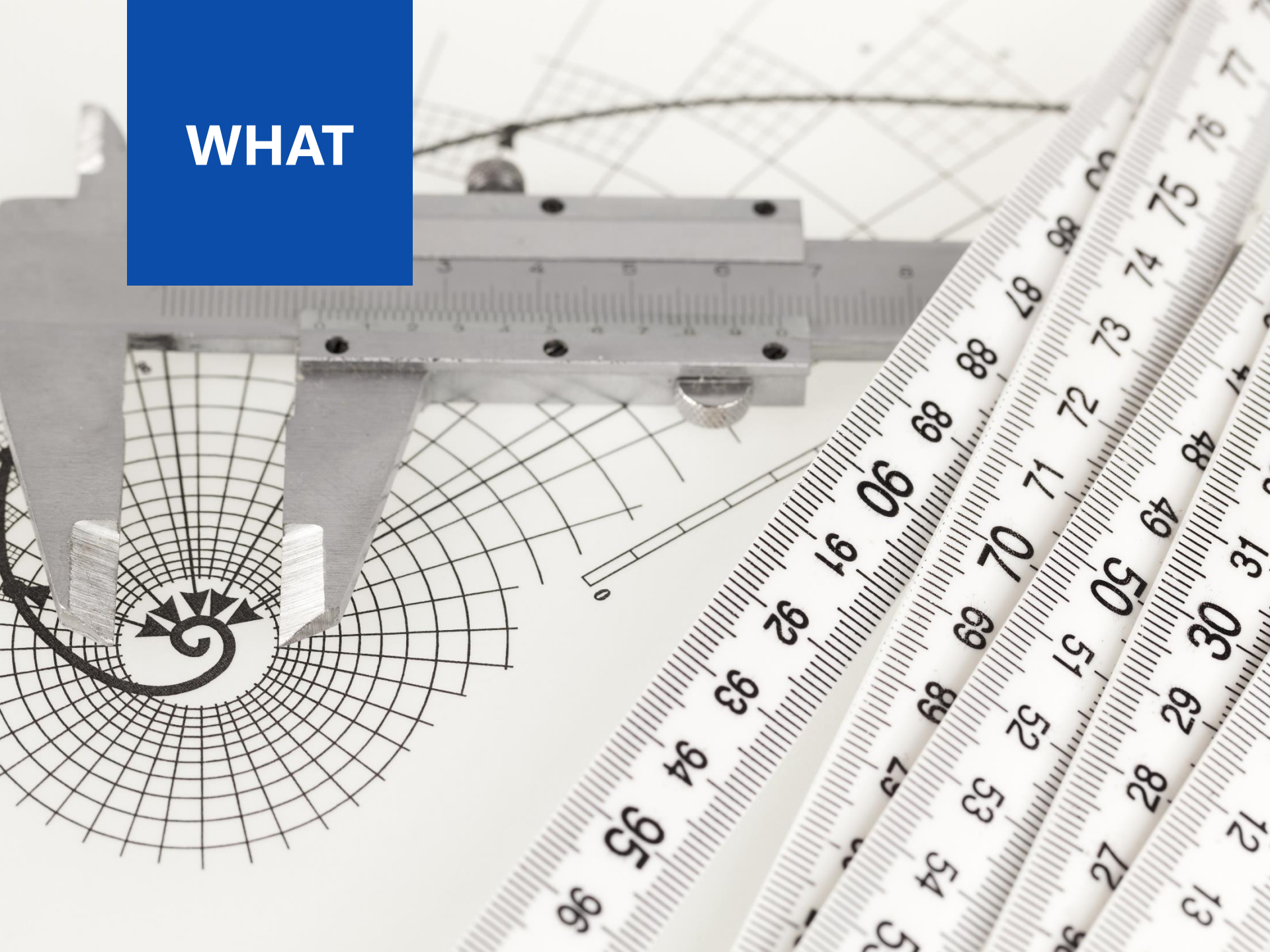# CANADIAN TACTICAL BOND

FACTOR-BASED MODEL PORTFOLIO STRATEGY

2020/01

WHAT

Summary

Key Points in a Nutshell

1 We are proud to introduce the Factor-Based Canadian Tactical Bond Model Portfolio Strategy with institutional level of liquidity and high tax efficiency.

2 The portfolio gained an annualized return of 5.6% since 2012. It has proven to outperform on a relative basis against the FTSE Canadian Bond Universe TR.

3 The portfolio returns are achieved by tactically shifting weights of bond classes via 10 ETFs in an attempt to generate value-added for its investors.

▲ FACTOR-BASED

Objectives

Setting a Way to Achieve Success

The portfolio is designed for potential investors with low risk tolerance seeking exposure to Canadian debt instruments by following a rigorous bottom-up factor based quantitative approach. The investment objectives of the portfolio are to:

1 Provide a reasonable level of income while preserving capital with bonds.

2 Consistently deliver performance over the FTSE Canadian Bond Universe TR.

3 Maximize tax efficiency by using very liquid and low fee Canadian listed ETFs.

Characteristics

Comparison of Smart Beta Strategies

	Market Cap Weighted Index	Factor-Based Canadian Tactical Bond
Risk management goals	None	None
Systematic rebalancing	Quarterly	Quarterly
Human input required	No	Supervised
Use of Leverage	None	None
Systematic Risk	Medium	Medium
Portfolio turnover	Low	Low
Investment process	None	Bottom-Up
Investment style	None	Factor-Based
Market behavior	Trend Following	Relative return

!

