



BMO
Asset Management
Quantitative
Investment
Long Short Strategies

Information as of Mar 31, 2025*



Global Asset Management

Presented by:
Quantitative Investments

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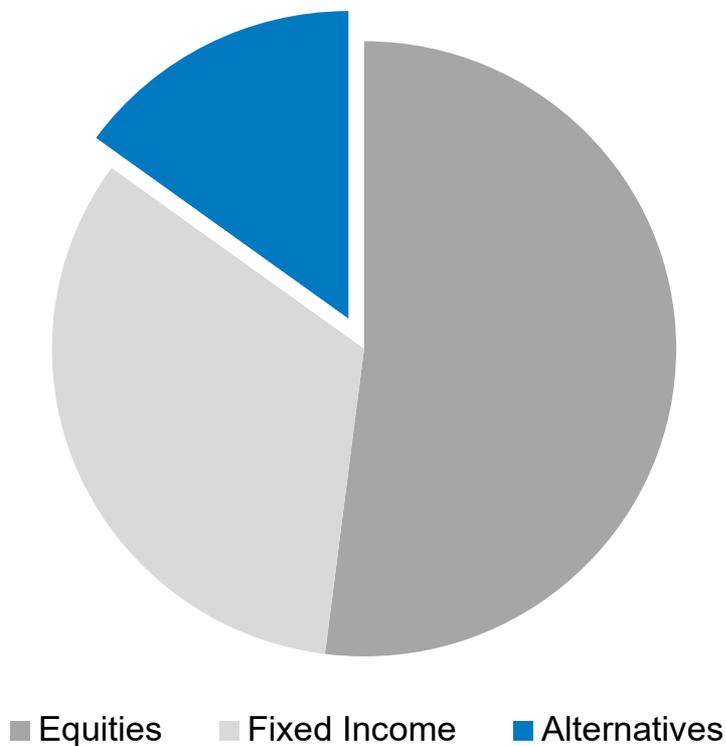
*Unless stated otherwise

Investment Category

Liquid Alternatives

BMO long short equity ETFs are liquid alternative investments

Overall Portfolio Allocation



Alternative Investments

Traditional Alternative Investments

- Private equity
- Private credit
- Hedge funds
- Real estate
- Infrastructure
- Commodities

Liquid Alternative Investments

- **Long short strategies**
- Market neutral strategies
- Global macro strategies
- Multi-strategy funds

Benefits of Liquid Alternatives

Liquid alternative funds became available to Canadian investors in 2019 following amendments to National Instrument 81-102 (Investment Funds). This new category of funds merges hedge fund-style strategies with the accessibility and oversight of mutual funds.

Hedge Fund Benefits

1. Broader range of investment strategies (e.g., long/short, global macro, market neutral)
2. Portfolio management flexibility (short selling, derivatives, borrowing)

Mutual Fund Benefits

1. Accessible to retail investors
2. High liquidity and frequent redemption opportunities
3. Simplified prospectus requirements
4. Heightened regulatory oversight

Liquid Alternative Funds

Strategy Highlights

BMO Long Short Equity Strategies

BMO's Long Short Equity strategy goes 100% long and 50% short in stocks based on its quantitative methodology to exploit market inefficiencies while reducing net market exposure. The remaining 50% of the portfolio is invested in money market instruments to produce extra income.

Risk Reduction

Reduced Market Exposure: ≈ 0.5 market beta.

Additional Income: from a 50% allocation to money market instruments.

Alpha Generation

BMO's Quantitative Investments team has a **15-year track record** of delivering outperformance over equity benchmarks. The Long Short strategy is an extension of its capabilities based on the same methodology.

**0.5 Market
Beta**

**15 Years of
Alpha
Generation**

BMO Quantitative Investments Overview

Who We Are

Experienced

Since 2010, our focus has been on quantitative investing

Consistent

One investment philosophy and process across all strategies since inception

Research Driven

Culture supports continuous innovation of investment process

Well Resourced

Backed by the deep resources and stability of BMO Financial Group

Team at a Glance

C\$15.7B

Total AUM

2010

Quantitative Investing Since

10

Portfolio Managers and Engineers

100+

Years of Combined Experience

Top Mandates

Low Volatility Equity

C\$8.7B

Core Equity

C\$4.7B

Income Equity

C\$2.3B

Source: BMO GAM

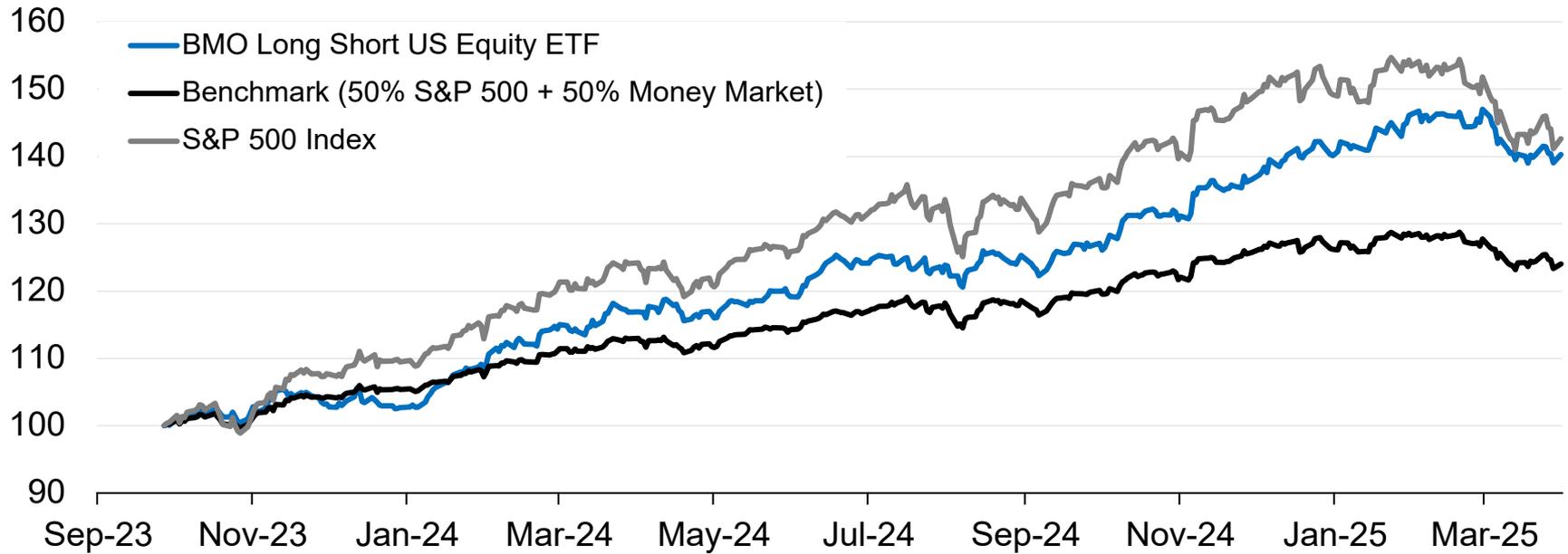
Note: All figures as of August 30, 2024. Total AUM Includes discretionary AUM of C\$13.9B and non-discretionary AUM of C\$1.1B from model-based mandates.

One Methodology, Many Strategies

Investment Strategy	Core			Long Short		Smart Alpha
Region	Canada	US	EAFE	Canada	US	Canada
Asset Class	Broad Canadian Equity	Broad US Equity	Broad International Equity	Long/Short US Equity	Long/Short Canadian Equity	Low Volatility Canadian Equity
Inception	Jun-12	Jul-17	Jan-24	Sep-23	Sep-23	Jun-11
AUM*	\$4.4 billion	\$308 million	\$136 million	\$12 million	\$72 million	\$2.64 billion
Expected Beta	0.9 - 1.1	1	0.9 - 1.1	0.4 - 0.6		0.6 - 0.8

Source: BMO AM Inc. * As of March 31, 2025. ** 5-year annualized.

