

BOTTOMLINE TECHNOLOGIES INC /DE/  
Form 10-Q  
May 08, 2009

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

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FORM 10-Q

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(Mark One)

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

For the quarterly period ended March 31, 2009

OR

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

For the transition period from \_\_\_\_\_ to \_\_\_\_\_

Commission file number: 0-25259

\_\_\_\_\_

Bottomline Technologies (de), Inc.  
(Exact name of registrant as specified in its charter)

\_\_\_\_\_

Delaware  
(State or other jurisdiction of  
incorporation or organization)

02-0433294  
(I.R.S. Employer  
Identification No.)

325 Corporate Drive  
Portsmouth, New Hampshire  
(Address of principal executive offices)

03801-6808  
(Zip Code)

(603) 436-0700

(Registrant's telephone number, including area code)

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

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate website, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes  No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act (Check one):

Large Accelerated Filer	<input type="checkbox"/>	Accelerated Filer	<input checked="" type="checkbox"/>
Non-Accelerated Filer	<input type="checkbox"/>	Smaller Reporting Company	<input type="checkbox"/>

(Do not check if a smaller reporting company)

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes  No

The number of shares outstanding of the registrant's common stock as of April 30, 2009 was 25,062,459 .

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## PART I. FINANCIAL INFORMATION

## Item 1. Financial Statements

Bottomline Technologies (de), Inc.  
Unaudited Condensed Consolidated Balance Sheets  
(in thousands)

	March 31, 2009	June 30, 2008
Assets		
Current assets:		
Cash and cash equivalents	\$ 40,957	\$ 35,316
Marketable securities	42	57
Accounts receivable, net of allowance for doubtful accounts and returns of \$724 at March 31, 2009 and \$1,433 at June 30, 2008	23,068	28,747
Other current assets	4,649	6,157
Total current assets	68,716	70,277
Property and equipment, net	10,094	11,840
Intangible assets, net	88,629	115,414
Other assets	3,628	1,235
Total assets	\$ 171,067	\$ 198,766
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	\$ 5,182	\$ 8,856
Accrued expenses	7,667	10,997
Deferred revenue	31,169	30,621
Total current liabilities	44,018	50,474
Deferred revenue, non-current	9,256	3,856
Deferred income taxes	2,276	4,179
Other liabilities	1,586	1,992
Total liabilities	57,136	60,501
Stockholders' equity:		
Preferred Stock, \$.001 par value:		
Authorized shares—4,000; issued and outstanding shares—none	---	---
Common Stock, \$.001 par value:		
Authorized shares—50,000; issued shares—26,291 at March 31, 2009, and 25,854 at June 30, 2008; outstanding shares—24,130 at March 31, 2009, and 23,939 at June 30, 2008	26	26
Additional paid-in capital	283,898	277,660
Accumulated other comprehensive (loss) income	(12,355)	7,766
Treasury stock: 2,161 shares at March 31, 2009, and 1,915 shares at June 30, 2008, at cost	(23,958)	(22,195)
Accumulated deficit	(133,680)	(124,992)
Total stockholders' equity	113,931	
		Basket Return:

8.49%

In this example, all of the hypothetical final index levels for the basket underliers are greater than the applicable hypothetical initial index levels, which results in the hypothetical final basket level being greater than the initial basket level of 100.00. Since the hypothetical final basket level was determined to be 108.49, the hypothetical cash settlement amount for each \$1,000 face amount of your notes will equal:

$$\text{Cash settlement amount} = \$1,000 + (\$1,000 \times 210.00\% \times 8.49\%) = \$1,178.29$$

Example 3: The final basket level is less than the initial basket level but greater than the buffer level. The cash settlement amount is equal to the \$1,000 face amount.

	Column A	Column B	Column C	Column D	Column E
Basket Underlier	Hypothetical Initial Index Level	Hypothetical Final Index Level	Column B/Column A	Initial Weighted Value	Column C x Column D
EURO STOXX 50® Index	100.00	91.00	91.00%	36.00	32.76
TOPIX®	100.00	91.00	91.00%	27.00	24.57
FTSE® 100 Index	100.00	91.00	91.00%	20.00	18.20
Swiss Market Index	100.00	91.00	91.00%	9.00	8.19
S&P®/ASX 200 Index	100.00	91.00	91.00%	8.00	7.28
			Final Basket Level:		91.00
			Basket Return:		-9.00%

In this example, all of the hypothetical final index levels for the basket underliers are less than the applicable hypothetical initial index levels, which results in the hypothetical final basket level being less than the initial basket level of 100.00. Since the hypothetical final basket level of 91.00 is greater than the buffer level of 87.50% of the initial basket level but less than the initial basket level of 100.00, the hypothetical cash settlement amount for each \$1,000 face amount of your notes will equal the face amount of the note, or \$1,000.

Example 4: The final basket level is less than the buffer level. The cash settlement amount is less than the \$1,000 face amount.

	Column A	Column B	Column C	Column D	Column E
Basket Underlier	Hypothetical Initial Index Level	Hypothetical Final Index Level	Column B/Column A	Initial Weighted Value	Column C x Column D
EURO STOXX 50® Index	100.00	40.00	40.00%	36.00	14.40
TOPIX®	100.00	100.00	100.00%	27.00	27.00
FTSE® 100 Index	100.00	100.00	100.00%	20.00	20.00
Swiss Market Index	100.00	115.00	115.00%	9.00	10.35
S&P®/ASX 200 Index	100.00	115.00	115.00%	8.00	9.20
			Final Basket Level:		80.95
			Basket Return:		-19.05%

In this example, the hypothetical final index level of the EURO STOXX 50® Index is less than its hypothetical initial index level, while the hypothetical final index levels of the TOPIX® and the FTSE® 100 Index are equal to their applicable hypothetical initial index levels and the hypothetical final index levels of the Swiss Market Index and the S&P®/ASX 200 Index are greater than their applicable hypothetical initial index levels.

Because the basket is unequally weighted, increases in the lower weighted basket underliers will be offset by decreases in the more heavily weighted basket underliers. In this example, the large decline in the EURO STOXX 50® Index results in the hypothetical final basket level being less than the buffer level of 87.50% of the initial basket level, even though the TOPIX® and the FTSE® 100 Index remained flat and the Swiss Market Index and the S&P®/ASX 200 Index increased.

Since the hypothetical final basket level of 80.95 is less than the buffer level of 87.50% of the initial basket level, the hypothetical cash settlement amount for each \$1,000 face amount of your notes will equal:

$$\text{Cash settlement amount} = \$1,000 + (\$1,000 \times 114.29\% \times (-19.05\% + 12.50\%)) = \$925.14$$

Example 5: The final basket level is less than the buffer level. The cash settlement amount is less than the \$1,000 face amount.

	Column A	Column B	Column C	Column D	Column E
Basket Underlier	Hypothetical Initial Index Level	Hypothetical Final Index Level	Column B/Column A	Initial Weighted Value	Column C x Column D
EURO STOXX 50® Index	100.00	44.00	44.00%	36.00	15.84
TOPIX®	100.00	62.00	62.00%	27.00	16.74
FTSE® 100 Index	100.00	55.00	55.00%	20.00	11.00
Swiss Market Index	100.00	43.00	43.00%	9.00	3.87
S&P®/ASX 200 Index	100.00	56.00	56.00%	8.00	4.48
			Final Basket Level:		51.93
			Basket Return:		-48.07%

In this example, the hypothetical final index levels for all of the basket underliers are less than the applicable hypothetical initial index levels, which results in the hypothetical final basket level being less than the initial basket level of 100.00. Since the hypothetical final basket level of 51.93 is less than the buffer level of 87.50% of the initial basket level, the hypothetical cash settlement amount for each \$1,000 face amount of your notes will equal:

$$\text{Cash settlement amount} = \$1,000 + (\$1,000 \times 114.29\% \times (-48.07\% + 12.50\%)) = \$593.49$$

No one can predict what the final basket level will be. The actual amount that a holder of the notes will receive at maturity and the actual return on your investment in the notes, if any, will depend on the initial index level of each basket underlier, the stated maturity date, the cap level and the maximum settlement amount that will be set on the trade date and the actual final basket level determined by the calculation agent as described below. In addition, the actual return on your notes will further depend on the original issue price. Moreover, the assumptions on which the hypothetical tables, chart and examples are based may turn out to be inaccurate. Consequently, the return on your

investment in the notes, if any, and the actual cash settlement amount to be paid in respect of the notes at maturity may be very different from the information reflected in the tables, chart and examples above.

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### ADDITIONAL RISK FACTORS SPECIFIC TO YOUR NOTES

An investment in your notes is subject to the risks described below, as well as the risks described under “Risk Factors” beginning on page S-1 of the accompanying prospectus supplement and page 1 of the accompanying prospectus. You should carefully review these risks as well as the terms of the notes described herein and in the accompanying prospectus, dated September 7, 2018, as supplemented by the accompanying prospectus supplement, dated September 7, 2018, and the accompanying product prospectus supplement PB-1, dated September 20, 2018, of Royal Bank of Canada. Your notes are a riskier investment than ordinary debt securities. Also, your notes are not equivalent to investing directly in the underlier stocks, i.e., the stocks included in the basket underliers. You should carefully consider whether the offered notes are suited to your particular circumstances.

#### You May Lose Your Entire Investment in the Notes

The principal amount of your investment is not protected and you may lose a significant amount, or even all of your investment in the notes. The cash settlement amount, if any, will depend on the performance of the basket underliers and the change in their levels from the trade date to the determination date, and you may receive significantly less than the principal amount of the notes. Subject to our credit risk, you will receive at least the principal amount of the notes at maturity only if the final basket level is greater than or equal to the buffer level. If the final basket level is less than the buffer level, then you will lose, for each \$1,000 in principal amount of the notes, an amount equal to the product of (i) the buffer rate times (ii) the sum of basket return plus the buffer amount times (iii) \$1,000. You could lose some or all of the principal amount. Thus, depending on the final basket level, you could lose a substantial portion, and perhaps all, of your investment in the notes, which would include any premium to the principal amount you may have paid when you purchased the notes.

In addition, if the notes are not held until maturity, assuming no changes in market conditions or to our creditworthiness and other relevant factors, the price you may receive for the notes may be significantly less than the price that you paid for them.

#### Our Initial Estimated Value of the Notes Will Be Less than the Original Issue Price

Our 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 notes, will be less than the original issue price of the notes, and does not represent a minimum price at which we, RBCCM or any of our other affiliates would be willing to purchase the notes in any secondary market (if any exists) at any time. This is due to, among other things, the fact that the original issue price of the notes reflects the borrowing rate we pay to issue securities of this kind (an internal funding rate that is lower than the rate at which we borrow funds by issuing conventional fixed rate debt), and the inclusion in the original issue price of the costs relating to our hedging of the notes.

#### The Price, if Any, at Which You May Be Able to Sell Your Notes Prior to Maturity May Be Less than the Original Issue Price and Our Initial Estimated Value

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 the original issue price and our initial estimated value. This is because any such sale price would not be expected to include our estimated profit and the costs relating to our hedging of the notes. In addition, any price at which you may sell the notes is likely to reflect customary bid-ask spreads for similar trades, and the cost of unwinding any related hedge transactions. In addition, the value of the notes determined for any secondary market price is expected to be based in part on the yield that is reflected in the interest rate on our conventional debt securities of similar maturity that are traded in the secondary market, rather than the internal funding rate that we used to price the notes and determine the initial estimated value. As a result, the secondary market price of the notes will be less than if the internal funding rate was used. These factors, together with various credit, market and economic factors over the term of the notes, and, potentially, changes in the levels of the basket underliers, 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.

As set forth below in the section “Supplemental Plan of Distribution (Conflicts of Interest),” for a limited period of time after the trade date, your broker may repurchase the notes at a price that is greater than the estimated value of the notes at that time. However, assuming no changes in any other relevant factors, the price you may receive if you sell your notes is expected to decline gradually during that period.

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 Is an Estimate Only, Calculated as of the Time the Terms of the Notes Are Set

Our 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 internal funding rate (which represents a discount from our credit spreads), expectations as to dividends on the underlier stocks, 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 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 notes in any secondary market, if any, should be expected to differ materially from our initial estimated value of your notes.

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#### Your Notes Will Not Bear Interest

You will not receive any interest payments on the notes. Even if the amount payable on the notes at maturity exceeds the principal amount of the notes, the overall return you earn on the notes may be less than you would otherwise have earned by investing in a non-indexed debt security of comparable maturity that bears interest at a prevailing market rate. Your investment may not reflect the full opportunity cost to you when you take into account factors that affect the time value of money.

