

April 2023: Sector flows following returns

- Equity ETFs saw mild net creations of \$11 billion with demand primarily from U.S.-focused products
- Quality ETFs led factor ETFs in flows; value and momentum ETFs continued to bleed assets
- High yield and mid/long duration bond ETFs picked up assets while low duration products saw redemptions
- ESG ETFs saw a \$2 billion reshuffle as a pension fund attempts to reach climate goals

Summary (Table 1, Chart 1): U.S. ETFs received \$29.4 billion in flows in April; although demand appeared across the board, flows to equity ETFs remained comparatively low at \$11 billion in net creations. There were positive signs of renewed interest in U.S. equity ETFs, which received \$8.9 billion in new money, primarily towards U.S. broad index ETFs. In the fixed income space, investors expressed optimism, showing preference for high yield ETFs and longer duration products while slightly reducing allocations to shorter-term bond ETFs.

Table 1: ETF Flows by Category

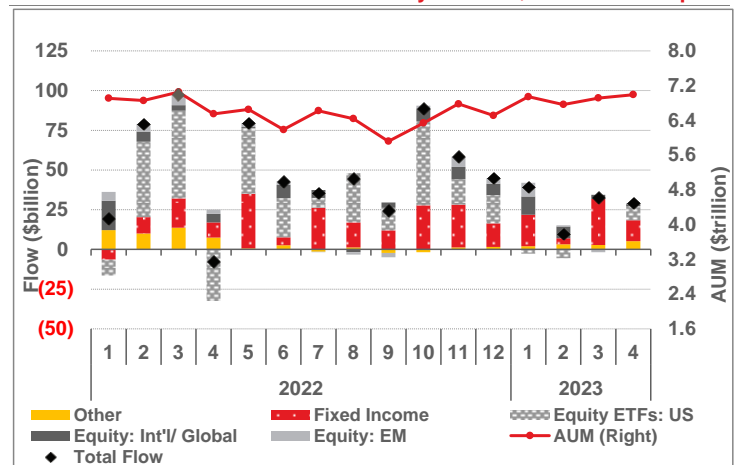
	AUM (\$B)	Mkt Shr	April 2023 Flow (\$B)	Flow/AUM	Jan-Apr 2023 Flow (\$B)	Flow/AUM
Equity	\$5,286		\$11.0	0.2%	\$29.6	0.6%
U.S. Broad/Large-Cap	\$1,672	24%	\$6.8	0.4%	\$0.3	0.0%
U.S. Other	\$2,357	34%	\$2.1	0.1%	-\$1.9	-0.1%
Int'l / Global	\$976	14%	\$1.3	0.1%	\$22.7	2.6%
Emerging Markets	\$281	4%	\$0.8	0.3%	\$8.4	3.2%
Fixed Income	\$1,391	20%	\$13.1	1.0%	\$65.6	5.1%
Commodity	\$138	2%	\$0.2	0.1%	-\$0.5	-0.4%
Multi-Asset	\$98	1%	\$3.4	3.6%	\$9.4	11.1%
Levered Long	\$56	1%	\$0.5	0.9%	\$1.8	4.1%
Inverse	\$23	0%	\$1.1	5.1%	\$5.1	21.1%
Crypto-Asset	\$1	0%	\$0.0	4.2%	\$0.1	15.8%
Total	\$6,993	100%	\$29.4	0.4%	\$111.1	1.7%

Source: NBF ETF Research, Bloomberg. Data as of April 30, 2023.

Equity ETFs by Geography (Table 3):

In April, interest in U.S. equities rekindled, with U.S. equity ETFs recording a positive monthly inflow of \$8.9 billion, a significant improvement from previous months. The majority of this inflow, \$5.3 billion, went to S&P 500 ETFs such as VOO, IVV and SPLG. Meanwhile, international developed and emerging markets ETFs also had net creations. Notably, broad Europe and Japan ETFs showed the highest flow as a percentage of starting AUM. Global/regional ETFs saw an outflow of \$1.8 billion; most of this was due to an institutional-size redemption of \$1.3 billion from iShares MSCI ACWI ETF (ACWI).

Chart 1: U.S. Listed ETF Flow and AUM by month - \$29.4 billion in April



Source: NBF ETF Research, Bloomberg. Data as of April 30, 2023.

