015   2,134.72   2,048.38   2,063.11     7/1/2016   12/31/2015   2,116.48   1,893.70   2,043.94     1/1/2016   6/30/2016   2,172.21   1,810.10   2,059.74     4/1/2016   6/30/2016   2,120.55   1,991.68   2,098.86     7/1/2017   3/31/2016   2,277.53   2,083.79   2,238.83     1/1/2017   3/31/2017   2,450.82   2,328.95   2,423.41     1/1/2017   1/2/31/2017   2,559.49   2,552.69   2,640.87     1/1/2018   3/31/2018   2,872.87   2,532.69   2,640.87					
1/1/2012       3/31/2012       1,419.15       1,258.86       1,408.47         4/1/2012       6/30/2012       1,422.38       1,266.74       1,362.16         7/1/2012       9/30/2012       1,474.51       1,325.41       1,440.67         10/1/2012       12/31/2012       1,470.96       1,343.35       1,426.19         1/1/2013       3/31/2013       1,570.28       1,426.19       1,569.19         4/1/2013       6/30/2013       1,687.18       1,536.03       1,606.28         7/1/2013       9/30/2013       1,729.86       1,604.57       1,681.55         10/1/2014       3/31/2014       1,883.97       1,737.92       1,872.34         4/1/2014       6/30/2014       1,968.17       1,814.36       1,960.23         7/1/2014       3/31/2014       2,093.55       1,820.66       2,058.90         1/1/2014       3/31/2015       2,119.59       1,980.90       2,067.89         4/1/2015       6/30/2015       2,134.72       2,048.38       2,063.11         7/1/2015       9/30/2015       2,132.82       1,867.01       1,920.03         10/1/2016       3/31/2016       2,072.21       1,810.10       2,059.74         4/1/2016       6/30/2016       2,					-
4/1/2012       6/30/2012       1,422.38       1,266.74       1,362.16         7/1/2012       9/30/2012       1,474.51       1,325.41       1,440.67         10/1/2012       12/31/2012       1,470.96       1,343.35       1,426.19         1/1/2013       3/31/2013       1,570.28       1,426.19       1,569.19         4/1/2013       6/30/2013       1,687.18       1,536.03       1,606.28         7/1/2013       9/30/2013       1,729.86       1,604.57       1,681.55         10/1/2013       12/31/2013       1,849.44       1,646.47       1,848.36         1/1/2014       3/31/2014       1,983.97       1,737.92       1,872.34         4/1/2014       6/30/2014       1,968.17       1,814.36       1,960.23         7/1/2014       9/30/2014       2,019.26       1,904.78       1,972.29         10/1/2014       12/31/2014       2,093.55       1,820.66       2,058.90         1/1/2015       3/31/2015       2,119.59       1,980.90       2,067.89         4/1/2015       6/30/2015       2,134.72       2,048.38       2,063.11         7/1/2015       9/30/2015       2,132.82       1,867.01       1,920.03         10/1/2015       12/31/2015 <t< td=""><td></td><td></td><td></td><td></td><td>-</td></t<>					-
7/1/2012         9/30/2012         1,474.51         1,325.41         1,440.67           10/1/2012         12/31/2012         1,470.96         1,343.35         1,426.19           1/1/2013         3/31/2013         1,570.28         1,426.19         1,569.19           4/1/2013         6/30/2013         1,687.18         1,536.03         1,606.28           7/1/2013         9/30/2013         1,729.86         1,604.57         1,681.55           10/1/2013         12/31/2013         1,849.44         1,646.47         1,848.36           1/1/2014         3/31/2014         1,883.97         1,737.92         1,872.34           4/1/2014         6/30/2014         1,968.17         1,814.36         1,960.23           7/1/2014         9/30/2014         2,019.26         1,904.78         1,972.29           10/1/2014         12/31/2015         2,119.59         1,980.90         2,067.89           4/1/2015         3/31/2015         2,119.59         1,980.90         2,067.89           4/1/2015         9/30/2015         2,132.82         1,867.01         1,920.03           10/1/2015         12/31/2015         2,116.48         1,893.70         2,043.94           1/1/2016         3/31/2016         2,072.21 <td></td> <td></td> <td></td> <td></td> <td></td>					
10/1/2012       12/31/2012       1,470.96       1,343.35       1,426.19         1/1/2013       3/31/2013       1,570.28       1,426.19       1,569.19         4/1/2013       6/30/2013       1,687.18       1,536.03       1,606.28         7/1/2013       9/30/2013       1,729.86       1,604.57       1,681.55         10/1/2014       12/31/2013       1,849.44       1,646.47       1,848.36         1/1/2014       3/31/2014       1,883.97       1,737.92       1,872.34         4/1/2014       6/30/2014       1,968.17       1,814.36       1,960.23         7/1/2014       9/30/2014       2,019.26       1,904.78       1,972.29         10/1/2014       12/31/2014       2,093.55       1,820.66       2,058.90         1/1/2015       3/31/2015       2,119.59       1,980.90       2,067.89         4/1/2015       6/30/2015       2,134.72       2,048.38       2,063.11         7/1/2015       9/30/2015       2,132.82       1,867.01       1,920.03         10/1/2015       12/31/2015       2,116.48       1,893.70       2,043.94         1/1/2016       3/31/2016       2,072.21       1,810.10       2,059.74         4/1/2016       6/30/2016 <t< td=""><td></td><td></td><td></td><td></td><td></td></t<>					
