

## May 2023: Generative AI Sparks Equity Market Optimism

- Investors came back to broad U.S. equity ETFs with a whopping \$18.2 billion inflow to SPY
- Inflows to technology sector ETFs set a new record high; defensive factor ETFs lost traction
- We reviewed the landscape of single-security ETFs in the U.S., from volume and flow perspective
- AI- and semiconductor-related ETFs outperformed amid growing optimism for generative AI technology

**Summary (Table 1, Chart 1):** Persistent inflation pressures; the Fed warning of a “mild recession”; and concerns over the federal debt ceiling debates - despite these clouds of worry hanging over investor mindshare, the U.S. equity market in May was buoyed by optimism surrounding projected widespread adoption of generative AI technology, as well as the strong earnings of some mega-cap companies. Investors have expressed greater confidence in equity ETFs, resulting in a \$26.1 billion inflow to the category. Fixed income ETFs took in \$15.4 billion of fresh assets, with an emphasis on longer duration U.S. aggregate and government bond ETFs.

**Table 1: ETF Flows by Category**

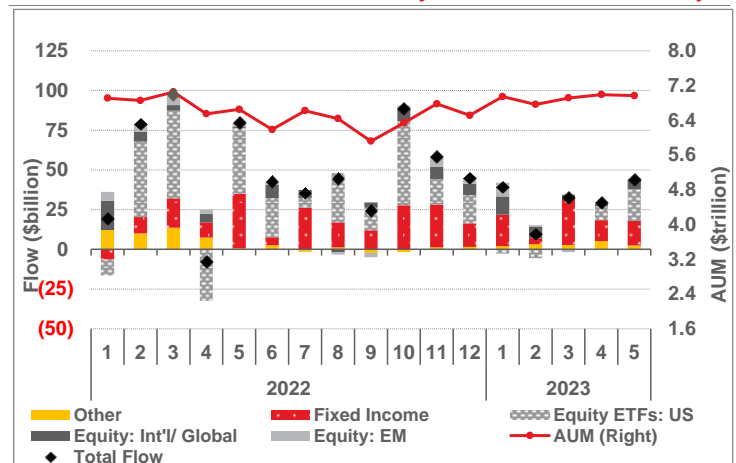
	AUM (\$B)	Mkt Shr	May 2023 Flow (\$B)	May 2023 Flow/AUM	Jan-May 2023 Flow (\$B)	Jan-May 2023 Flow/AUM
Equity	\$5,258		\$26.1	0.5%	\$55.7	1.1%
U.S. Broad/Large-Cap	\$1,716	25%	\$22.3	1.3%	\$22.6	1.5%
U.S. Other	\$2,315	33%	-\$2.5	-0.1%	-\$4.5	-0.2%
Int'l / Global	\$953	14%	\$6.4	0.7%	\$29.1	3.3%
Emerging Markets	\$274	4%	\$0.0	0.0%	\$8.5	3.2%
Fixed Income	\$1,391	20%	\$15.4	1.1%	\$81.0	6.3%
Commodity	\$136	2%	\$1.0	0.7%	\$0.5	0.4%
Multi-Asset	\$99	1%	\$2.5	2.6%	\$11.9	14.0%
Levered Long	\$60	1%	-\$1.3	-2.3%	\$0.5	1.2%
Inverse	\$22	0%	\$0.3	1.2%	\$5.3	22.3%
Crypto-Asset	\$1	0%	\$0.0	0.9%	\$0.1	17.4%
<b>Total</b>	<b>\$6,967</b>	<b>100%</b>	<b>\$44.0</b>	<b>0.6%</b>	<b>\$155.0</b>	<b>2.4%</b>

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

### Equity ETFs by Geography (Table 3):

In May, the U.S. Board/Large-Cap ETF category continued to attract new money, which is primarily attributed to SPDR S&P 500 ETF Trust (SPY). SPY regained the top spot on the single long ETF monthly inflow leaderboard, attracting an astounding \$18.2 billion. This represents the highest monthly creation amount for SPY since December 2021. Additionally, international/global equity ETFs experienced robust inflows, primarily driven by investments in low-cost broad developed market equity ETFs (such as VEA and VXUS), broad Japan ETFs (EWJ and BBJP), and VanEck's global semiconductor ETF (SMH). In contrast to 2022, where U.S.-focused active/strategic products dominated equity ETF creations, investors have shown a greater preference for broad market exposure and geographical diversification so far this year (Table 10).