Equity Sector ETFs (Table 4): Investors flocked back to defensive sectors in April (consumer staples, energy, healthcare and utilities); in fact, these were the sectors that beat the benchmark S&P 500 index. In addition to defensive sectors, communication and financials also outperformed. The communication sector led the pack with a 3.8% gain in April and a whopping 25.1% gain year-to-date, primarily due to Meta's recovering stock performance, which saw a 100% year-to-date return and a 13.4% gain in April (though it is still 37% below its late 2021 peak). The financial sector also saw a recovery, with U.S. big banks rebounding from the March selloff. All in, sector flows were positively correlated with returns, with financials, consumer staples and communication seeing the highest inflows. However, energy and healthcare continued to suffer outflows.

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Equity Factor ETFs (Table 7): Factor ETFs received \$2.4 billion in flows in April, with positive contributions from quality, growth, dividend/income and low volatility strategies. Unlike March (when inflows to quality ETFs were almost entirely due to a single institutional switch from ESGU to QUAL), April witnessed more organic flows across market caps and regions. We saw this

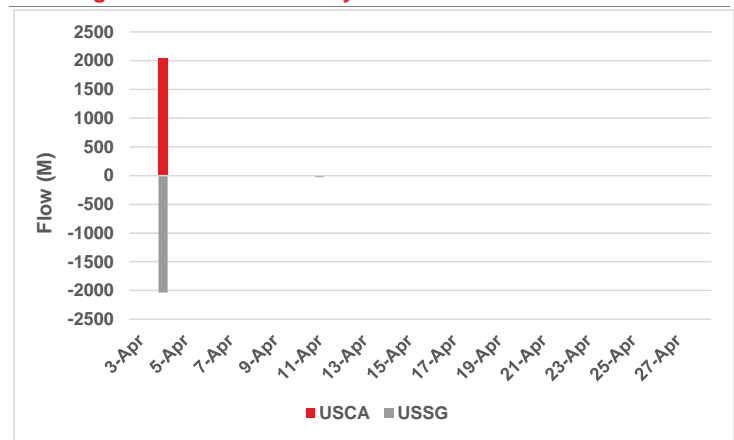
trend take place in broad (QUAL, JQUA), large-cap (SPHQ), mid-cap (XMHQ) and international (IQLT) ETFs. Value and momentum ETFs experienced outflows, even though the S&P Momentum and S&P 500 Value indices both outperformed the S&P 500 in April.

Fixed Income ETFs (Tables 5, 6): In April, longer duration fixed income ETFs (broad/mixed and long-term) extended their popularity streak, while ultra-short-term and short-term bond ETFs saw redemptions. Demand also increased across the entire credit spectrum, from U.S. government bond ETFs to high yield ETFs and Emerging Market ETFs. Among fixed income ETF categories by credit, high yield ETFs had the highest net inflows, driven by iShares iBoxx High Yield Corporate Bond ETF (HYG, \$2.5 billion) and SPDR Bloomberg Barclays High Yield Bond ETF (JNK, \$1.8 billion). This demand for high yield ETFs could be rebounding confidence in credit markets after the panic bank selloff in March, but that situation is still playing out. HYG and JNK each enjoyed percentage growth amounting to one fifth of starting assets in April, an incredible feat considering each of these ETFs is multi-billion dollars in size.

ESG ETFs (Table 18, Chart 2):

Flow trends in April were significantly impacted by two DWS Xtrackers' ETFs: Xtrackers MSCI USA ESG Leaders Equity ETF (USSG) and the newly launched Xtrackers MSCI USA Climate Action Equity ETF (USCA). On April 4, USSG experienced an outflow of \$2.0 billion, as the Finnish pension fund Ilmarinen exited its USSG positions and allocated cash to the climate-focused USCA to achieve its goal of “being carbon neutral by the end of 2035”, according to the pension fund manager and as reported in the media ([The Biggest ETF Launch Ever Is Just a \\$2 Billion ESG Fund Reshuffle](#)). Similar to the MSCI USA ESG Leaders Index which USSG tracks, USCA's underlying index, the MSCI USA Climate Action Index, uses a best-in-class approach and selects the top 50% of securities in each GICS sector of the parent index (MSCI USA). However, USCA ranks securities based on only climate-related metrics, such as Greenhouse Gas (GHG) Intensity, while USSG looks at overall ESG scores.

Chart 2: The “climate action” ETF USCA received \$2 billion of new money on its inception date while the “broad ESG” ETF USSG had a matching outflow on the same day



Source: NBF ETF Research, Bloomberg. Data as of April 30, 2023.

