For Institutional Investor use only

BMO ETFs

How ETFs are solving for challenges in Fixed Income

BMO Global Asset Management

Challenges in Fixed Income

Fixed Income Portfolio Managers and Institutions are facing a challenging fixed income environment, with bond inventories declining and liquidity constraints on individual issuances. Liquidity strains in the fixed income market can be overcome by using ETFs as they add an additional layer of liquidity. Fixed Income ETFs offer unparalleled transparency and liquidity in an efficient tool that is changing the way portfolios are managed.

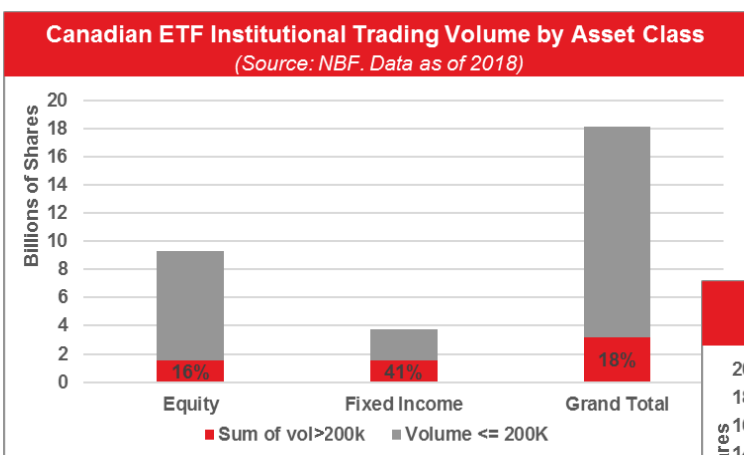
Canadian Institutions have already integrated ETFs into their portfolio strategies, most significantly in fixed income, and their motives are simple;

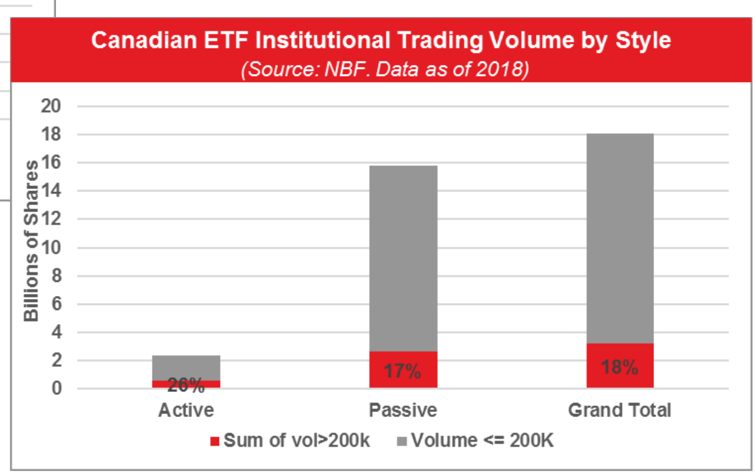
1 Trading
- enhanced liquidity
- price/trading transparency
- trade anonymity

2 Cost

3 Diversification Benefits/ Access to Markets

Fixed Income is the fastest growing segment of the Canadian ETF market. The charts below show Canadian ETF Institutional trading volume by asset class and style.

