

February 2, 2023

January 2023: Money moving overseas

NATIONAL BANK **OF CANADA**

FINANCIAL MARKETS

- U.S. ETFs received \$40 billion in January, primarily into foreign equities and fixed income ETFs.
- U.S. equity ETFs bled assets slightly, while Europe and Emerging Markets equity ETFs gained traction.
- Investors withdrew assets from money market ETFs and took on more credit and duration exposure.
- Blockchain/crypto-themed ETFs rebounded strongly in January but are still well below 2022's peak.

Summary (Table 1, Chart 1): U.S. ETFs received \$40 billion in new money in January, flowing primarily towards foreign equity and fixed income ETFs. U.S. Broad/Large-Cap ETFs suffered their third consecutive month of redemptions; strategic U.S. equity ETFs (such as sector, thematic and factor products) also finished the month with a net outflow. Within fixed income ETFs, investors were inclined towards Emerging Markets bonds and longer-duration products.

Equity ETFs by Geography (Table 3): Despite a rosylooking start to 2023 for U.S. stocks (the S&P 500 Index gained 6% in January), U.S. equity ETFs had a rough kickoff, finishing January with \$2.6 billion in outflows. New creations were predominantly concentrated in broad European and Emerging Markets equity ETFs. Europe-focused equity ETFs welcomed \$5.1 billion in January, a whopping 14.3% growth in terms of flow as a percentage of starting AUM. JPMorgan BetaBuilders Europe ETF (BBEU) topped the single product inflow with \$3.6 billion in fresh money.

As for Emerging Markets, we observed that investors expressed their bullishness by switching from defensive ETFs (iShares MSCI EM Min Vol Factor ETF, EEMV, \$2.4 billion outflow) to broad market exposure (IEMG and EEM, \$5.0 billion inflow combined). Besides strong demand for broad beta ETFs, \$2.0 billion still flowed into China-focused equity ETFs. Since China announced its reopening plan in November last year, China-focused equity ETFs have gained a cumulative \$3.5 billion of

Table 1: ETF Flows by Category

	AUM	Mkt	Jan	2023
	(\$B)	Shr	Flow (\$B)	Flow/AUM
Equity	\$5,317		\$17.6	0.4%
U.S. Broad/Large-Cap	\$1,624	23%	-\$2.2	-0.1%
U.S. Other	\$2,438	35%	-\$0.4	0.0%
Int'l / Global	\$958	14%	\$11.5	1.3%
Emerging Mark ets	\$296	4%	\$8.7	3.3%
Fixed Income	\$1,349	19%	\$19.8	1.5%
Commodity	\$137	2%	\$0.4	0.3%
Multi-Asset	\$69	1%	-\$0.8	-1.2%
Levered Long	\$51	1%	-\$1.8	-4.1%
Inverse	\$24	0%	\$4.2	17.7%
Crypto-Asset	\$1	0%	\$0.0	8.4%
Total	\$6,947	100%	\$39.5	0.6%

Source: NBF ETF Research, Bloomberg. Data as of January 31, 2023.

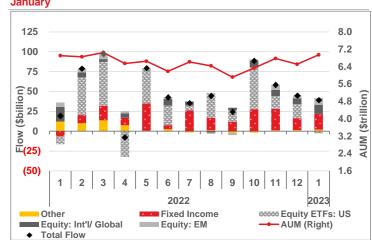


Chart 1: U.S.-Listed ETF Flow and AUM by month - \$39.5 billion in January

Source: NBF ETF Research, Bloomberg. Data as of January 31, 2023.

inflow, which represents almost 19% of this category's starting asset in November 2022.

We observed a "January effect" over nearly 30 years of U.S. ETF history, which is distinct from the wider stock market's January effect; in the world of U.S.-listed ETFs, money tends to move from U.S. equity into foreign equity products in January. Since March 1996, when the first foreign equity ETF was launched in the U.S., January is the only month in which foreign equity ETFs outsell U.S. equity ETFs (19 out of 27 Januarys), while December flows tend to favour U.S. equities (23 out of 27 Decembers). One hypothesis could be that in December, investors unwind their tax loss positions by selling individual stocks, cycling temporarily into U.S. equity ETFs.