1/1/2013       3/31/2013       1,570.28       1,426.19       1,569.19         4/1/2013       6/30/2013       1,687.18       1,536.03       1,606.28         7/1/2013       9/30/2013       1,729.86       1,604.57       1,681.55         10/1/2013       12/31/2013       1,849.44       1,646.47       1,848.36         1/1/2014       3/31/2014       1,883.97       1,737.92       1,872.34         4/1/2014       6/30/2014       1,968.17       1,814.36       1,960.23         7/1/2014       9/30/2014       2,019.26       1,904.78       1,972.29         10/1/2014       12/31/2014       2,093.55       1,820.66       2,058.90         1/1/2015       3/31/2015       2,119.59       1,980.90       2,067.89         4/1/2015       6/30/2015       2,134.72       2,048.38       2,063.11         7/1/2015       9/30/2015       2,132.82       1,867.01       1,920.03         10/1/2015       12/31/2015       2,116.48       1,893.70       2,043.94         1/1/2016       3/31/2016       2,072.21       1,810.10       2,059.74         4/1/2016       6/30/2016       2,193.81       2,074.02       2,168.27         10/1/2016       12/31/2016 <t< td=""><td></td><td></td><td></td><td>·</td><td></td></t<>				·	
4/1/2013       6/30/2013       1,687.18       1,536.03       1,606.28         7/1/2013       9/30/2013       1,729.86       1,604.57       1,681.55         10/1/2013       12/31/2013       1,849.44       1,646.47       1,848.36         1/1/2014       3/31/2014       1,883.97       1,737.92       1,872.34         4/1/2014       6/30/2014       1,968.17       1,814.36       1,960.23         7/1/2014       9/30/2014       2,019.26       1,904.78       1,972.29         10/1/2014       12/31/2014       2,093.55       1,820.66       2,058.90         1/1/2015       3/31/2015       2,119.59       1,980.90       2,067.89         4/1/2015       6/30/2015       2,134.72       2,048.38       2,063.11         7/1/2015       9/30/2015       2,132.82       1,867.01       1,920.03         10/1/2015       12/31/2015       2,116.48       1,893.70       2,043.94         1/1/2016       3/31/2016       2,072.21       1,810.10       2,059.74         4/1/2016       6/30/2016       2,120.55       1,991.68       2,098.86         7/1/2016       9/30/2016       2,193.81       2,074.02       2,168.27         10/1/2016       12/31/2016 <t< td=""><td></td><td></td><td></td><td></td><td></td></t<>					
7/1/2013         9/30/2013         1,729.86         1,604.57         1,681.55           10/1/2013         12/31/2013         1,849.44         1,646.47         1,848.36           1/1/2014         3/31/2014         1,883.97         1,737.92         1,872.34           4/1/2014         6/30/2014         1,968.17         1,814.36         1,960.23           7/1/2014         9/30/2014         2,019.26         1,904.78         1,972.29           10/1/2014         12/31/2014         2,093.55         1,820.66         2,058.90           1/1/2015         3/31/2015         2,119.59         1,980.90         2,067.89           4/1/2015         6/30/2015         2,134.72         2,048.38         2,063.11           7/1/2015         9/30/2015         2,132.82         1,867.01         1,920.03           10/1/2015         12/31/2015         2,116.48         1,893.70         2,043.94           1/1/2016         3/31/2016         2,072.21         1,810.10         2,059.74           4/1/2016         6/30/2016         2,120.55         1,991.68         2,098.86           7/1/2016         9/30/2016         2,193.81         2,074.02         2,168.27           10/1/2017         3/31/2016         2,277.53					
10/1/2013       12/31/2013       1,849.44       1,646.47       1,848.36         1/1/2014       3/31/2014       1,883.97       1,737.92       1,872.34         4/1/2014       6/30/2014       1,968.17       1,814.36       1,960.23         7/1/2014       9/30/2014       2,019.26       1,904.78       1,972.29         10/1/2014       12/31/2014       2,093.55       1,820.66       2,058.90         1/1/2015       3/31/2015       2,119.59       1,980.90       2,067.89         4/1/2015       6/30/2015       2,134.72       2,048.38       2,063.11         7/1/2015       9/30/2015       2,132.82       1,867.01       1,920.03         10/1/2015       12/31/2015       2,116.48       1,893.70       2,043.94         1/1/2016       3/31/2016       2,072.21       1,810.10       2,059.74         4/1/2016       6/30/2016       2,120.55       1,991.68       2,098.86         7/1/2016       9/30/2016       2,193.81       2,074.02       2,168.27         10/1/2017       3/31/2016       2,277.53       2,083.79       2,238.83         1/1/2017       6/30/2017       2,453.82       2,328.95       2,423.41         7/1/2017       9/30/2017 <td< td=""><td></td><td></td><td></td><td></td><td></td></td<>					
1/1/2014       3/31/2014       1,883.97       1,737.92       1,872.34         4/1/2014       6/30/2014       1,968.17       1,814.36       1,960.23         7/1/2014       9/30/2014       2,019.26       1,904.78       1,972.29         10/1/2014       12/31/2014       2,093.55       1,820.66       2,058.90         1/1/2015       3/31/2015       2,119.59       1,980.90       2,067.89         4/1/2015       6/30/2015       2,134.72       2,048.38       2,063.11         7/1/2015       9/30/2015       2,132.82       1,867.01       1,920.03         10/1/2015       12/31/2015       2,116.48       1,893.70       2,043.94         1/1/2016       3/31/2016       2,072.21       1,810.10       2,059.74         4/1/2016       6/30/2016       2,120.55       1,991.68       2,098.86         7/1/2016       9/30/2016       2,193.81       2,074.02       2,168.27         10/1/2016       12/31/2016       2,277.53       2,083.79       2,238.83         1/1/2017       3/31/2017       2,453.82       2,328.95       2,423.41         7/1/2017       9/30/2017       2,519.44       2,407.70       2,519.36         10/1/2018       3/31/2018 <td< td=""><td></td><td></td><td></td><td></td><td></td></td<>					
