ROYAL BANK OF CANADA
Form 424B2
August 30, 2018

RBC Capital Markets® Filed Pursuant to Rule 424(b)(2)
Registration Statement No. 333-208507

Pricing Supplement Dated August 29, 2018 To the Product Prospectus Supplement No. ERN-EI-1, Dated January 12, 2016, the Prospectus Supplement Dated January 8, 2016, and the Prospectus Dated January 8, 2016	\$815,000 Auto-Callable Notes Linked to the S&P 500® Index, due Septemeber 2, 2021 Royal Bank of Canada

Royal Bank of Canada is offering Auto-Callable Notes (the "Notes") linked to the S&P 500® Index (the "Reference Asset"). The Notes are senior unsecured obligations of Royal Bank of Canada, and will have the terms described in the documents described above, as supplemented or modified by this pricing supplement. We will not make any payments on the Notes until the maturity date or a prior automatic call.

The Notes will be automatically called at the applicable Call Amount if the closing level of the Reference Asset is greater than or equal to the Initial Level on any annual Observation Date on or after August 29, 2019. The Call Amounts are based on a rate of return of 6.55% per annum, and will increase on each annual Observation Date to reflect that rate of return. However, if the Notes are called on the final Observation Date, you will receive a return that is the greater of the return represented by that rate of return (19.65%) or the Percentage Change. If the Notes are not called, you may lose all or a substantial portion of your principal amount.

Any payments on the Notes are subject to our credit risk.

Investing in the Notes involves a number of risks. See "Additional Risk Factors Specific to the Notes" beginning on page PS-5 of the product prospectus supplement dated January 12, 2016, "Risk Factors" beginning on page S-1 of the prospectus supplement dated January 8, 2016, and "Selected Risk Considerations" beginning on page P–7 of this pricing supplement.

The Notes will not constitute deposits insured by the Canada Deposit Insurance Corporation, the U.S. Federal Deposit Insurance Corporation or any other Canadian or U.S. government agency or instrumentality.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of the Notes or determined that this pricing supplement is truthful or complete. Any representation to the contrary is a criminal offense.

Issuer:	Royal Bank of Canada	Stock Exchange Listing:	None
Pricing Date:	August 29, 2018	Principal Amount:	\$1,000 per Note
Issue Date:	August 31, 2018	Maturity Date:	September 2, 2021
Valuation Date:	August 30, 2021 (which is the final Observation Date)		
Initial Level:	2,914.04, which was the closing level of the Reference Asset on the Pricing Date.		
Final Level:	The closing level of the Reference Asset on the Valuation Date.		
Call Feature:	If the closing level of the Reference Asset is greater than or equal to the Initial Level starting on August 29, 2019 or on any Observation Date thereafter, the Notes will be called and we will pay the applicable Call Amount on the corresponding Call Settlement Date.		

Observation Dates and Call Settlement Dates:	Annually, beginning on August 29, 2019, as set forth below.
Payment at Maturity (if held to maturity):	If the Notes are not called on any Observation Date (including the Valuation Date), we will pay you at maturity an amount based on the Final Level: If the Final Level is less than the Initial Level, then the investor will receive at maturity, for each $1,000 in principal amount, a cash payment equal to: $1,000 + ($1,000 x Percentage Change) Investors could lose some or all of their initial investment if the level of the Reference Asset declines.
CUSIP:	78013XB49

	Per Note	Total
Price to public[1]	100.00%	$815,000.00
Underwriting discounts and commissions[1]	2.25%	$18,337.50
Proceeds to Royal Bank of Canada	97.75%	$796,662.50

[1] Certain dealers who purchased the Notes for sale to certain fee-based advisory accounts have foregone some or all of their underwriting discount or selling concessions. The public offering price for investors purchasing the Notes in these accounts was between $977.50 and $1,000 per $1,000 in principal amount.

The initial estimated value of the Notes as of the date of this pricing supplement is $969.67 per $1,000 in principal amount, which is less than the price to public. The actual value of the Notes at any time will reflect many factors, cannot be predicted with accuracy, and may be less than this amount. We describe our determination of the initial estimated value in more detail below.

