



# BMO Asset Management Quantitative Investment Long Short Strategies

Information as of June 30, 2025\*



Global Asset Management

Presented by:  
Quantitative Investments

For advisor use only

\*Unless stated otherwise

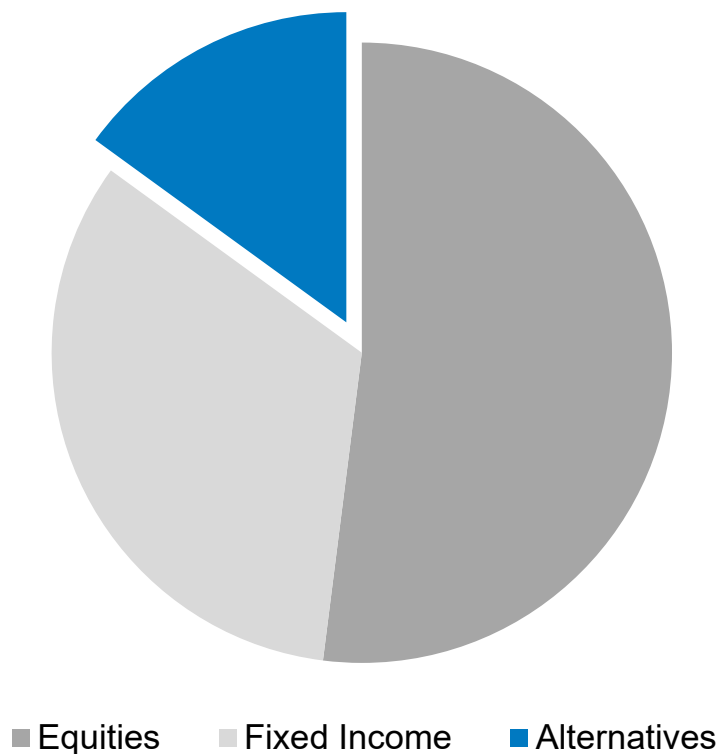
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# Investment Category

# 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

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# 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:  $\approx 0.5$  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\$16.5B**  
Total AUM

**2010**  
Quantitative  
Investing Since

**6**  
Investment  
Professionals

**13**  
Average Years  
of Experience

## Team Specialties

Core Equity

**C\$4.8B**

Low Volatility Equity

**C\$9.4B**

Income Equity

**C\$2.3B**

Source: BMO GAM

**Note:** All figures as of March 31, 2025. Total AUM Includes discretionary AUM of C\$15.4B and non-discretionary AUM of C\$1.1B from model-based mandates.

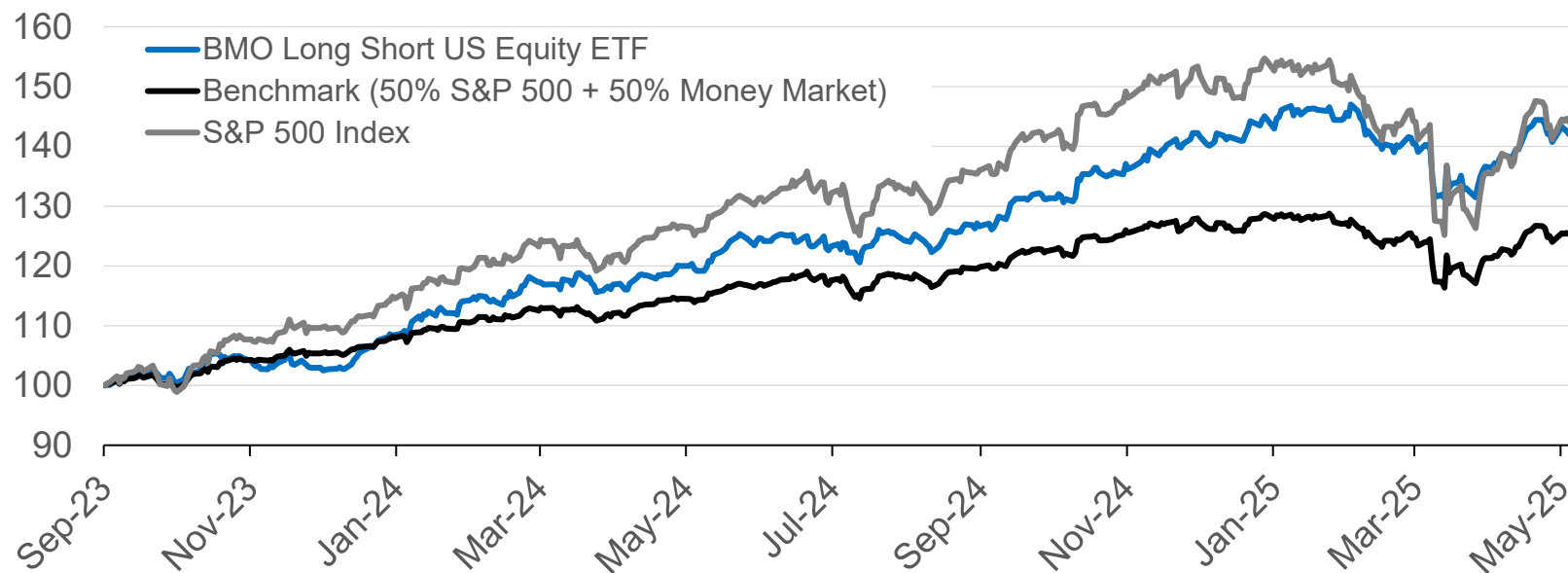
# One Methodology, Many Strategies

| Investment Strategy |                       |                 |                            | Long Short           |                            | Smart Alpha                    |
|---------------------|-----------------------|-----------------|----------------------------|----------------------|----------------------------|--------------------------------|
| Core                |                       |                 |                            |                      |                            |                                |
| 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                         |
| 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 April 30, 2025. \*\* 5-year annualized.



# BMO Long Short US Equity ETF (ZLSU)

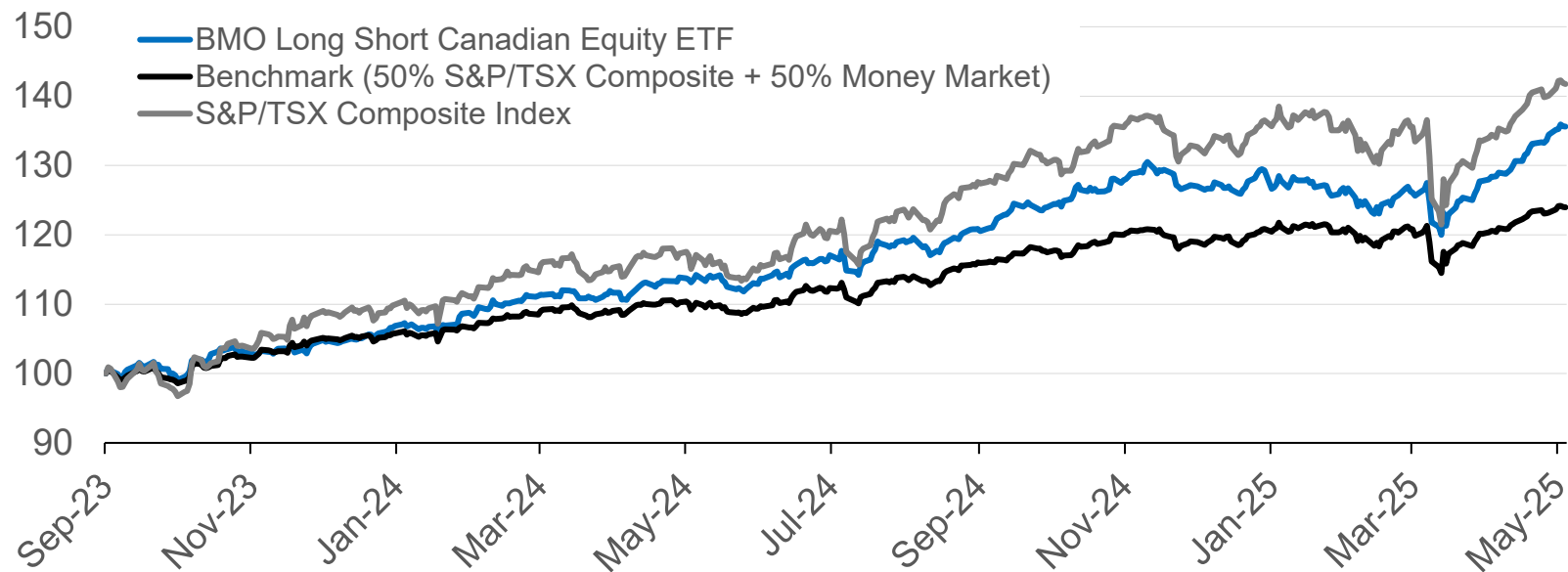


| 9/27/2023 to 5/31/2025       | BMO Long Short US Equity ETF | Benchmark (50% S&P 500 + 50% Money Market) | S&P 500 Index |
|------------------------------|------------------------------|--|---------------|
| <b>Annualized Return</b>     | 23.3%                        | 14.4%                                      | 24.4%         |
| <b>Annualized Volatility</b> | 10.8%                        | 8.6%                                       | 17.2%         |
| <b>Sharpe Ratio</b>          | 1.67                         | 1.10                                       | 1.11          |
| <b>Maximum Drawdown</b>      | 10.7%                        | 9.7%                                       | 19.1%         |

Source: Bloomberg, as of May 31, 2025. Past performance is not indicative of future results.

