

BANK OF MONTREAL /CAN/  
Form FWP  
October 26, 2018

Registration Statement No. 333-217200

Filed Pursuant to Rule 433

Subject to Completion, dated October 26, 2018

Pricing Supplement to the Prospectus dated April 27, 2017,  
the Prospectus Supplement dated September 23, 2018, and the Product Supplement dated May 1, 2017

US\$

### **Senior Medium-Term Notes, Series E**

Autocallable Cash-Settled Notes with Contingent Interest Payments due January 31, 2020

**Linked to the Lesser Performing of the EURO STOXX 50<sup>®</sup> Index, the Russell 2000<sup>®</sup> Index,  
the VanEck Vectors<sup>®</sup> Gold Miners ETF and the iShares<sup>®</sup> MSCI Emerging Markets ETF**

This pricing supplement relates an offering of Autocallable Cash-Settled Notes with Contingent Interest Payments linked to the Lesser Performing of the EURO STOXX 50<sup>®</sup> Index, the Russell 2000<sup>®</sup> Index, the VanEck Vectors<sup>®</sup> Gold Miners ETF and the iShares<sup>®</sup> MSCI Emerging Markets ETF (the “Underlying Assets”).

The notes are designed for investors who are seeking conditional interest payments equal to 1.10% (or 13.20% per annum) of the principal amount per month, as well as a return of principal if the Closing Level of **each** Underlying Asset on any Call Date beginning on April 25, 2019 is greater than or equal to 100% of its Initial Level (the “Call Level”). Investors should be willing to have their notes automatically redeemed prior to maturity and be willing to lose some or all of their principal at maturity.

The notes will bear interest at a rate equal to 1.10% of the principal amount per month (\$11.00 per \$1,000 in principal amount) if the value of each Underlying Asset is greater than or equal to its Coupon Barrier Level as of the applicable monthly Observation Date. Any interest will be payable on the last business day of each month, beginning on November 30, 2018, until January 31, 2020, subject to the automatic redemption feature.

If on any Call Date beginning on April 25, 2019, the Closing Level of **each** Underlying Asset is greater than its Call Level, the notes will be automatically called. On the applicable Call Settlement Date, for each \$1,000 principal amount, investors will receive the principal amount plus the applicable interest payment.

The notes do not guarantee any return of principal at maturity. Instead, if the notes are not automatically called, the payment at maturity will be based on the Final Level of each Underlying Asset and whether the Closing Level of any Underlying Asset has declined from its Initial Level below its Trigger Level during the Monitoring Period (a “Trigger Event”), as described below.

If the notes are not automatically redeemed, and a Trigger Event occurs with respect to **any** Underlying Asset **and** the Final Level of **any** Underlying Asset is less than its Initial Level, investors will be subject to one-for-one loss of the principal amount of the notes for any percentage decrease in the Lesser Performing Underlying Asset from its Initial Level to its Final Level. In such a case, you will receive a cash amount at maturity that is less than the

principal amount.

The notes will not be listed on any securities exchange.

All payments on the notes are subject to the credit risk of Bank of Montreal.

The offering is expected to price on or about October 29, 2018, and the notes are expected to settle through the facilities of The Depository Trust Company on or about October 31, 2018.

The notes are scheduled to mature on or about January 31, 2020.

The notes will be issued in minimum denominations of \$1,000 and integral multiples of \$1,000.

Our subsidiary, BMO Capital Markets Corp. (“BMOCM”), is the agent for this offering. See “Supplemental Plan of Distribution (Conflicts of Interest)” below.

The notes will not be subject to conversion into our common shares or the common shares of any of our affiliates under subsection 39.2(2.3) of the Canada Deposit Insurance Corporation Act (the “CDIC Act”).

Autocallable Note Number	Underlying Assets	Ticker Symbols	Initial Levels	Coupon Barrier and Trigger Levels (% of the Initial Levels)	CUSIP	Principal Amount	Price to Public <sup>(1)</sup>	Agent’s Commission <sup>(1)</sup>	Proceeds to Bank of Montreal
ARC454	EURO STOXX 50® Index	SX5E		65.00%	06367WEC3	100.00%		0.25%	99.75%
	Russell 2000® Index	RTY		65.00%				US\$	US\$
	VanEck Vectors® Gold Miners ETF								
		GDX		65.00%					
	iShares® MSCI Emerging Markets ETF	EEM		65.00%					

<sup>(1)</sup> Certain dealers who purchase the notes for sale to certain fee-based advisory accounts may forego some or all of their selling concessions, fees or commissions. The public offering price for investors purchasing the notes in these accounts may be between \$997.50 and \$1,000 per \$1,000 in principal amount.

*Investing in the notes involves risks, including those described in the “Selected Risk Considerations” section beginning on page P-5 of this pricing supplement, the “Additional Risk Factors Relating to the Notes” section beginning on page PS-6 of the product supplement, and the “Risk Factors” sections beginning on page S-1 of the prospectus supplement and on page 8 of the prospectus.*

**Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of the notes or passed upon the accuracy of this pricing supplement, the product supplement, the prospectus supplement or the prospectus. Any representation to the contrary is a criminal offense.**

The notes will be our unsecured obligations and will not be savings accounts or deposits that are insured by the United States Federal Deposit Insurance Corporation, the Deposit Insurance Fund, the Canada Deposit Insurance Corporation or any other governmental agency or instrumentality or other entity.

On the date of this preliminary pricing supplement, based on the terms set forth above, the estimated initial value of the notes is \$963.10 per \$1,000 in principal amount. The estimated initial value of the notes on the Pricing Date may differ from this value but will not be less than \$955 per \$1,000 in principal amount. However, as discussed in more detail in this pricing supplement, the actual value of the notes at any time will reflect many factors and cannot be predicted with accuracy.

**BMO CAPITAL MARKETS**

**Key Terms of the Notes:**

Underlying Assets:	The EURO STOXX 50 <sup>®</sup> Index (ticker symbol: SX5E), the Russell 2000 <sup>®</sup> Index (ticker symbol: RTY), the VanEck Vectors <sup>®</sup> Gold Miners ETF (ticker symbol: GDX) and the iShares <sup>®</sup> MSCI Emerging Markets ETF (ticker symbol: EEM). See the section below entitled “The Underlying Assets” for additional information about the Underlying Assets.
Conditional Coupon:	If the Closing Level of each Underlying Asset is greater than or equal to its respective Coupon Barrier Level as of the applicable monthly Observation Date, investors will receive an interest payment for that month. Holders of the notes may not receive any interest payments during the term of the notes.
Interest Rate:	1.10% of the principal amount per month, if payable, unless earlier redeemed. Accordingly, each interest payment, if payable, will equal \$11.00 for each \$1,000 in principal amount per month.
Observation Dates:	The third scheduled trading day prior to the applicable interest payment date. Each Observation Date is subject to postponement, as set forth in the product supplement in the section “General Terms of the Notes—Market Disruption Events.”
Interest Payment Dates:	Interest, if payable, will be paid on the last business day of each month, beginning on November 30, 2018 until January 31, 2020, subject to the automatic redemption feature.
Automatic Redemption:	If, on any Call Date beginning on April 25, 2019, the Closing Level of <b>each</b> Underlying Asset is greater than or equal to its Call Level, the notes will be automatically redeemed.
Payment upon Automatic Redemption:	If the notes are automatically redeemed, then, on the applicable Call Settlement Date, for each \$1,000 principal amount, investors will receive the principal amount plus the applicable interest payment.
Call Dates:	The 3 <sup>rd</sup> business day prior to a Call Settlement Date, beginning on April 25, 2019. Each Call Date is subject to postponement, as set forth in the product supplement in the section “General Terms of the Notes—Market Disruption Events.”
Call Settlement Dates:	The last business day of each month, beginning on April 30, 2019. The Call Settlement Date for the final Call Date will be the maturity date.
Payment at Maturity:	If the notes are not automatically redeemed, the payment at maturity for the notes is based on the performance of the Underlying Assets. You will receive \$1,000 for each \$1,000 in principal amount of the note, unless (a) a Trigger Event has occurred with respect to <b>any</b> Underlying Asset <b>and</b> (b) the Final Level of <b>any</b> Underlying Asset is less than its Initial Level.  However, holders of the notes are subject to potential loss of principal at maturity. If a Trigger Event has occurred with respect to <b>any</b> Underlying Asset, and if the Final Level of <b>any</b> Underlying Asset is less than its Initial Level, you will receive at maturity, for each \$1,000 in principal amount of your

notes, a cash amount equal to:

$\$1,000 + [\$1,000 \times (\text{Percentage Change of the Lesser Performing Underlying Asset})]$

**This amount will be less than the principal amount of your notes, and may be zero.**

You will also receive the final interest payment at maturity, if payable.

Trigger Event: A Trigger Event will be deemed to occur with respect to an Underlying Asset if its Closing Level is less than its Trigger Level on any trading day during the Monitoring Period.

Monitoring Period: The period from the Pricing Date to and including the Valuation Date.

Lesser Performing Underlying Asset: The Underlying Asset that has the lowest Percentage Change.

Percentage Changes: With respect to each Underlying Asset,

$\frac{\text{Final Level} - \text{Initial Level}}{\text{Initial Level}}$ , expressed as a percentage

Initial Levels: With respect to each Underlying Asset, its Closing Level on the Pricing Date. The Initial Levels for the GDX and EEM are subject to adjustments in certain circumstances. See “General Terms of the Notes — Anti-Dilution Adjustments to an Underlying Asset that Is an ETF” in the product supplement for additional information about these adjustments.

Call Levels: With respect to each Underlying Asset, 100% of its Initial Level.

Final Levels: With respect to each Underlying Asset, its Closing Level on the Valuation Date.

Coupon Barrier Levels: With respect to each Underlying Asset, 65% of its Initial Level.

Trigger Levels: With respect to each Underlying Asset, 65% of its Initial Level.