Top Performing ETFs (Table 2):

Note: crypto assets are highly risky and speculative.

April's top performing ETFs consist of soft commodity ETNs and crypto-related equity ETFs. The impressive gains in soft commodity prices (such as sugar and coffee) might be attributed to extreme weather conditions that have adversely affected harvests in some of the largest agriculture-producing countries like India and Colombia. As for crypto-related equity ETFs (DAPP, WGMI, BITQ), their price surge could be due to the strong positive correlation with the price of Bitcoin. These ETFs were up over 20% during the month when Bitcoin's price reached \$30,000 but suffered a decline of 10% shortly after as Bitcoin's price slid back to \$28,000, its starting level for April.

Table 2: Best Performing ETFs* – April 2023

Ticker	Name	Total Return (%)	AUM (\$M)	Flow (\$M)
1 SGG	iPath Series B Bloomberg Sugar Subindex	22.1	50	0
2 CANE	Teucrium Sugar Fund	21.2	41	6
3 DAPP	VanEck Digital Transformation ETF	14.3	33	0
4 WGMI	Valkyrie Bitcoin Miners ETF	13.7	9	2
5 EPOL	iShares MSCI Poland ETF	13.1	206	-25
6 JJS	iPath Series B Bloomberg Softs Subindex	12.5	17	1
7 SURI	Simplify Propel Opportunities ETF	11.7	64	0
8 JO	iPath Series B Bloomberg Coffee Subindex	10.5	47	-4
9 BITQ	Bitwise Crypto Industry Innovators ETF	10.1	68	1
10 SBIO	ALPS Medical Breakthroughs ETF	9.9	106	0

*Excluding leveraged/inverse ETFs. Source: NBF ETF Research, Bloomberg. Data as of April 30, 2023.

April 2023 ETF Flows: Tables 3 - 9

Table 3 - Equity ETF Flows by Geography - April 2023

Geography	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
U.S.	\$4,029		\$8.9	0.2%
Broad/Large Cap	\$1,672	32%	\$6.8	0.4%
U.S. Other	\$2,357	45%	\$2.1	0.1%
International Developed	\$606		\$3.1	0.5%
Broad Int'l Dev	\$470	9%	\$1.8	0.4%
Broad Europe	\$52	1%	\$1.1	2.2%
Japan	\$21	0%	\$0.4	2.1%
Canada	\$10	0%	-\$0.1	-1.0%
Other Developed	\$53	1%	-\$0.2	-0.3%
Emerging Markets	\$281		\$0.8	0.3%
Broad Cap Weighted	\$188	4%	\$0.4	0.2%
China (A+H)	\$27	1%	\$0.0	-0.1%
Other EM	\$66	1%	\$0.4	0.7%
Global/Regional	\$370	7%	-\$1.8	-0.5%
Total Displayed	\$5,286	100%	\$11.0	0.2%

Source: National Bank of Canada, Bloomberg

Table 4 - Equity ETF Flows by Sector and Themes* - April 2023

Sector	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Financials	\$57	7%	\$1.8	3.2%
Consumer Staples	\$34	4%	\$1.4	4.3%
Communication Services	\$27	3%	\$0.8	3.0%
Utilities	\$26	3%	\$0.3	1.1%
Consumer Discretionary	\$28	3%	\$0.2	0.7%
Industrials	\$34	4%	-\$0.2	-0.6%
Health Care	\$100	13%	-\$0.3	-0.3%
Materials	\$45	6%	-\$0.4	-0.9%
Real Estate	\$68	9%	-\$0.9	-1.3%
Energy	\$77	10%	-\$1.1	-1.5%
Technology	\$158	20%	-\$1.6	-1.0%
ESG	\$81	10%	-\$0.5	-0.6%
Thematic	\$60	8%	-\$0.4	-0.6%
Total Displayed	\$795	100%	-\$1.0	-0.1%

*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

Table 5 - Fixed Income ETF Flows by Type - April 2023

Type	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
U.S. Aggregate	\$317	23%	\$3.1	1.0%
U.S. Government	\$450	32%	\$1.7	0.4%
U.S. Municipals	\$102	7%	\$0.6	0.6%
U.S. I.G. Corporate	\$225	16%	\$0.8	0.4%
Developed Markets&Global	\$147	11%	\$1.6	1.1%
Emerging Markets	\$28	2%	\$0.3	1.2%
Sub-investment Grade	\$84	6%	\$4.9	6.3%
Convertibles and Preferreds	\$38	3%	\$0.1	0.2%
Total Displayed	\$1,391	100%	\$13.1	1.0%