Note: BMO Long Short US Equity ETF performance: 1 yr: 19.16% SI: 23.32%

# BMO Long Short Canadian Equity ETF (ZLSC)

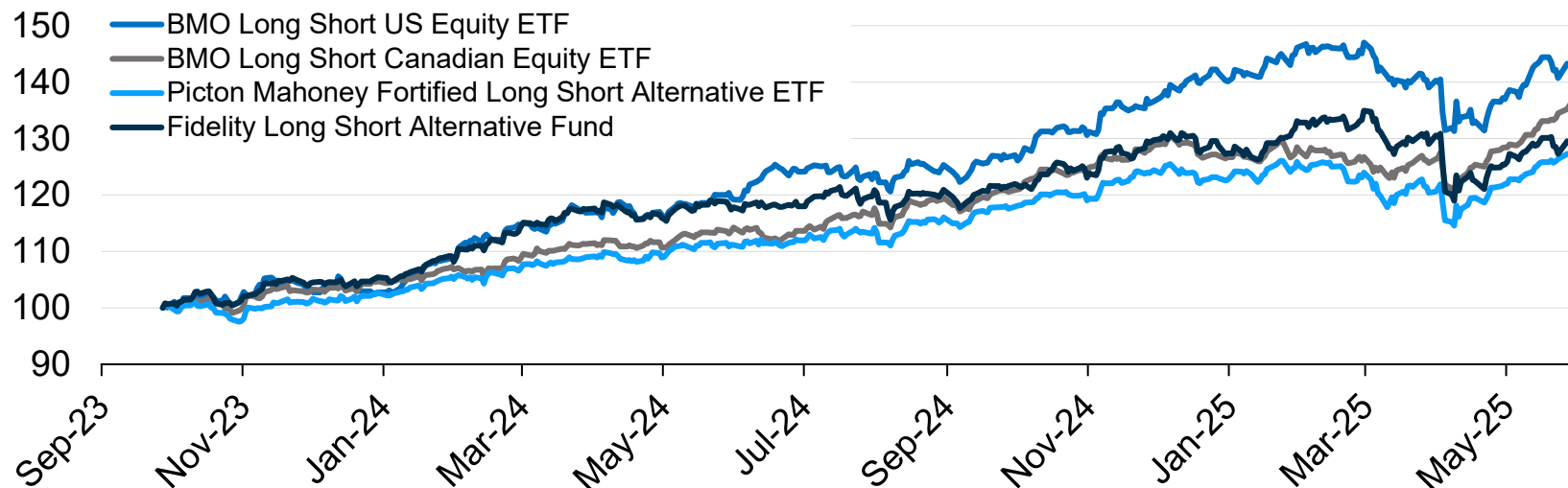


| 9/27/2023 to 5/31/2025       | BMO Long Short Canadian Equity ETF | Benchmark (50% S&P/TSX Composite + 50% Money Market) | S&P/TSX Composite Index |
|------------------------------|------------------------------------|--|-------------------------|
| <b>Annualized Return</b>     | 20.0%                              | 13.7%  | 23.2%                   |
| <b>Annualized Volatility</b> | 8.1%                               | 6.5%   | 13.1%                   |
| <b>Sharpe Ratio</b>          | 1.84                               | 1.35   | 1.37                    |
| <b>Maximum Drawdown</b>      | 8.1%                               | 6.0%   | 12.3%                   |

Source: Bloomberg, as of May 31, 2025. Past performance is not indicative of future results.

Note: BMO Long Short Canadian Equity ETF performance: 1 yr: 18.73% SI: 19.96%

# Strong Risk Adjusted Returns with Lower Fees



| 9/27/2023 to 5/31/2025       | BMO Long Short US Equity ETF | BMO Long Short Canadian Equity ETF | Picton Mahoney Fortified Long Short Alternative ETF | Fidelity Long Short Alternative Fund – Series F |
|------------------------------|------------------------------|------------------------------------|---|---|
| <b>Annualized Return</b>     | 23.3%                        | 20.0%                              | 15.4%   | 16.3%   |
| <b>Annualized Volatility</b> | 10.8%                        | 8.1%                               | 8.4%  | 10.5%   |
| <b>Sharpe Ratio</b>          | 1.67                         | 1.83                               | 1.24  | 1.07  |
| <b>Maximum Drawdown</b>      | 10.7%                        | 8.1%                               | 9.1%  | 11.8%   |
| <b>Management Fee</b>        | 0.65%                        | 0.65%                              | 0.95%   | 1.15%   |
| <b>Performance Fee</b>       | 0%                           | 0%                                 | 20%   | 0%  |

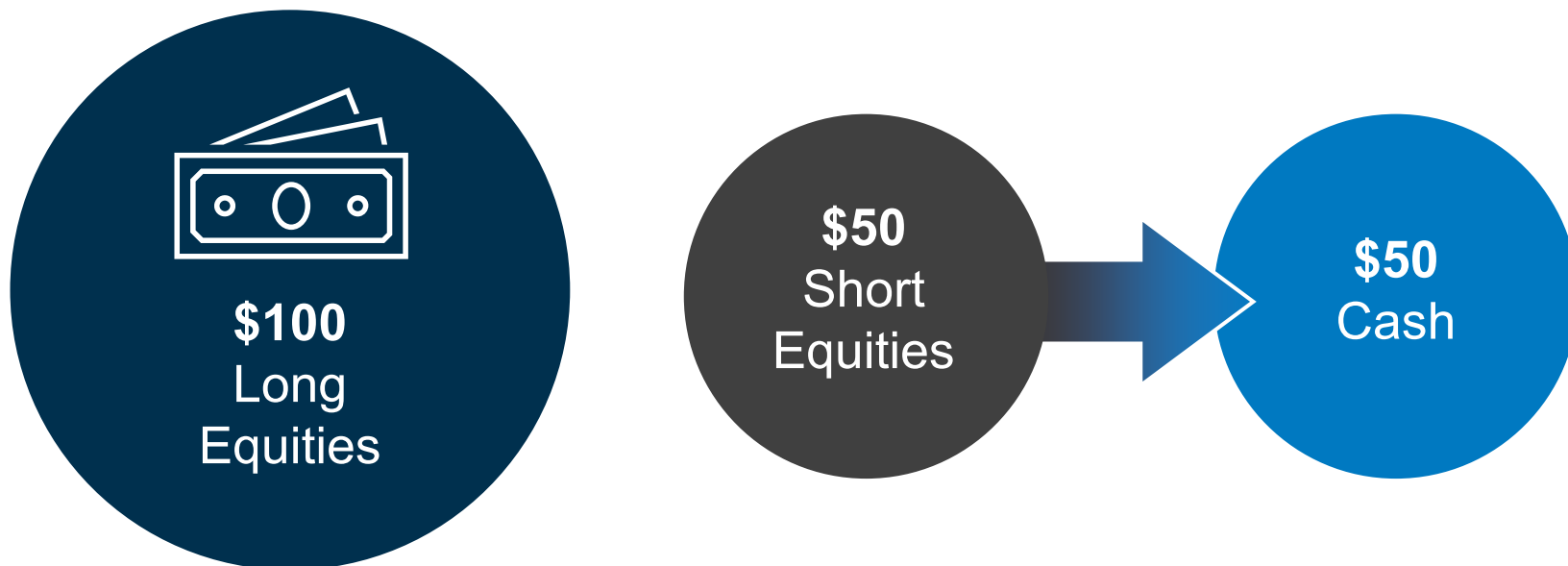
Sources: BMO GAM & Bloomberg, as of May 31, 2025.

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.