RBC Capital Markets, LLC, (“RBCCM”), acting as our agent, received a commission of $22.50 per $1,000 in principal amount of the Notes and used a portion of that commission to allow selling concessions to other dealers of up to $22.50 per $1,000 in principal amount of the Notes. The other dealers may forgo, in their sole discretion, some or all of their selling concessions. See “Supplemental Plan of Distribution (Conflicts of Interest)” below.

RBC Capital Markets, LLC

Auto-Callable Notes
Linked to the S&P 500® Index
Royal Bank of Canada

SUMMARY

The information in this "Summary" section is qualified by the more detailed information set forth in this pricing supplement, the product prospectus supplement, the prospectus supplement, and the prospectus.

General:	This pricing supplement relates to an offering of Auto-Callable Notes (the "Notes") linked to the Reference Asset.
Issuer:	Royal Bank of Canada ("Royal Bank")
Issue:	Senior Global Medium-Term Notes, Series G
Pricing Date:	August 29, 2018
Issue Date:	August 31, 2018
Denominations:	Minimum denomination of $1,000, and integral multiples of $1,000 thereafter.
Designated Currency:	U.S. Dollars
Call Feature:	If, starting on August 29, 2019 or any Observation Date thereafter, the closing level of the Reference Asset is greater than or equal to the Initial Level, then the Notes will be automatically called and the applicable Call Amount will be paid on the corresponding Call Settlement Date.

Observation Dates/Call Settlement Dates/Call Amounts:

Observation Date	Call Settlement Date	Call Amounts
August 29, 2019	September 4, 2019	$1,065.50
August 31, 2020	September 3, 2020	$1,131.00
August 30, 2021 (the "Valuation Date")	September 2, 2021 (the "Maturity Date")	The greater of (a) $1,196.50 or (b) $1,000 + ($1,000 x Percentage Change)

The Call Amounts correspond to a return of (a) 6.55% per annum (the "Annual Call Return Rate") on the Notes, if they are called on one of the first two Observation Dates, and (b) the greater of the Annual Call Return Rate or the Percentage Change if called on the final Observation Date. Accordingly, you will not receive any return on the Notes that exceeds the amount represented by the Annual Call Return Rate if the Notes are called on the first or second Observation Date, even if the level of the Reference Asset increases substantially.

Valuation Date:	August 30, 2021
Maturity Date:	September 2, 2021
Initial Level:	2,914.04, which was the closing level of the Reference Asset on the Pricing Date.
Final Level:	The closing level of the Reference Asset on the Valuation Date.
Payment at Maturity (if not previously called	If the Notes are not called on any Observation Date (including the Valuation Date), we will pay you at maturity an amount based on the Final Level: · If the Final Level is below the Initial Level, you will receive at maturity, for each $1,000 in principal amount, a cash payment equal to: $1,000 + ($1,000 x Percentage Change)

and held to maturity):	The amount of cash that you receive will be less than your principal amount, if anything, resulting in a loss that is proportionate to the decline from the Pricing Date to the Valuation Date. Investors in the Notes could lose some or all of their investment if the level of the Reference Asset declines.
Percentage Change:	$\frac{\text{Final Level} - \text{Initial Level}}{\text{Initial Level}}$