#### The Potential for the Value of Your Notes to Increase Will Be Limited

Your ability to participate in any change in the levels of the basket underliers and the level of the basket over the term of your notes will be limited because of the cap level. The cap level will limit the amount in cash you may receive for each of your notes at maturity, no matter how much the level of the basket may rise beyond the cap level over the term of your notes. Accordingly, the amount payable for each of your notes may be significantly less than your return had you invested directly in the underlier stocks.

#### Payment of the Amount Payable on Your Notes Is Subject to Our Credit Risk, and Market Perceptions About Our Creditworthiness May Adversely Affect the Market Value of Your Notes

The notes are our unsecured debt obligations. Investors are subject to our credit risk, and market perceptions about our creditworthiness may adversely affect the market value of the notes. Any decrease in the market's view on or confidence in our creditworthiness is likely to adversely affect the market value of the notes.

#### The Lower Performance of One Basket Underlier May Offset an Increase in One or More Other Basket Underliers

Declines in the level of one basket underlier may offset increases in the level of one or more other basket underliers. As a result, any return on the basket — and thus on your notes — may be reduced or eliminated, which will have the effect of reducing the amount payable in respect of your notes at maturity. In addition, because the basket underliers are not equally weighted, increases in the lower weighted basket underliers may be offset by even small decreases in the more heavily weighted basket underliers.

#### The Amount Payable on Your Notes Is Not Linked to the Level of the Basket at Any Time Other than the Determination Date

The amount payable on your notes will be based on the final basket level. Therefore, for example, if the closing level of one or more basket underliers decreased precipitously on the determination date, the amount payable at maturity may be significantly less than it would otherwise have been had the amount payable been linked to the closing levels of the basket underliers prior to that decrease. Although the actual levels of the basket underliers at maturity or at other times during the term of the notes may be higher than their levels on the determination date, you will not benefit from the closing level of any basket underlier at any time other than the determination date.

#### The Notes May Not Have an Active Trading Market

The notes will not be listed on any securities exchange. The dealer intends to offer to purchase the notes in the secondary market, but is not required to do so. The dealer or any of its affiliates may stop any market-making activities at any time. Even if there is a secondary market, it may not provide enough liquidity to allow you to easily trade or sell the notes. Because other dealers are not likely to make a secondary market for the notes, the price at which you may be able to trade the notes is likely to depend on the price, if any, at which the dealer is willing to buy the notes. 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.

If you sell your notes before maturity, you may have to do so at a substantial discount from the price that you paid for them, and as a result, you may suffer substantial losses.

#### The Market Value of Your Notes May Be Influenced by Many Unpredictable Factors

The following factors, among others, many of which are beyond our control, may influence the market value of your notes:

- the levels of the basket underliers;
- the volatility—i.e., the frequency and magnitude of changes—of the levels of the basket underliers;
- the dividend rates of the underlier stocks;
- economic, financial, regulatory, political, military and other events that affect stock markets generally and the underlier stocks;
- interest and yield rates in the market;

the time remaining until the notes  
mature; and

our creditworthiness, whether actual or perceived, and including actual or anticipated upgrades or downgrades in our credit ratings or changes in other credit measures.

These factors may influence the market value of your notes if you sell your notes before maturity, including the price you may receive for your notes in any market making transaction. If you sell your notes prior to maturity, you may receive less than the principal amount of your notes.

**An Investment in the Notes Is Subject to Risks Associated with Foreign Securities Markets**

The basket underliers track the value of certain foreign equity securities. The basket underliers are five separate indices, which track the equity markets in a variety of countries and regions. You should be aware that investments in securities linked to the value of foreign equity securities involve particular risks. The foreign securities markets comprising the basket underliers may have less liquidity and may be more volatile than U.S. or other securities markets and market developments may affect foreign markets differently from U.S. or other securities markets. Direct or indirect government

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intervention to stabilize these foreign securities markets, as well as cross-shareholdings in foreign companies, may affect trading prices and volumes in these markets. Also, there is generally less publicly available information about foreign companies than about those U.S. companies that are subject to the reporting requirements of the U.S.

Securities and Exchange Commission, and foreign companies are subject to accounting, auditing and financial reporting standards and requirements that differ from those applicable to U.S. reporting companies.

Prices of securities in foreign countries are subject to political, economic, financial and social factors that apply in those geographical regions. These factors, which could negatively affect those securities markets, include the possibility of recent or future changes in a foreign government's economic and fiscal policies, the possible imposition of, or changes in, currency exchange laws or other laws or restrictions applicable to foreign companies or investments in foreign equity securities and the possibility of fluctuations in the rate of exchange between currencies, the possibility of outbreaks of hostility and political instability and the possibility of natural disaster or adverse public health development in the region. Moreover, foreign economies may differ favorably or unfavorably from the U.S. economy in important respects such as growth of gross national product, rate of inflation, capital reinvestment, resources and self-sufficiency.

The Notes Are Linked to the Underlier Stocks, and Are Therefore Subject to Foreign Currency Exchange Rate Risk Although the underlier stocks are traded principally in non-U.S. dollars, the payments on the notes will not be adjusted due to any changes in currency exchange rates. Changes in the value of one or more of the currencies in which the underlier stocks are traded could have an adverse impact on the value of the notes and the payment at maturity. Foreign currency exchange rates vary over time, and may vary considerably during the life of the notes. Changes in a particular exchange rate result from the interaction of many factors directly or indirectly affecting economic and political conditions.

Of particular importance are:

- existing and expected rates of inflation;
- existing and expected interest rate levels;
- the balance of payments;
- the extent of governmental surpluses or deficits in the relevant countries; and
- other financial, economic, military and political factors.

All of these factors are, in turn, sensitive to the monetary, fiscal and trade policies pursued by the governments of the various component countries and the United States and other countries important to international trade and finance. It has been reported that the U.K. Financial Conduct Authority and regulators from other countries are in the process of investigating the potential manipulation of published currency exchange rates. If such manipulation has occurred or is continuing, certain published exchange rates may have been, or may be in the future, artificially lower (or higher) than they would otherwise have been. Any such manipulation could have an adverse impact on any payments on, and the value of, your notes and the trading market for your notes. In addition, we cannot predict whether any changes or reforms affecting the determination or publication of exchange rates or the supervision of currency trading will be implemented in connection with these investigations. Any such changes or reforms could also adversely impact your notes.

If the Level or Price of the Basket Underliers or the Underlier Stocks Changes, the Market Value of the Notes May Not Change in the Same Manner

The notes may trade quite differently from the performance of the basket underliers or the underlier stocks. Changes in the level or price, as applicable, of the basket underliers or the underlier stocks may not result in a comparable change in the market value of the notes. Some of the reasons for this disparity are discussed under “— The Market Value of Your Notes May Be Influenced by Many Unpredictable Factors” above.

The Return on the Notes Will Not Reflect Any Dividends Paid on the Underlier Stocks

The basket underlier sponsors calculate the levels of the basket underliers by reference to the prices of the applicable underlier stocks without taking account of the value of dividends paid on those underlier stocks. Therefore, the return on the notes will not reflect the return you would realize if you actually owned the underlier stocks and received the dividends paid on those underlier stocks.

You Have No Shareholder Rights or Rights to Receive Any Underlier Stock

Investing in your notes will not make you a holder of any of the underlier stocks. Neither you nor any other holder or owner of your notes will have any voting rights, any right to receive dividends or other distributions, any rights to

make a claim against the underlier stock issuers or any other rights with respect to the underlier stocks. Your notes will be paid in cash to the extent any amount is payable at maturity, and you will have no right to receive delivery of any of the underlier stocks.

**We Will Not Hold Any of the Underlier Stocks for Your Benefit, if We Hold Them at All**

The indenture and the terms governing your notes do not contain any restriction on our ability or the ability of any of our affiliates to sell, pledge or otherwise convey all or any portion of the underlier stocks that we or they may acquire.

Neither we nor our affiliates will pledge or otherwise hold any assets for your benefit, including any of these securities. Consequently, in the event of our bankruptcy, insolvency or liquidation, any of those securities that we own will be subject to the claims of our creditors generally and will not be available for your benefit specifically.

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Our Hedging Activities and/or Those of Our Distributors May Negatively Impact Investors in the Notes and Cause Our Interests and Those of Our Clients and Counterparties to Be Contrary to Those of Investors in the Notes

The dealer or one or more of our other affiliates and/or distributors expects to hedge its obligations under the hedging transaction that it may enter into with us by purchasing futures and/or other instruments linked to the basket or to one or more basket underliers or the underlier stocks. The dealer or one or more of our other affiliates and/or distributors also expects to adjust the hedge by, among other things, purchasing or selling any of the foregoing, and perhaps other instruments linked to the basket, or one or more of the basket underliers or underlier stocks, at any time and from time to time, and to unwind the hedge by selling any of the foregoing on or before the determination date.

We, the dealer, or one or more of our other affiliates and/or distributors may also enter into, adjust and unwind hedging transactions relating to other basket- or index-linked notes whose returns are linked to changes in the level or price of the basket, the basket underliers or the underlier stocks. Any of these hedging activities may adversely affect the levels of the basket underliers —directly or indirectly by affecting the price of the underlier stocks—and therefore the market value of the notes and the amount you will receive, if any, on the notes. In addition, you should expect that these transactions will cause us, the dealer or our other affiliates and/or distributors, or our clients or counterparties, to have economic interests and incentives that do not align with, and that may be directly contrary to, those of an investor in the notes. We, the dealer and our other affiliates and/or distributors will have no obligation to take, refrain from taking or cease taking any action with respect to these transactions based on the potential effect on an investor in the notes, and may receive substantial returns with respect to these hedging activities while the value of the notes may decline. Additionally, if the distributor from which you purchase notes is to conduct hedging activities for us in connection with the notes, that distributor may profit in connection with such hedging activities and such profit, if any, will be in addition to the compensation that the distributor receives for the sale of the notes to you. You should be aware that the potential to earn fees in connection with hedging activities may create a further incentive for the distributor to sell the notes to you in addition to the compensation they would receive for the sale of the notes.

#### Market Activities by Us and by the Dealer for Our Own Account or for Our Clients Could Negatively Impact Investors in the Notes

We, the dealer and our other affiliates provide a wide range of financial services to a substantial and diversified client base. As such, we each may act as an investor, investment banker, research provider, investment manager, investment advisor, market maker, trader, prime broker or lender. In those and other capacities, we, the dealer and/or our other affiliates purchase, sell or hold a broad array of investments, actively trade securities (including the notes or other securities that we have issued), the underlier stocks, derivatives, loans, credit default swaps, indices, baskets and other financial instruments and products for our own accounts or for the accounts of our customers, and we will have other direct or indirect interests, in those securities and in other markets that may be not be consistent with your interests and may adversely affect the levels of the basket underliers and/or the value of the notes. Any of these financial market activities may, individually or in the aggregate, have an adverse effect on the levels of the basket underliers and the market value of your notes, and you should expect that our interests and those of the dealer and/or our other affiliates, or our clients or counterparties, will at times be adverse to those of investors in the notes.

In addition to entering into these transactions itself, we, the dealer and our other affiliates may structure these transactions for our clients or counterparties, or otherwise advise or assist clients or counterparties in entering into these transactions. These activities may be undertaken to achieve a variety of objectives, including: permitting other purchasers of the notes or other securities to hedge their investment in whole or in part; facilitating transactions for other clients or counterparties that may have business objectives or investment strategies that are inconsistent with or contrary to those of investors in the notes; hedging the exposure of us, the dealer or our other affiliates in connection with the notes, through their market-making activities, as a swap counterparty or otherwise; enabling us, the dealer or our other affiliates to comply with internal risk limits or otherwise manage firmwide, business unit or product risk; and/or enabling us, the dealer or our other affiliates to take directional views as to relevant markets on behalf of itself or our clients or counterparties that are inconsistent with or contrary to the views and objectives of investors in the notes.

We, the dealer and our other affiliates regularly offer a wide array of securities, financial instruments and other products into the marketplace, including existing or new products that are similar to the notes or other securities that we may issue, the underlier stocks or other securities or instruments similar to or linked to the foregoing. Investors in the notes should expect that we, the dealer and our other affiliates will offer securities, financial instruments, and other

products that may compete with the notes for liquidity or otherwise.