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# Investment Process

# What is a 100:50 Long-Short Fund?

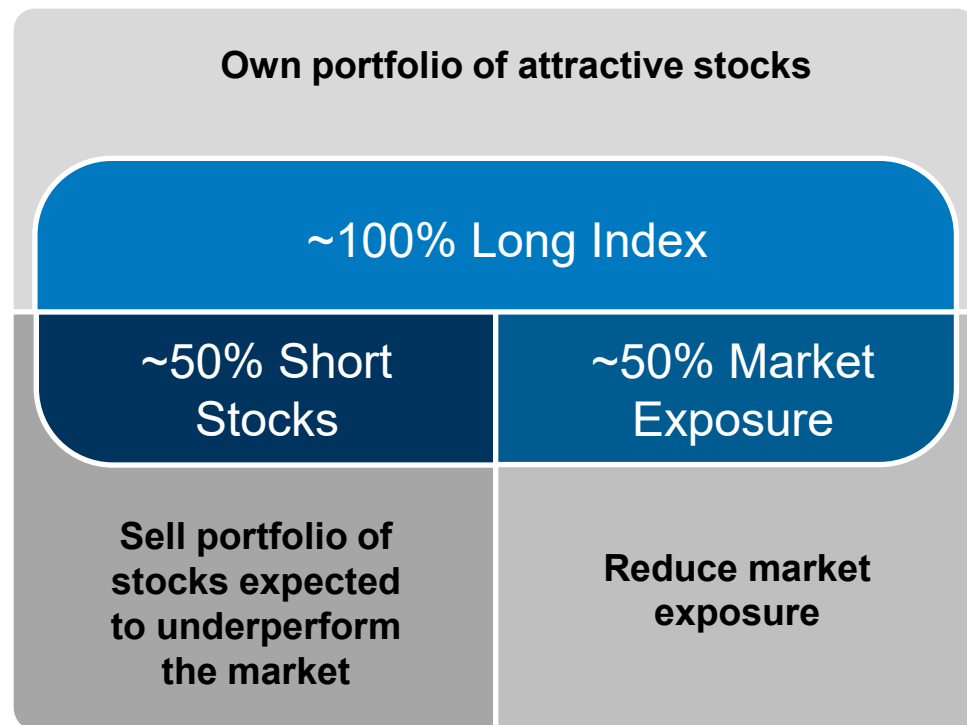


**1. Buy stocks we like  
("long position")**

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

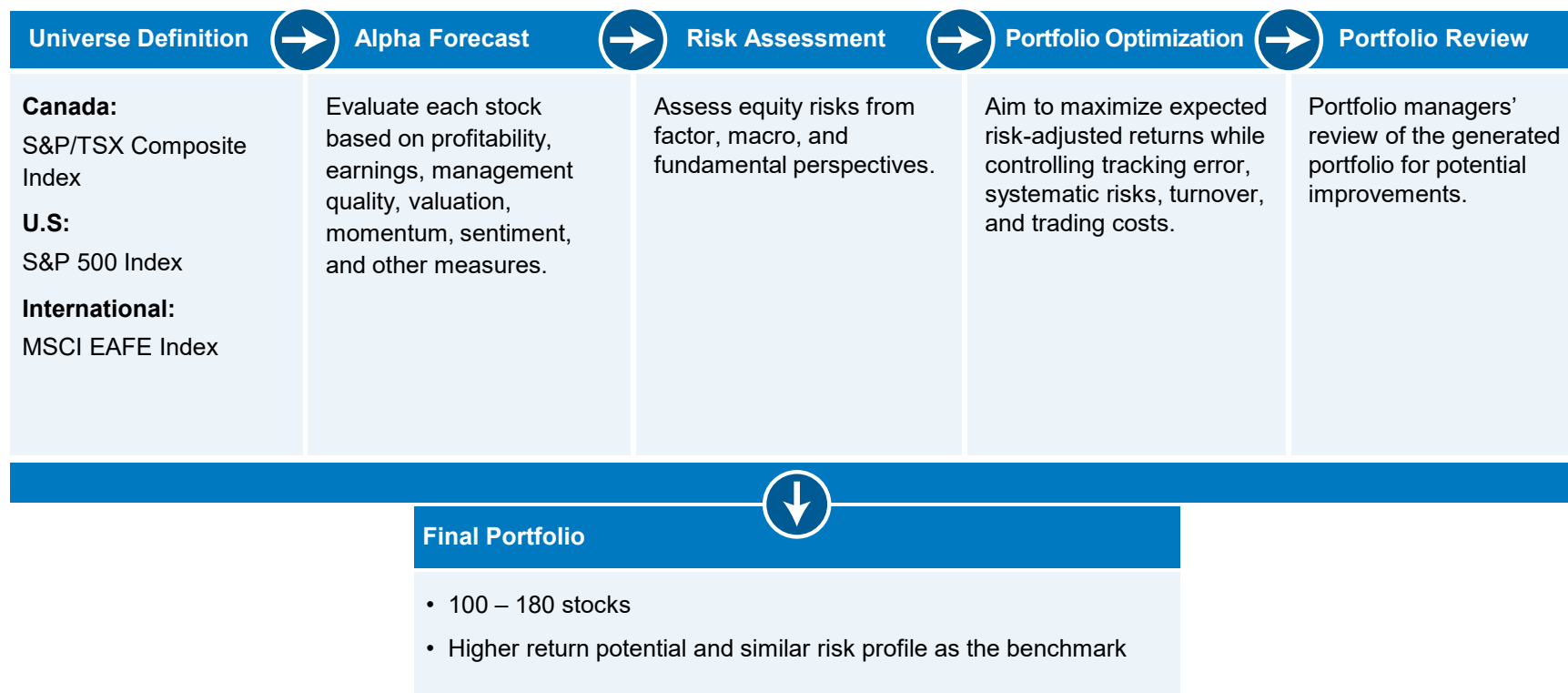
**3. Keep cash as  
collateral**

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

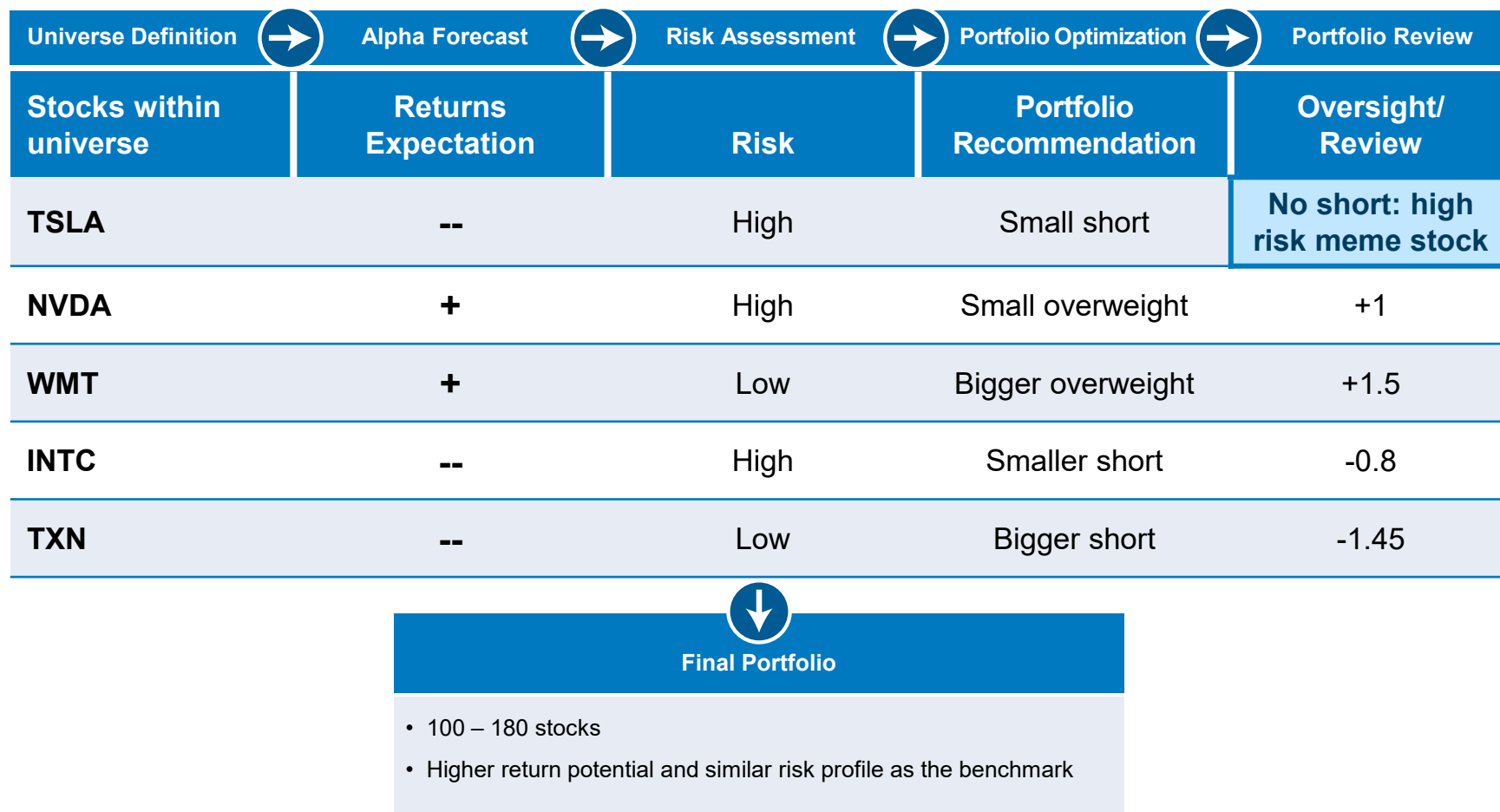
The fundamentals-based view of Tesla was very negative, due to the high valuation and falling profitability as well as future earning expectations due to their price cuts

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?