BMO Long Short US Equity ETF (ZLSU)

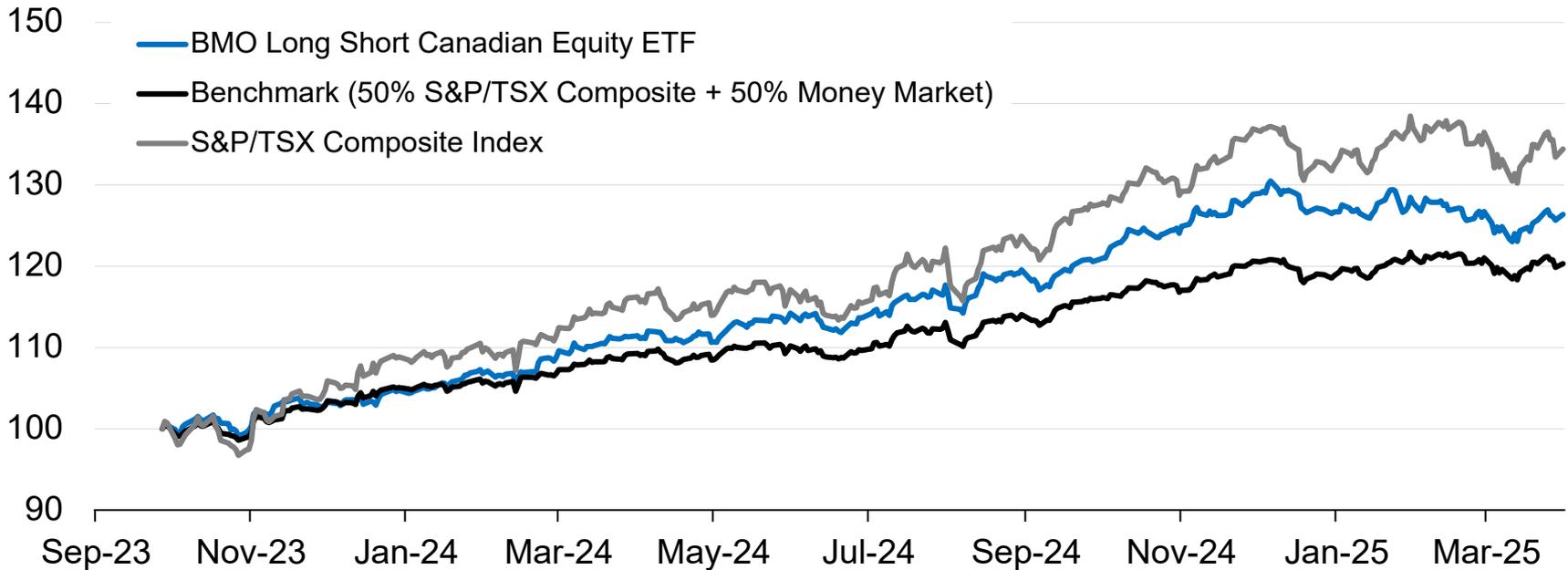


9/27/2023 to 3/31/2025	BMO Long Short US Equity ETF	Benchmark (50% S&P 500 + 50% Money Market)	S&P 500 Index
Annualized Return	25.1%	15.3%	26.5%
Annualized Volatility	9.1%	6.4%	12.8%
Sharpe Ratio	2.15	1.58	1.63

Source: Bloomberg. Past performance is not indicative of future results.

Note: BMO Long Short US Equity ETF performance: 1 yr: 20.04% SI: 25.18%

BMO Long Short Canadian Equity ETF (ZLSC)

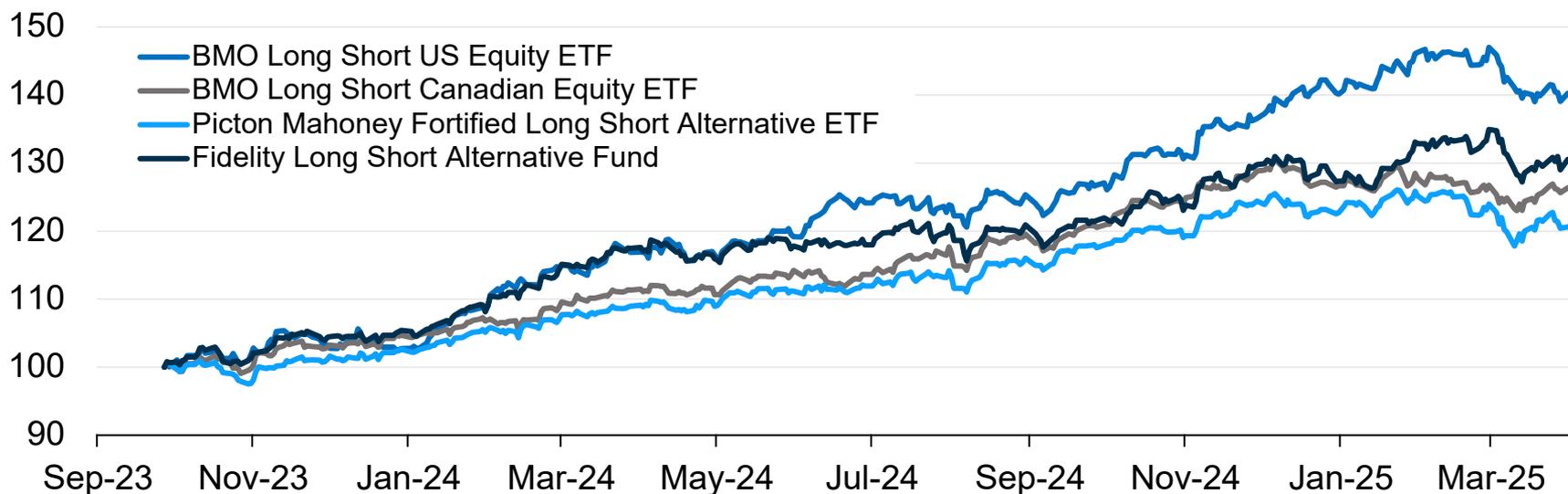


9/27/2023 to 3/31/2025	BMO Long Short Canadian Equity ETF	Benchmark (50% S&P/TSX Composite + 50% Money Market)	S&P/TSX Composite Index
Annualized Return	16.8%	13.0%	21.6%
Annualized Volatility	7.3%	5.6%	11.2%
Sharpe Ratio	1.58	1.42	1.45

Source: Bloomberg. Past performance is not indicative of future results.

Note: BMO Long Short Canadian Equity ETF performance: 1 yr: 13.51% SI: 16.80%

Strong Risk Adjusted Returns with Lower Fees



9/27/2023 to 3/31/2025	BMO Long Short US Equity ETF	BMO Long Short Canadian Equity ETF	Picton Mahoney Fortified Long Short Alternative ETF	Fidelity Long Short Alternative Fund
Annualized Return	25.1%	16.8%	13.2%	19.3%
Annualized Volatility	9.1%	7.3%	7.4%	8.7%
Sharpe Ratio	2.15	1.58	1.10	1.61
Management Fee	0.65%	0.65%	0.95%	1.15%
Performance Fee	0%	0%	20%	0%

Sources: BMO & Bloomberg.

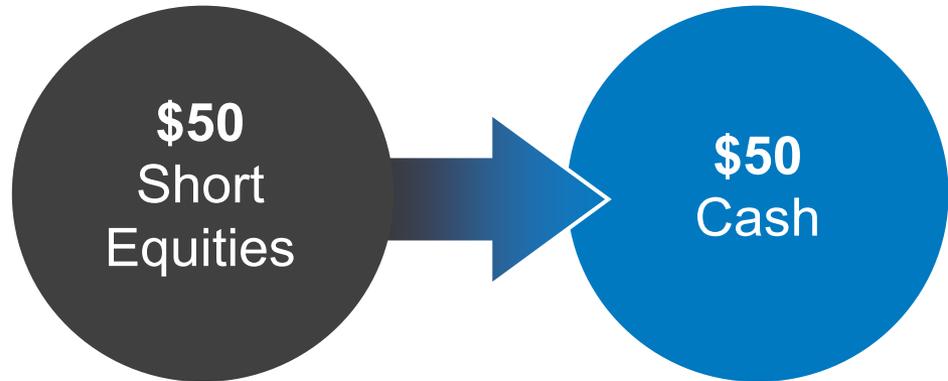
Disclaimer: Past performance is not indicative of future results. The comparison presented is intended to illustrate the historical performance of the BMO Long Short US Equity ETF (ZLSU) and BMO Long Short Canadian Equity ETF (ZLSC) as compared with the historical performance of the Picton Mahoney Fortified Long Short Alternative ETF (PFLS) and the Fidelity Long Short Alternative Fund (FLSA). There are various differences that may exist between product ZLSU, ZLSC and PFLS, FLSA that may affect the performance of each. The objectives and strategies of ZLSU, ZLSC result in holdings that do not necessarily reflect the constituents and weightings within PFLS and FLSA.

Investment Process

What is a 100:50 Long-Short Fund?



