

Royal Bank of Canada Market-Linked Notes \$816,000 Linked to a Basket of Five Equity Indices due on March 31, 2026

Investment Description

Market-Linked Notes (each, a “Note” and collectively, the “Notes”) are our unsecured and unsubordinated debt securities, with returns linked to an unequally weighted basket (the “Underlying Basket”) of five equity indices, consisting of the EURO STOXX 50® Index (40.00% weighting), the Nikkei 225 Index (25.00% weighting), the FTSE® 100 Index (17.50% weighting), the Swiss Market Index (10.00% weighting) and the S&P/ASX 200 Index (7.50% weighting) (the “Underlying Indices” and, each, an “Underlying Index”). If the Underlying Return (as defined below) is positive, we will repay the principal amount at maturity plus pay a return equal to the Participation Rate times the Underlying Return. If the Underlying Return is zero or negative, we will pay you the principal amount at maturity, but you will not receive any positive return on your investment. **Investing in the Notes involves significant risks. The Notes do not pay dividends or interest. The repayment of principal applies only if you hold the Notes to maturity. Any payment on the Notes, including any repayment of principal, is subject to our creditworthiness. If we default on our payment obligations, you may not receive any amounts owed to you under the Notes and you could lose your entire investment. The Notes will not be listed on any securities exchange. The Notes are not subject to conversion into our common shares under subsection 39.2(2.3) of the Canada Deposit Insurance Corporation Act.**

Features

- ❑ **Enhanced Growth Potential** — At maturity, if the Underlying Return is positive, we will pay you the principal amount plus a return equal to the Participation Rate times the Underlying Return.
- ❑ **Repayment of Principal** — If the Underlying Return is zero or negative, we will repay the principal amount of the Notes at maturity but you will not receive any positive return on your investment. The repayment of principal applies only if you hold the Notes to maturity. Any payment on the Notes, including any repayment of principal, is subject to the creditworthiness of Royal Bank of Canada

Key Dates

Trade Date	March 29, 2023
Settlement Date	March 31, 2023
Final Valuation Date ¹	March 27, 2026
Maturity Date ¹	March 31, 2026
¹ Subject to postponement if a market disruption event occurs, as described under “General Terms of the Securities — Payment at Maturity” in the accompanying product prospectus supplement UBS-IND-1.	

NOTICE TO INVESTORS: THE NOTES ARE SIGNIFICANTLY RISKIER THAN CONVENTIONAL DEBT INSTRUMENTS. YOU MAY NOT EARN A POSITIVE RETURN ON YOUR INVESTMENT. THIS MARKET RISK IS IN ADDITION TO THE CREDIT RISK INHERENT IN PURCHASING OUR DEBT OBLIGATION. YOU SHOULD NOT PURCHASE THE NOTES IF YOU DO NOT UNDERSTAND OR ARE NOT COMFORTABLE WITH THE SIGNIFICANT RISKS INVOLVED IN INVESTING IN THE NOTES.

YOU SHOULD CAREFULLY CONSIDER THE RISKS DESCRIBED UNDER “KEY RISKS” BEGINNING ON PAGE 5 OF THIS PRICING SUPPLEMENT AND UNDER “RISK FACTORS” BEGINNING ON PAGE PS-4 OF THE ACCOMPANYING PRODUCT PROSPECTUS SUPPLEMENT UBS-IND-1 BEFORE PURCHASING ANY NOTES. EVENTS RELATING TO ANY OF THOSE RISKS, OR OTHER RISKS AND UNCERTAINTIES, COULD ADVERSELY AFFECT THE MARKET VALUE OF, AND THE RETURN ON, YOUR NOTES.

Note Offering

We are offering Market-Linked Notes Linked to an unequally weighted basket of five equity indices. The Notes are offered at the Price to Public described below.

Underlying Indices with Weightings	Bloomberg Symbols	Participation Rate	Initial Basket Level	CUSIP	ISIN
EURO STOXX 50® Index (40.00%)	SX5E				
Nikkei 225 Index (25.00%)	NKY				
FTSE® 100 Index (17.50%)	UKX	119%	100.00	78016HVH0	US78016HVH01
Swiss Market Index (10.00%)	SMI				
S&P/ASX 200 Index (7.50%)	AS51				

See “Additional Information About Royal Bank of Canada and the Notes” in this pricing supplement. The Notes will have the terms specified in the prospectus dated September 14, 2021, the prospectus supplement dated September 14, 2021, product prospectus supplement UBS-IND-1 dated September 14, 2021 and this pricing supplement.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of the Notes or passed upon the accuracy or the adequacy of this pricing supplement or the accompanying prospectus, prospectus supplement and product prospectus supplement UBS-IND-1. Any representation to the contrary is a criminal offense.

Offering of the Notes	Price to Public ⁽¹⁾		Fees and Commissions ⁽¹⁾		Proceeds to Us	
	Total	Per Note	Total	Per Note	Total	Per Note
Notes Linked to a Basket of Equity Indices	\$816,000	\$1,000	\$0	\$0	\$816,000	\$1,000

⁽¹⁾ All sales of the Notes will be made to fee-based advisory accounts, for which UBS Financial Services Inc., which we refer to as UBS, is an investment advisor, and UBS will act as placement agent. The purchase price was \$1,000 per Note and UBS will forgo any commissions related to these sales. See “Supplemental Plan of Distribution (Conflicts of Interest)” below.

The initial estimated value of the Notes as of the Trade Date was \$975.72 per \$1,000 in principal amount, which is less than the price to public. The actual value of the Notes at any time will reflect many factors, cannot be predicted with accuracy, and may be less than this amount. We describe our determination of the initial estimated value under “Key Risks,” “Supplemental Plan of Distribution (Conflicts of Interest)” and “Structuring the Notes” below.

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

Additional Information About Royal Bank of Canada and the Notes

You should read this pricing supplement together with the prospectus dated September 14, 2021, as supplemented by the prospectus supplement dated September 14, 2021, relating to our senior global medium-term notes, Series I, of which these Notes are a part, and the more detailed information contained in product prospectus supplement UBS-IND-1 dated September 14, 2021. **This pricing supplement, together with the documents listed below, contains the terms of the Notes and supersedes all other prior or contemporaneous oral statements as well as any other written materials including preliminary or indicative pricing terms, correspondence, trade ideas, structures for implementation, sample structures, fact sheets, brochures or other educational materials of ours.** You should carefully consider, among other things, the matters set forth in “Risk Factors” in the accompanying product prospectus supplement UBS-IND-1, as the Notes involve risks not associated with conventional debt securities.

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

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

- ◆ Product prospectus supplement UBS-IND-1 dated September 14, 2021:
https://www.sec.gov/Archives/edgar/data/1000275/000114036121031147/brhc10028903_424b5.htm
- ◆ Prospectus supplement dated September 14, 2021:
<https://www.sec.gov/Archives/edgar/data/1000275/000121465921009472/rbcsupp911210424b3.htm>
- ◆ Prospectus dated September 14, 2021:
<https://www.sec.gov/Archives/edgar/data/1000275/000121465921009470/rbc911212424b3.htm>

As used in this pricing supplement, “we,” “us” or “our” refers to Royal Bank of Canada.

Investor Suitability

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

- ◆ You fully understand the risks inherent in an investment in the Notes, including the risk of receiving little or no positive return on your investment.
- ◆ You believe that the value of the Underlying Basket will appreciate over the term of the Notes.
- ◆ You are willing to invest in the Notes based on the Participation Rate set forth on the cover page of this pricing supplement.
- ◆ You can tolerate receiving only your principal amount at maturity if the Basket remains flat or depreciates over the term of the Notes.
- ◆ You can tolerate fluctuations in the price of the Notes prior to maturity.
- ◆ You do not seek current income from your investment and are willing to forgo dividends paid on the securities represented by the Underlying Indices.
- ◆ You are willing to hold the Notes to maturity and accept that there may be little or no secondary market for the Notes.
- ◆ You understand and accept the risks associated with the Underlying Indices.
- ◆ You are willing to assume our credit risk for all payments under the Notes, and understand that if we default on our obligations, you may not receive any amounts due to you, including any repayment of principal.

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

- ◆ You do not fully understand the risks inherent in an investment in the Notes, including the risk of receiving little or no positive return on your investment.
- ◆ You believe that the value of the Underlying Basket will decline over the term of the Notes.
- ◆ You are unwilling to invest in the Notes based on the Participation Rate set forth on the cover page of this pricing supplement.
- ◆ You cannot tolerate receiving only your principal amount at maturity if the Basket remains flat or depreciates over the term of the Notes.
- ◆ You cannot tolerate fluctuations in the price of the Notes prior to maturity.
- ◆ You seek current income from this investment or prefer to receive the dividends paid on the securities represented by the Underlying Indices.
- ◆ You are unable or unwilling to hold the Notes to maturity, or you seek an investment for which there will be an active secondary market.
- ◆ You do not understand or accept the risks associated with the Underlying Indices.
- ◆ You are not willing to assume our credit risk for all payments under the Notes, including any repayment of principal.

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

Final Terms of the Notes¹

Issuer: Royal Bank of Canada

Issue Price: \$1,000 per Note

Principal Amount: \$1,000 per Note.

Term: Approximately 3 years

Underlying Basket: An unequally weighted basket consisting of the following equity indices:

Underlying Indices	Bloomberg Symbols	Component Weightings	Initial Levels
EURO STOXX 50® Index	SX5E	40.00%	4,231.27
Nikkei 225 Index	NKY	25.00%	27,883.78
FTSE® 100 Index	UKX	17.50%	7,564.27
Swiss Market Index	SMI	10.00%	10,963.31
S&P/ASX 200 Index	AS51	7.50%	7,050.334

Participation Rate:

119%

Payment at Maturity (per \$1,000 Note):

If the Underlying Return is positive, we will pay you:
\$1,000 + (\$1,000 x Participation Rate x Underlying Return)

If the Underlying Return is zero or negative, we will pay you \$1,000

If the Underlying Return is zero or negative, you will not receive any positive return on your investment.

Underlying Return:

$$\frac{\text{Final Basket Level} - \text{Initial Basket Level}}{\text{Initial Basket Level}}$$

Initial Basket Level: Set to 100 on the Trade Date.

Level:

INVESTING IN THE NOTES INVOLVES SIGNIFICANT RISKS. YOU MAY NOT EARN A POSITIVE RETURN ON YOUR NOTES. ANY PAYMENT ON THE NOTES, INCLUDING ANY REPAYMENT OF PRINCIPAL, IS SUBJECT TO OUR CREDITWORTHINESS. IF WE DEFAULT ON OUR PAYMENT OBLIGATIONS, YOU MAY NOT RECEIVE ANY AMOUNTS OWED TO YOU UNDER THE NOTES AND YOU COULD LOSE YOUR ENTIRE INVESTMENT.