Equity Sector ETFs (Table 4): Perhaps boosted by the encouraging GDP data and the Fed downshifting the pace of rate hikes, the U.S. market has reversed sharply from 2022's bearish trends. All cyclical sectors finished with gains, led by Consumer Discretionary and Communication, which were the worst-performing sectors in 2022. Contrary to 2022's outperformances, defensive sectors are now at the bottom of the sector performance table and all but energy finished in the red. On the ETF side, while the January flow pattern corresponded to a shift from defensive to cyclical sectors, net creations remained low. Only Materials ETFs had significant inflow of \$1.4 billion, or 3.5% of their starting AUM. The S&P 500 Materials sub-index had the best three-month return among S&P 500 sector indices, supported by rising metal prices.

Equity Factor ETFs (Table 7): While sector flows might reflect some degree of a returning risk-on environment, dividend/income's continuing dominance in factor ETF flows suggests that stability remains the primary goal for investors seeking equity exposure. The overall factor demand, however, slid to its lowest level since 2020 September, with 'only' \$1.9 billion in net creations.

Fixed Income ETFs (Table 5, 6): Fixed income ETFs saw \$19.8 billion of inflow in January. Just like equity ETFs, bond ETFs offering Emerging Markets exposure surged in popularity. Besides the growing optimism for the region's economy, the weakening greenback also helped lift investors' confidence in Emerging Markets bonds. On the maturity side, assets flowed mostly towards mid- to long-duration ETFs, whereas ultra-short-term bond ETFs faced outflows.

ESG ETFs (Table 11): In January, U.S.-listed ESG ETFs had \$766 million of outflows, of which more than 80% was a one-time institutional-size redemption from iShares ESG Aware MSCI USA ETF (**ESGU**). On the inflow side, Emerging Markets equities received significant traction in the ESG space, an echo of broader appetite for the region. While most of the money went into the iShares ESG Aware MSCI Emerging Markets ETF (**ESGE**), which closely tracks the broad Emerging Markets benchmark, some investors also used ESG ETFs as a strategic play. For instance, Freedom 100 Emerging Markets ETF (**FRDM**), which weighs countries based on 'freedom metrics' and excludes some of the world's largest economies like China and India, gained \$31 million in January, or 10% of its starting AUM.

Top Performing ETFs (Table 2): January's top performing ETFs are all blockchain and/or crypto-related, which was one of the most hard-hit thematic ETF categories in the 2022 calendar year. Despite these ETFs' skyrocketing returns, investors who bought in last year are probably still deeply underwater. **WGMI** (Valkyrie Bitcoin Miners), for example, is down 83% since its debut in February 2022.

Table 2: Best Performing ETFs* – January 2023

	Ticker Name	Total Ret (%)	urn AUM (\$M)	Flow (\$M)
1	WGMI Valkyrie Bitcoin Miners ETF	97.0	4	1
2	DAM Vaneck Digital Asset Mining ET	- 77.2	1	0
3	DAPP VanEck Digital Transformation E	TF 64.1	29	0
4	BKCH Global X Blockchain ETF	63.9	61	2
5	BITQ Bitwise Crypto Industry Innovato	rs ETF 61.3	54	0
6	SATO Invesco Alerian Galaxy Crypto E	conomy ETF 55.1	3	0
7	IBLC iShares Blockchain And Tech E	TF 54.1	6	0
8	BITS Global X Blockchain & Bitcoin S	trategy ETF 50.6	10	-0
9	GFOF Grayscale Future of Finance ET	46.3	5	0
10	FDIG Fidelity Crypto Industry And Digi	tal Payments 44.6	24	0

*Excluding leveraged/inverse ETFs. Source: NBF ETF Research, Bloomberg. Data as of January 31, 2023.