Market Disruption Events:	The occurrence of a market disruption event (or a non-trading day) as to the Reference Asset will result in the postponement of an Observation Date or the Valuation Date, as described in the product prospectus supplement.
Calculation Agent:	RBC Capital Markets, LLC (“RBCCM”)
U.S. Tax Treatment:	By purchasing a Note, each holder agrees (in the absence of a change in law, an administrative determination or a judicial ruling to the contrary) to treat the Note as a callable pre-paid cash-settled derivative contract linked to the Reference Asset for U.S. federal income tax purposes. However, the U.S. federal income tax consequences of your investment in the Notes are uncertain and the Internal Revenue Service could assert that the Notes should be taxed in a manner that is different from that described in the preceding sentence. Please see the section below, “Supplemental Discussion of U.S. Federal Income Tax Consequences,” and the discussion (including the opinion of our counsel Morrison & Foerster LLP) in the product prospectus supplement dated January 12, 2016 under “Supplemental Discussion of U.S. Federal Income Tax Consequences,” which apply to the Notes.
Secondary Market:	RBCCM (or one of its affiliates), though not obligated to do so, may maintain a secondary market in the Notes after the Issue Date. The amount that you may receive upon sale of your Notes prior to maturity may be less than the principal amount.
Listing:	The Notes will not be listed on any securities exchange.
Settlement:	DTC global (including through its indirect participants Euroclear and Clearstream, Luxembourg as described under “Description of Debt Securities—Ownership and Book-Entry Issuance” in the prospectus dated January 8, 2016).
Terms Incorporated in the Master Note:	All of the terms appearing above the item captioned “Secondary Market” on the cover page and pages P-2 and P-3 of this pricing supplement and the terms appearing under the caption “General Terms of the Notes” in the product prospectus supplement dated January 12, 2016, as modified by this pricing supplement. In addition to those terms, the following two sentences are also incorporated into the master note: RBC confirms that it fully understands and is able to calculate the effective annual rate of interest applicable to the Notes based on the methodology for calculating per annum rates provided for in the Notes. RBC irrevocably agrees not to plead or assert Section 4 of the Interest Act (Canada), whether by way of defense or otherwise, in any proceeding relating to the Notes.

Auto-Callable Notes
Linked to the S&P 500® Index
Royal Bank of Canada

ADDITIONAL TERMS OF YOUR NOTES

You should read this pricing supplement together with the prospectus dated January 8, 2016, as supplemented by the prospectus supplement dated January 8, 2016 and the product prospectus supplement dated January 12, 2016, relating to our Senior Global Medium-Term Notes, Series G, of which these Notes are a part. Capitalized terms used but not defined in this pricing supplement will have the meanings given to them in the product prospectus supplement. In the event of any conflict, this pricing supplement will control. The Notes vary from the terms described in the product prospectus supplement in several important ways. You should read this pricing supplement carefully.

This pricing supplement, together with the documents listed below, contains the terms of the Notes and supersedes all prior or contemporaneous oral statements as well as any other written materials including preliminary or indicative pricing terms, correspondence, trade ideas, structures for implementation, sample structures, brochures or other educational materials of ours. You should carefully consider, among other things, the matters set forth in "Risk Factors" in the prospectus supplement dated January 8, 2016 and "Additional Risk Factors Specific to the Notes" in the product prospectus supplement dated January 12, 2016, as the Notes involve risks not associated with conventional debt securities. We urge you to consult your investment, legal, tax, accounting and other advisors before you invest in the Notes. You may access these documents on the Securities and Exchange Commission (the "SEC") website at www.sec.gov as follows (or if that address has changed, by reviewing our filings for the relevant date on the SEC website):

Prospectus dated January 8, 2016:
http://www.sec.gov/Archives/edgar/data/1000275/000121465916008810/j18160424b3.htm

Prospectus Supplement dated January 8, 2016:
http://www.sec.gov/Archives/edgar/data/1000275/000121465916008811/p14150424b3.htm

Product Prospectus Supplement dated January 12, 2016:
https://www.sec.gov/Archives/edgar/data/1000275/000114036116047560/form424b5.htm

Our Central Index Key, or CIK, on the SEC website is 1000275. As used in this pricing supplement, "we," "us," or "our" refers to Royal Bank of Canada.

Auto-Callable Notes
Linked to the S&P 500® Index
Royal Bank of Canada

HYPOTHETICAL EXAMPLES

The table set out below is included for illustration purposes only. The table illustrates the payments upon an automatic call and the Payment at Maturity of the Notes for a hypothetical range of performance for the Reference Asset, assuming the following terms:

Hypothetical Initial Level (for each Reference Asset):	1,000.00*
Principal Amount:	$1,000 per Note
Annual Call Return Rate:	6.55%
Call Amounts:	$1,065.50 if called on the first Observation Date $1,131.00 if called on the second Observation Date $1,196.50 (or the return represented by the Percentage Change, if higher) if called on the third Observation Date

* The hypothetical Initial Level of 1,000.00 used in the examples below has been chosen for illustrative purposes only, and does not represent the actual Initial Level.

