

December and Full Year 2022: a crash course in cash and crypto

- Canadian ETFs accumulated \$35 billion in 2022, while mutual funds suffered outflows of \$35 billion as of November
- Cash-like ETFs were a major story, more than doubling in AUM to \$15 billion as bonds sold off worldwide
- ETF Assets crossed the \$300 billion milestone several times in 2022 as market volatility rocked prices around
- Crypto made a splash in 2021 but its pond may have frozen over in 2022 on price declines and controversy

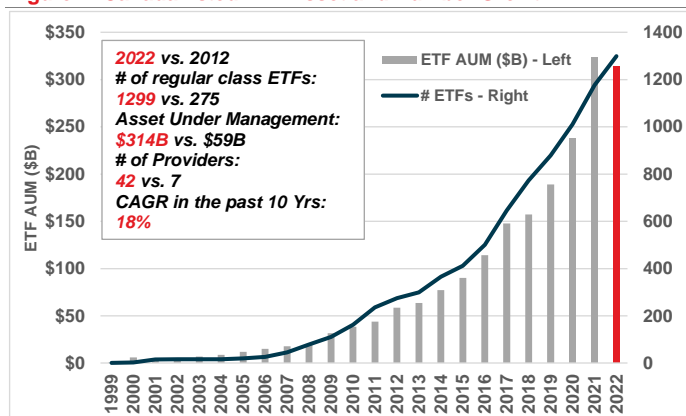
Summary: Canadian ETF inflows and launches held up well during 2022. This was a year that will go down in history as one of the worst for both risk and safety assets. Capping the year with the best December inflow record of \$7.6 billion, ETFs in Canada reached the whopping annual tally of \$35.5 billion in net flows, the third highest number following behind the near-insane creation activity of the pandemic years of 2021 and 2020.

Canadian ETFs assets dipped below the \$300 billion milestone as both stock and bond markets sold off, but the combined force of inflows and partially recovering markets pulled the AUM back to \$314 billion by the end of the year. Fixed Income ETFs welcomed \$19 billion, their highest annual inflow history; Equity ETFs gathered \$13 billion in 2022, equally split between Canada, U.S. and international.

In a year when both Equity and Fixed Income securities delivered negative returns, Multi-Asset ETFs (including Alternative ETFs) attracted attention and assets with \$1.9 billion inflows. A newly minted category of “lightly levered” ETFs grew in popularity, enabled by Alternative Mutual Fund regulations introduced in 2019, not to mention the continuous innovation of Canadian ETF providers. If considered as a standalone category, the \$1.3 billion inflow into “lightly levered” ETFs represents the largest percentage flow among all asset classes.

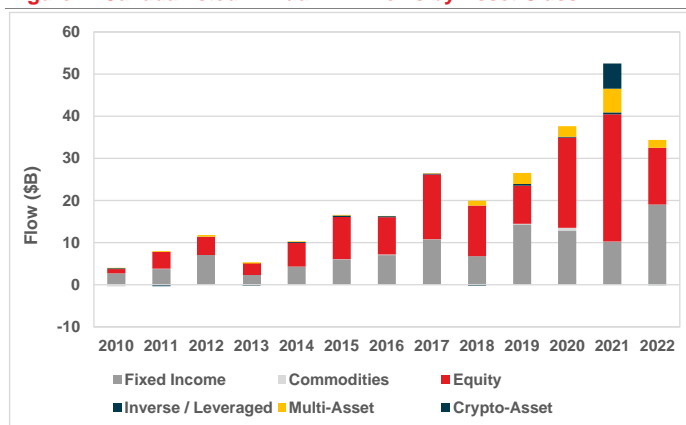
Crypto-asset ETFs were introduced in Canada (and the world) in 2021 and despite accumulating nearly \$6 billion that year, at the end of 2022, the category’s asset level stood at \$1.7 billion – and not because of outflows. In fact, net redemptions from crypto-asset ETFs remained remarkably muted throughout the year, despite precipitous (but unsurprising)

Figure 1: Canada-listed ETF Asset and Number Growth



Source: NBF ETF Research, Bloomberg. Data as of December 31, 2022; ETF flows and AUM since 2019 are adjusted for fund of funds.

Figure 2: Canada-listed Annual ETF Flows by Asset Class



Source: NBF ETF Research, Bloomberg. Data as of December 31, 2021. ETF flows since 2019 are adjusted for fund of funds.

	AUM (\$M)	Mkt Shr (%)	Dec 2022		Full Year 2022	
			Flow \$M	Flow/AUM	Flow \$M	Flow/AUM
Equity	\$195,653		\$1,674	0.8%	\$13,475	6.0%
Canada	\$73,337	23%	\$205	0.3%	\$4,145	5.2%
United States	\$67,421	21%	\$973	1.4%	\$4,870	6.0%
International	\$54,894	17%	\$496	0.9%	\$4,460	6.9%
Fixed Income	\$96,669	31%	\$5,876	6.4%	\$19,007	19.8%
Commodities	\$1,643	1%	\$7	0.4%	-\$279	-14.6%
Multi-Asset	\$15,700	5%	-\$33	-0.2%	\$1,867	11.9%
Inverse / Levered	\$2,998	1%	\$90	3.0%	\$1,550	84.6%
Crypto-Asset	\$1,661	1%	-\$52	-2.9%	-\$118	-2.0%
Total	\$314,323	100%	\$7,562	2.4%	\$35,502	10.2%

*Equity Flows include option strategies;
Source: National Bank of Canada, Bloomberg

drawdowns in the underlying prices of bitcoin and Ethereum. Only \$118 million flowed out from crypto-asset ETFs in 2022 and the rest of the asset declines came from the re-emergence of a new “crypto winter” after the fall of FTX and other crypto-businesses like Celsius, Luna/Terra and Three Arrows Capital.

2022 Full Year in Review

A Strong Year despite Markets Turmoil: Figure 1 & Figure 2 -

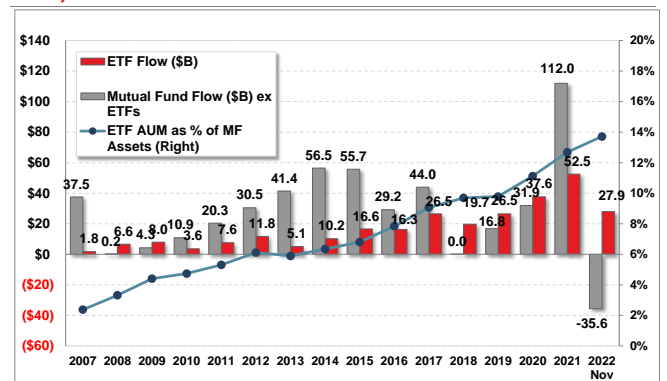
Canadian ETFs registered \$35.5 billion in 2022, or 10% of starting assets. There are now 1,299 ETFs in Canada and the landscape has grown at a cumulative rate of 18% over the past 10 years. The number of ETF providers stands at 42 after two new providers entered this year. Consistent with a general sense of flight to safety, investors chose to pour money into Fixed Income ETFs which took 54% of total ETF inflows. Equity inflows declined from last year, with \$13 billion created. Commodity ETFs, which are generally sought as an inflation hedge, registered outflows of \$279 million even though inflation measures from Statistics Canada topped 8.1% in June this year.

Multi-asset ETF inflows also slowed down from the previous record year. Inflows into “balanced portfolio” asset allocation ETFs have been an inflow mainstay since 2017, but their asset gathering decelerated somewhat in 2022. However, several alternative ETFs that we group under the Multi-asset category did see buying demand; in a year when both stocks and bonds suffered their worst combined year ever, hedge-fund like strategies that offered a semblance of protection had a chance to shine.