**Chart 1: U.S.-Listed ETF Flow and AUM by month - \$44.0 billion in May**



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

**Equity Sector ETFs (Table 4):** In May, U.S. sector ETFs experienced a reversal from previous months of outflows. The technology sector ETFs witnessed a remarkable net inflow of \$8.8 billion, surpassing the previous monthly record of \$5.6 billion set in February 2021. Most of these inflows were attributed to a substantial one-time creation of Vanguard Information Technology ETF (VGT), amounting to \$6.6 billion, possibly indicating institutional allocation. Another technology sector ETF, Fidelity MSCI Information Technology Index ETF (FTEC), also demonstrated signs of institutional adoption by attracting \$0.9 billion in a single day. In addition to these institutional activities, we also observed more organic demand for technology exposure, with \$0.8 billion flowing into the VanEck Semiconductor ETF (SMH) as investors attempt to catch the recent stock rally in the artificial-intelligence space.

**Equity Factor ETFs (Table 7):** Dividend/income ETFs experienced their first monthly net outflow since October 2020. Other defensive factor ETF categories (value and low volatility) had redemptions in May as well. Vanguard Value ETF (VTV) saw a significant \$3.0 billion outflow in a single day, which could be a result of an institutional model portfolio rebalance. On the other hand, quality ETFs remained resilient and continued to lead factor ETF categories in creations, with an additional \$0.9 billion injection into iShares MSCI USA Quality Factor ETF (QUAL). Growth ETFs also saw some interest in May, with a modest inflow of \$0.7 billion.

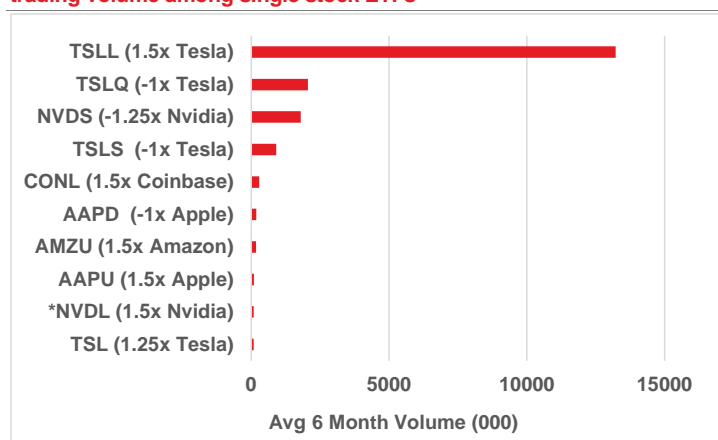
**Fixed Income ETFs (Tables 5, 6):** In May, we continue to observe outflows from ultra-short-term bond ETFs, such as iShares Short Treasury Bond ETF (SHV), and inflows to broad/mixed and long-term products, as investors opted to redeploy their cash positions and embrace higher duration risk. For example, we observed notable inflows into iShares Core U.S. Aggregate Bond ETF (AGG) and iShares 20+ Year Treasury Bond ETF (TLT), which took in \$3.2 billion and \$3.5 billion new assets, respectively. TLT has now has the highest inflow among U.S.-listed ETFs in 2023 thus far; this is likely *because* (and not in spite) of the fact that it is 28% below its starting level in 2022.

**Single-Security ETFs:** As we approach the one-year anniversary of the launch of the first suite of U.S. single-stock ETFs, this category has reached a significant milestone of over \$1 billion in AUM. However, it has also experienced its first wave of terminations. On May 26, 2023, AXS Investments announced the delisting of seven leverage/inverse ETFs, five of which were single-stock ETFs. Additionally, GraniteShares announced the closure of the GraniteShares 1x Short TSLA Daily ETF (TSLI) on the same day.