4/1/2014       6/30/2014       1,968.17       1,814.36       1,960.23         7/1/2014       9/30/2014       2,019.26       1,904.78       1,972.29         10/1/2014       12/31/2014       2,093.55       1,820.66       2,058.90         1/1/2015       3/31/2015       2,119.59       1,980.90       2,067.89         4/1/2015       6/30/2015       2,134.72       2,048.38       2,063.11         7/1/2015       9/30/2015       2,132.82       1,867.01       1,920.03         10/1/2015       12/31/2015       2,116.48       1,893.70       2,043.94         1/1/2016       3/31/2016       2,072.21       1,810.10       2,059.74         4/1/2016       6/30/2016       2,120.55       1,991.68       2,098.86         7/1/2016       9/30/2016       2,193.81       2,074.02       2,168.27         10/1/2016       12/31/2016       2,277.53       2,083.79       2,238.83         1/1/2017       3/31/2017       2,453.82       2,328.95       2,423.41         7/1/2017       9/30/2017       2,519.44       2,407.70       2,519.36         10/1/2017       12/31/2017       2,694.97       2,520.40       2,673.61         1/1/2018       3/31/2018 <t< td=""><td></td><td></td><td></td><td></td><td></td></t<>					
7/1/2014       9/30/2014       2,019.26       1,904.78       1,972.29         10/1/2014       12/31/2014       2,093.55       1,820.66       2,058.90         1/1/2015       3/31/2015       2,119.59       1,980.90       2,067.89         4/1/2015       6/30/2015       2,134.72       2,048.38       2,063.11         7/1/2015       9/30/2015       2,132.82       1,867.01       1,920.03         10/1/2015       12/31/2015       2,116.48       1,893.70       2,043.94         1/1/2016       3/31/2016       2,072.21       1,810.10       2,059.74         4/1/2016       6/30/2016       2,120.55       1,991.68       2,098.86         7/1/2016       9/30/2016       2,193.81       2,074.02       2,168.27         10/1/2016       12/31/2016       2,277.53       2,083.79       2,238.83         1/1/2017       3/31/2017       2,400.98       2,245.13       2,362.72         4/1/2017       6/30/2017       2,453.82       2,328.95       2,423.41         7/1/2017       1/2/31/2017       2,594.97       2,520.40       2,673.61         1/1/2018       3/31/2018       2,872.87       2,532.69       2,640.87				·	
10/1/2014       12/31/2014       2,093.55       1,820.66       2,058.90         1/1/2015       3/31/2015       2,119.59       1,980.90       2,067.89         4/1/2015       6/30/2015       2,134.72       2,048.38       2,063.11         7/1/2015       9/30/2015       2,132.82       1,867.01       1,920.03         10/1/2015       12/31/2015       2,116.48       1,893.70       2,043.94         1/1/2016       3/31/2016       2,072.21       1,810.10       2,059.74         4/1/2016       6/30/2016       2,120.55       1,991.68       2,098.86         7/1/2016       9/30/2016       2,193.81       2,074.02       2,168.27         10/1/2016       12/31/2016       2,277.53       2,083.79       2,238.83         1/1/2017       3/31/2017       2,400.98       2,245.13       2,362.72         4/1/2017       6/30/2017       2,453.82       2,328.95       2,423.41         7/1/2017       9/30/2017       2,519.44       2,407.70       2,519.36         10/1/2017       12/31/2017       2,694.97       2,520.40       2,673.61         1/1/2018       3/31/2018       2,872.87       2,532.69       2,640.87					
1/1/2015       3/31/2015       2,119.59       1,980.90       2,067.89         4/1/2015       6/30/2015       2,134.72       2,048.38       2,063.11         7/1/2015       9/30/2015       2,132.82       1,867.01       1,920.03         10/1/2015       12/31/2015       2,116.48       1,893.70       2,043.94         1/1/2016       3/31/2016       2,072.21       1,810.10       2,059.74         4/1/2016       6/30/2016       2,120.55       1,991.68       2,098.86         7/1/2016       9/30/2016       2,193.81       2,074.02       2,168.27         10/1/2016       12/31/2016       2,277.53       2,083.79       2,238.83         1/1/2017       3/31/2017       2,400.98       2,245.13       2,362.72         4/1/2017       6/30/2017       2,453.82       2,328.95       2,423.41         7/1/2017       9/30/2017       2,519.44       2,407.70       2,519.36         10/1/2017       12/31/2017       2,694.97       2,520.40       2,673.61         1/1/2018       3/31/2018       2,872.87       2,532.69       2,640.87					-
4/1/2015       6/30/2015       2,134.72       2,048.38       2,063.11         7/1/2015       9/30/2015       2,132.82       1,867.01       1,920.03         10/1/2015       12/31/2015       2,116.48       1,893.70       2,043.94         1/1/2016       3/31/2016       2,072.21       1,810.10       2,059.74         4/1/2016       6/30/2016       2,120.55       1,991.68       2,098.86         7/1/2016       9/30/2016       2,193.81       2,074.02       2,168.27         10/1/2016       12/31/2016       2,277.53       2,083.79       2,238.83         1/1/2017       3/31/2017       2,400.98       2,245.13       2,362.72         4/1/2017       6/30/2017       2,453.82       2,328.95       2,423.41         7/1/2017       9/30/2017       2,519.44       2,407.70       2,519.36         10/1/2017       12/31/2017       2,694.97       2,520.40       2,673.61         1/1/2018       3/31/2018       2,872.87       2,532.69       2,640.87					