Source: National Bank of Canada, Bloomberg

Table 6 - Fixed Income ETF Flows by Maturity - April 2023

Maturity	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Broad/Mixed	\$674	48%	\$11.7	1.8%
Ultra Short Term	\$180	13%	-\$1.8	-1.0%
Short Term	\$261	19%	-\$1.0	-0.4%
Mid Term	\$160	12%	-\$0.2	-0.1%
Long Term	\$76	5%	\$3.4	4.7%
Target Maturity	\$39	3%	\$1.1	2.8%
Rate Hedged	\$1	0%	-\$0.1	-6.7%
Total Displayed	\$1,391	100%	\$13.1	1.0%

Source: National Bank of Canada, Bloomberg

Table 7 - Equity ETF Flows by Factor* - April 2023

Factor	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Quality	\$51	3%	\$2.3	4.8%
Income	\$377	20%	\$1.1	0.3%
Growth	\$355	19%	\$0.7	0.2%
Low Vol	\$64	3%	\$0.6	1.0%
Small/Mid Cap	\$424	23%	\$0.0	0.0%
Momentum	\$22	1%	-\$0.6	-2.6%
Value	\$406	22%	-\$2.4	-0.6%
Multi-Factor and Other	\$148	8%	\$0.7	0.5%
Total Displayed	\$1,846	100%	\$2.4	0.1%

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

Table 8 - Top Single Long ETF Inflows - April 2023

Ticker	Name	Flow (\$B)	Flow/AUM
1 VOO	Vanguard S&P 500 ETF	\$3.0	1.1%
2 HYG	iShares iBoxx High Yield Corporate Bond ETF	\$2.5	19.3%
3 USCA	Xtrackers MSCI USA Climate Action Equity ETF	\$2.0	NA
4 XLF	Financial Select Sector SPDR Fund	\$1.9	6.4%
5 JNK	SPDR Bloomberg Barclays High Yield Bond ETF	\$1.8	25.4%
6 TLT	iShares 20+ Year Treasury Bond ETF	\$1.6	4.6%
7 JEPI	JPMorgan Equity Premium Income ETF	\$1.6	6.7%
8 BND	Vanguard Total Bond Market ETF	\$1.6	1.7%
9 IVV	iShares Core S&P 500 ETF	\$1.4	0.5%
10 QUAL	iShares MSCI USA Quality Factor ETF	\$1.4	5.2%
11 XLP	Consumer Staples Select Sector SPDR Fund	\$1.1	6.5%
12 VCIT	Vanguard Intermediate-Term Corporate Bond ETF	\$0.9	2.3%
13 SPLG	SPDR Portfolio S&P 500 ETF	\$0.9	5.7%
14 XLC	Communication Services Select Sector SPDR Fund	\$0.9	8.9%
15 AGG	iShares Core U.S. Aggregate Bond ETF	\$0.8	0.9%
16 BNDX	Vanguard International Bond ETF	\$0.8	1.6%
17 QQQ	Invesco QQQ Trust Series 1	\$0.7	0.4%
18 VGK	Vanguard FTSE Europe ETF	\$0.7	3.8%
19 OMFL	Invesco Russell 1000 Dynamic Multifactor ETF	\$0.6	22.5%
20 VTI	Vanguard Total Stock Market ETF	\$0.6	0.2%