Systemically applying a factor-based approach is highly effective in enhancing risk-adjusted performance in bond class allocations and generating levels of income and return.

FACTOR-BASED

CONFIDENTIAL

Methodology

Quantitative Modeling

HOW IT WORKS

A quantitative model systematically identifies mispriced bonds and attempts to deliver absolute and relative performance. Briefly, a ranking system sorts bonds from a universe based on pre-selected factors and the portfolio periodically overweight best ones and underweight the ones in which conditions have deteriorated over time following rules.

WHY IT WORKS

By rigorously adhering to this bond selection framework based on a thoroughly tested ranking system, we are able to remove the emotional element of the investment process. 80% of portfolio managers cannot beat their benchmark because 1) it is difficult to do so and 2) they unconsciously let fear and greed emotions affect their investment decisions.

Philosophy

Factor-Based (FB)

1. QVMS

Overweight/underweight ETFs using a factor-based approach to fixed-income using four factors: quality, value, momentum and seasonality.

2. Undexing

Our goal is to beat the market over the long run. We believe the best way to do it is to create a portfolio that looks very different from it.

3. Concentration

We are striving to achieve a balance between diversifying to remove specific risk yet not too much to avoid ending up mimicking the index.

4. Tax efficiency

The sheer amount of fixed income securities and the non-transparent yet high trading costs makes the purchase of ETFs the best choice.

Overview

**Our Investment Process**

6. Monitoring

Monitor the portfolio, rebalance and carry out performance attribution.

5. Portfolio

Build the live portfolio by investing real money in the defined strategy.

4. Simulation

Form a strategy resulting from a mix of set rules and filters applied to the ranking system.

Universe

Factors

Monitoring

PROCESS

Portfolio

Ranking

Simulation
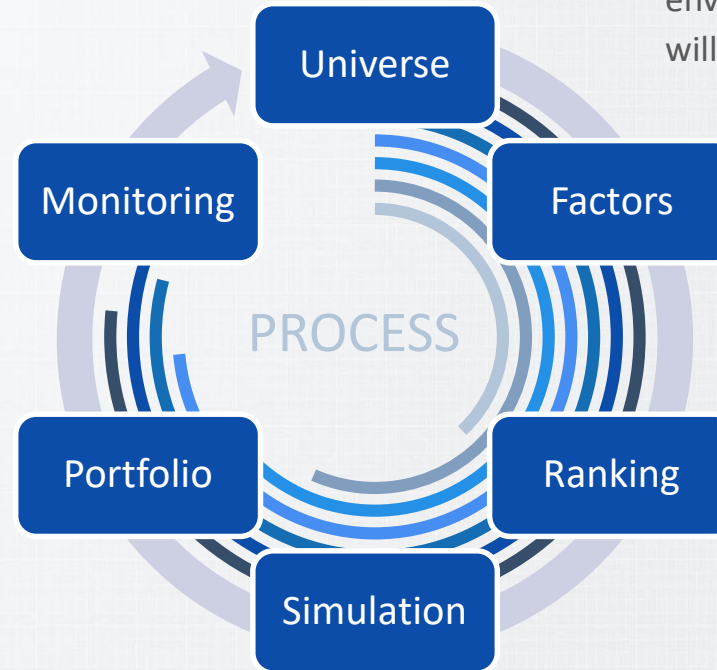
1. Universe

Define the investment environment in which we will pick our companies.

2. Factors

Design factors based on academic literature and innovative concepts.

3. Ranking

Create a composite of factors to rank ETFs from our defined universe.

Universe

Barclays US Aggregate Index

100

$million of debt issue minimum for the inclusion in the index due to new liquidity constraints.

1,500

Bonds are part of this benchmark, the gold standard to gauge the performance of US fixed-rate taxable bonds.

2

$trillion worth of bond securities, which represents approximately half of the total Canadian fixed-income universe.

10

ETFs in our portfolio, are overweighed or underweighted based on our ranking system.

XBB

FACTOR-BASED

Ranking
Factor-Based Model

The ranking system is an equal weighted of the four factors. Each factor will be briefly explained hereafter.

Quality 25%	Seasonality 25%
Momentum 25%	Value 25%

Quality
Factor-Based Sub-Model

We use the Markit Canada Manufacturing Purchasing Managers Index (PMI) to define four business cycle phases.