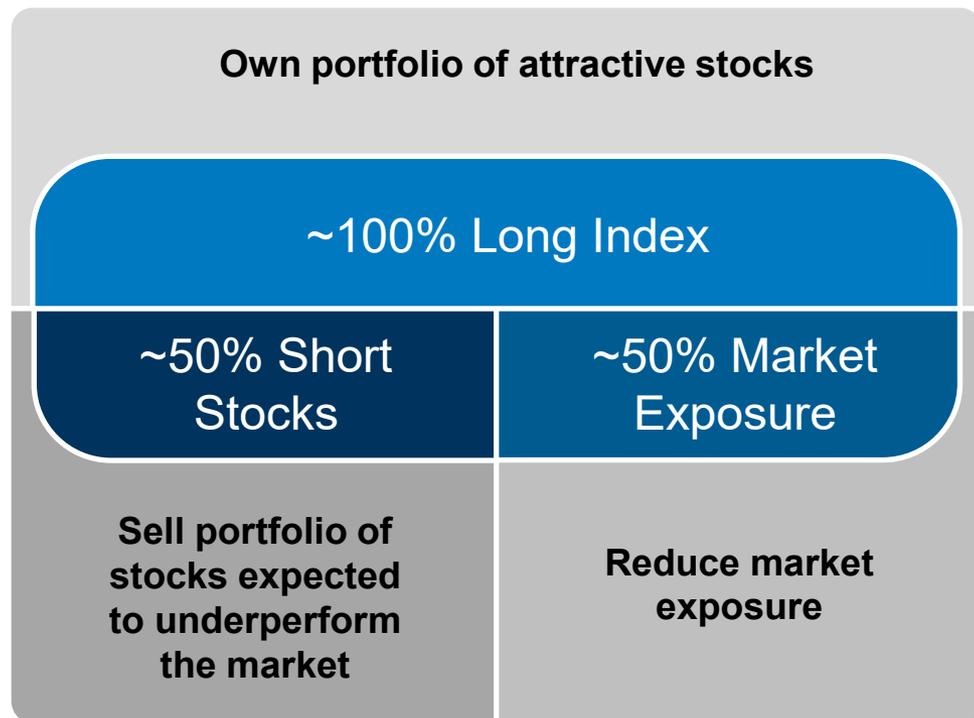
**1. Buy stocks we like
("long position")**



**2. Borrow-and-sell
stock we don't
like ("Short
Position")**

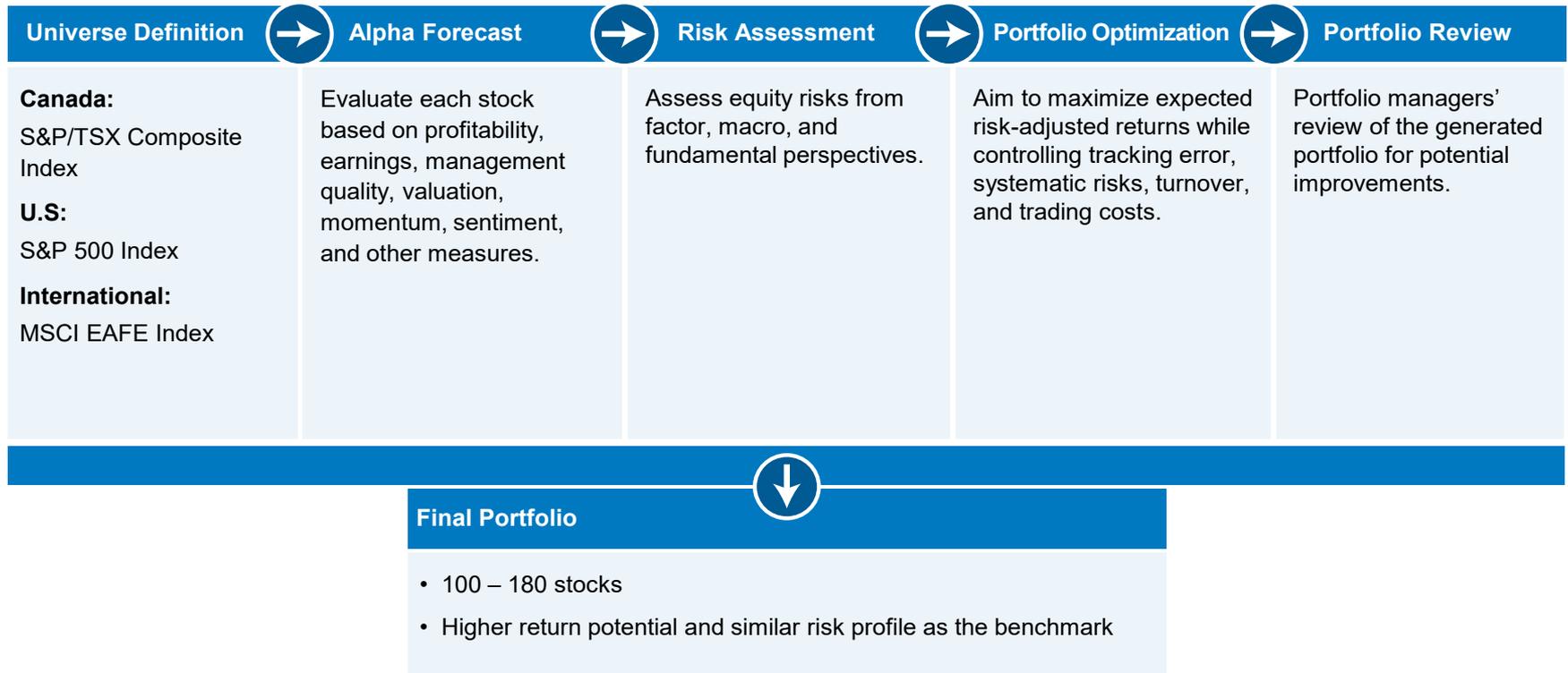
**3. Keep cash as
collateral**

Reduce Market Exposure by Selling Lower Quality Stocks



- Reduce market exposure and differentiate stocks based on their attractiveness.
- Own portfolio of attractive stocks.
- Sell portfolio of stocks expected to underperform the market.
- Short portfolio provides a portfolio hedge and monetizes negative views.
- The shorts add value when they underperform the index.

BMO Quantitative Methodology



Alpha Forecast - Investing in great businesses at fair prices

Profitability

- Return on equity
- Cash flow return on invested capital

Momentum

- Risk adjusted price momentum
- Disposition effect

Earnings Quality

- Accruals
- Stable cash flow growth

Sentiment

- Short interest
- Estimate revisions

Management Quality

- Accounting and governance
- External financing

Valuation

- Forward earning yield
- EBITDA to enterprise value

Note: Representative sample of factors used.

A diversified model combining established and proprietary factors

Alpha Forecast in Action: does TSLA look attractive?

TSLA		
Profitability	ROE of 21%, ROIC 16.5% was good.	+
Earnings Quality	But falling: last 4 quarters average ROE had been higher at 29%	-
Management Quality	Large Capex, with uncertain returns as Tesla had cut prices	--
Valuation	Forward PE of 84! Very expensive on other metrics too	--
Momentum	Lower return than market in last year	-
Sentiment	Earning expectations falling with TSLA price cuts	--
Return Expectation	Combining all above views : negative	--

The fundamentals-based view of Tesla was very negative, due to the high valuation and falling profitability as well as future earning expectations due to their price cuts

Note: Representative sample of factors used from July 2024.

Alpha Forecast in Action: a range of return expectations

	TSLA	NVDA	WMT	INTC	TXN
Profitability	+	++		--	
Earnings Quality	--	-		-	--
Management Quality	--		+	--	--
Valuation	--	-	-	-	-
Momentum	-	++	+	-	
Sentiment	--	++	++	--	
Return Expectation	--	+	+	--	--

Methodology in Action: go long, short or omit?

Universe Definition	Alpha Forecast	Risk Assessment	Portfolio Optimization	Portfolio Review
Stocks within universe	Returns Expectation	Risk	Portfolio Recommendation	Oversight/ Review
TSLA	--	High	Small short	No short: high risk meme stock
NVDA	+	High	Small overweight	+1
WMT	+	Low	Bigger overweight	+1.5
INTC	--	High	Smaller short	-0.8
TXN	--	Low	Bigger short	-1.45



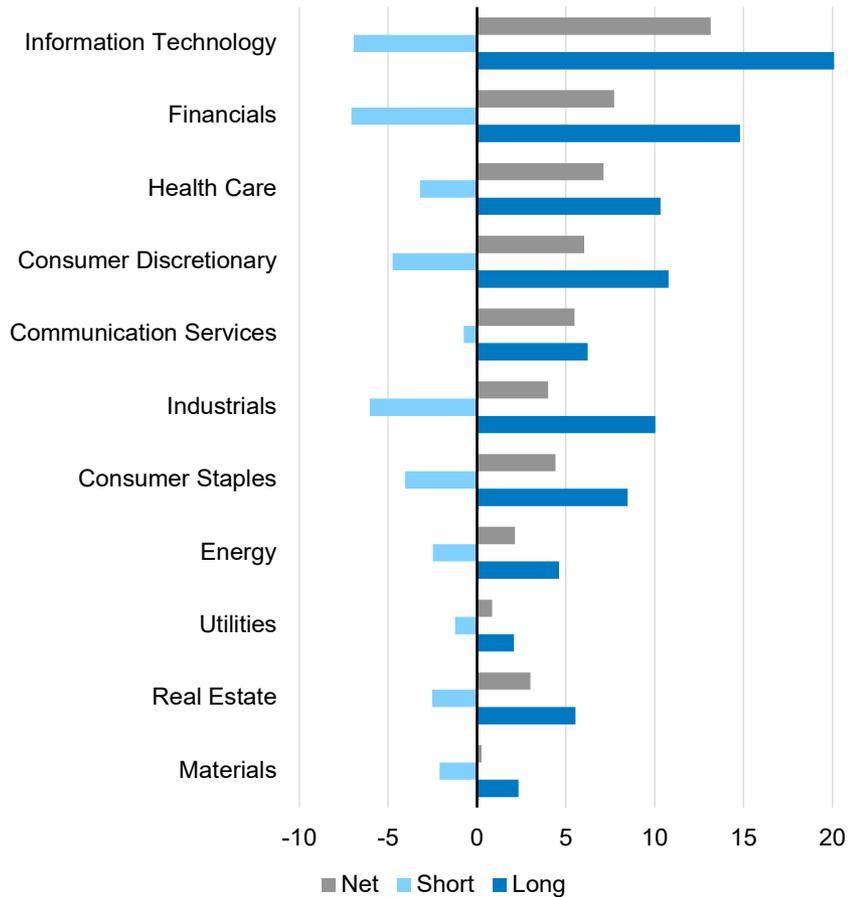
Final Portfolio

- 100 – 180 stocks
- Higher return potential and similar risk profile as the benchmark

