

ROYAL BANK OF CANADA  
Form FWP  
July 31, 2017

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ISSUER FREE WRITING PROSPECTUS

Filed Pursuant to Rule 433

Registration Statement No. 333-208507

Dated July 31, 2017

Royal Bank of Canada Capped Buffer In-GEARS

\$• Securities Linked to the Least Performing Underlying Between the S&P 500® Index and the Russell 2000® Index due on or about December 22, 2021

Investment Description

Capped Buffer In-GEARS (each, a “Security” and collectively, the “Securities”) are unconditional, unsecured and unsubordinated debt securities issued by Royal Bank of Canada with returns linked to the performance of the least performing underlying between the S&P 500® Index and the Russell 2000® Index (each, an “Underlying” and together, the “Underlyings”). The Final Underlying Level (as defined below) of each Underlying will be determined based on its closing level on each trading day during the three-month Valuation Period (as defined below). If the Underlying Return of the Least Performing Underlying (each as defined below) is greater than -6%, we will repay the principal amount at maturity plus pay a return equal to 1.86 (the “Upside Gearing”) times the sum of the Underlying Return of the Least Performing Underlying plus 6%, up to the Maximum Gain. If the Underlying Return of the Least Performing Underlying is between -16% and -6%, we will repay the principal amount at maturity. If the Underlying Return of the Least Performing Underlying is less than -16%, we will pay less than the principal amount at maturity and you will lose 1% of the principal amount of your Securities for every 1% decline in the level of the Least Performing Underlying by more than the Buffer of 16%, up to a loss of 84% of your investment. Investing in the Securities involves significant risks. The Securities do not pay dividends or interest. You may lose up to 84% of your principal amount. The downside exposure to the Underlyings is buffered only at maturity. Any payment on the Securities, including any repayment of principal, is subject to our creditworthiness. If we were to default on our payment obligations, you may not receive any amounts owed to you under the Securities and you could lose your entire investment. The Securities will not be listed on any securities exchange.

Features Key Dates<sup>1</sup>

Enhanced Growth Potential, Up to the Maximum Gain - At maturity, if the Underlying Return of the Least Performing Underlying is greater than -6%, we will pay you the principal amount plus a return equal to the Upside Gearing times the sum of the Underlying Return of the Least Performing Underlying plus 6%, up to the Maximum Gain. If the Underlying Return of the Least Performing Underlying is negative, investors may be exposed to its negative Underlying Return at maturity.

Buffered Downside Market Exposure - If the Underlying Return of the Least Performing Underlying is between -16% and -6%, we will pay the principal amount at maturity. However, if the Underlying Return of the Least Performing Underlying is less than -16%, investors will be exposed to the downside performance of the Least Performing Underlying and we will pay less than the full principal amount, resulting in a loss of the principal amount that is proportionate to the percentage decline in the Least Performing Underlying by more than the Buffer.

Accordingly, you may lose up to 84% of the principal amount of the Securities. Any payment on the Securities, including any repayment of principal, is subject to our creditworthiness.

Trade Date<sup>1</sup> July 31, 2017

Settlement Date<sup>1</sup> August 3, 2017

Valuation Period<sup>2</sup> September 17, 2021 to December 17, 2021  
(both inclusive)

Maturity Date December 22, 2021

<sup>1</sup> Expected. In the event that we make any change to the expected Trade Date and Settlement Date, the Valuation Period and Maturity Date will be changed so that the stated term of the Securities remains approximately the same.

<sup>2</sup> See page 4 for additional details.

NOTICE TO INVESTORS: THE SECURITIES ARE SIGNIFICANTLY RISKIER THAN CONVENTIONAL DEBT INSTRUMENTS. THE ISSUER IS NOT NECESSARILY OBLIGATED TO REPAY THE FULL PRINCIPAL AMOUNT OF THE SECURITIES AT MATURITY, AND THE SECURITIES HAVE FULL DOWNSIDE MARKET RISK SIMILAR TO THE LEAST PERFORMING UNDERLYING. THIS MARKET RISK IS IN ADDITION TO THE CREDIT RISK INHERENT IN PURCHASING OUR DEBT OBLIGATION. YOU SHOULD NOT PURCHASE THE SECURITIES IF YOU DO NOT UNDERSTAND OR ARE NOT COMFORTABLE WITH THE SIGNIFICANT RISKS INVOLVED IN INVESTING IN THE SECURITIES. YOU SHOULD CAREFULLY CONSIDER THE RISKS DESCRIBED UNDER “KEY RISKS” BEGINNING ON PAGE 5 OF THIS FREE WRITING PROSPECTUS AND UNDER “RISK FACTORS” BEGINNING ON PAGE PS-4 OF THE ACCOMPANYING PRODUCT PROSPECTUS SUPPLEMENT UBS-IND-1 BEFORE PURCHASING ANY SECURITIES. EVENTS RELATING TO ANY OF THOSE RISKS, OR OTHER RISKS AND UNCERTAINTIES, COULD ADVERSELY AFFECT THE MARKET VALUE OF, AND THE RETURN ON, YOUR SECURITIES. YOU COULD LOSE UP TO 84% OF THE PRINCIPAL AMOUNT OF THE SECURITIES.

#### Security Offering

We are offering Capped Buffer In-GEARS Linked to the Least Performing Underlying Between the S&P 500<sup>®</sup> Index and the Russell 2000<sup>®</sup> Index. The return on the principal amount is subject to, and will not exceed, the predetermined Maximum Gain. The Securities are offered at a minimum investment of 100 Securities at the Price to Public described below. The Initial Underlying Levels for the Securities will be determined on the Trade Date.

Underlyings	Upside Gearing	Maximum Gain	Buffer	Initial Underlying Levels	CUSIP	ISIN
S&P 500 <sup>®</sup> Index (SPX)				•		
Russell 2000 <sup>®</sup> Index (RTY)	1.86	55.80%	16%	•	78013F230	US78013F2305

See “Additional Information About Royal Bank of Canada and the Securities” in this free writing prospectus. The Securities will have the terms specified in the prospectus dated January 8, 2016, the prospectus supplement dated January 8, 2016, product prospectus supplement UBS-IND-1 dated January 5, 2017 and this free writing prospectus. Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of the Securities or passed upon the accuracy or the adequacy of this free writing prospectus or the accompanying prospectus, prospectus supplement and product prospectus supplement UBS-IND-1. Any representation to the contrary is a criminal offense.

Offering of the Securities	Price to Public		Fees and Commissions <sup>(1)</sup>		Proceeds to Us	
	Total	Per Security	Total	Per Security	Total	Per Security
Least Performing Underlying Between the S&P 500 <sup>®</sup> Index (SPX) and Russell 2000 <sup>®</sup> Index (RTY)	•	\$10.00	•	\$0.075	•	\$9.925

<sup>(1)</sup> UBS Financial Services Inc., which we refer to as UBS, will receive a commission that will depend on market conditions on the Trade Date. In no event will the commission received by UBS exceed \$0.075 per \$10 principal amount of the Securities. See “Supplemental Plan of Distribution (Conflicts of Interest)” on page 17 of this free writing prospectus.

The initial estimated value of the Securities as of the date of this document is \$9.8190 per \$10 in principal amount, which is less than the price to public. The pricing supplement relating to the Securities will set forth our estimate of the initial value of the Securities as of the Trade Date, which will not be more than \$0.20 less than this amount. The actual value of the Securities 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 under “Key Risks” beginning on page 5, “Supplemental Plan of Distribution (Conflicts of Interest)” on page 17 and “Structuring the Securities” on page 17 of this free writing prospectus.

The Securities will not constitute deposits insured under the Canada Deposit Insurance Corporation Act or by the United States Federal Deposit Insurance Corporation or any other Canadian or United States government agency or instrumentality.

UBS Financial Services Inc. RBC Capital Markets, LLC

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Additional Information About Royal Bank of Canada and the Securities

Royal Bank of Canada has filed a registration statement (including a prospectus) with the Securities and Exchange Commission, or SEC, for the offering to which this free writing prospectus relates. Before you invest, you should read the prospectus in that registration statement and the other documents relating to this offering that Royal Bank of Canada has filed with the SEC for more complete information about Royal Bank of Canada and this offering. You may obtain these documents without cost by visiting EDGAR on the SEC website at [www.sec.gov](http://www.sec.gov). Alternatively, Royal Bank of Canada, any agent or any dealer participating in this offering will arrange to send you the prospectus, the prospectus supplement, product prospectus supplement UBS-IND-1 and this free writing prospectus if you so request by calling toll-free 866-609-6009.