We take this opportunity to review the U.S. single-security ETF landscape, which has grown in ways that may have surprised many. Initially, there were expectations that leverage/inverse single-stock ETFs would receive significant adoption from both institutional and retail investors. However, only a few ETFs focused on highly volatile stocks, such as Tesla and more recently Nvidia, saw substantial demand and trading volume (Charts 2 and 3). In contrast to those expectations, F/M Investments, offering "boring" single-bond ETFs, has enjoyed impressive growth, amassing \$1.6 billion in AUM in less than a year. This is more than the combined assets of all U.S. single-stock ETFs. Investors have utilized these bond ETFs to express specific views on the yield curve, amid increasing volatility (and newfound opportunity) in the fixed income market.

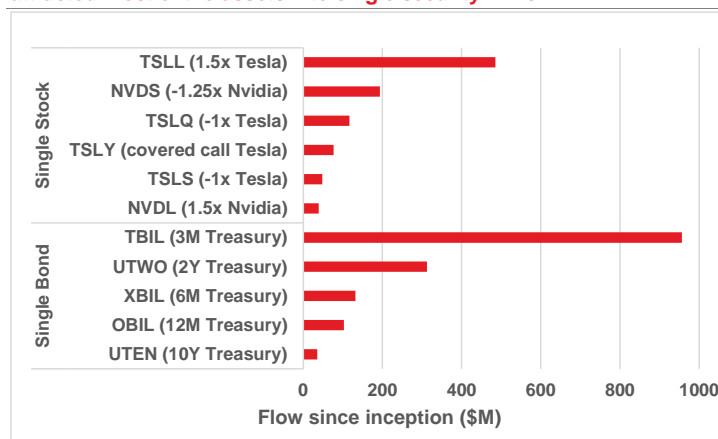
Interestingly, there is a new trend in the single-security ETF space, as more U.S. ETF issuers are exploring ETFs writing options on single stocks. Currently there are two single-stock covered call ETFs in the U.S., with a combined AUM of \$87 million. While those ETFs' indicative yields look attractive (as of May 31, 2023, YieldMax TSLA Option Income ETF, TSLY, has an annualized indicative yield of 34.1%), we'd like to remind investors that a covered call strategy

**Chart 2: Leverage/inverse ETFs on Tesla and Nvidia had most of the trading volume among single stock ETFs**



\* ETF is less than six-month-old. Average 3-month volume is used instead.  
Source: NBF ETF Research, Bloomberg. Data as of May 31, 2023.

**Chart 3: Single-bond ETFs, Tesla ETFs and the short Nvidia ETF attracted most of the assets into single security ETFs**



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

inherently limits one’s participation in price gains of the underlying stock(s) in exchange for higher yield, while keeping full downside exposure. This may lead to significant performance deviation from the referencing portfolio/security over time. **TSLY** for example, has a total return of only 1.2% since inception, whereas its underlying Tesla stock gained 11.3% over the same period. In addition, perhaps to meet the SEC’s fund diversification requirements, all U.S. single-stock covered call ETFs (including the ones in filing) provide synthetic long stock exposure through call and put options, rather than physically holding the stocks. This introduces an additional layer of complexity to the investment strategies of these ETFs.

**ESG ETFs (Table 18):**

Most of the ESG ETF creations came from U.S. equity ESG ETFs, primarily the Nuveen ESG-focused factor ETF suite. On the outflow side, iShares ESG Aware MSCI USA ETF (**ESGU**) continued to experience redemption in May. It lost \$223 million which is the highest outflow amount among ESG ETFs. Clean energy ETFs also bled assets during the same period.

**Table 2: Best Performing ETFs\* – May 2023**

Ticker	Name	Total Return (%)	AUM (\$M)	Flow (\$M)
1 <b>SPRX</b>	Spear Alpha ETF	27.9	5	1
2 <b>LRNZ</b>	TrueShares Technology AI & Deep Learning ETF	22.3	22	3
3 <b>TSLY</b>	Yieldmax Tsla Option Income Etf	19.9	81	18
4 <b>WUGI</b>	Esoterica NextG Economy ETF	18.9	20	0
5 <b>WCBR</b>	WisdomTree Cybersecurity Fund ETF	18.5	32	0
6 <b>VCAR</b>	Simplify Volt Robocar Disruption ETF	17.1	4	0
7 <b>FNGS</b>	MicroSectors FANG+ ETNs	17.1	75	0
8 <b>SMH</b>	VanEck Semiconductor ETF	16.6	9,186	818
9 <b>MOON</b>	Direxion Moonshot Innovators ETF	16.5	34	0
10 <b>DAT</b>	Proshares Big Data Refiners ETF	15.8	3	0