Pricing Date: On or about October 29, 2018

Settlement Date: On or about October 31, 2018

Valuation Date: On or about January 28, 2020

Maturity Date: On or about January 31, 2020

Calculation Agent: BMOCM

Selling Agent: BMOCM

*The Pricing Date and the settlement date are subject to change. The actual Pricing Date, settlement date, Call Dates, Interest Payment Dates, Call Dates, Valuation Date and maturity date for the notes will be set forth in the final pricing supplement.*

### **Additional Terms of the Notes**

You should read this pricing supplement together with the product supplement dated May 1, 2017, the prospectus supplement dated September 23, 2018 and the prospectus dated April 27, 2017. 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 or the agent. You should carefully consider, among other things, the matters set forth in “Additional Risk Factors Relating to the Notes” in the product supplement, as the notes involve risks not associated with conventional debt securities. We urge you to consult your investment, legal, tax, accounting and other advisers before you invest in the notes.

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

Product supplement dated May 1, 2017:

<https://www.sec.gov/Archives/edgar/data/927971/000121465917002863/p427170424b5.htm>

Prospectus supplement dated September 23, 2018:

<https://www.sec.gov/Archives/edgar/data/927971/000119312518280416/d624491d424b5.htm>

Prospectus dated April 27, 2017:

<https://www.sec.gov/Archives/edgar/data/927971/000119312517142728/d254784d424b2.htm>

Our Central Index Key, or CIK, on the SEC website is 927971. As used in this pricing supplement, “we,” “us” or “our” refers to Bank of Montreal.

Please note that references in the product supplement to the prospectus supplement will be deemed to refer to the prospectus supplement dated September 23, 2018.

We have filed a registration statement (including a prospectus) with the SEC for the offering to which this document relates. Before you invest, you should read the prospectus in that registration statement and the other documents that we have filed with the SEC for more complete information about us and this offering. You may obtain these documents free of charge by visiting the SEC’s website at <http://www.sec.gov>. Alternatively, we will arrange to send

to you the prospectus (as supplemented by the prospectus supplement and product supplement) if you request it by calling our agent toll-free at 1-877-369-5412.

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## Selected Risk Considerations

An investment in the notes involves significant risks. Investing in the notes is not equivalent to investing directly in the Underlying Assets or their components. These risks are explained in more detail in the “Additional Risk Factors Relating to the Notes” section of the product supplement.

**Your investment in the notes may result in a loss.** — The notes do not guarantee any return of principal. If the notes are not automatically redeemed, the payment at maturity will be based on whether a Trigger Event has occurred with respect to **any** Underlying Asset, and whether the Final Level of **any** Underlying Asset is less than its Initial Level. If a Trigger Event has occurred with respect to **any** Underlying Asset, and if the Final Level of **any** Underlying Asset is less than its Initial Level, you will be subject to a one-for-one loss of the principal amount of the notes for any Percentage Change of the Lesser Performing Underlying Asset from its Initial Level. In such a case, you will receive at maturity a cash payment that is less than the principal amount of the notes and may be zero. **Accordingly, you could lose up to the entire principal amount of your notes.**

**You may not receive any conditional interest payments with respect to your notes.** — If the Closing Level of any Underlying Asset is less than or equal to its respective Coupon Barrier Level as of the applicable monthly Observation Date, you will not receive a monthly interest payment on the applicable interest payment date. You may not receive any interest payments during the term of the notes.

**The protection provided by the Trigger Level of an Underlying Asset may terminate on any day during the Monitoring Period.** — If the Closing Level of **any** Underlying Asset on any trading day during the Monitoring Period is less than its Trigger Level and the Final Level of **any** Underlying Asset is less than its Initial Level, you will be fully exposed at maturity to any decrease in the value of the Lesser Performing Underlying Asset. Under these circumstances, if the Percentage Change of the Lesser Performing Underlying Asset on the Valuation Date is less than zero, you will lose 1% (or a fraction thereof) of the principal amount of your investment for every 1% (or a fraction thereof) that the Final Level of the Lesser Performing Underlying Asset is less than its Initial Level. You will be subject to this potential loss of principal even if, after the Trigger Event occurs with respect to **any** Underlying Asset, the value of each Underlying Asset increases above its Trigger Level.

**Your notes are subject to automatic early redemption.** — We will redeem the notes if the Closing Level of **each** Underlying Asset on any Call Date specified above is greater than its Call Level. Following an automatic redemption, you will not receive any additional conditional interest payments on the notes, and you may not be able to reinvest your proceeds in an investment with returns that are comparable to the notes.

**Your return on the notes is limited to the conditional interest payments, regardless of any appreciation in the value of any Underlying Asset.** — You will not receive a payment at maturity with a value greater than your principal amount plus the final interest payment, if payable. In addition, if the notes are automatically called, you will not receive a payment greater than the principal amount plus the applicable conditional interest payment, even if the

Final Level of an Underlying Asset exceeds its Call Level by a substantial amount. Accordingly, your maximum return for each \$1,000 in principal amount of the notes is equal to the 15 monthly payments of \$11.00, or approximately \$165.00, a return of 16.50% over the term of the notes.

**Your investment is subject to the credit risk of Bank of Montreal.** — Our credit ratings and credit spreads may adversely affect the market value of the notes. Investors are dependent on our ability to pay all amounts due on the notes, and therefore investors are subject to our credit risk and to changes in the market's view of our creditworthiness. Any decline in our credit ratings or increase in the credit spreads charged by the market for taking our credit risk is likely to adversely affect the value of the notes.

**Whether interest is payable on the notes, and your payment at maturity may be determined solely by reference to the Lesser Performing Underlying Asset, even if the other Underlying Assets perform better.** — We will only make each interest payment on the notes if the Closing Level of each of the Underlying Assets on the applicable Observation Date exceeds the applicable Coupon Barrier, even if the values of the other Underlying Assets have increased significantly. Similarly, if a Trigger Event occurs with respect to any Underlying Asset and the Final Level of any Underlying Asset is less than its Initial Level, your payment at maturity will be determined by reference to the performance of the Lesser Performing Underlying Asset. Even if the other Underlying Assets have appreciated in value compared to its Initial Level, or has experienced a decline that is less than that of the Lesser Performing Underlying Asset, your return at maturity will only be determined by reference to the performance of the Lesser Performing Underlying Asset if a Trigger Event occurs.

**The payments on the notes will be determined by reference to each Underlying Asset individually, not to a basket, and the payments on the notes will be based on the performance of the Lesser Performing Underlying Asset.** — Whether each interest payment is payable, and the payment at maturity if a Trigger Event occurs, will be determined only by reference to the performance of the Lesser Performing Underlying Asset, regardless of the performance of the other Underlying Assets. The notes are not linked to a weighted basket, in which the risk may be mitigated and diversified among each of the basket components. For example, in the case of notes linked to a weighted basket, the return would depend on the weighted aggregate performance of the basket components reflected as the basket return. As a result, the depreciation of one basket component could be mitigated by the appreciation of the other basket components, as scaled by the weighting of that basket component. However, in the case of the notes, the individual performance of each Underlying Asset would not be combined, and the depreciation of one Underlying Asset would not be mitigated by any appreciation of the other Underlying Assets. Instead, your receipt of interest payments on the notes will depend on the value of each Underlying Asset on each Observation Date, and your return at maturity will depend solely on the Final Level of the Lesser Performing Underlying Asset if a Trigger Event occurs.

**Potential conflicts.** — We and our affiliates play a variety of roles in connection with the issuance of the notes, including acting as calculation agent. In performing these duties, the economic interests of the calculation agent and other affiliates of ours are potentially adverse to your interests as an investor in the notes. We or one or more of our affiliates may also engage in trading of shares of the Underlying Assets that are ETFs or the securities represented or held by the Underlying Assets on a regular basis as part of our general broker-dealer and other businesses, for proprietary accounts, for other accounts under management or to facilitate transactions for our customers. Any of these activities could adversely affect the value of an Underlying Asset and, therefore, the market value of the notes. We or one or more of our affiliates may also issue or underwrite other securities or financial or derivative instruments with returns linked or related to changes in the performance of the Underlying Assets. By introducing competing products into the marketplace in this manner, we or one or more of our affiliates could adversely affect the market value of the notes.

**Our initial estimated value of the notes will be lower than the price to public.** — Our initial estimated value of the notes is only an estimate, and is based on a number of factors. The price to public of the notes will exceed our initial estimated value, because costs associated with offering, structuring and hedging the notes are included in the price to public, but are not included in the estimated value. These costs include the underwriting discount and selling concessions, the profits that we and our affiliates expect to realize for assuming the risks in hedging our obligations under the notes and the estimated cost of hedging these obligations. The initial estimated value may be as low as the amount indicated on the cover page of this pricing supplement.

**Our initial estimated value does not represent any future value of the notes, and may also differ from the estimated value of any other party.** — Our initial estimated value of the notes as of the date of this preliminary pricing supplement is, and our estimated value as determined on the Pricing Date will be, derived using our internal pricing models. This value is based on market conditions and other relevant factors, which include volatility of the Underlying Assets, dividend rates and interest rates. Different pricing models and assumptions could provide values for the notes that are greater than or less than our initial estimated value. In addition, market conditions and other relevant factors after the Pricing Date are expected to change, possibly rapidly, and our assumptions may prove to be incorrect. After the Pricing Date, the value of the notes could change dramatically due to changes in market conditions, our creditworthiness, and the other factors set forth in this pricing supplement and the product

supplement. These changes are likely to impact the price, if any, at which we or BMOCM would be willing to purchase the notes from you in any secondary market transactions. Our initial estimated value does not represent a minimum price at which we or our affiliates would be willing to buy your notes in any secondary market at any time.

**The terms of the notes are not determined by reference to the credit spreads for our conventional fixed-rate debt.** — To determine the terms of the notes, we will use an internal funding rate that represents a discount from the credit spreads for our conventional fixed-rate debt. As a result, the terms of the notes are less favorable to you than if we had used a higher funding rate.