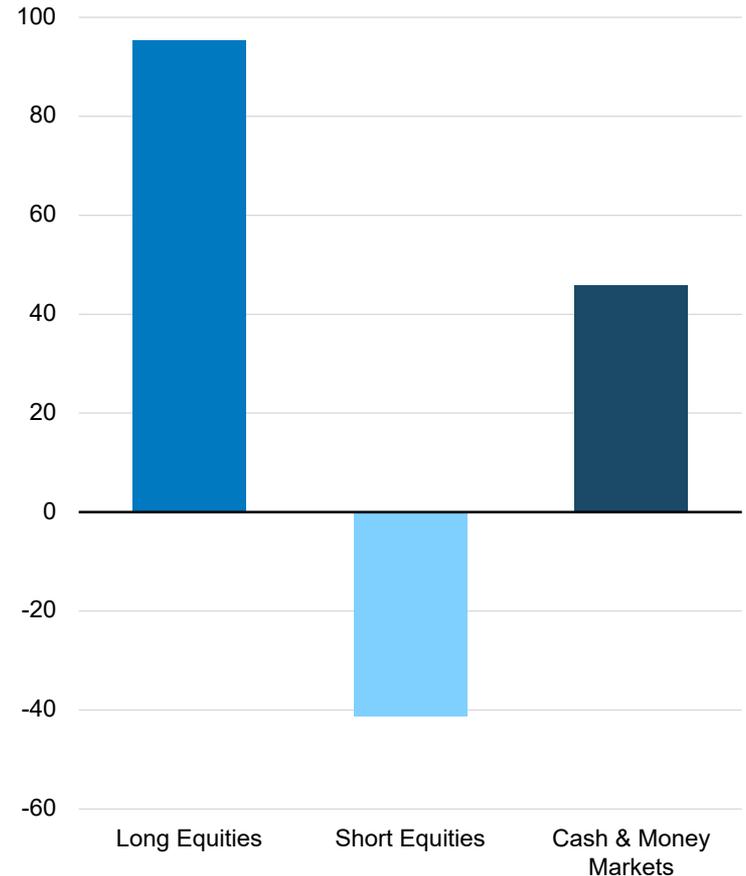
Portfolio Exposures and Positioning

ZLSU Sector Weights and Characteristics

Sector Allocation



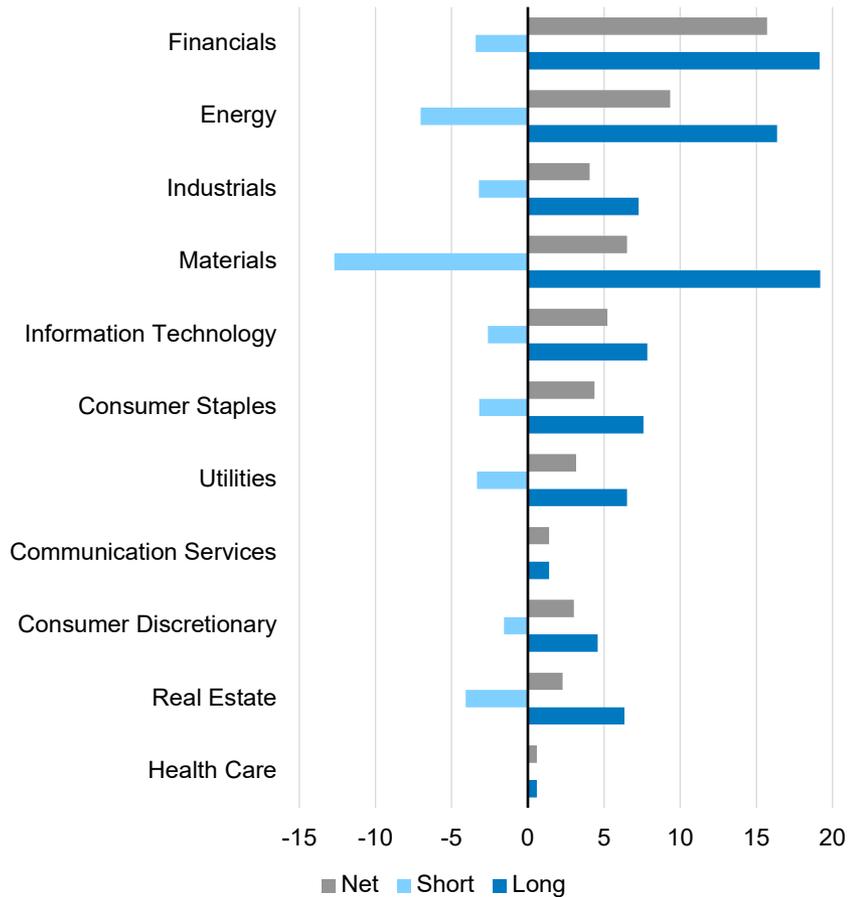
Long and Short Weights



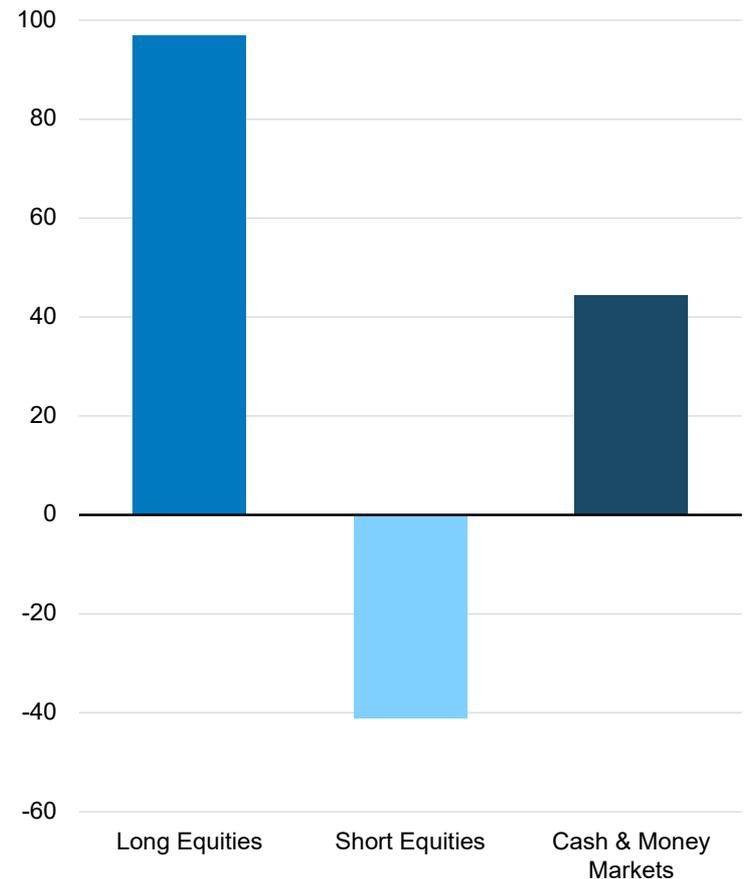
Benchmark: 50/50 S&P500 / Bloomberg U.S. Treasury Total Return Index (C\$).
 Source: BMO AM Inc., Bloomberg. Subject to change without notice.