ETFs outsold mutual funds: Figure 3 -

Following on the heels of a record-breaking inflow year in 2021, mutual funds in Canada suffered outflows in 2022, the first year since the Great Financial Crisis in 2008/09. The outflows started from the second quarter of the year and persisted throughout rest of 2022, amounting to \$35.6 billion, or 2% of 2021 year-end assets as of November, ranging across all asset classes including Equity funds, Fixed Income Funds and Balanced Funds;

Figure 3: Canada-listed ETF & Mutual Fund Flows (to November 2022)



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

Table 2 - ETF Flows by Provider - Full Year 2022

Provider	New Methodology (adjusted for ETF-of-ETFs)				Unadjusted	
	AUM (\$M)	Mkt Shr (%)	Full Year 2022 Flow (\$M)	Flow/AUM	Full Year 2022 AUM (\$M)	Full Year 2022 Flow (\$M)
1 RBC iShares	\$91,275	29.0%	\$5,141	5%	\$96,676	\$5,569
2 BMO	\$79,234	25.2%	\$6,829	7%	\$87,727	\$8,482
3 Vanguard	\$40,682	12.9%	\$6,004	12%	\$49,889	\$7,721
4 Horizons	\$22,275	7.1%	\$4,484	22%	\$22,851	\$4,608
5 CIGAM	\$15,788	5.0%	\$2,127	13%	\$15,964	\$2,246
6 Mackenzie*	\$12,180	3.9%	\$1,402	11%	\$12,414	\$1,446
7 TDAM	\$7,903	2.5%	\$1,132	13%	\$7,985	\$1,146
8 Purpose	\$6,609	2.1%	\$2,613	42%	\$6,867	\$2,653
9 NBI	\$6,394	2.0%	\$2,300	47%	\$6,394	\$2,300
10 Invesco	\$4,623	1.5%	\$712	16%	\$4,643	\$712
11 Fidelity	\$3,008	1.0%	\$637	22%	\$3,263	\$768
12 CIBC	\$2,475	0.8%	-\$285	-9%	\$2,483	-\$285
13 Harvest	\$2,445	0.8%	\$874	44%	\$2,858	\$1,288
14 Manulife	\$2,392	0.8%	\$118	5%	\$2,392	\$118
15 Dynamic	\$2,245	0.7%	-\$140	-5%	\$2,245	-\$140
16 Evolve Funds	\$2,138	0.7%	\$915	50%	\$2,184	\$903
17 PIMCO	\$2,074	0.7%	\$159	8%	\$2,074	\$159
18 Desjardins	\$1,614	0.5%	-\$333	-16%	\$1,614	-\$333
19 Hamilton	\$1,451	0.5%	\$829	72%	\$1,823	\$1,001
20 Franklin Templeton	\$1,311	0.4%	-\$639	-29%	\$1,311	-\$639
21 Scotia Bank	\$1,245	0.4%	\$508	57%	\$1,245	\$508
22 AGF	\$1,151	0.4%	-\$138	-10%	\$1,151	-\$138
23 Ninepoint Partners	\$645	0.2%	\$259	81%	\$645	\$259
24 Picton Mahoney	\$573	0.2%	\$113	23%	\$573	\$113
25 Brompton Funds	\$441	0.1%	\$35	6%	\$521	\$64
26 Middlefield	\$413	0.1%	-\$2	-1%	\$413	-\$2
27 First Trust	\$360	0.1%	-\$13	-3%	\$360	-\$13
28 Bristol Gate	\$293	0.1%	-\$20	-6%	\$293	-\$20
29 3iQ	\$277	0.1%	-\$344	-22%	\$277	-\$344
30 Guardian Capital	\$230	0.1%	\$120	82%	\$230	\$121
31 IA Clarington	\$112	0.0%	-\$11	-7%	\$112	-\$11
32 Emerge	\$102	0.0%	\$16	7%	\$102	\$16
33 Lysander	\$81	0.0%	\$2	2%	\$81	\$2
34 Accelerate	\$61	0.0%	\$7	11%	\$67	\$6
35 Mulvihill	\$59	0.0%	\$67	NA	\$59	\$67
36 Russell Investments	\$52	0.0%	\$5	9%	\$52	\$5
37 Arrow Capital	\$40	0.0%	\$19	81%	\$40	\$19
38 Starlight	\$25	0.0%	-\$8	-19%	\$25	-\$8
39 SmartBe	\$23	0.0%	-\$6	-19%	\$23	-\$6
40 Evermore Capital	\$14	0.0%	\$15	NA	\$14	\$15
41 NCM Investments	\$5	0.0%	\$0	0%	\$5	\$0
42 Caldwell	\$5	0.0%	\$0	0%	\$5	\$0
Total	\$314,323	100.0%	\$35,502	10.2%	\$339,951	\$40,373

*Includes Wealthsimple asset and flows. Source: NBF, Bloomberg

only money market mutual funds recorded inflows, an indication of the capital-preservation mode that informed many investor decisions this year.

Despite the asset bleed, on a two-year basis, inflows into mutual funds are still significant at \$76 billion. Even at their current flow rates, ETFs have a long way to go before they become the dominant asset management vehicle. That said, in volatile markets such as these, the intra-day liquidity of ETFs in addition to their low cost and transparency is appealing to institutional, retail and advisor investors alike.

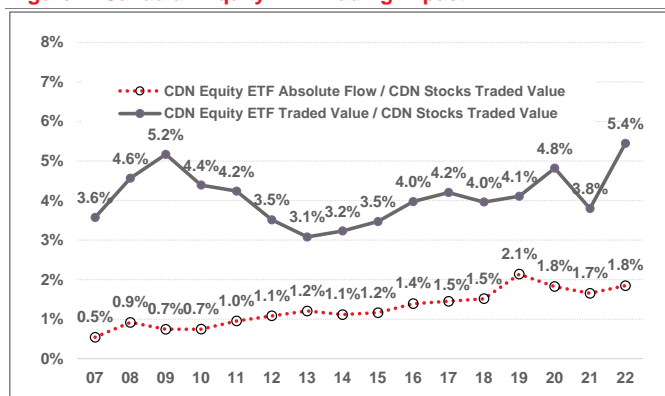
Equity ETF Flows:

Equity ETFs brought in \$13 billion, much smaller than the pandemic-era Equity inflows from 2020 and 2021; in fact, 2022’s equity inflows were in line with their pre-pandemic average. What’s surprising is that despite the inflation-induced stock market fears and pullbacks throughout 2022, Equity ETF net flows were positive 10 months out of 12. The only outflows occurred in June and September, which coincided with the equity market lows this year. In this section, we’ll cover a few interesting trends we observed:

Passive domination slightly declines: It’s true that low cost, market-cap weighted ETFs for broad exposure still dominate the leaderboard. Altogether, the cap-weighted category amassed \$6.8 billion, or 50% of total equity net flows. However, we do notice a slight decline in market-cap weighted ETF’s *share* of total equity ETF flows. In the past five years, the footprint of market-cap weighted ETF has decreased from an average of 65% of equity ETF flows from 2018 to 2020 to approximately 55% in the recent two calendar years. Thematic (including ESG ETFs), Dividend/Income and sector ETFs are taking up a growing slice of investor mindshare.

ETF True Market Impact Remains Muted: Figure 4 - The impact of ETF creation/redemption activity on the underlying stock market is still overall limited. Figure 4 shows that ETFs demonstrate elevated trading activity during periods of market stress, but because ETF trading is a two-way street consisting of natural buyers and sellers, much of this volume nets against itself. The black line represents the traded value of Canadian equity ETFs divided by the directly traded value of Canadian stocks. This data shows that ETF trading peaked twice; once during the 2008 great financial crisis and again in the 2020 COVID-19 selloff. Each time, dollar volumes subsequently declined as normalcy returned to the marketplace. In 2022, ETF *trading* reached a new record at 5.4% of Canadian stock traded value, a year of notably higher volatility. However, as we have emphasized many times, *trading activity alone* is not how ETFs affect underlying prices; to measure the impact, one must look only at creation/redemption activity, and for this, we turn to a measure we call “absolute flow,” the accumulated gross sum of all inflow/outflow in all Canadian equity ETFs during an observation period.