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

**Top Performing ETFs (Table 2):**

AI- and semiconductor-focused ETFs have been gaining momentum following investors’ bullish outlook on generative AI technology and growing demand for AI chips. Nvidia, one of the leading AI chip manufacturers in the U.S., saw its share price soar by 36% in May, fueled by its strong Q1 results. Top performing ETFs in Table 2 mostly have Nvidia as their top holdings since the beginning of May.

May 2023 ETF Flows: Tables 3 - 9

Geography	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
U.S.	\$4,031		\$19.7	0.5%
Broad/Large Cap	\$1,716	33%	\$22.3	1.3%
U.S. Other	\$2,315	44%	-\$2.5	-0.1%
International Developed	\$589		\$5.1	0.8%
Broad Int'l Dev	\$454	9%	\$2.8	0.6%
Broad Europe	\$50	1%	\$0.6	1.2%
Japan	\$23	0%	\$1.3	6.1%
Canada	\$9	0%	-\$0.2	-1.7%
Other Developed	\$53	1%	\$0.6	1.1%
Emerging Markets	\$274		\$0.0	0.0%
Broad Cap Weighted	\$184	4%	\$0.0	0.0%
China (A+H)	\$24	0%	-\$0.6	-2.2%
Other EM	\$66	1%	\$0.6	0.9%
Global/Regional	\$364	7%	\$1.3	0.3%
<b>Total Displayed</b>	<b>\$5,258</b>	<b>100%</b>	<b>\$26.1</b>	<b>0.5%</b>

Source: National Bank of Canada, Bloomberg

Sector	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Technology	\$182	23%	\$8.8	5.6%
Consumer Discretionary	\$29	4%	\$0.8	2.7%
Health Care	\$97	12%	\$0.5	0.5%
Utilities	\$25	3%	\$0.5	1.8%
Communication Services	\$28	4%	\$0.3	1.0%
Consumer Staples	\$32	4%	\$0.0	-0.1%
Real Estate	\$65	8%	-\$0.5	-0.8%
Industrials	\$32	4%	-\$0.8	-2.4%
Materials	\$41	5%	-\$1.0	-2.3%
Energy	\$69	9%	-\$2.5	-3.2%
Financials	\$52	7%	-\$2.7	-4.7%
ESG	\$80	10%	\$0.2	0.2%
Thematic	\$61	8%	\$0.7	1.1%
<b>Total Displayed</b>	<b>\$792</b>	<b>100%</b>	<b>\$4.1</b>	<b>0.5%</b>

\*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

Type	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
U.S. Aggregate	\$319	23%	\$5.9	1.9%
U.S. Government	\$453	33%	\$7.4	1.7%
U.S. Municipals	\$102	7%	\$0.7	0.7%
U.S. I.G. Corporate	\$223	16%	\$1.6	0.7%
Developed Markets&Global	\$149	11%	\$2.3	1.6%
Emerging Markets	\$27	2%	-\$0.5	-1.7%
Sub-investment Grade	\$81	6%	-\$2.0	-2.4%
Convertibles and Preferreds	\$37	3%	-\$0.1	-0.2%
<b>Total Displayed</b>	<b>\$1,391</b>	<b>100%</b>	<b>\$15.4</b>	<b>1.1%</b>

Source: National Bank of Canada, Bloomberg

Maturity	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Broad/Mixed	\$673	48%	\$7.9	1.2%
Ultra Short Term	\$178	13%	-\$2.4	-1.3%
Short Term	\$261	19%	\$1.4	0.5%
Mid Term	\$161	12%	\$2.7	1.7%
Long Term	\$79	6%	\$5.5	7.3%
Target Maturity	\$39	3%	\$0.4	1.0%
Rate Hedged	\$1	0%	-\$0.1	-6.4%
<b>Total Displayed</b>	<b>\$1,391</b>	<b>100%</b>	<b>\$15.4</b>	<b>1.1%</b>