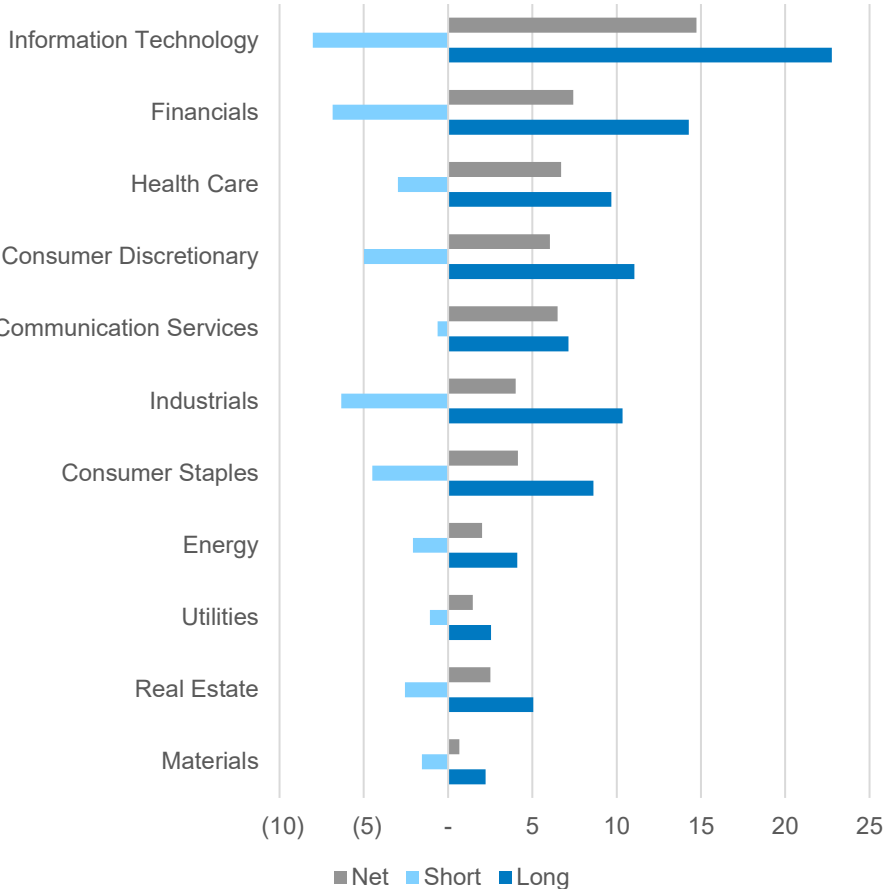


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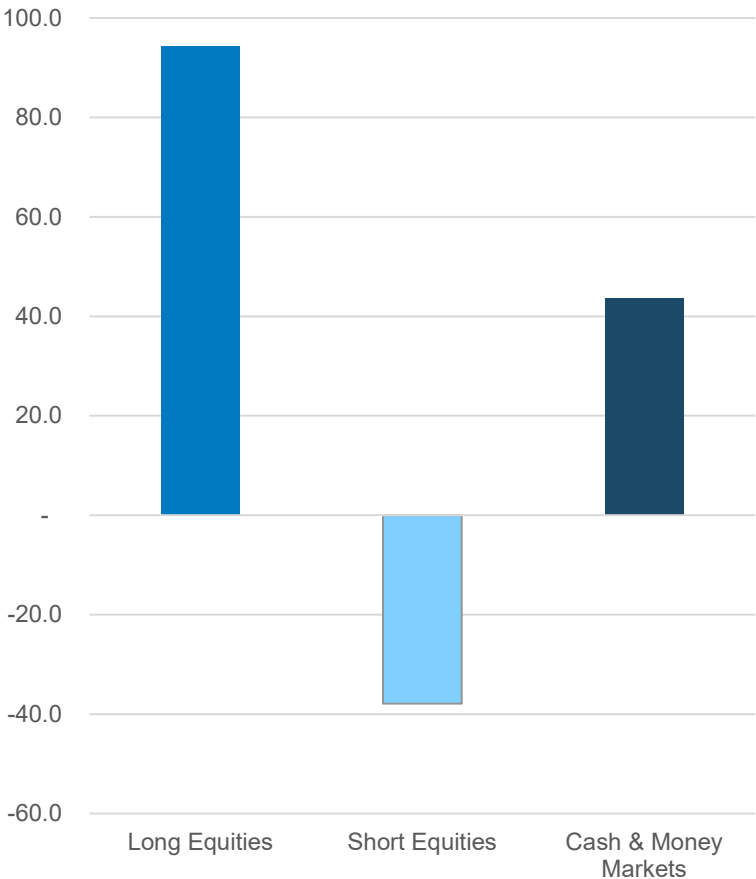
# Portfolio Exposures and Positioning