We, the Dealer and Our Other Affiliates Regularly Provide Services to, or Otherwise Have Business Relationships with, a Broad Client Base, Which Has Included and May Include Us and the Issuers of the Underlier Stocks

We, the dealer and our other affiliates regularly provide financial advisory, investment advisory and transactional services to a substantial and diversified client base. You should assume that we or they will, at present or in the future, provide such services or otherwise engage in transactions with, among others, us and the issuers of the underlier stocks, or transact in securities or instruments or with parties that are directly or indirectly related to these entities. These services could include making loans to or equity investments in those companies, providing financial advisory or other investment banking services, or issuing research reports. You should expect that we, the dealer and our other affiliates, in providing these services, engaging in such transactions, or acting for our own accounts, may take actions that have direct or indirect effects on the notes or other securities that we may issue, the underlier stocks or other securities or instruments similar to or linked to the foregoing, and that such actions could be adverse to the interests of investors in the notes. In addition, in connection with these activities, certain personnel within us, the dealer or our other affiliates may have access to confidential material non-public information about these parties that would not be disclosed to investors of the notes.

Past Basket Underlier Performance Is No Guide to Future Performance

The actual performance of the basket underliers over the term of the notes may bear little relation to their historical levels. Likewise, the amount payable at maturity may bear little relationship to the hypothetical return table or charts set forth

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elsewhere in this pricing supplement. We cannot predict the future performance of the basket underliers or the basket.

Trading activities undertaken by market participants, including certain investors in the notes or their affiliates, including in short positions and derivative positions, may adversely affect the levels of the basket underliers.

As the Calculation Agent, RBCCM Will Have the Authority to Make Determinations that Could Affect the Amount You Receive, if Any, at Maturity

As the calculation agent for the notes, RBCCM will have discretion in making various determinations that affect the notes, including determining the final basket level, which will be used to determine the cash settlement amount at maturity, and determining whether to postpone the determination date because of a market disruption event or because that day is not a trading day. The calculation agent also has discretion in making certain adjustments relating to a discontinuation or modification of a basket underlier, as described under “General Terms of the Notes—Unavailability of the Level of the Underlier” beginning on page PS-6 of the accompanying product prospectus supplement PB-1. The exercise of this discretion by RBCCM, which is our wholly owned subsidiary, could adversely affect the value of the notes and may create a conflict of interest between you and RBCCM. For a description of market disruption events as well as the consequences of the market disruption events, see the section entitled “General Terms of the Notes—Market

Disruption Events” beginning on page PS-7 of the accompanying product prospectus supplement PB-1. We may change the calculation agent at any time without notice, and RBCCM may resign as calculation agent at any time.

The Policies of the Applicable Basket Underlier Sponsors and Changes that Affect the Basket Underliers or the Underlier Stocks Could Affect the Amount Payable on the Notes, if Any, and Their Market Value

The policies of the basket underlier sponsors concerning the calculation of their levels, additions, deletions or substitutions of the underlier stocks and the manner in which changes affecting such underlier stocks or their issuers, such as stock dividends, reorganizations or mergers, are reflected in the levels of the basket underliers, could affect the levels of the basket underliers and, therefore, the amount payable on the notes, if any, at maturity and the market value of the notes prior to maturity. The amount payable on the notes, if any, and their market value could also be affected if a basket underlier sponsor changes these policies, for example, by changing the manner in which it calculates the level of the applicable basket underlier, or if a basket underlier sponsor discontinues or suspends calculation or publication of the level of a basket underlier, in which case it may become difficult to determine the market value of the notes. If events such as these occur, the calculation agent will determine the amount payable, if any, at maturity as described herein and in the product prospectus supplement.

The Calculation Agent Can Postpone the Determination of the Final Basket Level if a Market Disruption Event Occurs or Is Continuing

The determination of the final basket level may be postponed if the calculation agent determines that a market disruption event has occurred or is continuing on the determination date with respect to one or more of the basket underliers. If such a postponement occurs, the determination date will be postponed until the first following trading day on which the calculation agent determines that, on or subsequent to the originally scheduled determination date, each basket underlier has had at least one trading day on which no market disruption event has occurred or is continuing. In no case, however, will the determination date be postponed to a date later than the originally scheduled stated maturity date. If a market disruption event occurs or is continuing on the determination date, the stated maturity date for the notes will also be postponed.

If the determination of the level of a basket underlier for the determination date is postponed to the last possible day, but a market disruption event occurs or is continuing on that day, that day will nevertheless be the date on which the level of that basket underlier will be determined by the calculation agent. In such an event, the calculation agent will make a good faith estimate in its sole discretion of the level that would have prevailed in the absence of the market disruption event. See “Summary Information—Key Terms—Determination date,” “—Stated maturity date” and “—Consequence of a market disruption event or a non-trading day” above.

There Is No Affiliation Between Any Underlier Stock Issuers or Basket Underlier Sponsors and Us or the Dealer, and Neither We Nor the Dealer Is Responsible for Any Disclosure by Any of the Underlier Stock Issuers or Basket Underlier Sponsors

We are not affiliated with the issuers of the underlier stocks or with any sponsor of the basket underliers. As discussed herein, however, we, the dealer, and our other affiliates may currently, or from time to time in the future, engage in business with the issuers of the underlier stocks. Nevertheless, none of us, the dealer, or our respective affiliates assumes any responsibility for the accuracy or the completeness of any information about any basket underlier or any



of the underlier stocks. You, as an investor in the notes, should make your own investigation into the basket underliers and the underlier stocks. See the section below entitled “The Basket and the Basket Underliers” for additional information about the basket underliers.

Neither the basket underlier sponsors nor any issuers of the underlier stocks are involved in this offering of the notes in any way, and none of them have any obligation of any sort with respect to the notes. Thus, none of these sponsors or any of the issuers of the underlier stocks have any obligation to take your interests into consideration for any reason, including in taking any corporate actions that might affect the value of the notes.

**You Must Rely on Your Own Evaluation of the Merits of an Investment Linked to the Basket**

In the ordinary course of business, we, the dealer, our other affiliates and any additional dealers, including in acting as a research provider, investment advisor, market maker, principal investor or distributor, may express research or investment views on expected movements in the basket underliers or the underlier stocks, and may do so in the future.

These views or reports may be communicated to our clients, clients of our affiliates and clients of any additional dealers, and may be inconsistent with, or adverse to, the objectives of investors in the notes. However, these views are subject to change from time to time. Moreover, other professionals who transact business in markets relating to the basket underliers or the underlier stocks may at any time have significantly different views from those of these entities. For these reasons, you are

encouraged to derive information concerning the basket underliers or the underlier stocks from multiple sources, and you should not rely solely on views expressed by us, the dealer, our other affiliates, or any additional dealers.

**We May Sell an Additional Aggregate Amount of the Notes at a Different Original Issue Price**

At our sole option, we may decide to sell an additional aggregate amount of the notes subsequent to the trade date. The price of the notes in the subsequent sale may differ substantially (higher or lower) from the principal amount. If the Original Issue Price for Your Notes Represents a Premium to the Principal Amount, the Return on Your Notes Will Be Lower Than the Return on Notes for Which the Original Issue Price Is Equal to the Principal Amount or Represents a Discount to the Principal Amount

The cash settlement amount will not be adjusted based on the original issue price. If the original issue price for your notes differs from the principal amount, the return on your notes held to maturity will differ from, and may be substantially less than, the return on notes for which the original issue price is equal to the principal amount. If the original issue price for your notes represents a premium to the principal amount and you hold them to maturity, the return on your notes will be lower than the return on notes for which the original issue price is equal to the principal amount or represents a discount to the principal amount.

In addition, the impact of the buffer level and the cap level on the return on your investment will depend upon the price you pay for your notes relative to the principal amount. For example, if you purchase your notes at a premium to the principal amount, the cap level will only permit a lower percentage increase in your investment in the notes than would have been the case for notes purchased at the principal amount or a discount to the principal amount. Similarly, the buffer level, while still providing some protection for the return on the notes, will allow a greater percentage decrease in your investment in the notes than would have been the case for notes purchased at the principal amount or a discount to the principal amount.

**Significant Aspects of the Income Tax Treatment of an Investment in the Notes Are Uncertain**

The tax treatment of an investment in the notes is uncertain. We do not plan to request a ruling from the Internal Revenue Service or the Canada Revenue Agency regarding the tax treatment of an investment in the notes, and the Internal Revenue Service, the Canada Revenue Agency or a court may not agree with the tax treatment described in this pricing supplement.

The Internal Revenue Service has issued a notice indicating that it and the U.S. Treasury Department are actively considering whether, among other issues, a holder should be required to accrue interest over the term of an instrument such as the notes even though that holder will not receive any payments with respect to the notes until maturity or earlier sale or exchange and whether all or part of the gain a holder may recognize upon sale, exchange or maturity of an instrument such as the notes could be treated as ordinary income. The outcome of this process is uncertain and could apply on a retroactive basis.

Please read carefully the section entitled “Supplemental Discussion of U.S. Federal Income Tax Consequences” in the accompanying product prospectus supplement PB-1, the section entitled “Certain Income Tax Consequences” in the accompanying prospectus supplement and the section entitled “Tax Consequences” in the accompanying prospectus.

You should consult your tax advisor about your own tax situation.

**Non-U.S. Investors May Be Subject to Certain Additional Risks**

The notes will be denominated in U.S. dollars. If you are a non-U.S. investor who purchases the notes with a currency other than U.S. dollars, changes in rates of exchange may have an adverse effect on the value, price or returns of your investment.

This pricing supplement contains a general description of certain U.S. tax considerations relating to the notes. If you are a non-U.S. investor, you should consult your tax advisors as to the consequences, under the tax laws of the country where you are resident for tax purposes, of acquiring, holding and disposing of the notes and receiving the payments that might be due under the notes.

For a discussion of certain Canadian federal income tax consequences of investing in the notes, please see the section entitled “Tax Consequences — Canadian Taxation” in the accompanying prospectus. If you are not a Non-resident Holder (as that term is defined in “Tax Consequences — Canadian Taxation” in the accompanying prospectus) or if you acquire the notes in the secondary market, you should consult your tax advisor as to the consequences of acquiring, holding and disposing of the notes and receiving the payments that might be due under the notes.

**Certain Considerations for Insurance Companies and Employee Benefit Plans**

Any insurance company or fiduciary of a pension plan or other employee benefit plan that is subject to the prohibited transaction rules of the Employee Retirement Income Security Act of 1974, as amended (“ERISA”), or the Internal Revenue Code of 1986, as amended (the “Internal Revenue Code”), including an IRA or a Keogh plan (or a governmental plan to which similar prohibitions apply), and that is considering purchasing the notes with the assets of the insurance company or the assets of such a plan, should consult with its counsel regarding whether the purchase or holding of the notes could become a “prohibited transaction” under ERISA, the Internal Revenue Code or any substantially similar prohibition in light of the representations a purchaser or holder in any of the above categories is deemed to make by purchasing and holding the notes. This is discussed in more detail under “Employee Retirement Income Security Act” in the accompanying product prospectus supplement PB-1.

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## THE BASKET AND THE BASKET UNDERLIERS

### The Basket

The basket is comprised of five basket underliers with the following initial weights within the basket: the EURO STOXX 50<sup>®</sup> Index (36.00% weighting), the TOPIX<sup>®</sup> (27.00% weighting), the FTSE<sup>®</sup> 100 Index (20.00% weighting), the Swiss Market Index (9.00% weighting) and the S&P<sup>®</sup>/ASX 200 Index (8.00% weighting).

All information contained in this pricing supplement regarding the basket underliers including, without limitation, their make-up, method of calculation and changes in their components and their historical closing values, is derived from publicly available information prepared by the basket underlier sponsors. Such information reflects the policies of, and is subject to change by, the basket underlier sponsors. The basket underlier sponsors own the copyrights and all rights to the basket underliers. The basket underlier sponsors are under no obligation to continue to publish, and may discontinue publication of, the basket underliers. The consequences of the basket underlier sponsors discontinuing or modifying the basket underliers are described in the section entitled “Description of the Notes—Unavailability of the Level of the Underlier” on page PS-6 of the accompanying product prospectus supplement PB-1.

The basket underliers are calculated and maintained by the basket underlier sponsors. Neither we nor RBCCM has participated in the preparation of such documents or made any due diligence inquiry with respect to the basket underliers or basket underlier sponsors in connection with the offering of the notes. In connection with the offering of the notes, neither we nor RBCCM makes any representation that such publicly available information regarding the basket underliers or the basket underlier sponsors is accurate or complete. Furthermore, we cannot give any assurance that all events occurring prior to the offering of the notes (including events that would affect the accuracy or completeness of the publicly available information described in this pricing supplement) that would affect the level of the basket or have been publicly disclosed. Subsequent disclosure of any such events could affect the value received at maturity and therefore the market value of the notes.

