

November 2022: Anticipating bullishness

- U.S. ETFs welcomed \$58 billion in November; equity and fixed income ETFs enjoyed equal levels of demand
- U.S. equities rallied in anticipation of a dovish Fed; U.S. small/mid-cap ETFs were in relative favour
- Investors withdrew assets from money market ETFs and took on more credit and duration exposure
- Chinese equities rose sharply as investors started to position for an acceleration in China’s reopening

Summary (Table 1, Chart 1): U.S. ETFs received \$58 billion inflows in November. Among U.S.-focused equity ETFs, investors favoured factor ETFs over low-cost beta options. Turning overseas, demand for Emerging Market equities reignited despite the possibility of civil unrest in China over its zero-covid policies (or perhaps because of the protests’ effects in accelerating the country’s reopening). As for fixed income ETFs, high yield products gained traction, reflecting rising investor confidence in credit markets. Gold ETFs (GLD, IAU) had outflows despite the underlying’s upward performance and a weaker USD.

Table 1: ETF Flows by Category

	AUM (\$B)	Mkt Shr	Nov 2022 Flow (\$B)	Nov 2022 Flow/AUM	Jan-Nov 2022 Flow (\$B)	Jan-Nov 2022 Flow/AUM
Equity	\$5,212		\$30.2	0.6%	\$341.8	6.0%
U.S. Broad/Large-Cap	\$1,631	24%	-\$6.8	-0.4%	\$85.4	4.7%
U.S. Other	\$2,412	36%	\$22.8	1.0%	\$161.8	6.4%
Int'l / Global	\$897	13%	\$7.7	1.0%	\$66.4	6.7%
Emerging Markets	\$272	4%	\$6.5	2.8%	\$28.3	9.3%
Fixed Income	\$1,294	19%	\$27.0	2.2%	\$179.9	14.1%
Commodity	\$131	2%	-\$1.4	-1.2%	-\$2.5	-1.8%
Multi-Asset	\$68	1%	\$1.4	2.2%	\$21.0	38.4%
Levered Long	\$52	1%	\$0.2	0.4%	\$18.9	24.9%
Inverse	\$21	0%	\$1.0	4.4%	\$6.1	51.7%
Crypto-Asset	\$1	0%	\$0.0	-0.3%	\$0.2	18.7%
Total	\$6,780	100%	\$58.4	0.9%	\$565.5	7.8%

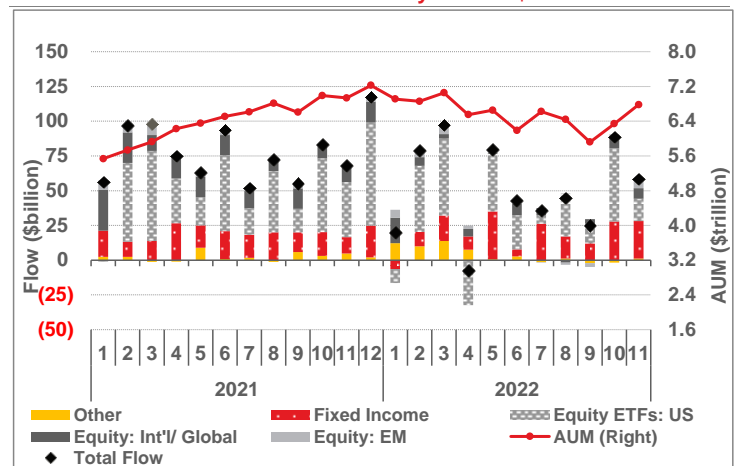
Source: NBF ETF Research, Bloomberg. Data as of November 30, 2022

Equity ETFs by Geography (Table 3): U.S. stocks continued to recover in November, along with growing optimism around easing inflation and a potential Fed pivot, supported by the unexpected October CPI data (+0.4% versus +0.6% by consensus). The S&P 500 index finished with a rally on the month’s last trading day, as Fed Chair Powell signaled moderation in the pace of policy rate increases “as soon as the December meeting”. The index enjoyed its second consecutive month of gains, up 5.6%. However, on the ETF side, we noticed significant outflows from some U.S. broad/large-cap contributing to a net \$6.8 billion outflow for the category; the largest redemptions came from SPDR S&P 500 ETF Trust (SPY, \$11.8 billion), but Vanguard S&P 500 ETF (VOO) also saw \$1.1 billion outflow in November.