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**Certain costs are likely to adversely affect the value of the notes.** — Absent any changes in market conditions, any secondary market prices of the notes will likely be lower than the price to public. This is because any secondary market prices will likely take into account our then-current market credit spreads, and because any secondary market prices are likely to exclude all or a portion of the agent’s commission and the hedging profits and estimated hedging costs that are included in the price to public of the notes and that may be reflected on your account statements. In addition, any such price is also likely to reflect a discount to account for costs associated with establishing or unwinding any related hedge transaction, such as dealer discounts, mark-ups and other transaction costs. As a result, the price, if any, at which BMOCM or any other party may be willing to purchase the notes from you in secondary market transactions, if at all, will likely be lower than the price to public. Any sale that you make prior to the maturity date could result in a substantial loss to you.

**Owning the notes is not the same as owning the Underlying Assets or their components or a security directly linked to the performance of the Underlying Assets or their components.** — The return on your notes will not reflect the return you would realize if you actually owned the Underlying Assets or their components or a security directly linked to the performance of the Underlying Assets or their components and held that investment for a similar period. Your notes may trade quite differently from the Underlying Assets. Changes in the value of an Underlying Asset may not result in comparable changes in the market value of your notes. Even if the value of an Underlying Asset increases from its Initial Level during the term of the notes, the market value of the notes prior to maturity may not increase to the same extent. It is also possible for the market value of the notes prior to maturity to decrease while the value of an Underlying Asset increases.

**You will not have any shareholder rights and will have no right to receive any securities represented by the Underlying Assets at maturity.** — Investing in your notes will not make you a holder of any securities represented by the Underlying Assets. Neither you nor any other holder or owner of the notes will have any voting rights, any right to receive dividends or other distributions or any other rights with respect to these securities.

**Adjustments to the Underlying Assets could adversely affect the value of the notes.** STOXX Limited, the sponsor of the SX5E, FTSE Russell, the sponsor of the RTY (each, an “Index Sponsor”), VanEck Associates, the investment advisor of the GDX, and BlackRock, Inc. (collectively with its affiliates, “BlackRock”), as the sponsor and advisor of the EEM, may add, delete or substitute the stocks represented or held by the Underlying Assets, or make other methodological changes. Further, these Index Sponsors and these investment advisors may discontinue or suspend calculation or publication of these indices or discontinue or suspend maintenance of these ETFs at any time, as applicable. Any of these actions could affect the value of and the return on the notes.

**We have no affiliation with either Index Sponsor (or the underlying index for any ETF) or the sponsor or investment advisor of any ETF and will not be responsible for any actions taken by them.** — The sponsors of these indices and the sponsors or investment advisors of these ETFs are not our affiliates, and will not be involved in the offering of the notes in any way. Consequently, we have no control over the actions of these sponsors or the sponsors or investment advisors of the ETFs, including any actions of the type that would require the calculation agent to adjust the payments on the notes. None of these index sponsors or the sponsors or investment advisors of the ETFs has any obligation of any sort with respect to the notes. Thus, none of these index sponsors or the sponsors or investment advisors of the ETFs has any obligation to take your interests into consideration for any reason, including in taking any actions that might affect the value of the notes. None of our proceeds from the issuance of the notes will

be delivered to either Index Sponsor or the sponsor or investment advisor of either ETF.

**The performance of each ETF may not correlate with the performance of its underlying index as well as the net asset value per share of that ETF.** — The performance of an ETF is linked principally to the performance of its underlying index and the net asset value per share of that ETF. However, because of the potential discrepancies identified in more detail in the product supplement, the return on an ETF may correlate imperfectly with the return on its underlying index or its net asset value per share.

**The ETFs are subject to management risks.** — The ETFs are subject to management risk, which is the risk that the investment advisor's investment strategy, the implementation of which is subject to a number of constraints, may not produce the intended results. For example, the investment advisor may invest a portion of an ETF's assets in securities not included in the relevant industry or sector but which the investment advisor believes will help that ETF track the relevant industry or sector.

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**Lack of liquidity.** — The notes will not be listed on any securities exchange. BMOCM may 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 the notes is likely to depend on the price, if any, at which BMOCM is willing to buy the notes.

**Hedging and trading activities.** — We or any of our affiliates may carry out hedging activities related to the notes, including purchasing or selling securities included in an Underlying Asset, or futures or options relating to an Underlying Asset, or other derivative instruments with returns linked or related to changes in the performance of an Underlying Asset. We or our affiliates may also engage in trading relating to an Underlying Asset from time to time. Any of these hedging or trading activities on or prior to the Pricing Date and during the term of the notes could adversely affect our payment to you at maturity.

**Many economic and market factors will influence the value of the notes.** — In addition to the value of each Underlying Asset and interest rates on any trading day, the value of the notes will be affected by a number of economic and market factors that may either offset or magnify each other, and which are described in more detail in the product supplement.

**You must rely on your own evaluation of the merits of an investment linked to the Underlying Assets.** — In the ordinary course of their businesses, our affiliates from time to time may express views on expected movements in the values of the Underlying Assets or the securities represented or held by the Underlying Assets. One or more of our affiliates have published, and in the future may publish, research reports that express views on the Underlying Assets or these securities. However, these views are subject to change from time to time. Moreover, other professionals who deal in the markets relating to the Underlying Assets at any time may have significantly different views from those of our affiliates. You are encouraged to derive information concerning the Underlying Assets from multiple sources, and you should not rely on the views expressed by our affiliates.

Neither the offering of the notes nor any views which our affiliates from time to time may express in the ordinary course of their businesses constitutes a recommendation as to the merits of an investment in the notes.

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

large-capitalization companies. These companies may also be more susceptible to adverse developments related to their products or services.

**An investment in the notes linked to the EURO STOXX 50<sup>®</sup> Index, the iShares<sup>®</sup> MSCI Emerging Markets ETF and the VanEck Vectors<sup>®</sup> Gold Miners ETF is subject to risks associated with foreign securities markets. —**

The SX5E, the MSCI Emerging Markets Index (the underlying index of the EEM), and the NYSE Arca Gold Miners Index (the underlying index of the GDX), track the value of certain foreign equity securities. You should be aware that investments in securities linked to the value of foreign equity securities involve particular risks. The foreign securities markets comprising these Underlying Assets may have less liquidity and may be more volatile than U.S. or other securities markets and market developments may affect foreign markets differently from U.S. or other securities markets. Direct or indirect government intervention to stabilize these foreign securities markets, as well as cross-shareholdings in foreign companies, may affect trading prices and volumes in these markets. Also, there is generally less publicly available information about foreign companies than about those U.S. companies that are subject to the reporting requirements of the U.S. Securities and Exchange Commission, and foreign companies are subject to accounting, auditing and financial reporting standards and requirements that differ from those applicable to U.S. reporting companies.



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

**An investment in the notes linked to the iShares<sup>®</sup> MSCI Emerging Markets ETF and the VanEck Vectors<sup>®</sup> Gold Miners ETF is subject to foreign currency exchange rate risk.** — The share prices of the EEM and the GDX will fluctuate based upon its net asset value, which will in turn depend in part upon changes in the value of the currencies in which the stocks held by the EEM and the GDX are traded. Accordingly, investors in the notes will be exposed to currency exchange rate risk with respect to each of the currencies in which the stocks held by the EEM and the GDX are traded. An investor's net exposure will depend on the extent to which these currencies strengthen or weaken against the U.S. dollar. If the dollar strengthens against these currencies, the net asset value of the EEM and the GDX will be adversely affected and the prices of the EEM and the GDX may decrease.

**The holdings of the VanEck Vectors<sup>®</sup> Gold Miners ETF are concentrated in the gold and silver mining industries.** — All or substantially all of the equity securities held by the GDX are issued by gold or silver mining companies. An investment in the notes will be exposed to risks in the gold and silver mining industries. As a result of being linked to a single industry or sector, the notes may have increased volatility as the share price of the GDX may be more susceptible to adverse factors that affect that industry or sector. Competitive pressures may have a significant effect on the financial condition of companies in these industries.

In addition, these companies are highly dependent on the price of gold or silver, as applicable. These prices fluctuate widely and may be affected by numerous factors. Factors affecting gold prices include economic factors, including, among other things, the structure of and confidence in the global monetary system, expectations of the future rate of inflation, the relative strength of, and confidence in, the U.S. dollar (the currency in which the price of gold is generally quoted), interest rates and gold borrowing and lending rates, and global or regional economic, financial, political, regulatory, judicial or other events. Gold prices may also be affected by industry factors such as industrial and jewelry demand, lending, sales and purchases of gold by the official sector, including central banks and other governmental agencies and multilateral institutions which hold gold, levels of gold production and production costs, and short-term changes in supply and demand because of trading activities in the gold market. Factors affecting silver prices include general economic trends, technical developments, substitution issues and regulation, as well as specific factors including industrial and jewelry demand, expectations with respect to the rate of inflation, the relative strength of the U.S. dollar (the currency in which the price of silver is generally quoted) and other currencies, interest rates, central bank sales, forward sales by producers, global or regional political or economic events, and production costs and disruptions in major silver producing countries such as Mexico and Peru. The supply of silver consists of a combination of new mine production and existing stocks of bullion and fabricated silver held by governments, public and private financial institutions, industrial organizations and private individuals. In addition, the price of silver has on occasion been subject to very rapid short-term changes due to speculative activities. From time to time, above-ground

inventories of silver may also influence the market.

**Relationship to gold and silver bullion.** — The GDX invests in shares of gold and silver mining companies, but not in gold bullion or silver bullion. The GDX may under- or over-perform gold bullion and/or silver bullion over the term of the notes.

**Significant aspects of the tax treatment of the notes are uncertain.** — The tax treatment of the notes is uncertain. We do not plan to request a ruling from the Internal Revenue Service or from any Canadian authorities regarding the tax treatment of the notes, and the Internal Revenue Service or a court may not agree with the tax treatment described in this pricing supplement.