You may revoke your offer to purchase the Securities at any time prior to the time at which we accept such offer by notifying the applicable agent. We reserve the right to change the terms of, or reject any offer to purchase, the Securities prior to their issuance. In the event of any changes to the terms of the Securities, we will notify you and you will be asked to accept such changes in connection with your purchase. You may also choose to reject such changes, in which case we may reject your offer to purchase.

You should read this free writing prospectus together with the prospectus dated January 8, 2016, as supplemented by the prospectus supplement dated January 8, 2016, relating to our senior global medium-term notes, Series G, of which these Securities are a part, and the more detailed information contained in product prospectus supplement UBS-IND-1 dated January 5, 2017. This free writing prospectus, together with the documents listed below, contains the terms of the Securities and supersedes all other 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, fact sheets, brochures or other educational materials of ours. You should carefully consider, among other things, the matters set forth in "Risk Factors" in the accompanying product prospectus supplement UBS-IND-1, as the Securities involve risks not associated with conventional debt securities.

If the terms discussed in this free writing prospectus differ from those discussed in the product prospectus supplement, the prospectus supplement, or the prospectus, the terms discussed herein will control.

You may access these on the SEC website at [www.sec.gov](http://www.sec.gov) as follows (or if such address has changed, by reviewing our filing for the relevant date on the SEC website):

Product prospectus supplement UBS-IND-1 dated January 5, 2017:

<https://www.sec.gov/Archives/edgar/data/1000275/000114036117000609/form424b5.htm>

Prospectus supplement dated January 8, 2016:

<http://www.sec.gov/Archives/edgar/data/1000275/000121465916008811/p14150424b3.htm>

Prospectus dated January 8, 2016:

<http://www.sec.gov/Archives/edgar/data/1000275/000121465916008810/j18160424b3.htm>

As used in this free writing prospectus, "we," "us" or "our" refers to Royal Bank of Canada.

### Investor Suitability

The Securities may be suitable for you if, among other considerations:

- .. You fully understand the risks inherent in an investment in the Securities, including the risk of loss of up to 84% of the principal amount.
- .. You can tolerate the loss of up to 84% of the principal amount of the Securities and are willing to make an investment that has similar downside market risk as a hypothetical investment in the Least Performing Underlying.
- .. You believe that the level of neither Underlying will decline over the term of the Securities by more than 6% and that the appreciation of the Least Performing Underlying is unlikely to exceed the Maximum Gain.
- .. You understand and accept that your potential return is limited by the Maximum Gain and you would be willing to invest in the Securities based on the Maximum Gain indicated on the cover page of this free writing prospectus.
- .. You are willing to accept that the Final Underlying Level of each Underlying will be determined based on its closing level on each trading day during the Valuation Period.
- .. You can tolerate fluctuations in the price of the Securities prior to maturity that may be similar to or exceed the downside fluctuations in the level of the Least Performing Underlying.
- .. You are willing to accept individual exposure to each Underlying and that the performance of the Least Performing Underlying will not be offset or mitigated by the performance of the other Underlying.
- .. You do not seek current income from your investment and are willing to forgo dividends paid on the securities represented by the Underlyings.
- .. You are willing to hold the Securities to maturity and accept that there may be little or no secondary market for the Securities.
- .. You are willing to assume our credit risk for all payments under the Securities, and understand that if we default on our obligations, you may not receive any amounts due to you, including any repayment of principal.

.. You fully understand and accept the risks associated with the Underlyings.

The Securities may not be suitable for you if, among other considerations:

- .. You do not fully understand the risks inherent in an investment in the Securities, including the risk of loss of up to 84% of the principal amount.
- .. You require an investment designed to provide a full return of principal at maturity.  
You cannot tolerate the loss of up to 84% of the principal amount of the Securities, and you are not willing to make an investment that has similar downside market risk as a hypothetical investment in the Least Performing Underlying.
- .. You believe that the level of either Underlying will decline over the term of the Securities by more than 6%, or you believe the level of the Least Performing Underlying will appreciate over the term of the Securities by a percentage that exceeds the Maximum Gain.
- .. You seek an investment that has unlimited return potential without a cap on appreciation.
- .. You would be unwilling to invest in the Securities based on the Maximum Gain indicated on the cover page of this free writing prospectus.
- .. You are unwilling to accept that the Final Underlying Level of each Underlying will be determined based on its closing level on each trading day during the Valuation Period.
- .. You cannot tolerate fluctuations in the price of the Securities prior to maturity that may be similar to or exceed the downside fluctuations in the level of the Least Performing Underlying.
- .. You are unwilling to accept individual exposure to each Underlying and that the performance of the Least Performing Underlying will not be offset or mitigated by the performance of the other Underlying.
- .. You seek current income from this investment or prefer to receive the dividends paid on the securities represented by the Underlyings.
- .. You are unable or unwilling to hold the Securities to maturity, or you seek an investment for which there will be an active secondary market.
- .. You are not willing to assume our credit risk for all payments under the Securities, including any repayment of principal.
- .. You do not fully understand and accept the risks associated with the Underlyings.

The suitability considerations identified above are not exhaustive. Whether or not the Securities are a suitable investment for you will depend on your individual circumstances, and you should reach an investment decision only after you and your investment, legal, tax, accounting, and other advisers have carefully considered the suitability of an investment in the Securities in light of your particular circumstances. You should also review carefully the “Key Risks” in this free writing prospectus and “Risk Factors” in the accompanying product prospectus supplement UBS-IND-1 for risks related to an investment in the Securities. In addition, you should review carefully the section below, “Information About the Underlyings,” for more information about the Underlyings.

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### Indicative Terms of the Securities<sup>1</sup>

Issuer:	Royal Bank of Canada
Issue Price:	\$10 per Security (subject to a minimum purchase of 100 Securities).
Principal Amount:	\$10 per Security
Term: <sup>2</sup>	Approximately 4.5 years
Underlyings:	The S&P 500 <sup>®</sup> Index (“SPX”) and the Russell 2000 Index (“RTY”)
Upside Gearing:	1.86
Maximum Gain:	55.80%
Buffer:	16%
	If the Underlying Return of the Least Performing Underlying is greater than -6%, we will pay you: \$10 + [\$10 x the lesser of (i) Upside Gearing x (Underlying Return of Least Performing Underlying +6%) and (ii) Maximum Gain]
Payment at Maturity (per \$10 Security):	If the Underlying Return of the Least Performing Underlying is less than or equal to -6% but greater than or equal to -16%, we will pay you \$10 per \$10 Security. If the Underlying Return of the Least Performing Underlying is less than -16%, we will pay you: \$10 + [\$10 x (Underlying Return of Least Performing Underlying + Buffer)] In this scenario, you will lose up to 84% of the principal amount of the Securities in an amount proportionate to the decrease in the Least Performing Underlying by more than the Buffer.
Least Performing Underlying:	The Underlying with the lowest Underlying Return.
Underlying Returns:	With respect to each Underlying, <u>Final Underlying Level – Initial Underlying Level</u> Initial Underlying Level
Initial Underlying Levels:	With respect to each Underlying, its closing level on the Trade Date.  With respect to each Underlying, the arithmetic average of its closing level on each trading day during the Valuation Period.
Final Underlying Levels:	A market disruption event as to one Underlying will not impact the other Underlying. As to either Underlying, if a market disruption event occurs on any trading day during the Valuation Period, its closing level on that trading day will be disregarded in the calculation of its Final Underlying Level.
Valuation Period:	From and including September 17, 2021 to and including December 17, 2021.

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<sup>1</sup> Terms used in this free writing prospectus, but not defined herein, shall have the meanings ascribed to them in the product prospectus supplement.

<sup>2</sup> In the event we make any change to the expected Trade Date and Settlement Date, the Valuation Period and Maturity Date will be changed to ensure that the stated term of the Securities remains approximately the same.

### Investment Timeline

Trade Date: The Initial Underlying Level of each Underlying is determined.

Valuation Period: The Final Underlying Level and Underlying Return of each Underlying are determined.

If the Underlying Return of the Least Performing Underlying is greater than -6%, we will pay you a cash payment per \$10 Security that provides you with your principal amount plus a return equal to the Upside Gearing multiplied by the sum of 6% plus the Underlying Return of the Least Performing Underlying, subject to the Maximum Gain. Your payment at maturity per \$10 Security will be equal to:

$\$10 + [\$10 \times \text{the lesser of (i) Upside Gearing} \times (\text{Underlying Return of Least Performing Underlying} + 6\%) \text{ and (ii) Maximum Gain}]$

Maturity Date: If the Underlying Return of the Least Performing Underlying is between -16% and -6% (both inclusive), we will pay you \$10 per \$10 Security.