Emerging Market equities showed strong recovery patterns in November. S&P Emerging Market BMI gained 13% over the month, aided by hopes that China would potentially ease pandemic-related restrictions. Broad beta ETFs EEM and IEMG took in \$1.5 billion combined. China-focused ETFs also saw large creations of \$0.9 billion, or 5% of the category’s starting AUM in

November. While ETFs investing in either mainland-listed securities (A-shares) or offshore-listed (Hong Kong H-shares the U.S. ADRs) received similar level of interest, we observed a divergence in performance (Chart 2) between the two. We selected four China broad-market ETFs as examples: MCHI and FXI, which primarily invest in H-Shares and the ADRs, and ASHR and CNYA, which hold A-shares. The offshore ETFs showed greater uptrends both around November 10th (when the Chinese government released the “20 guidelines” to ease COVID-zero restrictions) and on November 28th (right after the weekend-long

Chart 1: U.S. Listed ETF Flow and AUM by month - \$566 billion YTD



Source: NBF ETF Research, Bloomberg. Data as of November 30, 2022

anti-lockdown protests). One of the factors for the underperformance of A-share-based indices and ETFs might be that domestic investors have reservations around Beijing’s stated determination to fully reopen.

Equity Sector ETFs (Table 4): All S&P 500 Sector indices continued to have monthly gains. The best performing sectors were Materials and Industrials, which benefited from rising industrial and precious metal prices; the S&P GSCI Industrial Metals Index and S&P GSCI Precious Metals Index were up 12.2% and 7.4%, respectively, in November. As for sector ETFs, defensive sectors received most of the new money, led by Health Care (\$2.8 billion) and Consumer Staples (\$1.2 billion).

Equity Factor ETFs (Table 7): Similar to October’s inflows, dividend/income ETFs are still in high demand with \$8.1 billion in new money; assets flowing into “aggressive” factors have started to show similar surges; growth and small/mid-cap ETFs gained \$5.4 and \$4.6 billion, respectively. Value ETFs had an outflow of \$2.8 billion, primarily attributed to an institutional size redemption of \$4 billion from Vanguard Value ETF (VTV).

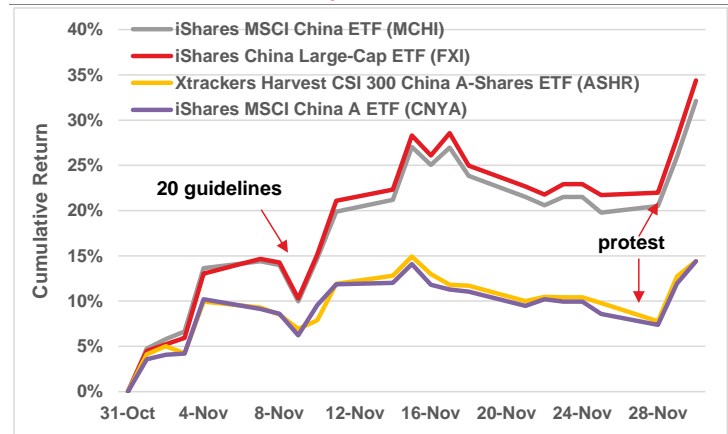
Fixed Income ETFs (Table 5, 6): Fixed Income ETFs had another month of solid inflows, taking in \$27 billion. High-yield bonds continued to lead in terms of both absolute dollar inflows and as a percentage of starting assets; however, U.S. municipals and investment-grade corporate ETFs each saw over \$5 billion in creations, implying more bullish appetites for credit risk overall. On the maturity side, we observed withdrawals from ultra-short-term ETFs and buying across the rest of the maturity spectrum. This trend is reflected through the changes to the U.S. treasury yield curve as well; the shorter end (one to six month) increased in November, while the longer maturity segments had a downward parallel shift.

Crypto ETFs: Please note that bitcoin and other crypto assets are extremely risky and highly speculative.