Source: National Bank of Canada, Bloomberg

Table 9 - Top Single Long ETF Outflows - April 2023

Ticker	Name	Flow (\$B)	Flow/AUM
1 USSG	Xtrackers MSCI USA ESG Leaders Equity ETF	-\$2.1	-63.0%
2 IEF	iShares 7-10 Year Treasury Bond ETF	-\$1.7	-5.7%
3 SPTI	SPDR Portfolio Intermediate Term Treasury ETF	-\$1.3	-23.7%
4 ACWI	iShares MSCI ACWI ETF	-\$1.3	-6.7%
5 LQD	iShares iBoxx \$ Investment Grade Corporate Bond	-\$1.0	-2.8%
6 IWD	iShares Russell 1000 Value ETF	-\$0.9	-1.8%
7 IWF	iShares Russell 1000 Growth ETF	-\$0.9	-1.3%
8 VCSH	Vanguard Short-Term Corporate Bond ETF	-\$0.8	-2.2%
9 VGT	Vanguard Information Technology ETF	-\$0.8	-1.7%
10 ESGU	iShares ESG Aware MSCI USA ETF	-\$0.8	-5.6%
11 XLE	Energy Select Sector SPDR Fund	-\$0.7	-1.7%
12 RSP	Invesco S&P 500 Equal Weight ETF	-\$0.6	-1.8%
13 DIA	SPDR Dow Jones Industrial Average ETF Trust	-\$0.6	-2.0%
14 GDV	VanEck Gold Miners ETF/USA	-\$0.5	-3.9%
15 BIL	SPDR Bloomberg Barclays 1-3 Month T-Bill ETF	-\$0.5	-1.7%
16 MTUM	iShares MSCI USA Momentum Factor ETF	-\$0.5	-4.8%
17 GBIL	Goldman Sachs Access Treasury 0-1 Year ETF	-\$0.5	-8.2%
18 VTWO	Vanguard Russell 2000 ETF	-\$0.4	-7.2%
19 XLI	Industrial Select Sector SPDR Fund	-\$0.4	-3.1%
20 XBI	SPDR S&P Biotech ETF	-\$0.4	-6.6%

Source: National Bank of Canada, Bloomberg

January - April 2023 ETF Flows: Tables 10 - 16

Table 10 - Equity ETF Flows by Geography - Jan-Apr 2023

Geography	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
U.S.	\$4,029		-\$1.6	0.0%
Broad/Large Cap	\$1,672	32%	\$0.3	0.0%
U.S. Other	\$2,357	45%	-\$1.9	-0.1%
International Developed	\$606		\$21.8	4.1%
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Other EM	\$66	1%	-\$0.4	-0.7%
Global/Regional	\$370	7%	\$0.9	0.3%
Total Displayed	\$5,286	100%	\$29.6	0.6%

Source: National Bank of Canada, Bloomberg

Table 11 - Equity ETF Flows by Sector and Themes* - Jan-Apr 2023

Sector	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Financials	\$57	7%	\$2.5	4.3%
Consumer Staples	\$34	4%	\$1.0	3.2%
Consumer Discretionary	\$28	3%	\$1.0	4.3%
Industrials	\$34	4%	\$0.6	1.9%
Materials	\$45	6%	\$0.6	1.3%
Communication Services	\$27	3%	\$0.3	1.2%
Utilities	\$26	3%	\$0.0	0.2%
Technology	\$158	20%	-\$2.8	-2.1%
Real Estate	\$68	9%	-\$3.2	-4.5%
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Thematic	\$60	8%	\$0.1	0.3%
Total Displayed	\$795	100%	-\$16.8	-2.2%

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Table 12 - Fixed Income ETF Flows by Type - Jan-Apr 2023

Type	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
U.S. Aggregate	\$317	23%	\$13.6	4.6%
U.S. Government	\$450	32%	\$42.6	10.7%
U.S. Municipals	\$102	7%	\$1.1	1.1%
U.S. I.G. Corporate	\$225	16%	\$6.7	3.1%
Developed Markets&Global	\$147	11%	\$7.4	5.4%
Emerging Markets	\$28	2%	\$0.6	2.3%
Sub-investment Grade	\$84	6%	-\$4.9	-5.6%
Convertibles and Preferreds	\$38	3%	-\$1.5	-3.7%
Total Displayed	\$1,391	100%	\$65.6	5.1%

Source: National Bank of Canada, Bloomberg

Table 13 - Fixed Income ETF Flows by Maturity - Jan-Apr 2023

Maturity	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Broad/Mixed	\$674	48%	\$24.3	3.9%
Ultra Short Term	\$180	13%	\$11.9	7.1%
Short Term	\$261	19%	-\$2.9	-1.1%
Mid Term	\$160	12%	\$12.5	8.8%
Long Term	\$76	5%	\$13.8	23.7%
Target Maturity	\$39	3%	\$6.4	19.9%
Rate Hedged	\$1	0%	-\$0.4	-22.5%
Total Displayed	\$1,391	100%	\$65.6	5.1%