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The Internal Revenue Service has released a notice that may affect the taxation of holders of “prepaid forward contracts” and similar instruments. According to the notice, the Internal Revenue Service and the U.S. Treasury are actively considering whether the holder of such instruments should be required to accrue ordinary income on a current basis. While it is not clear whether the notes would be viewed as similar to such instruments, it is possible that any future guidance could materially and adversely affect the tax consequences of an investment in the notes, possibly with retroactive effect.

Please read carefully the section entitled “Supplemental U.S. Federal Income Tax Considerations” in this pricing supplement, the section entitled “United States Federal Income Taxation” in the accompanying prospectus and the section entitled “Certain Income Tax Consequences” in the accompanying prospectus supplement. You should consult your tax advisor about your own tax situation.

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**Examples of the Hypothetical Payment at Maturity for a \$1,000 Investment in the Notes**

The following table illustrates the hypothetical payments on a note at maturity, assuming that the notes are not automatically called. The hypothetical payments are based on a \$1,000 investment in the note, a hypothetical Initial Level of 100.00 for each Underlying Asset, a hypothetical Trigger Level of 65.00 for each Underlying Asset (65% of its hypothetical Initial Level), a hypothetical Call Level of 100 for each Underlying Asset (100% of its hypothetical Initial Level), a range of hypothetical Final Levels of the Lesser Performing Underlying Asset and the effect on the payment at maturity if (i) a Trigger Event occurs with respect to **any** Underlying Asset or (ii) if a Trigger Event does not occur with respect to **each** Underlying Asset.

The hypothetical examples shown below are intended to help you understand the terms of the notes. If the notes are not automatically called, the actual cash amount that you will receive at maturity will depend upon whether the Closing Level of **any** Underlying Asset is below its Trigger Level on any trading day during the Monitoring Period and whether the Final Level of **any** Underlying Asset is below its Initial Level on the Valuation Date. If the notes are automatically called prior to maturity, the hypothetical examples below will not be relevant, and you will receive on the applicable Call Settlement Date, for each \$1,000 principal amount, the principal amount plus the applicable interest payment, if payable.

Your total return on the notes will also depend on the number of monthly periods in which interest is payable, as set forth above.

<b>Hypothetical Final Level of the Lesser Performing Underlying Asset</b>	<b>Hypothetical Final Level of the Lesser Performing Underlying Asset Expressed as a Percentage of the Initial Level</b>	<b>Payment at Maturity (Excluding Any Conditional Interest Payment)</b>	
		<b>(i) if the Closing Level of each Underlying Asset does not fall below its Trigger Level on any day during the Monitoring Period</b>	<b>(ii) if the Closing Level of any Underlying Asset falls below its Trigger Level on any day during the Monitoring Period</b>
150.00	150.00%	\$1,000.00	\$1,000.00

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125.00	125.00%	\$1,000.00	\$1,000.00
110.00	110.00%	\$1,000.00	\$1,000.00
100.00	100.00%	\$1,000.00	\$1,000.00
90.00	90.00%	\$1,000.00	\$900.00
80.00	80.00%	\$1,000.00	\$800.00
70.00	70.00%	\$1,000.00	\$700.00
65.00	65.00%	\$1,000.00	\$650.00
50.00	50.00%	N/A	\$500.00
25.00	25.00%	N/A	\$250.00
0.00	0.00%	N/A	\$0.00

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## Supplemental U.S. Federal Income Tax Considerations

*The following, together with the discussion of U.S. federal income taxation in the accompanying prospectus and prospectus supplement, 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 Canada and 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 pricing supplement 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 with respect to United States holders (as defined in the accompanying prospectus). It applies only to those holders who are not excluded from the discussion of U.S. federal income taxation in the accompanying prospectus. It does not apply to holders subject to special rules including holders subject to Section 451(b) of the Code. In addition, the discussion below assumes that an investor in the notes will be subject to a significant risk that it will lose a significant amount of its investment in the notes. Bank of Montreal intends to treat conditional interest payments with respect to the notes as U.S. source income for U.S. federal income tax purposes.

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 will not attempt to ascertain whether any Underlying Asset, the issuer of any of the component stocks included in an Underlying Asset or any of the entities whose stock is owned by any Underlying Asset that is an exchange traded fund would be treated as a “passive foreign investment company” within the meaning of Section 1297 of the Code or a “U.S. real property holding corporation” within the meaning of Section 897 of the Code. If any Underlying Asset, the issuer of any of the component stocks included in an Underlying Asset or any of the entities whose stock is owned by any Underlying Asset that is an exchange traded fund were so treated, certain adverse U.S. federal income tax consequences could possibly apply. You should refer to any available information filed with the SEC by the issuer of

any Underlying Asset, any of the component stocks included in an Underlying Asset or any of the entities whose stock is owned by any Underlying Asset that is an exchange traded fund and consult your tax advisor regarding the possible consequences to you in this regard.

In the opinion of our counsel, Morrison & Foerster LLP, it would generally be reasonable to treat a note with terms described in this pricing supplement as a pre-paid cash-settled contingent income-bearing derivative contract in respect of the Underlying Assets for U.S. federal income tax purposes, and the terms of the notes require a holder and us (in the absence of a change in law or an administrative or judicial ruling to the contrary) to treat the notes for all tax purposes in accordance with such characterization. Although the U.S. federal income tax treatment of the conditional interest payments is uncertain, we intend to take the position, and the following discussion assumes, that such conditional interest payments (including any interest payment on or with respect to the maturity date) constitute taxable ordinary income to a United States holder at the time received or accrued in accordance with the holder's regular method of accounting. If the notes are treated as described above, it would be reasonable for a United States holder to take the position that it will recognize capital gain or loss upon the sale or maturity of the notes in an amount equal to the difference between the amount a United States holder receives at such time (other than amounts properly attributable to any interest payments, which would be treated, as described above, as ordinary income) and the United States holder's tax basis in the notes. In general, a United States holder's tax basis in the notes will be equal to the price the holder paid for the notes. Capital gain recognized by an individual United States holder is generally taxed at ordinary income rates where the property is held for one year or less. The deductibility of capital losses is subject to limitations.

## **Alternative Treatments**

Alternative tax treatments of the notes are also possible and the Internal Revenue Service might assert that a treatment other than that described above is more appropriate. For example, it would be possible to treat the notes, and the Internal Revenue Service might assert that the notes should be treated, as a single debt instrument. If the notes are so treated, a United States holder would generally be required to accrue interest currently over the term of the notes irrespective of the conditional interest payments, if any, paid on the notes. In addition, any gain a United States holder might recognize upon the sale or maturity of the notes would be ordinary income and any loss recognized by a holder at such time would be ordinary loss to the extent of interest that same holder included in income in the current or previous taxable years in respect of the notes, and thereafter, would be capital loss.

Because of the absence of authority regarding the appropriate tax characterization of the notes, it is also possible that the Internal Revenue Service could seek to characterize the notes in a manner that results in other tax consequences that are different from those described above.

The Internal Revenue Service has released a notice that may affect the taxation of holders of the notes. According to the notice, the Internal Revenue Service and the Treasury Department are actively considering whether the holder of an instrument such as the notes should be required to accrue ordinary income on a current basis irrespective of any interest payments, and they sought taxpayer comments on the subject. It is not possible to determine what guidance they will ultimately issue, if any. It is possible, however, that under such guidance, holders of the notes will ultimately be required to accrue income currently and this could be applied on a retroactive basis. The Internal Revenue Service and the Treasury Department are also considering other relevant issues, including whether additional gain or loss from such instruments should be treated as ordinary or capital and whether the special “constructive ownership rules” of Section 1260 of the Code might be applied to such instruments. Holders are urged to consult their tax advisors concerning the significance, and the potential impact, of the above considerations. We intend to treat the notes for U.S. federal income tax purposes in accordance with the treatment described in this pricing supplement unless and until such time as the Treasury Department and Internal Revenue Service determine that some other treatment is more appropriate.

## **Backup Withholding and Information Reporting**

Please see the discussion under “United States Federal Income Taxation—Other Considerations—Backup Withholding and Information Reporting” in the accompanying prospectus for a description of the applicability of the backup withholding and information reporting rules to payments made on your notes.



## **Non-United States Holders**

The following discussion applies to non-United States holders of the notes. A non-United States holder is a beneficial owner of a note that, for U.S. federal income tax purposes, is a non-resident alien individual, a foreign corporation, or a foreign estate or trust.

While the U.S. federal income tax treatment of the notes (including proper characterization of the conditional interest payments for U.S. federal income tax purposes) is uncertain, U.S. federal income tax at a 30% rate (or at a lower rate under an applicable income tax treaty) will be withheld in respect of the conditional interest payments paid to a non-United States holder unless such payments are effectively connected with the conduct by the non-United States holder of a trade or business in the U.S. (in which case, to avoid withholding, the non-United States holder will be required to provide a Form W-8ECI). We will not pay any additional amounts in respect of such withholding. To claim benefits under an income tax treaty, a non-United States holder must obtain a taxpayer identification number and certify as to its eligibility under the appropriate treaty's limitations on benefits article, if applicable (which certification may generally be made on a Form W-8BEN or W-8BEN-E, or a substitute or successor form). In addition, special rules may apply to claims for treaty benefits made by corporate non-United States holders. A non-United States holder that is eligible for a reduced rate of U.S. federal withholding tax pursuant to an income tax treaty may obtain a refund of any excess amounts withheld by filing an appropriate claim for refund with the Internal Revenue Service. The availability of a lower rate of withholding or an exemption from withholding under an applicable income tax treaty will depend on the proper characterization of the conditional interest payments under U.S. federal income tax laws and whether such treaty rate or exemption applies to such payments. No assurance can be provided on the proper characterization of the conditional interest payments for U.S. federal income tax purposes and, accordingly, no assurance can be provided on the availability of benefits under any income tax treaty. Non-United States holders must consult their tax advisors in this regard.