As to each basket underlier, sector designations are determined by the applicable basket underlier sponsor using criteria it has selected or developed. Index sponsors may use very different standards for determining sector designations. In addition, many companies operate in a number of sectors, but are listed in only one sector and the basis on which that sector is selected may also differ. As a result, sector comparisons between indices with different index sponsors may reflect differences in methodology as well as actual differences in the sector composition of the indices.

We, the dealer or our respective affiliates may presently or from time to time engage in business with one or more of the issuers of the underlier stocks without regard to your interests, including extending loans to or entering into loans with, or making equity investments in, one or more of such issuers or providing advisory services to one or more of such issuers, such as merger and acquisition advisory services. In the course of business, we, the dealer or our respective affiliates may acquire non-public information about one or more of such issuers and none of us, the dealer or our respective affiliates undertake to disclose any such information to you. In addition, we, the dealer or our respective affiliates from time to time have published and in the future may publish research reports with respect to such issuers. These research reports may or may not recommend that investors buy or hold the securities of such issuers. As a prospective purchaser of the notes, you should undertake an independent investigation of the basket underliers or of the issuers of the underlier stocks to the extent required, in your judgment, to allow you to make an informed decision with respect to an investment in the notes.

We are not incorporating by reference the websites of the basket underlier sponsors or any material it includes into this pricing supplement. In this pricing supplement, unless the context requires otherwise, references to the basket underliers will include any successor underliers to the basket underliers and references to the basket underlier sponsors will include any successors thereto.

### EURO STOXX 50<sup>®</sup> Index

The EURO STOXX 50<sup>®</sup> Index (Bloomberg ticker “SX5E Index”) was created by STOXX, which is owned by Deutsche Börse AG. Publication of the underlier began in February 1998, based on an initial Index level of 1,000 at December 31, 1991.

#### Composition and Maintenance

The EURO STOXX 50<sup>®</sup> Index is composed of 50 component stocks of market sector leaders from within the 19 EURO STOXX<sup>®</sup> Supersector indices, which represent the Eurozone portion of the STOXX Europe 600<sup>®</sup> Supersector indices.

Information regarding the EURO STOXX 50<sup>®</sup> Index (including information regarding the countries represented by the securities included in this Basket Underlier and their respective weightings, the industries represented by the securities included in this Basket Underlier and their respective weightings and the top ten components of this Basket Underlier and their respective weightings) may be found on STOXX’s website. That information is updated from time to time on that website. Please note that information included in that website is not included or incorporated by reference in this pricing supplement.

The composition of the EURO STOXX 50<sup>®</sup> Index is reviewed annually, based on the closing stock data on the last trading day in August. The component stocks are announced on the first trading day in September. Changes to the component stocks are implemented on the third Friday in September and are effective the following trading day. Changes in the composition of the EURO STOXX 50<sup>®</sup> Index are made to ensure that the EURO STOXX 50<sup>®</sup> Index includes the 50 market sector leaders from within the EURO STOXX 50<sup>®</sup> Index.

The free float factors for each component stock used to calculate the EURO STOXX 50<sup>®</sup> Index, as described below, are reviewed, calculated, and implemented on a quarterly basis and are fixed until the next quarterly review.

The EURO STOXX 50<sup>®</sup> Index is also reviewed on an ongoing basis. Corporate actions (including initial public offerings, mergers and takeovers, spin-offs, delistings, and bankruptcy) that affect the EURO STOXX 50<sup>®</sup> Index composition are immediately reviewed. Any changes are announced, implemented, and effective in line with the type of corporate action and the magnitude of the effect.

#### Calculation of the EURO STOXX 50<sup>®</sup> Index

The EURO STOXX 50<sup>®</sup> Index is calculated with the “Laspeyres formula,” which measures the aggregate price changes in the component stocks against a fixed base quantity weight. The formula for calculating the EURO STOXX 50<sup>®</sup> Index value can be expressed as follows:

$$\text{EURO STOXX 50}^{\text{®}} \text{ Index} = \frac{\text{Free float market capitalization of the EURO STOXX 50}^{\text{®}} \text{ Index}}{\text{Adjusted base date market capitalization of the EURO STOXX 50}^{\text{®}} \text{ Index}} \times 1,000$$

The “free float market capitalization of the EURO STOXX 50<sup>®</sup> Index” is equal to the sum of the products of the closing price, market capitalization, and free float factor for each component stock as of the time the EURO STOXX 50<sup>®</sup> Index is being calculated.

The EURO STOXX 50<sup>®</sup> Index is also subject to a divisor, which is adjusted to maintain the continuity of the EURO STOXX 50<sup>®</sup> Index values across changes due to corporate actions, such as the deletion and addition of stocks, the substitution of stocks, stock dividends, and stock splits.

#### License Agreement

We have entered into a non-exclusive license agreement with STOXX providing for the license to us and certain of our affiliated or subsidiary companies, in exchange for a fee, of the right to use indices owned and published by STOXX (including the EURO STOXX 50<sup>®</sup> Index) in connection with certain securities, including the notes offered hereby.

The license agreement between us and STOXX requires that the following language be stated in this document: STOXX has no relationship to us, other than the licensing of the EURO STOXX 50<sup>®</sup> Index and the related trademarks for use in connection with the notes. STOXX does not:

- sponsor, endorse, sell, or promote the notes;
- recommend that any person invest in the notes offered hereby or any other securities;
- have any responsibility or liability for or make any decisions about the timing, amount, or pricing of the notes;
- have any responsibility or liability for the administration, management, or marketing of the notes; or
- consider the needs of the notes or the holders of the notes in determining, composing, or calculating the EURO STOXX 50<sup>®</sup> Index, or have any obligation to do so.

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

- STOXX does not make any warranty, express or implied, and disclaims any and all warranty concerning: the results to be obtained by the notes, the holders of the notes or any other person in connection with the use of the EURO STOXX 50<sup>®</sup> Index and the data included in the EURO STOXX 50<sup>®</sup> Index;
  - the accuracy or completeness of the EURO STOXX 50<sup>®</sup> Index and its data;
  - the merchantability and the fitness for a particular purpose or use of the EURO STOXX 50<sup>®</sup> Index and its data;
- STOXX will have no liability for any errors, omissions, or interruptions in the EURO STOXX 50<sup>®</sup> Index or its data;  
and

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Under no circumstances will STOXX be liable for any lost profits or indirect, punitive, special, or consequential damages or losses, even if STOXX knows that they might occur.

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

#### The TOPIX®

The TOPIX® (Bloomberg ticker “TPX”), also known as the Tokyo Stock Price Index, is a capitalization weighted index of all the domestic common stocks listed on the First Section of the TSE. Domestic stocks admitted to the TSE are assigned either to the TSE First Section Index, the TSE Second Section Index or the TSE Mothers Index. Stocks listed in the First Section, which number approximately 1,750, are among the most actively traded stocks on the TSE. The TOPIX® is supplemented by the sub-basket components of the 33 industry sectors and was developed with a base index value of 100 as of January 4, 1968. The TOPIX® is calculated and published by TSE. Information regarding the TOPIX® (including information regarding the industries represented by the securities included in this Basket Underlier and their respective weightings and the securities included in this Basket Underlier and their respective weightings) may be found on TSE’s website. That information is updated from time to time on that website. Please note that information included in that website is not included or incorporated by reference in this pricing supplement.

Composition and Maintenance. The TOPIX® is composed of all domestic common stocks listed on the TSE First Section, excluding temporary issues and preferred stocks. Companies scheduled to be delisted or newly listed companies that are still in the waiting period are excluded from the TOPIX®. The TOPIX® has no constituent review.

The number of constituents will change according to new listings and delistings.

#### Index Calculation

The TOPIX® is a free-float adjusted market capitalization-weighted index, which reflects movements in the market capitalization from a base market value of 100 set on the base date of January 4, 1968. The TSE calculates the TOPIX® by multiplying the base point of 100 by the figure obtained from dividing the current free float adjusted market value by the base market value. The resulting value is not expressed in Japanese yen, but presented in terms of points rounded to the nearest one hundredth. The formula for calculating the index value can be expressed as follows:

$$\text{Index value} = \text{Base point of 100} \times \frac{\text{Current free float adjusted market value}}{\text{Base market value}}$$

The current free float adjusted market value is the sum of the product of the price and the number of free float adjusted shares for index calculation of each component stock.

The number of free float adjusted shares for index calculation is the number of listed shares multiplied by free-float weight. The number of listed shares for index calculation is determined by the TSE. The number of listed shares for index calculation normally coincides with that of listed shares. However, in some cases these numbers differ. For instance, in the case of a stock split, while the number of listed shares increases at the additional listing date which comes after such stock split becomes effective, the number of listed shares for index calculation increases at the ex-rights date.

Free-float weight is a weight of listed shares deemed to be available for trading in the market and is determined and calculated by the TSE for each listed company for index calculation. The free-float weight of one company may be different from that of any other company. Free-float weight is reviewed once a year in order to reflect the latest distribution of share ownership. The timing of the yearly free-float weight review is different according to the settlement terms of listed companies. In addition to the yearly review, extraordinary reviews are conducted in the following cases: allocation of new shares to a third party, conversion of preferred shares or exercise of subscription warrants, company spin-off, merger, acquisition, take-over bid, and other events that the TSE judges as appropriate reasons to review.

In the event of any increase or decrease in the current free-float adjusted market value due to reasons other than fluctuations in the TSE, such as public offerings or changes in the number of constituents in the TSE First Section, necessary adjustments are made by the TSE to the base market value in order to maintain the continuity of the TOPIX®. The TSE makes adjustments as follows:

Event	Implementation of Adjustment (Before Markets Open)	Price Used for Adjustments
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Addition	Company to be listed on the TSE First Section by initial public offering or via another stock exchange	Last business day of the next month of listing	Price on the adjustment date
Addition	New listing of a newly formed company resulting from a corporate consolidation (such as a merger or acquisition) that results in a TOPIX or ex-TOPIX constituent being delisted and the new company being immediately listed on the TSE First Section	New listing date or one business day after the listing if the business day before is a holiday	Base price used to decide the daily price limit
Addition	Transfer to the TSE First Section from the TSE Second Section, the TSE Mothers Index, or the JASDAQ Securities Exchange	Last business day of the next month of transfer (a free float weight of 0.00 is used from the transfer date to the adjustment date and thus the	Price on the adjustment date

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		number of shares to be used for calculation will be 0.00 during such period)	
Deletion	Company to be de-listed due to a stock-swap and the like while newly established companies promptly list their shares	Initial listing day of newly established company (normally it is three business days after de-listing)	Price on business day before the de-listing date (the price used for adjustments is frozen after close of trading one business day before delisting, to the exclusion date for index calculation purpose)
Deletion	Company to be de-listed due to other reason than described above (merger or stock-swap, with other surviving company included in the TOPIX®)	Date of delisting	Price on business day before the adjustment date
Deletion	Transfer to the TSE Second Section from the TSE First Section	Date of transfer	Price on business day before the adjustment date
Deletion	Designation of securities to be delisted	Four business days after the designation of securities to be delisted (one business day after designation if the day of designation is a holiday)	Price on business day before the adjustment date

The adjusted base market value will equal the old base market value multiplied by the quotient of the free-float-adjusted market value on the business day before the adjustment date plus or minus, as applicable, the adjustment amount divided by the free-float-adjusted market value on the business day before the adjustment date.

The adjustment amount for the foregoing calculation will be an amount equal to the product of the change (the absolute value of the increase or decrease) in the number of shares times the price of the shares.

Changes in the number of shares and the price of the shares for adjustments to the base market value will be made as described in the table below.

Change in the Number of Constituent Shares

Event	Implementation of Adjustment (Before Markets Open)	Price used for adjustment
Change of free float weight	Date of change	Stock price at the end of trading on the business day before adjustment date
Public offering	Additional listing date (day after payment date). If listing date falls on a holiday, the next business day	Stock price at the end of trading on the business day before adjustment date
Allocation of new shares to a third party	Five business days after additional listing date (two business days after payment date)	Stock price at the end of trading on the business day before adjustment date
Issues to shareholders with payment	Ex-rights date	Stock price at the end of trading on the business day before adjustment date
Exercise of subscription warrants	Last business day of the month following exercise	Stock price at the end of trading on the business day before adjustment date
Conversion of preferred shares	Last business day of the month following conversion	Stock price at the end of trading on the business day before adjustment date

Cancellation of treasury stock	Last business day of the month following cancellation	Stock price at the end of trading on the business day before adjustment date
Merger or stock swap between a non-surviving constituent and another constituent	Delisting date of the non-surviving constituent	Stock price at the end of trading on the business day before adjustment date

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Merger or stock-swap other than that described above	Listing change date (effective date)	Stock price at the end of trading on the business day before adjustment date
Offering for sale of shares held by the Japanese government	Listing change date	Stock price at the end of trading on the business day before adjustment date
Company spin-off in which the number of shares of the succeeding company increases	Listing change date	Stock price at the end of trading on the business day before adjustment date
Other adjustments	Last business day of the month in which the information appears in “Sho-ho” (TSE Notice) or the last business day of the following month	Stock price at the end of trading on the business day before adjustment date

No adjustments will be made to the base market value in the case of a stock split or reverse stock split.