7/1/2015       9/30/2015       2,132.82       1,867.01       1,920.03         10/1/2015       12/31/2015       2,116.48       1,893.70       2,043.94         1/1/2016       3/31/2016       2,072.21       1,810.10       2,059.74         4/1/2016       6/30/2016       2,120.55       1,991.68       2,098.86         7/1/2016       9/30/2016       2,193.81       2,074.02       2,168.27         10/1/2016       12/31/2016       2,277.53       2,083.79       2,238.83         1/1/2017       3/31/2017       2,400.98       2,245.13       2,362.72         4/1/2017       6/30/2017       2,453.82       2,328.95       2,423.41         7/1/2017       9/30/2017       2,519.44       2,407.70       2,519.36         10/1/2017       12/31/2017       2,694.97       2,520.40       2,673.61         1/1/2018       3/31/2018       2,872.87       2,532.69       2,640.87					
10/1/2015       12/31/2015       2,116.48       1,893.70       2,043.94         1/1/2016       3/31/2016       2,072.21       1,810.10       2,059.74         4/1/2016       6/30/2016       2,120.55       1,991.68       2,098.86         7/1/2016       9/30/2016       2,193.81       2,074.02       2,168.27         10/1/2016       12/31/2016       2,277.53       2,083.79       2,238.83         1/1/2017       3/31/2017       2,400.98       2,245.13       2,362.72         4/1/2017       6/30/2017       2,453.82       2,328.95       2,423.41         7/1/2017       9/30/2017       2,519.44       2,407.70       2,519.36         10/1/2017       12/31/2017       2,694.97       2,520.40       2,673.61         1/1/2018       3/31/2018       2,872.87       2,532.69       2,640.87					
1/1/2016       3/31/2016       2,072.21       1,810.10       2,059.74         4/1/2016       6/30/2016       2,120.55       1,991.68       2,098.86         7/1/2016       9/30/2016       2,193.81       2,074.02       2,168.27         10/1/2016       12/31/2016       2,277.53       2,083.79       2,238.83         1/1/2017       3/31/2017       2,400.98       2,245.13       2,362.72         4/1/2017       6/30/2017       2,453.82       2,328.95       2,423.41         7/1/2017       9/30/2017       2,519.44       2,407.70       2,519.36         10/1/2017       12/31/2017       2,694.97       2,520.40       2,673.61         1/1/2018       3/31/2018       2,872.87       2,532.69       2,640.87	7/1/2015	9/30/2015	2,132.82		•
4/1/2016       6/30/2016       2,120.55       1,991.68       2,098.86         7/1/2016       9/30/2016       2,193.81       2,074.02       2,168.27         10/1/2016       12/31/2016       2,277.53       2,083.79       2,238.83         1/1/2017       3/31/2017       2,400.98       2,245.13       2,362.72         4/1/2017       6/30/2017       2,453.82       2,328.95       2,423.41         7/1/2017       9/30/2017       2,519.44       2,407.70       2,519.36         10/1/2017       12/31/2017       2,694.97       2,520.40       2,673.61         1/1/2018       3/31/2018       2,872.87       2,532.69       2,640.87					2,043.94
7/1/2016       9/30/2016       2,193.81       2,074.02       2,168.27         10/1/2016       12/31/2016       2,277.53       2,083.79       2,238.83         1/1/2017       3/31/2017       2,400.98       2,245.13       2,362.72         4/1/2017       6/30/2017       2,453.82       2,328.95       2,423.41         7/1/2017       9/30/2017       2,519.44       2,407.70       2,519.36         10/1/2017       12/31/2017       2,694.97       2,520.40       2,673.61         1/1/2018       3/31/2018       2,872.87       2,532.69       2,640.87		3/31/2016	2,072.21		2,059.74
10/1/2016       12/31/2016       2,277.53       2,083.79       2,238.83         1/1/2017       3/31/2017       2,400.98       2,245.13       2,362.72         4/1/2017       6/30/2017       2,453.82       2,328.95       2,423.41         7/1/2017       9/30/2017       2,519.44       2,407.70       2,519.36         10/1/2017       12/31/2017       2,694.97       2,520.40       2,673.61         1/1/2018       3/31/2018       2,872.87       2,532.69       2,640.87	4/1/2016	6/30/2016	2,120.55	1,991.68	2,098.86
1/1/2017       3/31/2017       2,400.98       2,245.13       2,362.72         4/1/2017       6/30/2017       2,453.82       2,328.95       2,423.41         7/1/2017       9/30/2017       2,519.44       2,407.70       2,519.36         10/1/2017       12/31/2017       2,694.97       2,520.40       2,673.61         1/1/2018       3/31/2018       2,872.87       2,532.69       2,640.87	7/1/2016	9/30/2016	2,193.81	2,074.02	2,168.27
4/1/2017       6/30/2017       2,453.82       2,328.95       2,423.41         7/1/2017       9/30/2017       2,519.44       2,407.70       2,519.36         10/1/2017       12/31/2017       2,694.97       2,520.40       2,673.61         1/1/2018       3/31/2018       2,872.87       2,532.69       2,640.87	10/1/2016	12/31/2016	2,277.53	2,083.79	2,238.83
7/1/2017       9/30/2017       2,519.44       2,407.70       2,519.36         10/1/2017       12/31/2017       2,694.97       2,520.40       2,673.61         1/1/2018       3/31/2018       2,872.87       2,532.69       2,640.87	1/1/2017	3/31/2017	2,400.98	2,245.13	2,362.72
10/1/2017       12/31/2017       2,694.97       2,520.40       2,673.61         1/1/2018       3/31/2018       2,872.87       2,532.69       2,640.87	4/1/2017	6/30/2017	2,453.82	2,328.95	2,423.41
1/1/2018 3/31/2018 2,872.87 2,532.69 2,640.87	7/1/2017	9/30/2017	2,519.44	2,407.70	2,519.36
	10/1/2017	12/31/2017	2,694.97	2,520.40	2,673.61
4/1/2018 6/26/2018 2,791.47 2,553.80 2,723.06	1/1/2018	3/31/2018	2,872.87	2,532.69	2,640.87
	4/1/2018	6/26/2018	2,791.47	2,553.80	2,723.06