If the Underlying Return of the Least Performing Underlying is less than -16%, we will pay you a cash payment that is less than the principal amount of \$10 per Security, resulting in a loss of principal that is proportionate to the percentage decline in the Least Performing Underlying in excess of the Buffer, and equal to:

$\$10 + [\$10 \times (\text{Underlying Return of Least Performing Underlying} + \text{Buffer})]$

In this scenario, you will lose up to 84% of the principal amount of the Securities, in an amount proportionate to the decrease in the Least Performing Underlying in excess of the Buffer.

**INVESTING IN THE SECURITIES INVOLVES SIGNIFICANT RISKS. YOU MAY LOSE UP TO 84% OF YOUR PRINCIPAL AMOUNT. ANY PAYMENT ON THE SECURITIES, INCLUDING ANY REPAYMENT OF PRINCIPAL, IS SUBJECT TO OUR CREDITWORTHINESS. IF WE WERE TO DEFAULT ON OUR PAYMENT OBLIGATIONS, YOU MAY NOT RECEIVE ANY AMOUNTS OWED TO YOU UNDER THE SECURITIES AND YOU COULD LOSE YOUR ENTIRE INVESTMENT.**



## Key Risks

An investment in the Securities involves significant risks. Investing in the Securities is not equivalent to investing directly in any of the component securities of the Underlyings. These risks are explained in more detail in the “Risk Factors” section of the accompanying product prospectus supplement UBS-IND-1. We also urge you to consult your investment, legal, tax, accounting and other advisors before investing in the Securities.

### Risks Relating to the Securities Generally

**Your Investment in the Securities May Result in a Loss of Principal** — The Securities differ from ordinary debt securities in that we are not necessarily obligated to repay the full principal amount of the Securities at maturity. The return on the Securities at maturity is linked to the performance of the Underlyings and will depend on whether, and the extent to which, the Underlying Return of the Least Performing Underlying is positive or negative. If the Underlying Return of the Least Performing Underlying is less than -16%, you will be exposed to any decrease in the Least Performing Underlying in excess of the Buffer and we will pay you less than your principal amount at maturity, resulting in a loss of principal of your Securities that is proportionate to the percentage decline in the Least Performing Underlying in excess of the Buffer. Accordingly, you could lose up to 84% of the principal amount of the Securities.

**The Upside Gearing Applies Only if You Hold the Securities to Maturity** — The application of the Upside Gearing only applies at maturity. If you are able to sell your Securities prior to maturity in the secondary market, the price you receive will likely not reflect the full effect of the Upside Gearing and the return you realize may be less than the Upside Gearing times the sum of 6% plus the return of the Least Performing Underlying at the time of sale, even if that return is positive and does not exceed the Maximum Gain.

**The Contingent Repayment of Principal Applies Only if You Hold the Securities to Maturity** — The contingent repayment of principal provided by the Buffer is only available at maturity. If you are able to sell your Securities prior to maturity in the secondary market, you may have to sell them at a loss, even if the level of each Underlying has not decreased by 16% or more at the time of sale.

**The Appreciation Potential of the Securities Is Limited by the Maximum Gain** — If the Underlying Return of the Least Performing Underlying is greater than -6%, we will pay you \$10 per Security at maturity plus an additional return that will not exceed the Maximum Gain, regardless of the appreciation in either Underlying, which may be significant. Therefore, you will not benefit from any appreciation of either Underlying in excess of an amount that, when added to 6% and then multiplied by the Upside Gearing, exceeds the Maximum Gain, and your return on the Securities may be less than your return would be on a hypothetical direct investment in the securities represented by an Underlying.

**No Interest Payments** — We will not pay any interest with respect to the Securities.

**An Investment in the Securities Is Subject to Our Credit Risk** — The Securities are unsubordinated, unsecured debt obligations of the issuer, Royal Bank of Canada, and are not, either directly or indirectly, an obligation of any third party. Any payment to be made on the Securities, including any repayment of principal at maturity, depends on our ability to satisfy our obligations as they come due. As a result, our actual and perceived creditworthiness may affect the market value of the Securities and, in the event we were to default on our obligations, you may not receive any amounts owed to you under the terms of the Securities and you could lose your entire initial investment.

**Your Return on the Securities May Be Lower than the Return on a Conventional Debt Security of Comparable Maturity** — The return that you will receive on the Securities, which could be negative, may be less than the return you could earn on other investments. Even if your return is positive, your return may be less than the return you could earn if you bought a conventional senior interest bearing debt security of ours with the same maturity date or if you were able to invest directly in the securities included in an Underlying. Your investment may not reflect the full opportunity cost to you when you take into account factors that affect the time value of money.

**No Dividend Payments or Voting Rights** — Investing in the Securities is not equivalent to investing directly in any of the component securities of an Underlying. As a holder of the Securities, you will not have voting rights or rights to receive cash dividends or other distributions or other rights that holders of the securities represented by either Underlying would have. Each Underlying is a price return index, and its Underlying Return excludes any cash dividend payments paid on its component stocks.

The Initial Estimated Value of the Securities Will Be Less than the Price to the Public — The initial estimated value that is set forth on the cover page of this document, and that will be set forth in the final pricing supplement for the Securities, will be less than the public offering price you pay for the Securities, does not represent a minimum price at which we, RBCCM or any of our other affiliates would be willing to purchase the Securities in any secondary market (if any exists) at any time. If you attempt to sell the Securities 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 level of the Underlyings, 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 our estimated profit and the costs relating to our hedging of the Securities. These factors, together with various credit, market and economic factors over the term of the Securities, are expected to reduce the price at which you may be able to sell the Securities in any secondary market and will affect the value of the Securities 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 Securities prior to maturity may be less than the price to public, as any such sale price would not be expected to include the underwriting discount and our estimated profit and the costs relating to our hedging of the Securities. In addition, any price at which you may sell the Securities is likely to reflect customary bid-ask spreads for similar trades. In addition to bid-ask spreads, the value of the Securities determined for any secondary market price is expected to be based on a secondary market rate rather than the internal borrowing rate used to price the Securities and determine the initial estimated value. As a result, the secondary price will be less than if the internal borrowing rate was used. The Securities are not designed to be short-term trading instruments. Accordingly, you should be able and willing to hold your Securities to maturity.

Our Initial Estimated Value of the Securities Is an Estimate Only, Calculated as of the Time the Terms of the Securities Are Set — The initial estimated value of the Securities is based on the value of our obligation to make the payments on the Securities, together with the mid-market value of the derivative embedded in the terms of the Securities. See “Structuring the Securities” 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 Securities. These assumptions are based on certain forecasts about future events, which may prove to be incorrect. Other entities may value the Securities or similar securities at a price that is significantly different than we do.

The value of the Securities at any time after the Trade 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 Securities in any secondary market, if any, should be expected to differ materially from the initial estimated value of your Securities and the amount that may be paid at maturity.

**Your Return On The Securities Is Not Linked to a Basket Consisting of the Underlyings. Rather, It Will Be Contingent Upon the Performance of Each Individual Underlying** — Unlike an instrument with a return linked to a basket of indices or other underlying assets, in which risk is mitigated and diversified among all of the components of the basket, you will be exposed equally to the risks related to both of the Underlyings. Poor performance by either one of the Underlyings over the term of the Securities may negatively affect your return and will not be offset or mitigated by a positive performance by the other Underlying. If the Final Underlying Level of either Underlying is less than its Initial Underlying Level by more than the Buffer, you will incur a loss proportionate to the decrease in the level of the Least Performing Underlying in excess of the Buffer. Accordingly, your investment is subject to the market risk of each Underlying, which results in a higher risk of incurring a loss at maturity.

**Because the Securities Are Linked to the Individual Performance of More Than One Underlying, It Is More Likely That the Final Underlying Level of One of the Underlyings Will Be Less Than Its Initial Underlying Level by More Than the Buffer, Increasing The Probability That You Will Lose up to 84% of Your Initial Investment** — The risk that you will lose up to 84% of your initial investment in the Securities is greater if you invest in the Securities as opposed to securities that are linked to the performance of a single Underlying if their terms are otherwise substantially similar. With a greater total number of Underlyings, it is more likely that the Final Underlying Level of an Underlying will be below its initial Underlying Level by more than the Buffer, and therefore it is more likely that you will receive an amount in cash which is less than your principal amount. In addition, the performances of a pair of Underlyings may be positively or negatively correlated, or may not be correlated at all. If the Underlyings are not correlated to each other or are negatively correlated, there is a greater potential for the Final Underlying Level of one of those Underlyings to be less than its initial Underlying Level by more than the Buffer, and therefore the risk that you will lose a portion of your principal at maturity.