Final Basket Level:

$100 \times [1 + (\text{the sum of the Index Return of each Underlying Index multiplied by its Component Weighting})]$

Index Return of Each Underlying Index:

The Index Return with respect to each Underlying Index reflects its performance, calculated as follows:

$$\frac{\text{Final Level} - \text{Initial Level}}{\text{Initial Level}}$$

Initial Level:

With respect to each Underlying Index, the Index Closing Level of that Underlying Index on the Trade Date, as indicated in the table above.

Final Level:

With respect to each Underlying Index, the Index Closing Level of that Underlying Index on the Final Valuation Date.

Investment Timeline

Trade Date:

The Initial Level of each Underlying Index was determined, and the Initial Basket Level was set to 100. The Participation Rate was determined.



Maturity Date:

The Final Level and the Index Return of each Underlying Index, the Final Basket Level and the Underlying Return are determined.

If the Underlying Return is positive, we will pay you a cash payment per \$1,000 Note equal to:

$$\$1,000 + (\$1,000 \times \text{Participation Rate} \times \text{Underlying Return})$$

If the Underlying Return is zero or negative, we will pay you a cash payment of \$1,000 per \$1,000 Note.

¹ Terms used in this pricing supplement, but not defined herein, shall have the meanings ascribed to them in the product prospectus supplement.

Key Risks

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

Risks Relating to the Terms and Structure of the Notes

- ♦ **The Notes Do Not Pay Interest and May Not Pay More than the Principal Amount:** If the Underlying Return is zero or negative, you will receive only the principal amount for each Note you hold at maturity and will receive no positive return on your investment. As the Notes do not pay any interest, if the Basket does not appreciate sufficiently over the term of the Notes, the overall return on the Notes (the effective yield to maturity) may be less than the amount that would be paid on one of our conventional debt securities of comparable maturity. The Notes have been designed for investors who are willing to forgo market fixed or floating interest rates in exchange for a return, if any, based on the performance of the Basket.
- ♦ **The Repayment of Principal Applies Only if You Hold the Notes to Maturity:** You should be willing to hold your Notes to maturity. If you are able to sell your Notes prior to maturity in the secondary market, you may have to sell them at a loss even if the value of the Underlying Basket is above the Initial Basket Level at the time of sale.
- ♦ **The Participation Rate Applies Only if You Hold the Notes to Maturity:** The application of the Participation Rate only applies at maturity. If you are able to sell your Notes prior to maturity in the secondary market, the price you receive will likely not reflect the full effect of the Participation Rate and the return you realize may be less than the Participation Rate times the return of the Underlying Indices at the time of sale, even if that return is positive.
- ♦ **An Investment in the Notes Is Subject to Our Credit Risk:** The Notes are our unsubordinated, unsecured debt obligations, and are not, either directly or indirectly, an obligation of any third party. Any payment to be made on the Notes, including any repayment of principal at maturity, depends on our ability to satisfy our obligations as they come due. As a result, our actual and perceived creditworthiness may affect the market value of the Notes and, if we default on our obligations, you may not receive any amounts owed to you under the terms of the Notes and you could lose your entire initial investment.
- ♦ **You Will Be Required to Include Income on the Notes Over Their Term Based Upon a Comparable Yield, Even Though You Will Not Receive Any Payments Until Maturity:** We intend to take the position that the Notes will be treated as debt instruments subject to the special tax rules governing contingent payment debt instruments for U.S. federal income tax purposes. Under such treatment, the Notes are considered to be issued with original issue discount. You will be required to include income on the Notes over their term based upon a comparable yield, even though you will not receive any payments until maturity. You are urged to review the section entitled “What Are the Tax Consequences of the Notes?—U.S. Federal Income Tax Consequences” and consult your own tax advisor.
- ♦ **The Notes Will Be Subject to Risks, Including Non-Payment in Full, Under Canadian Bank Resolution Powers:** Under Canadian bank resolution powers, the Canada Deposit Insurance Corporation (“CDIC”) may, in circumstances where we have ceased, or are about to cease, to be viable, assume temporary control or ownership over us and may be granted broad powers by one or more orders of the Governor in Council (Canada), including the power to sell or dispose of all or a part of our assets, and the power to carry out or cause us to carry out a transaction or a series of transactions the purpose of which is to restructure our business. See “Description of Debt Securities — Canadian Bank Resolution Powers” in the accompanying prospectus for a description of the Canadian bank resolution powers, including the bail-in regime. If the CDIC were to take action under the Canadian bank resolution powers with respect to us, holders of the Notes could be exposed to losses.
- ♦ **Your Return on the Notes May Be Lower than the Return on a Conventional Debt Security of Comparable Maturity:** The return that you will receive on the Notes, which could be zero, may be less than the return you could earn on other investments. Even if your return is positive, your return may be less than the return you could earn if you bought a conventional senior interest bearing debt security of ours with the same maturity date or if you were able to invest directly in the Underlying Indices or the securities represented by the Underlying Indices. Your investment may not reflect the full opportunity cost to you when you take into account factors that affect the time value of money.
- ♦ **Changes in the Level of One or More of the Underlying Indices May Be Offset by Changes in the Level of One or More of the Other Underlying Indices:** Changes in the levels of the Underlying Indices may not correlate with each other. At a time when the level of one of the Underlying Indices increases, the level of any other Underlying Indices may not increase as much or may even decline. Therefore, in calculating the Final Basket Level, an increase in the level of one of the Underlying Indices may be moderated, or more than offset, by a lesser increase or decline in the level of any other Underlying Indices. In addition, because the SX5E makes up 40% of the Underlying Basket, we expect that generally the market value of your Notes and your payment at maturity will depend to a greater extent on the performance of the

SX5E than the performance of each of the other Underlying Indices. Further, high correlation of movements in the levels of the Underlying Indices during periods of negative returns among the Underlying Indices could have an adverse effect on any payment on the Notes.

- ♦ **Holders of the Notes Will Not Receive Dividend Payments or Have Any Voting Rights:** Investing in the Notes is not equivalent to investing directly in any of the component securities of an Underlying Index. As a holder of the Notes, you will not have voting rights or rights to receive cash dividends or other distributions or other rights that holders of the equity securities underlying an Underlying Index would have. Each Underlying Index is a price return index, and its Index Return excludes any cash dividend payments paid on its component stocks.
- ♦ **The Tax Treatment of the Notes Is Uncertain:** Significant aspects of the tax treatment of an investment in the Notes are uncertain. You should consult your tax adviser about your tax situation.

Risks Relating to the Initial Estimated Value of the Notes

- ♦ **The Initial Estimated Value of the Notes Is Less than the Price to the Public:** The initial estimated value that is set forth on the cover page of this pricing supplement, which is less than the public offering price you pay for the Notes, 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. If you attempt to sell the Notes prior to maturity, their market value may be lower than the price you paid for them and the initial estimated value. This is due to, among other things, changes in the value of the Underlying Basket, the borrowing rate we pay to issue securities of this kind, and the inclusion in the price to the public of and our estimated profit and the costs relating to our hedging of the Notes. These factors, together with various credit, market and economic factors over the term of the Notes, are expected to reduce the price at which you may be able to sell the Notes in any secondary market and will affect the value of the Notes in complex and unpredictable ways. Assuming no change in market conditions or any other relevant factors, the price, if any, at which you may be able to sell your Notes prior to maturity may be less than the price to public, as any such sale price would not be expected to include the 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. In addition to bid-ask spreads, the value of the Notes determined for any secondary market price is expected to be based on the secondary market rate rather than the internal borrowing rate used to price the Notes and determine the initial estimated value. As a result, the secondary market price will be less than if the internal borrowing rate was used. The Notes are not designed to be short-term trading instruments. Accordingly, you should be able and willing to hold your Notes to maturity.
- ♦ **Our Initial Estimated Value of the Notes Is an Estimate Only, Calculated as of the Time the Terms of the Notes Were Set:** The initial estimated value of the Notes is based on the value of our obligation to make the payments on the Notes, together with the mid-market value of the derivative embedded in the terms of the Notes. See “Structuring the Notes” below. Our estimate is based on a variety of assumptions, including our credit spreads, expectations as to dividends, interest rates and volatility, and the expected term of the Notes. These assumptions are based on certain forecasts about future events, which may prove to be incorrect. Other entities may value the Notes or similar securities at a price that is significantly different than we do.

The value of the Notes at any time after the 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 the initial estimated value of your Notes and the amount that may be paid at maturity.

Risks Relating to the Secondary Market for the Notes

- ♦ **The Notes Are Expected to Have a Limited Trading Market:** The Notes will not be listed on any securities exchange. RBCCM intends to offer to purchase the Notes in the secondary market, but is not required to do so. Even if there is a secondary market, it may not provide enough liquidity to allow you to trade or sell the Notes easily. Because other dealers are not likely to make a secondary market for the Notes, the price at which you may be able to trade your Notes is likely to depend on the price, if any, at which RBCCM is willing to buy the Notes.
- ♦ **The Terms of the Notes at Issuance Were Influenced, and Their Market Value Prior to Maturity May Be Influenced, by Many Unpredictable Factors:** Many economic and market factors influenced the terms of the Notes at issuance, and will influence their value prior to maturity. These factors are similar in some ways to those that could affect the value of a combination of instruments that might be used to replicate the payments on the Notes, including a combination of a bond with one or more options or other derivative instruments. For the market value of the Notes, we expect that, generally, the levels of the Underlying Indices on any day will affect the value of the Notes more than any other single factor. However, you should not expect the value of the Notes in the secondary market to vary in proportion to changes in the levels of the Underlying Indices. The value of the Notes will be affected by a number of other factors that may either offset or magnify each other, including:

- ♦ the actual or expected volatility of each Underlying Index;
- ♦ the time remaining to maturity of the Notes;
- ♦ the dividend rates on the equity securities included in the Underlying Indices;
- ♦ interest and yield rates in the market generally, as well as in each of the markets of the equity securities included in the Underlying Indices;
- ♦ a variety of economic, financial, political, regulatory or judicial events; and
- ♦ our creditworthiness, including actual or anticipated downgrades in our credit ratings.

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

Risks Relating to the Underlying Indices

- ♦ **An Investment in the Notes Is Subject to Risks Associated with Non-U.S. Securities Markets:** The securities included in each Underlying Index have been issued by non-U.S. companies. An investment in securities linked to the value of non-U.S. equity securities involves particular risks. Non-U.S. securities markets may be more volatile than U.S. securities markets, and market developments may affect non-U.S. securities markets differently from the U.S. securities markets. Direct or indirect government intervention to stabilize these non-U.S. securities markets, as well as cross shareholdings among non-U.S. companies, may affect trading prices and volumes in those markets. Also, there is generally less publicly available information in the U.S. about non-U.S. companies than about those U.S. companies that are subject to the reporting requirements of the SEC, and non-U.S. companies are subject to accounting, disclosure, auditing and financial reporting standards and requirements that differ from those applicable to U.S. reporting companies.