Source: National Bank of Canada, Bloomberg

Table 14 - Equity ETF Flows by Factor* - Jan-Apr 2023

Factor	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Quality	\$51	3%	\$11.5	31.8%
Income	\$377	20%	\$6.6	1.8%
Growth	\$355	19%	\$4.0	1.3%
Small/Mid Cap	\$424	23%	\$2.1	0.5%
Momentum	\$22	1%	-\$2.0	-8.4%
Value	\$406	22%	-\$5.1	-1.3%
Low Vol	\$64	3%	-\$6.3	-9.2%
Multi-Factor and Other	\$148	8%	\$5.0	3.7%
Total Displayed	\$1,846	100%	\$15.7	0.9%

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

Table 15 - Top Single Long ETF Inflows - Jan-Apr 2023

Ticker	Name	Flow (\$B)	Flow/AUM
1 QUAL	iShares MSCI USA Quality Factor ETF	\$8.7	49.3%
2 VOO	Vanguard S&P 500 ETF	\$7.6	2.9%
3 JEPI	JPMorgan Equity Premium Income ETF	\$7.5	42.7%
4 TLT	iShares 20+ Year Treasury Bond ETF	\$7.2	26.6%
5 BBEU	JPMorgan BetaBuilders Europe ETF	\$5.7	181.0%
6 BND	Vanguard Total Bond Market ETF	\$5.0	5.9%
7 SCHI	Schwab 5-10 Year Corporate Bond ETF	\$4.7	1444.5%
8 IEF	iShares 7-10 Year Treasury Bond ETF	\$4.6	20.0%
9 IEMG	iShares Core MSCI Emerging Markets ETF	\$3.9	6.2%
10 SCHD	Schwab US Dividend Equity ETF	\$3.8	8.6%
11 AGG	iShares Core U.S. Aggregate Bond ETF	\$3.8	4.6%
12 VTI	Vanguard Total Stock Market ETF	\$3.8	1.4%
13 SHV	iShares Short Treasury Bond ETF	\$3.3	16.7%
14 GOVT	iShares US Cash Cows 100 ETF	\$3.3	15.0%
15 SCHO	Schwab Short-Term U.S. Treasury ETF	\$3.2	31.0%
16 BNDX	Vanguard Total International Bond ETF	\$3.1	7.0%
17 VTW	Vanguard Value ETF	\$2.9	3.0%
18 COVZ	Pacer US Cash Cows 100 ETF	\$2.9	28.1%
19 IUSB	iShares Core Total USD Bond Market ETF	\$2.7	14.2%
20 BIL	SPDR Bloomberg Barclays 1-3 Month T-Bill ETF	\$2.7	NA

Source: National Bank of Canada, Bloomberg

Table 16 - Top Single Long ETF Outflows - Jan-Apr 2023

Ticker	Name	Flow (\$B)	Flow/AUM
1 SPY	SPDR S&P 500 ETF Trust	-\$8.1	-2.3%
2 ESGU	iShares ESG Aware MSCI USA ETF	-\$7.2	-36.9%
3 IWD	iShares Russell 1000 Value ETF	-\$4.9	-8.9%
4 IWF	iShares Russell 1000 Growth ETF	-\$4.7	-7.8%
5 VCSH	Vanguard Short-Term Corporate Bond ETF	-\$4.4	-10.9%
6 EEMV	iShares MSCI EM Min Vol Factor ETF	-\$3.8	-46.1%
7 IWM	iShares Russell 2000 ETF	-\$3.1	-6.0%
8 XLK	Technology Select Sector SPDR Fund	-\$2.7	-7.0%
9 IVV	iShares Core S&P 500 ETF	-\$2.6	-0.9%
10 ACWI	iShares MSCI ACWI ETF	-\$2.2	-11.9%
11 LQD	iShares iBoxx \$ IG Corporate Bond ETF	-\$2.1	-5.9%
12 MTUM	iShares MSCI USA Momentum Factor ETF	-\$2.0	-16.6%
13 USSG	Xtrackers MSCI USA ESG Leaders Equity ETF	-\$2.0	-67.2%
14 DIA	SPDR Dow Jones Industrial Average ETF Trust	-\$2.0	-6.7%
15 SCHP	Schwab US TIPS ETF	-\$1.9	-13.8%
16 SHYG	iShares 0-5 Year High Yield Corporate Bond ETF	-\$1.8	-25.9%
17 HDV	iShares Core High Dividend ETF	-\$1.8	-13.7%
18 IVE	iShares S&P 500 Value ETF	-\$1.5	-6.2%
19 QQQ	Invesco QQQ Trust Series 1	-\$1.5	-1.0%
20 XBI	SPDR S&P Biotech ETF	-\$1.4	-17.9%