Except as discussed below, a non-United States holder will generally not be subject to U.S. federal income or withholding tax on any gain (not including for the avoidance of doubt any amounts properly attributable to any interest which would be subject to the rules discussed in the previous paragraph) upon the sale or maturity of the notes, provided that (i) the holder complies with any applicable certification requirements (which certification may generally be made on a Form W-8BEN or W-8BEN-E, or a substitute or successor form), (ii) the payment 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, such 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 would 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 United States 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-United States 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.

A “dividend equivalent” payment is treated as a dividend from sources within the U.S. and such payments generally would be subject to a 30% U.S. withholding tax if paid to a non-United States holder. Under U.S. Treasury Department regulations, payments (including deemed payments) with respect to equity-linked instruments (“ELIs”) that are “specified ELIs” may be treated as dividend equivalents if such specified ELIs reference an interest in an “underlying security,” which is generally any interest in an entity taxable as a corporation for U.S. federal income tax purposes if a payment with respect to such interest could give rise to a U.S. source dividend. However, Internal Revenue Service guidance provides that withholding on dividend equivalent payments will not apply to specified ELIs that are not delta-one instruments and that are issued before January 1, 2021. Based on our determination that the notes are not “delta-one” instruments, non-U.S. holders should not be subject to withholding on dividend equivalent payments, if any, under the notes. However, it is possible that the notes could be treated as deemed reissued for U.S. federal income tax purposes upon the occurrence of certain events affecting the Underlying Assets or the notes, and following such occurrence the notes could be treated as delta-one specified ELIs that are subject to withholding on dividend equivalent payments. Non-United States holders that enter, or have entered, into other transactions in respect of the Underlying Assets or the notes should consult their tax advisors as to the application of the dividend equivalent withholding tax in the context of the notes and their other transactions. If any payments are treated as dividend equivalents subject to withholding, we (or the applicable paying agent) would be entitled to withhold taxes without being required to pay any additional amounts with respect to amounts so withheld.

As discussed above, alternative characterizations of the notes for U.S. federal income tax purposes are possible. Should an alternative characterization, by reason of change or clarification of the law, by regulation or otherwise, cause payments as to the notes to become subject to withholding tax in addition to the withholding tax described above, we will withhold tax at the applicable statutory rate. The Internal Revenue Service has also indicated that it is considering whether income in respect of instruments such as the notes should be subject to withholding tax. Prospective investors should consult their own tax advisors in this regard.

## **Foreign Account Tax Compliance Act**

The Foreign Account Tax Compliance Act imposes a 30% U.S. withholding tax on certain U.S. source payments, including interest (and OID), dividends, other fixed or determinable annual or periodical gain, profits, and income, and on the gross proceeds from a disposition of property of a type which can produce U.S. source interest or dividends (“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 Treasury Department to collect and provide to the Treasury Department substantial information regarding U.S. account holders, including certain account holders that are foreign entities with U.S. owners, with such institution. A note may constitute an account for these purposes. The legislation 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.

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The U.S. Treasury Department and the Internal Revenue Service have announced that withholding on payments of gross proceeds from a sale or redemption of the notes will only apply to payments made after December 31, 2018. If we 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. Account holders subject to information reporting requirements pursuant to the Foreign Account Tax Compliance Act may include holders of the notes. Foreign financial institutions and non-financial foreign entities located in jurisdictions that have an intergovernmental agreement with the United States governing the Foreign Account Tax Compliance Act may be subject to different rules. Holders are urged to consult with their own tax advisors regarding the possible implications of this legislation on their investment in the notes.

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

BMOCM will purchase the notes from us at a purchase price reflecting the commission set forth on the cover page of this pricing supplement. BMOCM has informed us that, as part of its distribution of the notes, it will reoffer the notes to other dealers who will sell them. Each such dealer, or each additional dealer engaged by a dealer to whom BMOCM reoffers the notes, will receive a commission from BMOCM, which will not exceed the commission set forth on the cover page.

Certain dealers who purchase the notes for sale to certain fee-based advisory accounts may forego some or all of their selling concessions, fees or commissions. The public offering price for investors purchasing the notes in these accounts may be less than 100% of the principal amount, as set forth on the cover page of this document. Investors that hold their notes in these accounts may be charged fees by the investment advisor or manager of that account based on the amount of assets held in those accounts, including the notes.

We own, directly or indirectly, all of the outstanding equity securities of BMOCM, the agent for this offering. In accordance with FINRA Rule 5121, BMOCM may not make sales in this offering to any of its discretionary accounts without the prior written approval of the customer.

We reserve the right to withdraw, cancel or modify the offering of the notes and to reject orders in whole or in part. You may cancel any order for the notes prior to its acceptance.

You should not construe the offering of the notes as a recommendation of the merits of acquiring an investment linked to any Underlying Asset or as to the suitability of an investment in the notes.

BMOCM may, but is not obligated to, make a market in the notes. BMOCM will determine any secondary market prices that it is prepared to offer in its sole discretion.

We may use the final pricing supplement relating to the notes in the initial sale of the notes. In addition, BMOCM or another of our affiliates may use the final pricing supplement relating to the notes in market-making transactions in any notes after their initial sale. Unless BMOCM or we inform you otherwise in the confirmation of sale, the final pricing supplement is being used by BMOCM in a market-making transaction.

For a period of approximately three months following issuance of the notes, the price, if any, at which we or our affiliates would be willing to buy the notes from investors, and the value that BMOCM may also publish for the notes through one or more financial information vendors and which could be indicated for the notes on any brokerage account statements, will reflect a temporary upward adjustment from our estimated value of the notes that would otherwise be determined and applicable at that time. This temporary upward adjustment represents a portion of (a) the hedging profit that we or our affiliates expect to realize over the term of the notes and (b) the underwriting discount and the selling concessions paid in connection with this offering. The amount of this temporary upward adjustment will decline to zero on a straight-line basis over the three-month period.

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

The notes are not intended to be offered, sold or otherwise made available to, and should not be offered, sold or otherwise made available to, any retail investor in the EEA. For these purposes, the expression “offer” includes the communication in any form and by any means of sufficient information on the terms of the offer and the notes to be offered so as to enable an investor to decide to purchase or subscribe the notes, and a “retail investor” means a person who is one (or more) of: (a) a retail client, as defined in point (11) of Article 4(1) of Directive 2014/65/EU, as amended (“MiFID II”); or (b) a customer, within the meaning of Insurance Distribution Directive 2016/97/EU, as amended, where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II; or (c) not a qualified investor as defined in the Prospectus Directive. Consequently, no key information document required by Regulation (EU) No 1286/2014, as amended (the “PRIIPs Regulation”), for offering or selling the notes or otherwise making them available to retail investors in the EEA has been prepared, and therefore, offering or selling the notes or otherwise making them available to any retail investor in the EEA may be unlawful under the PRIIPs Regulation.

#### **Additional Information Relating to the Estimated Initial Value of the Notes**

Our estimated initial value of the notes on the date of this preliminary pricing supplement, and that will be set forth on the cover page of the final pricing supplement relating to the notes, equals the sum of the values of the following hypothetical components:

- a fixed-income debt component with the same tenor as the notes, valued using our internal funding rate for structured notes; and
- one or more derivative transactions relating to the economic terms of the notes.

The internal funding rate used in the determination of the initial estimated value generally represents a discount from the credit spreads for our conventional fixed-rate debt. The value of these derivative transactions are derived from our internal pricing models. These models are based on factors such as the traded market prices of comparable derivative instruments and on other inputs, which include volatility, dividend rates, interest rates and other factors. As a result, the estimated initial value of the notes on the Pricing Date will be determined based on market conditions at that time.

## **The Underlying Assets**

All disclosures contained in this pricing supplement regarding the Underlying Assets, including, without limitation, their make-up, method of calculation, and changes in their components and their historical closing values, have been derived from publicly available information prepared by the applicable sponsors. The information reflects the policies of, and is subject to change by, the sponsors. The sponsors own the copyrights and all rights to the Underlying Assets. The sponsors are under no obligation to continue to publish, and may discontinue publication of, the Underlying Assets. Neither we nor BMO Capital Markets Corp. accepts any responsibility for the calculation, maintenance or publication of any Underlying Asset or any successor.

Each of the GDx and the EEM file reports with the SEC under the Exchange Act and the Investment Company Act. Copies of those reports may be obtained through the SEC's website, [www.sec.gov](http://www.sec.gov). Information included on that website is not included or incorporated by reference in this document.

## **The EURO STOXX 50® Index**

The EURO STOXX 50® Index ("SX5E") was created by STOXX, a joint venture between Deutsche Börse AG and SIX Group AG. Publication of the SX5E began in February 1998, based on an initial Index level of 1,000 at December 31, 1991. On March 1, 2010, STOXX announced the removal of the "Dow Jones" prefix from all of its indices, including the SX5E. Additional information about the SX5E is available on the STOXX Limited website: <http://www.stoxx.com>. However, information included in that website is not included or incorporated by reference in this pricing supplement.

## **SX5E Composition and Maintenance**

For each of the 19 EURO STOXX regional supersector indices, the stocks are ranked in terms of free-float market capitalization. The largest stocks are added to the selection list until the coverage is close to, but still less than, 60% of the free-float market capitalization of the corresponding supersector index. If the next highest-ranked stock brings the coverage closer to 60% in absolute terms, then it is also added to the selection list. All current stocks in the index are then added to the selection list. All of the stocks on the selection list are then ranked in terms of free-float market capitalization to produce the final index selection list. The largest 40 stocks on the selection list are selected; the remaining 10 stocks are selected from the largest remaining current stocks ranked between 41 and 60; if the number of stocks selected is still below 50, then the largest remaining stocks are selected until there are 50 stocks. In exceptional cases, STOXX's management board can add stocks to and remove them from the selection list.

The index stocks are subject to a capped maximum index weight of 10%, which is applied on a quarterly basis.