Retroactive adjustments will not be made to revise the figures of the TOPIX® that have already been calculated and disseminated, even if issuing companies file amendments on previously released information.

If trading in a certain constituent is suspended, the TSE regards it as having no change in its share price for purposes of calculating the TOPIX®. In the event of unforeseen circumstances, or if the TSE decides it is impossible to use its existing methods to calculate the TOPIX®, the TSE may use an alternate method of index calculation as it deems valid.

#### License Agreement

We expect to enter into a license agreement with TSE, in exchange for a fee, whereby we are permitted to use the TOPIX® in connection with the offer and sale of the notes. We are not affiliated with TSE; the only relationship between TSE and us is the licensing of the use of the TOPIX® and trademarks relating to the TOPIX®.

The notes are not sponsored, endorsed or promoted by TSE. No inference should be drawn from the information contained in this pricing supplement that TSE makes any representation or warranty, implied or express, to us, any holder of the notes or any member of the public regarding the advisability of investing in securities generally or in the notes in particular or the ability of the TOPIX to track general stock market performance.

TSE determines, composes and calculates the TOPIX® without regard to the notes. TSE has no obligation to take into account your interest, or that of anyone else having an interest, in the notes in determining, composing or calculating the TOPIX®. TSE is not responsible for and has not participated in the determination of the terms, prices or amount of the notes and will not be responsible for or participate in any determination or calculation regarding the principal amount of the notes payable at the stated maturity date. TSE has no obligation or liability in connection with the administration, marketing or trading of the notes.

Neither us nor any of our affiliates accepts any responsibility for the calculation, maintenance or publication of the TOPIX® or any successor index. TSE disclaims all responsibility for any errors or omissions in the calculation and dissemination of the TOPIX® or the manner in which the TOPIX® is applied in determining the closing level or any amount payable upon maturity of the notes. The level of the TOPIX® and the TOPIX trademarks are subject to the proprietary rights owned by the TSE and the TSE owns all rights and know-how relating to the TOPIX® such as calculation, publication and use of the level of the TOPIX® and relating to the TOPIX trademarks. The TSE shall reserve the rights to change the methods of calculation or publication, to cease the calculation or publication of the level of the TOPIX® or to change the TOPIX trademarks or cease the use thereof. The TSE makes no warranty or representation whatsoever, either as to the results stemmed from the use of the level of the TOPIX® and the TOPIX trademarks or as to the figure at which the level of the TOPIX® stands on any particular day. The TSE gives no assurance regarding accuracy or completeness of the level of the TOPIX® and data contained therein. Further, the TSE shall not be liable for the miscalculation, incorrect publication, delayed or interrupted publication of the level of the TOPIX®. No notes are in any way sponsored, endorsed or promoted by the TSE. The TSE shall not bear any obligation to give an explanation of the notes or an advice on investments to any purchaser of the notes or to the

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The FTSE<sup>®</sup> 100 Index

The FTSE<sup>®</sup> 100 Index (Bloomberg ticker “UKX Index”) is a market capitalization-weighted index of the 100 most highly capitalized U.K.-listed blue chip companies traded on the London Stock Exchange. The FTSE<sup>®</sup> 100 Index was developed with a base level of 1,000 as of December 30, 1983. It is calculated, published and disseminated by FTSE Russell (“FTSE”), a company owned by the London Stock Exchange Group Plc (the “Exchange”). FTSE is under no obligation to continue to publish the FTSE<sup>®</sup> 100 Index and may discontinue publication of the FTSE<sup>®</sup> 100 Index at any time.

The FTSE<sup>®</sup> 100 is a market capitalization-weighted index of the 100 most highly capitalized U.K.-listed blue chip companies traded on the London Stock Exchange. FTSE divides the 100 companies included in the FTSE<sup>®</sup> 100 Index into 19 sectors: Oil & Gas, Chemicals, Basic Resources, Construction & Materials, Industrial Goods & Services, Automobiles & Parts, Food & Beverage, Personal & Household Goods, Health Care, Retail, Media, Travel & Leisure, Telecommunications, Utilities, Banks, Insurance, Real Estate, Financial Services and Technology.

Information regarding the FTSE<sup>®</sup> 100 Index (including information regarding the industries represented by the securities included in this Basket Underlier and their respective weightings and the top five components of this Basket Underlier and their respective weightings) may be found on FTSE’s website. That information is updated from time to time on that

website. Please note that information included in that website is not included or incorporated by reference in this pricing supplement.

#### FTSE<sup>®</sup> 100 Index Composition and Selection Criteria

The FTSE<sup>®</sup> 100 Index consists of the 100 largest U.K.-listed blue chip companies, based on full market capitalization, that pass screening tests for price and liquidity. The FTSE<sup>®</sup> 100 Index is reviewed on a quarterly basis in March, June, September and December based on data from the close of business on the Tuesday before the first Friday of the review month. The FTSE Europe, Middle East & Africa Regional Advisory Committee (the “Committee”), meets quarterly to approve the constituents of the index. These meetings are held on the Wednesday before the first Friday in March, June, September and December. Any constituent changes are implemented after the close of business on the third Friday of the review month (i.e., effective Monday), following the expiration of the London International Financial Futures and Options Exchange futures and options contracts.

#### Eligibility Standards

Only “premium listed” equity shares, as defined by the Financial Conduct Authority in its Listing Rules Sourcebook, are eligible for inclusion in the FTSE<sup>®</sup> 100 Index. Eligible stocks must pass price and liquidity screens before being included in the index. Additionally, a stock must have a free float (as described below) of greater than 5%.

**Price Screen** — With regard to the price screen, the Committee must be satisfied that an accurate and reliable price exists for purposes of determining the market value of a company. To be eligible for inclusion in the FTSE<sup>®</sup> 100 Index, a stock must have a full listing on the London Stock Exchange with a Sterling-denominated price on SETS (SETS is the London Stock Exchange’s trading service for UK blue chip securities).

**Liquidity Screen** — With regard to liquidity, each eligible stock is tested for liquidity annually in June by calculating its median daily trading per month. When calculating the median of daily trades per month of any security, a minimum of five trading days in each month must exist, otherwise the month is excluded from the test. Liquidity is tested from the first business day in May of the previous year to the last business day of April. The median trade is calculated by ranking each daily trade total and selecting the middle-ranking day. Any period of suspension is not included in the test. The liquidity test is applied on a pro-rata basis where the testing period is less than 12 months. A stock not presently included in the FTSE<sup>®</sup> 100 Index that does not turnover at least 0.025% of its shares in issue (after application of any investability weightings) based on its median daily trade per month in at least ten of the 12 months prior to the annual index review in June will not be eligible for inclusion until the next annual review. An existing constituent failing to trade at least 0.015% of its shares in issue (after the application of any investability weightings) based on its median daily trade per month for at least eight of the 12 months prior to the annual index review will be removed from the FTSE<sup>®</sup> 100 Index and will not be eligible for inclusion until the next annual review. New issues will become eligible for inclusion in the index at the quarterly review following their issuance provided that they have a minimum trading record of at least 20 trading days prior to the review date and that they have turned over at least 0.025% of their shares in issue (after the application of any investability weightings) based on their median daily trade per month since listing.

In addition, in order to be included in the FTSE<sup>®</sup> 100 Index, a company is required to have greater than 5% of its voting rights (aggregated across all of its equity securities, including, where identifiable, those that are not listed or trading) in the hands of unrestricted shareholders. Current constituents of this index that do not meet this requirement will have until the September 2022 review to meet the requirement; otherwise they will be removed from the FTSE<sup>®</sup> 100 Index.

**Market Capitalization Ranking** — Eligible stocks that pass the price and liquidity screens are ranked by the Committee according to their market capitalization before the application of any adjustments based on the extent to which the shares are publicly traded. Only the quoted equity capital of a constituent company will be included in the calculation of its market capitalization. Where a company has two or more classes of equity, secondary lines will be included in the calculation of the market capitalization of the company only if those lines are significant and liquid. The Committee will add a stock to the FTSE<sup>®</sup> 100 Index at the quarterly review if it has risen to 90th place or above on the full market capitalization rankings and will delete a stock at the quarterly review if it has fallen to 111th place or below on these rankings. Market capitalization rankings are calculated using data as of the close of business on the day before the review.

**100 Constituent Limitation** — The FTSE<sup>®</sup> 100 Index always contains 100 constituents. If a greater number of companies qualify to be inserted in the index than qualify to be removed, the lowest ranking constituents of the index will be

removed so that the total number of stocks remains at 100 following inclusion of those that qualify to be inserted.

Likewise, if a greater number of companies qualify to be removed than to be inserted at the quarterly review, securities of the highest ranking companies that are then not included in the FTSE® 100 Index will be inserted to match the number of companies being removed, in order to maintain the total at 100.

#### Index Calculation

The FTSE® 100 Index is a market capitalization weighted index. This means that the price movement of a larger company (that is, one representing a larger percentage of the index) will have a greater effect on the level of the index than will the price movement of a smaller company (that is, one representing a smaller percentage of the index). The value of the FTSE® 100 Index is represented by a fraction, (a) the numerator of which is the sum of the product of (i) the price of each component stock, (ii) the number of shares issued for each such component and (iii) a free float factor for each such component (described more fully below), and (b) the denominator of which is a divisor. The divisor represents the total issued share capital of the index on the base date; the divisor may be adjusted as necessary to allow for changes in issued share capital of individual securities without distorting the index.

As noted above, a free float factor is applied to each index component. By employing this approach, FTSE uses the investable market capitalization, not the total market capitalization, of each constituent to determine the value of the FTSE® 100 Index. Investable market capitalization depends on free float. The following are excluded from free float: shares directly owned by state, regional, municipal and local governments (excluding shares held by independently managed pension schemes for governments); shares held by sovereign wealth funds where each holding is 10% or greater of the total number of shares in issue (if the holding subsequently decreases below 10%, the shares will be excluded from free float until the holding falls below 7%); shares held by directors, senior executives and managers of the

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company, and by their family and direct relations, and by companies with which they are affiliated; shares held within employee share plans; shares held by public companies or by non-listed subsidiaries of public companies; shares held by founders, promoters, former directors, founding venture capital and private equity firms, private companies and individuals (including employees) where the holding is 10% or greater of the total number of shares in issue (if the holding subsequently decreases below 10%, the shares will be excluded from free float until the holding falls below 7%); all shares where the holder is subject to a lock-in clause (for the duration of that clause, after which free float changes resulting from the expiration of a lock-in clause will be implemented at the next quarterly review subsequent to there being a minimum of 20 business days between the expiration date of such lock-in clause and the index review date); shares held for publicly announced strategic reasons, including shares held by several holders acting in concert; and shares that are subject to ongoing contractual agreements (such as swaps) where they would ordinarily be treated as restricted.

The FTSE® 100 Index is recalculated whenever errors or distortions occur that are deemed to be significant. Users of the FTSE® 100 Index are notified through appropriate media.

#### Index Maintenance

The FTSE® 100 Index is reviewed quarterly for changes in free float. A stock's free float is also reviewed and adjusted if necessary following certain corporate events. Following a takeover or merger involving one or more index constituents, the free float restrictions will be based on restricted holdings in the successor company and will be implemented when the offer has completed (or lapsed) unless it directly reflects a corporate action independent of and not conditional on the takeover or merger completing or lapsing. If the corporate event includes another corporate action that affects the index, a change in free float is implemented at the same time as the corporate action. If there is no corporate action, the change in free float will be applied at the next quarterly review. Following the application of an initial free float restriction, a stock's free float will only be changed if its rounded free float moves more than three percentage points above or below the existing rounded free float. Companies with a free float of above 99% and of 15% or below will not be subject to the three percentage points threshold.