# ZLSU Sector Weights and Characteristics

## Sector Allocation



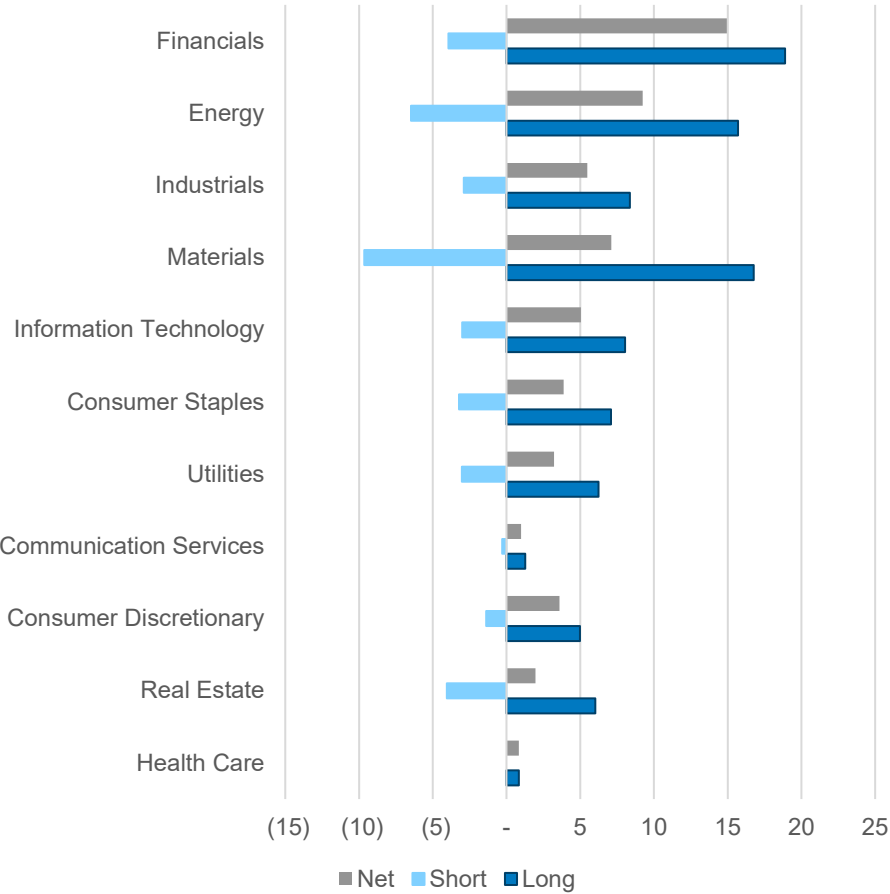
## Long and Short Weights



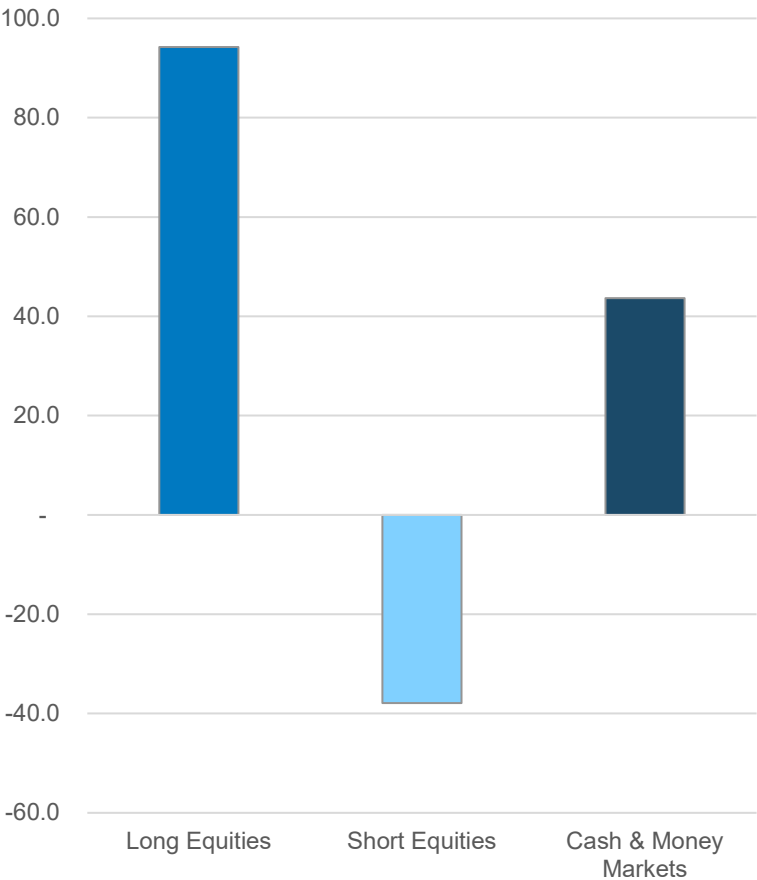
Benchmark: 50/50 S&P500 / Bloomberg U.S. Treasury Total Return Index (C\$).  
Source: BMO GAM, Bloomberg. Subject to change without notice.

# ZLSC Sector Weights and Characteristics

Sector Allocation



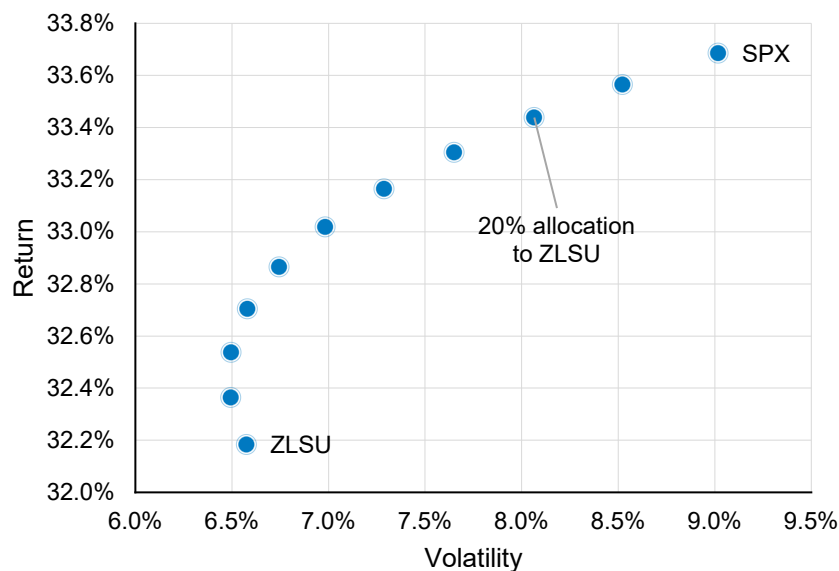
Long and Short Weights



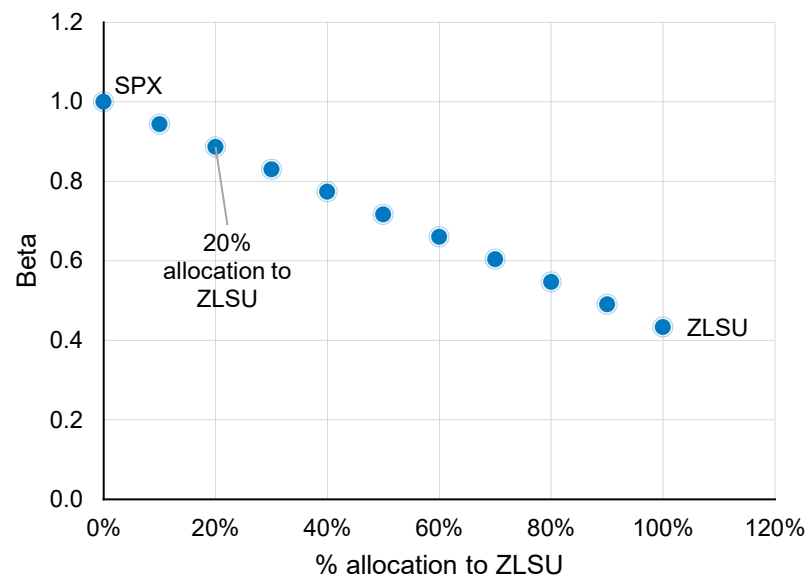
Benchmark: 50/50 S&P/TSX / FTSE Canada 91 Day T-Bill Index.  
 Source: BMO GAM, Bloomberg. Subject to Change without notice.

# 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)



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# 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

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# Quantitative Investing Benefits

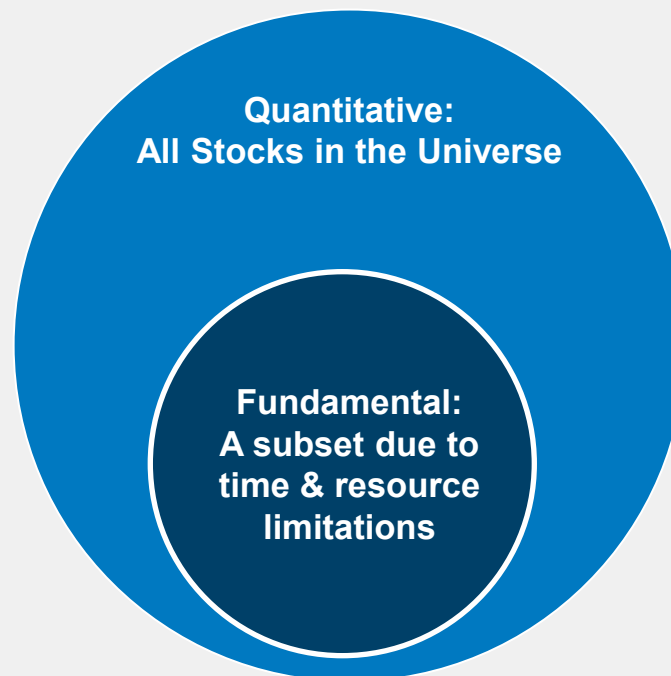
# Data-Driven & Systematic

## 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\*

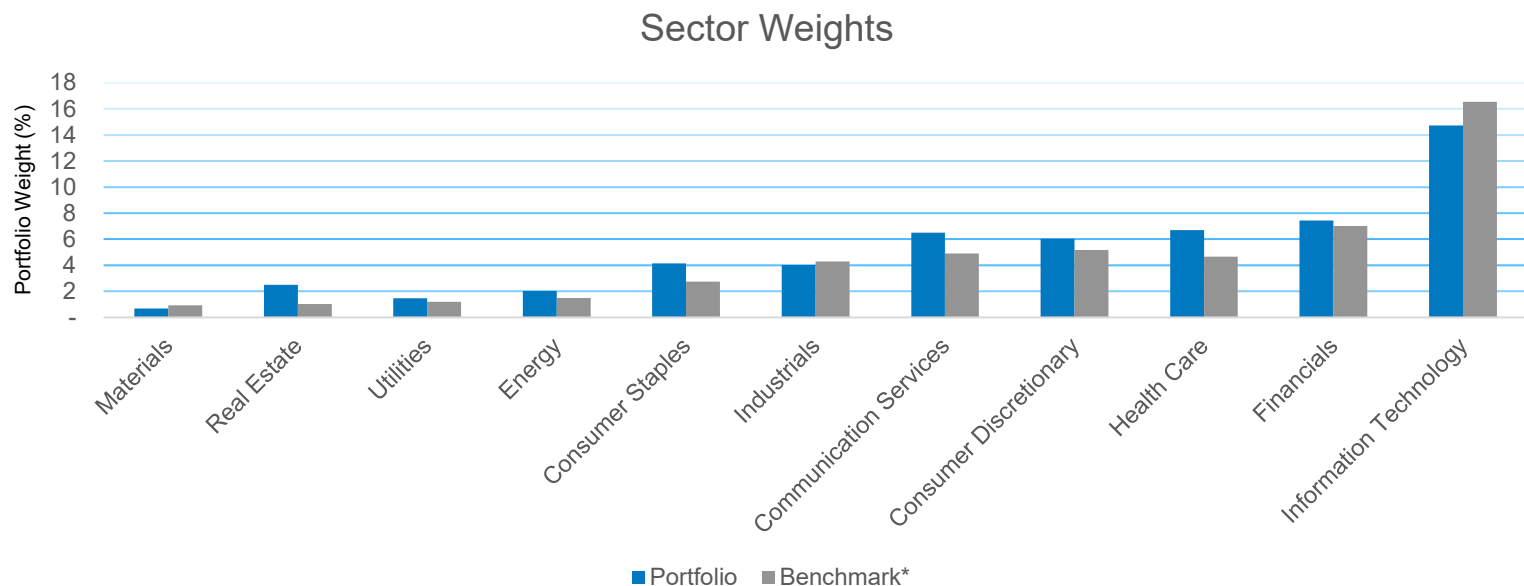
- **Systematic processes:** Strategies follow defined models, minimizing discretionary decisions.
- **Consistent factors:** The same set of factors is applied consistently across different time periods and geographic regions.
- **Ongoing Rebalancing:** Portfolios are regularly rebalanced in a disciplined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

\*Past Performance is not indicative of future results.