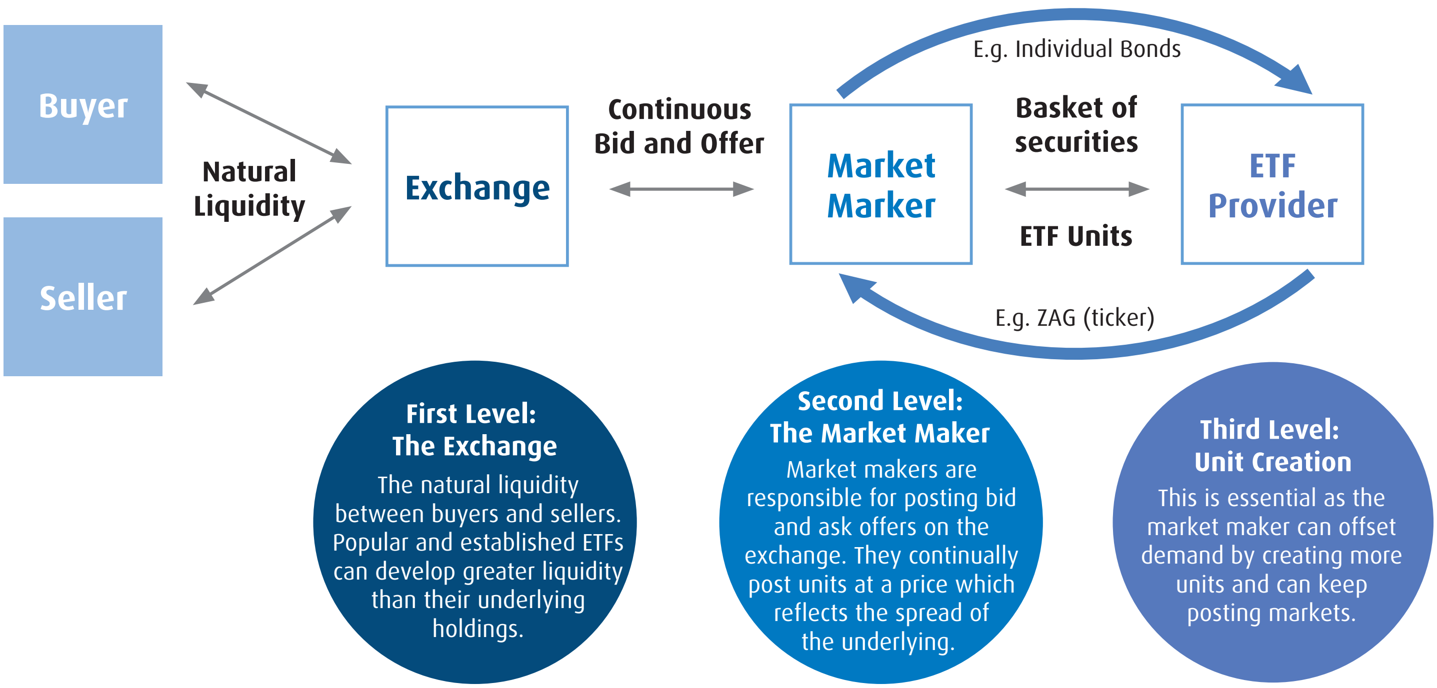




Benefits of Fixed Income ETFs
1. Trading

ETF Secondary market liquidity is highly advantageous to fixed income managers because it provides flexibility and tight execution.

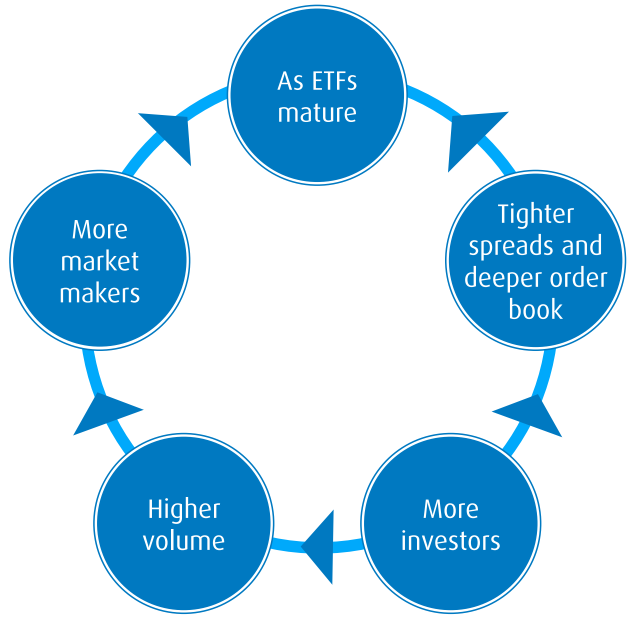
HOW AN ETF TRADES – THREE LEVELS OF LIQUIDITY



Be cautious in using volume as an indicator of liquidity, **true liquidity** is the liquidity of the underlying market (at a minimum)

- Watch the reported volume, **ETFs trade on many exchanges**
- **Spread is an important indication of liquidity**
- Institutions can use a variety to trading techniques to **ensure their price is met**

Secondary market liquidity is unique to ETFs and does not apply to individual bond holdings or bond pools. ETF volume is additive to what trades in the underlying market (underlying market is where active managers trade)



The chart below shows an Illustration of the additional liquidity on trading activity provided by BMO's fixed income ETFs. For each dollar traded, only a fraction results in subscription or redemption activity as significant trading occurs between buyers and sellers on the exchange.