At each quarterly review, the Committee publishes a Reserve List containing the six highest ranking non-constituents of the FTSE® 100 Index. The Reserve List will be used in the event that one or more constituents are deleted from the index during the period up to the next quarterly review. If a merger or takeover results in one index constituent being absorbed by another constituent, the resulting company will remain a constituent and a vacancy will be created. This vacancy will be filled by selecting the highest ranking security in the Reserve List as at the close of the FTSE® 100 Index calculation two days prior to the deletion and related index adjustment. If an index constituent is taken over by a non-constituent company, the original constituent will be removed and replaced by the highest ranking non-constituent on the Reserve List. Any eligible company resulting from the takeover will be eligible to become the replacement company if it is ranked higher than any other company on the Reserve List. If a constituent company is split to form two or more companies, then the resulting companies will be eligible for inclusion as FTSE® 100 Index constituents, based on their respective full market capitalizations (before the application of any investability weightings), provided that they qualify in all other respects. Any eligible company resulting from a split that has no available market price after 20 business days will be removed. If a split results in the inclusion of an ineligible non-equity security, such security will remain in the FTSE® 100 Index for two trading days and then be removed. If a constituent is delisted or ceases to have a firm quotation, it will be removed from the list of constituents and be replaced by the highest ranking eligible company from the Reserve List as at the close of the index calculation two days prior to the deletion.

#### Capitalization Adjustments

A premium listed secondary line of a company will be considered for index inclusion if its total market capitalization before the application of any adjustments based on the extent to which the shares are publicly traded, is greater than 25% of the total market capitalization of the company's principal line and the secondary line is eligible, in its own right. Should the total market capitalization of a secondary line fall below 20% of the total market capitalization of the company's principal line at an annual review, the secondary line will be deleted from the FTSE® 100 Index unless its total market capitalization remains above the qualification level for continued inclusion as a constituent of the FTSE® 100 Index at that review. Where a company has partly paid shares, these shares, together with the outstanding call(s), are both included in the FTSE® 100 Index. Warrants to purchase ordinary shares and convertible securities are not included in the FTSE® 100 Index until they are exercised or converted.

**Share Weighting Changes** — For the purposes of computing the FTSE<sup>®</sup>100 Index, the number of shares in issue for each constituent security is expressed to the nearest share and, to prevent a large number of insignificant weighting changes, the number of shares in issue for each constituent security is amended only when the total shares in issue held within the index system changes by more than 1% on a cumulative basis. Changes will be made quarterly after the close of business on the third Friday of March, June, September and December. The data for these changes will be taken from the close of business on the third Wednesday of the month prior to the review month.

If a corporate action is applied to a constituent which involves a change in the number of shares in issue, the change in shares will be applied simultaneously with the corporate action. If accumulated changes in the number of shares in issue add up to 10% or more or when an accumulated share change represents \$2 billion of a company's total market capitalization, they are implemented between quarters. If an adjustment is made, it will be applied for the first time at the next review in March of the following year. All adjustments are made before the start of the index calculation on the day concerned, unless market conditions prevent this.

**Shares in Issue Increase** — When a company increases the number of shares it has in issue, the market capitalization of that company increases and the total market capitalization will rise accordingly. The index divisor is adjusted to maintain a constant index value.

**Weighting Amendments** — The market capitalization of a company is adjusted to take account of various corporate actions. To prevent the value of the FTSE<sup>®</sup> 100 Index from changing due to such an event, all corporate actions which affect the market capitalization of the FTSE<sup>®</sup> 100 Index require an offsetting divisor adjustment. By adjusting the divisor, the value of the FTSE<sup>®</sup> 100 Index remains constant before and after the event. Below is a summary of the more frequent corporate actions and their resulting adjustment.



Type of Corporate Action	Adjustment	Adjustment to Divisor
Issue of new shares	Share weighting increased	Yes
Share repurchase	Share weighting decreased	Yes
Bonus issued or stock split	Share weighting multiplied by four. Share price divided by four	No

Rights Issues — A rights issue is where a company raises new capital by offering shareholders additional shares at a set ratio with a discount to the market price. The rights become attached to the shares on a set date—the ex-date. On this date, the price of the company’s underlying shares will fall by the value of the rights. The effect of the rights issue is to increase the market capitalization of the company by the value of the additional shares created by the rights issue less the value of the fall in the share price. The share weighting of the company and index divisor are also adjusted to prevent the index falling in line with the reduction in the share price on the ex-date.

In the event that the market price is equal to or below the rights offer price at the close of business immediately before trading ex-dividend, no adjustments will be made. In this circumstance, any resulting new shares will only be added to the index weighting once the take-up proportion is known and together with any associated change to the company’s free float. If the rights issue is highly dilutive and the ratio is greater than ten to one, FTSE will include the new shares on a separate temporary line to reflect the market value of the right (together with a temporary line fixed at the value of the outstanding rights subscription price) until the end of the subscription period, at which point the temporary lines will be deleted and the new shares will be merged into the existing share line. In the event the rights issue involves non-equity and the value of the right cannot be determined, there will be no adjustment to the parent stock on the ex-date. The rights line will be included in the index at a value of zero on the ex-date (with no inclusion of the cash call value). If the rights line trades, it will be deleted at the market price after two days. If it does not trade, it will be deleted at a value of zero.

#### Market Disruption

If there is a system problem or situation in the market that is judged by FTSE to affect the quality of the constituent prices at any time when an index is being calculated, the index will be declared indicative (e.g. normally where a “fast market” exists in the equity market). The message “IND” will be displayed against the index value calculated by FTSE. The Committee must be satisfied that an accurate and reliable price for the purposes of determining the market value of a company exists. The Committee may exclude a security from the FTSE® 100 Index should it consider that an “accurate and reliable” price is not available.

If any event leads to an error in the index value of the FTSE® 100 Index that is greater than three basis points at the local country index level, then the FTSE® 100 Index will generally be recalculated, subject to discovery, within one month of the event. Where an alternative approach is available, FTSE may, at its sole discretion, choose not to recalculate.

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#### Swiss Market Index

The Swiss Market Index (Bloomberg ticker “SMI Index”):

· was first launched with a base level of 1,500 as of June 30, 1988; and  
is sponsored, calculated, published and disseminated by SIX Group Ltd., certain of its subsidiaries, and the Management Committee of the SIX Swiss Exchange (the “SIX Exchange”).

The Swiss Market Index is a price return float-adjusted market capitalization-weighted index of the 20 largest stocks traded on the Swiss Stock Exchange. The Management Committee of SIX Swiss Exchange is supported by an Index Commission (advisory board) in all index-related matters, notably in connection with changes to the index rules and adjustments, additions and exclusions outside of the established review and acceptance period. The Index Commission

meets at least twice annually.

Information regarding the Swiss Market Index (including information regarding the top ten securities included in this Basket Underlier and their respective weights and the industries represented by the securities included in this Basket Underlier and their respective weightings) may be found on SIX Exchange's website. That information is updated from time to time on that website. Please note that information included in that website is not included or incorporated by reference in this pricing supplement.

#### Swiss Market Index Composition and Selection Criteria

The Swiss Market Index is comprised of the 20 highest ranked stocks traded on the Swiss Stock Exchange that have a free float of 20% or more and that are not investment companies. The equity universe is largely Swiss domestic companies; however, in some cases, foreign issuers with a primary listing on the Swiss Stock Exchange or investment companies that do not hold any shares of any other eligible company and that have a primary listing on the Swiss Stock Exchange may be included.

The ranking of each security is determined by a combination of the following criteria: average free-float market capitalization (compared to the capitalization of the entire Swiss Stock Exchange index family), and

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·cumulative on order book turnover (compared to the total turnover of the Swiss Stock Exchange index family). Each of these two factors is assigned a 50% weighting in ranking the stocks eligible for the Swiss Market Index. The Swiss Market Index is reconstituted annually after prior notice of at least two months on the third Friday in September after the close of trading.

The reconstitution is based on data from the previous July 1 through June 30. Provisional interim selection (ranking) lists are also published following the end of the third, fourth and first financial quarters. In order to reduce turnover, an index constituent will not be replaced unless it is ranked below 23 or, if it is ranked 21 or 22, if another share ranks 18 or higher. If a company has primary listings on several exchanges and less than 50% of that company's total turnover is generated on the Swiss Stock Exchange, it will not be included in the Swiss Market Index unless it ranks at least 18 or better on the selection list on the basis of its turnover alone (i.e., without considering its free float).

#### Maintenance of the Swiss Market Index

Constituent Changes. In the case of major market changes as a result of capital events such as mergers or new listings, the Management Committee of SIX Swiss Exchange can decide at the request of the Index Commission that a security should be admitted to the Swiss Market Index outside the annual review period as long as it clearly fulfills the criteria for inclusion. For the same reasons, a security can also be excluded if the requirements for admission to the Swiss Market Index are no longer fulfilled. As a general rule, extraordinary acceptances into the Swiss Market Index take place after a three-month period on a quarterly basis after the close of trading on the third Friday of March, June, September and December (for example, a security listed on or before the fifth trading day prior to the end of November cannot be included until the following March). An announced insolvency is deemed to be an extraordinary event and the security will be removed from the Swiss Market Index with five trading days' prior notice if the circumstances permit such notice.

Number of Shares and Free Float. The securities included in the Swiss Market Index are weighted according to their free float. This means that shares deemed to be in firm hands are subtracted from the total market capitalization of that company. The free float is calculated on the basis of outstanding shares. Issued and outstanding equity capital is, as a rule, the total amount of equity capital that has been fully subscribed and wholly or partially paid in and documented in the Commercial Register. Not counting as issued and outstanding equity capital are the approved capital and the conditional capital of a company. The free float is calculated on the basis of listed shares only. If a company offers several different categories of listed participation rights, each is treated separately for purposes of index calculation. Shares held deemed to be in firm hands are shareholdings that have been acquired by one person or a group of persons in companies domiciled in Switzerland and which, upon exceeding 5%, have been reported to the SIX Exchange. Shares of persons and groups of persons who are subject to a shareholder agreement which is binding for more than 5% of the listed shares or who, according to publicly known facts, have a long-term interest in a company, are also deemed to be in firm hands.

For the calculation of the number of shares in firm hands, the SIX Exchange may also use other sources than the reports submitted to it. In particular, the SIX Exchange may use data gained from issuer surveys that it conducts itself. In general, shares held by custodian nominees, trustee companies, investment funds, pension funds and investment companies are deemed free-floating regardless whether a report has been made to the SIX Exchange. The SIX Exchange classifies at its own discretion persons and groups of persons who, because of their area of activity or the absence of important information, cannot be clearly assigned.

The free-float rule applies only to bearer shares and registered shares. Capital issued in the form of participation certificates ("Partizipationsscheine") and bonus certificates ("Genussscheine") is taken into full account in calculating the Swiss Market Index because it does not confer voting rights.

The number of securities in the Swiss Market Index and the free-float factors are adjusted after the close of trading on four adjustment dates per year, the third Friday of March, June, September and December. Such changes are pre-announced at least one month before the adjustment date, although the basket underlier sponsor reserves the right to take account of recent changes before the adjustment date in the actual adjustment, so the definite new securities are announced five trading days before the adjustment date.

In order to avoid frequent slight changes to the weighting and to maintain the stability of the Swiss Market Index, any extraordinary change of the total number of outstanding securities or the free float will only result in an extraordinary adjustment if it exceeds 10% and 5% respectively and is in conjunction with a corporate action.

After a takeover, the basket underlier sponsor may, in exceptional cases, adjust the free float of a company upon publication of the end results after a five-day notification period or may exclude the security from the relevant index family. When an insolvency has been announced, an extraordinary adjustment will be made and the affected security will be removed from the Swiss Market Index after five trading days' notice.

The basket underlier sponsor reserves the right to make an extraordinary adjustment, in exceptional cases, without observing the notification period.

**Capped Weightings and Intra-Quarter Breaches.** The weight of any index constituent that exceeds a weight of 18% within the Swiss Market Index is reduced to that value at each ordinary quarterly adjustment date by applying a capping factor to the calculation of such constituent's free float market capitalization. A constituent's number of shares and free float figure are used to determine its capping factor. The excess weight (the difference of the original weight minus the capped weight) is distributed proportionally across the other index constituents. The constituents are also capped to 18% as soon as two index constituents exceed a weight of 20% (an "intra-quarter breach"). If an intra-quarter breach is observed after the close of the markets, the new capping factors are implemented after the close of the following trading day. The weights of the largest components are therefore set again to be approximately 18% at the subsequent market open. In order to achieve a capped weighting while attempting to not cause market distortion, a stepwise reduction is conducted based on

the ordinary quarterly index adjustment reviews to ensure that no change in the weight (as a result of capping) from one review to the next exceeds 3%. The transition period is in effect until no component has a weight larger than 18%.