Prices of securities in non-U.S. countries are subject to political, economic, financial and social factors that may be unique to the particular countries. These factors, which could negatively affect the non-U.S. securities markets, include the possibility of recent or future changes in the economic and fiscal policies of non-U.S. governments, the possible imposition of, or changes in, currency exchange laws or other non-U.S. laws or restrictions applicable to non-U.S. companies or investments in non-U.S. equity securities, 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 developments in the relevant region. Moreover, the economies of certain foreign countries may differ favorably or unfavorably from the U.S. economy in important respects, such as growth of gross national product, rate of inflation, trade surpluses or deficits, capital reinvestment, resources and self-sufficiency.
- ♦ **The Return on the Notes Will Not Be Adjusted for the Exchange Rates Related to the Underlying Indices:** Although the equity securities that comprise each Underlying Index are traded in the foreign currencies, and your Notes are denominated in U.S. dollars, the amount payable on your Notes will not be adjusted for changes in the exchange rates between the U.S. dollar and the relevant foreign currencies. Therefore, if a relevant foreign currency appreciates or depreciates relative to the U.S. dollar over the term of the Notes, you will not receive any additional payment or incur any reduction in any payment on the Notes. Changes in exchange rates, however, may also reflect changes in the foreign economies that in turn may affect the level of an Underlying Index, and therefore the return on your Notes.
- ♦ **Changes Affecting an Underlying Index May Reduce the Return on the Notes:** The policies of an index sponsor concerning additions, deletions and substitutions of the stocks included in the relevant Underlying Index and the manner in which the index sponsor takes account of certain changes affecting those stocks included in the relevant Underlying Index may adversely affect the level of that Underlying Index. The policies of an index sponsor with respect to the calculation of the relevant Underlying Index could also adversely affect the level of that Underlying Index. An index sponsor may discontinue or suspend calculation or dissemination of the relevant Underlying Index and has no obligation to consider your interests in the Notes when taking any action regarding the relevant Underlying Index. Any such actions could have an adverse effect on the value of the Notes and the amount that may be paid at maturity.
- ♦ **The Historical Levels of any Underlying Index Should Not Be Taken as an Indication of Its Future Levels During the Term of the Notes:** The levels of the Underlying Indices will determine the value of the Notes at any given time. However, it is impossible to predict whether the level of any Underlying Index will rise or fall, and the levels of the Underlying Indices will be influenced by complex and interrelated political, economic, financial and other factors that can affect the value of the Underlying Basket.
- ♦ **The Probability That the Value of the Underlying Basket Will Fall Below the Initial Basket Level on the Final Valuation Date Will Depend on the Volatility of the Underlying Indices:** "Volatility" refers to the frequency and magnitude of changes in the levels of the Underlying Indices. Greater expected volatility with respect to the Underlying

Indices reflects a higher expectation as of the Trade Date that the Underlying Basket could close below the Initial Basket Level on the Final Valuation Date, resulting in zero return on your investment. However, an Underlying Index's volatility can change significantly over the term of the Notes. The level of the Underlying Basket could fall sharply, which could result in a zero return on your investment.

Risks Relating to Conflicts of Interest

- ♦ **We and Our Affiliates Will Have Potential Conflicts of Interest in Connection with the Notes:** We, UBS and our respective affiliates play a variety of roles in connection with the issuance of the Notes, including hedging our obligations under the Notes. In performing these duties, the economic interests of the calculation agent and other affiliates of ours and those of UBS are potentially adverse to your interests as an investor in the Notes.

We, UBS and our respective affiliates may do business from time to time with the issuers of the securities represented by the Underlying Indices. We may engage in lending or financing transactions with them, or advise them in connection with acquisitions or other transactions. We may acquire non-public information about these companies, which we have no obligation to provide to you.

- ♦ **Potentially Inconsistent Research, Opinions or Recommendations by RBCCM, UBS or Their Affiliates:** RBCCM, UBS or their respective affiliates may publish research, express opinions or provide recommendations that are inconsistent with investing in or holding the Notes, and which may be revised at any time. Any such research, opinions or recommendations could affect the value of the Underlying Basket, and therefore, the market value of the Notes.
- ♦ **The Activities of Royal Bank of Canada and UBS Impact on Price:** Trading or other transactions by Royal Bank of Canada, UBS and our respective affiliates in the equity securities composing an Underlying Index or in futures, options, exchange-traded funds or other derivative products on those equity securities may adversely affect the market value of those equity securities, the level of that Underlying Index, and, therefore, the market value of the Notes.

Hypothetical Examples and Return Table at Maturity

Hypothetical terms only. Actual terms may vary. See the cover page for actual offering terms. The following table and hypothetical examples below illustrate the payment at maturity per \$1,000 Note for a hypothetical range of Underlying Returns from -100.00% to +100.00% and are based on the Initial Underlying Level of 100.00 and the Participation Rate of 119%. The hypothetical Payment at Maturity examples set forth below are for illustrative purposes only and may not be the actual returns applicable to a purchaser of the Notes. The actual payment at maturity will be determined based on the Final Basket Level on the Final Valuation Date. You should consider carefully whether the Notes are suitable to your investment goals. The numbers appearing in the table below have been rounded for ease of analysis.

Example 1 – On the Final Valuation Date, the Underlying Basket closes 5% above the Initial Underlying Level. Because the Underlying Return is positive, we will pay you an amount based upon the Underlying Return times the Participation Rate. In this case, we will pay you at maturity a cash payment of \$1,059.50 per \$1,000 principal amount Note, calculated as follows:

$$\$1,000 + (\$1,000 \times 5\% \times 119\%) = \$1,000 + \$59.50 = \$1,059.50$$

Example 2 – On the Final Valuation Date, the Underlying Basket closes 50% below the Initial Underlying Level. Because the Underlying Return is negative, we will pay you at maturity the principal amount of \$1,000 principal amount Note. If the Underlying Return is zero or negative, you will not receive any positive return on your investment.

Hypothetical Final Basket Level	Hypothetical Underlying Return ¹	Hypothetical Payment at Maturity (\$)	Hypothetical Total Return on Notes ²
200.00	100.00%	\$2,190.00	119.00%
175.00	75.00%	\$1,892.50	89.25%
150.00	50.00%	\$1,595.00	59.50%
140.00	40.00%	\$1,476.00	47.60%
130.00	30.00%	\$1,357.00	35.70%
120.00	20.00%	\$1,238.00	23.80%
110.00	10.00%	\$1,119.00	11.90%
105.00	5.00%	\$1,059.50	5.95%
100.00	0.00%	\$1,000.00	0.00%
90.00	-10.00%	\$1,000.00	0.00%
80.00	-20.00%	\$1,000.00	0.00%
70.00	-30.00%	\$1,000.00	0.00%
60.00	-40.00%	\$1,000.00	0.00%
50.00	-50.00%	\$1,000.00	0.00%
25.00	-75.00%	\$1,000.00	0.00%
0.00	-100.00%	\$1,000.00	0.00%

(1) The Underlying Return excludes any cash dividend payments.

(2) The “total return” is the number, expressed as a percentage that results from comparing the payment at maturity per \$1,000 principal amount Note to the purchase price of \$1,000 per Note.

What Are the Tax Consequences of the Notes?

U.S. Federal Income Tax Consequences

The following is a general description of the material U.S. tax considerations relating to the Notes. It does not purport to be a complete analysis of all tax considerations relating to the Notes. Prospective purchasers of the Notes should consult their tax advisors as to the consequences under the tax laws of the country of which they are resident for tax purposes and the tax laws of the U.S. of acquiring, holding and disposing of the Notes and receiving payments under the Notes. This summary is based upon the law as in effect on the date of this document and is subject to any change in law that may take effect after such date.

The following section supplements the discussion of U.S. federal income taxation in the accompanying prospectus and prospectus supplement and it supersedes the discussion of U.S. federal income taxation in the accompanying product prospectus supplement. It applies only to those holders who are not excluded from the discussion of U.S. federal income taxation in the accompanying prospectus. This discussion applies only to holders that will purchase the Notes upon original issuance and will hold the Notes as capital assets for U.S. federal income tax purposes. Further, this discussion does not address the tax consequences applicable to any holders under section 451(b) of the U.S. Internal Revenue Code of 1986, as amended (the "Code").

You should consult your tax advisor concerning the U.S. federal income tax and other tax consequences of your investment in the Notes in your particular circumstances, including the application of state, local or other tax laws and the possible effects of changes in federal or other tax laws.

NO STATUTORY, JUDICIAL OR ADMINISTRATIVE AUTHORITY DIRECTLY DISCUSSES HOW THE NOTES SHOULD BE TREATED FOR U.S. FEDERAL INCOME TAX PURPOSES. AS A RESULT, THE U.S. FEDERAL INCOME TAX CONSEQUENCES OF AN INVESTMENT IN THE NOTES ARE UNCERTAIN. BECAUSE OF THE UNCERTAINTY, YOU SHOULD CONSULT YOUR TAX ADVISOR IN DETERMINING THE U.S. FEDERAL INCOME TAX AND OTHER TAX CONSEQUENCES OF YOUR INVESTMENT IN THE NOTES, INCLUDING THE APPLICATION OF STATE, LOCAL OR OTHER TAX LAWS AND THE POSSIBLE EFFECTS OF CHANGES IN FEDERAL OR OTHER TAX LAWS.

We intend to take the position that the Notes will be treated as debt instruments subject to the special tax rules governing contingent payment debt instruments for U.S. federal income tax purposes. Under those rules, the amount of interest you are required to take into account for each accrual period and adjustments in respect of the Notes will be determined by constructing a projected payment schedule for the Notes, and applying the rules similar to those for accruing original issue discount ("OID") on a hypothetical noncontingent debt instrument with that projected payment schedule. Under these rules, you will be required to include amounts in income during the term of the Notes, although we will not make any payments on the Notes until maturity.

This method is applied by first determining the yield at which we would issue a noncontingent fixed rate debt instrument with terms and conditions similar to the Notes (the "comparable yield") including the level of subordination, term, timing of payment and general market conditions, but excluding any adjustments for riskiness of the contingencies or liquidity of the Notes, and then determining a payment schedule as of the issue date that would produce the comparable yield. A projected payment schedule with respect to the Notes generally is a series of projected payments, the amount and timing of which would produce a yield to maturity on the Notes equal to the comparable yield. This projected payment schedule and comparable yield will be constructed solely for tax purposes, and will not constitute a representation of the amount of contingent payments (if any) that we will make on the Notes.