Source: National Bank of Canada, Bloomberg

Factor	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Quality	\$52	3%	\$1.7	3.4%
Growth	\$366	20%	\$0.7	0.2%
Momentum	\$21	1%	\$0.0	-0.2%
Income	\$359	20%	-\$0.6	-0.2%
Low Vol	\$61	3%	-\$0.8	-1.2%
Small/Mid Cap	\$412	23%	-\$1.7	-0.4%
Value	\$385	21%	-\$5.5	-1.4%
Multi-Factor and Other	\$145	8%	\$0.8	0.5%
<b>Total Displayed</b>	<b>\$1,802</b>	<b>100%</b>	<b>-\$5.4</b>	<b>-0.3%</b>

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

Rank	Ticker	Name	Flow (\$B)	Flow/AUM
1	SPY	SPDR S&P 500 ETF Trust	\$18.2	4.8%
2	VGT	Vanguard Information Technology ETF	\$7.2	15.6%
3	TLT	iShares 20+ Year Treasury Bond ETF	\$3.5	9.7%
4	AGG	iShares Core U.S. Aggregate Bond ETF	\$3.2	3.5%
5	VTI	Vanguard Total Stock Market ETF	\$2.0	0.7%
6	VOO	Vanguard S&P 500 ETF	\$1.9	0.6%
7	QQQ	Invesco QQQ Trust Series 1	\$1.8	1.0%
8	VGSH	Vanguard Short-Term Treasury ETF	\$1.7	8.0%
9	JEPI	JPMorgan Equity Premium Income ETF	\$1.4	5.5%
10	XLV	Health Care Select Sector SPDR Fund	\$1.3	3.4%
11	LQD	iShares iBoxx \$ Investment Grade Corporate Bond	\$1.3	3.8%
12	BND	Vanguard Total Bond Market ETF	\$1.2	1.3%
13	SCHO	Schwab Short-Term U.S. Treasury ETF	\$1.0	7.0%
14	QUAL	iShares MSCI USA Quality Factor ETF	\$0.9	3.3%
15	QQQM	Invesco Nasdaq 100 ETF	\$0.9	9.5%
16	GLD	SPDR Gold Shares	\$0.9	1.5%
17	GOVT	iShares US Treasury Bond ETF	\$0.8	3.1%
18	SMH	VanEck Semiconductor ETF	\$0.8	11.5%
19	JEPQ	JPMorgan Nasdaq Equity Premium Income ETF	\$0.8	31.7%
20	VEA	Vanguard FTSE Developed Markets ETF	\$0.7	0.7%

Source: National Bank of Canada, Bloomberg

Rank	Ticker	Name	Flow (\$B)	Flow/AUM
1	SHV	iShares Short Treasury Bond ETF	-\$3.8	-16.4%
2	VTV	Vanguard Value ETF	-\$3.8	-3.7%
3	IVV	iShares Core S&P 500 ETF	-\$2.8	-0.9%
4	XLF	Financial Select Sector SPDR Fund	-\$2.4	-7.5%
5	XLE	Energy Select Sector SPDR Fund	-\$1.6	-4.2%
6	VCSH	Vanguard Short-Term Corporate Bond ETF	-\$1.1	-2.9%
7	JNK	SPDR Bloomberg Barclays High Yield Bond ETF	-\$1.0	-11.1%
8	VYM	Vanguard High Dividend Yield ETF	-\$0.7	-1.4%
9	SRLN	SPDR Blackstone Senior Loan ETF	-\$0.6	-12.9%
10	IJH	iShares Core S&P Mid-Cap ETF	-\$0.6	-1.0%
11	SPLV	Invesco S&P 500 Low Volatility ETF	-\$0.6	-5.9%
12	EMB	iShares JP Morgan USD EM Bond ETF	-\$0.6	-3.9%
13	TIP	iShares TIPS Bond ETF	-\$0.6	-2.6%
14	VNQ	Vanguard Real Estate ETF	-\$0.6	-1.8%
15	ACWI	iShares MSCI ACWI ETF	-\$0.6	-3.2%
16	EEM	iShares MSCI Emerging Markets ETF	-\$0.6	-2.3%
17	IJR	iShares Core S&P Small-Cap ETF	-\$0.5	-0.8%
18	RPV	Invesco S&P 500 Pure Value ETF	-\$0.5	-18.1%
19	XLI	Industrial Select Sector SPDR Fund	-\$0.4	-3.4%
20	VB	Vanguard Small-Cap ETF	-\$0.4	-1.1%