Phase 1
Decline

Phase 2
Recovery

Phase 4
Slowdown
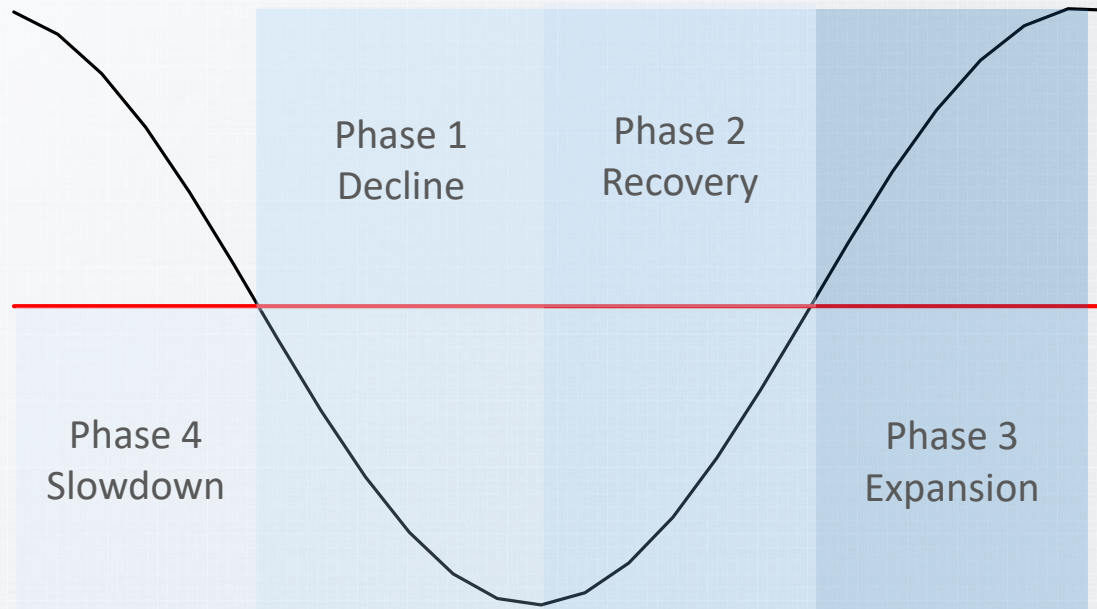
Phase 3
Expansion

We overweight/underweight bonds of varying quality and maturity based on current Phase.

FACTOR-BASED

Value

Factor-Based Sub-Model

We calculate a regression using various macroeconomic variables: mortgage purchases, mortgage debt, free credit balance, commodities, food inflation, etc.

Residual Between Observed and Predicted 30YR Yield

—Undervalued —Overvalued —Residual
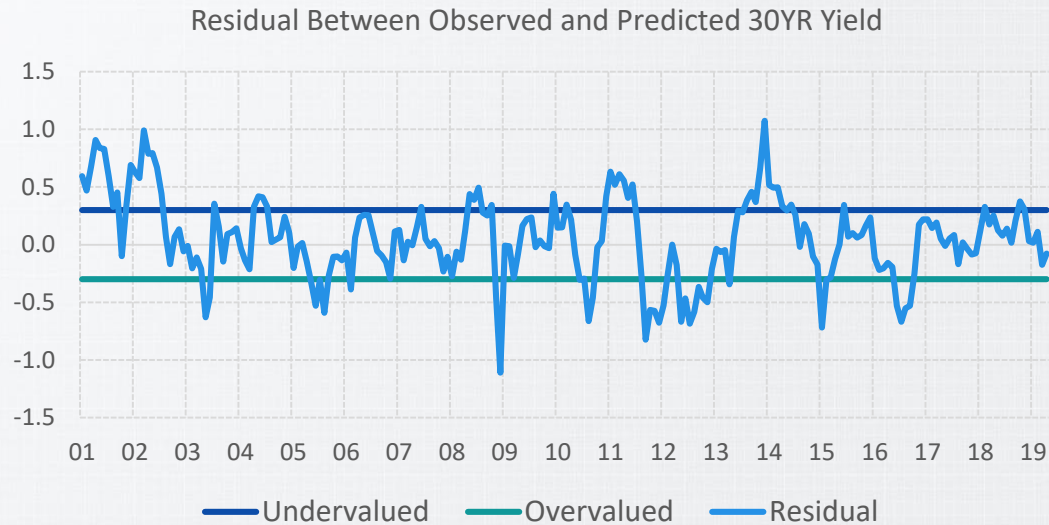
We overweight/underweight bonds of varying quality and maturity based on residual extreme levels.