Ticker	ETF Name	Dollar Traded	Subscription/ Redemption Activity
ZAG	BMO Aggregate Bond Index ETF	$100	$56.0
ZCS	BMO Short Corporate Bond Index ETF	$100	$66.8
ZHY	BMO High Yield US Corp Bond Hedged to CAD Index ETF	$100	$7.7
ZCM	BMO Mid Corporate Bond Index ETF	$100	$14.9
ZIC	BMO Mid-Term US IG Corporate Bond Index ETF (CAD)	$100	$43.6
ZPR	BMO Laddered Preferred Share Index ETF	$100	$29.6

For illustrative purposes only

ETFs have taken a largely off-exchange, OTC driven asset class and democratized its price discovery. Where individual bond prices may be stale or based on quotes instead of transactions, fixed income ETFs trade based on the exchange bid and ask, adjusting to the value of the underlying basket of bonds at any point in the trading day. The price transparency this has created means more efficient and cost-effective trading. ETFs can be a liquidity vehicle in periods of market stress, and while spreads may adjust, exiting positions will be easier compared to individual bonds which may not trade at all.

Institutions can benefit from and see great value in the trade anonymity provided by using ETFs and trading on an exchange. Instead of execution costs across a basket of bonds that may take days to execute, a single trade on an ETF provides instant exposure for the buyer.

Benefits of Fixed Income ETFs
2. Cost

MER

- Annual fee payable to the manager of the ETF
- Includes; custodian/valuation fees, transfer agent fees and any other services retained by the manager to run the fund

Spread

- The difference between the bid/ask price on the ETF
- Spreads can be impacted by the volume of the ETF, AUM of the ETF along with the liquidity of the underlying

ETF Costs

Premium/Discount

- Difference in the quoted price of the ETF and the NAV is expressed as a Premium (when market price of ETF is above NAV) or Discount (when market price of ETF is below the NAV)
  - It is important for investors to be aware, especially during market open and close or during periods of high market volatility, that they may be transacting at levels inconsistent with the underlying securities

Commissions

- Commission paid to the broker for trading the ETF

ETFs spread costs, while a factor, are often lower than spreads on individual bonds, particularly with harder to trade corporate bonds. Example below outlines an illustration of spread differentials between individual bonds, & ETFs.

Ticker	Maturity	Credit	Institutional Spread	ETF Spread
ZFS	Short	Federal	0.03%	0.07%
ZFM	**Mid**	**Federal**	**0.07%**	**0.06%**
ZFL	Long	Federal	0.11%	0.12%
ZPS	Short	Provincial	0.05%	0.08%
ZMP	**Mid**	**Provincial**	**0.09%**	**0.07%**
ZPL	**Long**	**Provincial**	**0.15%**	**0.13%**
ZCS	**Short**	**Corporate**	**0.17%**	**0.07%**
ZCM	**Mid**	**Corporate**	**0.40%**	**0.13%**
ZLC	**Long**	**Corporate**	**0.70%**	**0.17%**
ZAG	**Aggregate**	**Aggregate**	**0.30%**	**0.07%**

Source: BMO Global Asset Management. For illustrative purposes only

Additionally, securities lending in the ETF can offset or potentially cover the MER, thereby increasing the yield.

Benefits of Fixed Income ETFs
3. Access & Diversification

Fixed Income ETFs provide beta exposure to segments of the market that were previously difficult to access such as High Yield, Emerging Markets, and Floating Rate Loans. They serve as a liquid tool to manage duration or credit exposure, adapting as markets change. Geographic diversification of many indices also helps improve yield and reduce volatility relating to potential rate hikes in any given geography. Most bond *alpha* is generated by a small number of bonds. The rest of the exposure can be held in fungible fixed income ETFs which have better liquidity, diversification and tighter spreads compared to cash bonds.

BMO Fixed Income ETFs

Ten years ago, when looking at over the counter (OTC) asset classes like fixed income and preferred shares, the Canadian ETF marketplace was still in it's infancy, offering only 10 ETFs from two providers. ETFs add the transparency and trading efficiency of exchange trading to give investors better options, better execution, and the opportunity to apply asset allocation across their portfolio.

Historically, investors typically created portfolios of direct bonds, or held an aggregate fixed income fund. ETFs have allowed institutions to better position fixed income instead of focusing only on equity markets. Early in the development of the BMO ETF shelf, we created a unique grid that covers the Canadian investment grade universe, using precise segmentation to create nine ETFs across short-mid-long term crossed with federal-provincial-corporate exposures.