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Barrier Booster Notes Linked to the Lesser Performing of Two Equity Indices, Due June 30, 2022 Royal Bank of Canada

### EURO STOXX 50<sup>®</sup> Index ("SX5E")

The SX5E was created by STOXX Limited, a subsidiary of Deutsche Börse AG. Publication of the SX5E began in February 1998, based on an initial index level of 1,000 at December 31, 1991.

Composition and Maintenance

The SX5E is composed of 50 component stocks of market sector leaders from within the 19 EURO STOXX® Supersector indices, which represent the Eurozone portion of the STOXX Europe 600® Supersector indices. The composition of the SX5E is reviewed annually, based on the closing stock data on the last trading day in August. The component stocks are announced on the first trading day in September. Changes to the component stocks are implemented on the third Friday in September and are effective the following trading day. Changes in the composition of the SX5E are made to ensure that the SX5E includes the 50 market sector leaders from within the SX5E. The free float factors for each component stock used to calculate the SX5E, as described below, are reviewed, calculated, and implemented on a quarterly basis and are fixed until the next quarterly review.

The SX5E is also reviewed on an ongoing monthly basis. Corporate actions (including initial public offerings, mergers and takeovers, spin-offs, delistings, and bankruptcy) that affect the SX5E composition are announced immediately, implemented two trading days later and become effective on the next trading day after implementation. Calculation of the SX5E

The SX5E is calculated with the "Laspeyres formula," which measures the aggregate price changes in the component stocks against a fixed base quantity weight. The formula for calculating the SX5E value can be expressed as follows:

$$SX5E = \frac{Free \text{ float market capitalization of the SX5E}}{Divisor} \times 1,000$$

The "free float market capitalization of the SX5E" is equal to the sum of the products of the price, the number of shares, the free float factor and the weighting cap factor for each component stock as of the time the SX5E is being calculated.

The SX5E is also subject to a divisor, which is adjusted to maintain the continuity of the SX5E values across changes due to corporate actions, such as the deletion and addition of stocks, the substitution of stocks, stock dividends, and stock splits.