FACTOR-BASED

CONFIDENTIAL

Momentum

Factor-Based Sub-Model

Relative momentum measures how a bond class has performed relative to others. Absolute momentum measures whether a bond class has actually risen in value.
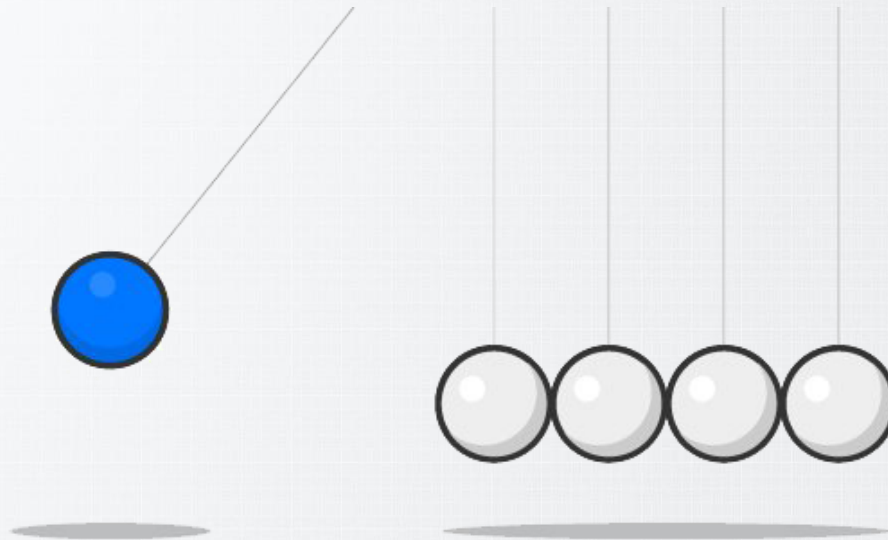
We overweight/underweight bonds of varying quality and maturity based on momentum.

Seasonality

Factor-Based Sub-Model

We analyzed the performance of all bond classes over the last few decades.

We overweight/underweight bonds of varying
quality and maturity based on current quarter.

Simulation

Our Portfolio Rules and Filters

G General Rules

- The portfolio is long only and without any leverage whatsoever.

- 10 ETFs representing each a different bond class are held.

- Transactions are recorded at the average high | low of trade day.

- Rebalancing frequency is quarterly and sent before market open.

- Variable slippage (average daily $ traded) is taken into account.

B Rebalancing Rules

- The 10 ETFs must be held at all times, only the weighting of each position is adjusted.

FACTOR-BASED

Portfolio

Historical Performance

Legend: Factor-Based — FTSE Canadian Bond TR

Key Portfolio Statistics

Annualized Return (%)
(FTSE Canadian Bond TR = 3.4)   5.6

Standard Deviation (%)
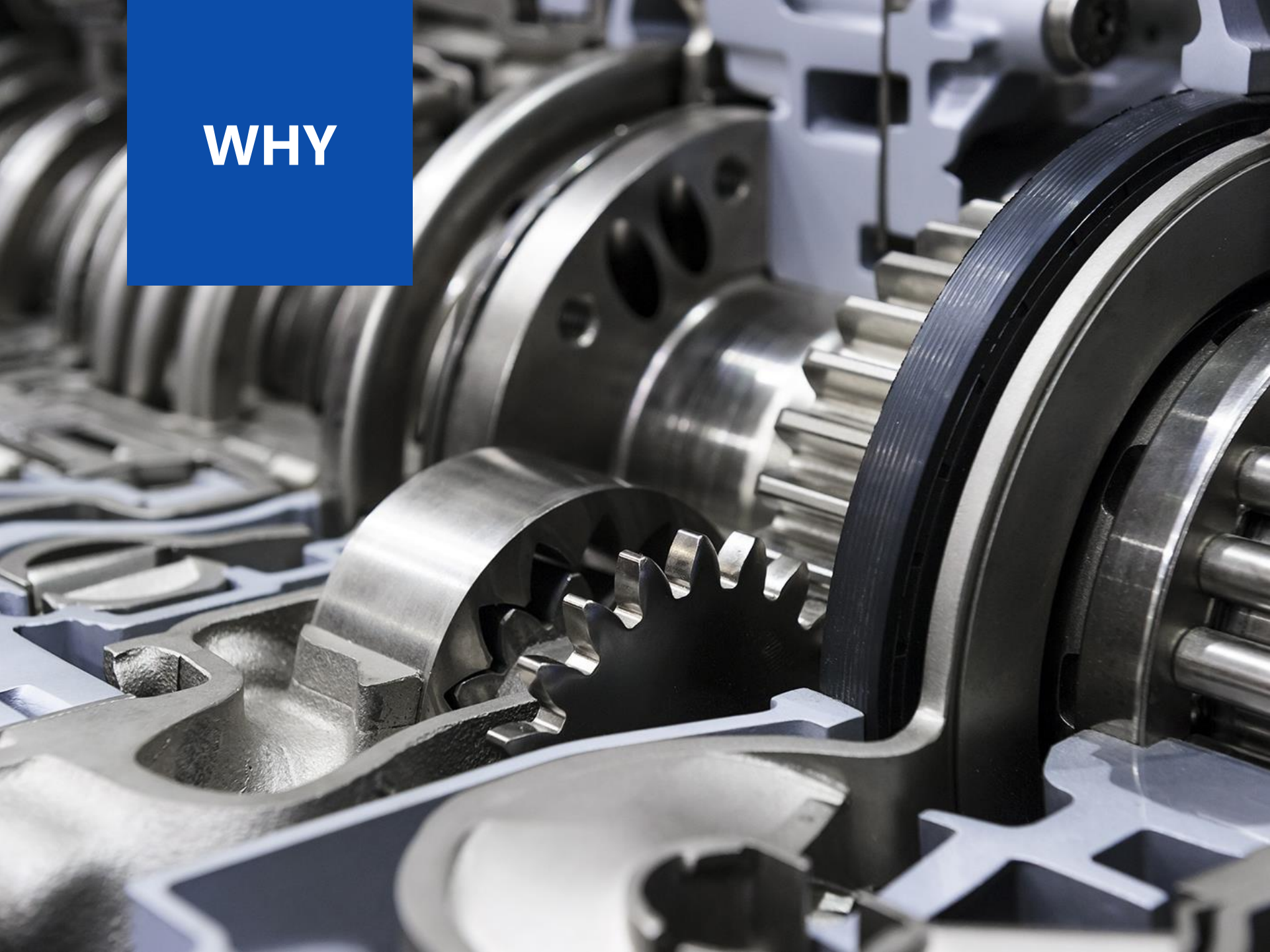(FTSE Canadian Bond TR = 3.7)   4.3