The amount of interest that you will be required to include in income during each accrual period for the Notes will equal the product of the adjusted issue price for the Notes at the beginning of the accrual period and the comparable yield for the Notes for such period, adjusted upward or downward to reflect the difference, if any, between the actual and projected amount of any contingent payments. Any net differences between actual payments received by a holder on the Notes in a taxable year and the projected amounts of those payments will be accounted for as additional interest (in the case of a net positive adjustment) or as an offset to interest income in respect of the Notes (in the case of a net negative adjustment), for that taxable year. If the net negative adjustment for a taxable year exceeds the amount of interest on the Notes for that year, the excess will be treated as an ordinary loss in that year, but only to the extent the holder's total interest inclusions on the Notes exceed the total amount of any ordinary loss in respect of the Notes claimed by the U.S. holder under this rule in prior taxable years. Any net negative adjustment that is not allowed as an ordinary loss for the taxable year is carried forward to the next taxable year, and is taken into account in determining whether the U.S. holder has a net positive or negative adjustment for that year. Any net negative adjustment that is carried forward to a taxable year in which a holder sells or taxably disposes of the Notes reduces the holder's amount realized on the sale or other taxable disposition.

The following table is based upon a projected payment schedule (including estimates of the annual interest payments) and a comparable yield equal to 4.99557% per annum (compounded semi-annually). The comparable yield is our estimate of

the comparable yield based upon market conditions as of the date of this document. It has been determined by us for purposes of illustrating the application of the Code and the Treasury regulations to the Notes based on the issue date and the maturity date set forth above. This tax accrual table is based upon a projected payment schedule per \$1,000 principal amount of the Notes, which would consist of estimates of the annual interest payments and a repayment of \$1,159.5400 at maturity. The following table is for tax purposes only, and we make no representations or predictions as to what the actual payments will be.

Accrual Period	Interest Deemed to Accrue During Accrual Period (per \$1,000 principal amount of the Notes)	Total Interest Deemed to Have Accrued from Original Issue Date (per \$1,000 principal amount of the Notes)
March 31, 2023 through December 31, 2023	\$37.9203	\$37.9203
January 1, 2024 through December 31, 2024	\$52.4966	\$90.4169
January 1, 2025 through December 31, 2025	\$55.1518	\$145.5687
January 1, 2026 through March 31, 2026	\$13.9713	\$159.5400

You will be required to use such comparable yield and projected payment schedule in determining your interest accruals in respect of your Notes, unless you timely disclose and justify on your federal income tax return the use of a different comparable yield and projected payment schedule. ***The comparable yield and projected payment schedule is not provided to you for any purpose other than the determination of your interest accruals in respect of the Notes, and we make no representations regarding the amount of contingent payments with respect to the Notes.***

The adjusted issue price of the Notes will equal the Notes' original offering price plus any interest deemed to be accrued on the Notes (under the rules governing contingent payment debt instruments). Special rules apply in determining interest accruals for a U.S. holder that purchases the Notes for an amount that differs from the Note's adjusted issue price at the time of the purchase and such holders are urged to consult with their tax advisor.

Special rules apply if one or more contingent payments become fixed prior to maturity. If all remaining contingent payments become fixed substantially contemporaneously, applicable Treasury regulations provide that you should make adjustments to the prior and future interest inclusions in respect of your Notes over the remaining term for the Notes in a reasonable manner. If one or more (but not all) contingent payments become fixed more than six months prior to the relevant payment date, applicable Treasury regulation provide that you should account for the difference between the original projected payments and the fixed payments by making an adjustment equal to the difference between the present value of the amount that is fixed and the projected amount of the contingent payment by discounting each amount from the date the payment is due to the date the payment becomes fixed, using a discount rate equal to the comparable yield on the debt instrument. Additionally, the projected payment schedule is modified prospectively to reflect the fixed amount of the payment. You should consult your tax advisor regarding the application of these rules.

You will recognize gain or loss on the sale or maturity of the Notes in an amount equal to the difference, if any, between the amount of cash you receive at such time and your adjusted basis in the Notes. In general, your adjusted basis in the Notes will equal the amount you paid to acquire the Notes, increased by the amount of interest income you have previously accrued in respect of the Notes (determined without regard to any of the positive or negative adjustments to interest accruals described above) and decreased by the amount of any projected payments in respect of the Notes through the date of the sale or exchange. The rules for determining the adjusted basis for holders who acquire the Notes at a price other than the adjusted issue price are complex, such holders should consult their tax advisors for assistance in determining their adjusted basis in the Notes.

Any gain you recognize on the sale or maturity of the Notes generally will be ordinary interest income. Any loss you recognize at such time will be ordinary loss to the extent of interest you included as income in the current or previous taxable years in respect of the Notes (reduced by the total amount of net negative adjustments previously taken into account as ordinary losses), and thereafter, capital loss. The deductibility of capital losses is limited.

Backup Withholding and Information Reporting. Payments made with respect to the Notes and proceeds from the sale of the Notes may be subject to a backup withholding tax unless, in general, the holder complies with certain procedures or is an exempt recipient. Any amounts so withheld generally will be refunded by the Internal Revenue Service ("IRS") or allowed as a credit against the holder's U.S. federal income tax, provided the holder makes a timely filing of an appropriate tax return or refund claim.

Reports will be made to the IRS and to holders that are not exempted from the reporting requirements.

Non-U.S. Holders. The following discussion applies to non-U.S. holders of the Notes. You are a non-U.S. holder if you are a beneficial owner of the Notes and are for U.S. federal income tax purposes a non-resident alien individual, a foreign corporation, or a foreign estate or trust.

Except as discussed below, payments made to a non-U.S. holder, and any gain realized on the sale or maturity of the Notes, generally should be exempt from U.S. federal income and withholding tax, subject to generally applicable exceptions set forth in the rules exempting "portfolio interest" from U.S. withholding tax, provided that (i) the holder complies with applicable certification requirements, which certification may be made on Form W-8BEN or W-8BEN-E (or a substitute or successor form) on which the holder certifies, under penalties of perjury, that the holder is not a U.S. person and provides its name and address, (ii) the payment or gain is not effectively connected with the conduct by the holder of a U.S. trade or business, and (iii) if the holder is a non-resident alien individual, the holder is not present in the U.S. for 183 days or more during the taxable year of the sale or maturity of the Notes. In the case of (ii) above, the holder generally should be subject to U.S. federal income tax with respect to any income or gain in the same manner as if the holder were a U.S. holder and, in the case of a holder that is a corporation, the holder may also be subject to a branch profits tax equal to 30% (or such lower rate provided by an applicable U.S. income tax treaty) of a portion of its earnings and profits for the taxable year that are effectively connected with its conduct of a trade or business in the U.S., subject to certain adjustments. Payments made to a non-U.S. holder may be subject to information reporting and to backup withholding unless the holder complies with applicable certification and identification requirements as to its foreign status.

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, directly or indirectly, 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, 2025. Royal Bank has determined that non-U.S. holders should not be subject to withholding under Section 871(m) of the Code on payments 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 an Underlying Index or the Notes (for example, upon an Underlying Index 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 an Underlying Index 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.

Foreign Account Tax Compliance Act. The Foreign Account Tax Compliance Act ("FATCA") imposes a 30% U.S. withholding tax on certain U.S. source payments, including interest (and original issue discount), dividends, and other fixed or determinable annual or periodical gain, profits, and income ("Withholdable Payments"), if paid to a foreign financial institution (including amounts paid to a foreign financial institution on behalf of a holder), unless such institution enters into an agreement with the U.S. Treasury Department to collect and provide to the U.S. Treasury Department certain information regarding U.S. financial account holders, including certain account holders that are foreign entities with U.S. owners, with such institution, or otherwise complies with the legislation. In addition, the Notes may constitute a "financial account" for these purposes and, thus, be subject to information reporting requirements pursuant to FATCA. FATCA also generally imposes a withholding tax of 30% on Withholdable Payments made to a non-financial foreign entity unless such entity provides the withholding agent with a certification that it does not have any substantial U.S. owners or a certification identifying the direct and indirect substantial U.S. owners of the entity. Under certain circumstances, a holder may be eligible for refunds or credits of such taxes.

The U.S. Treasury Department has proposed regulations that eliminate the requirement of FATCA withholding on payments of gross proceeds upon the sale or disposition of financial instruments of a type which can produce U.S. source interest or dividends. The U.S. Treasury Department has indicated that taxpayers may rely on these proposed regulations

pending their finalization, and the discussion above assumes the proposed regulations will be finalized in their proposed form with retroactive effect. If we (or the applicable withholding agent) determine withholding is appropriate with respect to the Notes, we will withhold tax at the applicable statutory rate, and we will not pay any additional amounts in respect of such withholding. Therefore, if such withholding applies, any payments on the Notes will be significantly less than what you would have otherwise received. Depending on your circumstances, these amounts withheld may be creditable or refundable to you. Foreign financial institutions and non-financial foreign entities located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules. Prospective investors are urged to consult with their own tax advisors regarding the possible implications of FATCA on their investment in the Notes.

Canadian Federal Income Tax Consequences

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

Information About the Underlying Indices

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

The EURO STOXX 50® Index

The SX5E was created by STOXX, which is currently owned by Deutsche Börse AG. Publication of the SX5E began in February 1998, based on an initial SX5E level of 1,000 at December 31, 1991.

Composition and Maintenance

The SX5E is composed of 50 component stocks of market sector leaders from within the 20 EURO STOXX® Supersector indices, which represent the Eurozone portion of the STOXX Europe 600® Supersector indices.

The composition of the SX5E is reviewed annually, based on the closing stock data on the last trading day in August. The component stocks are announced on the first trading day in September. Changes to the component stocks are implemented on the third Friday in September and are effective the following trading day. Changes in the composition of the SX5E are made to ensure that the SX5E includes the 50 market sector leaders from within the Eurozone.

The free float factors for each component stock used to calculate the SX5E, as described below, are reviewed, calculated, and implemented on a quarterly basis and are fixed until the next quarterly review.

The SX5E is also reviewed on an ongoing basis. Corporate actions (including initial public offerings, mergers and takeovers, spin-offs, delistings, and bankruptcy) that affect the SX5E 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 SX5E

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

$$\text{Index} = \frac{\text{Free float market capitalization of the index}}{\text{Adjusted base date market capitalization of the index}}$$

The “free float market capitalization of the SX5E” 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 SX5E is being calculated.