Figure 4: Canadian Equity ETF Trading Impact



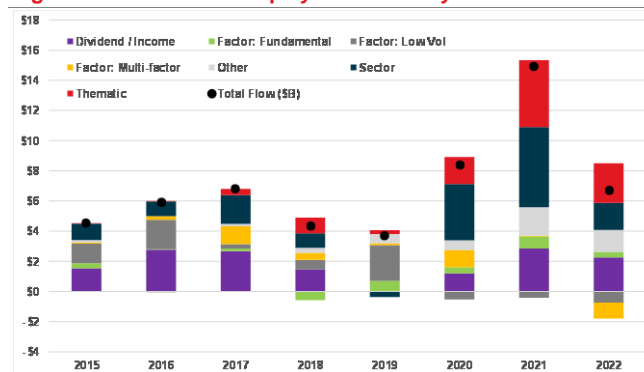
Source: NBF ETF Research, Bloomberg, IIROC. Data as of November 30, 2022. Excludes leveraged & inverse ETFs

The red dotted line is the Canadian equity ETF *absolute flow* divided by Canadian stocks’ traded value each year. ETF “absolute flow” is a closer estimate to the true impact on the underlying stocks because only a fraction of secondary market ETF trading will necessitate market maker’s hedging in the underlying stocks. The red line has been quite muted, hovering

around 1% to 2% in the past decade. This low number suggests that ETFs are playing a minimal role (if any) in the pricing of Canadian stocks, especially when one considers that the broad Canadian stock market is liquid. That said, in more illiquid segments of the market, niche ETFs could theoretically have more impact on the underlying securities.

Change in Leadership: Figure 5 - Changing market conditions and investor preference over the past few years have prompted innovation, diverting investor assets toward different kinds of ETFs. Dividend/Income ETFs have been a consistent factor that have attracted inflows in the past. It is also a category that (on average) outperformed the market this year because of the factor’s natural defensive positioning. One notable factor to track has been for Low Volatility ETFs – a five-year-long consecutive inflow streak reversed into a three-year outflow streak at the start of the pandemic in 2020. There were some recent months when low volatility ETFs regained favour (December 2022 as an example), but investors have nevertheless withdrawn from Low Volatility ETFs on a net basis, even though as a group they outperformed the broad market benchmark in 2022. Multi-factor ETFs had positive inflows from 2015 to 2021 but in 2022 saw outflows concentrated in a few product suites.

Figure 5: Canada-listed Equity ETF Flows by Factor

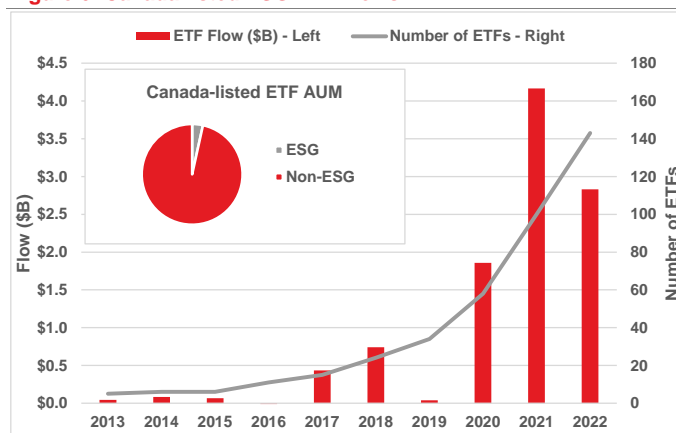


Source: NBF ETF Research, Bloomberg. Data as of December 31, 2022. ETF flows and AUM since 2019 are adjusted for fund of funds.

We observed a few other categories that have seen higher inflows compared to the “before times” when the world was not plagued by the pandemic:

- **ESG has grown to be the largest category in Thematic ETFs** - Thematic ETFs ballooned in assets from \$2.6 billion as of the end of 2019 to \$11.8 billion in 2022, close to a fourfold increase. The bulk of the AUM and flow for thematic ETFs are now dominated by ESG ETFs, which represents \$8 billion in assets. In the U.S., ESG ETF flows are much smaller than the previous year, but in Canada, ESG ETF flows in 2022 remain strong at \$2.8 billion (a small handful of ESG ETFs are not in the Thematic category) - Figure 6, led by actively managed ESG ETFs, bond ESG ETFs and ESG ETFs on the Robo-advisor platform Wealthsimple. Outside ESG, we also observed significant inflows into inflation-related themes such as infrastructure and agriculture ETFs.

Figure 6: Canada-listed ESG ETF Flows



Source: NBF ETF Research, Bloomberg. ETF flows and AUM since 2019 are adjusted for fund of funds.

- **Sector ETFs made a comeback** - Sector ETFs are an important part of many investors’ toolkit; these tools “sharpened” during the pandemic as sector returns diverged. Contrary to 2021, when cyclical sectors such as Financials and Technology saw inflows, in 2022, defensive sectors like utilities gathered the most percentage inflows while Materials ETFs lost traction.
- **“Other” category** - In Figure 5, there is a category labeled “Other” that is also expanding in size recently. The increase is on the back of several “All Equity” ETF portfolios launched in 2019 and a few actively managed ETFs that

do not belong to the other groups.

Fixed Income ETF Flows:

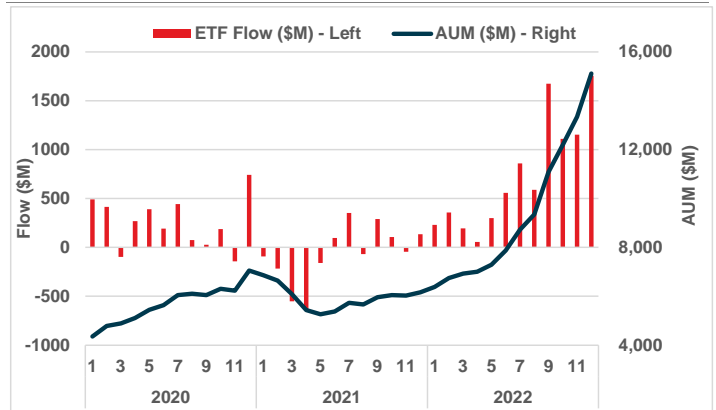
Fixed Income ETFs gathered \$19 billion in 2022, the best year of inflows. This is despite the fact that global bond indices recorded the worst ever year of performance; XBB (Canada’s FTSE/TMX Canada Universe Bond index ETF) for instance is one of the oldest bond ETFs in the world having incepted in 2000, and in its entire history, it never performed as negatively as it did in the past year. For various reasons, investors still chose to migrate to aggregate bond ETFs, in addition to cash alternative ETFs.

Fixed income ETFs occupied an outsized 54% of total ETF flows in 2022. After a decade of near-zero yields, the recent round of rate increases may be the swiftest hiking cycle in history; with the ensuing declines in bond prices, Canadian aggregate bond index ETFs now provide average yields above 4%, a much more attractive entry point compared to the beginning of this year. This could be one reason investors are still choosing aggregate bond ETFs as the core vehicle of exposure; another driving force behind fixed income ETF inflows this year may have been tax-loss-selling of beaten-up individual bonds, especially those with longer durations.

The flow patterns in 2022 also reveal some market-wide tactical shifts between different durations and regions. For example, long-term bond ETFs saw outflows earlier this year as interest rates moved up and investors sought lower interest rate risk via ultra short-term products. As the concerns over a recession in the U.S. (and perhaps worldwide) began to surface mid-year because of sharply higher rates and potentially deteriorating corporate earnings, flows into long-term bond ETFs reversed course and has pulled in new money each month since. U.S./North America bond and foreign bond ETFs each took in a few hundred million in flows as well. We find several compelling examples of outperformance in actively managed ETFs in these two categories. In particular, more than 90% of actively managed foreign bond ETFs outperformed the global aggregate bond index. The outperformance came from the portfolio managers’ tactical positioning in credit, duration, region, sector as well as short positions in the case of alternative mutual funds with a fixed income focus.