ZLSC Sector Weights and Characteristics

Sector Allocation



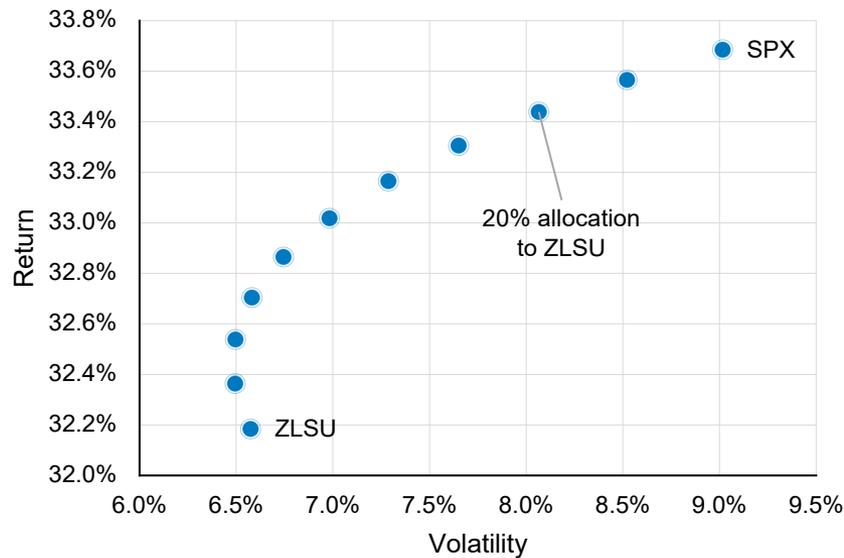
Long and Short Weights



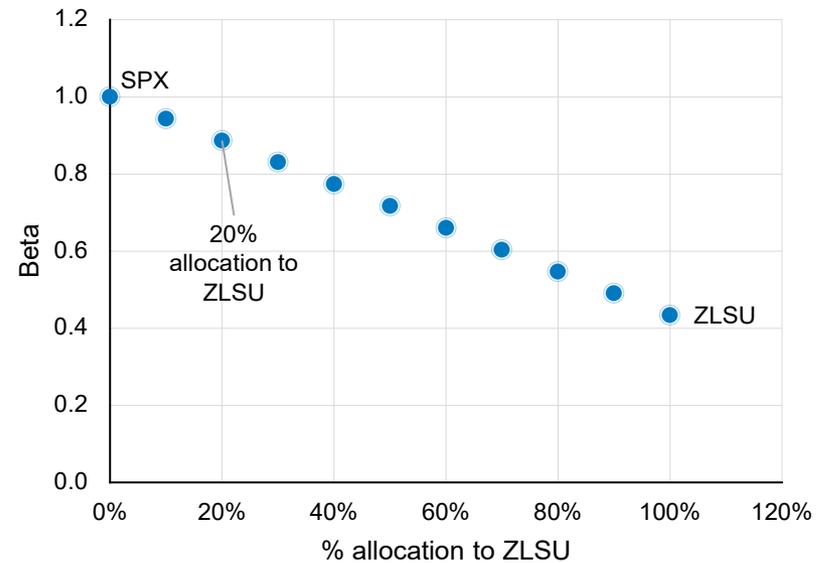
Benchmark: 50/50 S&P/TSX / FTSE Canada 91 Day T-Bill Index.
 Source: BMO AM Inc., Bloomberg. Subject to Change without notice.

Improving Risks Adjusted Returns Within Equity Portfolios

Efficient Frontier: ZLSU and S&P 500 (Since Inception)



Beta of allocation: ZLSU and S&P 500 (Since Inception)



Appendix – BMO Quantitative Investment Team

Quantitative Investments



Sara Petrich

Head, ETF & Structured Solutions



Sadiq S. Adatia, CFA, FSA, FCIA

Chief Investment Officer (CIO)



Lu Lin, MFin, MS

Head, Quantitative Investments
and Strategic Optimization



Ariel Liang
CFA, MS, LLM

Portfolio Manager



Sachal Mahajan
CFA, MS

Portfolio Manager



Yadwinder Garg
CFA, MS

Portfolio Manager



Paul Borean,
CFA, MS

Portfolio Manager



Albert Yao
CFA, MS

Associate
Portfolio Manager



Wang, Zheng

Financial Engineer



Ozgur Akturk, CFA, MFin, PMP

Head, Business Architecture



Gabriel Bortes

Senior Business Architect



Jae Park

Intermediate Business,
Technology Specialist

An experienced team implementing fundamental insights systematically

Quantitative Investing Benefits

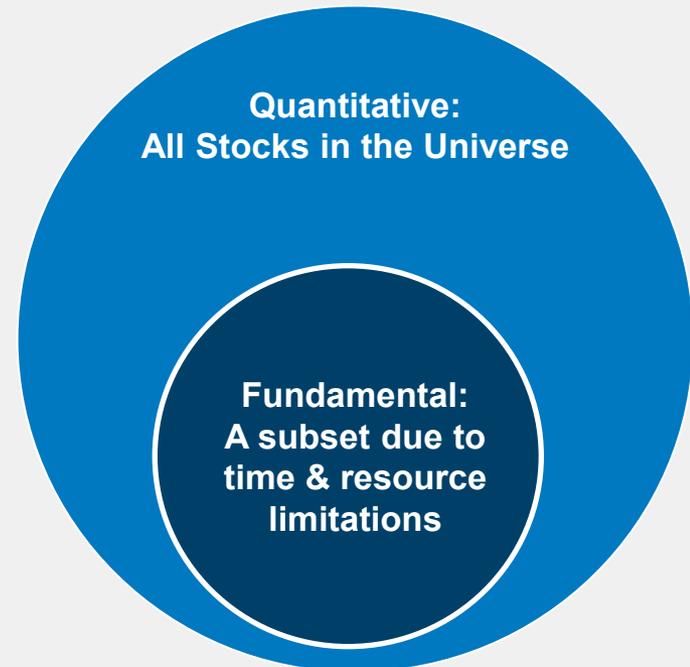
Data-Driven & Systematic

Empirical Evidence Improves Decision-Making

- **Fundamental Investing:** Relies on experience, judgement, and qualitative data to assess intrinsic value and guide decisions.
- **Quantitative Investing:** Uses empirical models and large datasets to identify predictive patterns and systematically drive decisions.

Systematically Capturing All Opportunities

- **Quantitative methods handle large datasets, ensuring broader opportunity set coverage:**



Objective & Repeatable

Rules-Based Approach Limits Emotional Bias

Quantitative investing mitigates common human biases, including:

- Overconfidence
- Confirmation
- Loss aversion
- Herding
- Recency
- Anchoring
- And more

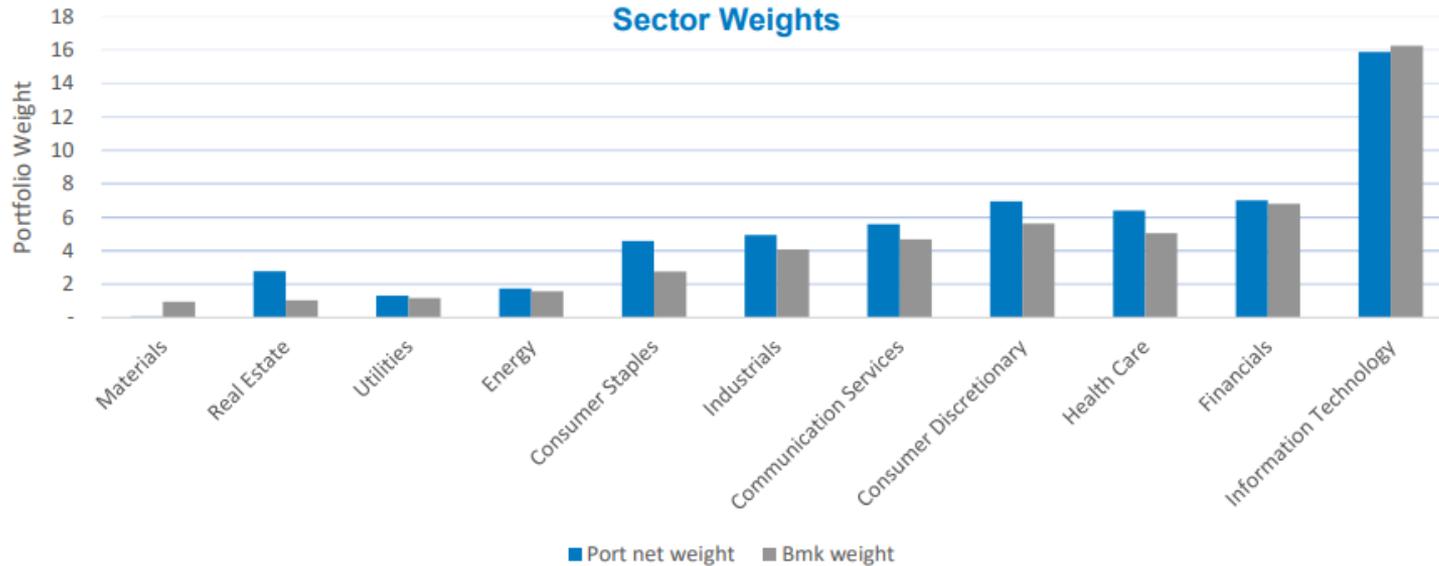
Consistent Processes Help Create Repeatable Results*

- **Systematic processes:** Strategies follow defined models, minimizing discretionary decisions.
- **Consistent factors:** The same set of factors is applied consistently across different time periods and geographic regions.
- **Ongoing Rebalancing:** Portfolios are regularly rebalanced in a disciplined manner, reinforcing consistency over time.

*Past Performance is not indicative of future results.