January 2023 ETF Flows: Tables 3 - 9

Table 3 - Equity ETF Flow	s by Geograpi	hy - Jan 20	23			
Geography	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM		
U.S.	\$4,063		-\$2.6	-0.1%		
Broad/Large Cap	\$1,624	31%	-\$2.2	-0.1%		
U.S. Other	\$2,438	46%	-\$0.4	0.0%		
International Developed	\$582		\$8.9	1.7%		
Broad Int'l Dev	\$453	9%	\$3.3	0.8%		
Broad Europe	\$45	1%	\$5.1	14.3%		
Japan	\$21	0%	-\$0.1	-0.3%		
Canada	\$10	0%	\$0.0	0.1%		
Other Developed	\$53	1%	\$0.5	1.1%		
Emerging Markets	\$296		\$8.7	3.3%		
Broad Cap Weighted	\$197	4%	\$6.5	3.7%		
China (A+H)	\$32	1%	\$2.0	7.7%		
Other EM	\$68	1%	\$0.1	0.2%		
Global/Regional	\$376	7%	\$2.6	0.8%		
Total Displayed	\$5,317	100%	\$17.6	0.4%		
Source: National Bank of Canada, Bloomberg						

Source: National Bank of Canada, Bioonberg							
Table 4 - Equity ETF Flows by Sector and Themes* - Jan 2023							
Sector	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM			
Materials	\$48	6%	\$1.4	3.5%			
Communication Services	\$28	3%	\$0.4	1.8%			
Industrials	\$34	4%	\$0.2	0.5%			
Consumer Discretionary	\$27	3%	\$0.1	0.6%			
Utilities	\$26	3%	\$0.1	0.5%			
Consumer Staples	\$31	4%	\$0.0	0.0%			
Financials	\$63	8%	\$0.1	-0.1%			
Real Estate	\$77	9%	[\$0.4	-0.6%			
Energy	\$88	11%	5 80.7	-0.8%			
Health Care	\$105	13%	5 0.9	-0.9%			
Technology	\$148	18%	\$2.0	-1.5%			
ESG	\$89	11%	\$0.9	-1.0%			
Thematic	\$61	7%	\$0.0	0.0%			
Total Displayed	\$826	100%	-\$2.6	-0.3%			

*Includes all geographic focus; Source: National Bank of Canada, Bloomberg QQQ is classified as a broad market ETF and does not belong to technology sector

able 5 - Fixed Income ETF	Flows by T	ype - Jan 20)23
Гуре	AUM (\$B)	Mkt Shr	Flow (\$B) Flow/AU
U.S. Aggregate	\$304	23%	\$2.3 0.8%
U.S. Government	\$411	30%	\$ 5.0 1.3%
U.S. Municipals	\$102	8%	\$0.2 0.2%
U.S. I.G. Corporate	\$226	17%	\$7.4 3.5%
Developed Markets&Global	\$142	11%	\$2.4 1.8%
Emerging Markets	\$31	2%	\$2.8 10.4%
Sub-investment Grade	\$90	7%	\$0.4 0.5%
Convertibles and Preferreds	\$42	3%	-\$0.9 -2.3%
Total Displayed	\$1,349	100%	\$19.8 1.5%
	Source:	National Ban	k of Canada, Bloombe
Table 6 - Fixed Income ETF	Flowsby M	aturity - Jai	
Maturity	AUM (\$B)	Mkt Shr	Flow (\$B) Flow/AU
Broad/Mixed	\$663	49%	\$10.2 1.6%
Ultra Short Term	\$164	12%	-\$4.1 -2.5%
Short Term	\$267	20%	\$2.9 1.1%
Mid Term	\$151	11%	\$4.0 2.8%
Long Term	\$67	5%	\$4.6 7.9%
Target Maturity	\$35	3%	\$2.4 7.5%
Rate Hedged	\$2	0%	-\$0.2 -12.3%
Total Displayed	\$1,349	100%	\$19.8 1.5%
			ik of Canada, <u>Bloombe</u>
Table 7 - Equity ETF Flows			
Factor	AUM (\$B)	Mkt Shr	Flow (\$B) Flow/AU
Income	\$404	21%	\$4.3 1.1%
Quality	\$39	2%	\$1.0 2.7%
Small/Mid Cap	\$453	24%	\$0.4 0.1%
Momentum	\$25	1%	\$0.3 1.1%
Value	\$429	23%	-\$0.1 0.0%
Growth	\$334	18%	-\$2.8 -0.9%