Cash alternative ETFs (Figure 7) also provide an interesting case study on the tactical usage of Fixed Income ETFs. These products hold high interest deposits in financial institutions like credit unions and Canadian banks and were an inflow darling since their introduction in 2013 (with the launch of Purpose PSA). Unlike traditional Fixed Income ETFs whose prices go down as interest rates go up, distributions of cash alternative ETFs increase in proportion to the Bank of Canada overnight rate, while their NAVs remain stable like a traditional cash account. The category had positive inflows every month in 2022, bringing its full year inflows to a record breaking \$8.8 billion, more than doubling its 2021 year-end assets. The inflows accelerated since August, perhaps as the Fed reassured investors that the only pivot it plans to deliver is to higher interest rates.

Figure 7: Cash Alternative ETF Flows and AUM



Source: NBF ETF Research, Bloomberg. Data as of December 31, 2022. ETF flows since 2019 are adjusted for fund of funds.

Commodities:

In a year with inflation being the top headline virtually every month, Commodity ETFs in Canada paradoxically lost \$279 million, ending the year at \$1.6 billion in AUM. This is largely due to the fact that Commodities ETFs in Canada are primarily gold or silver bullion ETFs, some natural gas or crude oil futures ETFs, a few new carbon credit ETFs and most recently one broad commodity ETF; this sounds like a wide selection, but it's a marked lack of diversity compared to the dozens of U.S.-listed commodity ETFs and ETNs. The 2022 Commodities outflows were led by gold bullion ETFs, which disappointed inflation-watchers with flat returns this year.

Crypto-Asset: 2021's buying frenzy in crypto-asset ETFs has fallen into deep-freeze during this latest "crypto-winter," judging from the perspective of new issuance and fund flows in 2022. Last year, the crypto-asset ETF category ballooned from zero to 34 products and from zero to \$6 billion in AUM. ETF providers engaged in a pitched competitive battle over management fees and launch dates in order to attract assets. This year, only three crypto-asset ETFs came to market and investors redeemed \$118 million in 2022 after a short burst of inflows in May. Because of their AUM and liquidity, Canada-listed crypto ETFs, which were first to market globally, are now wrapped inside other globally-listed crypto ETFs; subsequently, they may be subject to a certain degree of global interest towards the entire asset class.

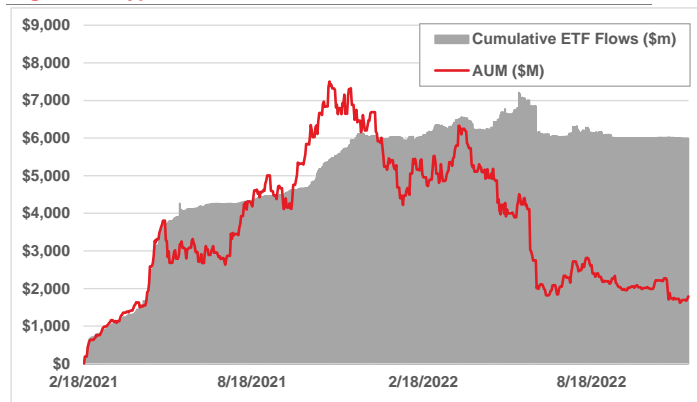
At its peak in November 2021, the AUM of Canadian crypto ETFs reached \$7.5 billion. Figure 8 and Figure 9 shows that despite this (perhaps unsurprising) drawdown in bitcoin and Ethereum prices, users of the Canadian crypto-ETFs have yet to dispose of shares en masse. In past drawdowns (e.g., May 2021), we saw the pace of inflows slow down rather than turn negative (grey area in Figure 8), but only recently did they flatten to a small trickle of outflows. This suggests that crypto-asset ETF users are sticking to their allocations, possibly hoping for the market to recoup these losses in the long term – or they are treating this latest drawdown as an effective write-off.

Option-based ETFs: Figure 10

Option-based ETFs include covered call, put write, defined payoff, buffer, collar and other combinations of different option-based strategies.

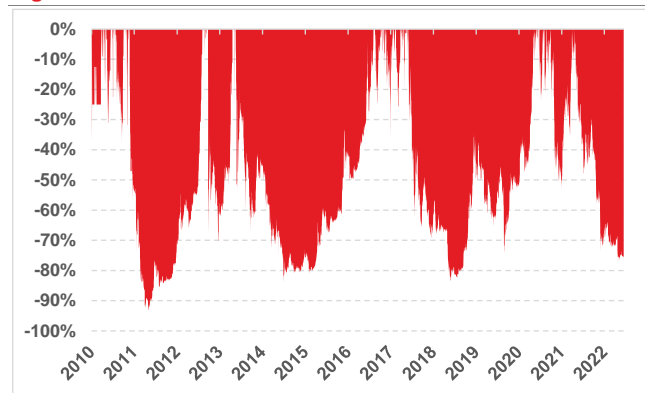
Option-based ETFs in Canada have reached the AUM of \$17

Figure 8: Crypto-Asset ETF Flow and AUM in Canada



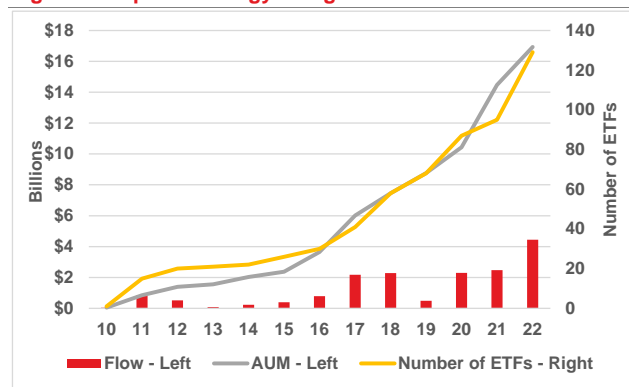
Source: NBF ETF Research, Bloomberg. Data as of November 31, 2022. ETF flows since 2019 are adjusted for fund of funds.

Figure 9: Bitcoin Drawdowns from Recent Peak



Source: NBF ETF Research, Bloomberg. Data as of December 31, 2022.

Figure 10: Option Strategy ETF growth in Canada



Source: NBF ETF Research, Bloomberg. Data as of December 31, 2022. ETF flows since 2019 are adjusted for fund of funds.

billion spread across 129 products. “Covered call” is the dominant mandate with more than 90% of the option-based ETF market share. Their net flows have been positive every year since the launch of the first covered call ETF in 2010 and their inflow pace has accelerated in the past three years as investors sought income and the perception of safety in this volatile market. In 2022, option-based ETFs welcomed inflows of \$4.4 billion, the highest ever net inflows record for the category’s relatively long history.

Investors who seek income, safety and more precision in outcome may find option-based ETFs appealing. Nonetheless, we emphasize that investors exploring this category should learn about the possibility of reduced upside participation, higher costs and the complexity that comes from active option management.

Product launches & innovation: Figure 11

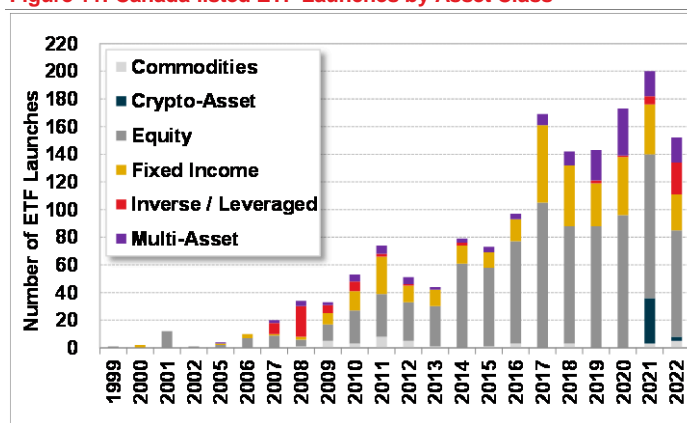
In 2022, a total of 152 ETFs were launched in Canada and 33 were delisted (not including the last crop of advisory class ETF series) bringing the total number ETFs to 1,299. Actively managed ETFs dominate the new launches – fully 109 products, or 72% of new launches were actively managed ETFs that do not track a published index.