The crypto-asset “community” faced a harsh November. Early in the month, CoinDesk reported concerns about the financial conditions of FTX, one of the world’s largest crypto exchanges, and its sister company Alameda Research, a crypto hedge fund. CoinDesk revealed that a significant amount of Alameda’s assets were held in illiquid tokens (FTT) issued by FTX. It was also reported that FTX lent customer deposits to fund Alameda. In less than a week, fueled by FTX’s competitor Binance announcing the liquidation of \$2 billion (on book) of its FTT holdings, investors rushed to withdraw money out of FTX. Bahamas-based FTX suffered liquidity crunch and eventually filed for bankruptcy together with Alameda.

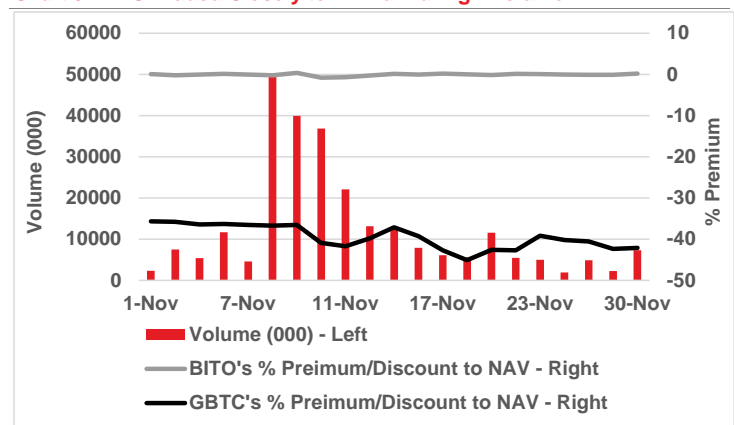
Despite the collapse of FTX and contagion effect that has greatly shaken the crypto community’s confidence, we noticed that money invested in U.S.-listed crypto ETFs have remained somewhat sticky. The single long futures-based ETFs listed in the U.S. had \$2 million of outflow, just 0.3% of its AUM at the beginning of November. Trading volumes for Bitcoin futures ETFs (such as Proshares Bitcoin Strategy ETF, BITO) did heighten amid the FTX failure, but their prices traded quite closely to NAV, reaching discounts of 0.8%, at most. This compares favourably with

Chart 2: H-shares and ADRs outperformed A-shares in November



Source: NBF ETF Research, Bloomberg. Data as of November 30, 2022

Chart 3: BITO Traded Closely to NAV amid High Volume



Source: NBF ETF Research, Bloomberg. Data as of November 30, 2022

other structures such as Grayscale Bitcoin Trust, which is closed and does not have an active creation-redemption mechanism; its price discount-to-NAV reached -45% in November.

ESG ETFs (Table 18): U.S.-listed ESG ETFs had \$1.0 billion of in flows in November. Top inflows went to Invesco Solar ETF (TAN, \$214 million), Nuveen Securities' NULV (Nuveen ESG Large-cap Value ETF) and NULC (Nuveen ESG Small-cap ETF). The latter two are factor-based U.S. equity ETFs and likely earned institutional adoptions near the end of November. On the outflow side, a large percentage of outflows came from the iShares MSCI ESG Aware suite (U.S.: ESGU, EAFE: ESGD, corporate bond: USUC).

Top Performing ETFs (Table 2): November's best performing table is led by Chinese equity ETFs, covering various sectors and themes, as investors are eagerly eyeing a full reopening of China in the near term.

Table 2: Best Performing ETFs* – November 2022

Rank	Ticker	Name	Total Return (%)	AUM (\$M)	Flow (\$M)
1	CHIR	Global X MSCI China Real Estate ETF	61.6	7	0
2	KWEB	KraneShares CSI China Internet ETF	45.5	5,778	39
3	PGJ	Invesco Golden Dragon China ETF	42.0	211	-24
4	KTEC	KraneShares Hang Seng TECH Index ETF	36.4	7	-2
5	CHIQ	Global X MSCI China Consumer Discretionary	34.1	278	-9
6	CHIC	Global X MSCI China Communication Services	32.5	7	0
7	FXI	iShares China Large-Cap ETF	34.4	5,062	105
8	MCHI	iShares MSCI China ETF	32.1	7,308	568
9	KESG	Kraneshares MSCI China ESG Leaders Index	29.3	5	0
10	MCH	Matthews China Active ETF	29.2	6	2

*Excluding leveraged/inverse ETFs. Source: NBF ETF Research, Bloomberg. Data as of November 30, 2022