Source: National Bank of Canada, Bloomberg

Table 17: ETF Provider Table

Provider	AUM (\$B)	Mkt Shr	April 2023		Jan-Apr 2023	
			Flow (\$B)	Flow/AUM	Flow (\$B)	Flow/AUM
1 BlackRock iShares	\$2,325	33%	\$4.0	0.2%	\$2.2	0.1%
2 Vanguard	\$2,036	29%	\$9.7	0.5%	\$34.7	1.8%
3 State Street SSGA	\$1,031	15%	\$4.8	0.5%	-\$3.4	-0.4%
4 Invesco	\$364	5%	\$1.3	0.4%	\$1.8	0.5%
5 Charles Schwab	\$283	4%	\$0.8	0.3%	\$11.2	4.3%
6 First Trust	\$137	2%	\$0.1	0.1%	\$1.9	1.4%
7 JPMorgan	\$112	2%	\$1.5	1.4%	\$17.9	20.4%
8 Dimensional Holdings	\$85	1%	\$2.2	2.7%	\$9.5	13.1%
9 ProShares	\$64	1%	\$1.1	1.7%	\$3.8	6.6%
10 WisdomTree	\$62	1%	\$0.3	0.6%	\$4.3	7.8%
11 VanEck	\$57	1%	-\$0.7	-1.2%	-\$0.1	-0.2%
12 Global X	\$38	1%	\$0.2	0.6%	\$0.7	2%
13 Fidelity	\$33	0%	\$0.2	0.5%	\$0.9	3%
14 Goldman Sachs	\$29	0%	-\$0.4	-1.3%	\$0.5	1.8%
15 Direxion	\$26	0%	\$0.4	1.6%	\$2.2	9.9%
16 Pacer Financial	\$24	0%	\$0.5	2.2%	\$3.9	20.2%
17 American Century	\$24	0%	\$0.8	3.5%	\$3.8	19.6%
18 Northern Trust	\$21	0%	\$0.0	0.1%	\$0.0	0.0%
19 PIMCO	\$21	0%	-\$0.2	-1.1%	-\$0.8	-4.0%
20 DWS Xtrackers	\$20	0%	\$0.3	1.4%	\$0.6	3.0%
Top 20 Total	\$6,792	97%	\$26.9		\$95.5	
Total ETF	\$6,993	100%	\$29.4		\$111.1	

Source: NBF ETF Research, Bloomberg. Data as of April 30, 2023.

Table 18: ESG ETF Flows by Categories

Category	AUM (\$M)	AUM (%)	April 2023		Apr YTD 2023	
			Flow (\$M)	Flow/AUM	Flow (\$M)	Flow/AUM
Equity	\$83,859	90%	-\$474	-0.6%	-\$5,994	-7.1%
Broad - U.S.	\$40,322	43%	-\$2,817	-6.6%	-\$8,951	-19.5%
Broad - DM	\$8,894	10%	-\$4	0.0%	\$69	0.9%
Broad - EM	\$4,784	5%	-\$1	0.0%	\$508	12.2%
Broad - Global	\$4,141	4%	-\$7	-0.2%	\$127	3.4%
Environment	\$8,818	9%	\$2,391	16.8%	\$2,632	18.6%
Clean Energy	\$11,214	12%	-\$134	-4.3%	-\$654	-22.2%
Energy Transition	\$2,042	2%	-\$16	-0.8%	-\$26	-0.5%
Social	\$3,005	3%	\$111	3.4%	\$260	5.6%
Other	\$631	1%	\$4	0.4%	\$40	1.3%
Commodities	\$1,057	1%	-\$17	-1.5%	\$30	13.3%
Multi-Asset	\$65	0%	\$0	0.0%	\$7	3.1%
Fixed Income	\$8,262	9%	\$50	0.6%	\$1,166	13.8%
Total Displayed	\$93,243	100%	-\$441	-0.5%	-\$4,791	-5.2%

Source: NBF ETF Research, Bloomberg. Data as of April 30, 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, Healthcare, Utilities as defensive sectors.

Cyclical Sectors: We classify Consumer Cyclical, 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/EBITDA, 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.

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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.

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