It is impossible to predict what the correlations between the Underlyings will be over the term of the Securities. The Underlyings represent different equity markets and these different equity markets may not perform similarly over the term of the Securities. Although the correlation of the Underlyings' performance may change over the term of the Securities, the Upside Gearing and the Maximum Gain are determined, in part, based on the Underlyings' performance calculated using our internal models at the time when the terms of the Securities are determined. A higher Upside Gearing or Maximum Gain is generally associated with lower correlation of the Underlyings, which reflects a greater potential for a loss on your investment at maturity. See "Correlation of the Underlyings" below.

**The Return on the Securities Will Be Affected by the Closing Levels of the Underlyings During the Valuation Period** — Because the Final Underlying Level of an Underlying will be determined based on its closing levels during the Valuation Period, and the Final Underlying Level of that Underlying may be less than its closing level on the last trading day during the Valuation Period, your return on the Securities may be less than what it would be if the payment on the Securities were based solely on the performance of the Underlyings on a single trading day. This difference could be particularly large if there is a significant increase in the closing level of an Underlying shortly prior to maturity. Additionally, the secondary market value of the Securities, if such a market exists, will be impacted by the closing level of each Underlying on any previous trading day during the Valuation Period, in that those levels will impact the amount payable at maturity.

**Changes Affecting the Underlyings** — The policies of an index sponsor concerning additions, deletions and substitutions of the stocks included in the applicable Underlying and the manner in which an index sponsor takes account of certain changes affecting those stocks included in the applicable Underlying may adversely affect its level. The policies of an index sponsor with respect to the calculation of the applicable Underlying could also adversely affect its level. An index sponsor may discontinue or suspend calculation or dissemination of the applicable Underlying and has no obligation to consider your interests in the Securities when taking any action regarding that Underlying. Any such actions could have an adverse effect on the value of the Securities and the amount that may be paid at maturity.

**Lack of Liquidity** — The Securities will not be listed on any securities exchange. RBC Capital Markets, LLC ("RBCCM") intends to offer to purchase the Securities in the secondary market, but is not required to do so. Even if

there is a secondary market, it may not provide enough liquidity to allow you to trade or sell the Securities easily. Because other dealers are not likely to make a secondary market for the Securities, the price at which you may be able to trade your Securities is likely to depend on the price, if any, at which RBCCM is willing to buy the Securities.

**Potential Conflicts** — We and our affiliates play a variety of roles in connection with the issuance of the Securities, including hedging our obligations under the Securities. In performing these duties, the economic interests of the calculation agent and other affiliates of ours are potentially adverse to your interests as an investor in the Securities. **Potentially Inconsistent Research, Opinions or Recommendations by RBCCM, UBS or Their Affiliates** — RBCCM, UBS or their affiliates may publish research, express opinions or provide recommendations that are inconsistent with investing in or holding the Securities, and which may be revised at any time. Any such research, opinions or recommendations could affect the level of an Underlying or the equity securities included in an Underlying, and therefore, the market value of the Securities.

**An Investment in Securities Linked to the RTY Is Subject to Risks Associated in Investing in Stocks with a Small Market Capitalization** — The RTY consists of stocks issued by companies with relatively small market capitalizations. These companies often have greater stock price volatility, lower trading volume and less liquidity than large-capitalization companies. As a result, the level of the RTY may be more volatile than that of a market measure that does not track solely small-capitalization stocks. Stock prices of small-capitalization companies are also often more vulnerable than those of large-capitalization companies to adverse business and economic developments, and the stocks of small-capitalization companies may be thinly traded, and be less attractive to many investors if they do not pay dividends. In addition, small capitalization companies are often less well-established and less stable financially than large-capitalization companies and may depend on a small number of key personnel, making them more vulnerable to loss of those individuals. Small capitalization companies tend to have lower revenues, less diverse product lines, smaller shares of their target markets, fewer financial resources and fewer competitive strengths than large-capitalization companies. These companies may also be more susceptible to adverse developments related to their products or services.

**Uncertain Tax Treatment** — Significant aspects of the tax treatment of an investment in the Securities are uncertain. You should consult your tax adviser about your tax situation.

Potential Royal Bank of Canada and UBS Impact on Price — Trading or other transactions by Royal Bank of Canada, UBS and our respective affiliates in the equity securities composing an Underlying or in futures, options, exchange-traded funds or other derivative products on the equity securities included in an Underlying may adversely affect the market value of those equity securities, the level of that Underlying, and, therefore, the market value of the Securities.

The Probability That the Final Underlying Level of an Underlying Will Be Below Its Initial Underlying Level by More Than the Buffer Will Depend on the Volatility of That Underlying — “Volatility” refers to the frequency and magnitude of changes in the level of an Underlying. Greater expected volatility with respect to an Underlying reflects a higher expectation as of the Trade Date that the Final Underlying Level of that Underlying could be below its Initial Underlying Level, resulting in the loss of up to 84% of your investment. However, an Underlying’s volatility can change significantly over the term of the Securities. The level of an Underlying could fall sharply, which could result in a significant loss of principal.

The Terms of the Securities at Issuance and Their Market Value Prior to Maturity Will Be Influenced by Many Unpredictable Factors — Many economic and market factors will influence the terms of the Securities at issuance and their value prior to maturity. These factors are similar in some ways to those that could affect the value of a combination of instruments that might be used to replicate the payments on the Securities, including a combination of a bond with one or more options or other derivative instruments. For the market value of the Securities, we expect that, generally, the levels of the Underlyings on any day will affect the value of the Securities more than any other single factor. However, you should not expect the value of the Securities in the secondary market to vary in proportion to changes in the level of the Underlying. The value of the Securities will be affected by a number of other factors that may either offset or magnify each other, including:

the actual or expected volatility of the Underlyings;

.. the time remaining to maturity of the Securities;

the dividend rates on the securities represented by the Underlyings;

.. interest and yield rates in the market generally, as well as in each of the markets of the securities represented by the Underlyings;

a variety of economic, financial, political, regulatory or judicial events; and

our creditworthiness, including actual or anticipated downgrades in our credit ratings.

Some or all of these factors will influence the terms of the Securities at issuance as well as the price you will receive if you choose to sell the Securities prior to maturity. The impact of any of the factors set forth above may enhance or offset some or all of any change resulting from another factor or factors. You may have to sell the Securities at a substantial discount from the principal amount if, for example, the level of the Least Performing Underlying is at, below or not sufficiently above, its Initial Underlying Level.

Hypothetical Examples and Return Table at Maturity

Hypothetical terms only. Actual terms may vary. See the cover page for actual offering terms.

The following table and hypothetical examples below illustrate the payment at maturity per \$10.00 Security for a hypothetical range of Underlying Returns of the Least Performing Underlying from -100.00% to +100.00% and assume a hypothetical Initial Underlying Level of 2,000.00 for the Least Performing Underlying, and reflect the Upside Gearing of 1.86, the Maximum Gain of 55.80% and the Buffer of 16%. The actual Initial Underlying Level of each Underlying will be set on the Trade Date. The hypothetical Payment at Maturity examples set forth below are for illustrative purposes only and may not be the actual returns applicable to a purchaser of the Securities. The actual payment at maturity will be determined based on the Final Underlying Level of the Least Performing Underlying. You should consider carefully whether the Securities are suitable to your investment goals. The numbers appearing in the table below have been rounded for ease of analysis.

Example 1 - The Final Underlying Level of the Least Performing Underlying is 40% greater than its Initial Underlying Level. Because the Underlying Return of the Least Performing Underlying is greater than -6%, we will pay you an amount based upon the lesser of (a) the sum of 6% plus the Underlying Return of the Least Performing Underlying times the Upside Gearing and (b) the Maximum Gain. Since the sum of 6% plus the Underlying Return of the Least Performing Underlying of 40% times the Upside Gearing is greater than the Maximum Gain, we will pay you at maturity a cash payment of \$15.580 per \$10 principal amount Security, calculated as follows:

$$\$10 + (\$10 \times 55.80\%) = \$10 + \$5.580 = \$15.580$$

Example 2 - The Final Underlying Level of the Least Performing Underlying is 2% below its Initial Underlying Level. Because the Underlying Return of the Least Performing Underlying is greater than -6%, we will pay you an amount based upon the lesser of the sum of 6% plus the Underlying Return of the Least Performing Underlying times the Upside Gearing and the Maximum Gain. Since the sum of 6% plus the Underlying Return of the Least Performing Underlying of -2% times the Upside Gearing is less than the Maximum Gain, we will pay you at maturity a cash payment of \$10.744 per \$10 principal amount Security, calculated as follows:

$$\$10 + [\$10 \times 1.86 \times (-2\% + 6\%)] = \$10 + \$0.744 = \$10.744$$

Example 3 - The Final Underlying Level of the Least Performing Underlying is 10% below its Initial Underlying Level. Because the Underlying Return of the Least Performing Underlying is between -16% and -6%, we will pay you at maturity a cash payment of \$10.000 per \$10 principal amount Security.