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Barrier Booster Notes Linked to the Lesser Performing of Two Equity Indices, Due June 30, 2022 Royal Bank of Canada

#### License Agreement

We have entered into a non-exclusive license agreement with STOXX providing for the license to us and certain of our affiliated or subsidiary companies, in exchange for a fee, of the right to use indices owned and published by STOXX (including the SX5E) in connection with certain securities, including the Notes offered hereby. The license agreement between us and STOXX requires that the following language be stated in this document: STOXX has no relationship to us, other than the licensing of the SX5E and the related trademarks for use in connection with the Notes. STOXX does not:

- ·sponsor, endorse, sell, or promote the Notes;
- ·recommend that any person invest in the Notes offered hereby or any other securities;
- ·have any responsibility or liability for or make any decisions about the timing, amount, or pricing of the Notes;
- ·have any responsibility or liability for the administration, management, or marketing of the Notes; or
- consider the needs of the Notes or the holders of the Notes in determining, composing, or calculating the SX5E, or have any obligation to do so.

STOXX will not have any liability in connection with the Notes. Specifically:

- ·STOXX does not make any warranty, express or implied, and disclaims any and all warranty concerning: the results to be obtained by the Notes, the holders of the Notes or any other person in connection with the use of the SX5E and the data included in the SX5E;
- ·the accuracy or completeness of the SX5E and its data;
- •the merchantability and the fitness for a particular purpose or use of the SX5E and its data;
- ·STOXX will have no liability for any errors, omissions, or interruptions in the SX5E or its data; and Under no circumstances will STOXX be liable for any lost profits or indirect, punitive, special, or consequential damages or losses, even if STOXX knows that they might occur.

The licensing agreement between us and STOXX is solely for their benefit and our benefit, and not for the benefit of the holders of the Notes or any other third parties.

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Barrier Booster Notes Linked to the Lesser Performing of Two Equity Indices, Due June 30, 2022 Royal Bank of Canada

#### **Historical Information**

The graph below sets forth the information relating to the historical performance of the SX5E. In addition, below the graph is a table setting forth the intra-day high, intra-day low and period-end closing levels of the SX5E. We obtained the information regarding the historical performance of the SX5E in the chart below from Bloomberg Financial Markets. We have not independently verified the accuracy or completeness of the information obtained from Bloomberg Financial Markets. The historical performance of the SX5E should not be taken as an indication of its future performance, and no assurance can be given as to the Final Level of the SX5E. We cannot give you assurance that the performance of the SX5E will result in any positive return on your initial investment.

EURO STOXX 50® Index ("SX5E")

PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE RESULTS.

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Barrier Booster Notes Linked to the Lesser Performing of Two Equity Indices, Due June 30, 2022 Royal Bank of Canada

Period-Start	Period-End	High Intra-Day Level of this	Low Intra-Day Level of this	Period-End Closing Level of this
Date	Date	Reference Asset	Reference Asset	Reference Asset
1/1/2008	3/31/2008	4,411.59	3,417.25	3,628.06
4/1/2008	6/30/2008	3,900.30	3,298.05	3,352.81
7/1/2008	9/30/2008	3,456.81	2,924.13	3,038.20
10/1/2008	12/31/2008	3,130.25	2,128.29	2,451.48
1/1/2009	3/31/2009	2,608.15	1,765.49	2,071.13
4/1/2009	6/30/2009	2,549.32	2,021.53	2,401.69
7/1/2009	9/30/2009	2,915.71	2,258.60	2,872.63
10/1/2009	12/31/2009	3,001.56	2,693.80	2,966.24
1/1/2010	3/31/2010	3,044.37	2,617.77	2,931.16
4/1/2010	6/30/2010	3,027.14	2,448.10	2,573.32
7/1/2010	9/30/2010	2,849.45	2,502.50	2,747.90
10/1/2010	12/31/2010	2,902.80	2,635.08	2,807.04
1/1/2011	3/31/2011	3,077.24	2,717.74	2,910.91
4/1/2011	6/30/2011	3,029.68	2,692.95	2,848.53
7/1/2011	9/30/2011	2,887.30	1,935.89	2,179.66
10/1/2011	12/31/2011	2,506.22	2,054.98	2,316.55
1/1/2012	3/31/2012	2,611.42	2,279.73	2,477.28
4/1/2012	6/30/2012	2,509.93	2,050.16	2,264.72
7/1/2012	9/30/2012	2,604.77	2,142.46	2,454.26
10/1/2012	12/31/2012	2,668.23	2,427.32	2,635.93
1/1/2013	3/31/2013	2,754.80	2,563.64	2,624.02
4/1/2013	6/30/2013	2,851.48	2,494.54	2,602.59
7/1/2013	9/30/2013	2,955.47	2,539.15	2,893.15
10/1/2013	12/31/2013	3,116.23	2,891.39	3,109.00
1/1/2014	3/31/2014	3,185.68	2,944.13	3,161.60
4/1/2014	6/30/2014	3,325.50	3,083.43	3,228.24
7/1/2014	9/30/2014	3,301.15	2,977.52	3,225.93
10/1/2014	12/31/2014	3,278.97	2,789.63	3,146.43
1/1/2015	3/31/2015	3,742.42	2,998.53	3,697.38
4/1/2015	6/30/2015	3,836.28	3,374.18	3,424.30
7/1/2015	9/30/2015	3,714.26	2,973.16	3,100.67
10/1/2015	12/31/2015	3,524.04	3,036.17	3,267.52
1/1/2016	3/31/2016	3,266.01	2,672.73	3,004.93
4/1/2016	6/30/2016	3,156.86	2,678.27	2,864.74
7/1/2016	9/30/2016	3,101.75	2,742.66	3,002.24
10/1/2016	12/31/2016	3,290.52	2,937.98	3,290.52
1/1/2017	3/31/2017	3,500.93	3,214.31	3,500.93
4/1/2017	6/30/2017	3,666.80	3,407.33	3,441.88
7/1/2017	9/30/2017	3,594.85	3,363.68	3,594.85
10/1/2017	12/31/2017	3,708.82	3,503.20	3,503.96
1/1/2018	3/31/2018	3,687.22	3,261.86	3,361.50
4/1/2018	6/26/2018	3,596.20	3,300.50	3,368.72