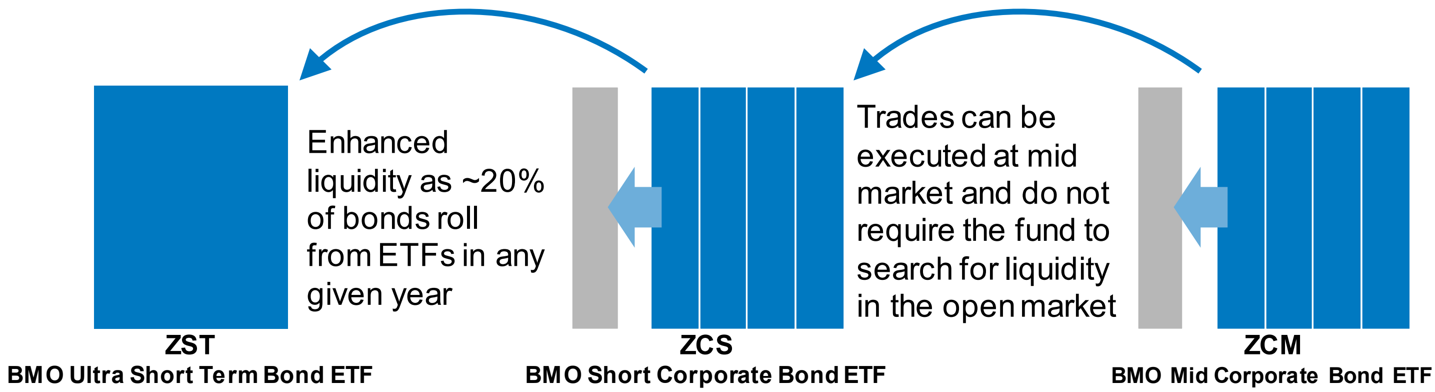
BMO ETFs is a top 10 Global Fixed Income ETF Provider[3] (based on AUM) offering the most precise fixed income suite in Canada.[4]

We have solutions covering broad market exposures, targeted and non-traditional exposures. This granularity offered helps portfolio managers build more precise exposures and tactically adjust those portfolios given their market outlooks.

Sampling & Scalability Advantage

A significant advantage of the BMO ETF suite is its sampling and scalability advantage which provides an additional liquidity layer on an annual basis, minimizing the necessity to buy bonds in the open market. This gives the current fund a significant amount of room to continue to grow (this is in addition to our ability to go to the Dealer network to source bonds)

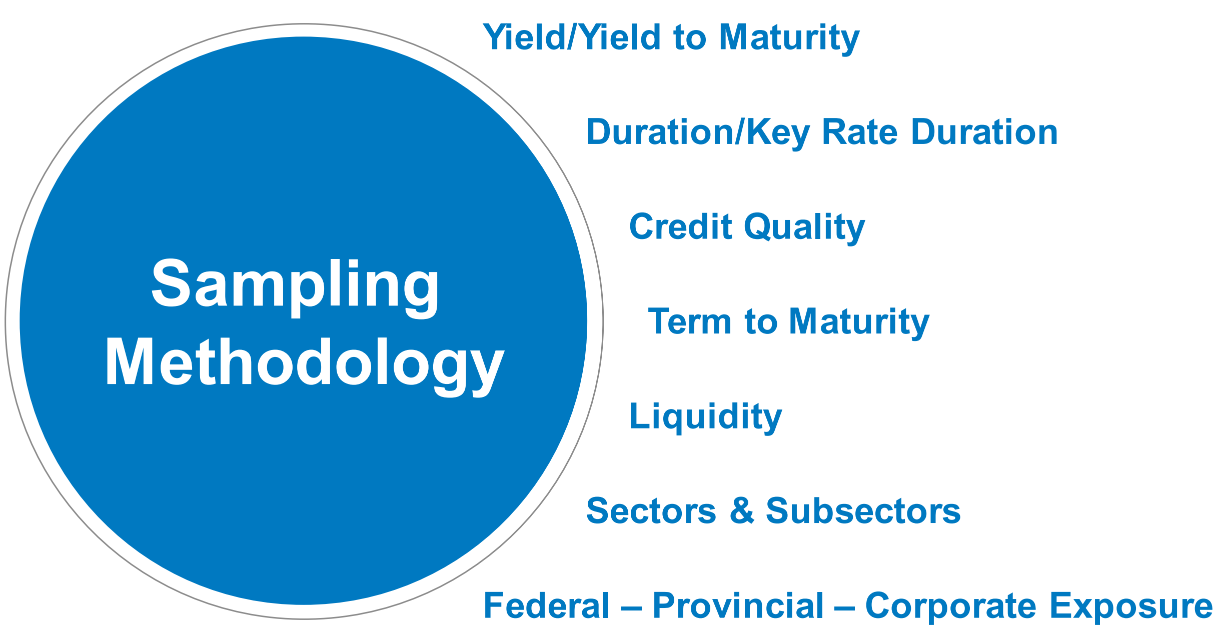
BMO ETF bond execution is aided by our ability to move individual issues down the curve as they approach maturity.