Example 4 - The Final Underlying Level of the Least Performing Underlying is 40% below its Initial Underlying Level. Because the Underlying Return of the Least Performing Underlying is -40%, which is less than -16%, we will pay you at maturity a cash payment of \$7.600 per \$10 principal amount Security (a 24% loss on the principal amount), calculated as follows:

$$\$10 + [\$10 \times (-40\% + 16\%)] = \$10 - \$2.40 = \$7.600$$

Hypothetical Final Underlying Level of the Least Performing Underlying	Hypothetical Underlying Return of the Least Performing Underlying <sup>1</sup>	Hypothetical Payment at Maturity	Hypothetical Total Return on Securities <sup>2</sup>
4,000.00	100.00%	\$15.580	55.80%
3,500.00	75.00%	\$15.580	55.80%
3,000.00	50.00%	\$15.580	55.80%
2,800.00	40.00%	\$15.580	55.80%
2,600.00	30.00%	\$15.580	55.80%
2,480.00	24.00%	\$15.580	55.80%
2,400.00	20.00%	\$14.836	48.36%
2,200.00	10.00%	\$12.976	29.76%
2,000.00	0.00%	\$11.116	11.16%
1,960.00	-2.00%	\$10.744	7.44%

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1,880.00	-6.00%	\$10.000	0.00%
1,840.00	-8.00%	\$10.000	0.00%
1,800.00	-10.00%	\$10.000	0.00%
1,680.00	-16.00%	\$9.400	-6.00%
1,600.00	-20.00%	\$9.600	-4.00%
1,400.00	-30.00%	\$8.600	-14.00%
1,200.00	-40.00%	\$7.600	-24.00%
1,000.00	-50.00%	\$6.600	-34.00%
500.00	-75.00%	\$4.100	-59.00%
0.00	-100.00%	\$1.600	-84.00%

<sup>1</sup> The Underlying Return of the Least Performing Underlying excludes any cash dividend payments.

<sup>2</sup> The “total return” is the number, expressed as a percentage, that results from comparing the payment at maturity per \$10 principal amount Security to the purchase price of \$10.00 per Security.

## What Are the Tax Consequences of the Securities?

### U.S. Federal Income Tax Consequences

Set forth below, together with the discussion of U.S. federal income tax in the accompanying product prospectus supplement, prospectus supplement, and prospectus, is a summary of the material U.S. federal income tax consequences relating to an investment in the Securities. The following summary is not complete and is qualified in its entirety by the discussion under the section entitled “Supplemental Discussion of U.S. Federal Income Tax Consequences” in the accompanying product prospectus supplement, the section entitled “Certain Income Tax Consequences” in the accompanying prospectus supplement, and the section entitled “Tax Consequences” in the accompanying prospectus, which you should carefully review prior to investing in the Securities.

In the opinion of our counsel, Morrison & Foerster LLP, it would generally be reasonable to treat the Securities as pre-paid cash-settled derivative contracts in respect of the Underlyings for U.S. federal income tax purposes, and the terms of the Securities require a holder and us (in the absence of a change in law or an administrative or judicial ruling to the contrary) to treat the Securities for all tax purposes in accordance with such characterization. If the Securities are so treated, a U.S. holder should generally recognize capital gain or loss upon the sale or maturity of the Securities in an amount equal to the difference between the amount a holder receives at such time and the holder’s tax basis in the Securities. Capital gain recognized by an individual U.S. holder is generally taxed at preferential rates where the property is held for more than one year and is generally taxed at ordinary income rates where the property is held for one year or less. The deductibility of capital losses is subject to limitations.

Alternative tax treatments are also possible and the Internal Revenue Service might assert that a treatment other than that described above is more appropriate. In addition, the Internal Revenue Service has released a notice that may affect the taxation of holders of the Securities. According to the notice, the Internal Revenue Service and the Treasury Department are actively considering whether the holder of an instrument such as the Securities should be required to accrue ordinary income on a current basis. It is not possible to determine what guidance they will ultimately issue, if any. It is possible, however, that under such guidance, holders of the Securities will ultimately be required to accrue income currently and this could be applied on a retroactive basis. The Internal Revenue Service and the Treasury Department are also considering other relevant issues, including whether additional gain or loss from such instruments should be treated as ordinary or capital and whether the special “constructive ownership rules” of Section 1260 of the Internal Revenue Code might be applied to such instruments. Holders are urged to consult their tax advisors concerning the significance, and the potential impact, of the above considerations.

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, U.S. Treasury Department regulations 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, 2018. Based on our determination that the Securities are not delta-one instruments, non-U.S. holders should not be subject to withholding on dividend equivalent payments, if any, under the Securities. However, it is possible that the Securities could be treated as deemed reissued for U.S. federal income tax purposes upon the occurrence of certain events affecting the Underlying or the Securities (for example, upon an Underlying rebalancing), and following such occurrence the Securities 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 Underlying or the Securities should consult their tax advisors as to the application of the dividend equivalent withholding tax in the context of the Securities 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.

Individual holders that own “specified foreign financial assets” may be required to include certain information with respect to such assets with their U.S. federal income tax return. You are urged to consult your own tax advisor regarding such requirements with respect to the Securities.



Please see the discussion under the section entitled “Supplemental Discussion of U.S. Federal Income Tax Consequences” in the accompanying product prospectus supplement for a further discussion of the U.S. federal income tax consequences of an investment in the Securities.

Canadian Federal Income Tax Consequences

For a discussion of the material Canadian federal income tax consequences relating to an investment in the Securities, please see the section entitled "Tax Consequences—Canadian Taxation" in the accompanying prospectus, which you should carefully review prior to investing in the Securities.

### Information About the Underlyings

We have derived all information contained in this document regarding the Underlyings, including, without limitation, their make-up, method of calculation, and changes in their components, from publicly available sources. The information reflects the policies of, and is subject to change by, the index sponsors. Each index sponsor, which owns the copyright and all other rights to the applicable Underlying, has no obligation to continue to publish, and may discontinue publication of that Underlying. None of us, UBS or RBCCM accepts any responsibility for the calculation, maintenance or publication of either Underlying or any successor index.

#### The S&P 500<sup>®</sup> Index

The SPX is intended to provide an indication of the pattern of common stock price movement in the large capitalization segment of the U.S. equity market. 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 Dow Jones Indices LLC (“SPDJI” or the “index sponsor”) chooses companies for inclusion in the SPX with the aim of achieving a distribution by broad industry groupings that approximates the distribution of these groupings in the common stock population of its Stock Guide Database of over 10,000 companies, which the index sponsor uses as an assumed model for the composition of the total market. Relevant criteria employed by the index sponsor include the viability of the particular company, the extent to which that company represents the industry group to which it is assigned, the extent to which the market price of that company’s common stock generally is responsive to changes in the affairs of the respective industry, and the market value and trading activity of the common stock of that company. SPDJI from time to time, in its sole discretion, may add companies to, or delete companies from, the SPX to achieve the objectives stated above.

The index sponsor 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 Securities will not reflect the return you would realize if you actually owned the SPX constituent stocks and received the dividends paid on those stocks.

#### Computation of the SPX

While SPDJI currently employs the following methodology to calculate the SPX, no assurance can be given that SPDJI 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, SPDJI 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. SPDJI’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 depository 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 depository shares and Canadian exchangeable shares are normally part of the float unless those shares form a control

block. If a company has multiple classes of stock outstanding, shares in an unlisted or non-traded class are treated as a control block.

For each stock, an investable weight factor (“IWF”) is calculated by dividing the available float shares by the total shares outstanding. As of September 21, 2012, 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, SPDJI 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, SPDJI 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. For companies with multiple classes of stock, SPDJI calculates the weighted average IWF for each stock using the proportion of the total company market capitalization of each share class as weights.