Source: National Bank of Canada, Bloomberg

January - May 2023 ETF Flows: Tables 10 - 16

**Table 10 - Equity ETF Flows by Geography - Jan-May 2023**

Geography	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
U.S.	\$4,031		\$18.2	0.5%
Broad/Large Cap	\$1,716	33%	\$22.6	1.5%
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Canada	\$9	0%	-\$0.5	-5.0%
Other Developed	\$53	1%	\$1.5	3.1%
Emerging Markets	\$274		\$8.5	3.2%
Broad Cap Weighted	\$184	4%	\$7.9	4.5%
China (A+H)	\$24	0%	\$0.4	1.4%
Other EM	\$66	1%	\$0.2	0.3%
Global/Regional	\$364	7%	\$2.1	0.6%
<b>Total Displayed</b>	<b>\$5,258</b>	<b>100%</b>	<b>\$55.7</b>	<b>1.1%</b>

Source: National Bank of Canada, Bloomberg

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

Sector	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Technology	\$182	23%	\$6.0	4.4%
Consumer Discretionary	\$29	4%	\$1.8	7.5%
Consumer Staples	\$32	4%	\$1.0	3.1%
Communication Services	\$28	4%	\$0.6	2.4%
Utilities	\$25	3%	\$0.5	2.0%
Financials	\$52	7%	-\$0.2	-0.3%
Industrials	\$32	4%	-\$0.2	-0.6%
Materials	\$41	5%	-\$0.5	-1.2%
Real Estate	\$65	8%	-\$3.7	-5.3%
Health Care	\$97	12%	-\$4.0	-3.8%
Energy	\$69	9%	-\$8.9	-10.3%
ESG	\$80	10%	-\$5.9	-7.2%
Thematic	\$61	8%	\$0.8	1.4%
<b>Total Displayed</b>	<b>\$792</b>	<b>100%</b>	<b>-\$12.7</b>	<b>-1.6%</b>

\*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 12 - Fixed Income ETF Flows by Type - Jan-May 2023**

Type	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
U.S. Aggregate	\$319	23%	\$19.5	6.6%
U.S. Government	\$453	33%	\$50.0	12.6%
U.S. Municipals	\$102	7%	\$1.8	1.8%
U.S. I.G. Corporate	\$223	16%	\$8.3	3.9%
Developed Markets&Global	\$149	11%	\$9.7	7.1%
Emerging Markets	\$27	2%	\$0.1	0.5%
Sub-investment Grade	\$81	6%	-\$6.9	-7.9%
Convertibles and Preferreds	\$37	3%	-\$1.5	-3.9%
<b>Total Displayed</b>	<b>\$1,391</b>	<b>100%</b>	<b>\$81.0</b>	<b>6.3%</b>

Source: National Bank of Canada, Bloomberg

**Table 13 - Fixed Income ETF Flows by Maturity - Jan-May 2023**

Maturity	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Broad/Mixed	\$673	48%	\$32.2	5.1%
Ultra Short Term	\$178	13%	\$9.5	5.6%
Short Term	\$261	19%	-\$1.5	-0.6%
Mid Term	\$161	12%	\$15.2	10.7%
Long Term	\$79	6%	\$19.3	33.2%
Target Maturity	\$39	3%	\$6.8	21.1%
Rate Hedged	\$1	0%	-\$0.5	-27.5%
<b>Total Displayed</b>	<b>\$1,391</b>	<b>100%</b>	<b>\$81.0</b>	<b>6.3%</b>

Source: National Bank of Canada, Bloomberg

**Table 14 - Equity ETF Flows by Factor\* - Jan-May 2023**

Factor	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Quality	\$52	3%	\$13.2	36.6%
Income	\$359	20%	\$6.0	1.6%
Growth	\$366	20%	\$4.7	1.5%
Small/Mid Cap	\$412	23%	\$0.4	0.1%
Momentum	\$21	1%	-\$2.1	-8.6%
Low Vol	\$61	3%	-\$7.1	-10.4%
Value	\$385	21%	-\$10.6	-2.6%
Multi-Factor and Other	\$145	8%	\$5.8	4.2%
<b>Total Displayed</b>	<b>\$1,802</b>	<b>100%</b>	<b>\$10.3</b>	<b>0.6%</b>