Portfolio Characteristics

ZLSU Sector Weights and Characteristics

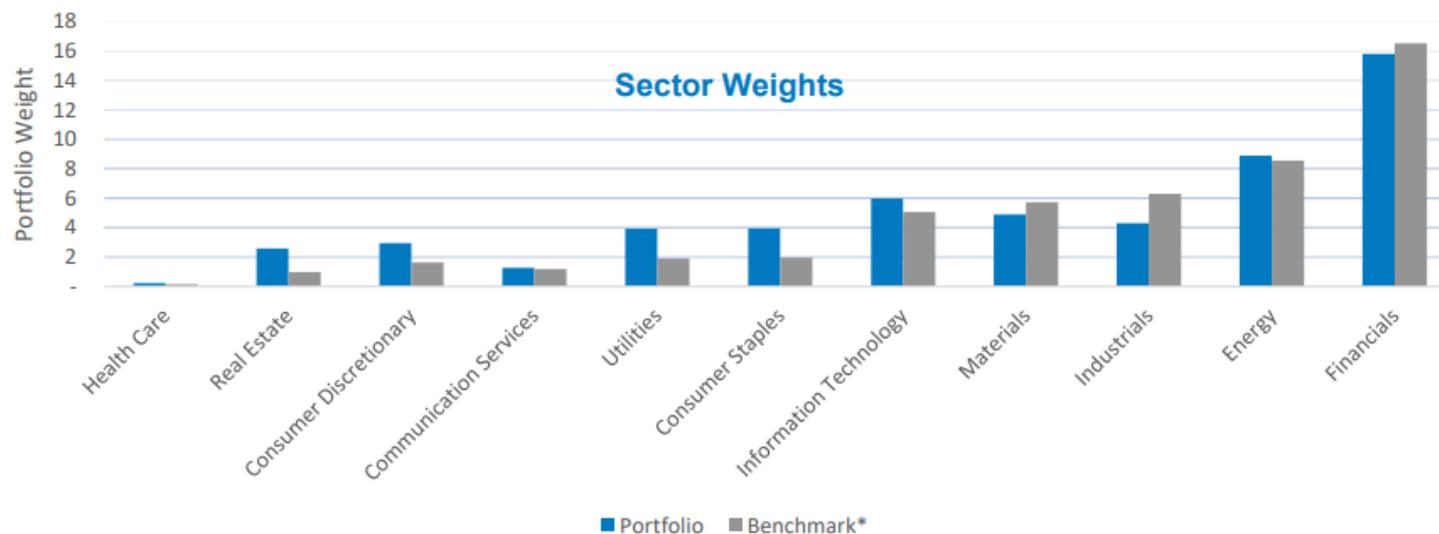


Portfolio Characteristics

	ZLSU long	ZLSU shorts	S&P 500
ROE	21.5	8.5	17.5
Free Cash Flow Growth	18.1	11.5	16.9
Free Cash Flow Yield	3.9	2.8	2.8
Earnings Yield	4.2	2.8	3.7
Debt/Ebitda	2.8	4.9	2.9
Analyst Recommendation	4.3	3.9	4.3

Benchmark: 50/50 S&P500 / Bloomberg U.S. Treasury Total Return Index (C\$).
 Source: BMO AM Inc., Bloomberg. Subject to change without notice.

ZLSC Sector Weights and Characteristics



Portfolio Characteristics

	ZLSC long	ZLSC shorts	S&P TSX
ROE	11.8	1.8	9.8
Free Cash Flow Growth	13.8	12.6	10.5
Free Cash Flow Yield	6.2	1.7	5.2
Earnings Yield	4.9	3.7	5.0
Debt/Ebitda	3.1	4.8	4.0
Analyst Recommendation	4.3	4.0	4.1

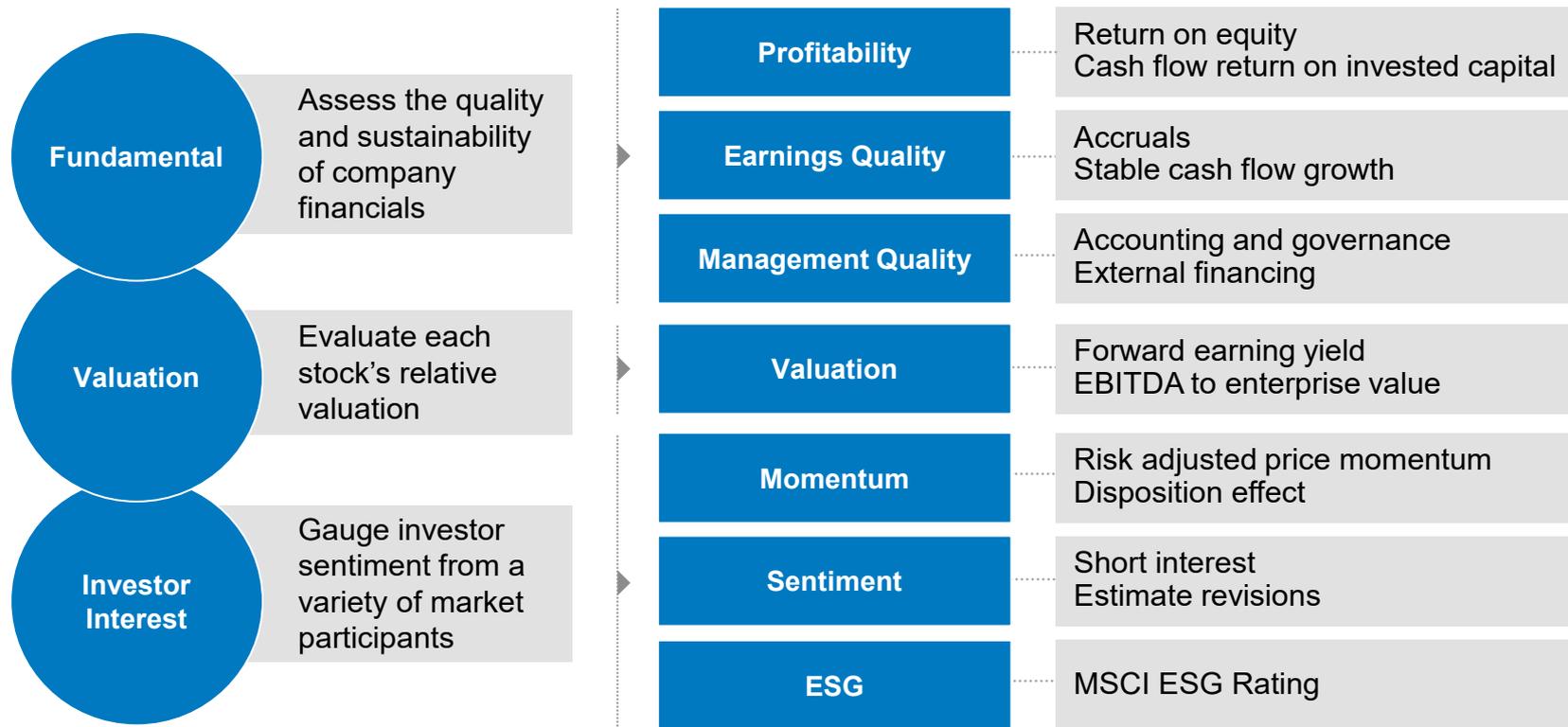
Benchmark: 50/50 S&P/TSX / FTSE Canada 91 Day T-Bill Index
 Source: BMO AM Inc., Bloomberg. Subject to Change without notice

Strong Risk Adjusted Returns with Lower Fees

Data: 26/09/23 - 28/2/25	BMO Long Short Canadian Equity (ZLSC)	BMO Long Short US Equity (ZLSU)	Picton Mahoney Fortified Long Short (PFLS)	Fidelity Long/Short (FLSA) - since Feb 5 2024
Returns (Annualized Net)	17.84	31.17	16.00	23.72
Volatility	5.93	6.78	6.15	7.31
Risk-Adjusted Return (Sharpe Ratio)	2.05	3.38	1.48	1.66
Max Drawdown	-3.72	-3.81	-3.39	-4.75
Fee	0.65%	0.65%	0.95%	1.15%
Performance Fee	0.00%	0.00%	20.00%	
Performance Fee hurdle			2%	
Style	Long/Short	Long/Short	Long/Short	Long/Short
Invests in	Canada Equities	US Equities	Canada & US Equities	Canada & US Equities

BMO Quantitative Investment Methodology

We invest in great businesses at fair prices as investor interest grows



Note: Representative sample of factors used.