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 index closing level. Changes in a company's shares outstanding of 5.00% or more due to mergers, acquisitions, public offerings, tender offers, Dutch auctions, or exchange offers are made as soon as reasonably possible. Share changes due to mergers or acquisitions of publicly held companies that trade on a major exchange are implemented when the transaction occurs, even if both of the companies are not in the same headline index, and regardless of the size of the change. All other changes of 5.00% or more (due to, for example, company stock repurchases, private placements, redemptions, exercise of options, warrants, conversion of preferred stock, notes, debt, equity participation units, at the market offerings, or other recapitalizations) are made weekly and are announced on Fridays for implementation after the close of trading on the following Friday. Changes of less than 5.00% are accumulated and made quarterly on the third Friday of March, June, September, and December, and are usually announced two to five days prior.

If a change in a company's shares outstanding of 5.00% or more 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.

#### License Agreement

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The Securities are not sponsored, endorsed, sold or promoted by S&P Dow Jones Indices LLC, Dow Jones, S&P or any of their respective affiliates (collectively, "S&P Dow Jones Indices"). S&P Dow Jones Indices make no representation or warranty, express or implied, to the holders of the Securities or any member of the public regarding the advisability of investing in securities generally or in the Securities particularly or the ability of the SPX to track general market performance. S&P Dow Jones Indices' only relationship to us with respect to the SPX is the licensing of the SPX and certain trademarks, service marks and/or trade names of S&P Dow Jones Indices and/or its third party licensors. The SPX is determined, composed and calculated by S&P Dow Jones Indices without regard to us or the Securities. S&P Dow Jones Indices have no obligation to take our needs or the needs of holders of the Securities into consideration in determining, composing or calculating the SPX. S&P Dow Jones Indices are not responsible for and have not participated in the determination of the prices, and amount of the Securities or the timing of the issuance or sale of the Securities or in the determination or calculation of the equation by which the Securities are to be converted into cash. S&P Dow Jones Indices have no obligation or liability in connection with the administration, marketing or trading of the Securities. There is no assurance that investment products based on the SPX will accurately track index performance or provide positive investment returns. S&P Dow Jones Indices LLC and its subsidiaries are not investment advisors. Inclusion of a security or futures contract within an index is not a recommendation by S&P Dow Jones Indices to buy, sell, or hold such security or futures contract, nor is it considered to be investment advice.

Notwithstanding the foregoing, CME Group Inc. and its affiliates may independently issue and/or sponsor financial products unrelated to the Securities currently being issued by us, but which may be similar to and competitive with the Securities. In addition, CME Group Inc. and its affiliates may trade financial products which are linked to the performance of the SPX. It is possible that this trading activity will affect the value of the Securities.

**S&P DOW JONES INDICES DO NOT GUARANTEE THE ADEQUACY, ACCURACY, TIMELINESS AND/OR THE COMPLETENESS OF THE SPX OR ANY DATA RELATED THERETO OR ANY COMMUNICATION, INCLUDING BUT NOT LIMITED TO, ORAL OR WRITTEN COMMUNICATION (INCLUDING ELECTRONIC COMMUNICATIONS) WITH RESPECT THERETO. S&P DOW JONES INDICES SHALL NOT BE SUBJECT TO ANY DAMAGES OR LIABILITY FOR ANY ERRORS, OMISSIONS, OR DELAYS THEREIN. S&P DOW JONES INDICES MAKE NO EXPRESS OR IMPLIED WARRANTIES, AND EXPRESSLY DISCLAIMS ALL WARRANTIES, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE OR AS TO RESULTS TO BE OBTAINED BY US, HOLDERS OF THE SECURITIES, OR ANY OTHER PERSON OR ENTITY FROM THE USE OF THE SPX OR WITH RESPECT TO ANY DATA RELATED THERETO.**

WITHOUT LIMITING ANY OF THE FOREGOING, IN NO EVENT WHATSOEVER SHALL S&P DOW JONES INDICES BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES INCLUDING BUT NOT LIMITED TO, LOSS OF PROFITS, TRADING LOSSES, LOST TIME OR GOODWILL, EVEN IF THEY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, WHETHER IN CONTRACT, TORT, STRICT LIABILITY, OR OTHERWISE. THERE ARE NO THIRD PARTY BENEFICIARIES OF ANY AGREEMENTS OR ARRANGEMENTS BETWEEN S&P DOW JONES INDICES AND US, OTHER THAN THE LICENSORS OF S&P DOW JONES INDICES.

Historical Information

The following table sets forth the quarterly high, low and period-end closing levels of the SPX, as reported by Bloomberg L.P. The historical performance of the SPX should not be taken as an indication of its future performance. We cannot give you assurance that the performance of the SPX will result in the return of any of your initial investment.

Quarter Begin	Quarter End	Quarterly Closing High	Quarterly Closing Low	Quarterly Period-End Close
1/1/2008	3/31/2008	1,447.16	1,273.37	1,322.70
4/1/2008	6/30/2008	1,426.63	1,278.38	1,280.00
7/1/2008	9/30/2008	1,305.32	1,106.39	1,166.36
10/1/2008	12/31/2008	1,161.06	752.44	903.25
1/1/2009	3/31/2009	934.70	676.53	797.87
4/1/2009	6/30/2009	946.21	811.08	919.32
7/1/2009	9/30/2009	1,071.66	879.13	1,057.08
10/1/2009	12/31/2009	1,127.78	1,025.21	1,115.10
1/1/2010	3/31/2010	1,174.17	1,056.74	1,169.43
4/1/2010	6/30/2010	1,217.28	1,030.71	1,030.71
7/1/2010	9/30/2010	1,148.67	1,022.58	1,141.20
10/1/2010	12/31/2010	1,259.78	1,137.03	1,257.64
1/1/2011	3/31/2011	1,343.01	1,256.88	1,325.83
4/1/2011	6/30/2011	1,363.61	1,265.42	1,320.64
7/1/2011	9/30/2011	1,353.22	1,119.46	1,131.42
10/1/2011	12/31/2011	1,285.09	1,099.23	1,257.60
1/1/2012	3/31/2012	1,416.51	1,277.06	1,408.47
4/1/2012	6/30/2012	1,419.04	1,278.04	1,362.16
7/1/2012	9/30/2012	1,465.77	1,334.76	1,440.67
10/1/2012	12/31/2012	1,461.40	1,353.33	1,426.19
1/1/2013	3/31/2013	1,569.19	1,457.15	1,569.19
4/1/2013	6/30/2013	1,669.16	1,541.61	1,606.28
7/1/2013	9/30/2013	1,725.52	1,614.08	1,681.55
10/1/2013	12/31/2013	1,848.36	1,655.45	1,848.36
1/1/2014	3/31/2014	1,878.04	1,741.89	1,872.34
4/1/2014	6/30/2014	1,962.87	1,815.69	1,960.23
7/1/2014	9/30/2014	2,011.36	1,909.57	1,972.29
10/1/2014	12/31/2014	2,090.57	1,862.49	2,058.90
1/1/2015	3/31/2015	2,117.39	1,992.67	2,067.89
4/1/2015	6/30/2015	2,130.82	2,057.64	2,063.11
7/1/2015	9/30/2015	2,128.28	1,867.61	1,920.03
10/1/2015	12/31/2015	2,109.79	1,923.82	2,043.94
1/1/2016	3/31/2016	2,063.95	1,829.08	2,059.74
4/1/2016	6/30/2016	2,119.12	2,000.54	2,098.86
7/1/2016	9/30/2016	2,190.15	2,088.55	2,168.27
10/1/2016	12/31/2016	2,271.72	2,085.18	2,238.83
1/1/2017	3/31/2017	2,395.96	2,257.83	2,362.72
4/1/2017	6/30/2017	2,453.46	2,328.95	2,423.41
7/1/2017	7/27/2017*	2,477.83	2,409.75	2,475.42

\* This free writing prospectus includes information for the third calendar quarter of 2017 only for the period from July 1, 2017 through July 27, 2017. Accordingly, the “Quarterly Closing High,” “Quarterly Closing Low” and “Quarterly Period-End Close” data indicated are for this shortened period only and do not reflect complete data for the third calendar quarter of 2017.

The graph below illustrates the performance of the SPX from January 1, 2008 to July 27, 2017.

HISTORIC PERFORMANCE IS NOT AN INDICATION OF FUTURE PERFORMANCE.

Source: Bloomberg L.P. We have not independently verified the accuracy or completeness of the information obtained from Bloomberg Financial Markets.