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Barrier Booster Notes Linked to the Lesser Performing of Two Equity Indices, Due June 30, 2022 Royal Bank of Canada

#### SUPPLEMENTAL DISCUSSION OF

### U.S. FEDERAL INCOME TAX CONSEQUENCES

The following disclosure supplements, and to the extent inconsistent supersedes, the discussion in the product prospectus supplement dated January 12, 2016 under "Supplemental Discussion of U.S. Federal Income Tax Consequences." The discussions below and in the accompanying product prospectus supplement do not address the tax consequences applicable to holders subject to Section 451(b) of the Code.

Under Section 871(m) of the Code, a "dividend equivalent" payment is treated as a dividend from sources within the United States. Such payments generally would be subject to a 30% U.S. withholding tax if paid to a non-U.S. holder. Under U.S. Treasury Department regulations, payments (including deemed payments) with respect to equity-linked instruments ("ELIs") that are "specified ELIs" may be treated as dividend equivalents if such specified ELIs reference an interest in an "underlying security," which is generally any interest in an entity taxable as a corporation for U.S. federal income tax purposes if a payment with respect to such interest could give rise to a U.S. source dividend. However, the IRS has issued guidance that states that the U.S. Treasury Department and the IRS intend to amend the effective dates of the U.S. Treasury Department regulations to provide that withholding on dividend equivalent payments will not apply to specified ELIs that are not delta-one instruments and that are issued before January 1, 2019. Based on our determination that the Notes are not delta-one instruments, non-U.S. holders should not be subject to withholding on dividend equivalent payments, if any, under the Notes. However, it is possible that the Notes could be treated as deemed reissued for U.S. federal income tax purposes upon the occurrence of certain events affecting the Reference Assets or the Notes (for example, upon a Reference Asset rebalancing), and following such occurrence the Notes could be treated as subject to withholding on dividend equivalent payments. Non-U.S. holders that enter, or have entered, into other transactions in respect of the Reference Assets or the Notes should consult their tax advisors as to the application of the dividend equivalent withholding tax in the context of the Notes and their other transactions. If any payments are treated as dividend equivalents subject to withholding, we (or the applicable withholding agent) would be entitled to withhold taxes without being required to pay any additional amounts with respect to amounts so withheld.

### SUPPLEMENTAL PLAN OF DISTRIBUTION (CONFLICTS OF INTEREST)

Delivery of the Notes will be made against payment for the Notes on June 29, 2018, which is the third (3rd) business day following the Pricing Date (this settlement cycle being referred to as "T+3"). See "Plan of Distribution" in the prospectus dated January 8, 2016. For additional information as to the relationship between us and RBCCM, please see the section "Plan of Distribution—Conflicts of Interest" in the prospectus dated January 8, 2016.

We will deliver the Notes on a date that is greater than two business days following the Pricing Date. Under Rule 15c6-1 of the Exchange Act, trades in the secondary market generally are required to settle in two business days, unless the parties to any such trade expressly agree otherwise. Accordingly, purchasers who wish to trade the Notes more than two business days prior to the original Issue Date will be required to specify alternative arrangements to prevent a failed settlement.

In the initial offering of the Notes, they were offered to investors at a purchase price equal to par, except with respect to certain accounts as indicated on the cover page of this document.

The value of the Notes shown on your account statement may be based on RBCCM's estimate of the value of the Notes if RBCCM or another of our affiliates were to make a market in the Notes (which it is not obligated to do). That estimate will be based upon the price that RBCCM may pay for the Notes in light of then prevailing market conditions, our creditworthiness and transaction costs. For a period of approximately 9 months after the issue date of the Notes, the value of the Notes that may be shown on your account statement may be higher than RBCCM's estimated value of the Notes at that time. This is because the estimated value of the Notes will not include the

underwriting discount and our hedging costs and profits; however, the value of the Notes shown on your account statement during that period may be a higher amount, reflecting the addition of RBCCM's underwriting discount and our estimated costs and profits from hedging the Notes. This excess is expected to decrease over time until the end of this period. After this period, if RBCCM repurchases your Notes, it expects to do so at prices that reflect their estimated value.

No Prospectus (as defined in Directive 2003/71/EC (as amended, the "Prospectus Directive")) will be prepared in connection with the Notes. Accordingly, the Notes may not be offered to the public in any member state of the European Economic Area (the "EEA"), and any purchaser of the Notes who subsequently sells any of the Notes in any EEA member state must do so only in accordance with the requirements of the Prospectus Directive, as implemented in that member state.