In the case of an intra-quarter breach where two index constituents exceed 20%, the weights are limited to the last defined weights as of the prior review.

#### Calculation of the Swiss Market Index

The basket underlier sponsor calculates the Swiss Market Index using the “Laspeyres formula,” with a weighted arithmetic mean of a defined number of securities issues. The formula for calculating the index value can be expressed as follows:

$$\text{Swiss Market Index (SMI}^{\text{®}}) = \frac{\text{Free Float Market Capitalization of the Swiss Market Index}}{\text{Divisor}}$$

The “free float market capitalization of the SMI<sup>®</sup>” is equal to the sum of the product of the last-paid price, the number of shares, the free-float factor, the capping factor and, if a foreign stock is included, the current CHF exchange rate as of the time the index value is being calculated. The index value is calculated in real time and is updated whenever a trade is made in a component stock. Where any Swiss Market Index component stock price is unavailable on any trading day, the basket underlier sponsor will use the last reported price for such component stock. Only prices from the SIX Exchange’s electronic order book are used in calculating the Swiss Market Index.

#### Divisor Value and Adjustments

The divisor is a technical number used to calculate the index and is adjusted to reflect changes in market capitalization due to corporate events.

Below are common corporate events and their impact on the divisor of the index.

Event	Divisor Change?
Regular cash dividend	No
Repayments of capital through reduction of a share’s par value	No
Special dividends, anniversary bonds and other extraordinary payments that, contrary to the company’s usual dividend policy, are paid out or declared extraordinary.	Yes
Share dividends (company’s own shares)	No
Share dividend (shares of another company)	Yes

The basket underlier sponsor reserves the right to respond to any other corporate events with divisor adjustments or, in extraordinary circumstances, to depart from the provisions set forth above.

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#### The S&P®/ASX 200 Index

The S&P®/ASX 200 Index (Bloomberg ticker “AS51 Index”):

was first launched in 1979 by the Australian Securities Exchange and was acquired and re-launched by its current index sponsor on April 3, 2000; and

is sponsored, calculated, published and disseminated by S&P Dow Jones Indices LLC, a part of McGraw Hill Financial (“S&P”).

The S&P®/ASX 200 Index includes 200 companies and covers approximately 80% of the Australian equity market by market capitalization. As discussed below, the S&P®/ASX 200 Index is not limited solely to companies having their primary operations or headquarters in Australia or to companies having their primary listing on the Australian Securities Exchange (the “ASX”). All ordinary and preferred shares (if such preferred shares are not of a fixed income nature) listed on the ASX, including secondary listings, are eligible for the S&P®/ASX 200 Index. Hybrid stocks, bonds, warrants, preferred stock that provides a guaranteed fixed return and listed investment companies are not eligible for inclusion.

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The S&P<sup>®</sup>/ASX 200 Index is intended to provide exposure to the largest 200 eligible securities that are listed on the ASX by float-adjusted market capitalization. Constituent companies for the S&P<sup>®</sup>/ASX 200 Index are chosen based on market capitalization, public float and liquidity. All index-eligible securities that have their primary or secondary listing on the ASX are included in the initial selection of stocks from which the 200 index stocks may be selected. The float-adjusted market capitalization of companies is determined based on the daily average market capitalization over the last six months. The security's price history over the last six months, the latest available shares on issue and the investable weight factor (the "IWF"), are the factors relevant to the calculation of daily average market capitalization. The IWF is a variable that is primarily used to determine the available float of a security for ASX listed securities.

Information regarding the S&P<sup>®</sup>/ASX 200 Index (including information regarding the top ten components of this Basket Underlier, the industries represented by the securities included in this Basket Underlier and their respective weights and the countries represented by the securities included in this Basket Underlier and their respective weights) may be found on S&P's website. That information is updated from time to time on that website. As of the close of business on September 21, 2018, S&P Dow Jones Indices LLC and MSCI, Inc. updated the Global Industry Classification Sector ("GICS") structure. Among other things, the update broadened the Telecommunications Services sector and renamed it the Communication Services sector. The renamed sector includes the previously existing Telecommunication Services Industry group, as well as the Media Industry group, which was moved from the Consumer Discretionary sector and renamed the Media & Entertainment Industry group. The Media & Entertainment Industry group contains three industries: Media, Entertainment and Interactive Media & Services. The Media industry continues to consist of the Advertising, Broadcasting, Cable & Satellite and Publishing sub-industries. The Entertainment industry contains the Movies & Entertainment sub-industry (which includes online entertainment streaming companies in addition to companies previously classified in such industry prior to September 21, 2018) and the Interactive Home Entertainment sub-industry (which includes companies previously classified in the Home Entertainment Software sub-industry prior to September 21, 2018 (when the Home Entertainment Software sub-industry was a sub-industry in the Information Technology sector)), as well as producers of interactive gaming products, including mobile gaming applications). The Interactive Media & Services industry and sub-industry includes companies engaged in content and information creation or distribution through proprietary platforms, where revenues are derived primarily through pay-per-click advertisements, and includes search engines, social media and networking platforms, online classifieds and online review companies. The GICS structure changes are effective for this index as of the open of business on September 24, 2018 to coincide with the September 2018 quarterly rebalancing.

#### Number of Shares

When considering the index eligibility of securities for inclusion or promotion into S&P/ASX indices, the number of index securities under consideration is based upon the latest available ASX quoted securities. For domestic securities (companies incorporated in Australia and traded on the ASX, companies incorporated overseas but exclusively listed on the ASX and companies incorporated overseas and traded on other markets but most of its trading activity is on the ASX), this figure is purely based upon the latest available data from the ASX.

Foreign-domiciled securities may quote the total number of securities on the ASX that is representative of their global equity capital; whereas other foreign-domiciled securities may quote securities on the ASX on a partial basis that represents their Australian equity capital. In order to overcome this inconsistency, S&P will quote the number of index securities that are represented by CHESS Depositary Interests ("CDIs") for a foreign entity. When CDIs are not issued, S&P will use the total securities held on the Australian register (CHESS and, where supplied, the issuer sponsored register). This quoted number for a foreign entity is representative of the Australian equity capital, thereby allowing the S&P<sup>®</sup>/ASX 200 Index to be increasingly reflective of the Australian market.

The number of CDIs or shares of a foreign entity quoted on the ASX can experience more volatility than is typically the case for ordinary shares on issue. Therefore, an average number on issue will be applied over a six-month period.

Where CDI information is not supplied to the ASX by the company or the company's share register, estimates for Australian equity capital will be drawn from CHESS data and, ultimately, registry-sourced data.

#### IWF

All stocks in the index are assigned an IWF, which is an adjustment factor that accounts for the publicly available shares of a company. The IWF ranges between 0 and 1 and is calculated as 1 minus the percentage of shares held by strategic shareholders who possess 5% or more of issued shares. A company must have a minimum IWF of 0.3 to be

eligible for index inclusion.

S&P Dow Jones Indices identifies the following shareholders whose holdings are considered to be control blocks and are subject to float adjustment:

1. Government and government agencies;
2. Controlling and strategic shareholders/partners;
3. Any other entities or individuals which hold more than 5%, excluding insurance companies, securities companies and investment funds; and
4. Other restricted portions such as treasury stocks.

#### Liquidity Test

Only stocks that are regularly traded are eligible for inclusion. Eligible stocks are considered for index inclusion based on their stock median liquidity (median daily value traded divided by its average float-adjusted market capitalization for the last six months relative to the market capitalization weighted average of the stock median liquidities of the 500 constituents of the All Ordinaries index, another member of the S&P®/ASX index family).

#### Index Maintenance

S&P rebalances constituents quarterly to ensure adequate market capitalization and liquidity using the previous six months' data to determine index eligibility. Quarterly review changes take effect the third Friday of March, June,

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September and December. Eligible stocks are considered for index inclusion based on their float-adjusted market capitalization rank relative to the stated quota of 200 securities. For example, a stock that is currently in the S&P®/ASX 300 and is ranked at 175, based on float-adjusted market capitalization, within the universe of eligible securities may be considered for inclusion into the S&P®/ASX 200 Index, provided that liquidity hurdles are met. In order to limit the level of index turnover, eligible non-constituent securities will generally only be considered for index inclusion once a current constituent stock is excluded due to a sufficiently low rank and/or liquidity, based on the float-adjusted market capitalization. Potential index inclusions and exclusions need to satisfy buffer requirements in terms of the rank of the stock relative to a given index. The buffers are established to limit the level of index turnover that may take place at each quarterly rebalancing.

Between rebalancing dates, an index addition is generally made only if a vacancy is created by an index deletion. Index additions are made according to float-adjusted market capitalization and liquidity. An initial public offering is added to the S&P®/ASX 200 Index only when an appropriate vacancy occurs and is subject to proven liquidity for at least two months. An exception may be made for extraordinary large offerings where sizeable trading volumes justify index inclusion.

Deletions can occur between index rebalancing dates due to acquisitions, mergers and spin-offs or due to suspension or bankruptcies. The decision to remove a stock from the S&P®/ASX 200 Index will be made once there is sufficient evidence that the transaction will be completed. Stocks that are removed due to mergers and acquisitions are removed from the S&P®/ASX 200 Index at the cash offer price for cash-only offers. Otherwise, the best available price in the market is used.

Share numbers for all index constituents are updated quarterly and are rounded to the nearest thousand. The update to the number of issued shares will be considered if the change is at least 5% of the float adjusted shares or \$100 million in value.

Share updates for foreign-domiciled securities will take place annually at the March rebalancing. The update to the number of index shares will only take place when the six-month average of CDIs or the Total Securities held in the Australian branch of issuer sponsored register (where supplied) and in CHESSE, as of the March rebalancing, differs from the current index shares by either 5% or a market-cap dollar amount greater than \$100 million. Where CDI information is not supplied to the ASX by the company or the company's share register, estimates for Australian equity capital will be drawn from CHESSE data and, ultimately, registry-sourced data.

Intra-quarter share changes are implemented at the effective date or as soon as reliable information is available; however, they will only take place in the following circumstances:

- changes in a company's float-adjusted shares of 5% or more due to market-wide shares issuance;
- rights issues, bonus issues and other major corporate actions; and
- share issues resulting from index companies merging and major off-market buy-backs.

Share changes due to mergers or acquisitions are implemented when the transaction occurs, even if both of the companies are not in the same index and regardless of the size of the change.

IWFs are reviewed annually as part of the September quarterly review. However, any event that alters the float of a security in excess of 5% will be implemented as soon as practicable by an adjustment to the IWF.

The function of the IWF is also to manage the index weight of foreign-domiciled securities that quote shares on the basis of CDIs. Due to the volatility that is displayed by CDIs, unusually large changes in the number of CDIs on issue could result. Where this is the case, the IWF may be used to limit the effect of unusually large changes in the average number of CDIs (and, thereby, limit the potential to manipulate this figure). Where S&P's Australian Index Committee (the "ASX Committee") sees fit to apply the IWF in this manner, the rationale for the decision will be announced to the market. This will be reviewed annually at the March-quarter index rebalancing date.

#### Index Calculation

The S&P®/ASX 200 Index is calculated using a base-weighted aggregate methodology. The value of the S&P®/ASX 200 Index on any day for which an index value is published is determined by a fraction, the numerator of which is the aggregate of the price of each stock in the S&P®/ASX 200 Index times the number of shares of such stock included in the S&P®/ASX 200 Index times that stock's IWF, and the denominator of which is the divisor, which is described more fully below.

In order to prevent the value of the S&P®/ASX 200 Index from changing due to corporate actions, all corporate actions may require S&P to make an index or divisor adjustment. This helps maintain the value of the index and

ensures that the movement of the S&P®/ASX 200 Index does not reflect the corporate actions of the individual companies that comprise the S&P®/ASX 200 Index.

The table below summarizes the types of index adjustments and indicates whether the corporate action will require a divisor adjustment:

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Type of Corporate Action	Index Treatment	Divisor Adjustment Required
Cash dividend	None	No
Special Cash Dividend	Price adjustment needed	Yes
Stock dividend and/or split	Shares are multiplied by and price is divided by the split factor	No
Stock dividend from class A shares into existing class B shares, both of which are included in the S&P®/ASX 200 Index	Adjustment for price of A; adjustment for shares in B	Yes
Stock dividend of different class, same company and is not included in the S&P®/ASX 200 Index	Price adjustment	Yes
Reverse split	Adjustment for price and shares	No
Rights offering	Adjustment for price and shares	Yes
Rights offering for a new line	Adjustment for price	Yes
New share issuance	Adjustment for shares	Yes
Reduction of capital	Share adjustment	Yes
New addition to index	Share adjustment	Yes
Deletion from index	Share adjustment	Yes
Merger (acquisition by index company for stock)	Share increase	Yes

In situations where an exchange is forced to close early due to unforeseen events, such as computer or electric power failures, weather conditions or other events, S&P will calculate the closing price of the indices based on (1) the closing prices published by the exchange or (2) if no closing price is available, the last regular trade reported for each security before the exchange closed. If the exchange fails to open due to unforeseen circumstances, S&P treats this closure as a standard market holiday. The S&P®/ASX 200 Index will use the prior day's closing prices and shifts any corporate actions to the following business day. If all exchanges fail to open or in other extreme circumstances, S&P may determine not to publish the S&P®/ASX 200 Index for that day.