The SX5E is composed of 50 component stocks of market sector leaders from within the 19 EURO STOXX<sup>®</sup> Supersector indices, which represent the Eurozone portion of the STOXX Europe 600<sup>®</sup> Supersector indices. The index stocks have a high degree of liquidity and represent the largest companies across a wide range of market sectors.

### **Composition and Maintenance of the SX5E**

The composition of the SX5E is reviewed annually, based on the closing stock data on the last trading day in August. Changes in the composition of the SX5E are made to ensure that it includes the 50 market sector leaders from within the EURO STOXX Index.

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 subject to a “fast exit rule.” The index stocks are monitored for any changes based on the monthly selection list ranking. A stock is deleted from the SX5E if: (a) it ranks 75 or below on the monthly selection list and (b) it has been ranked 75 or below for a consecutive period of two months in the monthly selection list. The highest-ranked stock that is not already an index stock will replace it. Changes will be implemented on the close of the fifth trading day of the month, and are effective the next trading day.

The SX5E is also subject to a “fast entry rule.” All stocks on the latest selection lists and initial public offering (IPO) stocks are reviewed for a fast-track addition on a quarterly basis. A stock is added, if (a) it qualifies for the latest STOXX blue-chip selection list generated end of February, May, August or November and (b) it ranks within the “lower buffer” on this selection list.



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 EURO STOXX 50<sup>®</sup> Index**

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

$$\text{Index} = \frac{\text{free float market capitalization of the index at the time}}{\text{divisor of the index at the time}}$$

The “free float market capitalization of the index” is equal to the sum of the products of the closing price, number of shares, free float factor and the weighting cap factor for each component company as of the time that the SX5E is being calculated.

The divisor of the SX5E is adjusted to maintain the continuity of the SX5E’s 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, which grants us a license in exchange for a fee to use the SX5E in connection with the issuance of certain securities, including the notes.

STOXX and its licensors (the “Licensors”) have no relationship with us or BMOCM, other than the licensing of the SX5E and the related trademarks for use in connection with the notes.

STOXX and its Licensors do not:

· sponsor, endorse, sell or promote the notes.

· recommend that any person invest in the notes 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.

· consider the needs of the notes or the owners of the notes in determining, composing or calculating the SX5E or have any obligation to do so.

**STOXX and its Licensors will not have any liability in connection with the notes. Specifically,**

**STOXX and its Licensors do not make any warranty, express or implied, and disclaim any and all warranty about:**

§ **the results to be obtained by the notes, the owner 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 or its data;**

**STOXX and its Licensors will have no liability for any errors, omissions or interruptions in the SX5E or its data; and**

**any lost profits or indirect, punitive, special or consequential damages or losses, even if STOXX knows that they might occur.**

**The licensing agreement among us, BMOCM and STOXX is solely for the benefit of the parties thereto and not for the benefit of the owner of the notes or any other third parties.**



## **The Russell 2000® Index**

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

## **Selection of Stocks Comprising the RTY**

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

All securities eligible for inclusion in the RTY must trade on a major U.S. exchange. Stocks must have a closing price at or above \$1.00 on their primary exchange on the “rank day” in May of each year (timetable is announced each spring) to be eligible for inclusion during annual reconstitution. However, in order to reduce unnecessary turnover, if an existing member’s closing price is less than \$1.00 on the last day of May, it will be considered eligible if the average of the daily closing prices (from its primary exchange) during the month of May is equal to or greater than \$1.00. FTSE

Russell adds initial public offerings (IPOs) each quarter to ensure that new additions to the institutional investing opportunity set are reflected in representative indexes. A stock added during the quarterly IPO process is considered a new index addition, and therefore must have a closing price on its primary exchange at or above \$1.00 on the last day of the eligibility period in order to qualify for index inclusion. If an existing index member does not trade on the rank day, it must price at \$1.00 or above on another eligible U.S. exchange to remain eligible.

Royalty trusts, limited liability companies, closed-end investment companies (companies that are required to report Acquired Fund Fees and Expenses, as defined by the SEC, including business development companies, are not eligible), blank check companies, special-purpose acquisition companies, exchange traded funds, mutual funds and limited partnerships are ineligible for inclusion. Preferred and convertible preferred stock, redeemable shares, participating preferred stock, warrants, rights, installment receipts and trust receipts are not eligible for inclusion in the RTY.

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

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

## **License Agreement**

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**VanEck Vectors® Gold Miners ETF**

In this section, the Underlying Asset refers to the shares of the VanEck Vectors® Gold Miners ETF (the “GDX”), and the Underlying Index refers to the NYSE Arca Gold Miners Index.

The Underlying Asset is an investment portfolio maintained, managed and advised by Van Eck. The Market Vectors® ETF Trust is a registered open-end investment company that consists of numerous separate investment portfolios, including the Underlying Asset.

The Underlying Asset is an exchange traded fund that trades on NYSE Arca under the ticker symbol “GDX.”

The Underlying Asset seeks to provide investment results that correspond generally to the price and yield performance, before fees and expenses, of the Underlying Index. The Underlying Index was developed by the NYSE Amex and is calculated, maintained and published by NYSE Arca. The Underlying Index is a modified market capitalization-weighted index comprised of publicly traded companies involved primarily in mining for gold or silver.

The Underlying Asset utilizes a “passive” or “indexing” investment approach in attempting to track the performance of the Underlying Index. The Underlying Asset will invest in all of the securities which comprise the Underlying Index. The Underlying Asset will normally invest at least 95% of its total assets in common stocks that comprise the Underlying Index.

The notes are not sponsored, endorsed, sold or promoted by Van Eck. Van Eck makes no representations or warranties to the owners of the notes or any member of the public regarding the advisability of investing in the notes. Van Eck has no obligation or liability in connection with the operation, marketing, trading or sale of the notes.

*The Underlying Index*

We have derived all information contained in this pricing supplement regarding the Underlying Index, including, without limitation, its make-up, method of calculation and changes in its components, from publicly available information and information supplied by NYSE Arca. Such information reflects the policies of, and is subject to change by, NYSE Arca. The Underlying Index was developed by the NYSE Amex (formerly the American Stock

Exchange) and is calculated, maintained and published by the NYSE Arca. The NYSE Arca has no obligation to continue to publish, and may discontinue the publication of, the Underlying Index.

The Underlying Index includes common stocks, ADRs and GDRs of selected companies that are involved primarily in mining for gold or silver and that are listed for trading and electronically quoted on a major stock market that is accessible by foreign investors. Generally, this will include exchanges in most developed markets and major emerging markets, and will include companies that are cross-listed, e.g., both U.S. and Canadian listings. NYSE Arca will use its discretion to avoid exchanges and markets that are considered “frontier” in nature or have major restrictions to foreign ownership. The Underlying Index includes companies that derive at least 50% of their revenues from gold mining and related activities (40% for companies that were included in the Underlying Index prior to September 23, 2013). Also, the Underlying Index maintains exposure to companies with a significant revenue exposure to silver mining in addition to gold mining, which will not exceed 20% of the Underlying Index weight at each rebalance.

Only companies with market capitalizations greater than \$750 million that have an average daily volume of at least 50,000 shares over the past three months and an average daily value traded of at least \$1 million over the past three months are eligible for inclusion in the Underlying Index. Starting in December 2013, for companies that were included in the Underlying Index prior to September 23, 2013, the market capitalization requirement at each rebalance became \$450 million, the average daily volume requirement will be at least 30,000 shares over the past three months and the average daily value traded requirement will be at least \$600,000 over the past three months. NYSE Arca has the discretion to not include all companies that meet the minimum criteria for inclusion. The Underlying Index’s benchmark value was 500.00 at the close of trading on December 20, 2002.



*Calculation of the Underlying Index.* The Underlying Index is calculated by NYSE Arca on a price return basis. The calculation is based on the current modified market capitalization divided by a divisor. The divisor was determined on the initial capitalization base of the Underlying Index and the base level and may be adjusted as a result of corporate actions and composition changes, as described below.

*Index Maintenance.* The Underlying Index is reviewed quarterly to ensure that at least 90% of the index weight is accounted for by index components that continue to meet the initial eligibility requirements. NYSE Arca may at any time and from time to time change the number of securities comprising the group by adding or deleting one or more securities, or replacing one or more securities contained in the group with one or more substitute securities of its choice, if in NYSE Arca's discretion such addition, deletion or substitution is necessary or appropriate to maintain the quality and/or character of the Underlying Index. Components will be removed from the Underlying Index during the quarterly review if (1) the market capitalization falls below \$450 million, or (2) the traded average daily shares for the previous three months is lower than 30,000 shares and the traded average daily value for the previous three months is less than \$600,000.

At the time of the quarterly rebalance, the component security quantities will be modified to conform to the following asset diversification requirements:

(1) the weight of any single component security may not account for more than 20% of the total value of the Underlying Index;

the component securities are split into two subgroups—large and small, which are ranked by market capitalization weight in the Underlying Index. Large securities are defined as having a starting index weight greater than or equal to 5%. Small securities are defined as having a starting index weight below 5%; and

(3) the final aggregate weight of those component securities which individually represent more than 4.5% of the total value of the Underlying Index may not account for more than 45% of the total index value.

The weights of the components securities (taking into account expected component changes and share adjustments) are modified in accordance with the Underlying Index's diversification rules.

Changes to the index composition and/or the component security weights in the Underlying Index are determined and announced prior to taking effect, which typically occurs after the close of trading on the third Friday of each calendar quarter month in connection with the quarterly index rebalance. The share quantities of each component security in the index portfolio remains fixed between quarterly reviews except in the event of certain types of corporate actions such as stock splits, reverse stock splits, stock dividends, or similar events. The share quantities used in the index

calculations are not typically adjusted for shares issued or repurchased between quarterly reviews. However, in the event of a merger between two components, the share quantity of the surviving entity may be adjusted to account for any stock issued in the acquisition. NYSE Arca may substitute securities or change the number of securities included in the Underlying Index, based on changing conditions in the industry or in the event of certain types of corporate actions, including mergers, acquisitions, spin-offs, and reorganizations. In the event of component or share quantity changes to the index portfolio, the payment of dividends other than ordinary cash dividends, spin-offs, rights offerings, re-capitalization, or other corporate actions affecting a component security of the Underlying Index, the index divisor may be adjusted to ensure that there are no changes to the index level as a result of nonmarket forces.