Despite the year’s challenging markets, the Canadian ETF industry continues to be a hotbed of innovation. Canada saw the launch of the world’s first spot bitcoin and spot Ethereum ETFs in 2021. Figure 11 shows ETF launches by asset class. Since the CSA streamlined Alternative mutual funds regulations which came into effect in January 2019, many alternative ETFs have been launched under this regime.

This spurred product innovation and growth in the Multi-Asset category, which the majority of these alternative ETFs fall under. Several Alternative ETFs in the Multi-Asset group that adopt market neutral or hedge fund strategies were among the best performing ETFs in 2022, which presented the ideal proving ground for uncorrelated mandates to outperform.

“Lightly levered” ETFs are a new product category (filed under “alternative mutual fund” regulations) with low amounts of cash leverage (e.g., 25% or 33%) to enhance returns over long holding periods (and increasing possible losses too). Lightly levered ETFs now number 25 products (including five single-stock leverage ETFs with covered call overlay) with combined AUM of \$1.5 billion, a notable jump since the first such launch in 2020 (Figure 12). Unlike leverage and inverse ETFs that reset daily, the lightly levered ETFs have trigger-based leverage resets which mean less volatility and time decay. They still have all the risk characteristics that leverage would entail – more upside but also more downside than their unlevered counterparts, in addition to headwinds from the prime borrowing fees (interest on cash margin).

Figure 11: Canada-listed ETF Launches by Asset Class



Source: NBF ETF Research, Bloomberg. Data as of December 31, 2022

Figure 12: Lightly Levered ETFs in Canada

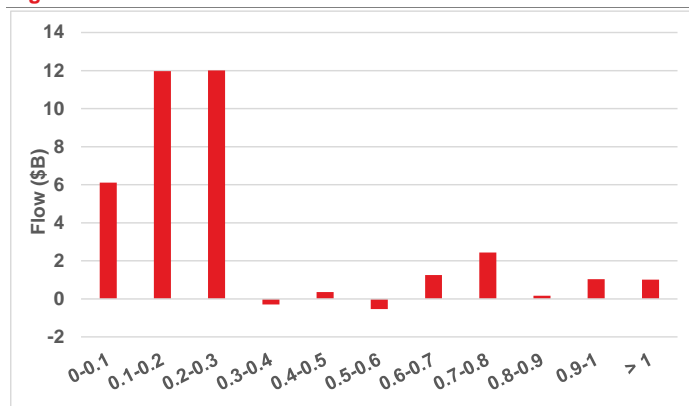
Ticker	Name	Provider	Inception Date	2022 Flow (\$M)	AUM (\$M)
BEPR	Brompton Flaherty & Crumrine Enhanced IG Preferred ETF	Brompton	2021-11-26	12	63
BMAX	Brompton Enhanced Multi-Asset Income ETF	Brompton	2022-10-20	17	17
BEPR/U	Brompton Flaherty & Crumrine Enhanced IG Preferred ETF	Brompton	2021-11-26	1	1
CBNK	Mulvihill Canadian Bank Enhanced Yield Etf	Mulvihill	2022-02-28	64	57
BANK	Evolve Canadian Banks and Lifecos Enhanced Yield Index	Evolve	2022-02-01	38	35
TECE	Evolve Enhanced FANGMA Index ETF	Evolve	2022-03-01	1	1
TECE/U	Evolve Enhanced FANGMA Index ETF	Evolve	2022-03-01	1	1
TECE/B	Evolve Enhanced FANGMA Index ETF	Evolve	2022-03-01	1	1
HCAL	Hamilton Enhanced Canadian Bank ETF	Hamilton	2020-10-15	172	371
HYLD	Hamilton Enhanced US Covered Call ETF	Hamilton	2022-02-08	351	301
HDIV	Hamilton Enhanced Multi-Sector Covered Call ETF	Hamilton	2021-07-21	199	274
HFIN	Hamilton Enhanced Canadian Financials ETF	Hamilton	2022-01-27	80	76
HYLD/U	Hamilton Enhanced US Covered Call ETF	Hamilton	2022-02-04	9	10
HUTS	Hamilton Enhanced Utilities ETF	Hamilton	2022-09-06	11	10
HDIF	Harvest Diversified Monthly Income ETF	Harvest	2022-02-16	266	239
HTAE	Harvest Tech Achievers Enhanced Income Etf	Harvest	2022-10-25	10	9
HLLE	Harvest Healthcare Leaders Enhanced Income ETF	Harvest	2022-10-25	3	3
HLFE	Harvest Canadian Equity Enhanced Income Leaders ETF	Harvest	2022-10-25	3	3
HUTE	Harvest Equal Weight Global Utilities Enhanced Income Etf	Harvest	2022-10-25	2	2
HBFE	Harvest Brand Leaders Enhanced Income ETF	Harvest	2022-10-25	2	2
YAMZ	Amazon AMZN Yield Shares Purpose ETF	Purpose	2022-12-20	2	2
BRKY	Berkshire Hathaway BRK Yield Shares Purpose ETF	Purpose	2022-12-20	5	5
APLY	Apple AAPL Yield Shares Purpose ETF	Purpose	2022-12-20	3	3
YGOG	Alphabet GOOGL Yield Shares Purpose ETF	Purpose	2022-12-20	2	1
YTSL	Tesla TSLA Yield Shares Purpose ETF	Purpose	2022-12-20	4	3

Source: NBF ETF Research, Bloomberg. Data as of December 31, 2022. Flows and AUM are adjusted for fund funds.

AUM and Flow Distribution by MER: Figure 13 & Figure 14

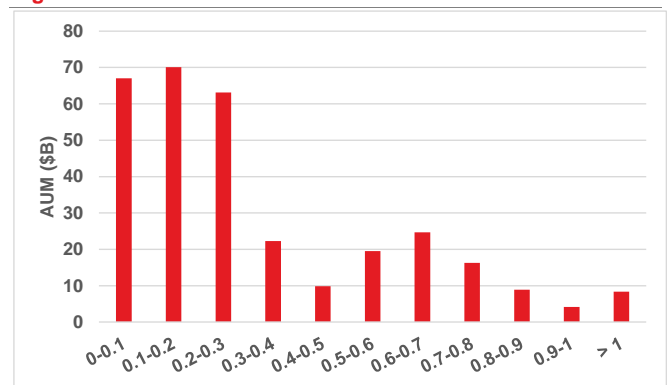
Figure 13 and 14 shows how Canadian ETFs break down by Management Expense Ratio (MER). More than 60% of all assets and more than 80% of 2022 flows fall in the buckets between zero and 30 bps as most passive, index-tracking broad market ETFs remain popular and low in cost. The 60 - 80 bps range have large inflows from ESG, covered call, sector and dividend ETFs. The 90 bps to more than 100 bps band contains ETFs in the “lightly levered”, sector covered call and alternative ETFs. Contrary to last year when all the fee buckets attracted inflows, the 30 - 40 bps and 50 - 60 bps ranges both suffered outflows as many low volatility factor, multi-factor and preferred share ETFs, which were in redemption mode, tend to have MERs in these ranges. The flows pattern suggests that investors are adopting a “barbell approach” to investing whereby they dedicate a large segment of their portfolios to low-cost passive products, with the balance allocated to higher risk and higher cost ETFs.