Maximum Drawdown (%)
(FTSE Canadian Bond TR = -4.2)   -5.2

Index Correlation
(FTSE Canadian Bond TR = 1.00)   0.94

Sharpe Ratio
(FTSE Canadian Bond TR = 0.73)   1.11

Since Inception (January 1st, 2012)

FACTOR-BASED

WHY

Statistics

Calendar Performance

Yearly

Calendar Returns	2012	2013	2014	2015	2016	2017	2018	2019	2020
Factor-Based	7.4	-1.9	12.5	3.6	6.1	4.3	-0.1	10.3	3.5
FTSE Canadian Bond TR	3.0	-1.3	8.3	3.3	1.3	2.4	1.0	7.3	2.7
Difference	4.5	-0.6	4.2	0.4	4.8	1.9	-1.1	3.0	0.8

Monthly

Calendar Returns	02-19	03-19	04-19	05-19	06-19	07-19	08-19	09-19	10-19	11-19	12-19	01-20
Factor-Based	0.2	2.5	-0.1	2.4	1.9	0.4	1.1	-0.3	-0.2	0.7	-1.1	3.5
FTSE Canadian Bond TR	0.3	2.2	-0.1	1.7	1.0	0.0	2.0	-0.9	-0.2	0.5	-1.1	2.7
Difference	-0.1	0.4	0.0	0.6	0.9	0.4	-0.9	0.6	0.0	0.2	-0.1	0.8

Statistics

Trailing Performance

Period	Factor-Based	FTSE Canadian Bond TR	Difference
YTD	3.5	2.7	0.8
1M	3.5	2.7	0.8
3M	3.0	2.1	0.9
6M	3.6	3.0	0.6
1Y	11.4	8.5	2.9
3Y	5.7	4.5	1.3
5Y	4.3	2.6	1.7
SI	5.6	3.4	2.2

■ Factor-Based   ■ FTSE Canadian Bond TR   ■ Difference
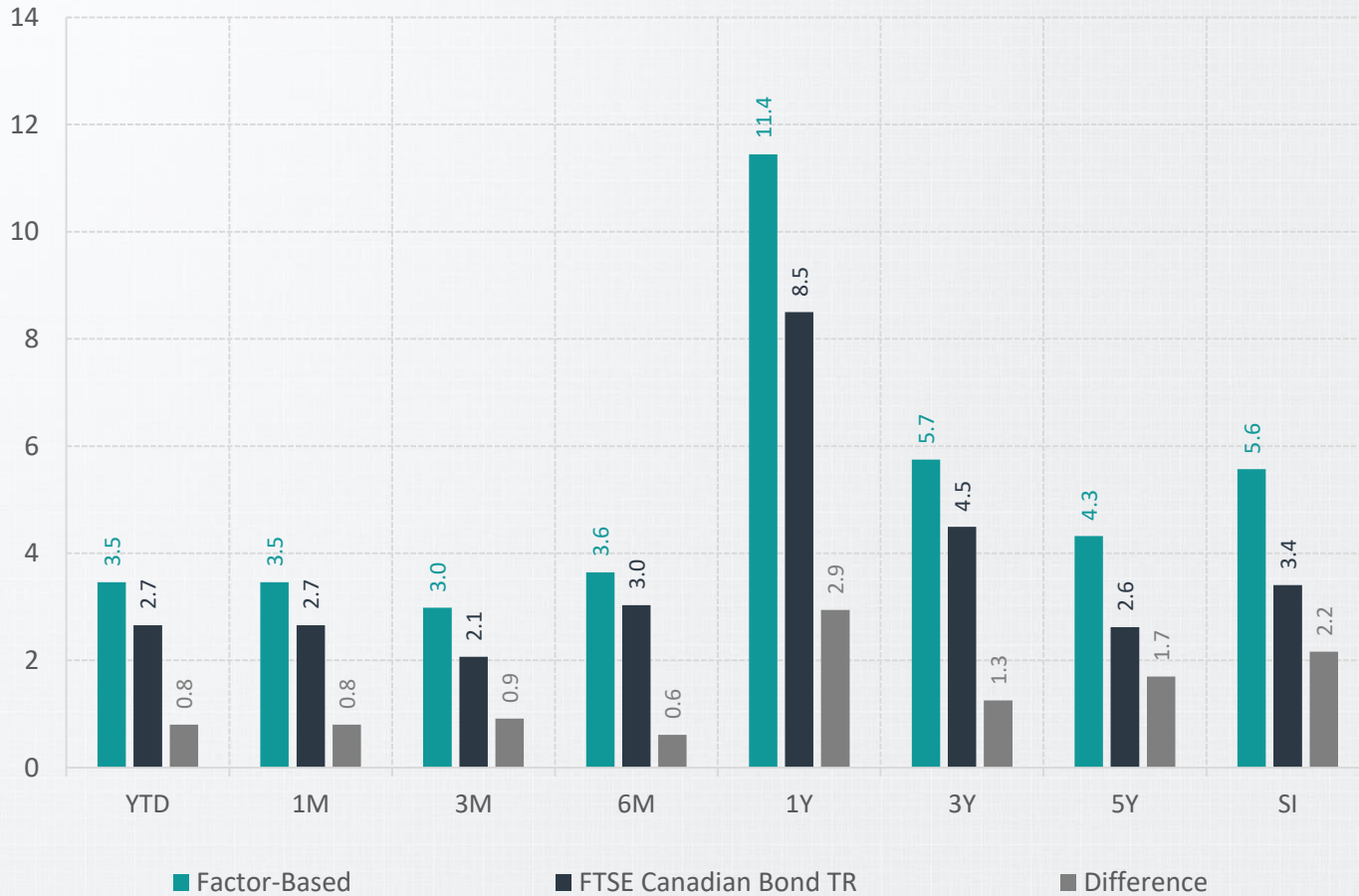
FACTOR-BASED