*Includes all geographic focus, excluding sector ETFs; Source: NBC, Bloomberg

4%

8%

1**00%**

-\$3.2 -4.6%

1.4%

0.1%

\$2.0

\$1.9

\$67

\$148

\$1,898

Table	e 8 - 1	۲٥p Single Long ETF Inflows - Jan 2023			Tab	ole 9 - To	p Single Long ETF Outflows - Jan 2023		
Ti	icker	Name	Flow (\$B) F	low/AUM		Ticker	Name	Flow (\$B) F	low/AUM
1 IE	EMG	iShares Core MSCI Emerging Markets ETF	\$3.6	5.7%	1	QQQ	Invesco QQQ Trust Series 1	-\$4.4	-3.0%
2 B	BEU	JPMorgan BetaBuilders Europe ETF	\$3.6	114.5%	2	IWF	iShares Russell 1000 Growth ETF	-\$3.9	-6.6%
3 1	VTV	Vanguard Value ETF	\$2.6	2.7%	3	IWD	iShares Russell 1000 Value ETF	-\$3.3	-6.0%
4 S	сно	Schwab Short-Term U.S. Treasury ETF	\$2.6	25.1%	4	EEMV	iShares MSCI EM Min Vol Factor ETF	-\$2.4	-30.0%
5 L	_QD	iShares iBoxx \$ IG Corporate Bond ETF	\$2.5	7.1%	5	BIL	SPDR Bloomberg Barclays 1-3 Month T-Bill ETF	-\$1.8	-6.6%
6 E	ЕМВ	iShares JP Morgan USD EM Bond ETF	\$2.4	16.8%	6	IWM	iShares Russell 2000 ETF	-\$1.5	-3.0%
7 J	JEPI	JPMorgan Equity Premium Income ETF	\$2.4	14.0%	7	VIG	Vanguard Dividend Appreciation ETF	-\$1.2	-1.8%
8 5	SPY	SPDR S&P 500 ETF Trust	\$2.3	0.6%	8	GOVT	iShares US Treasury Bond ETF	-\$1.0	-4.7%
9 1	TLT	iShares 20+ Year Treasury Bond ETF	\$2.0	7.4%	9	SGOV	iShares 0-3 Month Treasury Bond ETF	-\$1.0	-13.4%
10 S	CHD	Schwab US Dividend Equity ETF	\$1.5	3.4%	10	EFA	iShares MSCI EAFE ETF	-\$1.0	-2.1%
11 H	HYG	iShares iBoxx High Yield Corporate Bond ETF	\$1.4	9.1%	11	SHYG	iShares 0-5 Year High Yield Corporate Bond ETF	-\$0.9	-13.1%
12 '	VTI	Vanguard Total Stock Market ETF	\$1.4	0.5%	12	XLK	Technology Select Sector SPDR Fund	-\$0.9	-2.3%
13 B	NDX	Vanguard Total International Bond ETF	\$1.4	3.2%	13	SHV	iShares Short Treasury Bond ETF	-\$0.9	-4.3%
14 E	EEM	iShares MSCI Emerging Markets ETF	\$1.4	6.1%	14	ESGU	iShares ESG Aware MSCI USA ETF	-\$0.8	-4.3%
15 A	٩GG	iShares Core U.S. Aggregate Bond ETF	\$1.3	1.6%	15	HDV	iShares Core High Dividend ETF	-\$0.8	-6.5%
16 N	IBB	iShares MBS ETF	\$1.3	5.4%	16	ITOT	iShares Core S&P Total US Stock Market ETF	-\$0.8	-2.0%
17 F	RSP	Invesco S&P 500 Equal Weight ETF	\$1.2	3.8%	17	ICVT	iShares Convertible Bond ETF	-\$0.8	-41.4%
18	IEF	iShares 7-10 Year Treasury Bond ETF	\$1.1	5.0%	18	IWB	iShares Russell 1000 ETF	-\$0.8	-2.8%
19 C	owz	Pacer US Cash Cows 100 ETF	\$1.1	11.1%	19	XOP	SPDR S&P Oil & Gas Exploration & Production	-\$0.7	-14.9%
20 1	TLH	iShares 10-20 Year Treasury Bond ETF	\$1.1	18.1%	20	BSV	Vanguard Short-Term Bond ETF	-\$0.7	-1.9%