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

**Table 15 - Top Single Long ETF Inflows - Jan-May 2023**

Ticker	Name	Flow (\$B)	Flow/AUM
1	TLT iShares 20+ Year Treasury Bond ETF	\$10.7	39.7%
2	SPY SPDR S&P 500 ETF Trust	\$10.2	2.9%
3	QUAL iShares MSCI USA Quality Factor ETF	\$9.6	54.7%
4	VOO Vanguard S&P 500 ETF	\$9.5	3.6%
5	JEPI JPMorgan Equity Premium Income ETF	\$8.9	50.7%
6	AGG iShares Core U.S. Aggregate Bond ETF	\$7.0	8.4%
7	BND Vanguard Total Bond Market ETF	\$6.2	7.3%
8	VGT Vanguard Information Technology ETF	\$6.0	15.1%
9	VTI Vanguard Total Stock Market ETF	\$5.8	2.2%
10	BBEU JPMorgan BetaBuilders Europe ETF	\$5.7	181.0%
11	IEF iShares 7-10 Year Treasury Bond ETF	\$5.0	22.0%
12	SCHI Schwab 5-10 Year Corporate Bond ETF	\$4.8	1453.9%
13	GOVT iShares US Treasury Bond ETF	\$4.1	18.7%
14	SCHO Schwab Short-Term U.S. Treasury ETF	\$4.1	40.3%
15	SCHD Schwab US Dividend Equity ETF	\$4.0	9.0%
16	VGSH Vanguard Short-Term Treasury ETF	\$4.0	22.0%
17	IEMG iShares Core MSCI Emerging Markets ETF	\$3.9	6.2%
18	BNDX Vanguard Total International Bond ETF	\$3.6	8.0%
19	QQQM Invesco Nasdaq 100 ETF	\$3.2	56.4%
20	IUSB iShares Core Total USD Bond Market ETF	\$3.1	NA

Source: National Bank of Canada, Bloomberg

**Table 16 - Top Single Long ETF Outflows - Jan-May 2023**

Ticker	Name	Flow (\$B)	Flow/AUM
1	ESGU iShares ESG Aware MSCI USA ETF	-\$7.5	-38.1%
2	VCSH Vanguard Short-Term Corporate Bond ETF	-\$5.5	-13.6%
3	IVV iShares Core S&P 500 ETF	-\$5.4	-1.9%
4	IWD iShares Russell 1000 Value ETF	-\$5.1	-9.4%
5	IWF iShares Russell 1000 Growth ETF	-\$4.5	-7.6%
6	EEMV iShares MSCI EM Min Vol Factor ETF	-\$3.8	-47.1%
7	XLE Energy Select Sector SPDR Fund	-\$2.8	-6.8%
8	ACWI iShares MSCI ACWI ETF	-\$2.7	-15.1%
9	XLK Technology Select Sector SPDR Fund	-\$2.6	-6.9%
10	IWM iShares Russell 2000 ETF	-\$2.4	-4.6%
11	MTUM iShares MSCI USA Momentum Factor ETF	-\$2.3	-19.3%
12	HDV iShares Core High Dividend ETF	-\$2.0	-15.6%
13	SCHP Schwab US TIPS ETF	-\$2.0	-14.5%
14	USSG Xtrackers MSCI USA ESG Leaders Equity ETF	-\$2.0	-67.0%
15	SHYG iShares 0-5 Year High Yield Corporate Bond ETF	-\$1.9	-27.0%
16	IVE iShares S&P 500 Value ETF	-\$1.8	-7.1%
17	DIA SPDR Dow Jones Industrial Average ETF Trust	-\$1.7	-5.9%
18	VTIP Vanguard Short-Term Inflation-Protected	-\$1.7	-10.4%
19	SRLN SPDR Blackstone Senior Loan ETF	-\$1.7	-28.2%
20	FLOT iShares Floating Rate Bond ETF	-\$1.6	-18.3%