In this case, if the Percentage Change on the Valuation Date is between 0% and 19.65%, the Call Amount payable on the maturity date will be $1,196.50. However, if the Percentage Change on the Valuation Date is greater than 19.65% (the Annual Call Return Rate multiplied by 3), you will receive a return based on the Percentage Change, and that payment will exceed $1,196.50.

Summary of Hypothetical Examples

	Notes Are Called on an Observation Date				Notes Are Not Called on Any Observation Date
	Example 1	Example 2	Example 3	Example 4	
Initial Level	1,000	1,000	1,000	1,000	1,000
Closing Level on the First Observation Date	1,250	900	900	900	980
Closing Level on the Second Observation Date	N/A	1,100	850	850	780
Closing Level on the Final Observation Date	N/A	N/A	1,100	1,250	600
Percentage Change of the Reference Asset	N/A	N/A	10%	25%	-40%
Call Amount	$1,065.50	$1,131.00	$1,196.50 (paid on the maturity date)	$1,250 (paid on the maturity date)	N/A
	N/A	N/A	N/A	N/A	$600

Payment Maturity
(if
not previously
called)

Auto-Callable Notes
Linked to the S&P 500® Index
Royal Bank of Canada

Hypothetical Examples of Amounts Payable Upon an Automatic Call

The following hypothetical examples illustrate payments of the Call Amounts set forth in the table in the "Summary" section above.

Example 1: The level of the Reference Asset increases by 25% from the Initial Level to a closing level of 1,250 on the first Observation Date. Because the closing level of the Reference Asset on the first Observation Date is greater than its Initial Level, the investor receives on the applicable Call Settlement Date a cash payment of $1,065.50, representing the corresponding hypothetical Call Amount. After the Notes are called, they will no longer remain outstanding and there will be no further payments on the Notes.

Example 2: The level of the Reference Asset decreases by 10% from the Initial Level to its closing level on the first Observation Date of 900, but the level of the Reference Asset increases by 10% from the Initial Level to a closing level of 1,100 on the second Observation Date. Because the Notes are not called on the first Observation Date and the closing level of the Reference Asset on the second Observation Date is greater than its Initial Level, the investor receives on the applicable Call Settlement Date a cash payment of $1,131, representing the corresponding hypothetical Call Amount. After the Notes are called, they will no longer remain outstanding and there will be no further payments on the Notes.

Example 3: The Notes are not called on the first two Observation Dates and the Final Level is 1,100 on the Valuation Date, which is greater than its Initial Level; however the Percentage Change does not exceed 19.65% (the hypothetical Annual Call Return Rate multiplied by 3). Because the Notes are not called on the first two Observation Dates and the closing level of the Reference Asset on the Valuation Date is greater than its Initial Level, the investor receives on the Maturity Date a cash payment of $1,196.50, representing the corresponding hypothetical Call Amount.

Example 4: The Notes are not called on the first two Observation Dates and the Final Level is 1,250 on the Valuation Date, which is greater than its Initial Level, and the Percentage Change exceeds 19.65%. Because the Notes are not called on the first two Observation Dates and the closing level of the Reference Asset on the Valuation Date is greater than its Initial Level, and the Percentage Change exceeds 19.65%, the investor receives on the Maturity Date a cash payment of $1,250, representing the corresponding hypothetical Call Amount. In this case, the return on the Notes is greater than the call return rate set forth on the cover page.

Hypothetical Example of Amounts Payable at Maturity

The following hypothetical example illustrates how the payments at maturity set forth in the table above are calculated, assuming the Notes have not been called on any Observation Date.