Low Vol

Multi-Factor and Other

Total Displayed

Source: National Bank of Canada, Bloomberg

Source: National Bank of Canada, Bloomberg



Table 10: ETF Provider Table

		AUM	Mkt	Jan	2023
		(\$B)	Shr	Flow (\$B)	Flow/AUM
1	BlackRock iShares	\$2,338	34%	-\$0.2	0.0%
2	Vanguard	\$2,015	29%	\$12.1	0.6%
3	State Street SSGA	\$1,037	15%	\$3.8	0.4%
4	Invesco	\$353	5%	- \$1.0	-0.3%
5	Charles Schwab	\$281	4%	\$5.3	2.0%
6	First Trust	\$141	2%	\$1.1	0.8%
7	JPMorgan	\$99	1%	\$7.5	8.5%
8	Dimensional Holdings	\$80	1%	\$2.6	3.6%
9	ProShares	\$61	1%	\$1.6	2.7%
10	WisdomTree	\$59	1%	\$0.4	0.8%
11	VanEck	\$57	1%	\$0.2	0.4%
12	Global X	\$39	1%	-\$0.1	-0.2%
13	Fidelity	\$33	0%	\$0.4	1.4%
14	Goldman Sachs	\$28	0%	-\$0.4	-1.6%
15	Direxion	\$26	0%	\$0.6	2.8%
16	Pacer Financial	\$22	0%	\$1.4	7.2%
17	Northern Trust	\$22	0%	\$0.0	-0.2%
18	American Century	\$22	0%	\$0.9	4.9%
19	PIMCO	\$21	0%	-\$0.4	-1.9%
20	DWS Xtrackers	\$20	0%	\$0.3	1.7%
	Top 20 Total	\$6,753	97%	\$36.1	
	Total ETF	\$6,947	100%	\$39.5	

Source: NBF ETF Research, Bloomberg. Data as of January 31, 2023.

Table 11: ESG ETF Flows by Categories

			Janua	ry 2023
Category	AUM (\$M) A	AUM (%)	Flow (\$M)	Flow/AUM
Equity	\$90,316	92%	- \$9 23	-1.1%
Broad - U.S.	\$47,937	49%	-\$1,1 <mark>2</mark> 0	-2.4%
Broad - DM	\$8,489	9%	-\$\$\$7	′ - 1.1%
Broad - EM	\$4,812	5%	\$272	6.5%
Broad - Global	\$4,040	4%	\$7	0.2%
Environment	\$8,269	8%	\$99	1.3%
Clean Energy	\$13,275	13%	-\$152	-1.2%
Social	\$2,573	3%	\$19	0.8%
Other	\$563	1%	\$8	1.5%
Commodities	\$1,009	1%	-\$4	-0.5%
Multi-Asset	\$60	0%	\$3	5.0%
Fixed Income	\$7,166	7%	\$159	2.3%
Total Displayed	\$98,551	100%	-\$766	-0.8%

Source: NBF ETF Research, Bloomberg. Data as of January 31, 2023.

Appendix 1 - Glossary

Exchange Traded Funds (ETFs) are open-ended mutual funds in continuous distribution. This report also includes other Exchange Traded Products such as notes, grantor trusts, limited partnerships and unit investment trusts.

AUM (Assets Under Management): AUM is expressed in local currency, which is the U.S. dollar for the purpose of this report.

Market Share/AUM (%): AUM as % of category total AUM on the last line of the table.

Flow: The net dollar amount of fund creations and redemptions for the period based on daily NAV and the change in Shares Outstanding. Flows are expressed in local currency, which is the U.S. dollar for the purpose of this report.

Maturity: We categorize fixed income ETFs into the following maturity brackets:



- Broad/Mixed: ETF that holds issues from across more than one maturity bucket (short, mid and/or long-term).
- Floating Rate: ETF that mainly invests in floating rate issues with periodic interest rate resets.
- Long-Term: ETF that mainly invests in long-term issues and has a weighted average maturity greater than 10 years.
- Mid-Term: ETF that mainly invests in intermediate-term fixed issues and has a weighted average maturity between three and 10 years.
- Short-Term: ETF that mainly invests in short-term issues with weighted average maturity less than three years.
- Target Maturity: ETF that has a target maturity, such as a fixed date or year.
- **Rate Hedged:** ETF that uses derivatives to mitigate interest rate risk and to maintain a zero or negative portfolio duration.