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

License Agreement

We have entered into a non-exclusive license agreement with STOXX providing for the license to us and certain of our affiliated or subsidiary companies, in exchange for a fee, of the right to use indices owned and published by STOXX (including the SX5E) in connection with certain securities, including the Notes offered hereby.

The license agreement between us and STOXX requires that the following language be stated in this document:

STOXX has no relationship to us, other than the licensing of the SX5E and the related trademarks for use in connection with the Notes. STOXX does not:

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

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

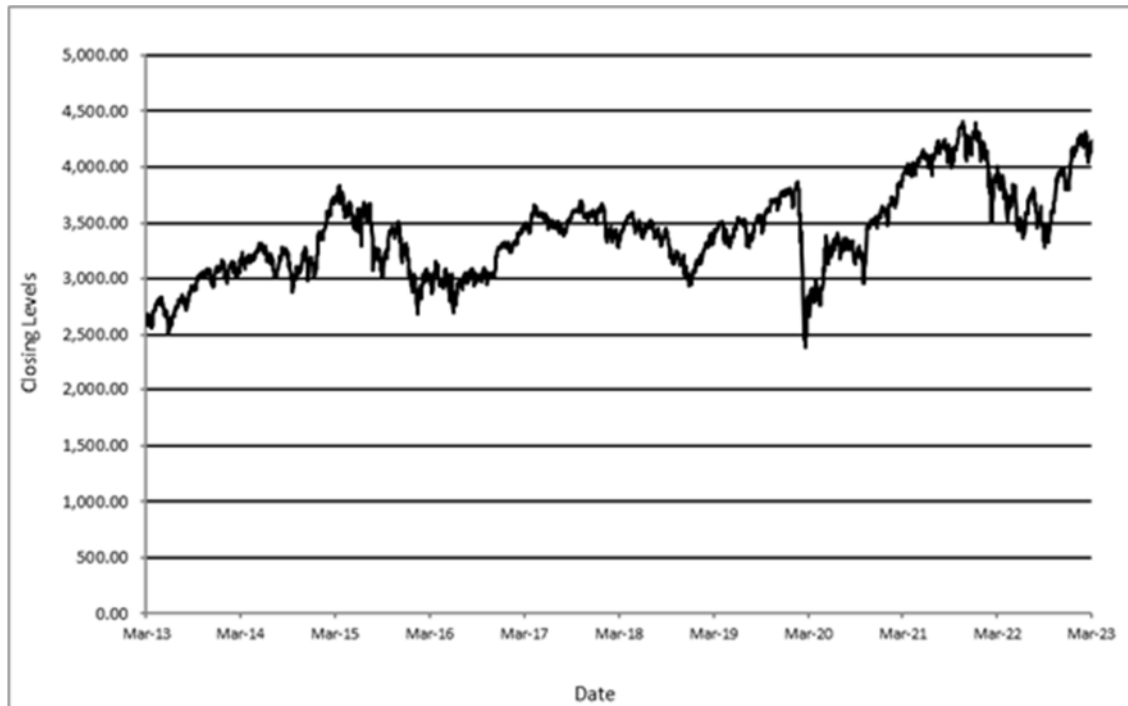
- STOXX does not make any warranty, express or implied, and disclaims any and all warranty concerning:
- the results to be obtained by the Notes, the holders of the Notes or any other person in connection with the use of the SX5E and the data included in the SX5E;
- the accuracy or completeness of the SX5E and its data;
- the merchantability and the fitness for a particular purpose or use of the SX5E and its data;

- STOXX will have no liability for any errors, omissions, or interruptions in the SX5E or its data; and
- Under no circumstances will STOXX be liable for any lost profits or indirect, punitive, special, or consequential damages or losses, even if STOXX knows that they might occur.

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

Historical Information

The following graph sets forth the closing levels of the SX5E from March 29, 2013 through March 29, 2023, as reported by Bloomberg Financial Markets. ***The historical performance of the SX5E should not be taken as an indication of future performance. We cannot give you assurance that the performance of the SX5E will result in the return of any of your initial investment.***



The Nikkei 225 Index

The NKY is calculated, maintained and published by Nikkei Inc. The index is reported by Bloomberg L.P. under the symbol "NKY."

The NKY is a stock index that measures the composite price performance of selected Japanese stocks. The formal name of the NKY is the Nikkei Stock Average. The NKY is based on 225 underlying stocks (the "Nikkei Underlying Stocks") trading on the Tokyo Stock Exchange ("TSE") representing a broad cross-section of Japanese industries. All 225 Nikkei Underlying Stocks are stocks listed in the Prime Market of the TSE. Stocks listed in the Prime Market of the TSE are among the most actively traded stocks on the TSE. Nikkei Inc. rules require that the 75 most liquid issues (one-third of the component count of the NKY) be included in the NKY. Nikkei Inc. was first calculated and published by the NKY beginning in 1970; prior to 1970, the TSE calculated the NKY.

The 225 companies included in the NKY are divided into six sector categories: Technology, Financials, Consumer Goods, Materials, Capital Goods/Others and Transportation and Utilities. These six sector categories are further divided into 36 industrial classifications as follows:

- Technology - Pharmaceuticals, Electrical Machinery, Automobiles, and Auto Parts, Precision Instruments, Telecommunications;
- Financials - Banks, Other Financial Services, Securities, Insurance;
- Consumer Goods - Fishery, Food, Retail, Services;
- Materials - Mining, Textiles & Apparel, Paper and Pulp, Chemicals, Petroleum, Rubber, Glass & Ceramics, Steel, Nonferrous Metals, Trading Companies;
- Capital Goods/Others - Construction, Machinery, Shipbuilding, Transportation Equipment, Other Manufacturing, Real Estate; and
- Transportation and Utilities - Railroads and Buses, Land Transport, Marine Transport, Air Transport, Electric Power, Gas.

Constituents are deleted and added to the index to balance the number of constituents among these sectors.

Calculation of the NKY

The NKY is a modified, price-weighted index (i.e., a Nikkei Underlying Stock's weight in the NKY is based on its price per share rather than the total market capitalization of the issuer) which is calculated by (i) multiplying the per share price of each Nikkei Underlying Stock by the corresponding price adjustment factor for such Nikkei Underlying Stock, (ii) calculating the sum of all these products and (iii) dividing such sum by a divisor (the "Divisor"). The Divisor was initially set at 225 for the date of May 16, 1949 (the date on which the TSE was reopened after World War II) using historical numbers from that date. The Divisor is subject to periodic adjustments as set forth below.

The price adjustment factor of a stock to be added to the index is 1. However, a value other than 1 may be assigned under some circumstances. The stock prices used in the calculation of the NKY are those reported by a primary market for the Nikkei Underlying Stocks (currently the TSE). The level of the NKY is currently calculated once every 5 seconds during TSE trading hours.

In order to maintain continuity in the NKY in the event of certain changes due to non-market factors affecting the Nikkei Underlying Stocks, such as the addition or deletion of stocks, substitution of stocks, stock splits or distributions of assets to stockholders, the Divisor used in calculating the NKY is adjusted in a manner designed to maintain the continuity in the level of the NKY. Thereafter, the Divisor remains at the new value until a further adjustment is necessary as the result of another change.

Standards for Listing and Maintenance

The membership of the index is reviewed once per year, with a base date at the end of July, and the result becomes effective in the beginning of October. A Nikkei Underlying Stock may be deleted or added by Nikkei Inc. Any stock becoming ineligible for listing in the Prime Market of the TSE due to any of the following reasons will be deleted from the Nikkei Underlying Stocks, including the merger of the issuer with, or acquisition of the issuer by, another company, the delisting of the stock, or the transfer of such stock to a market other than the Prime Market. Nikkei Underlying Stocks with relatively low liquidity, based on trading value and rate of price fluctuation over the past five years, may be deleted by Nikkei Inc. Upon deletion of a stock from the Nikkei Underlying Stocks, Nikkei Inc. will select a replacement for such deleted Nikkei Underlying Stock in accordance with certain criteria. Replacements are generally chosen by the liquidity of companies in the same sector as the deleted company.

Property Rights and Disclaimers

The Nikkei Stock Average is the intellectual property of Nikkei Inc. "Nikkei," "Nikkei Stock Average," and "Nikkei 225" are the service marks of Nikkei Inc. Nikkei Inc. reserves all the rights, including copyright, to the NKY. Nikkei Digital Media, Inc., a wholly owned subsidiary of Nikkei Inc. calculates and disseminates the NKY under exclusive agreement with Nikkei Inc. Nikkei Inc. and Nikkei Digital Media Inc. are collectively the "Nikkei Index Sponsor."

The Notes are not in any way sponsored, endorsed or promoted by the Nikkei Index Sponsor. The Nikkei Index Sponsor does not make any warranty or representation whatsoever, express or implied, either as to the results to be obtained as to the use of the NKY or the figure as which the NKY stands at any particular day or otherwise. The NKY is compiled and calculated solely by the Nikkei Index Sponsor. However, the Nikkei Index Sponsor shall not be liable to any person for any error in the NKY and the Nikkei Index Sponsor shall not be under any obligation to advise any person, including a purchase or vendor of the Notes, of any error therein.

In addition, the Nikkei Index Sponsor gives no assurance regarding any modification or change in any methodology used in calculating the NKY and is under no obligation to continue the calculation, publication and dissemination of the NKY.

License Agreement

Royal Bank has entered into a non-exclusive license agreement with Nikkei, which will allow us and our affiliates, in exchange for a fee, to use the NKY in connection with this offering. We are not affiliated with Nikkei; the only relationship between Nikkei and us will be the licensing of the use of the NKY and trademarks relating to the NKY.

Nikkei is under no obligation to continue the calculation and dissemination of the NKY. The Notes are not sponsored, endorsed, sold or promoted by Nikkei. No inference should be drawn from the information contained in this document that Nikkei 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 NKY to track general stock market performance.

Nikkei determines, composes and calculates the NKY without regard to the Notes. Nikkei 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 NKY. Nikkei 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 maturity. Nikkei has no obligation or liability in connection with the administration, marketing or trading of the Notes.

Nikkei disclaims all responsibility for any errors or omissions in the calculation and dissemination of the NKY or the manner in which the NKY is applied in determining any level of the NKY or any amount payable on the Notes.

NIKKEI DOES NOT GUARANTEE THE ACCURACY OR THE COMPLETENESS OF THE NKY OR ANY DATA INCLUDED IN THE NKY. NIKKEI ASSUMES NO LIABILITY FOR ANY ERRORS OR OMISSIONS.

“Nikkei®” is a trademark of Nikkei. The Notes are not sponsored, endorsed, sold or promoted by Nikkei, and Nikkei makes no representation regarding the advisability of investing in the Notes.