November 2022 ETF Flows: Tables 3 - 9

Geography	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
U.S.	\$4,043		\$16.0	0.4%
Broad/Large Cap	\$1,631	31%	-\$6.8	-0.4%
U.S. Other	\$2,412	46%	\$22.8	1.0%
International Developed	\$541		\$2.1	0.4%
Broad Int'l Dev	\$423	8%	\$2.0	0.5%
Broad Europe	\$37	1%	\$0.7	2.2%
Japan	\$20	0%	\$0.0	-0.2%
Canada	\$11	0%	\$0.3	3.4%
Other Developed	\$50	1%	-\$0.9	-1.9%
Emerging Markets	\$272		\$6.5	2.8%
Broad Cap Weighted	\$181	3%	\$3.4	2.2%
China (A+H)	\$25	0%	\$0.9	4.8%
Other EM	\$66	1%	\$2.1	3.7%
Global/Regional	\$356	7%	\$5.6	1.8%
Total Displayed	\$5,212	100%	\$30.2	0.6%

Source: National Bank of Canada, Bloomberg

Sector	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Health Care	\$109	13%	\$2.8	2.8%
Consumer Staples	\$32	4%	\$1.2	4.2%
Industrials	\$33	4%	\$0.4	1.3%
Utilities	\$27	3%	\$0.3	1.3%
Financials	\$64	8%	\$0.2	0.3%
Real Estate	\$74	9%	\$0.1	0.2%
Materials	\$44	5%	\$0.1	0.2%
Energy	\$91	11%	-\$0.1	-0.1%
Communication Services	\$25	3%	-\$0.2	-1.1%
Consumer Discretionary	\$27	3%	-\$0.4	-1.5%
Technology	\$149	18%	-\$0.4	-0.3%
ESG	\$90	11%	\$0.9	1.1%
Thematic	\$59	7%	\$0.2	0.4%
Total Displayed	\$824	100%	\$5.2	0.7%

*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

Ticker	Name	Flow (\$B)	Flow/AUM
1	HYG iShares iBoxx High Yield Corporate Bond ETF	\$3.8	26.8%
2	QQQ Invesco QQQ Trust Series 1	\$2.9	1.9%
3	VCSH Vanguard Short-Term Corporate Bond ETF	\$2.4	6.3%
4	VTEB Vanguard Tax-Exempt Bond Index ETF	\$2.1	9.9%
5	SCHD Schwab US Dividend Equity ETF	\$1.7	4.2%
6	ACWI iShares MSCI ACWI ETF	\$1.6	10.3%
7	IWM iShares Russell 2000 ETF	\$1.6	2.9%
8	JEPI JPMorgan Equity Premium Income ETF	\$1.6	10.7%
9	AGG iShares Core U.S. Aggregate Bond ETF	\$1.5	2.0%
10	MUB iShares National Muni Bond ETF	\$1.4	4.9%
11	RSP Invesco S&P 500 Equal Weight ETF	\$1.3	4.3%
12	VTI Vanguard Total Stock Market ETF	\$1.3	0.5%
13	XLV Health Care Select Sector SPDR Fund	\$1.3	3.2%
14	IJH iShares Core S&P Mid-Cap ETF	\$1.2	1.9%
15	TLT iShares 20+ Year Treasury Bond ETF	\$1.2	4.8%
16	JNK SPDR Bloomberg Barclays High Yield Bond ETF	\$1.1	13.0%
17	BND Vanguard Total Bond Market ETF	\$1.1	1.4%
18	VGIT Vanguard Intermediate-Term Treasury ETF	\$1.0	8.5%
19	IGSB iShares Trust iShares 1-5 Year IG Corporate Bond	\$1.0	4.9%
20	COWZ Pacer US Cash Cows 100 ETF	\$1.0	11.8%

Source: National Bank of Canada, Bloomberg

Type	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
U.S. Aggregate	\$289	22%	\$4.1	1.5%
U.S. Government	\$396	31%	\$3.9	1.0%
U.S. Municipals	\$97	7%	\$5.2	5.9%
U.S. I.G. Corporate	\$215	17%	\$5.5	2.7%
Developed Markets&Global	\$137	11%	\$1.1	0.8%
Emerging Markets	\$26	2%	\$0.1	0.4%
Sub-investment Grade	\$92	7%	\$7.1	8.5%
Convertibles and Preferreds	\$41	3%	-\$0.1	-0.2%
Total Displayed	\$1,294	100%	\$27.0	2.2%