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# Portfolio Characteristics

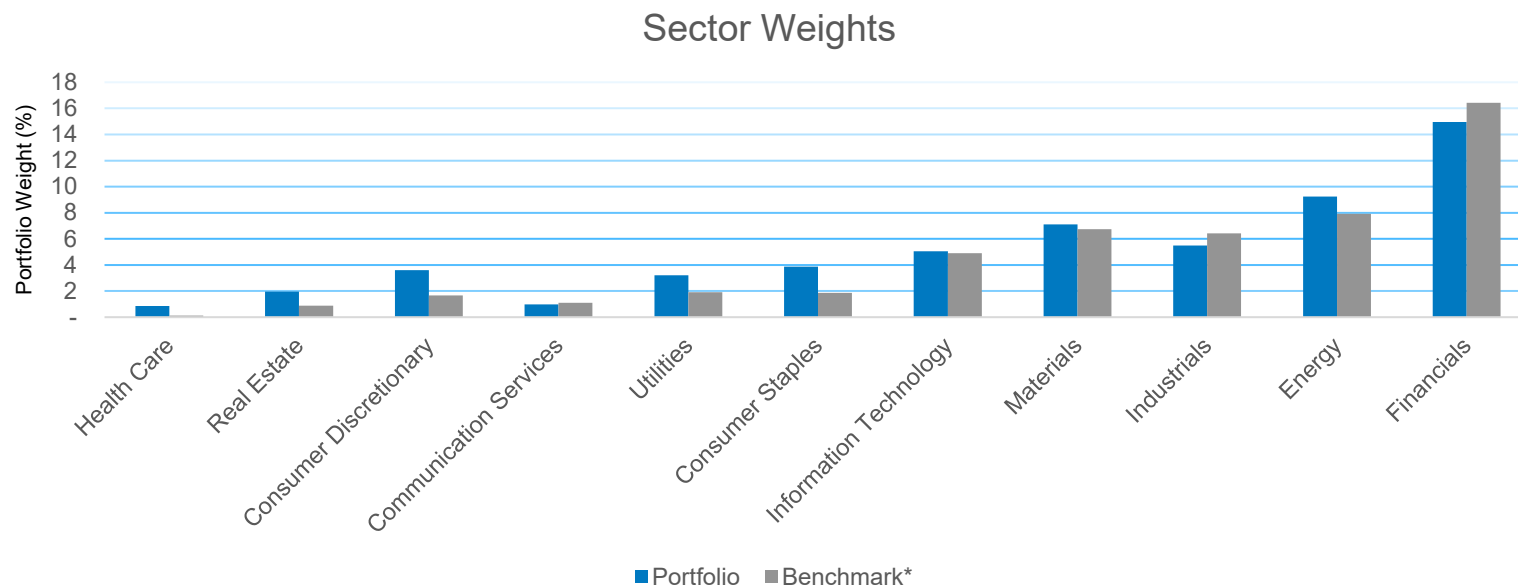
# ZLSU Sector Weights and Characteristics



|                        | ZLSU Longs | ZLSU Shorts | S&P 500 |
|------------------------|------------|-------------|---------|
| ROE                    | 21.5       | 9.4         | 18.1    |
| Forward ROE            | 50.8       | 13.9        | 44.3    |
| Free Cash Flow Growth  | 15.5       | 2.7         | 17.4    |
| Free Cash Flow Yield   | 4.2        | 2.2         | 3.0     |
| Earnings Yield         | 4.0        | 2.9         | 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 GAM, Bloomberg. Subject to change without notice.

# ZLSC Sector Weights and Characteristics



|                        | ZLSC Longs | ZLSC Shorts | S&P/TSX |
|------------------------|------------|-------------|---------|
| ROE                    | 11.9       | 3.5         | 18.1    |
| Forward ROE            | 19.6       | 12.1        | 44.3    |
| Free Cash Flow Growth  | 21.4       | 4.5         | 17.4    |
| Free Cash Flow Yield   | 6.9        | 1.2         | 3.0     |
| Earnings Yield         | 5.4        | 6.2         | 3.8     |
| Debt/Ebitda            | 3.5        | 3.7         | 3.0     |
| Analyst Recommendation | 4.3        | 3.9         | 4.3     |

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

# Strong Risk Adjusted Returns with Lower Fees

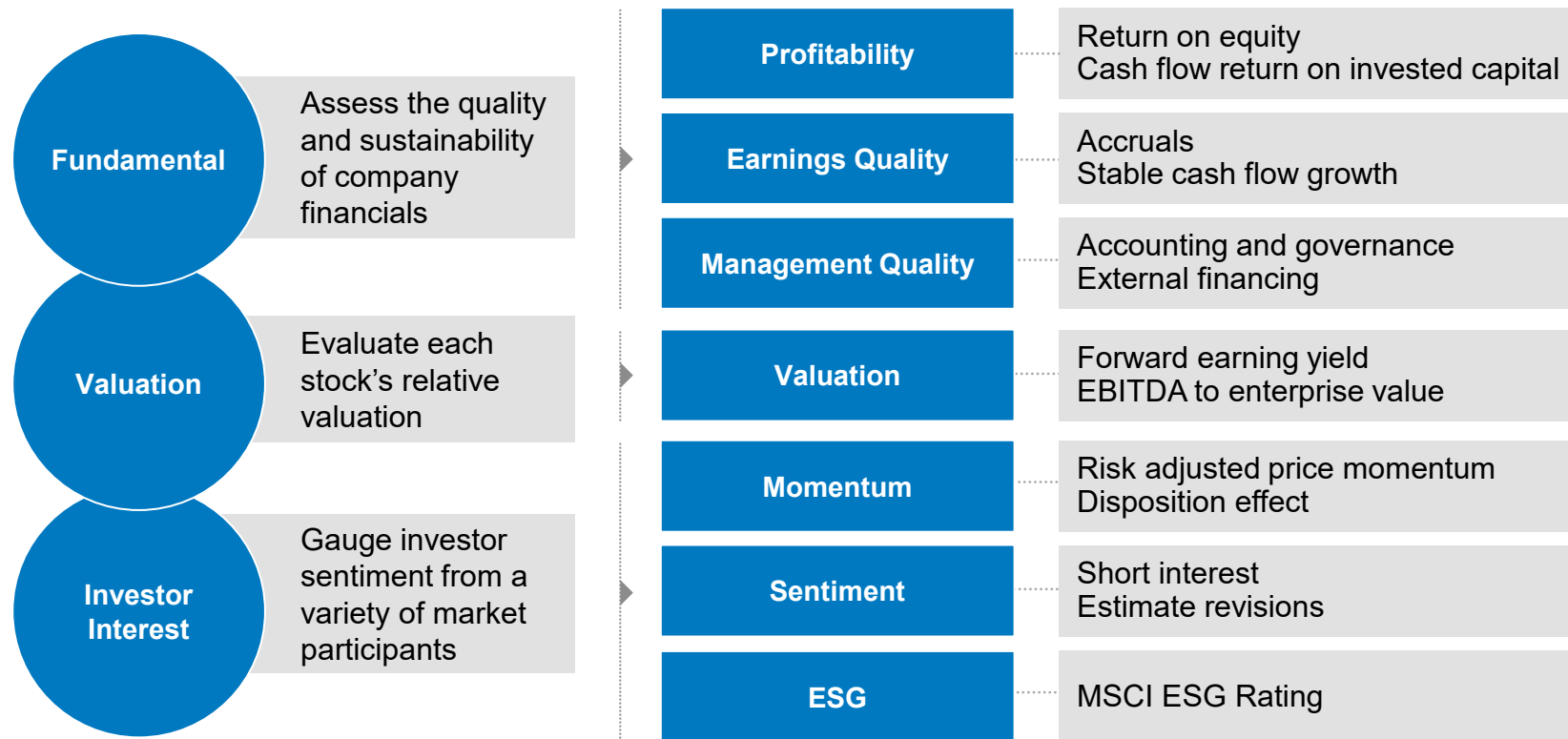
| Data: 26/09/23 - 31/05/25                  | BMO Long Short<br>Canadian Equity<br>ETF (ZLSC) | BMO Long Short<br>US Equity ETF<br>(ZLSU) | PICTON Long Short<br>Equity Alternative<br>Fund – ETF Series<br>(PFLS) | Fidelity<br>Long/Short<br>Alternative Fund –<br>ETF Series<br>(FLSA) - since<br>Feb 5 2024 |
|--|---|---|--|--|
| <b>Returns (Annualized Net)</b>            | 20.0  | 23.3                                      | 15.4   | 16.3   |
| <b>Volatility</b>                          | 8.1   | 10.8                                      | 8.4  | 10.5   |
| <b>Risk-Adjusted Return (Sharpe Ratio)</b> | 1.83  | 1.67                                      | 1.24   | 1.07   |
| <b>Max Drawdown</b>                        | -8.1  | -10.7                                     | -9.1   | -11.8  |
| <b>Management Fee</b>                      | 0.65%   | 0.65%                                     | 0.95%  | 1.15%  |
| <b>Performance Fee</b>                     | 0.00%   | 0.00%                                     | 20.00%   | 0.00%  |
| <b>Performance Fee hurdle</b>              | n/a   | n/a                                       | 2%   | n/a  |
| <b>Style</b>                               | Long/Short                                      | Long/Short                                | Long/Short   | Long/Short   |
| <b>Invests in</b>                          | Canada Equities                                 | US Equities                               | Canada & US<br>Equities  | Canada & US<br>Equities  |