### The Russell 2000® Index

The RTY was developed by Russell Investments (“Russell”) before FTSE International Limited (“FTSE”) and Russell combined in 2015 to create FTSE Russell, which is wholly owned by London Stock Exchange Group. Russell began dissemination of the RTY (Bloomberg L.P. index symbol “RTY”) on January 1, 1984. The RTY was set to 135 as of the close of business on December 31, 1986. FTSE Russell (the “index sponsor”) calculates and publishes the RTY. The RTY is designed to track the performance of the small capitalization segment of the U.S. equity market. As a subset of the Russell 3000® Index, the RTY consists of the smallest 2,000 companies included in the Russell 3000® Index. The Russell 3000® Index measures the performance of the largest 3,000 U.S. companies, representing approximately 98% of the investable U.S. equity market. The RTY is determined, comprised, and calculated by the index sponsor without regard to the Securities.

### Selection of Stocks Underlying the RTY

All companies eligible for inclusion in the RTY must be classified as a U.S. company under the index sponsor’s country-assignment methodology. If a company is incorporated, has a stated headquarters location, and trades in the same country (American Depositary Receipts and American Depositary Shares are not eligible), then the company is assigned to its country of incorporation. If any of the three factors are not the same, the index sponsor defines three Home Country Indicators (“HCIs”): country of incorporation, country of headquarters, and country of the most liquid exchange (as defined by a two-year average daily dollar trading volume) (“ADDTV”) from all exchanges within a country. Using the HCIs, the index sponsor compares the primary location of the company’s assets with the three HCIs. If the primary location of its assets matches any of the HCIs, then the company is assigned to the primary location of its assets. If there is insufficient information to determine the country in which the company’s assets are primarily located, the index sponsor will use the primary country from which the company’s revenues are primarily derived for the comparison with the three HCIs in a similar manner. The index sponsor uses the average of two years of assets or revenues data to reduce potential turnover. If conclusive country details cannot be derived from assets or revenues data, the index sponsor will assign the company to the country of its headquarters, which is defined as the address of the company’s principal executive offices, unless that country is a Benefit Driven Incorporation “BDI” country, in which case the company will be assigned to the country of its most liquid stock exchange. BDI countries include: Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bonaire, British Virgin Islands, Cayman Islands, Channel Islands, Cook Islands, Curacao, Faroe Islands, Gibraltar, Guernsey, Isle of Man, Jersey, Liberia, Marshall Islands, Panama, Saba, Sint Eustatius, Sint Maarten, and Turks and Caicos Islands. For any companies incorporated or headquartered in a U.S. territory, including countries such as Puerto Rico, Guam, and U.S. Virgin Islands, a U.S. HCI is assigned.

All securities eligible for inclusion in the RTY must trade on a major U.S. exchange. Stocks must have a closing price at or above \$1.00 on their primary exchange on the last trading day in May to be eligible for inclusion during annual reconstitution. However, in order to reduce unnecessary turnover, if an existing member’s closing price is less than \$1.00 on the last day of May, it will be considered eligible if the average of the daily closing prices (from its primary exchange) during the month of May is equal to or greater than \$1.00. Initial public offerings are added each quarter and must have a closing price at or above \$1.00 on the last day of their eligibility period in order to qualify for index inclusion. If an existing stock does not trade on the “rank day” (typically the last trading day in May, but a confirmed timetable is announced each Spring) but does have a closing price at or above \$1.00 on another eligible U.S. exchange, that stock will be eligible for inclusion.

An important criterion used to determine the list of securities eligible for the RTY is total market capitalization, which is defined as the market price as of the last trading day in May for those securities being considered at annual reconstitution times the total number of shares outstanding. Where applicable, common stock, non-restricted exchangeable shares and partnership units/membership interests are used to determine market capitalization. Any other form of shares such as preferred stock, convertible preferred stock, redeemable shares, participating preferred stock, warrants and rights, installment receipts or trust receipts, are excluded from the calculation. If multiple share classes of common stock exist, they are combined. In cases where the common stock share classes act independently of each other (e.g., tracking stocks), each class is considered for inclusion separately. If multiple share classes exist, the pricing vehicle will be designated as the share class with the highest two-year trading volume as of the rank day in May.



Companies with a total market capitalization of less than \$30 million are not eligible for the RTY. Similarly, companies with only 5% or less of their shares available in the marketplace are not eligible for the RTY. Royalty trusts, limited liability companies, closed-end investment companies (companies that are required to report Acquired Fund Fees and Expenses, as defined by the SEC, including business development companies), blank check companies, special-purpose acquisition companies, and limited partnerships are also not eligible for inclusion in the Russell U.S. Indices. Exchange traded funds and mutual funds are also excluded. Bulletin board, pink-sheets, and over-the-counter (“OTC”) traded securities are not eligible for inclusion.

Annual reconstitution is a process by which the RTY is completely rebuilt. On the rank last trading day of May, all eligible securities are ranked by their total market capitalization. The largest 4,000 become the Russell 3000E Index, and the other of the index sponsor’s indexes are determined from that set of securities. Reconstitution of the RTY occurs on the last Friday in June or, when the last Friday in June is the 29th or 30th, reconstitution occurs on the prior Friday. In addition, the index sponsor adds initial public offerings to the RTY on a quarterly basis based on total market capitalization guidelines ranking within the market-adjusted capitalization breaks established during the most recent reconstitution.

After membership is determined, a security’s shares are adjusted to include only those shares available to the public. This is often referred to as “free float.” The purpose of the adjustment is to exclude from market calculations the capitalization that is not available for purchase and is not part of the investable opportunity set.

#### License Agreement

FTSE Russell and Royal Bank of Canada have entered into a non-exclusive license agreement providing for the license to Royal Bank of Canada, and certain of its affiliates, in exchange for a fee, of the right to use indices owned and published by FTSE Russell in connection with some securities, including the Securities.

FTSE Russell does not guarantee the accuracy and/or the completeness of the RTY or any data included in the RTY and has no liability for any errors, omissions, or interruptions in the RTY. FTSE Russell makes no warranty, express or implied, as to results to be obtained by the calculation agent, holders of the Securities, or any other person or entity from the use of the RTY or any data included in the RTY in connection with the rights licensed under the license agreement described in this document or for any other use. FTSE Russell makes no express or implied warranties, and hereby expressly disclaims all warranties of merchantability or fitness for a particular purpose with respect to the RTY or any data included in the RTY. Without limiting any of the above information, in no event will FTSE Russell have any liability for any special, punitive, indirect or consequential damages, including lost profits, even if notified of the possibility of these damages.

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The Securities are not sponsored, endorsed, sold or promoted by FTSE Russell. FTSE Russell makes no representation or warranty, express or implied, to the owners of the Securities or any member of the public regarding the advisability of investing in securities generally or in the Securities particularly or the ability of the RTY to track general stock market performance or a segment of the same. FTSE Russell's publication of the RTY in no way suggests or implies an opinion by FTSE Russell as to the advisability of investment in any or all of the stocks upon which the RTY is based. FTSE Russell's only relationship to Royal Bank of Canada is the licensing of certain trademarks and trade names of FTSE Russell and of the RTY, which is determined, composed and calculated by FTSE Russell without regard to Royal Bank of Canada or the Securities. FTSE Russell is not responsible for and has not reviewed the Securities nor any associated literature or publications and FTSE Russell makes no representation or warranty express or implied as to their accuracy or completeness, or otherwise. FTSE Russell reserves the right, at any time and without notice, to alter, amend, terminate or in any way change the RTY. FTSE Russell has no obligation or liability in connection with the administration, marketing or trading of the Securities.

“Russell 2000®” and “Russell 3000®” are registered trademarks of FTSE Russell in the U.S. and other countries.

Historical Information

The following table sets forth the quarterly high, low and period-end closing levels of the RTY, as reported by Bloomberg L.P. The historical performance of the RTY should not be taken as an indication of its future performance. We cannot give you assurance that the performance of the RTY will result in the return of any of your initial investment.