Source: National Bank of Canada, Bloomberg

Maturity	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Broad/Mixed	\$638	49%	\$17.2	2.9%
Ultra Short Term	\$159	12%	-\$1.7	-1.1%
Short Term	\$262	20%	\$5.0	2.0%
Mid Term	\$141	11%	\$1.2	0.9%
Long Term	\$58	4%	\$2.8	5.5%
Target Maturity	\$34	3%	\$2.5	8.3%
Rate Hedged	\$2	0%	-\$0.2	-8.3%
Total Displayed	\$1,294	100%	\$26.9	2.2%

Source: National Bank of Canada, Bloomberg

Factor	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Income	\$393	21%	\$8.1	2.2%
Growth	\$331	18%	\$5.4	1.7%
Small/Mid Cap	\$439	24%	\$4.6	1.1%
Low Vol	\$70	4%	\$0.4	0.6%
Momentum	\$25	1%	\$0.1	0.3%
Quality	\$38	2%	\$0.1	0.2%
Value	\$418	22%	-\$2.8	-0.7%
Multi-Factor and Other	\$143	8%	\$2.3	1.7%
Total Displayed	\$1,857	100%	\$18.1	1.0%

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

Ticker	Name	Flow (\$B)	Flow/AUM
1	SPY SPDR S&P 500 ETF Trust	-\$11.8	-3.2%
2	VTV Vanguard Value ETF	-\$6.1	-5.9%
3	SHV iShares Short Treasury Bond ETF	-\$3.6	-15.0%
4	VOO Vanguard S&P 500 ETF	-\$1.1	-0.4%
5	VTIP Vanguard Short-Term Inflation-Protected ETF	-\$0.9	-4.7%
6	SHY iShares 1-3 Year Treasury Bond ETF	-\$0.8	-2.8%
7	GSLC Goldman Sachs ActiveBeta U.S. Large Cap	-\$0.8	-7.4%
8	TIP iShares TIPS Bond ETF	-\$0.7	-2.7%
9	XLY Consumer Discretionary Select Sector SPDR	-\$0.7	-4.5%
10	GLD SPDR Gold Shares	-\$0.6	-1.3%
11	MINT PIMCO Enhanced Short Maturity Active ETF	-\$0.5	-4.8%
12	IGV iShares Expanded Tech-Software Sector ETF	-\$0.5	-8.7%
13	IEI iShares 3-7 Year Treasury Bond ETF	-\$0.5	-3.8%
14	XLE Energy Select Sector SPDR Fund	-\$0.4	-1.0%
15	EFV iShares MSCI EAFE Value ETF	-\$0.4	-3.1%
16	IGM iShares Expanded Tech Sector ETF	-\$0.4	-14.2%
17	RPAR RPAR Risk Parity ETF	-\$0.4	-36.5%
18	IEF iShares 7-10 Year Treasury Bond ETF	-\$0.4	-1.8%
19	IAU iShares Gold Trust	-\$0.4	-1.6%
20	BBEU JPMorgan BetaBuilders Europe ETF	-\$0.4	-10.5%

Source: National Bank of Canada, Bloomberg

January - November 2022 ETF Flows: Tables 10 - 16

Geography	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
U.S.	\$4,043		\$247.2	5.7%
Broad/Large Cap	\$1,631	31%	\$85.4	4.7%
U.S. Other	\$2,412	46%	\$161.8	6.4%
International Developed	\$541		\$38.2	6.4%
Broad Int'l Dev	\$423	8%	\$42.0	9.4%
Broad Europe	\$37	1%	-\$10.4	-18.2%
Japan	\$20	0%	-\$0.5	-1.9%
Canada	\$11	0%	\$1.4	13.8%
Other Developed	\$50	1%	\$5.6	10.3%
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Technology	\$149	18%	-\$0.4	-0.2%
Materials	\$44	5%	-\$0.5	-1.0%
Communication Services	\$25	3%	-\$3.6	-8.5%
Real Estate	\$74	9%	-\$3.7	-3.7%
Industrials	\$33	4%	-\$4.1	-10.1%
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Ultra Short Term	\$159	12%	\$44.1	37.4%
Short Term	\$262	20%	\$30.9	12.5%
Mid Term	\$141	11%	\$25.9	19.0%
Long Term	\$58	4%	\$26.3	54.2%
Target Maturity	\$34	3%	\$12.4	54.7%
Rate Hedged	\$2	0%	-\$1.6	-43.7%
Total Displayed	\$1,294	100%	\$179.9	14.1%