A diversified model combining established and proprietary factors

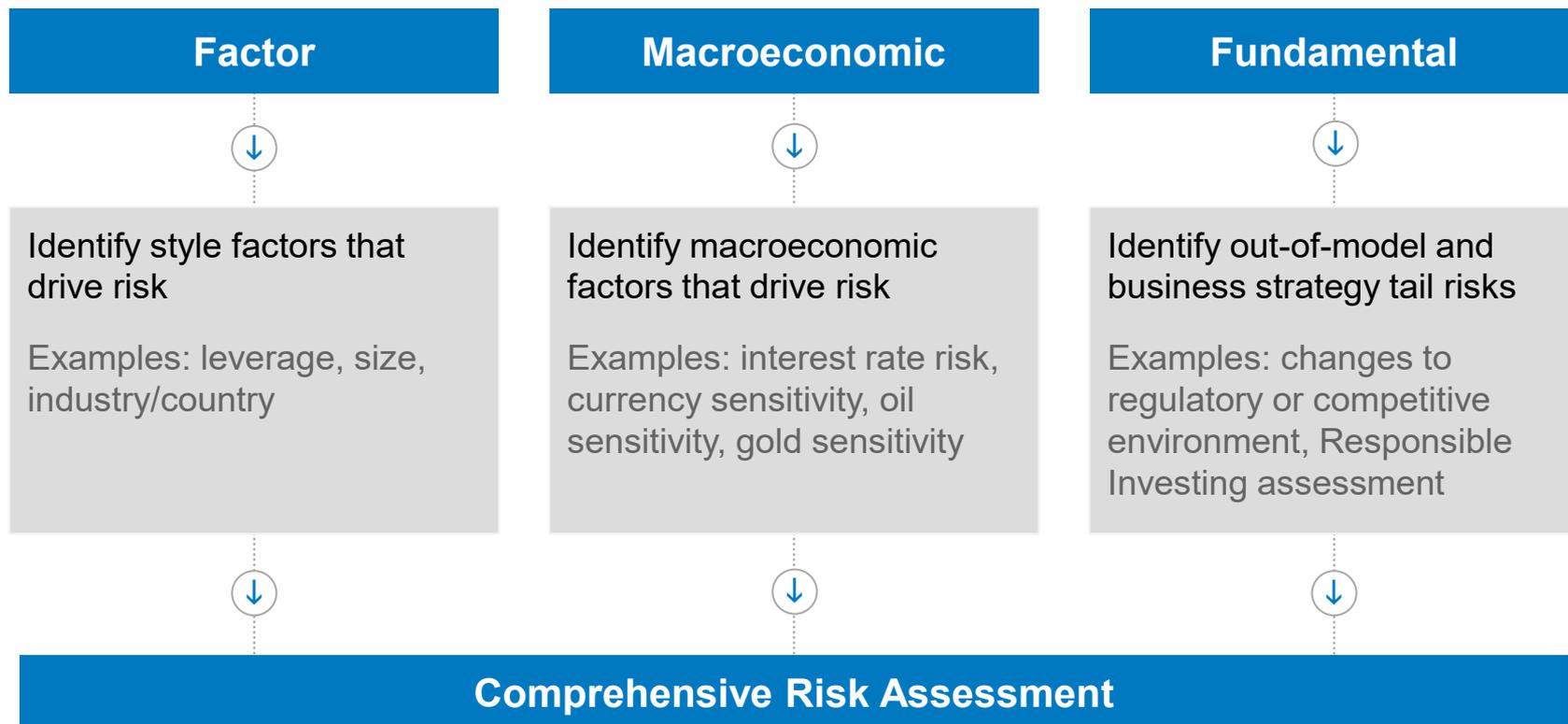
Model

		General	Bank	Energy	REITs	Japan
Factor	Earnings Quality	Cash Flow Growth	Non-Performing Loans to Total Loans	EPS Growth	Adjusted FFO Growth	Accruals
	Management Quality	Capex to Total Asset	External Financing	Capex Growth	Payout Ratio	Capex to Total Asset
	Valuation	Forward Earnings Yield	Dividend Yield Conditioned on Momentum	Free cash flow to enterprise value	Forward FFO Yield	Dividend Yield Conditioned on Momentum

Note: Representative sample of factors used in specified models

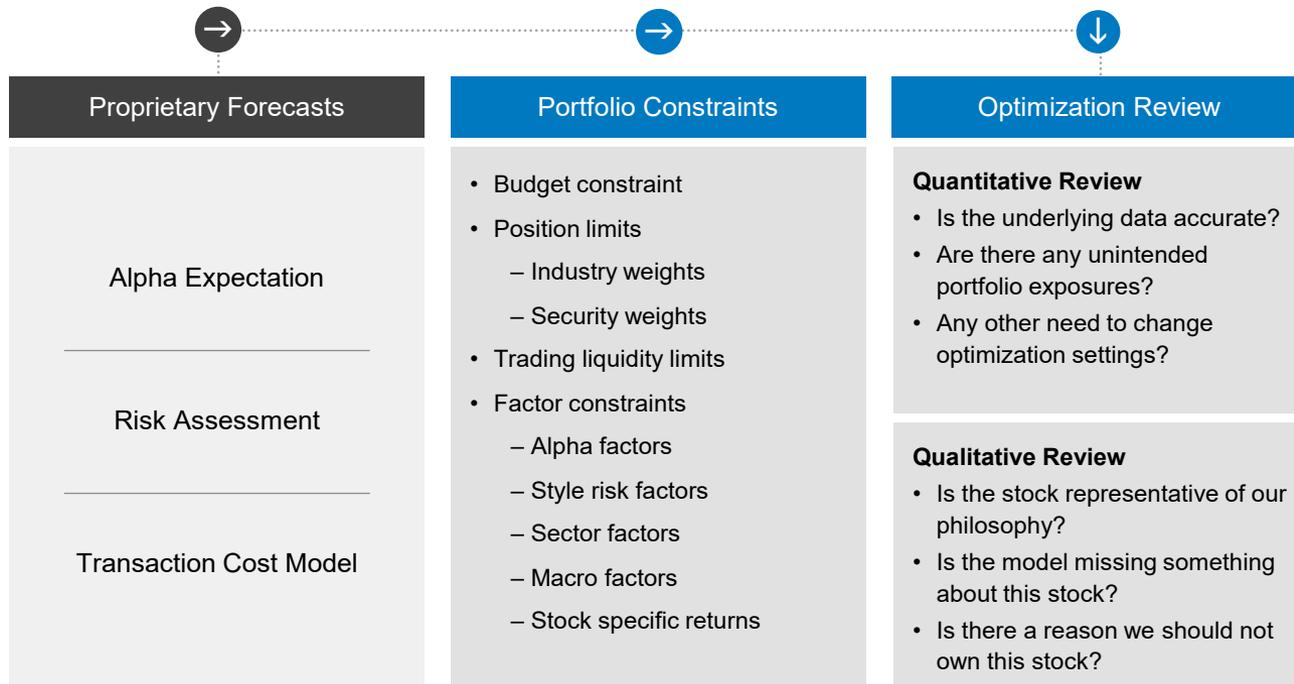
A unique take on modelling tailored to unique characteristics of key sectors

We comprehensively analyze risk through multiple perspectives



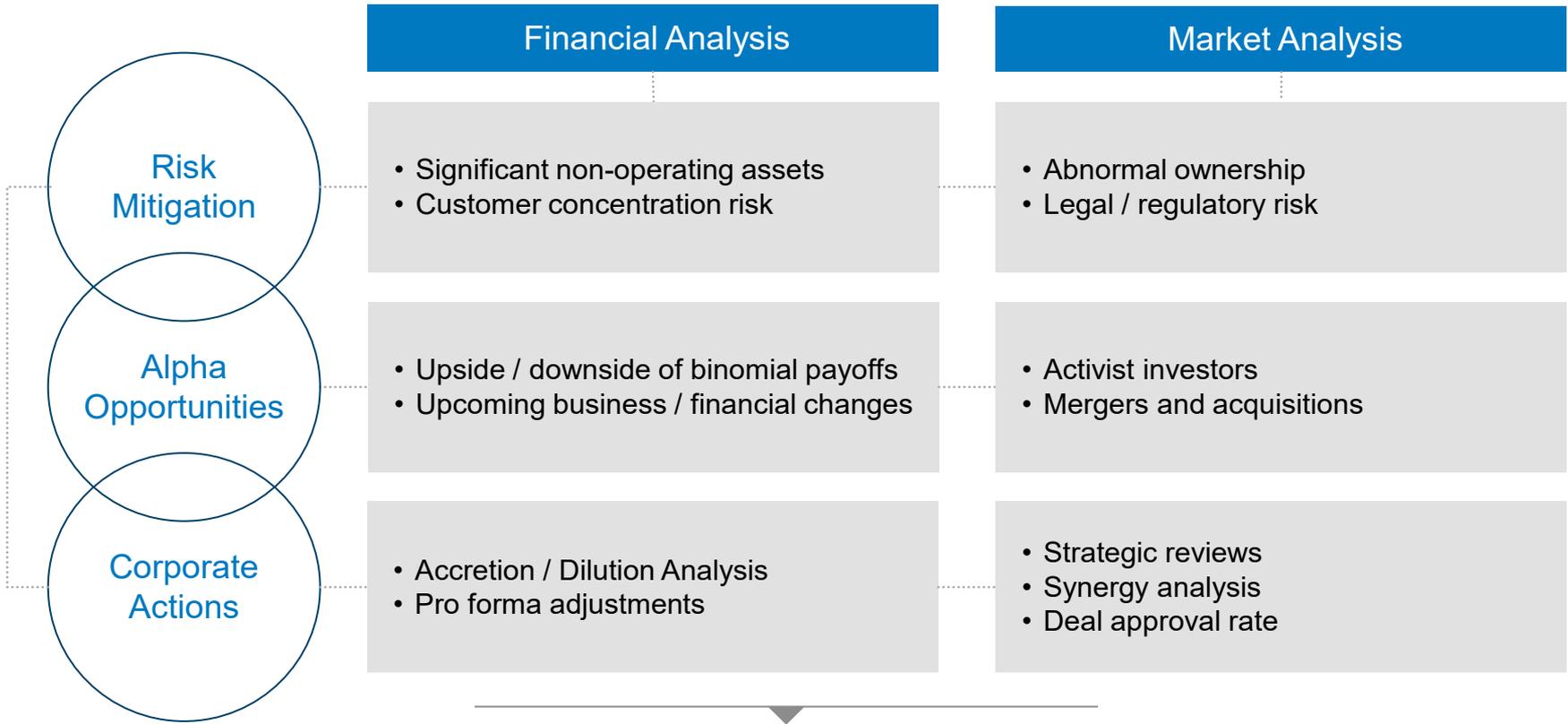
Winning by not losing from multiple angles