Historical Information

The following graph sets forth the closing levels of the NKY from March 29, 2013 through March 29, 2023, as reported by Bloomberg Financial Markets. ***The historical performance of the NKY should not be taken as an indication of future performance. We cannot give you assurance that the performance of the NKY will result in the return of any of your initial investment.***



The FTSE® 100 Index

The FTSE® 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 UKX was developed with a base level of 1,000 as of December 30, 1983. It is calculated, published and disseminated by FTSE International Limited (“FTSE”), a company owned by the London Stock Exchange Plc (the “Exchange”). Additional information on the UKX is available from the following website: ftserussell.com/. Information on that website is not included or incorporated by reference in this document. FTSE is under no obligation to continue to publish the UKX and may discontinue publication of the UKX at any time.

The UKX 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 UKX into 20 sectors: Automobiles & Parts, Banks, Basic Resources, Chemicals, Construction & Materials, Consumer Products & Services, Energy, Financial Services, Food, Beverages & Tobacco, Health Care, Industrial Goods & Services, Insurance, Media, Personal Care, Drug & Grocery Stores, Real Estate, Retailers, Technology, Telecommunications, Travel & Leisure and Utilities.

Index Composition and Selection Criteria

The UKX 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 UKX 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 Russell 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 ICE Futures Europe 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 UKX. Eligible stocks must pass price and liquidity screens before being included in the index. Additionally, a stock generally must have a minimum free float (as described below) of 25% if the issuing company is U.K. incorporated and greater than 50% if it is non-U.K. incorporated.

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 UKX, 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 U.K. 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 in the current year. 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 UKX 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 UKX 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 UKX, 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 did not meet this requirement had until the September 2022 review to meet the requirement; otherwise they were required to be removed from the UKX.

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 listed equity shares of a constituent company will be included in the calculation of its market capitalization. Where a company has two or more classes of listed equity, secondary lines will be included in the calculation of the market capitalization of the company based on the market price of that secondary line. The Committee will add a stock to the FTSE® 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 UKX 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 of the FTSE All-Share Index that are then not included in the UKX will be inserted to match the number of companies being removed, in order to maintain the total at 100.

Index Calculation

The UKX 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 UKX 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 UKX. Investable market capitalization is full market capitalization adjusted for free float restrictions and foreign ownership limits. 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; shares held by directors, senior executives and managers of the 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; 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 subject to the lock-in expiry date occurring on or prior to the share and free float change information cut-off date, which is typically the Friday five weeks prior to effective 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 UKX is recalculated whenever errors or distortions occur that are deemed to be significant. Users of the UKX are notified through appropriate media.

Index Maintenance

The UKX is reviewed quarterly for changes in free float. A stock's free float is also reviewed and adjusted if necessary following certain corporate events. Adjustments due to mergers and acquisitions are applied to the index after the action is determined to be final, typically after the close of the last trade date of the target company, with provision of appropriate notice. 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 15% or below will not be subject to the three percentage points threshold and will be updated if the change is greater than one percentage point.

Where a UKX company is scheduled to be deleted after the periodic review changes have been announced but before they have been implemented, the highest ranking constituent of the FTSE All-Share Index (which is not currently a member of the UKX) is selected as the replacement company. However, if that replacement company is already scheduled to be added as part of the index review then the next highest-ranking company is selected as the replacement. (The FTSE All-Share Index is designed to represent 98% of the full market capitalisation of all companies which qualify as eligible for inclusion in the FTSE UK Index Series.)

Where a company being deleted is already due to be replaced in the UKX as part of the periodic review, it will be replaced by the largest company previously announced as a review addition to the index. In other words, the review addition will be brought forward and implemented concurrent with the intra-quarter deletion.

If a constituent company is split to form two or more companies, then the resulting companies will be eligible for inclusion as UKX 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 UKX 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 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 UKX unless its total market capitalization remains above the qualification level for continued inclusion as a constituent of the UKX at that review. Where a company has partly paid shares, these shares, together with the outstanding call(s), are both included in the UKX. Warrants to purchase ordinary shares and convertible securities are not included in the UKX until the quarterly review after they have been exercised or converted.

Share Weighting Changes — For the purposes of computing the UKX, 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 free float and share changes prior to the quarterly free-float and share changes cut-off date will be taken. 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. Share and free float changes will be implemented outside of the quarterly update cycle if primary offerings of new shares or secondary offerings of existing shares results in (i) a \$1 billion investable market capitalization change, or (ii) a 5% change in index shares and a \$250 million investable market capitalization change. Typically, changes will be implemented after the close on the day that the subscription periods close. If discovery of the event occurs more than two days after the close of the subscription period, the changes will be deferred until the next quarterly review.

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 UKX from changing due to such an event, all corporate actions which affect the market capitalization of the UKX require an offsetting divisor adjustment. By adjusting the divisor, the value of the UKX 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 and share price adjusted according to the terms of the split	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 the 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 UKX should it consider that an “accurate and reliable” price is not available.

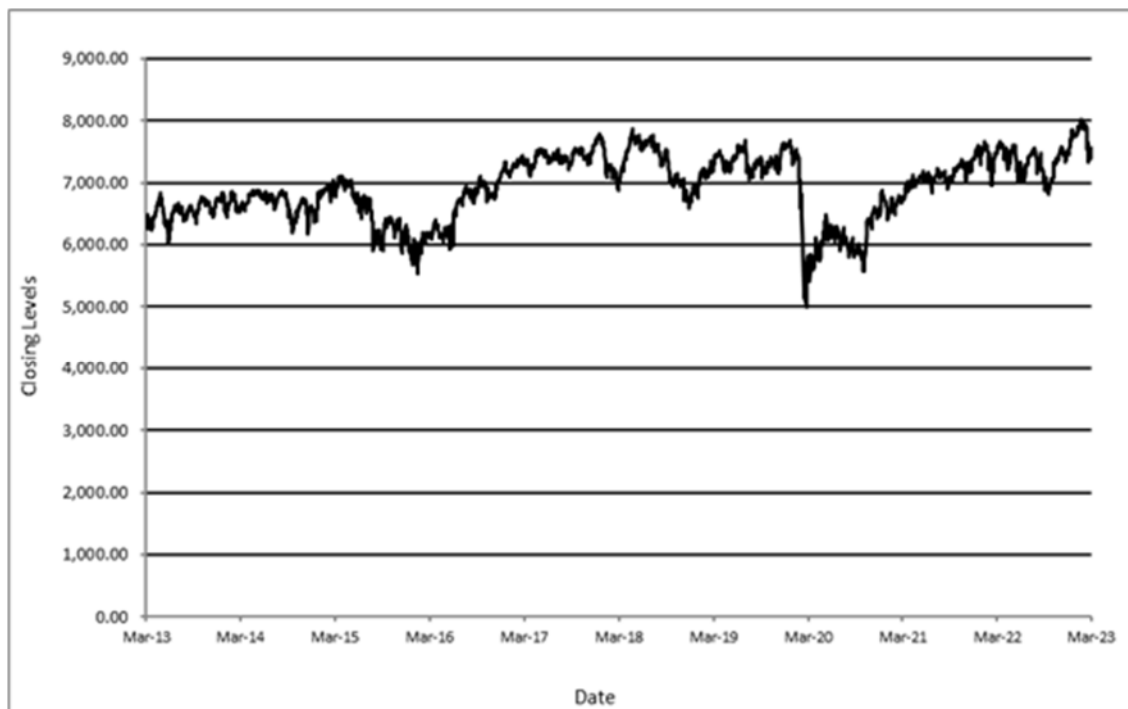
FTSE will follow the steps set out in the FTSE Russell Index Recalculation Guidelines when determining whether an index or an index series should be recalculated and/or associated data products reissued as a result of an inaccuracy.

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Historical Information

The following graph sets forth the closing levels of the UKX from March 29, 2013 through March 29, 2023, as reported by Bloomberg Financial Markets. ***The historical performance of the UKX should not be taken as an indication of future performance. We cannot give you assurance that the performance of the UKX will result in the return of any of your initial investment.***



Swiss Market Index

The Swiss Market Index (the “SMI”):

- ♦ 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 SMI 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, inclusions and exclusions outside of the established review and acceptance period. The Index Commission meets at least twice annually.

Index Composition and Selection Criteria

The SMI 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 over the last 12 months (compared to the capitalization of the Swiss Performance Index, which serves as a benchmark for the overall Swiss equity market and as the index universe for the Swiss Market Index), and
- ♦ cumulative on order book turnover over the last 12 months (compared to the total turnover of the Swiss Performance Index).

The SMI is reconstituted annually after prior notice of at least two months on the third Friday in September after the close of trading. For companies that were listed during the last 12 months, the cumulated on order book turnover generally excludes the first five trading days in the calculation. The ordinary index reconstitution is based on data from the previous July 1 through June 30. Provisional interim selection (ranking) lists based on the average free-float market capitalization and cumulative on order book turnover over the last 12 months are also published at the cut off dates of March 31, September 30 and December 31.

The 18 securities with the highest rank are selected for inclusion in the Swiss Market Index. In order to reduce turnover, a buffer is applied for securities ranked 19 to 22. Out of the securities ranked 19 to 22 current components are selected with priority over the other securities. New components out of the buffer are selected until 20 components have been reached.

If a company has primary listings on several exchanges and less than 50% of that company’s total turnover is generated on the SIX Swiss Exchange, it will not be included in the Swiss Market Index unless it satisfies an additional liquidity criteria. For this purpose, all the components of the Swiss Performance Index are ranked based on their cumulated on order book turnover over the past 12 months relative to the total turnover of the Swiss Performance Index. Such a security must rank at least 18 or better in terms of the cumulated on order book turnover over the past 12 months, and if it ranks 23 or lower, it will be automatically excluded from the Swiss Market Index.

Index Maintenance

Constituent Changes. In the case of major market changes as a result of corporate actions, the Management Committee of SIX Swiss Exchange can decide at the request of the Index Commission that a security should be admitted to the SMI outside of 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 SMI are no longer fulfilled. As a general rule, extraordinary acceptances into the SMI 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). If a delisting has been confirmed, it will be removed from the index at the next upcoming ordinary quarterly adjustment date (March, June, September and December), with a notice period of at least five days. If a delisted company is removed before the ordinary index review, it will be replaced by the highest ranked candidate on the selection list which is not yet part of the index in order to maintain 20 components.

Number of Shares and Free Float. The securities included in the SMI 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. The capital in circulation does not include conditional or authorized capital. 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 the 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 and bonus certificates is taken into full account in calculating the SMI because it does not confer voting rights.

The number of securities in the SMI 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 index 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 SMI, 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. Such an adjustment takes effect after a notification period of two trading days based on the information available.

After a takeover, the index 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 SMI after five trading days' notice.