~20% of the short corporate universe will roll under 1yr in any given year.
Consider as an example the Short Corporate Bond ETF being 1.5B $300MM of supply that the Ultra Short Term Bond ETF can take advantage of

For illustrative purposes only

Liquidity is enhanced further by our sampling methodology where the fixed income delivery basket is updated frequently to ensure we are sampling the most liquid names.



BMO ETFs Team

BMO ETFs has an unparalleled team of experts in investment management and market sourcing which has been a key component of our success. The BMO team has worked together for over 15 years delivering many ETF market firsts.

Name	Title	Years with Firm	Years of industry Experience
Kevin Gopaul	Head, BMO Global Asset Management	10	21
Robert Bechard	Managing Director, Head of ETF Portfolio Management	10	21
Mark Raes	Managing Director, Head of ETF Development	10	21
Chris McHaney	Director, Portfolio Manager	10	20
Raymond Chan	Director, Portfolio Manager	10	17
Matthew Montemurro	Director, Portfolio Manager	10	10
Alfred Lee, CFA	Director, Investment Strategist & Portfolio Manager	9	19
Chris Heakes	Director, Portfolio Manager	9	11
Vishal Bhatia	Director, Portfolio Manager	4	22
Charles-Lucien Myssie	Director, Portfolio Manager	4	21
	Total Experience	**86**	**183**

BMO ETFs Road Map

Core Fixed Income Road Map

Frequency of distribution: M Monthly Q Quarterly A Annually

Broad Market

BMO Ultra Short-Term Bond **ZST** distributing units — Duration: 0.5 Distribution Yield: 2.8% | M Yield to Maturity: 2.1% **ZST.L** accumulating units — Duration: 0.5 Distribution Yield: 0.0% | A Yield to Maturity: 2.1% Mgmt. Fee: 0.15% **Risk Rating:** Low	O BMO Aggregate Bond **ZAG*** Duration: 8.0 Distribution Yield: 3.0% | M Yield to Maturity: 2.1% Mgmt. Fee: 0.08% **Risk Rating:** Low	BMO Discount Bond **ZDB*** Duration: 7.8 Distribution Yield: 2.2% | M Yield to Maturity: 2.1% Mgmt. Fee: 0.09% **Risk Rating:** Low
BMO Core Plus Bond Fund **ZCPB** Distribution Yield: 2.5% | Q Mgmt Fee: 0.50% **Risk Rating:** Low	BMO Global Multi-Sector Bond Fund **ZMSB** Distribution Yield: 3.3% | Q Mgmt. Fee: 0.60% **Risk Rating:** Low to Medium	BMO Real Return Bond **ZRR** Duration: 15.4 Distribution Yield: 2.3% | M Yield to Maturity: 2.2%* Mgmt. Fee: 0.25% **Risk Rating:** Low to Medium

Canadian Segmented Market

BMO Government Bond **ZGB** Duration: 8.8 Distribution Yield: 2.4% | Q Yield to Maturity: 1.9% Mgmt. Fee: 0.15% **Risk Rating:** Low	BMO Corporate Bond **ZCB** Duration: 6.3 Distribution Yield: 3.1% | Q Yield to Maturity: 2.6% Mgmt. Fee: 0.15% **Risk Rating:** Low	BMO Short-Term Bond **ZSB** Duration: 2.7 Distribution Yield: 2.4% | Q Yield to Maturity: 1.7% Mgmt. Fee: 0.09% **Risk Rating:** Low