#### Recalculation Policy

S&P reserves the right to recalculate and republish the S&P®/ASX 200 Index at its discretion in the event one of the following issues has occurred:

- incorrect or revised closing price of one or more constituent securities;
- missed corporate event;
- incorrect application of corporate action or index methodology;
- late announcement of a corporate event; or
- incorrect calculation or data entry error.

The decision to recalculate the index is made at the discretion of S&P's index manager and/or the ASX Committee, as further discussed below. The potential market impact or disruption resulting from the potential recalculation is considered when making any such decision. In the event of one of the above events, other than as described in the third bullet, the index manager may, at his or her discretion, recalculate the index without involving the ASX Committee. If such event is discovered beyond the two trading day period, the ASX Committee shall decide whether the index should be recalculated. In the event of an incorrect application of the methodology that results in the incorrect composition and/or weighting of index constituents, the ASX Committee shall determine whether or not to recalculate the index following specified guidelines. If the index is recalculated, it shall be done within a reasonable

timeframe following the detection and review of the issue.

Calculations and Pricing Disruptions

Prices used to calculate the index are obtained from IDC and Thomson Reuters. If the relevant exchange suffers a failure or interruption, real-time calculations are halted until the exchange confirms that trading and price dissemination has resumed.

If the interruption is not resolved before the market close and the exchange publishes a list of closing prices, those prices are used to calculate the closing value of the index. If no list is published, the last trade for each security before the interruption is used to calculate the closing value of the index. If no trades were reported for a security, the previous close adjusted for corporate actions is used for index calculation.

In extreme circumstances, S&P may decide to delay index adjustments or not publish the index.

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### Unexpected Exchange Closures

An unexpected market/exchange closure occurs when a market/exchange fully or partially fails to open or trading is temporarily halted. This can apply to a single exchange or to a market as a whole, when all of the primary exchanges are closed and/or not trading. Unexpected market/exchange closures are usually due to unforeseen circumstances, such as natural disasters, inclement weather, outages, or other events.

In the event of an unexpected exchange closure, S&P uses the following guidelines:

if an unexpected exchange closure occurs prior to the open of trading and it is indicated that trading will not open for a given day, S&P will treat the day as an unscheduled market holiday.

if a market disruption occurs intraday, S&P will wait for the impacted exchange to publish a list of closing prices, which will then be used to calculate the closing index values. If no list is published, the last trade for each security before the interruption is used to calculate the index closing value. If no trades were reported for a security, the previous closing price, adjusted for corporate actions, is used for index calculation.

### License Agreement

The S&P®/ASX 200 Index is published and maintained by the S&P Australian Index Committee (the “ASX Committee”), a team of representatives from both Standard & Poor’s and the Australian Stock Exchange. The S&P®/ASX 200 Index is composed of the S&P®/ASX 100 stocks plus an additional 100 stocks selected by the ASX Committee. The S&P®/ASX 200 Index essentially covers large-cap and mid-cap stocks evaluated for liquidity and size. Additional information concerning the S&P®/ASX 200 Index may be obtained from the Australian Stock Exchange website at [www.asx.com.au](http://www.asx.com.au). We are not incorporating by reference the website or any material it includes in this pricing supplement.

Historical Performance of the Basket Underliers

The respective closing levels of the basket underliers have fluctuated in the past and may experience significant fluctuations in the future. Any historical upward or downward trend in the closing levels of the basket underliers during any period shown below is not an indication that the basket underliers are more or less likely to increase or decrease at any time during the term of the notes.

The historical levels of the basket underliers are provided for informational purposes only. You should not take the historical levels of the basket underliers as an indication of their future performance. We cannot give you any assurance that the future performance of the basket, the basket underliers or the underlier stocks will result in your receiving an amount greater than the original issue price at maturity. Neither we nor any of our affiliates makes any representation to you as to the performance of the basket underliers. Moreover, in light of current market conditions, the trends reflected in the historical performance of the basket underliers may be less likely to be indicative of the performance of the basket underliers over the term of the notes than would otherwise have been the case. The actual performance of the basket and the basket underliers over the term of the notes, as well as the cash settlement amount, may bear little relation to the historical levels shown below.

The graphs below show the daily historical closing levels of the EURO STOXX 50<sup>®</sup> Index, the TOPIX<sup>®</sup>, the FTSE<sup>®</sup> 100 Index, the Swiss Market Index and the S&P<sup>®</sup>/ASX 200 Index from November 12, 2008 through November 12, 2018. We obtained the closing levels of the basket underliers listed in the graph below from Bloomberg Financial Services, without independent verification.

Historical Performance of the EURO STOXX 50<sup>®</sup> Index

Historical Performance of the TOPIX®

Historical Performance of the FTSE® 100 Index

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Historical Performance of the Swiss Market Index

Historical Performance of the S&P®/ASX 200 Index

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Historical Performance of the Basket

The following graph is based on the basket closing levels for the period from January 1, 2008 through November 12, 2018, assuming that the basket closing level was 100 on January 1, 2008. We derived the basket closing levels based on the method to calculate the basket closing level as described in this pricing supplement and on actual closing levels of the relevant basket underliers on the relevant dates.

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SUPPLEMENTAL DISCUSSION OF U.S. FEDERAL INCOME TAX CONSEQUENCES

The following disclosure supplements, and to the extent inconsistent supersedes, the discussion in the product prospectus supplement dated September 20, 2018 under “Supplemental Discussion of U.S. Federal Income Tax Consequences.”

Under Section 871(m) of the Code, a “dividend equivalent” payment is treated as a dividend from sources within the United States. Such payments generally would be subject to a 30% U.S. withholding tax if paid to a non-U.S. holder.

Under U.S. Treasury Department regulations, payments (including deemed payments) with respect to equity-linked instruments (“ELIs”) that are “specified ELIs” may be treated as dividend equivalents if such specified ELIs reference an interest in an “underlying security,” which is generally any interest in an entity taxable as a corporation for U.S. federal income tax purposes if a payment with respect to such interest could give rise to a U.S. source dividend. However, the IRS has issued guidance that states that the U.S. Treasury Department and the IRS intend to amend the effective dates of the U.S. Treasury Department regulations to provide that withholding on dividend equivalent payments will not apply to specified ELIs that are not delta-one instruments and that are issued before January 1, 2021. Based on our determination that the notes are not delta-one instruments, non-U.S. holders should not be subject to withholding on dividend equivalent payments, if any, under the notes. However, it is possible that the notes could be treated as deemed reissued for U.S. federal income tax purposes upon the occurrence of certain events affecting any basket underlier or the notes (for example, upon a basket underlier rebalancing), and following such occurrence the notes could be treated as subject to withholding on dividend equivalent payments. Non-U.S. holders that enter, or have entered, into other transactions in respect of any basket underlier or the notes should consult their tax advisors as to the application of the dividend equivalent withholding tax in the context of the notes and their other transactions. If any payments are treated as dividend equivalents subject to withholding, we (or the applicable withholding agent) would be entitled to withhold taxes without being required to pay any additional amounts with respect to amounts so withheld.

SUPPLEMENTAL PLAN OF DISTRIBUTION (CONFLICTS OF INTEREST)

We will agree to sell to RBCCM, and RBCCM will agree to purchase from us, the principal amount of the notes specified, at the price specified, on the cover page of this pricing supplement. RBCCM has informed us that, as part of its distribution of the notes, it will reoffer them at a purchase price equal to [100.00]% of the principal amount to one or more other dealers who will sell them to their customers. In the future, RBCCM or one of its affiliates, may repurchase and resell the notes in market-making transactions, with resales being made at prices related to prevailing market prices at the time of resale or at negotiated prices. For more information about the plan of distribution, the distribution agreement and possible market-making activities, see “Supplemental Plan of Distribution” in the accompanying prospectus supplement. For additional information as to the relationship between us and RBCCM, please see the section “Plan of Distribution Conflicts of Interest” in the accompanying prospectus.

If the notes priced on the date of this pricing supplement, RBCCM, acting as agent for Royal Bank of Canada, would not receive an underwriting discount in connection with the sale of the notes.

We expect to deliver the notes against payment therefor in New York, New York on \_\_\_\_\_, 2018, which is expected to be the fifth scheduled business day following the trade date. Under Rule 15c6-1 of the Securities Exchange Act of 1934, trades in the secondary market generally are required to settle in two business days, unless the parties to any such trade expressly agree otherwise. Accordingly, purchasers who wish to trade notes on any date prior to two business days before delivery will be required, by virtue of the fact that the notes are initially expected to settle in five business days (T + 5), to specify alternative settlement arrangements to prevent a failed settlement.

RBCCM may use this pricing supplement in the initial sale of the notes. In addition, RBCCM or any other affiliate of Royal Bank of Canada may use this pricing supplement in a market-making transaction in a note after its initial sale.

Unless RBCCM or its agent informs the purchaser otherwise in the confirmation of sale, this pricing supplement is being used in a market-making transaction.

RBCCM or another of our affiliates may make a market in the notes after the trade date; however, it is not obligated to do so. The price that it makes available from time to time after the issue date at which it would be willing to repurchase the notes will generally reflect its estimate of their value. That estimated value will be based upon a variety of factors, including then prevailing market conditions, our creditworthiness and transaction costs. However, for a period of approximately three months after the trade date, the price at which RBCCM may repurchase the notes is expected to be higher than their estimated value at that time. This is because, at the beginning of this period, that price

will not include certain costs that were included in the original issue price, particularly our hedging costs and profits. As the period continues, these costs are expected to be gradually included in the price that RBCCM would be willing to pay, and the difference between that price and RBCCM's estimate of the value of the notes will decrease over time until the end of this period. After this period, if RBCCM continues to make a market in the notes, the prices that it would pay for them are expected to reflect its estimated value, as well as customary bid-ask spreads for similar trades.

In addition, the value of the notes shown on your account statement may not be identical to the price at which RBCCM would be willing to purchase the notes at that time, and could be lower than RBCCM's price.

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### STRUCTURING THE NOTES

The notes are our debt securities. As is the case for all of our debt securities, including our structured notes, the economic terms of the notes reflect our actual or perceived creditworthiness. In addition, because structured notes result in increased operational, funding and liability management costs to us, we typically borrow the funds under these notes at a rate that is lower than the rate that we might pay for a conventional fixed or floating rate debt security of comparable maturity. This relatively lower implied borrowing rate, which is reflected in the economic terms of the notes, along with the fees and expenses associated with structured notes, typically reduces the initial estimated value of the notes at the time their terms are set.

In order to satisfy our payment obligations under the notes, we may choose to enter into certain hedging arrangements (which may include call options, put options or other derivatives) with RBCCM and/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, and the tenor of the notes. The economic terms of the notes and their initial estimated value depend in part on the terms of these hedging arrangements. Our cost of hedging will include the projected profit that such counterparties expect to realize in consideration for assuming the risks inherent in hedging our obligations under the notes. Because hedging our obligations entails risks and may be influenced by market forces beyond the counterparties' control, such hedging may result in a profit that is more or less than expected, or could result in a loss.

See "Use of Proceeds and Hedging" on page PS-13 of the accompanying product prospectus supplement PB-1. The lower implied borrowing rate and the hedging-related costs relating to the notes reduce the economic terms of the notes to you and result in the initial estimated value for the notes on the trade date being less than their original issue price. See "Risk Factors—Our Initial Estimated Value of the Notes Will Be Less than the Original Issue Price."

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We have not authorized anyone to provide any information or to make any representations other than those contained or incorporated by reference in this pricing supplement, the accompanying product prospectus supplement PB-1, the accompanying prospectus supplement or the accompanying prospectus. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. These documents are an offer to sell only the notes offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. The information contained in each such document is current only as of its respective date.

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Royal Bank of Canada

Leveraged Buffered Basket-Linked Notes, due , 2020

RBC Capital Markets, LLC