Quarter Begin	Quarter End	Quarterly Closing High	Quarterly Closing Low	Quarterly Period-End Close
1/1/2008	3/31/2008	753.554	643.966	687.967
4/1/2008	6/30/2008	763.266	686.073	689.659
7/1/2008	9/30/2008	754.377	657.718	679.583
10/1/2008	12/31/2008	671.590	385.308	499.453
1/1/2009	3/31/2009	514.710	343.260	422.748
4/1/2009	6/30/2009	531.680	429.158	508.281
7/1/2009	9/30/2009	620.695	479.267	604.278
10/1/2009	12/31/2009	634.072	562.395	625.389
1/1/2010	3/31/2010	690.303	586.491	678.643
4/1/2010	6/30/2010	741.922	609.486	609.486
7/1/2010	9/30/2010	677.642	590.034	676.139
10/1/2010	12/31/2010	792.347	669.450	783.647
1/1/2011	3/31/2011	843.549	773.184	843.549
4/1/2011	6/30/2011	865.291	777.197	827.429
7/1/2011	9/30/2011	858.113	643.421	644.156
10/1/2011	12/30/2011	765.432	609.490	740.916
1/1/2012	3/30/2012	846.129	747.275	830.301
4/1/2012	6/29/2012	840.626	737.241	798.487
7/1/2012	9/28/2012	864.697	767.751	837.450
10/1/2012	12/31/2012	852.495	769.483	849.350
1/1/2013	3/29/2013	953.068	872.605	951.542
4/1/2013	6/28/2013	999.985	901.513	977.475
7/1/2013	9/30/2013	1,078.409	989.535	1,073.786
10/1/2013	12/31/2013	1,163.637	1,043.459	1,163.637
1/1/2014	3/31/2014	1,208.651	1,093.594	1,173.038
4/1/2014	6/30/2014	1,192.964	1,095.986	1,192.964
7/1/2014	9/30/2014	1,208.150	1,101.676	1,101.676
10/1/2014	12/31/2014	1,219.109	1,049.303	1,204.696
1/1/2015	3/31/2015	1,266.373	1,154.709	1,252.772
4/1/2015	6/30/2015	1,295.799	1,215.417	1,253.947
7/1/2015	9/30/2015	1,273.328	1,083.907	1,100.688
10/1/2015	12/31/2015	1,204.159	1,097.552	1,135.889

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1/1/2016	3/31/2016	1,114.028	953.715	1,114.028
4/1/2016	6/30/2016	1,188.954	1,089.646	1,151.923
7/1/2016	9/30/2016	1,263.438	1,139.453	1,251.646
10/1/2016	12/31/2016	1,388.073	1,156.885	1,357.130
1/1/2017	3/31/2017	1,413.635	1,345.598	1,385.920
4/1/2017	6/30/2017	1,425.985	1,345.244	1,415.359
7/1/2017	7/27/2017*	1,450.387	1,400.815	1,433.624

\* This free writing prospectus includes information for the third calendar quarter of 2017 only for the period from July 1, 2017 through July 27, 2017. Accordingly, the “Quarterly Closing High,” “Quarterly Closing Low” and “Quarterly Period-End Close” data indicated are for this shortened period only and do not reflect complete data for the third calendar quarter of 2017.

The graph below illustrates the performance of the RTY from January 1, 2008 to July 27, 2017.

**HISTORIC PERFORMANCE IS NOT AN INDICATION OF FUTURE PERFORMANCE.**

Source: Bloomberg L.P. We have not independently verified the accuracy or completeness of the information obtained from Bloomberg Financial Markets.

### Correlation of the Underlyings

The graph below illustrates the daily performance of the Underlyings from January 1, 2008 through July 27, 2017. For comparison purposes, each Underlying has been normalized to have a closing level of 100.00 on January 1, 2008 by dividing the closing level of that Underlying on each day by the closing level of that Underlying on January 1, 2008 and multiplying by 100.00. We obtained the closing levels used to determine the normalized closing levels set forth below from Bloomberg, without independent verification.

Past performance of the Underlyings is not indicative of their future performance.

The correlation of a pair of indices represents a statistical measurement of the degree to which the returns of those indices were similar to each other over a given period in terms of timing and direction (i.e., positive or negative). The closer the relationship of the daily returns of the Underlyings over a given period, the more positively correlated those Underlyings are. The graph above illustrates the historical performance of the indices relative to one another over the time period shown and provides an indication of how close the relative performance of the daily returns of one Underlying has historically been to the other. The lower (or more negative) the correlation between two Underlyings, the less likely it is that those indices will move in the same direction and, therefore, the greater the potential for one of those indices to close below its Initial Underlying Level by more than the Buffer. This is because the less positively correlated a pair of Underlyings are, the greater the likelihood that at least one of those indices will decrease in value. This results in a greater potential for a loss of principal at maturity. However, even if the two Underlyings have a higher positive correlation, the Final Underlying Level of one or both of those indices might close below its Initial Underlying Level by more than the Buffer, as both of those Underlyings may decrease in value together.

The lower the correlation between two Underlyings, the greater the potential for one of those indices to close below its Initial Underlying Level by more than the Buffer. Therefore, the greater the number of Underlyings, the greater the potential for a loss of principal at maturity. We determine the Upside Gearing and the Maximum Gain for the Securities based, in part, on the correlation among the Underlyings, calculated using internal models at the time the terms of the Securities are set. As discussed above, increased risk resulting from lower correlation or from a greater number of Underlyings will be reflected in a higher Upside Gearing and Maximum Gain than would be payable on securities linked to fewer Underlyings or that have a higher degree of correlation.

#### Supplemental Plan of Distribution (Conflicts of Interest)

We have agreed to indemnify UBS and RBCCM against liabilities under the Securities Act of 1933, as amended, or to contribute payments that UBS and RBCCM may be required to make relating to these liabilities as described in the prospectus supplement and the prospectus. We will agree that UBS may sell all or a part of the Securities that it will purchase from us to investors at the price to public listed on the cover hereof, or its affiliates at the price indicated on the cover of the pricing supplement, the document that will be filed under Rule 424(b)(2) containing the final pricing terms of the Securities.

UBS may allow a concession not in excess of the underwriting discount set forth on the cover of the pricing supplement to its affiliates for distribution of the Securities.

Subject to regulatory constraints and market conditions, RBCCM intends to offer to purchase the Securities in the secondary market, but it is not required to do so.

We or our affiliates may enter into swap agreements or related hedge transactions with one of our other affiliates or unaffiliated counterparties in connection with the sale of the Securities and RBCCM and/or an affiliate may earn additional income as a result of payments pursuant to the swap or related hedge transactions. See “Use of Proceeds and Hedging” beginning on page PS-13 of the accompanying product prospectus supplement UBS-IND-1.

The value of the Securities shown on your account statement may be based on RBCCM’s estimate of the value of the Securities if RBCCM or another of our affiliates were to make a market in the Securities (which it is not obligated to do). That estimate will be based upon the price that RBCCM may pay for the Securities in light of then prevailing market conditions, our creditworthiness and transaction costs. If so specified in the pricing supplement related to the Securities, for a period of approximately six months after the issue date, the value of the Securities that may be shown on your account statement may be higher than RBCCM’s estimated value of the Securities at that time. This is because the estimated value of the Securities will not include the underwriting discount and our hedging costs and profits; however, the value of the Securities shown on your account statement during that period may be a higher amount, potentially reflecting the addition of the underwriting discount and our estimated costs and profits from hedging the Securities. Any such excess is expected to decrease over time until the end of this period. After this period, if RBCCM repurchases your Securities, it expects to do so at prices that reflect their estimated value. This period may be reduced at RBCCM’s discretion based on a variety of factors, including but not limited to, the amount of the Securities that we repurchase and our negotiated arrangements from time to time with UBS.

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.

#### Structuring the Securities

The Securities are our debt securities, the return on which is linked to the performance of the Underlyings. As is the case for all of our debt securities, including our structured notes, the economic terms of the Securities 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 Securities 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 is likely to result in a higher initial estimated value of the Securities at the time their terms are set than if the secondary market rate was used. Unlike the estimated value included on the cover of this document or in the final pricing supplement relating to the Securities, any value of the Securities determined for purposes of a secondary market transaction may be based on a different borrowing rate, which may result in a lower value for the Securities than if our initial internal borrowing rate were used.

In order to satisfy our payment obligations under the Securities, 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 Underlyings, and the tenor of the Securities. The economic terms of the Securities and their initial estimated value depend in part on the terms of these hedging arrangements.

The lower implied borrowing rate is a factor that reduces the economic terms of the Securities to you. The initial offering price of the Securities also reflects the underwriting commission and our estimated hedging costs. These

factors result in the initial estimated value for the Securities on the Trade Date being less than their public offering price. See “Key Risks—The Initial Estimated Value of the Securities Will Be Less than the Price to the Public” above.

Terms Incorporated in Master Note

The terms appearing above under the caption “Indicative Terms of the Securities” and the provisions in the accompanying product prospectus supplement UBS-IND-1 dated January 5, 2017 under the caption “General Terms of the Securities,” are incorporated into the master note issued to DTC, the registered holder of the Securities.