NAV (Net Asset Value per share): ETF price is used when NAV is not available.

Flow/AUM (Flow as % AUM): Flow as a percentage of assets under management from the beginning of the period.

Defensive Sectors: We classify Consumer non-cyclicals, Energy, Health Care, Utilities as defensive sectors.

Cyclical Sectors: We classify Consumer Cyclicals, Financials, Real Estate, Industrials, Information Technology, Materials, Communication Services as cyclical sectors.

All numbers are as of last month's final business day.

Appendix 2 - Equity ETF by Factor Categories

We group Factor Equity ETFs (exclude cap-weighted ETFs, sector ETFs and thematic ETFs) into the categories below. These groupings follow NBF's discretion and can differ from the ETF Provider's definition and classification from other sources.

Small/Mid-Cap: A fund with small/mid-cap focus.

Income: A fund with the primary goal of providing income. We classify a fund as belonging to the Income category when its strategy focuses on providing income or the fund self-identifies as using an income strategy, even though it may incorporate other factors in addition to income.

Value: A fund that invests primarily in the stocks that are considered undervalued using metrics such as price-to-earnings, price-to-book, EV/EBITA, etc.

Growth: A fund that invests primarily in fast-growing stocks using metrics such as earnings growth, sales growth, momentum, etc.

Momentum: A fund that invests primarily in high momentum stocks using metrics such as period returns.

Quality: A fund that invests primarily in high quality stocks using metrics like ROE, debt/equity and earnings growth.

Low Vol or Risk: A fund that aims to achieve reduced portfolio volatility, either by screening for low volatility stocks, low beta stocks and/or minimizing the portfolio volatility.

Other: Any non-cap weighted factor strategy that is not covered by otherwise defined categories. This includes equal-weight, multi-factor, AlphaDEX and other fundamental-based ETFs.



DISCLOSURES

Levered and Inverse Exchange-Traded Funds are very different from most ETFs. They pursue leveraged investment goals, and they are riskier than alternatives that do not use leverage because they magnify the performance of the benchmark on an investment. These ETFs seek daily leveraged investment results. The return of an inverse or levered ETF for periods longer than a single day, especially in periods of market volatility, may be completely uncorrelated to the return of the benchmark over such longer periods. Levered and inverse ETFs are intended to be used as short-term trading vehicles for investors managing their portfolios on a daily basis. They are not to be used by, and are not appropriate for, investors who intend to hold positions.

Unless otherwise agreed in writing, National Bank of Canada and its affiliates act solely in the capacity of an arm's length contractual counterparty and not as an adviser or fiduciary. Accordingly, you should not regard transaction proposals or other written or oral communications from us as a recommendation or advice that a transaction is appropriate for you or meets your financial objectives. Any financial transaction involves a variety of potentially significant risks and issues; additionally, please note bitcoin and other crypto assets are extremely risky and highly speculative. Before entering into any financial transaction, you should ensure that you fully understand the terms, have evaluated the risks and have determined that the transaction is appropriate for you in all respects. If you believe that you need assistance, you should consult appropriate advisers before entering into the transaction. The attached material does not constitute an offer to enter into any transaction. Such material is believed by us to be reliable, but we make no representation as to its accuracy or completeness. This brief statement does not purport to describe all of the risks associated with financial transactions and should not be construed as advice to you.

General

This Report was prepared by National Bank Financial Inc. (NBF), a Canadian investment dealer, a dealer member of IIROC and an indirect wholly owned subsidiary of National Bank of Canada. National Bank of Canada is a public company listed on the Toronto Stock Exchange.