Figure 13: MER Distribution of Canadian ETF 2022 Flows



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

Figure 14: MER Distribution of Canadian ETF AUM



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

Other Full Year 2022 Tables

Table 3 - Top ETF Inflows - Full Year 2022

Ticker	Name	Flow (\$M)	Flow/AUM
1	CSAV CI High Interest Savings ETF	\$3,205	154%
2	PSA Purpose High Interest Savings ETF	\$1,956	107%
3	HBB Horizons Cdn Select Universe Bond ETF	\$1,440	92%
4	CASH Horizons High Interest Savings ETF	\$1,423	8758%
5	HXT Horizon S&P/TSX 60 Index ETF	\$1,204	42%
6	TCLB TD Canadian Long Term Federal Bond ETF	\$1,179	402%
7	VFV Vanguard S&P 500 Index ETF	\$1,099	17%
8	ZAG BMO Aggregate Bond Index ETF	\$1,080	17%
9	ZMU BMO Mid-Term US IG Corporate Bond CAD-H	\$1,047	56%
10	NMCE NBI Sustainable Canadian Equity ETF	\$1,015	286%
11	ESGY BMO MSCI USA ESG Leaders Index ETF	\$957	105%
12	VSP Vanguard S&P 500 Index ETF CAD-hedged	\$853	40%
13	XSP iShares Core S&P 500 Index ETF CAD- Hedged	\$840	10%
14	HISA High Interest Savings Account Fund	\$822	313%
15	XIU iShares S&P/TSX 60 Index ETF	\$816	7%
16	ZFS BMO Short Federal Bond Index ETF	\$783	179%
17	ZFM BMO Mid Federal Bond Index ETF	\$779	267%
18	VEQT Vanguard All-Equity ETF Portfolio	\$726	42%
19	ZEAT BMO MSCI EAFE Index ETF	\$707	13%
20	VAB Vanguard Canadian Aggregate Bond Index ETF	\$672	19%

Source: National Bank of Canada, Bloomberg;

Table 4 - Top ETF Outflows - Full Year 2022

Ticker	Name	Flow (\$M)	Flow/AUM
1	ESGY/BMO MSCI USA ESG Leaders Index ETF	-\$768	-94%
2	XIC iShares Core S&P/TSX Capped Composite Index ETF	-\$745	-7%
3	HXCN Horizons S&P/TSX Capped Composite Index ETF	-\$639	-32%
4	TTP TD Canadian Equity Index ETF	-\$628	-36%
5	HXS Horizons S&P 500 Index ETF	-\$521	-16%
6	XSB iShares Core Canadian Short Term Bond Index ETF	-\$493	-14%
7	XSH iShares Core Canadian Short Term Corporate Bond	-\$469	-25%
8	ZCM BMO Mid Corporate Bond Index ETF	-\$417	-41%
9	ZMP BMO Mid Provincial Bond Index ETF	-\$390	-52%
10	TEG TD Global Technology Leaders Index ETF	-\$380	-18%
11	HPR Horizons Active Preferred Share ETF	-\$376	-20%
12	ZLU BMO Low Volatility US Equity ETF	-\$360	-20%
13	DANC Desjardins Alt Long/Short Equity Market Neutral ETF	-\$342	-39%
14	CMUE CIBC Multifactor US Equity ETF	-\$342	-93%
15	CMCE CIBC Multifactor Canadian Equity ETF	-\$337	-103%
16	FIG CI Investment Grade Bond ETF	-\$334	-45%
17	ZPR BMO Laddered Preferred Share Index ETF	-\$333	-14%
18	VALT/CI Gold Bullion Fund	-\$323	-92%
19	DXG Dynamic Active Global Dividend ETF	-\$316	-24%
20	CGXF CI Gold+ Giants Covered Call ETF	-\$299	-63%

Source: National Bank of Canada, Bloomberg;

Table 5 - ETF Flows by Category - Full Year 2022

Asset Class	AUM (\$M)	Mkt Shr	Flow (\$M)	Flow/AUM
Equity	\$195,653	62%	\$13,475	6%
Fixed Income	\$96,669	31%	\$19,007	20%
Commodities	\$1,643	1%	-\$279	-15%
Multi-Asset	\$15,700	5%	\$1,867	12%
Inverse / Leveraged	\$2,998	1%	\$1,550	85%
Crypto-Asset	\$1,661	1%	-\$118	-2%
Total	\$314,323	100%	\$35,502	10.2%

*Equity Flows include option strategies; Source: National Bank of Canada, Bloomberg

Table 6 - Equity ETF Flows by Geography - Full Year 2022

Geography	AUM (\$M)	Mkt Shr	Flow (\$M)	Flow/AUM
Canada	\$73,337	37%	\$4,145	5%
United States	\$67,421	34%	\$4,870	6%
DM: Broad	\$20,899	11%	\$1,061	4%
DM: Regional & Country	\$5,534	3%	\$896	13%
Emerging Markets	\$5,463	3%	\$84	1%
Global	\$22,999	12%	\$2,419	10%
Total	\$195,653	100%	\$13,475	6.0%

*Equity Flows include option strategies; Source: National Bank of Canada, Bloomberg

Table 7 - Equity ETF Flows by Sector* - Full Year 2022

Sector	AUM (\$M)	Mkt Shr	Flow (\$M)	Flow/AUM
Financials	\$9,669	36%	\$839	7%
Energy	\$3,606	13%	\$419	19%
Real Estate	\$3,039	11%	-\$134	-3%
Health Care	\$2,790	10%	\$439	17%
Technology	\$2,511	9%	\$40	1%
Utilities	\$2,442	9%	\$509	22%
Materials	\$2,130	8%	-\$255	-10%
Other	\$556	2%	-\$63	-9%
Total	\$26,744	100%	\$1,794	6%

*Includes all geo focuses and Covered Call Strategies; Source: NBF, Bloomberg

Table 8 - Equity ETF Flows by Focus - Full Year 2022

Focus	AUM (\$M)	Mkt Shr	Flow (\$M)	Flow/AUM
Cap-weighted	\$113,956	58%	\$6,772	5%
Dividend / Income	\$21,577	11%	\$2,250	10%
Factor: Low Vol	\$7,715	4%	-\$734	-8%
Factor: Multi-factor	\$2,877	1%	-\$1,043	-24%
Factor: Fundamental	\$4,886	2%	\$373	7%
Sector	\$26,744	14%	\$1,794	6%
Thematic	\$11,846	6%	\$2,628	24%
ESG**	\$8,008	4%	\$2,239	33%
Other	\$6,053	3%	\$1,434	27%
Total	\$195,653	100%	\$13,475	6.0%

*Equity Flows include option strategies; Source: National Bank of Canada, Bloomberg

** Only includes ESG ETFs under Thematic category

Table 9 - Fixed Income ETF Flows by Type - Full Year 2022

Type	AUM (\$M)	Mkt Shr	Flow (\$M)	Flow/AUM
Canada Aggregate	\$29,321	30%	\$6,427	23%
Canada Government	\$10,580	11%	\$2,625	27%
Canada Corporate	\$13,392	14%	\$165	1%
U.S. / North America	\$8,011	8%	\$1,686	17%
Foreign	\$10,297	11%	\$710	6%
Sub-Investment Grade	\$3,872	4%	-\$161	-3%
Preferred/Convertible	\$6,088	6%	-\$1,275	-13%
Cash Alternative	\$15,107	16%	\$8,829	141%
Total	\$96,669	100%	\$19,007	19.8%

Source: National Bank of Canada, Bloomberg

Table 10 - Fixed Income ETF Flows by Maturity - Full Year 2022

Maturity	AUM (\$M)	Mkt Shr	Flow (\$M)	Flow/AUM
Broad/Mixed	\$46,528	48%	\$6,040	12%
Ultra Short Term	\$4,726	5%	\$714	17%
Short Term	\$17,480	18%	-\$398	-2%
Mid Term	\$5,757	6%	\$1,423	21%
Long Term	\$4,914	5%	\$1,804	41%
Real Return	\$1,446	1%	-\$38	-2%
Target Maturity	\$710	1%	\$634	196%
Cash Alternative	\$15,107	16%	\$8,829	141%
Total	\$96,669	100%	\$19,007	19.8%

Source: National Bank of Canada, Bloomberg

Other December 2022 Tables

On the next page

Canadian ETFs welcomed \$7.6 billion in flows in December, dominated by Fixed Income Asset Class (\$5.9 billion), which is the highest percentage flow compared to all other asset classes. The inflow into Fixed Income ETFs is also the highest monthly flows on record for this group, bringing the monthly total ETF flows to the second highest in history for Canadian ETFs. Cash alternative ETFs single-handedly contributed \$1.8 billion. Outside cash alternative ETFs, all other Fixed Income ETF categories saw inflows except for preferred share ETFs. Equity ETFs welcomed \$1.7 billion, led by U.S. equity, Emerging Market equity, Financials sector and iShares ESG Aware suite of products. Multi-factor ETFs continued to bleed assets.