Statistics

Return & Risk Measurements

Trailing 3 Year	Factor-Based	FTSE Canadian Bond TR	Difference
Ann. Return (%)	5.7	4.5	1.3
Standard Dev. (%)	4.2	3.8	0.4
Max Drawdown (%)	-2.8	-3.6	0.8
Sharpe Ratio	1.0	0.7	0.3
Sortino Ratio	1.46	1.05	0.41
Index Correlation	0.94	1.00	-0.06
Upside Capture	1.09	0.00	1.09
Downside Capture	0.81	0.00	0.81
Portfolio Beta	1.03	1.00	0.03
Portfolio Alpha (%)	1.26	0.00	1.26

Since Inception	Factor-Based	FTSE Canadian Bond TR	Difference
Ann. Return (%)	5.6	3.4	2.2
Standard Dev. (%)	4.3	3.7	0.6
Max Drawdown (%)	-5.2	-4.2	-1.0
Sharpe Ratio	1.1	0.7	0.4
Sortino Ratio	1.63	1.09	0.54
Index Correlation	0.94	1.00	-0.06
Upside Capture	1.25	0.00	1.25
Downside Capture	0.88	0.00	0.88
Portfolio Beta	1.09	1.00	0.09
Portfolio Alpha (%)	2.17	0.00	2.17