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# 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

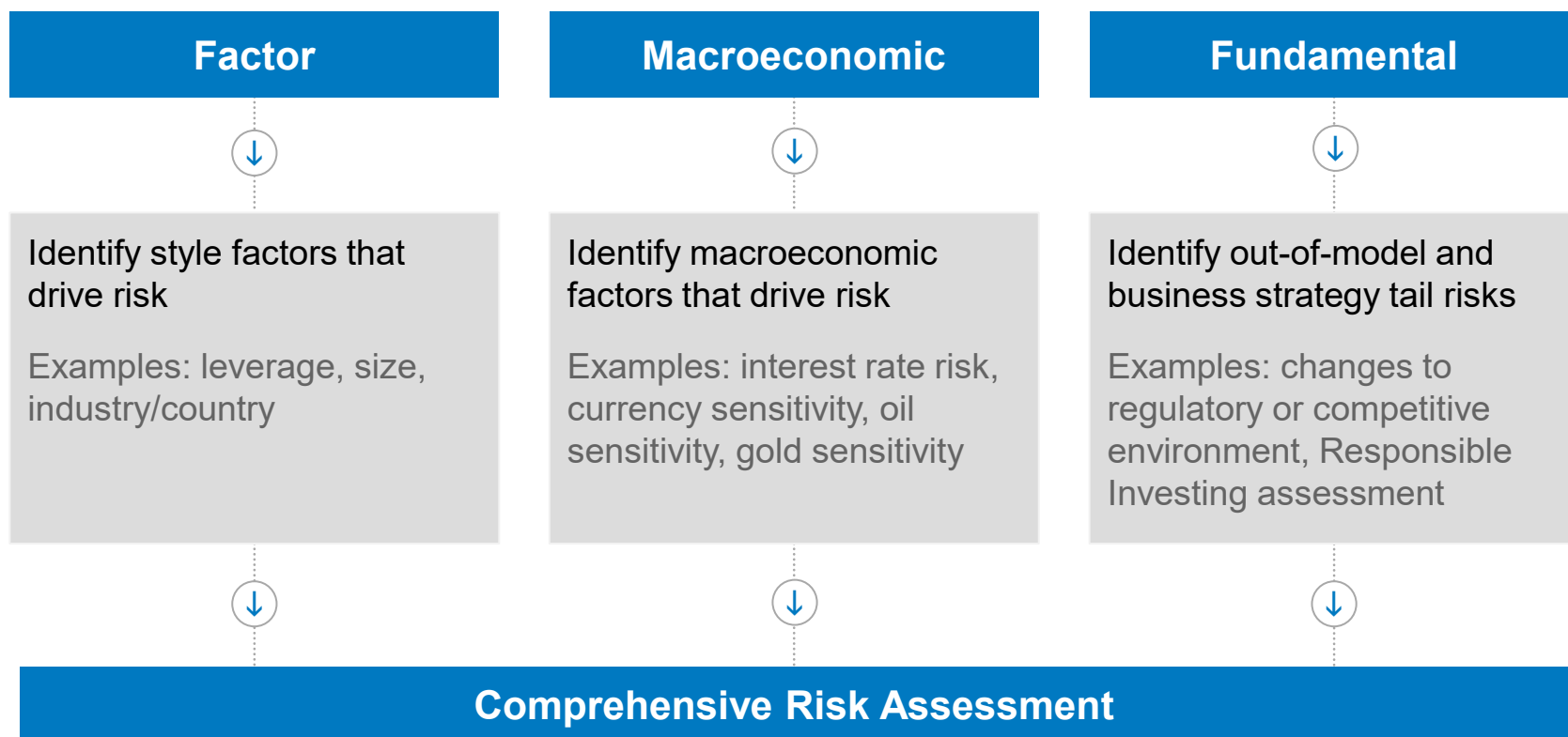
## Model

| Factor |                    | General                | Bank                                   | Energy                             | REITs               | Japan                                  |
|--------|--------------------|------------------------|--|------------------------------------|---------------------|--|
|        | 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

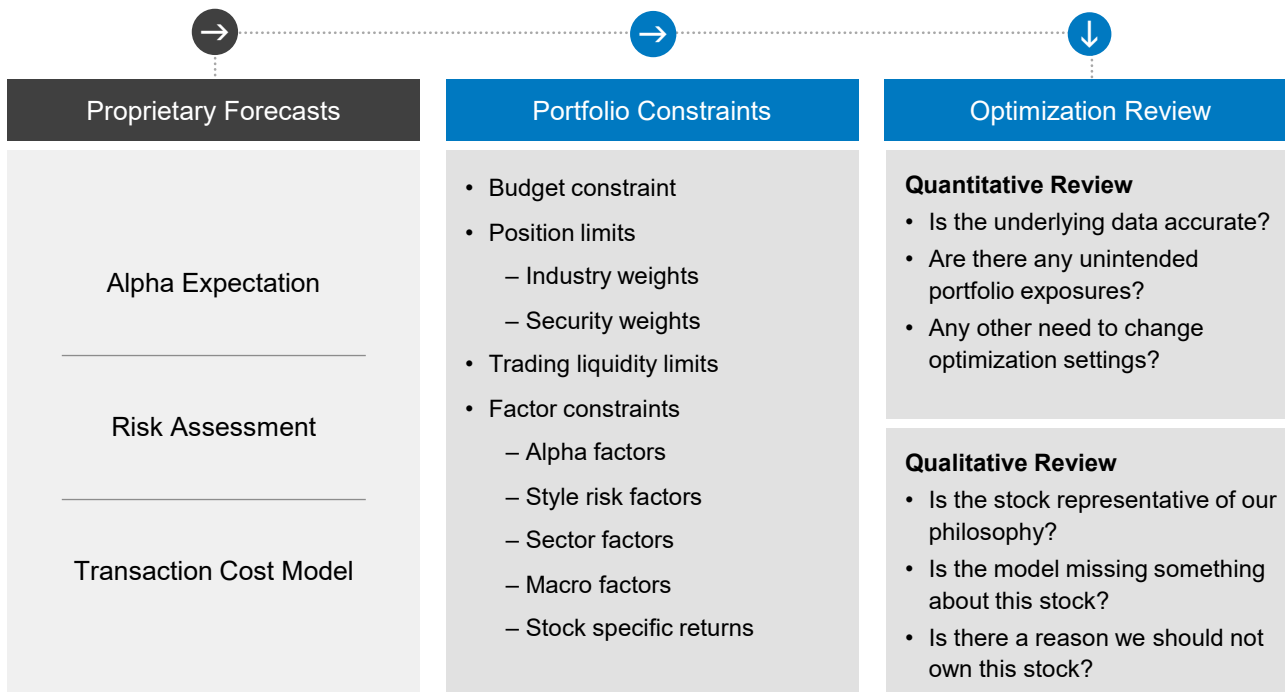
A unique take on modelling tailored to unique characteristics of key sectors