Source: National Bank of Canada, Bloomberg

Factor	AUM (\$B)	Mkt Shr	Flow (\$B)	Flow/AUM
Income	\$393	21%	\$86.0	27.0%
Value	\$418	22%	\$32.4	8.1%
Growth	\$331	18%	\$22.6	5.6%
Small/Mid Cap	\$439	24%	\$13.2	2.7%
Low Vol	\$70	4%	\$10.1	15.5%
Momentum	\$25	1%	\$0.5	1.6%
Quality	\$38	2%	-\$0.1	-0.3%
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Total Displayed	\$1,857	100%	\$178.9	9.4%

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

Ticker	Name	Flow (\$B)	Flow/AUM
1 VOO	Vanguard S&P 500 ETF	\$38.8	13.9%
2 VTI	Vanguard Total Stock Market ETF	\$23.6	7.9%
3 IVV	iShares Core S&P 500 ETF	\$22.2	6.6%
4 TLT	iShares 20+ Year Treasury Bond ETF	\$15.0	76.1%
5 SCHD	Schwab US Dividend Equity ETF	\$13.9	44.5%
6 BIL	SPDR Bloomberg Barclays 1-3 Month T-Bill ETF	\$12.6	92.4%
7 BND	Vanguard Total Bond Market ETF	\$12.0	14.3%
8 JEPI	JPMorgan Equity Premium Income ETF	\$11.5	195.3%
9 USFR	WisdomTree Floating Rate Treasury Fund	\$10.6	573.9%
10 VTEB	Vanguard Tax-Exempt Bond Index ETF	\$10.1	67.7%
11 VTV	Vanguard Value ETF	\$9.6	10.4%
12 VEA	Vanguard FTSE Developed Markets ETF	\$9.3	8.4%
13 SHY	iShares 1-3 Year Treasury Bond ETF	\$9.2	44.5%
14 VUG	Vanguard Growth ETF	\$8.9	9.8%
15 VYM	Vanguard High Dividend Yield ETF	\$8.8	20.5%
16 GOVT	iShares US Treasury Bond ETF	\$8.7	53.6%
17 COWZ	Pacer US Cash Cows 100 ETF	\$8.7	684.0%
18 MUB	iShares National Muni Bond ETF	\$8.6	34.0%
19 DFUV	Dimensional US Marketwide Value ETF	\$8.0	NA
20 XLV	Health Care Select Sector SPDR Fund	\$7.9	22.3%

Source: National Bank of Canada, Bloomberg

Ticker	Name	Flow (\$B)	Flow/AUM
1 SPY	SPDR S&P 500 ETF Trust	-\$20.3	-4.4%
2 TIP	iShares TIPS Bond ETF	-\$8.4	-21.6%
3 XLF	Financial Select Sector SPDR Fund	-\$6.2	-14.1%
4 VLUU	iShares MSCI USA Value Factor ETF	-\$6.2	-38.4%
5 BBEU	JPMorgan BetaBuilders Europe ETF	-\$4.6	-47.2%
6 SCHP	Schwab US TIPS ETF	-\$4.1	-19.3%
7 MINT	PIMCO Enhanced Short Maturity Active ETF	-\$3.7	-27.1%
8 VGG	Vanguard FTSE Europe ETF	-\$3.1	-13.8%
9 PFF	iShares Preferred & Income Securities ETF	-\$3.0	-14.6%
10 GLD	SPDR Gold Shares	-\$2.9	-5.1%
11 XLY	Consumer Discretionary Select Sector SPDR	-\$2.8	-12.0%
12 IWM	iShares Russell 2000 ETF	-\$2.7	-4.0%
13 FALN	iShares Fallen Angels USD Bond ETF	-\$2.7	-54.3%
14 XLI	Industrial Select Sector SPDR Fund	-\$2.6	-15.0%
15 IYR	iShares U.S. Real Estate ETF	-\$2.5	-34.4%
16 FDN	First Trust Dow Jones Internet Index Fund	-\$2.4	-24.1%
17 QUAL	iShares MSCI USA Quality Factor ETF	-\$2.2	-8.8%
18 IXG	iShares Global Financials ETF	-\$2.1	-75.0%
19 BKLN	Invesco Senior Loan ETF	-\$2.0	-31.6%
20 IAU	iShares Gold Trust	-\$1.9	-6.6%