Table 11 - Top Single Long ETF Inflows - Dec 2022

Ticker	Name	Flow (\$M)	Flow/AUM
1	CSAV	CI High Interest Savings ETF	\$742 16%
2	ZFM	BMO Mid Federal Bond Index ETF	\$736 244%
3	ZFS	BMO Short Federal Bond Index ETF	\$699 140%
4	FSB	CI Enhanced Short Duration Bon	\$628 239%
5	ZSP	BMO S&P 500 Index ETF	\$424 5%
6	CASH	Horizons High Interest Savings ETF	\$391 37%
7	ZEB	BMO Equal Weight Banks Index ETF	\$377 17%
8	PSA	Purpose High Interest Savings ETF	\$336 10%
9	XBB	iShares Core Canadian Universe Bond Index ETF	\$257 6%
10	ZNQ	BMO NASDAQ 100 Equity Index ETF	\$199 89%
11	ZST	BMO Ultra Short-Term Bond ETF	\$168 25%
12	ZEM	BMO MSCI Emerging Markets Index ETF	\$167 13%
13	VAB	Vanguard Canadian Aggregate Bond Index ETF	\$161 6%
14	CBH	iShares 1-10 Year Laddered Corporate Bond Index ETF	\$159 35%
15	HSUV/U	Horizons USD Cash Maximizer ETF	\$156 18%
16	XSUS	iShares ESG Aware MSCI USA Index ETF	\$134 137%
17	VSU	Vanguard Canadian Short-Term Bond Index ETF	\$124 10%
18	XCB	iShares Core Canadian Corporat	\$117 8%
19	QUIG	Mackenzie US Investment Grade Corporate Bond Index	\$114 29%
20	HISA	High Interest Savings Account Fund	\$113 12%

Source: National Bank of Canada, Bloomberg;

Table 12 - Top Single Long ETF Outflows - Dec 2022

Ticker	Name	Flow (\$M)	Flow/AUM
1	XIU	iShares S&P/TSX 60 Index ETF	-\$220 -2%
2	XIC	iShares Core S&P/TSX Capped Composite Index ETF	-\$133 -2%
3	WXM	CI Morningstar Canada Momentum Index ETF	-\$111 -14%
4	HPR	Horizons Active Preferred Share ETF	-\$82 -7%
5	VXMB	CI Morningstar International Value Index ETF	-\$75 -20%
6	FGO	CI Enhanced Government Bond ETF	-\$73 -10%
7	XEC	iShares Core MSCI Emerging Markets IMI Index ETF	-\$64 -6%
8	ZWP	BMO Europe High Dividend Covered Call ETF	-\$57 -41%
9	ZCPB	BMO Core Plus Bond Fund ETF	-\$54 -3%
10	DXG	Dynamic Active Global Dividend ETF	-\$52 -6%
11	VSP	Vanguard S&P 500 Index ETF CAD-hedged	-\$51 -2%
12	HXT	Horizon S&P/TSX 60 Index ETF	-\$44 -1%
13	DANC	Desjardins Alt Long/Short Equity Market Neutral ETF	-\$43 -7%
14	CDZ	iShares S&P/TSX Canadian Dividend Aristocrats Index	-\$42 -4%
15	VUN	Vanguard US Total Market Index ETF	-\$41 -2%
16	MFT	Mackenzie Floating Rate Income ETF	-\$41 -5%
17	QBTL	AGFIQ US Market Neutral Anti-Beta CAD-Hedged ETF	-\$40 -11%
18	ZDI	BMO International Dividend ETF	-\$39 -17%
19	FLJA	Franklin FTSE Japan Index ETF	-\$39 -47%
20	XFR	iShares Floating Rate Index ETF	-\$38 -7%

Source: National Bank of Canada, Bloomberg;

Table 13 - ETF Flows by Category - Dec 2022

Asset Class	AUM (\$M)	Mkt Shr	Flow (\$M)	Flow/AUM
Equity	\$195,653	62%	\$1,674	0.8%
Fixed Income	\$96,669	31%	\$5,876	6.4%
Commodities	\$1,643	1%	\$7	0.4%
Multi-Asset	\$15,700	5%	-\$33	-0.2%
Inverse / Levered	\$2,998	1%	\$90	3.0%
Crypto-Asset	\$1,661	1%	-\$52	-2.9%
Total	\$314,323	100%	\$7,562	2.4%

*Equity Flows include option strategies; Source: National Bank of Canada, Bloomberg

Table 14 - Equity ETF Flows by Geography - Dec 2022

Geography	AUM (\$M)	Mkt Shr	Flow (\$M)	Flow/AUM
Canada	\$73,337	37%	\$205	0.3%
United States	\$67,421	34%	\$973	1.4%
DM: Broad	\$20,899	11%	\$157	0.7%
DM: Regional & Country	\$5,534	3%	\$137	2.4%
Emerging Markets	\$5,463	3%	\$248	4.6%
Global	\$22,999	12%	-\$47	-0.2%
Total	\$195,653	100%	\$1,674	0.8%

*Equity Flows include option strategies; Source: National Bank of Canada, Bloomberg

Table 15 - Equity ETF Flows by Sector* - Dec 2022

Sector	AUM (\$M)	Mkt Shr	Flow (\$M)	Flow/AUM
Financials	\$9,669	36%	\$407	4.1%
Energy	\$3,601	13%	\$17	0.5%
Real Estate	\$3,039	11%	\$10	0.3%
Health Care	\$2,790	10%	\$27	1.0%
Technology	\$2,511	9%	-\$24	-0.9%
Utilities	\$2,442	9%	\$27	1.1%
Materials	\$2,130	8%	-\$29	-1.3%
Other	\$561	2%	-\$21	-4.0%
Total	\$26,744	100%	\$414	1.5%

*Includes all geo focuses and Covered Call Strategies; Source: NBF, Bloomberg

Table 16 - Equity ETF Flows by Focus - Dec 2022

Focus	AUM (\$M)	Mkt Shr	Flow (\$M)	Flow/AUM
Cap-weighted	\$113,956	58%	\$909	0.8%
Dividend / Income	\$21,577	11%	\$181	0.8%
Factor: Low Vol	\$7,715	4%	\$35	0.4%
Factor: Multi-factor	\$2,877	1%	-\$45	-1.5%
Factor: Fundamental	\$4,886	2%	-\$69	-1.3%
Sector	\$26,744	14%	\$414	1.5%
Thematic	\$11,846	6%	\$208	1.7%
ESG**	\$8,008	4%	\$264	3.3%
Other	\$6,053	3%	\$41	0.7%
Total	\$195,653	100%	\$1,674	0.8%

*Equity Flows include option strategies; Source: National Bank of Canada, Bloomberg

** Only includes ESG ETFs under Thematic category

Table 17 - Fixed Income ETF Flows by Type - Dec 2022

Type	AUM (\$M)	Mkt Shr	Flow (\$M)	Flow/AUM
Canada Aggregate	\$29,321	30%	\$926	3.2%
Canada Government	\$10,580	11%	\$1,521	16.3%
Canada Corporate	\$13,392	14%	\$741	5.8%
U.S. / North America	\$8,011	8%	\$748	10.2%
Foreign	\$10,297	11%	\$175	1.7%
Sub-Investment Grade	\$3,872	4%	\$105	2.7%
Preferred/Convertible	\$6,088	6%	-\$95	-1.5%
Cash Alternative	\$15,107	16%	\$1,755	13.2%
Total	\$96,669	100%	\$5,876	6.4%