The particulars contained herein were obtained from sources which we believe to be reliable but are not guaranteed by us and may be incomplete and may be subject to change without notice. The information is current as of the date of this document. Neither the author nor NBF assumes any obligation to update the information or advise on further developments relating to the topics or securities discussed. The opinions expressed are based upon the author(s) analysis and interpretation of these particulars and are not to be construed as a solicitation or offer to buy or sell the securities mentioned herein, and nothing in this Report constitutes a representation that any investment strategy or recommendation contained herein is suitable or appropriate to a recipient's individual circumstances. In all cases, investors should conduct their own investigation and analysis of such information before taking or omitting to take any action in relation to securities or markets that are analyzed in this Report. The Report alone is not intended to form the basis for an investment decision, or to replace any due diligence or analytical work required by you in making an investment decision.

This Report is for distribution only under such circumstances as may be permitted by applicable law. This Report is not directed at you if NBF or any affiliate distributing this Report is prohibited or restricted by any legislation or regulation in any jurisdiction from making it available to you.

National Bank of Canada Financial Markets is a trade name used by National Bank Financial Inc. and National Bank of Canada Financial Inc.

National Bank Financial Inc. or an affiliate thereof, owns or controls an equity interest in TMX Group Limited ("TMX Group") and has a nominee director serving on the TMX Group's board of directors. As such, each such investment dealer may be considered to have an economic interest in the listing of securities on any exchange owned or operated by TMX Group, including the Toronto Stock Exchange, the TSX Venture Exchange and the Alpha Exchange. No person or company is required to obtain products or services from TMX Group or its affiliates as a condition of any such dealer supplying or continuing to supply a product or service.

Research analysts

The Research Analyst(s) who prepared these reports certify that their respective report accurately reflects his or her personal opinion and that no part of his/her compensation was, is, or will be directly or indirectly related to the specific recommendations or views as to the securities or companies.

NBF compensates its Research Analysts from a variety of sources. The Research Department is a cost centre and is funded by the business activities of NBF including Institutional Equity Sales and Trading, Retail Sales, the correspondent clearing business, and Corporate and Investment Banking. Since the revenues from these businesses vary, the funds for research compensation vary. No one business line has a greater influence than any other for Research Analyst compensation.

Canadian Residents

NBF or its affiliates may engage in any trading strategies described herein for their own account or on a discretionary basis on behalf of certain clients and, as market conditions change, may amend or change investment strategy including full and complete divestment. The trading interests of NBF and its affiliates may also be contrary to any opinions expressed in this Report.

NBF or its affiliates often act as financial advisor, agent, lender or underwriter or provides trading related services for certain issuers mentioned herein and may receive remuneration for its services. As well, NBF and its affiliates and/or their officers, directors, representatives, associates, may have a position in the securities mentioned herein and may make purchases and/or sales of these securities from time to time in the open market or otherwise. NBF and its affiliates may make a market in securities mentioned in this Report. This Report may not be independent of the proprietary interests of NBF and its affiliates.

NBF is a member of the Canadian Investor Protection Fund.

UK Residents

This Report is a marketing document. This Report has not been prepared in accordance with EU legal requirements designed to promote the independence of investment research and it is not subject to any prohibition on dealing ahead of the dissemination of investment research.

In respect of the distribution of this Report to UK residents, NBF has approved the contents (including, where necessary, for the purposes of Section 21(1) of the Financial Services and Markets Act 2000). This Report is for information purposes only and does not constitute a personal recommendation, or investment, legal or tax advice. NBF and/or its parent and/or any companies within or affiliates of the National Bank of Canada group and/or any of their directors, officers and employees may have or may have had interests or long or short positions in, and may at any time make purchases and/or sales as principal or agent, or may act or may have acted as market maker in the relevant investments or related investments discussed in this Report, or may act or have acted as investment and/or commercial banker with respect hereto. The value of investments, and the income derived from them, can go down as well as



DISCLOSURES

up and you may not get back the amount invested. Past performance is not a guide to future performance. If an investment is denominated in a foreign currency, rates of exchange may have an adverse effect on the value of the investment. Investments which are illiquid may be difficult to sell or realise; it may also be difficult to obtain reliable information about their value or the extent of the risks to which they are exposed. Certain transactions, including those involving futures, swaps, and other derivatives, give rise to substantial risk and are not suitable for all investors. The investments contained in this Report are not available to retail customers and this Report is not for distribution to retail clients (within the meaning of the rules of the Financial Conduct Authority). Persons who are retail clients should not act or rely upon the information in this Report. This Report does not constitute or form part of any offer for sale or subscription of or solicitation of any offer to buy or subscribe for the securities described herein nor shall it or any part of it form the basis of or be relied on in connection with any contract or commitment whatsoever.