Source: National Bank of Canada, Bloomberg

Table 17: ETF Provider Table

Provider	AUM (\$B)	Mkt Shr	Nov 2022		Jan-Nov 2022	
			Flow (\$B)	Flow/AUM	Flow (\$B)	Flow/AUM
1 BlackRock iShares	\$2,282	34%	\$22.6	1.1%	\$149.8	6.1%
2 Vanguard	\$1,964	29%	\$11.0	0.6%	\$176.3	8.5%
3 State Street SSGA	\$1,028	15%	-\$1.3	-0.1%	\$26.0	2.3%
4 Invesco	\$356	5%	\$6.7	2.0%	\$23.6	5.8%
5 Charles Schwab	\$268	4%	\$2.9	1.2%	\$31.9	11.7%
6 First Trust	\$139	2%	\$1.3	1.0%	\$9.0	6.0%
7 JPMorgan	\$90	1%	\$1.9	2.3%	\$23.5	32.5%
8 Dimensional Holdings	\$72	1%	\$3.3	5.1%	\$30.2	66.7%
9 ProShares	\$61	1%	\$0.8	1.3%	\$13.8	19.3%
10 WisdomTree	\$57	1%	\$1.1	2.2%	\$13.5	28.1%
11 VanEck	\$54	1%	\$0.6	1.3%	\$2.1	3.3%
12 Global X	\$38	1%	\$0.2	0.7%	\$3.8	9%
13 Fidelity	\$32	0%	\$0.4	1.5%	\$2.6	7%
14 Goldman Sachs	\$27	0%	-\$0.7	-2.5%	\$3.9	14.3%
15 Direxion	\$26	0%	\$0.6	2.9%	\$11.1	37.3%
16 PIMCO	\$22	0%	-\$0.2	-0.9%	-\$2.9	-10.8%
17 Northern Trust	\$21	0%	\$0.1	0.6%	\$2.2	11.0%
18 DWS Xtrackers	\$20	0%	\$0.5	2.6%	-\$1.1	-4.7%
19 Pacer Financial	\$20	0%	\$1.2	6.6%	\$10.4	102.5%
20 American Century	\$19	0%	\$1.7	10.8%	\$9.4	95.4%
Top 20 Total	\$6,595	97%	\$54.8		\$539.1	
Total ETF	\$6,780	100%	\$58.4		\$565.5	

Source: NBF ETF Research, Bloomberg. Data as of November 30, 2022

Table 18: ESG ETF Flows by Categories

Category	AUM (\$M)	AUM (%)	November 2022		Jan - November 2022	
			Flow (\$M)	Flow/AUM	Flow (\$M)	Flow/AUM
Equity	\$91,142	92%	\$946	1.1%	\$3,219	3.1%
Broad - U.S.	\$49,169	50%	\$233	0.5%	\$763	1.3%
Broad - DM	\$8,101	8%	-\$54	-0.8%	\$934	10.9%
Broad - EM	\$4,419	4%	\$11	0.3%	-\$662	-10.1%
Broad - Global	\$3,834	4%	\$12	0.3%	\$508	12.6%
Environment	\$7,952	8%	\$369	5.3%	\$1,386	18.0%
Clean Energy	\$14,049	14%	\$300	2.4%	-\$784	-4.9%
Social	\$2,624	3%	\$20	0.8%	\$625	27.3%
Other	\$692	1%	\$29	4.7%	\$260	54.1%
Commodities	\$1,124	1%	-\$42	-3.6%	-\$447	-23.8%
Multi-Asset	\$163	0%	\$0	0.2%	-\$1	-0.6%
Fixed Income	\$6,742	7%	\$114	1.8%	\$1,464	24.0%
Total Displayed	\$99,170	100%	\$1,018	1.1%	\$4,235	3.8%

Source: NBF ETF Research, Bloomberg. Data as of November 30, 2022

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/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.

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