### **iShares® MSCI Emerging Markets ETF**

In this section, the Underlying Asset refers to the shares of the iShares® MSCI Emerging Markets ETF (the “EEM”), and the Underlying Index refers to the MSCI Emerging Markets Index.

iShares consists of numerous separate investment portfolios (the “iShares Funds”), including the Underlying Asset. The Underlying Asset seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the Underlying Index. The Underlying Asset typically earns income from dividends from securities held by the Underlying Asset. These amounts, net of expenses and taxes (if applicable), are passed along to the Underlying Asset’s shareholders as “ordinary income.” In addition, the Underlying Asset realizes capital gains or losses whenever it sells securities. Net long-term capital gains are distributed to its shareholders as “capital gain distributions.” However, because the notes are linked only to the share price of the Underlying Asset, you will not be entitled to receive income, dividend, or capital gain distributions from the Underlying Asset or any equivalent payments.

“iShare®” and “BlackRock®” are registered trademarks of BlackRock®. The notes are not sponsored, endorsed, sold, or promoted by BlackRock®, or by any of the iShares® Funds. Neither BlackRock® nor the iShares® Funds make any representations or warranties to the owners of the notes or any member of the public regarding the advisability of investing in the notes. Neither BlackRock® nor the iShares® Funds shall have any obligation or liability in connection with the registration, operation, marketing, trading, or sale of the notes or in connection with our use of information about the Underlying Asset or any of the iShares® Funds.

The Underlying Asset is intended to provide investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Emerging Markets Index. This Underlying Asset trades on NYSE Arca under the ticker symbol “EEM.”

### ***The MSCI Emerging Markets Index***

The MSCI Emerging Markets Index is intended to measure equity market performance in the global emerging markets. The MSCI Emerging Markets Index is a free float-adjusted market capitalization index with a base date of December 31, 1987 and an initial value of 100. The MSCI Emerging Markets Index is calculated daily in U.S. dollars and published in real time every 60 seconds during market trading hours. The MSCI Emerging Markets Index currently consists of the following 24 emerging market country indices: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Russia, Qatar, South Africa, South Korea, Taiwan, Thailand, Turkey and the United Arab Emirates.

The MSCI Emerging Markets Index is part of the MSCI Regional Equity Indices series and is an MSCI Global Investable Market Index, which is a family within the MSCI International Equity Indices. MSCI is the Index Sponsor of the MSCI Emerging Markets Index.

***General – MSCI Global Investable Market Indices***

MSCI provides global equity indices intended to measure equity performance in international markets and the MSCI International Equity Indices are designed to serve as global equity performance benchmarks. In constructing these indices, MSCI applies its index construction and maintenance methodology across developed, emerging, and frontier markets.

MSCI enhanced the methodology used in its MSCI International Equity Indices. The MSCI Standard and MSCI Small Cap Indices, along with the other MSCI equity indices based on them, transitioned to the global investable market indices methodology described below. The transition was completed at the end of May 2008. The Enhanced MSCI Standard Indices are composed of the MSCI Large Cap and Mid Cap Indices. The MSCI Global Small Cap Index transitioned to the MSCI Small Cap Index resulting from the Global Investable Market Indices methodology and contains no overlap with constituents of the transitioned MSCI Standard Indices. Together, the relevant MSCI Large Cap, Mid Cap, and Small Cap Indices will make up the MSCI investable market index for each country, composite, sector, and style index that MSCI offers.

*Constructing the MSCI Global Investable Market Indices.* MSCI undertakes an index construction process, which involves:

· defining the equity universe;

· determining the market investable equity universe for each market;

- determining market capitalization size segments for each market;
- applying index continuity rules for the MSCI Standard Index;
- creating style segments within each size segment within each market; and
- classifying securities under the Global Industry Classification Standard (the “GICS”).

*Defining the Equity Universe. The equity universe is defined by:*

**Identifying Eligible Equity Securities:** the equity universe initially looks at securities listed in any of the countries in the MSCI Global Index Series, which will be classified as either Developed Markets (“DM”) or Emerging Markets (“EM”). All listed equity securities, or listed securities that exhibit characteristics of equity securities, except mutual funds, exchange traded funds, equity derivatives, limited partnerships, and most investment trusts, are eligible for inclusion in the equity universe. Real Estate Investment Trusts (“REITs”) in some countries and certain income trusts in Canada are also eligible for inclusion.

**Classifying Eligible Securities into the Appropriate Country:** each company and its securities (i.e., share classes) are classified in only one country.

*Determining the Market Investable Equity Universes.* A market investable equity universe for a market is derived by applying investability screens to individual companies and securities in the equity universe that are classified in that market. A market is equivalent to a single country, except in DM Europe, where all DM countries in Europe are aggregated into a single market for index construction purposes. Subsequently, individual DM Europe country indices within the MSCI Europe Index are derived from the constituents of the MSCI Europe Index under the global investable market indices methodology.

The investability screens used to determine the investable equity universe in each market are as follows:

*Equity Universe Minimum Size Requirement:* this investability screen is applied at the company level. In order to be included in a market investable equity universe, a company must have the required minimum full market capitalization.

*Equity Universe Minimum Free Float-Adjusted Market Capitalization Requirement:* this investability screen is applied at the individual security level. To be eligible for inclusion in a market investable equity universe, a security must have a free float-adjusted market capitalization equal to or higher than 50% of the equity universe minimum size requirement.

*DM and EM Minimum Liquidity Requirement:* this investability screen is applied at the individual security level. To be eligible for inclusion in a market investable equity universe, a security must have adequate liquidity. The twelve-month and three-month Annual Traded Value Ratio (“ATVR”), a measure that screens out extreme daily trading volumes and takes into account the free float-adjusted market capitalization size of securities, together with the three-month frequency of trading are used to measure liquidity. In the calculation of the ATVR, the trading volumes in depository receipts associated with that security, such as ADRs or GDRs, are also considered. A minimum liquidity level of 20% of three- and twelve-month ATVR and 90% of three-month frequency of trading over the last four consecutive quarters are required for inclusion of a security in a market investable equity universe of a DM, and a minimum liquidity level of 15% of three- and twelve-month ATVR and 80% of three-month frequency of trading over the last four consecutive quarters are required for inclusion of a security in a market investable equity universe of an EM.

*Global Minimum Foreign Inclusion Factor Requirement:* this investability screen is applied at the individual security level. To be eligible for inclusion in a market investable equity universe, a security’s Foreign Inclusion Factor (“FIF”) must reach a certain threshold. The FIF of a security is defined as the proportion of shares outstanding that is available for purchase in the public equity markets by international investors. This proportion accounts for the available free float of and/or the foreign ownership limits applicable to a specific security (or company). In general, a security must have an FIF equal to or larger than 0.15 to be eligible for inclusion in a market investable equity universe.

*Minimum Length of Trading Requirement:* this investability screen is applied at the individual security level. For an initial public offering (“IPO”) to be eligible for inclusion in a market investable equity universe, the new issue must have started trading at least three months before the implementation of a semi-annual index review (as described below). This requirement is applicable to small new issues in all markets. Large IPOs are not subject to the minimum length of trading requirement and may be included in a market investable equity universe and the Standard Index outside of a Quarterly or Semi-Annual Index Review.

*Defining Market Capitalization Size Segments for Each Market.* Once a market investable equity universe is defined, it is segmented into the following size-based indices:

Investable Market Index (Large + Mid + Small);

Standard Index (Large + Mid);

Large Cap Index;

Mid Cap Index; or

Small Cap Index.

Creating the size segment indices in each market involves the following steps:

- defining the market coverage target range for each size segment;
- determining the global minimum size range for each size segment;
- determining the market size-segment cutoffs and associated segment number of companies;
- assigning companies to the size segments; and
- applying final size-segment investability requirements.

*Index Continuity Rules for the Standard Indices.* In order to achieve index continuity, as well as to provide some basic level of diversification within a market index, and notwithstanding the effect of other index construction rules described in this section, a minimum number of five constituents will be maintained for a DM Standard Index and a minimum number of three constituents will be maintained for an EM Standard Index.

*Creating Style Indices within Each Size Segment.* All securities in the investable equity universe are classified into value or growth segments using the MSCI Global Value and Growth methodology.

*Classifying Securities under the Global Industry Classification Standard.* All securities in the global investable equity universe are assigned to the industry that best describes their business activities. To this end, MSCI has designed, in conjunction with Standard & Poor's, the GICS. Under the GICS, each company is assigned to one sub-industry according to its principal business activity. Therefore, a company can belong to only one industry grouping at each of the four levels of the GICS.

#### *Calculation Methodology for the Underlying Index*

The performance of the underlying index is a free-float weighted average of the U.S. dollar values of its component securities.

Prices used to calculate the component securities are the official exchange closing prices or prices accepted as such in the relevant market. In the case of a market closure, or if a security does not trade on a specific day or during a specific period, MSCI carries forward the previous day's price (or latest available closing price). In the event of a market outage resulting in any component security price to be unavailable, MSCI will generally use the last reported price for such component security for the purpose of performance calculation unless MSCI determines that another price is more appropriate based on the circumstances. Closing prices are converted into U.S. dollars, as applicable, using the closing exchange rates calculated by WM/Reuters at 4:00PM London Time.



*Index Maintenance*

The MSCI Global Investable Market Indices are maintained with the objective of reflecting the evolution of the underlying equity markets and segments on a timely basis, while seeking to achieve index continuity, continuous investability of constituents and replicability of the indices, index stability and low index turnover. In particular, index maintenance involves:

(i) Semi-Annual Index Reviews (“SAIRs”) in May and November of the Size Segment and Global Value and Growth Indices which include:

- updating the indices on the basis of a fully refreshed equity universe;

- taking buffer rules into consideration for migration of securities across size and style segments; and

- updating FIFs and Number of Shares (“NOS”).