Source: National Bank of Canada, Bloomberg

Table 18 - Fixed Income ETF Flows by Maturity - Dec 2022

Maturity	AUM (\$M)	Mkt Shr	Flow (\$M)	Flow/AUM
Broad/Mixed	\$46,528	48%	\$1,115	2.4%
Ultra Short Term	\$4,726	5%	\$274	6.1%
Short Term	\$17,480	18%	\$1,525	9.5%
Mid Term	\$5,757	6%	\$1,117	23.7%
Long Term	\$4,914	5%	\$23	0.5%
Real Return	\$1,446	1%	-\$30	-2.0%
Target Maturity	\$710	1%	\$97	15.8%
Cash Alternative	\$15,107	16%	\$1,755	13.2%
Total	\$96,669	100%	\$5,876	6.4%

Source: National Bank of Canada, Bloomberg

Table 19 - ETF Flows by Provider - Dec 2022

Provider	New Methodology (adjusted for ETF-of-ETFs)					Unadjusted	
	AUM (\$M)	Mkt Shr (%)	Dec 2022		Dec 2022		
			Flow (\$M)	Flow/AUM	AUM (\$M)	Flow (\$M)	
1 RBC iShares	\$91,275	29.0%	\$810	1%	\$96,676	\$818	
2 BMO	\$79,234	25.2%	\$3,337	4%	\$87,727	\$3,623	
3 Vanguard	\$40,682	12.9%	\$513	1%	\$49,889	\$655	
4 Horizons	\$22,275	7.1%	\$558	2%	\$22,851	\$567	
5 CIGAM	\$15,788	5.0%	\$1,151	8%	\$15,964	\$1,153	
6 Mackenzie*	\$12,180	3.9%	\$273	2%	\$12,414	\$287	
7 TDAM	\$7,903	2.5%	\$141	2%	\$7,985	\$144	
8 Purpose	\$6,609	2.1%	\$365	6%	\$6,867	\$360	
9 NBI	\$6,394	2.0%	-\$54	-1%	\$6,394	-\$54	
10 Invesco	\$4,623	1.5%	\$72	2%	\$4,643	\$72	
11 Fidelity	\$3,008	1.0%	\$51	2%	\$3,263	\$50	
12 CIBC	\$2,475	0.8%	\$8	0%	\$2,483	\$9	
13 Harvest	\$2,445	0.8%	\$45	2%	\$2,858	\$84	
14 Manulife	\$2,392	0.8%	-\$15	-1%	\$2,392	-\$15	
15 Dynamic	\$2,245	0.7%	\$136	6%	\$2,245	\$136	
16 Evolve Funds	\$2,138	0.7%	\$108	5%	\$2,184	\$107	
17 PIMCO	\$2,074	0.7%	\$10	0%	\$2,074	\$10	
18 Desjardins	\$1,614	0.5%	-\$36	-2%	\$1,614	-\$36	
19 Hamilton	\$1,451	0.5%	\$41	3%	\$1,823	\$49	
20 Franklin Templeton	\$1,311	0.4%	\$24	2%	\$1,311	\$24	
21 Scotia Bank	\$1,245	0.4%	\$108	9%	\$1,245	\$108	
22 AGF	\$1,151	0.4%	-\$53	-4%	\$1,151	-\$53	
23 Ninepoint Partners	\$645	0.2%	\$3	0%	\$645	\$3	
24 Picton Mahoney	\$573	0.2%	-\$25	-4%	\$573	-\$25	
25 Brompton Funds	\$441	0.1%	\$6	1%	\$521	\$17	
26 Middlefield	\$413	0.1%	\$3	1%	\$413	\$3	
27 First Trust	\$360	0.1%	-\$29	-7%	\$360	-\$29	
28 Bristol Gate	\$293	0.1%	-\$6	-2%	\$293	-\$6	
29 3iQ	\$277	0.1%	-\$1	0%	\$277	-\$1	
30 Guardian Capital	\$230	0.1%	\$4	2%	\$230	\$4	
31 IA Clarington	\$112	0.0%	\$10	10%	\$112	\$10	
32 Emerge	\$102	0.0%	-\$3	-2%	\$102	-\$3	
33 Lysander	\$81	0.0%	-\$3	-3%	\$81	-\$3	
34 Accelerate	\$61	0.0%	\$0	0%	\$67	\$0	
35 Mulvihill	\$59	0.0%	\$6	10%	\$59	\$6	
36 Russell Investments	\$52	0.0%	\$5	10%	\$52	\$5	
37 Arrow Capital	\$40	0.0%	\$0	1%	\$40	\$0	
38 Starlight	\$25	0.0%	-\$1	-2%	\$25	-\$1	
39 SmartBe	\$23	0.0%	\$0	0%	\$23	\$0	
40 Evermore Capital	\$14	0.0%	\$0	0%	\$14	\$0	
41 NCM Investments	\$5	0.0%	\$0	0%	\$5	\$0	
42 Caldwell	\$5	0.0%	\$0	0%	\$5	\$0	
Total	\$314,323	100.0%	\$7,562	2.4%	\$339,951	\$8,078	

*Includes Wealthsimple asset and flows. Source: NBF, Bloomberg

Table 20 - Canada listed ESG ETF Flows by Categories* - December 2022

Category	AUM (\$M)	AUM (%)	December 2022		Full Year 2022	
			Flow (\$M)	Flow/AUM	Flow (\$M)	Flow/AUM
Equity	\$9,112	84%	\$225	2.4%	\$2,060	25.1%
Broad - Canada	\$2,446	23%	\$68	2.7%	\$1,102	72.0%
Broad - U.S.	\$2,280	21%	\$98	4.2%	\$452	19.9%
Broad - DM	\$1,322	12%	\$58	4.5%	\$220	16.6%
Broad - EM	\$329	3%	\$26	8.4%	\$23	6.2%
Broad - Global	\$1,185	11%	-\$15	-1.2%	\$150	12.9%
Environment	\$1,007	9%	-\$4	-0.4%	-\$31	-2.7%
Clean Energy	\$317	3%	-\$9	-2.6%	\$164	95.8%
Social	\$151	1%	-\$1	-0.7%	-\$13	-6.8%
Infrastructure	\$73	1%	\$4	5.9%	-\$6	-56.3%
Commodities	\$13	0%	\$0	0.0%	\$13	NA
Multi-Asset	\$149	1%	\$1	0.8%	\$30	20.5%
Fixed Income	\$1,581	15%	-\$2	-0.1%	\$728	67.1%
Total Displayed	\$10,854	100%	\$224	2.0%	\$2,830	30.0%

Source: National Bank of Canada, Bloomberg

Appendix 1 - Glossary

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

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

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

Market Share (%): Category's AUM as % of the total AUM.

MER (Management Expense Ratio): Manager's 2021 annual fee for managing and administering the fund, expressed as a percentage of total fund value. In most cases this includes fees from investing in other ETFs. Where audited MER is unavailable or if the fee has been significantly reduced recently, the MER is estimated using the Stated Management Fee and sales tax.

Canadian MER does not include trading commissions incurred by the ETF, nor does it include trading expenses (such as swap or forward fees). An asterisk (*) indicates that the fund pays additional expenses such as swap or forward fees, which are normally reported under trading expenses. The asterisk can also indicate that the fund charges a performance fee. Data are sourced from annual fillings.

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

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

Appendix 2 - Equity ETF Categories

We group Equity 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.

Cap-Weighted: A fund that weights securities based on the total or float-adjusted market capitalization of each security.

Dividend/Income: A fund with 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.

Fundamental: A fund that selects and/or weights securities based on fundamental metrics from a company's financial statements such as balance sheet. Strategies include Value, Growth, Quality, RAFI Fundamental, Earnings, etc.

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.

Multi-Factor: ETFs that consider more than one NBF-defined factor including Income, Fundamental and Risk.

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