## We comprehensively analyze risk through multiple perspectives



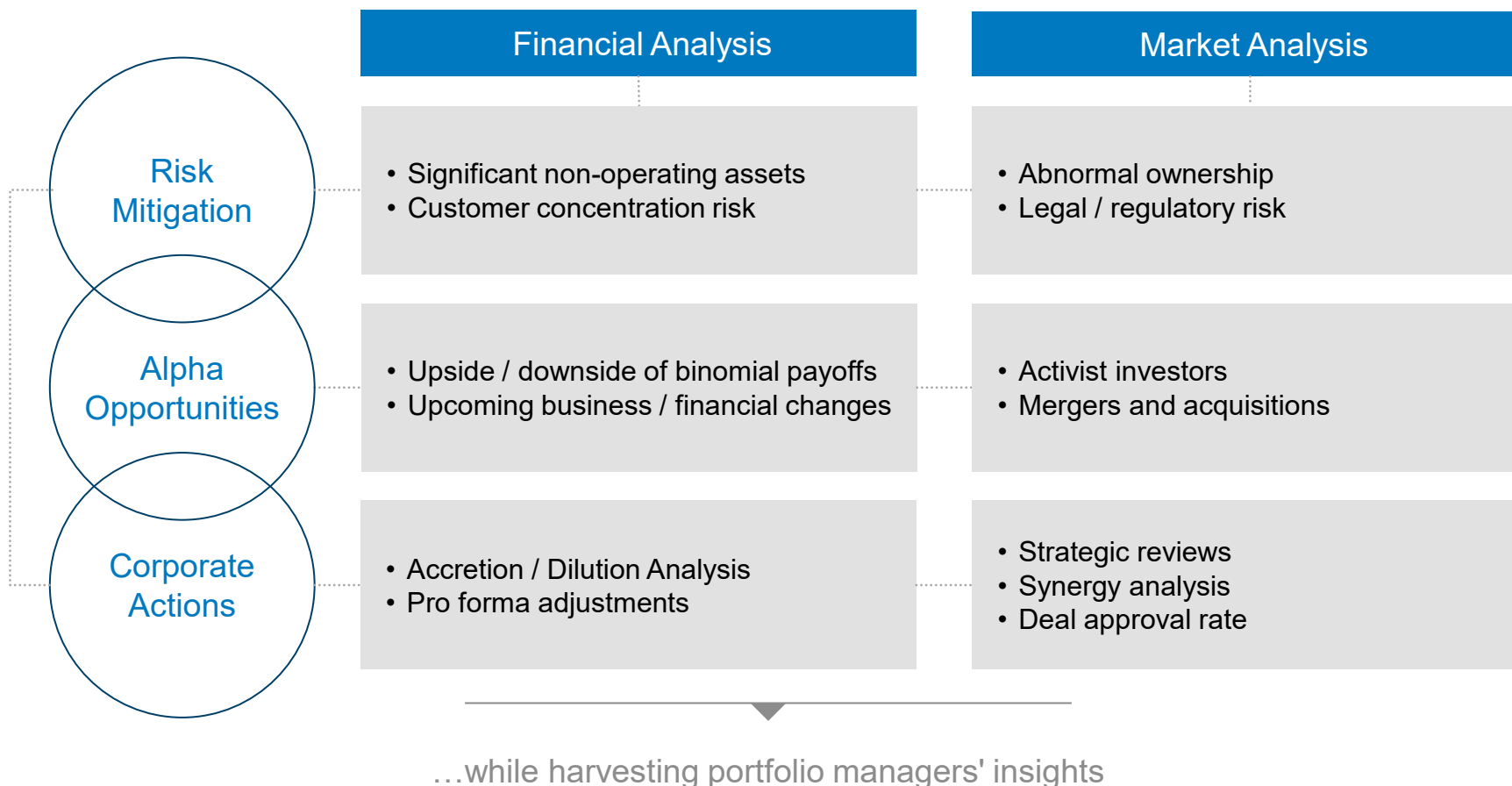
Winning by not losing from multiple angles

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



Use the best practices from quantitative portfolio construction...

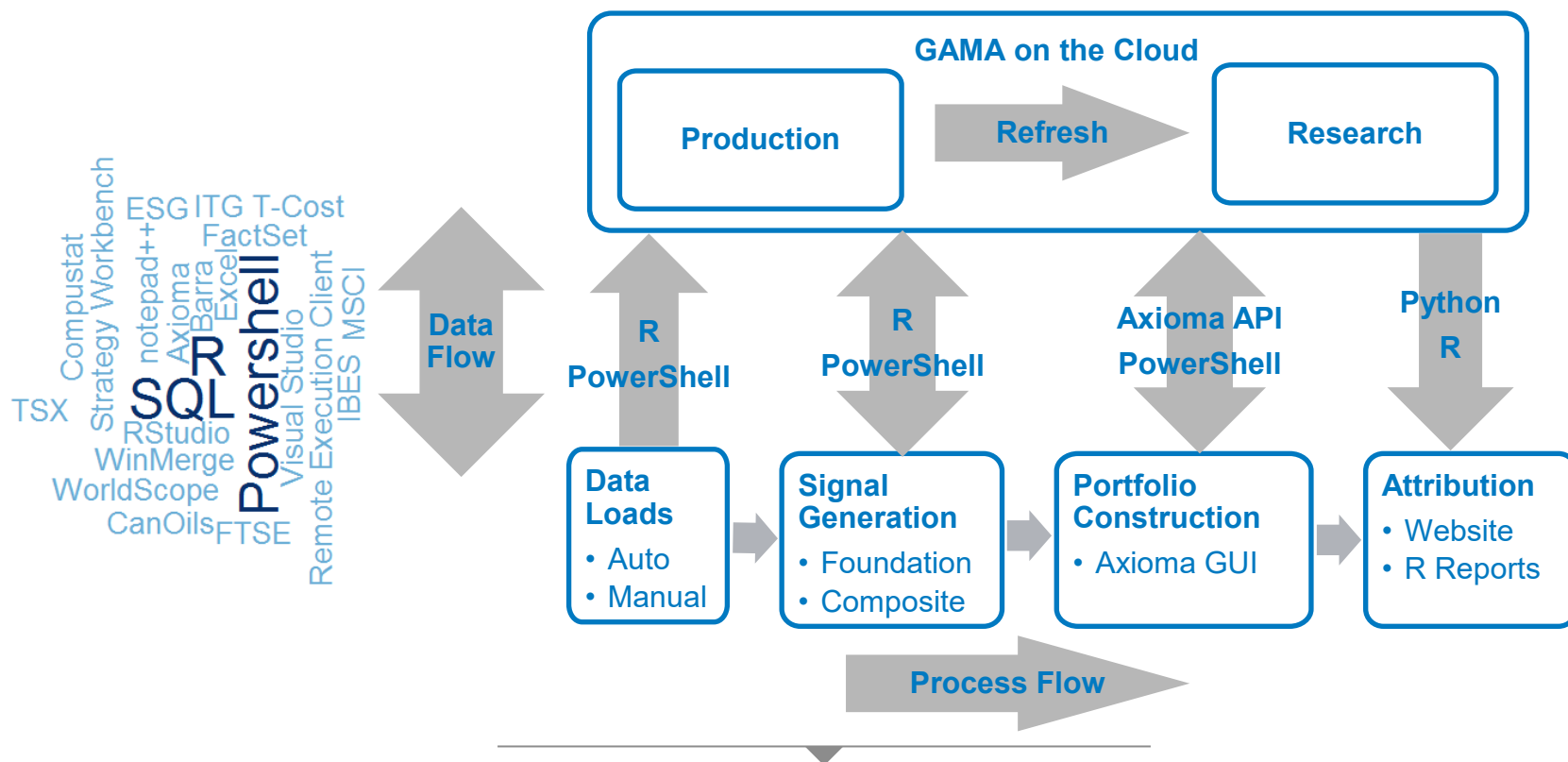
**We make disciplined decisions based on model recommendations and independent analysis on tail risks that quantitative models might miss**



# Cloud-based Technology Platform

|                |                       |              |        |
|----------------|-----------------------|--------------|--------|
| Alpha          | Risk                  | Optimization | Review |
| Cloud Platform | Responsible Investing |              |        |

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

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## 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



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# 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 (Series F), and PICTON Long Short Equity Alternative Fund (ETF Series), 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 |
|--|-------|--------|--------|--------|--------|-----------|----------------|
| <b>Fidelity Long/Short Alternative Fund – Series F</b>                     | 1.60% | 0.21%  | 2.72%  | 10.89% | 16.16% | 14.22%    | 10/16/2020     |
| <b>Picton Mahoney Fortified Long Short Alternative – ETF Series (PFLS)</b> | 1.60% | 7.06%  | 5.24%  | 15.35% | 13.29% | 14.53%    | 7/15/2020      |
| <b>BMO Long Short US Equity ETF (ZLSU)</b>                                 | 1.61% | 2.88%  | 2.99%  | 16.24% | n/a    | 23.21%    | 9/27/2023      |
| <b>BMO Long Short Canadian Equity ETF (ZLSC)</b>                           | 3.19% | 10.75% | 10.47% | 23.15% | n/a    | 21.07%    | 9/27/2023      |

Sources: Morningstar, as of June 30, 2025.

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.

# Disclaimer

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## 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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