We balance return, risk and cost carefully to construct optimal portfolios



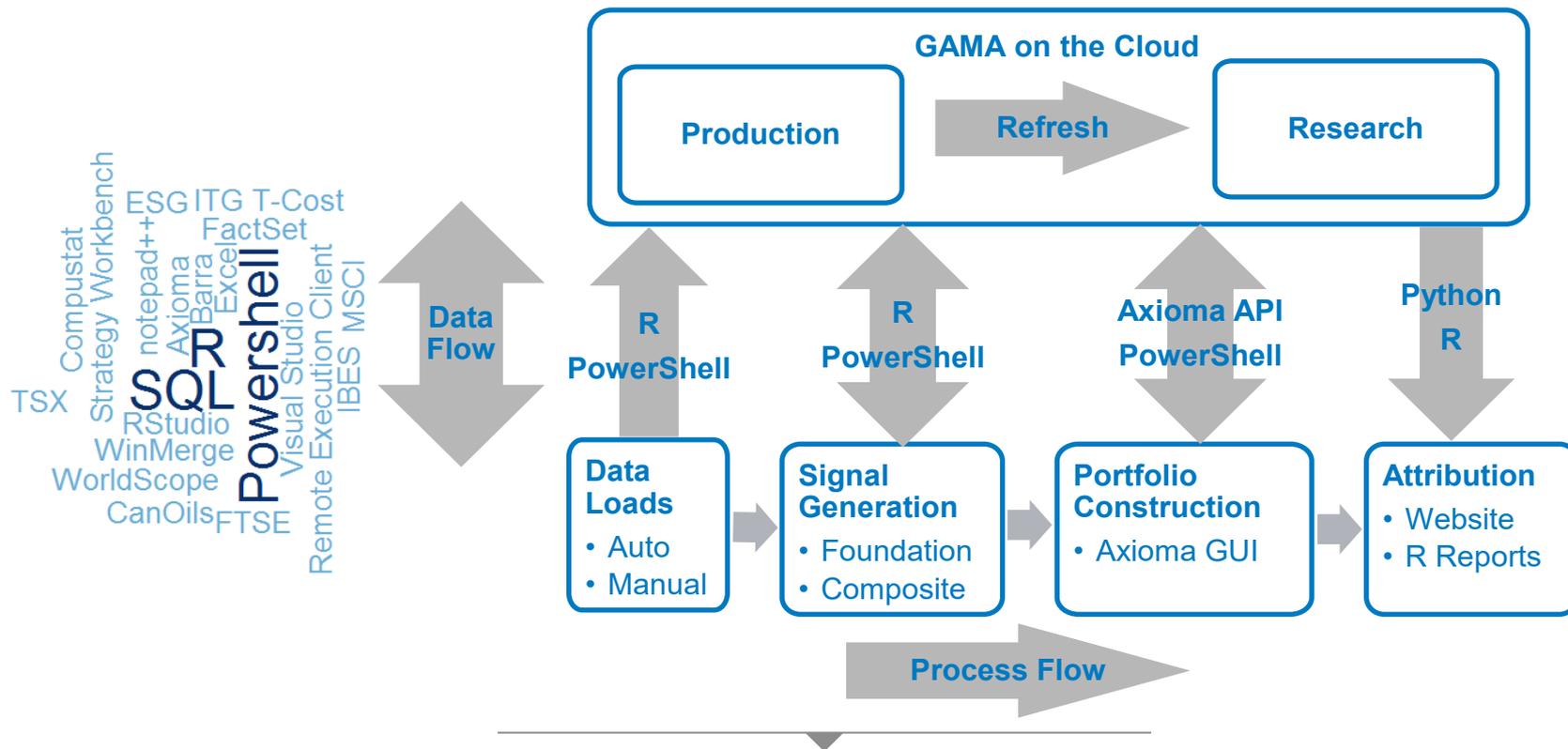
Use the best practices from quantitative portfolio construction...

We make disciplined decisions based on model recommendations and independent analysis on tail risks that quantitative models might miss



...while harvesting portfolio managers' insights

We stay on the leading edge of new technologies through a proprietary GAMA platform on the Amazon cloud



Effective and scalable research and production platform speeds up idea implementations

Data: Industry Standard + Alternative Data

Fundamental Data

Daily data from CompStat and Worldscope covering thousands of global companies' fundamental information worldwide.

Trading Cost Data

Trading Cost estimates from ITG covering global stocks.

Borrow rates for US and Canada stocks daily from two leading Canadian Prime Brokers.

Market Data

Price, volume, short interest data.

Risk Data

Industry Standard risk models from **MSCI Barra** covering Canada and Global stock universes.

ESG Risk assessment Data

Alternative Data

Industry specific data for Oil and Gas industry.

Data related to precious metals miners, short interest

Appendix

Comparison of Long Short Equity Funds

The BMO Long Short US Equity ETF, BMO Long Short Canadian Equity ETF, Fidelity Long Short Alternative Fund, and Picton Mahoney Fortified Long Short Alternative Fund ETF, are all liquid alternative investments with a long short equity investment strategy.

As of March 31, 2025	1 mo	3 mo	6 mo	1 yr	3 yr	Inception	Inception Date
Fidelity Long/Short Alternative Fund	-3.25%	2.51%	7.07%	11.15%	11.82%	15.01%	10/16/2020
Picton Mahoney Fortified Long Short Alternative Fund ETF	-2.71%	-1.70%	2.26%	10.71%	7.38%	13.86%	7/15/2020
BMO Long Short US Equity ETF	-4.58%	0.11%	10.37%	20.04%	n/a	25.18%	9/27/2023
BMO Long Short Canadian Equity ETF	-0.30%	-0.25%	4.52%	13.51%	n/a	16.80%	9/27/2023

Sources: BMO, Fidelity Investments Canada, Picton Mahoney.

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Disclaimer

For Advisor Use Only

Commissions, management fees and expenses all may be associated with investments in exchange traded funds. Please read the ETF Facts or simplified prospectus of the BMO ETFs before investing. The indicated rates of return are the historical annual compounded total returns including changes in unit value and reinvestment of all dividends or distributions and do not take into account sales, redemption, distribution or optional charges or income taxes payable by any unitholder that would have reduced returns. Exchange traded funds are not guaranteed, their values change frequently and past performance may not be repeated.

For a summary of the risks of an investment in the BMO ETFs, please see the specific risks set out in the BMO ETF's simplified prospectus. BMO ETFs trade like stocks, fluctuate in market value and may trade at a discount to their net asset value, which may increase the risk of loss. Distributions are not guaranteed and are subject to change and/or elimination.

BMO ETFs are managed by BMO Asset Management Inc., which is an investment fund manager and a portfolio manager, and a separate legal entity from Bank of Montreal.

The portfolio holdings are subject to change without notice and only represent a small percentage of portfolio holdings. They are not recommendations to buy or sell any particular security.

Any statement that necessarily depends on future events may be a forward-looking statement. Forward-looking statements are not guarantees of performance. They involve risks, uncertainties and assumptions. Although such statements are based on assumptions that are believed to be reasonable, there can be no assurance that actual results will not differ materially from expectations. Investors are cautioned not to rely unduly on any forward-looking statements. In connection with any forward-looking statements, investors should carefully consider the areas of risk described in the most recent simplified prospectus.

Index returns do not reflect transactions costs or the deduction of other fees and expenses and it is not possible to invest directly in an Index. Past performance is not indicative of future results.

All investments involve risk. The value of an ETF can go down as well as up and you could lose money. The risk of an ETF is rated based on the volatility of the ETF's returns using the standardized risk classification methodology mandated by the Canadian Securities Administrators. Historical volatility doesn't tell you how volatile an ETF will be in the future. An ETF with a risk rating of "low" can still lose money. For more information about the risk rating and specific risks that can affect an ETF's returns, see the BMO ETFs' simplified prospectus.

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