FACTOR-BASED

CONFIDENTIAL

Statistics

Rolling Maximum Drawdown

Factor-Based —— FTSE Canadian Bond TR
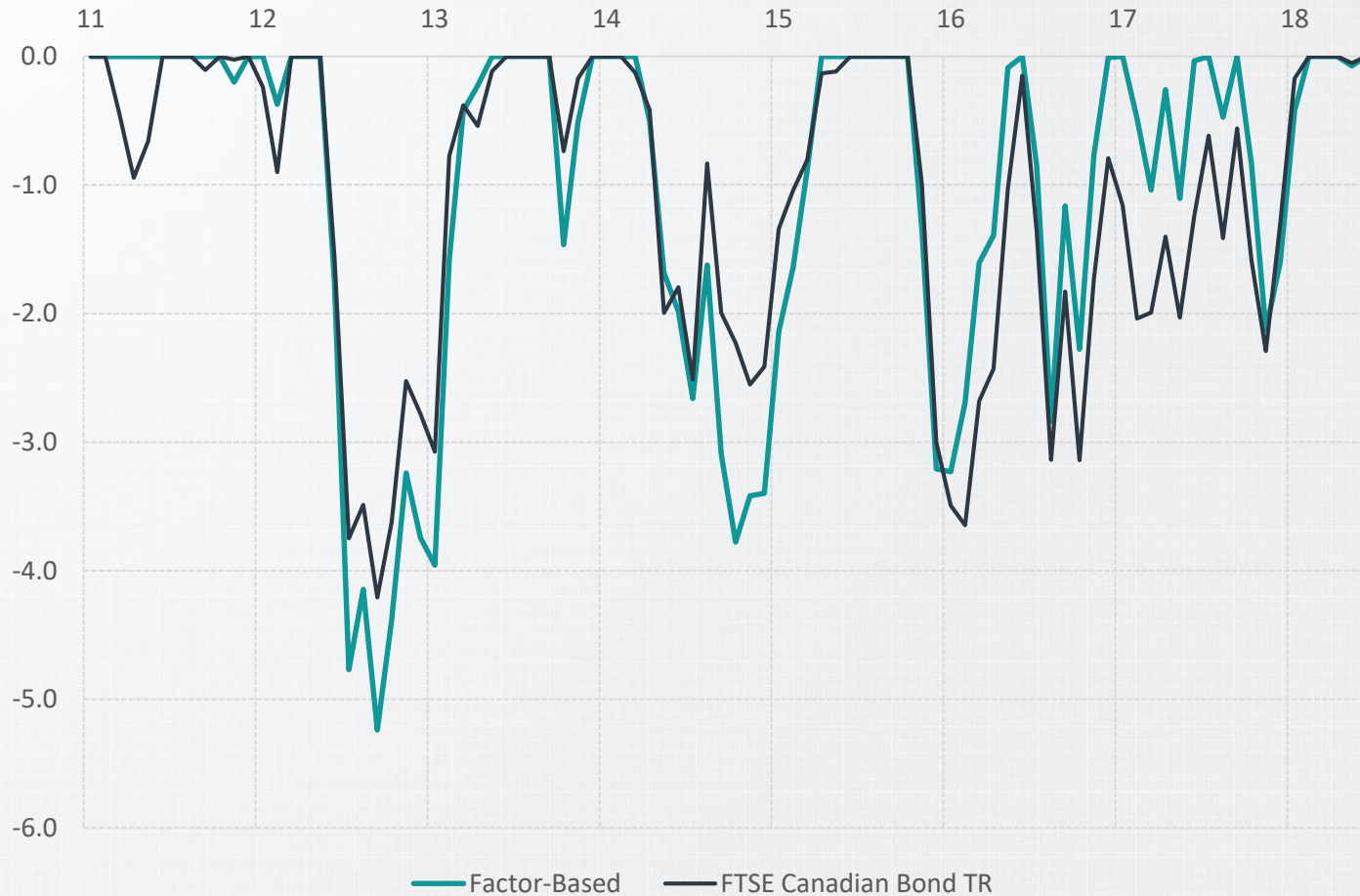
Statistics

Outperformance in Different Market Conditions

Value Added

Monthly Value Added vs FTSE Canadian Bond TR Monthly Returns (%)

Down -0.5/-1	Down 0/-0.5	Up 0-0.5	Up 0.5-1	Up >1	All periods	All up	All down
-0.7	-0.2	0.3	0.7	1.0	0.2	0.4	-0.3

Occurences

Monthly Occurences vs FTSE Canadian Bond TR Monthly Returns (%)

Down -0.5/-1	Down 0/-0.5	Up 0-0.5	Up 0.5-1	Up >1	All periods	All up	All down
8	24	43	21	2	98	67	31
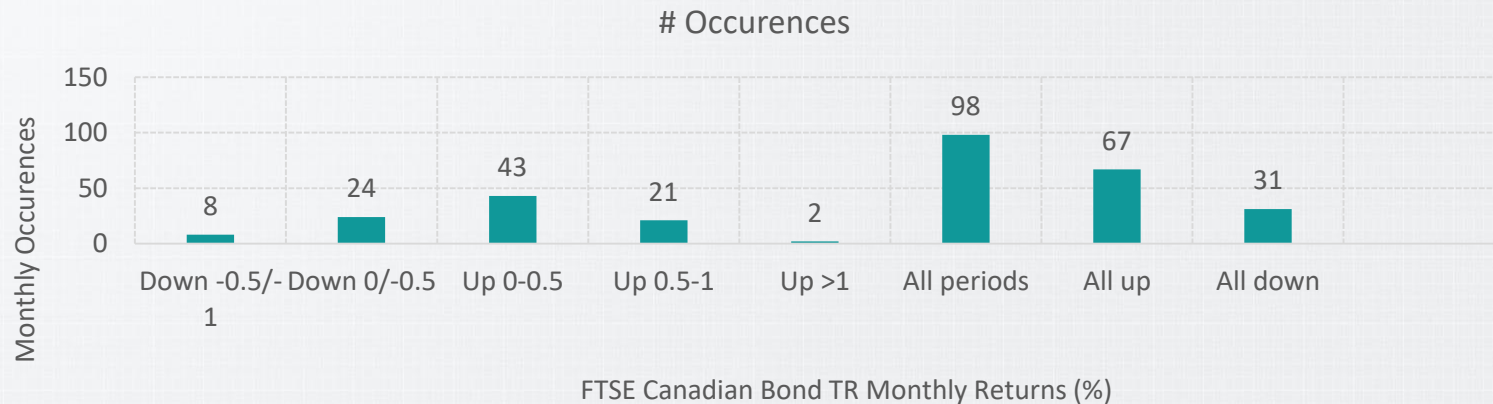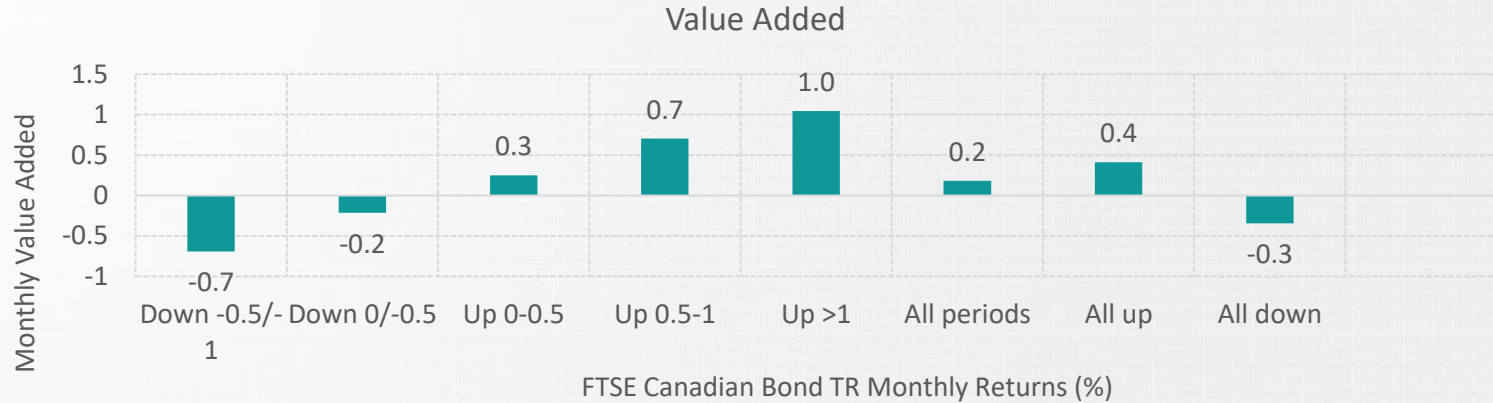
Characteristics