The index 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 around 18% at the subsequent market open. If an issuer is represented in the Swiss Market Index by more than one security, the free float market capitalization of those securities is cumulated for the calculation of the capping factors.

Index Calculation

The index sponsor calculates the SMI 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:

Swiss Market Index (SMI®) =	$\frac{\text{Free Float Market Capitalization of the Swiss Market Index}}{\text{Divisor}}$
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The "free float market capitalization of the SMI®" 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 SMI component stock price is unavailable on any trading day, the index 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 SMI.

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
Share Split	No
Rights Issue	If the rights issue is used to raise capital, the divisor increases. If the rights issue is used to return capital, the divisor decreases.

Merger & Acquisition Activities

Mergers and acquisitions are corporate actions that go along with a change to the ownership structure of one or more companies. This can result in the disappearance of the involved companies and in the creation of a new company (merger) or in the integration of one company into the other (acquisition). Therefore, the corporate action may lead to a new listing or to a delisting which results in an adjustment of the index composition. In both cases, a change in the number of shares or the free float factor are to be considered, which result in a change of the component's weight.

Spinoff

A spinoff takes place if a company divests parts of its business into a new company and lists its shares. The shares of this newly created company are equally distributed to the shareholders of the existing company. Therefore, in principle, a spinoff is treated like an extraordinary payment. However, there is no market price available at the ex-date of the spinoff. In order to receive such a market price, the company spun off is retained in the index during the ex-date. The adjustments using the market value are effective the first trading day after the ex-date based on the closing values of the ex-date.

The index 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.

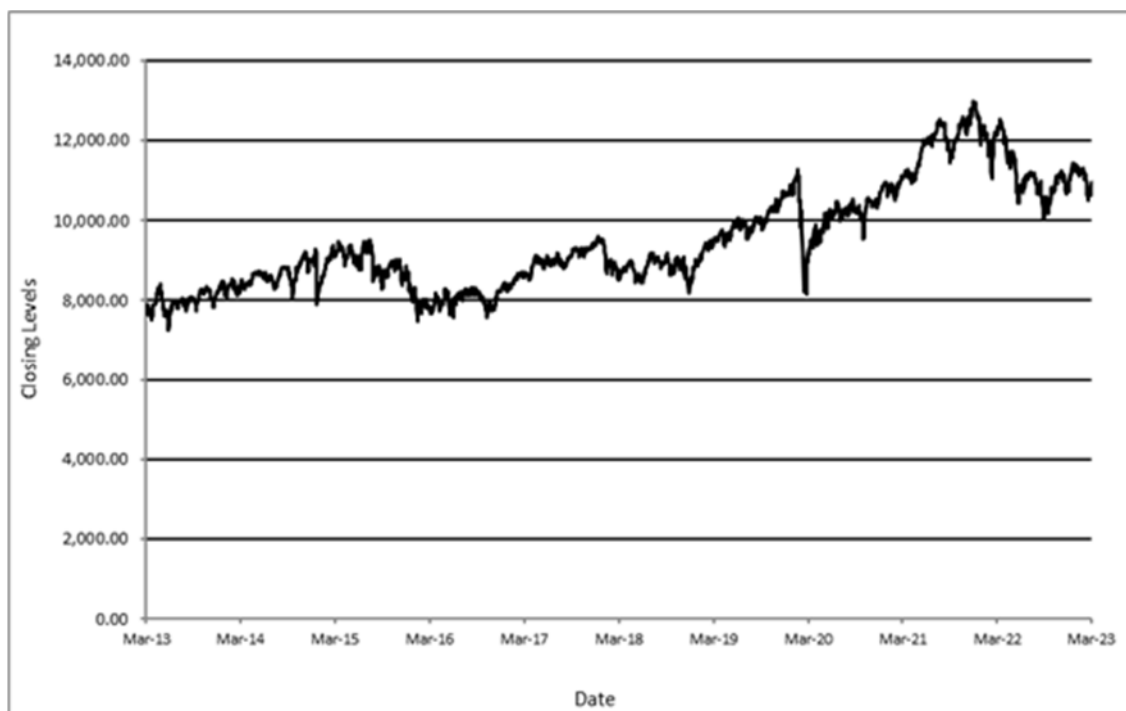
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Historical Information

The following graph sets forth the closing levels of the SMI from March 29, 2013 through March 29, 2023, as reported by Bloomberg Financial Markets. ***The historical performance of the SMI should not be taken as an indication of future performance. We cannot give you assurance that the performance of the SMI will result in the return of any of your initial investment.***



The S&P®/ASX 200 Index (the “AS51”):

- 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.

The AS51 includes 200 of the largest and most liquid stocks listed on the Australian Securities Exchange (“ASX”) by market capitalization. As discussed below, the AS51 is not limited solely to companies having their primary operations or headquarters in Australia or to companies having their primary listing on 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 AS51. Hybrid stocks, bonds, warrants, preferred stock that provides a guaranteed fixed return and listed investment companies are not eligible for inclusion.

The AS51 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 AS51 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 AS51 may be found on S&P’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 document.

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 AS51 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 three-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

The index is float-adjusted, meaning that the share counts used in calculating the index reflect only those shares available to investors, rather than all of a company’s outstanding shares. S&P seeks to exclude shares held by long-term, strategic shareholders, a group that generally includes the following: officers and directors and related individuals whose holdings are publicly disclosed, private equity, venture capital, special equity firms, asset managers and insurance companies with board of director representation, publicly traded companies that hold shares in another company, holders of restricted shares (except for shares held as part of a lock-up agreement), company-sponsored employee share plans/trusts, defined contribution plans/savings, investment plans, foundations or family trusts associated with the company, government entities at all levels (except government retirement or pension funds), sovereign wealth funds and any individual person listed as a 5% or greater stakeholder in a company as reported in regulatory filings (collectively, “strategic holders”). To this end, S&P excludes all shareholdings with a position greater than 5% of the outstanding shares of a company from the float-adjusted share count to be used in index calculations (other than depositary banks, pension funds (including government pension and retirement funds), mutual funds, exchange traded fund providers, investment funds, asset managers (including hedge funds with no board of director representation), investment funds of insurance companies and independent foundations not associated with the company).

The exclusion is accomplished by calculating an investable weight factor (IWF) for each stock that is included in the index as follows:

$$\text{IWF} = (\text{available float shares}) / (\text{total shares outstanding})$$

where available float shares is defined as total shares outstanding less shares held by strategic holders. In most cases, an IWF is reported to the nearest one percentage point. For companies with multiple share class lines, a separate IWF is calculated for each share class line.

A company must have a minimum IWF of 0.3 to be eligible for inclusion in the index; however, an IWF at or above 0.3 is not necessary for ongoing index membership.

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.

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, 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 AS51, provided that liquidity hurdles are met. Stocks that fail the relative liquidity criteria are typically removed from the float-adjusted market capitalization rankings.

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 AS51 only when an appropriate vacancy occurs and is subject to proven liquidity for at least eight weeks. 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 AS51 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 AS51 at the cash offer price for cash-only offers. Otherwise, the best available price in the market is used.

Share numbers and IWFs for index constituents are updated quarterly in accordance with S&P Dow Jones Indices' Equity Policies & Practices Methodology, which is available on the index sponsor's website. The share count for each index constituent is reviewed quarterly, and is rounded to the nearest thousand for domestic Australian stocks.

Share updates for non-Australian-domiciled securities will take place at each quarterly rebalancing. The update to the number of shares outstanding will only take place when the three-month average of CDIs or the total securities held in the Australian branch of issuer sponsored register (where supplied) and in CHESS, on the rebalancing reference date, differs from the current number of shares used by 5% or more.

Intra-Quarter Changes to the Number of Shares of a Constituent

Certain changes as a result of mandatory events, such as mergers or acquisition driven share/IWF changes, stock splits and mandatory distributions are not subject to a minimum threshold for implementation and are implemented when the transaction occurs. At S&P's discretion, however, non-material merger and acquisition changes may be accumulated and implemented with the updates made with the quarterly share updates as described below. Material share/IWF changes resulting from certain non-mandatory corporate actions follow the accelerated implementation rule.

Accelerated Implementation Rule

1. Public offerings. Public offerings of new company-issued shares and/or existing shares offered by selling shareholders, including block sales and spot secondaries, will be eligible for accelerated implementation treatment if the size of the event meets the materiality threshold criteria:

- (a) at least US \$150 million, and
- (b) at least 5% of the pre-event total shares.

In addition to the materiality threshold, public offerings must satisfy the following conditions:

- be underwritten.
- have a publicly available prospectus, offering document, or prospectus summary filed with the relevant authorities.
- have a publicly available confirmation from an official source that the offering has been completed.

For public offerings that involve a concurrent combination of new company shares and existing shares offered by selling shareholders, both events are implemented if either of the public offerings represent at least 5% of total shares and US \$150 million. Any concurrent share repurchase by the affected company will also be included in the implementation.

2. Dutch Auctions, self-tender offer buybacks, and split-off exchange offers. These nonmandatory corporate action types will be eligible for accelerated implementation treatment regardless of size once their results are publicly announced by S&P.

Exception to the Accelerated Implementation Rule

For non-mandatory corporate actions subject to the accelerated implementation rule with a size of at least US \$1 billion, S&P will apply the share change, and any resulting IWF change, using the latest share and ownership information publicly available at the time of the announcement, even if the offering size is below the 5% threshold. This exception ensures that very large events are recognized in a timely manner using the latest available information.

All non-mandatory events not covered by the accelerated implementation rule (including but not limited to private placements, acquisition of private companies, and conversion of non-index share lines) will be implemented quarterly coinciding with the third Friday of the third month in each calendar quarter. In addition, events that were not implemented under the accelerated implementation rule but were found to have been eligible, (e.g. due to lack of publicly available information at the time of the event) are implemented as part of a quarterly rebalancing.

Announcement Policy

For accelerated implementation, S&P will provide two (2) business days' notice for all non-US domiciled stocks, and one (1) business days' notice for all US domiciled stocks.

IWF Updates

Accelerated implementation for events less than US \$1 billion will include an adjustment to the company's IWF only to the extent that such an IWF change helps the new float share total mimic the shares available in the offering. To minimize unnecessary turnover, these IWF changes do not need to meet any minimum threshold requirement for implementation. Any IWF change resulting in an IWF of 0.96 or greater is rounded up to 1.00 at the next annual IWF review. For accelerated implementation of events of at least US\$1 billion, any change in a company's IWF will include the latest share and ownership information publicly available at the time of the announcement.

IWF changes will only be made at the quarterly review if the change represents at least 5% of total current shares outstanding and is related to a single corporate action that did not qualify for the accelerated implementation rule.