(ii) Quarterly Index Reviews in February and August of the Size Segment Indices aimed at:

- including significant new eligible securities (such as IPOs that were not eligible for earlier inclusion) in the index;

- allowing for significant moves of companies within the Size Segment Indices, using wider buffers than in the SAIR; and

- reflecting the impact of significant market events on FIFs and updating NOS.

(iii) Ongoing Event-Related Changes: changes of this type are generally implemented in the indices as they occur. Significantly large IPOs are included in the indices after the close of the company’s tenth day of trading.

Through this maintenance process, MSCI may make structural changes to the indices by adding or deleting component country indices. Consequently, the composition of the Underlying Index may change over the term of the notes.

Neither we nor any of our affiliates, including BMOCM, accepts any responsibility for the calculation, maintenance, or publication of, or for any error, omission, or disruption in the Underlying Index, or any successor to the index. MSCI does not guarantee the accuracy or the completeness of the Underlying Index, or any data included in the index. MSCI assumes no liability for any errors, omissions, or disruption in the calculation and dissemination of the Underlying Index. MSCI disclaims all responsibility for any errors or omissions in the calculation and dissemination of the Underlying Index, or the manner in which the index is applied in determining the amount payable on the notes at maturity.

**Historical Performances of the Underlying Assets**

The following tables set forth the quarter-end high and low closing levels for each Underlying Asset from the first quarter of 2008 through October 24, 2018.

The historical levels of the Underlying Assets are provided for informational purposes only. You should not take the historical levels of the applicable Underlying Asset as an indication of its future performance, which may be better or worse than the levels set forth below.

**Closing Levels of the EURO STOXX 50® Index**

	<b>High</b>	<b>Low</b>
2008 First Quarter	4,339.23	3,431.82
Second Quarter	3,882.28	3,340.27
Third Quarter	3,445.66	3,000.83
Fourth Quarter	3,113.82	2,165.91
2009 First Quarter	2,578.43	1,809.98
Second Quarter	2,537.35	2,097.57
Third Quarter	2,899.12	2,281.47
Fourth Quarter	2,992.08	2,712.30
2010 First Quarter	3,017.85	2,631.64
Second Quarter	3,012.65	2,488.50
Third Quarter	2,827.27	2,507.83
Fourth Quarter	2,890.64	2,650.99
2011 First Quarter	3,068.00	2,721.24
Second Quarter	3,011.25	2,715.88
Third Quarter	2,875.67	1,995.01
Fourth Quarter	2,476.92	2,090.25
2012 First Quarter	2,608.42	2,286.45
Second Quarter	2,501.18	2,068.66
Third Quarter	2,594.56	2,151.54
Fourth Quarter	2,659.95	2,427.32
2013 First Quarter	2,749.27	2,570.52
Second Quarter	2,835.87	2,511.83

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Third Quarter	2,936.202,570.76
Fourth Quarter	3,111.372,902.12
2014 First Quarter	3,172.432,962.49
Second Quarter	3,314.803,091.52
Third Quarter	3,289.753,006.83
Fourth Quarter	3,277.382,874.65
2015 First Quarter	3,731.353,007.91
Second Quarter	3,828.783,424.30
Third Quarter	3,686.583,019.34
Fourth Quarter	3,506.453,069.05
2016 First Quarter	3,178.012,680.35
Second Quarter	3,151.692,697.44
Third Quarter	3,091.662,761.37
Fourth Quarter	3,290.522,954.53
2017 First Quarter	3,500.933,230.68
Second Quarter	3,658.793,409.78
Third Quarter	3,594.853,388.22
Fourth Quarter	3,697.403,503.96
2018 First Quarter	3,672.293,278.72
Second Quarter	3,592.183,340.35
Third Quarter	3,527.183,293.36
Third Quarter (through October 24, 2018)	3,449.793,140.94

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**Closing Levels of the Russell 2000® Index**

	<b>High</b>	<b>Low</b>
2008 First Quarter	753.548	643.966
Second Quarter	763.266	686.073
Third Quarter	754.377	657.718
Fourth Quarter	671.590	385.308
2009 First Quarter	514.710	343.260
Second Quarter	531.680	429.158
Third Quarter	620.695	479.267
Fourth Quarter	634.072	562.395
2010 First Quarter	690.303	586.491
Second Quarter	741.922	609.486
Third Quarter	677.642	590.034
Fourth Quarter	792.347	669.450
2011 First Quarter	843.549	773.184
Second Quarter	865.291	777.197
Third Quarter	858.113	643.421
Fourth Quarter	765.432	609.490
2012 First Quarter	846.129	747.275
Second Quarter	840.626	737.241
Third Quarter	864.697	767.751
Fourth Quarter	852.495	769.483
2013 First Quarter	953.068	872.605
Second Quarter	999.985	901.513
Third Quarter	1,078.409	989.535
Fourth Quarter	1,163.637	1,043.459
2014 First Quarter	1,208.651	1,093.594
Second Quarter	1,192.964	1,095.986
Third Quarter	1,208.150	1,101.676
Fourth Quarter	1,219.109	1,049.303
2015 First Quarter	1,266.373	1,154.709
Second Quarter	1,295.799	1,215.417
Third Quarter	1,273.328	1,083.907
Fourth Quarter	1,204.159	1,097.552
2016 First Quarter	1,114.028	953.715
Second Quarter	1,188.954	1,089.646
Third Quarter	1,263.438	1,139.453
Fourth Quarter	1,388.073	1,156.885

2017	First Quarter	1,413.635	1,345.598
	Second Quarter	1,425.985	1,345.244
	Third Quarter	1,490.861	1,356.905
	Fourth Quarter	1,548.926	1,464.095
2018	First Quarter	1,610.706	1,463.793
	Second Quarter	1,706.985	1,492.531
	Third Quarter	1,740.753	1,653.132
	Fourth Quarter (through October 24, 2018)	1,672.992	1,468.698

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**Closing Prices of the VanEck Vectors® Gold Miners ETF**

	<b>High (in \$)</b>	<b>Low (in \$)</b>
2008 First Quarter	56.29	46.50
Second Quarter	51.40	42.38
Third Quarter	50.84	27.95
Fourth Quarter	33.96	16.38
2009 First Quarter	38.57	28.20
Second Quarter	44.55	30.95
Third Quarter	48.00	35.14
Fourth Quarter	54.78	41.87
2010 First Quarter	50.17	40.22
Second Quarter	54.07	46.36
Third Quarter	56.66	47.09
Fourth Quarter	63.80	54.28
2011 First Quarter	60.79	53.12
Second Quarter	63.95	51.80
Third Quarter	66.69	53.75
Fourth Quarter	63.32	50.07
2012 First Quarter	57.47	48.75
Second Quarter	50.37	39.34
Third Quarter	54.81	40.70
Fourth Quarter	54.25	44.85
2013 First Quarter	47.09	35.91
Second Quarter	37.45	22.22
Third Quarter	30.43	22.90
Fourth Quarter	26.52	20.39
2014 First Quarter	27.73	21.27
Second Quarter	26.45	22.04
Third Quarter	27.46	21.35
Fourth Quarter	21.94	16.59
2015 First Quarter	22.94	17.67
Second Quarter	20.82	17.76
Third Quarter	17.85	13.04
Fourth Quarter	16.90	13.08
2016 First Quarter	20.86	12.47
Second Quarter	27.70	19.53

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Third Quarter	31.32	25.45
Fourth Quarter	25.96	18.99
2017 First Quarter	25.57	21.14
Second Quarter	24.57	21.10
Third Quarter	25.49	21.21
Fourth Quarter	23.84	21.42
2018 First Quarter	24.60	21.27
Second Quarter	23.06	21.81
Third Quarter	22.68	17.57
Fourth Quarter (through October 24, 2018)	20.10	18.39

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**Closing Levels of the iShares® MSCI Emerging Markets ETF**

	<b>High (\$)</b>	<b>Low (\$)</b>
2008 First Quarter	50.37	42.17
Second Quarter	51.70	44.43
Third Quarter	44.43	31.33
Fourth Quarter	33.90	18.22
2009 First Quarter	27.09	19.94
Second Quarter	34.64	25.65
Third Quarter	39.29	30.75
Fourth Quarter	42.07	37.56
2010 First Quarter	43.22	36.83
Second Quarter	43.98	36.16
Third Quarter	44.77	37.59
Fourth Quarter	48.58	44.77
2011 First Quarter	48.69	44.63
Second Quarter	50.21	45.50
Third Quarter	48.46	34.95
Fourth Quarter	42.80	34.36
2012 First Quarter	44.76	38.23
Second Quarter	43.54	36.68
Third Quarter	42.37	37.42
Fourth Quarter	44.35	40.14
2013 First Quarter	45.20	41.80
Second Quarter	44.23	36.63
Third Quarter	43.29	37.34
Fourth Quarter	43.66	40.44
2014 First Quarter	40.99	37.09
Second Quarter	43.95	40.82
Third Quarter	45.85	41.56
Fourth Quarter	42.44	37.73
2015 First Quarter	41.07	37.92
Second Quarter	44.09	39.04
Third Quarter	39.78	31.32
Fourth Quarter	36.29	31.55
2016 First Quarter	34.28	28.25
Second Quarter	35.26	31.87

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Third Quarter	38.20	33.77
Fourth Quarter	38.10	34.08
2017 First Quarter	39.99	35.43
Second Quarter	41.93	38.81
Third Quarter	45.85	41.05
Fourth Quarter	47.81	44.82
2018 First Quarter	52.08	45.69
Second Quarter	48.14	42.33
Third Quarter	45.03	41.14
Fourth Quarter (through October 24, 2018)	42.93	39.14

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