Top Holdings & Characteristics

Ticker	Bond Class	Weight (%)
XHB:CN	High Yield	28.3
XCB:CN	Corporate	20.0
XEB:CN	Emerging Market	18.3
CVD:CN	Convertible Bonds	15.0
ZPL:CN	Long Term Provincials	13.3
ZFL:CN	Long Term Federal	5.0
ZMP:CN	Inter. Term Provincials	0.0
ZFS:CN	Short Term Federal	0.0
ZPS:CN	Short Term Provincials	0.0
ZFM:CN	Inter. Term Federal	0.0

Median	Factor-Based	FTSE Canadian Bond TR
Equity Beta	0.20	0.05
AUM ($M)	734	4143
Standard Deviation	4.39%	3.66%
Max Drawdown (%)	-4.13%	-4.20%
12m Trailing Yield	3.50%	2.74%
Avg. Yield to Maturity	3.45%	1.98%
Weighted Avg. Coupon	4.08%	3.09%
Weighted Avg. Maturity	11.39	10.84
Effective Duration	7.95	8.20
Avg. Management Fee	0.45%	0.10%

FACTOR-BASED

Allocation

Sector Weights & Benchmark Deviations

Weight (%)	Factor-Based	FTSE Canadian Bond TR	Deviation (%)	
Convertible Bonds	18.1	0.4	17.7	
High Yield	18.9	3.2	15.7	
Long Term Provies	22.2	10.0	12.2	
Emerging Market	4.7	0.0	4.7	
Inter. Term Provies	0.0	0.0	0.0	
Short Term Provies	0.0	0.0	0.0	
Corporate	18.9	25.5		-6.6
Long Term Federal	17.2	24.7		-7.4
Short Term Federal	0.0	16.2		-16.2
Inter. Term Federal	0.0	30.0		-30.0

FACTOR-BASED

WHO

Who We Are

Factor-Based (FB)

IN A NUTSHELL…

Factor-Based (FB) is a financial research firm that specializes in equities and bonds for investment advisors and institutional clients. We are dedicated to produce exceptional risk adjusted returns for our investors by strictly adhering to factor-based investing methods.

Disclosures

Disclaimer and Trademarks Notice

The Factor-Based Canadian Tactical Bond Model Portfolio Strategy is not and should not be perceived as an investment fund. Any information provided by Factor-Based (FB) or included in the Strategy is not intended as and does not constitute investment advice, legal advice, tax advice, or an offer to sell any security, or as a recommendation regarding any particular security in any jurisdiction.

Information provided by Factor-Based (FB) or included in the Strategy should not be used as the sole basis for making investment decisions. Factor-Based cannot guarantee the accuracy, completeness, timeliness, or correct sequencing of any of the information processed by FB including, but not limited to information originated by FB or gathered by FB from external providers or publicly available sources. There may be delays, omissions, or inaccuracies in the information.

Factor-Based (FB) does not make any representations, implicit nor explicit, about the suitability of the Strategy, nor the information contained in this presentation or provided by any of the foregoing. All such information and software are provided "as is" without any implied warranty of any kind.

FACTOR-BASED