Quarterly share change events resulting from the conversion of derivative securities, acquisitions of private companies, or acquisitions of non-index companies that do not trade on a major exchange are considered to be available to investors unless there is explicit information stating that the new owner is a strategic holder.

Other than the situations described above, please note that IWF changes are only made at the annual IWF review.

Share Updates

For companies with multiple share class lines, the 5% share change threshold is based on each individual multiple share class line rather than total company shares.

Changes to share counts that total less than 5% of total shares are accumulated and made quarterly on the third Friday of March, June, September, and December.

Exceptions:

Any non- fully paid or non-fully settled offering such as forward sales agreements are not eligible for accelerated implementation. Share updates resulting from completion of subscription receipts terms or the settlement of forward sale agreements are updated at a future quarterly share rebalance.

Rebalancing Guidelines – Share/IWF Freeze

A share/IWF freeze period is implemented during each quarterly rebalancing. The freeze period begins after the market close on the Tuesday prior to the second Friday of each rebalancing month (i.e. March, June, September, and December) and ends after the market close on the third Friday of the rebalancing month. Pro-forma files are normally released after the market close on the second Friday, one week prior to the rebalancing effective date. In September, preliminary share and float data is released on the first Friday of the month. However, the share freeze period for September follows the same schedule as the other three quarterly share freeze periods. For illustration purposes, if rebalancing pro-forma files are scheduled to be released on Friday, March 13, the share/IWF freeze period will begin after the close of trading on Tuesday, March 10 and will end after the close of trading the following Friday, March 20 (i.e. the third Friday of the rebalancing month).

During the share/IWF freeze period, shares and IWFs are not changed except for mandatory corporate action events (such as merger activity, stock splits, and rights offerings), and the accelerated implementation rule is suspended. All changes that qualify for accelerated implementation scheduled to be effective during the share/IWF freeze period will instead be announced on the third Friday of the rebalancing month, and implemented five business days after the quarterly rebalancing effective date.

Index Calculation

The AS51 Index is calculated using a base-weighted aggregate methodology. The value of the AS51 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 AS51 Index times the number of shares of such stock included in the AS51 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 AS51 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 AS51 does not reflect the corporate actions of the individual companies that comprise the AS51 Index.

The table below summarizes the types of index adjustments and their consequences under the index methodology:

Corporate Action	Treatment
Company addition/deletion	<u>Addition</u> Companies are added at the float market capitalization weight. The net change to the index market capitalization causes a divisor adjustment. <u>Deletion</u> The weights of all stocks in the index will proportionally change. Relative weights will stay the same. The index divisor will change due to the net change in the index market capitalization.
Change in shares outstanding	Increasing (decreasing) the shares outstanding increases (decreases) the market capitalization of the index. The change to the index market capitalization causes a divisor adjustment.
Split/reverse split	Shares outstanding are adjusted by split ratio. The stock price is adjusted by the split ratio. There is no change to the index market capitalization and no divisor adjustment.
Spin-off	The spin-off is added to the index on the ex-date at a price of zero. The spin-off index shares are based on the spin-off ratio. On the ex-date, the spin-off will have the same attributes as its parent company, and will remain in the index for at least one trading day. As a result, there will be no change to the index divisor on the ex-date. If the spin-off is ineligible for continued inclusion, it will be removed after the ex-date. The weight of the spin-off being deleted is reinvested across all the index components proportionally such that the relative weights of all index components are unchanged. The net change in index market capitalization will cause a divisor change.
Change in IWF	Increasing (decreasing) the IWF increases (decreases) the market capitalization of the index. A net change to the index market capitalization causes a divisor adjustment.
Ordinary dividend	When a company pays an ordinary cash dividend, the index does not make any adjustments to the price or shares of the stock. As a result, there are no divisor adjustments to the index.
Special dividend	The stock price is adjusted by the amount of the dividend. The net change to the index market capitalization causes a divisor adjustment.
Rights offering	All rights offerings that are in the money on the ex-date are applied under the assumption the rights are fully subscribed. The stock price is adjusted by the value of the rights and the shares outstanding are increased by the rights ratio. The net change in market capitalization causes a divisor adjustment.

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 S&P's Australian Index Committee (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 Refinitiv. 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.

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:

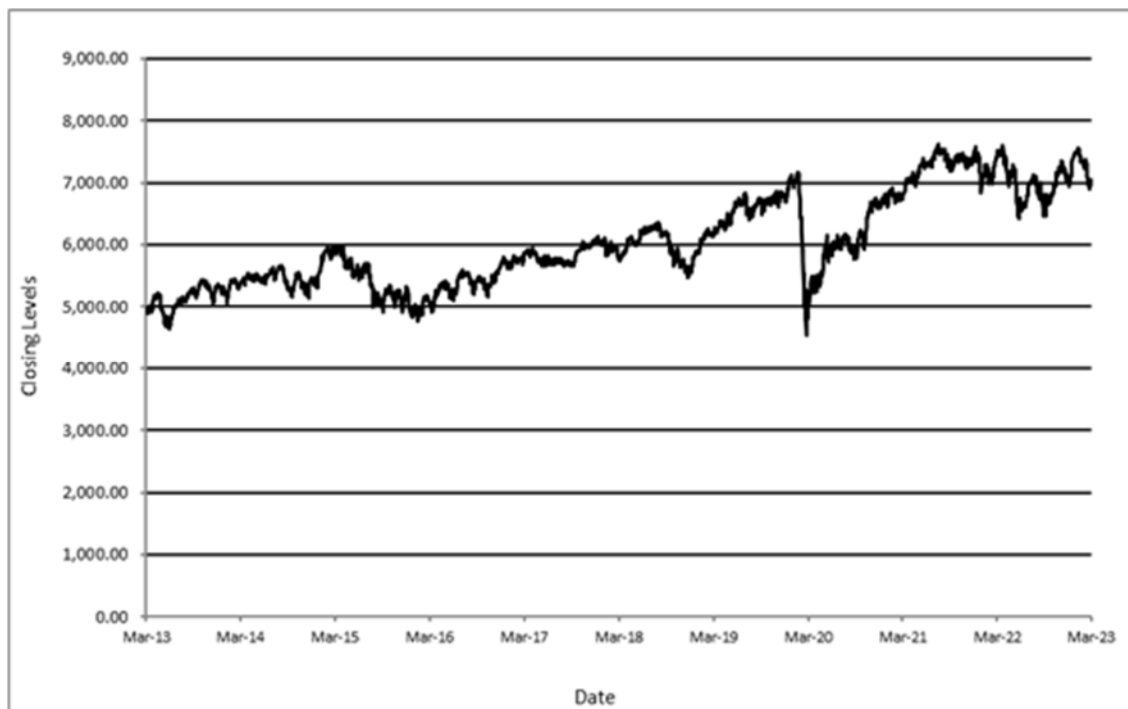
- ♦ if an unexpected exchange closure occurs prior to the open of trading and it is indicated that trading will not open for a given day, S&P will treat the day as an unscheduled market holiday.
- ♦ if a market disruption occurs intraday, S&P will wait for the impacted exchange to publish a list of closing 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 asx.com.au. We are not incorporating by reference the website or any material it includes in this document.

Historical Information

The following graph sets forth the closing levels of the AS51 from March 29, 2013 through March 29, 2023, as reported by Bloomberg Financial Markets. ***The historical performance of the AS51 should not be taken as an indication of future performance. We cannot give you assurance that the performance of the AS51 will result in the return of any of your initial investment.***



Supplemental Plan of Distribution (Conflicts of Interest)

We have agreed to indemnify UBS and RBCCM against liabilities under the Securities Act of 1933, as amended, or to contribute payments that UBS and RBCCM may be required to make relating to these liabilities as described in the prospectus supplement and the prospectus.

All sales of the Notes will be made to certain fee-based advisory accounts for which UBS is an investment advisor and UBS will act as placement agent. The purchase price will be \$1,000 per Note, and UBS will forgo any commissions related to these sales. Investors that purchase and hold the Notes in fee-based advisory accounts will pay advisory fees to UBS based on the amount of assets held in those accounts.

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

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

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

For additional information as to the relationship between us and RBCCM, please see the section “Plan of Distribution—Conflicts of Interest” in the prospectus dated September 14, 2021.

Structuring the Notes

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

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

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

Terms Incorporated in the Master Note

The terms appearing above under the caption “Final Terms of the Securities” and the provisions in the accompanying product prospectus supplement UBS-IND-1 dated September 14, 2021 under the caption “General Terms of the Securities,” are incorporated into the master note issued to DTC, the registered holder of the Notes.

Validity of the Notes

In the opinion of Norton Rose Fulbright Canada LLP, the issue and sale of the Notes has been duly authorized by all necessary corporate action of the Bank in conformity with the Indenture, and when the Notes have been duly executed, authenticated and issued in accordance with the Indenture and delivered against payment therefor, the Notes will be validly issued and, to the extent validity of the Notes is a matter governed by the laws of the Province of Ontario or Québec, or the laws of Canada applicable therein, will be valid obligations of the Bank, subject to equitable remedies which may only be granted at the discretion of a court of competent authority, subject to applicable bankruptcy, to rights to indemnity and contribution under the Notes or the Indenture which may be limited by applicable law, to insolvency and other laws of general application affecting creditors' rights, to limitations under applicable limitations statutes, and to limitations as to the currency in which judgments in Canada may be rendered, as prescribed by the Currency Act (Canada). This opinion is given as of the date hereof and is limited to the laws of the Provinces of Ontario and Québec and the federal laws of Canada applicable thereto. In addition, this opinion is subject to customary assumptions about the Trustee's authorization, execution and delivery of the Indenture and the genuineness of signatures and certain factual matters, all as stated in the letter of such counsel dated September 14, 2021, which has been filed as Exhibit 5.3 to Royal Bank's Form 6-K filed with the SEC on September 14, 2021.

In the opinion of Ashurst LLP, when the Notes have been duly completed in accordance with the Indenture and issued and sold as contemplated by the prospectus supplement and the prospectus, the Notes will be valid, binding and enforceable obligations of the Bank, entitled to the benefits of the Indenture, subject to applicable bankruptcy, insolvency, fraudulent transfer, reorganization, moratorium and similar laws of general applicability relating to or affecting creditors' rights and subject to general principles of equity, public policy considerations and the discretion of the court before which any suit or proceeding may be brought. This opinion is given as of the date hereof and is limited to the laws of the State of New York. This opinion is subject to customary assumptions about the Trustee's authorization, execution and delivery of the Indenture and the genuineness of signatures and to such counsel's reliance on the Bank and other sources as to certain factual matters, all as stated in the legal opinion dated September 14, 2021, which has been filed as Exhibit 5.4 to the Bank's Form 6-K dated September 14, 2021.