This information is only for distribution to Eligible Counterparties and Professional Clients in the United Kingdom within the meaning of the rules of the Financial Conduct Authority. NBF is authorized and regulated by the Financial Conduct Authority and has its registered office at 70 St. Mary Axe, London, EC3A 8BE.

NBF is not authorized by the Prudential Regulation Authority and the Financial Conduct Authority to accept deposits in the United Kingdom.

U.S. Residents

With respect to the distribution of this report in the United States of America, National Bank of Canada Financial Inc. ("NBCFI") is registered with the Securities Exchange Commission (SEC), the Financial Industry Regulatory Authority (FINRA), and is a member of the Securities Investor Protection Corporation (SIPC). NBCFI operates pursuant to a 15 a-6 Agreement with its Canadian affiliates, NBF and National Bank of Canada.

This report has been prepared in whole or in part by research analysts employed by non-US affiliates of NBCFI that are not registered as broker/dealers in the US. These non-US research analysts are not registered as associated persons of NBCFI and are not licensed or qualified as research analysts with FINRA or any other US regulatory authority and, accordingly, may not be subject (among other things) to FINRA restrictions regarding communications by a research analyst with the subject company, public appearances by research analysts and trading securities held in a research analyst account.

All of the views expressed in this research report accurately reflects the research analyst's personal views regarding any and all of the subject securities or issuers. No part of the analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed in this research report. The analyst responsible for the production of this report certifies that the views expressed herein reflect his or her accurate personal and technical judgment at the moment of publication.

Because the views of analysts may differ, members of the National Bank Financial Group may have or may in the future issue reports that are inconsistent with this report, or that reach conclusions different from those in this report. To make further inquiry related to this report, United States residents should contact their NBCFI registered representative.

HK Residents

With respect to the distribution of this report in Hong Kong by NBC Financial Markets Asia Limited ("NBCFMA") which is licensed by the Securities and Futures Commission ("SFC") to conduct Type 1 (dealing in securities) and Type 3 (leveraged foreign exchange trading) regulated activities, the contents of this report are solely for informational purposes. It has not been approved by, reviewed by, verified by or filed with any regulator in Hong Kong. Nothing herein is a recommendation, advice, offer or solicitation to buy or sell a product or service, nor an official confirmation of any transaction. None of the products issuers, NBCFMA or its affiliates or other persons or entities named herein are obliged to notify you of changes to any information and none of the foregoing assume any loss suffered by you in reliance of such information.

The content of this report may contain information about investment products which are not authorized by SFC for offering to the public in Hong Kong and such information will only be available to those persons who are Professional Investors (as defined in the Securities and Futures Ordinance of Hong Kong ("SFO")). If you are in any doubt as to your status you should consult a financial adviser or contact us. This material is not meant to be marketing materials and is not intended for public distribution. Please note that neither this material nor the product referred to is authorized for sale by SFC. Please refer to product prospectus for full details.

There may be conflicts of interest relating to NBCFMA or its affiliates' businesses. These activities and interests include potential multiple advisory, transactional and financial and other interests in securities and instruments that may be purchased or sold by NBCFMA or its affiliates, or in other investment vehicles which are managed by NBCFMA or its affiliates that may purchase or sell such securities and instruments.

No other entity within the National Bank of Canada group, including National Bank of Canada and National Bank Financial Inc., is licensed or registered with the SFC. Accordingly, such entities and their employees are not permitted and do not intend to: (i) carry on a business in any regulated activity in Hong Kong; (ii) hold themselves out as carrying on a business in any regulated activity in Hong Kong; or (iii) actively market their services to the Hong Kong public.

Copyright

This Report may not be reproduced in whole or in part, or further distributed or published or referred to in any manner whatsoever, nor may the information, opinions or conclusions contained in it be referred to without in each case the prior express written consent of NBF.

Dissemination policy

Please click on this link to access NBF's Research Dissemination Policy.