Canadian Precise Market

BMO Short Corporate Bond **ZCS*** distributing units — Duration: 2.8 Distribution Yield: 3.0% | M Yield to Maturity: 2.3% **ZCS.L** accumulating units — Duration: 2.8 Distribution Yield: 0.0% | A Yield to Maturity: 2.3% Mgmt. Fee: 0.10% **Risk Rating:** Low	BMO Mid Corporate Bond **ZCM*** Duration: 6.3 Distribution Yield: 3.3% | M Yield to Maturity: 2.8% Mgmt. Fee: 0.30% **Risk Rating:** Low	BMO Long Corporate Bond **ZLC*** Duration: 13.3 Distribution Yield: 4.0% | M Yield to Maturity: 3.4% Mgmt. Fee: 0.30% **Risk Rating:** Low to Medium
BMO Short Provincial Bond **ZPS*** distributing units — Duration: 3.0 Distribution Yield: 3.2% | M Yield to Maturity: 1.7% **ZPS.L** accumulating units — Duration: 3.0 Distribution Yield: 0.0% | A Yield to Maturity: 1.7% Mgmt. Fee: 0.25% **Risk Rating:** Low	BMO Mid Provincial Bond **ZMP*** Duration: 6.6 Distribution Yield: 2.7% | M Yield to Maturity: 2.0% Mgmt. Fee: 0.25% **Risk Rating:** Low	BMO Long Provincial Bond **ZPL*** Duration: 16.1 Distribution Yield: 3.2% | M Yield to Maturity: 2.5% Mgmt. Fee: 0.25% **Risk Rating:** Low to Medium
BMO Short Federal Bond **ZFS*** distributing units — Duration: 2.7 Distribution Yield: 1.8% | M Yield to Maturity: 1.5% **ZFS.L** accumulating units — Duration: 2.7 Distribution Yield: 0.0% | A Yield to Maturity: 1.5% Mgmt. Fee: 0.20% **Risk Rating:** Low	BMO Mid Federal Bond **ZFM*** Duration: 7.1 Distribution Yield: 2.0% | M Yield to Maturity: 1.6% Mgmt. Fee: 0.20% **Risk Rating:** Low	O BMO Long Federal Bond **ZFL** Duration: 16.8 Distribution Yield: 2.9% | M Yield to Maturity: 1.7% Mgmt. Fee: 0.20% **Risk Rating:** Low to Medium

US/Global

BMO Short-Term US Treasury Bond **ZTS** unhedged **ZTS.U** USD units Duration: 2.8 Distribution Yield: 1.6% | Q Yield to Maturity: 1.8% Mgmt. Fee: 0.20% **Risk Rating:** Low to Medium	BMO Mid-Term US Treasury Bond **ZTM** unhedged **ZTM.U** USD units Duration: 6.4 Distribution Yield: 1.9% | Q Yield to Maturity: 1.9% Mgmt. Fee: 0.20% **Risk Rating:** Medium	BMO Long-Term US Treasury Bond **ZTL** unhedged **ZTL.U** USD units Duration: 18.0 Distribution Yield: 2.6% | Q Yield to Maturity: 2.5% Mgmt. Fee: 0.20% **Risk Rating:** Medium
BMO Ultra Short-Term US Bond **ZUS.U** USD units — Duration: 0.7 Distribution Yield: 3.1% | M Yield to Maturity: 2.9% **ZUS.V** USD accumulating units — Duration: 0.7 Distribution Yield: 0.0% | A Yield to Maturity: 2.9% Mgmt. Fee: 0.15% **Risk Rating:** Low new	BMO Short-Term US IG Corporate Bond **ZSU** hedged to CAD Duration: 2.5 Distribution Yield: 2.7% | M Yield to Maturity: 2.5% Mgmt. Fee: 0.25% **Risk Rating:** Low	BMO Mid-Term US IG Corporate Bond **ZMU*** hedged to CAD **ZIC*** unhedged **ZIC.U*** unhedged USD traded Duration: 6.3 Distribution Yield: 3.6% | M Yield to Maturity: 3.0% Mgmt. Fee: 0.25% **Risk Rating:** Low
BMO Floating Rate High Yield **ZFH*** Duration: 0.2 Distribution Yield: 4.5% | M Yield to Maturity: 4.6% Mgmt. Fee: 0.40% **Risk Rating:** Low to Medium	BMO High Yield US Corporate Bond **ZJK*** unhedged **ZHY*** hedged to CAD Duration: 3.3 Distribution Yield: 6.1% | M Yield to Maturity: 5.8% Mgmt. Fee: 0.55% **Risk Rating:** Low to Medium	O BMO Emerging Market Bond **ZEF** hedged to CAD Duration: 5.3 Distribution Yield: 4.7% | M Yield to Maturity: 4.7% Mgmt. Fee: 0.50% **Risk Rating:** Low to Medium

O = Optionable ETFs *= Passive Foreign Investment Company (PFIC) annual information statements available Source: BMO Global Asset Management, as of June 30, 2019

BMO Global Asset Management

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[1] ETFGI Industry Report – April 2019
[2] Bloomberg January 2019