The Notes are not intended to be offered, sold or otherwise made available to, and should not be offered, sold or otherwise made available to, any retail investor in the EEA. For these purposes, the expression "offer" includes the communication in any form and by any means of sufficient information on the terms of the offer and the Notes to be offered so as to enable an investor to decide to purchase or subscribe the Notes, and a "retail investor" means a person who is one (or more) of: (a) a retail client, as defined in point

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Barrier Booster Notes Linked to the Lesser Performing of Two Equity Indices, Due June 30, 2022 Royal Bank of Canada

(11) of Article 4(1) of Directive 2014/65/EU (as amended, "MiFID II"); or (b) a customer, within the meaning of Insurance Distribution Directive 2016/97/EU, as amended, where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II; or (c) not a qualified investor as defined in the Prospectus Directive. Consequently, no key information document required by Regulation (EU) No 1286/2014 (as amended, the "PRIIPs Regulation") for offering or selling the Notes or otherwise making them available to retail investors in the EEA has been prepared, and therefore, offering or selling the Notes or otherwise making them available to any retail investor in the EEA may be unlawful under the PRIIPs Regulation.

#### STRUCTURING THE NOTES

The Notes are our debt securities, the return on which is linked to the performance of the Reference Assets. As is the case for all of our debt securities, including our structured notes, the economic terms of the Notes reflect our actual or perceived creditworthiness at the time of pricing. In addition, because structured notes result in increased operational, funding and liability management costs to us, we typically borrow the funds under these Notes at a rate that is more favorable to us than the rate that we might pay for a conventional fixed or floating rate debt security of comparable maturity. Using this relatively lower implied borrowing rate rather than the secondary market rate, is a factor that reduced the initial estimated value of the Notes at the time their terms were set. Unlike the estimated value included in this pricing supplement, any value of the Notes determined for purposes of a secondary market transaction may be based on a different funding rate, which may result in a lower value for the Notes than if our initial internal funding rate were used.

In order to satisfy our payment obligations under the Notes, we may choose to enter into certain hedging arrangements (which may include call options, put options or other derivatives) on the issue date with RBCCM or one of our other subsidiaries. The terms of these hedging arrangements take into account a number of factors, including our creditworthiness, interest rate movements, the volatility of the Reference Assets, and the tenor of the Notes. The economic terms of the Notes and their initial estimated value depend in part on the terms of these hedging arrangements.

The lower implied borrowing rate is a factor that reduced the economic terms of the Notes to you. The initial offering price of the Notes also reflects the underwriting commission and our estimated hedging costs. These factors resulted in the initial estimated value for the Notes on the Pricing Date being less than their public offering price. See "Selected Risk Considerations—The Initial Estimated Value of the Notes Is Less than the Price to the Public" above.

### VALIDITY OF THE NOTES

In the opinion of Norton Rose Fulbright Canada LLP, the issue and sale of the Notes has been duly authorized by all necessary corporate action of the Bank in conformity with the Indenture, and when the Notes have been duly executed, authenticated and issued in accordance with the Indenture and delivered against payment therefor, the Notes will be validly issued and, to the extent validity of the Notes is a matter governed by the laws of the Province of Ontario or Québec, or the laws of Canada applicable therein, and will be valid obligations of the Bank, subject to equitable remedies which may only be granted at the discretion of a court of competent authority, subject to applicable bankruptcy, to rights to indemnity and contribution under the Notes or the Indenture which may be limited by applicable law; to insolvency and other laws of general application affecting creditors' rights, to limitations under applicable limitations statutes, and to limitations as to the currency in which judgments in Canada may be rendered, as prescribed by the Currency Act

(Canada). This opinion is given as of the date hereof and is limited to the laws of the Provinces of Ontario and Québec and the federal laws of Canada applicable thereto. In addition, this opinion is subject to customary assumptions about the Trustee's authorization, execution and delivery of the Indenture and the genuineness of signatures and certain

factual matters, all as stated in the letter of such counsel dated January 8, 2016, which has been filed as Exhibit 5.1 to Royal Bank's Form 6-K filed with the SEC on January 8, 2016.

In the opinion of Morrison & Foerster LLP, when the Notes have been duly completed in accordance with the Indenture and issued and sold as contemplated by the prospectus supplement and the prospectus, the Notes will be valid, binding and enforceable obligations of Royal Bank, entitled to the benefits of the Indenture, subject to applicable bankruptcy, insolvency and similar laws affecting creditors' rights generally, concepts of reasonableness and equitable principles of general applicability (including, without limitation, concepts of good faith, fair dealing and the lack of bad faith). This opinion is given as of the date hereof and is limited to the laws of the State of New York. This opinion is subject to customary assumptions about the Trustee's authorization, execution and delivery of the Indenture and the genuineness of signatures and to such counsel's reliance on the Bank and other sources as to certain factual matters, all as stated in the legal opinion dated January 8, 2016, which has been filed as Exhibit 5.2 to the Bank's Form 6-K dated January 8, 2016.

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