The level of the Reference Asset is 600 on the Valuation Date, which is less than the Initial Level. The Notes are not called on any Observation Date because its closing level is below its Initial Level on each Observation Date (including the Valuation Date). Because the Final Level is less than its Initial Level, we will pay only $600 for each $1,000 in the principal amount of the Notes, calculated as follows:

Principal Amount + (Principal Amount x Percentage Change)
= $1,000 + ($1,000 x -40%) = $1,000 - $400 = $600

* * *

The potential payments shown above are entirely hypothetical; they are based on levels of the Reference Asset that may not be achieved and on assumptions that may prove to be erroneous. The actual market value of your Notes on the maturity date or at any other time, including any time you may wish to sell your Notes, may bear little relation to the hypothetical payments at maturity shown above, and those amounts should not be viewed as an indication of the return on an investment in the Notes or on an investment in the securities included in the Reference Asset.

SELECTED RISK CONSIDERATIONS

An investment in the Notes involves significant risks. Investing in the Notes is not equivalent to investing directly in the Reference Asset. These risks are explained in more detail in the section "Additional Risk Factors Specific to the Notes" in the product prospectus supplement. In addition to the risks described in the prospectus supplement and the product prospectus supplement, you should consider the following:

- Principal at Risk — Investors in the Notes could lose all or a substantial portion of their principal amount if there is a decline in the closing level of the Reference Asset between the Pricing Date and the Valuation Date. If the Notes are not automatically called and the Final Level is less than the Initial Level, the amount of cash that you receive at maturity will represent a loss of your principal that is proportionate to the decline in the closing level of the Reference Asset from the Pricing Date to the Valuation Date. You could lose all or a substantial portion of the principal amount.
- The Notes Are Subject to an Automatic Call — If, starting on August 29, 2019 and on any Observation Date thereafter, the closing level of the Reference Asset is greater than or equal to its Initial Level, then the Notes will be automatically called. If the Notes are automatically called, then, on the applicable Call Settlement Date, for each $1,000 in principal amount, you will receive the applicable Call Amount on the corresponding Call Settlement Date. You will not receive any payments after the Call Settlement Date and you will not receive any return on the Notes that exceeds the applicable Call Amount set forth above as to the first or second Observation Date, even if the level of the Reference Asset increases substantially. You may be unable to reinvest your proceeds from the automatic call in an investment with a return that is as high as the return on the Notes.
- The Notes Do Not Pay Interest and Your Return May Be Lower than the Return on a Conventional Debt Security of Comparable Maturity – There will be no periodic interest payments on the Notes as there would be on a conventional fixed rate or floating-rate debt security having the same maturity. The return that you will receive on the Notes, which could be negative, may be less than the return you could earn on other investments. Your return may be less than the return you would earn if you bought a conventional senior interest bearing debt security of Royal Bank.
- Payments on the Notes Are Subject to Our Credit Risk, and Changes in Our Credit Ratings Are Expected to Affect the Market Value of the Notes — The Notes are Royal Bank's senior unsecured debt securities. As a result, your receipt of any Call Amounts, if payable, and the amount due on the maturity date is dependent upon Royal Bank's ability to repay its obligations on the applicable payment date. This will be the case even if the level of the Reference Asset increases after the Pricing Date. No assurance can be given as to what our financial condition will be at any time during the term of the Notes.
- There May Not Be an Active Trading Market for the Notes-Sales in the Secondary Market May Result in Significant Losses — There may be little or no secondary market for the Notes. The Notes will not be listed on any securities exchange. RBCCM and other affiliates of Royal Bank may make a market for the Notes; however, they are not required to do so. RBCCM or any other affiliate of Royal Bank may stop any market-making activities at any time. Even if a secondary market for the Notes develops, it may not provide significant liquidity or trade at prices advantageous to you. We expect that transaction costs in any secondary market would be high. As a result, the difference between bid and asked prices for your Notes in any secondary market could be substantial.
- Owning the Notes Is Not the Same as Owning the Securities Represented by the Reference Asset — The return on your Notes is unlikely to reflect the return you would realize if you actually owned the securities represented by the Reference Asset. For instance, you will not receive or be entitled to receive any dividend

payments or other distributions on those securities during the term of your Notes. As an owner of the Notes, you will not have voting rights or any other rights that holders of the Reference Asset may have. Furthermore, the Reference Asset may appreciate substantially during the term of the Notes, while your potential return as to the first or second Observation Date will be limited to the applicable Call Amounts.