Source: National Bank of Canada, Bloomberg

**Table 17: ETF Provider Table**

Provider	AUM (\$B)	Mkt Shr	May 2023		Jan-May 2023	
			Flow (\$B)	Flow/AUM	Flow (\$B)	Flow/AUM
1 BlackRock iShares	\$2,295	33%	\$2.1	0.1%	\$4.3	0.2%
2 Vanguard	\$2,029	29%	\$13.0	0.6%	\$47.7	2.5%
3 State Street SSGA	\$1,035	15%	\$15.8	1.5%	\$12.3	1.3%
4 Invesco	\$374	5%	\$0.8	0.2%	\$2.5	0.8%
5 Charles Schwab	\$279	4%	\$1.1	0.4%	\$12.3	4.7%
6 First Trust	\$136	2%	-\$0.4	-0.3%	\$1.4	1.1%
7 JPMorgan	\$112	2%	\$2.8	2.5%	\$20.7	23.5%
8 Dimensional Holdings	\$85	1%	\$2.0	2.3%	\$11.5	15.9%
9 ProShares	\$64	1%	-\$1.4	-2.1%	\$2.4	4.2%
10 WisdomTree	\$62	1%	\$0.9	1.4%	\$5.2	9.4%
11 VanEck	\$57	1%	\$0.7	1.3%	\$0.6	1.2%
12 Global X	\$39	1%	\$0.9	2.5%	\$1.7	5%
13 Fidelity	\$34	0%	\$0.4	1.1%	\$1.2	4%
14 Goldman Sachs	\$28	0%	\$0.0	0.1%	\$0.5	1.8%
15 Direxion	\$28	0%	\$0.3	1.1%	\$2.5	11.1%
16 American Century	\$24	0%	\$1.1	4.8%	\$4.9	25.5%
17 Pacer Financial	\$23	0%	\$0.1	0.5%	\$4.1	20.8%
18 PIMCO	\$21	0%	\$0.4	2.0%	-\$0.4	-2.0%
19 Northern Trust	\$20	0%	\$0.1	0.7%	\$0.2	0.7%
20 DWS Xtrackers	\$20	0%	\$0.0	0.2%	\$0.6	3.2%
<b>Top 20 Total</b>	<b>\$6,765</b>	<b>97%</b>	<b>\$40.7</b>		<b>\$136.2</b>	
<b>Total ETF</b>	<b>\$6,967</b>	<b>100%</b>	<b>\$44.0</b>		<b>\$155.0</b>	

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

**Table 18: ESG ETF Flows by Categories**

Category	AUM (\$M)	AUM (%)	May 2023		May YTD 2023	
			Flow (\$M)	Flow/AUM	Flow (\$M)	Flow/AUM
Equity	\$83,681	90%	\$220	0.3%	-\$5,774	-6.8%
Broad - U.S.	\$40,849	44%	\$354	0.9%	-\$8,597	-18.7%
Broad - DM	\$8,603	9%	\$33	0.4%	\$102	1.3%
Broad - EM	\$4,711	5%	\$0	0.0%	\$508	12.2%
Broad - Global	\$4,030	4%	-\$4	-0.1%	\$123	3.3%
Environment	\$8,852	10%	\$2	0.0%	\$2,634	46.2%
Clean Energy	\$10,902	12%	-\$262	-2.3%	-\$815	-7.5%
Energy Transition	\$2,033	2%	\$11	0.5%	-\$16	-0.8%
Social	\$3,047	3%	\$70	2.3%	\$330	12.6%
Other	\$646	1%	\$17	2.7%	\$58	10.6%
Commodities	\$994	1%	-\$9	-1.0%	-\$29	-3.1%
Multi-Asset	\$65	0%	\$1	1.8%	\$9	15.9%
Fixed Income	\$8,279	9%	\$122	1.5%	\$1,289	18.7%
<b>Total Displayed</b>	<b>\$93,020</b>	<b>100%</b>	<b>\$334</b>	<b>0.4%</b>	<b>-\$4,506</b>	<b>-4.9%</b>

Source: NBF ETF Research, Bloomberg. Data as of May 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 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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