Your Notes could be called on the final Observation Date, in which case your return on the Notes could exceed the Annual Call Return Rate. However, you would only receive the benefit on such a higher return if the level of the Reference Asset increases by more than 19.65% (which represents the Annual Call Return Rate multiplied by 3) between the second and third Observation Dates; this is due to the fact that the closing level of the Reference Asset on the second Observation Date will be less than its Initial Level on the second Observation Date if the Notes are not called on that date.

- The Initial Estimated Value of the Notes Is Less than the Price to the Public — The initial estimated value set forth on the cover page of this pricing supplement does not represent a minimum price at which we, RBCCM or any of our affiliates would be willing to purchase the Notes in any secondary market (if any exists) at any time. If you attempt to sell the Notes prior to maturity, their market value may be lower than the price you paid for them and the initial estimated value. This is due to, among other things, changes in the levels of the Reference Asset, the borrowing rate we pay to issue securities of this kind, and the inclusion in the price to the public of the underwriting discount and the estimated costs relating to our hedging of the Notes. These factors, together with various credit, market and economic factors over the term of the Notes, are expected to reduce the price at which you may be able to sell the Notes in any secondary market and will affect the value of the Notes in complex and unpredictable ways. Assuming no change in market conditions or any other relevant factors, the price, if any, at which you may be able to sell your Notes prior to maturity may be less than your original purchase price, as any such sale price would not be expected to include the underwriting discount and the hedging costs relating to the Notes. In addition to bid-ask spreads, the value of the Notes determined by RBCCM for any secondary market price is expected to be based on the secondary rate rather than the internal funding rate used to price the Notes and determine the initial estimated value. As a result, the secondary price 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.

- Inconsistent Research — Royal Bank or its affiliates may issue research reports on securities that are, or may become, components of the Reference Asset. We may also publish research from time to time on financial markets and other matters that may influence the levels of the Reference Asset 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 Asset. You should make your own independent investigation of the merits of investing in the Notes and the Reference Asset.

- Market Disruption Events and Adjustments — The payment at maturity, each Observation Date and the Valuation Date are subject to adjustment 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.

Auto-Callable Notes
Linked to the S&P 500® Index
Royal Bank of Canada

INFORMATION REGARDING THE REFERENCE ASSET

All disclosures contained in this pricing supplement regarding the Reference Asset, including, without limitation, its make up, method of calculation, and changes in its components, have been derived from publicly available sources. The information reflects the policies of, and is subject to change by, S&P Dow Jones Indices LLC ("S&P"). S&P, which owns the copyright and all other rights to the Reference Asset, has no obligation to continue to publish, and may discontinue publication of, the Reference Asset. The consequences of S&P discontinuing publication of the 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 the Reference Asset or any successor index.

The Reference Asset is intended to provide an indication of the pattern of common stock price movement. The calculation of the level of the Reference Asset 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 Reference Asset by reference to the prices of the constituent stocks of the Reference Asset 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 Reference Asset 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 Reference Asset. 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 Reference Asset while a second listed share class line of the same company is excluded.

Computation of the Reference Asset

While S&P currently employs the following methodology to calculate the Reference Asset, 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 Reference Asset 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 Reference Asset halfway from a market capitalization weighted formula to a float-adjusted formula, before moving the Reference Asset to full float adjustment on September 16, 2005. S&P's criteria for selecting stocks for the Reference Asset did not change with the shift to float adjustment. However, the adjustment affects each company's weight in the Reference Asset.

Under float adjustment, the share counts used in calculating the Reference Asset 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 Reference Asset. 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.

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

Auto-Callable Notes
Linked to the S&P 500® Index
Royal Bank of Canada

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 Reference Asset is calculated using a base-weighted aggregate methodology. The level of the Reference Asset 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 Reference Asset 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 Reference Asset, it serves as a link to the original base period level of the Reference Asset. The index divisor keeps the Reference Asset comparable over time and is the manipulation point for all adjustments to the Reference Asset, 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 Reference Asset, and do not require index divisor adjustments.

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

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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