CANADIAN EQUITY

FACTOR-BASED MODEL PORTFOLIO STRATEGY

2020/03

WHAT

Summary

Key Points in a Nutshell

1 We are proud to introduce the Factor-Based Canadian Equity Model Portfolio Strategy with institutional level of liquidity and low portfolio turnover.

2 The portfolio gained an annualized return of 15.1% since 2000. It has proven to outperform on a relative basis against the S&P/TSX TR.

3 The portfolio returns are achieved by strategically selecting 25 quality at a reasonable price (QARP) companies generating wealth for its shareholders.

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Objectives

Setting a Way to Achieve Success

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

1 Target long term capital appreciation among Canadian Equities.

2 Consistently deliver performance over the S&P/TSX Total Return Index.

3 Maximize tax efficiency by having a low portfolio turnover ratio.

Characteristics

Comparison of Smart Beta Strategies

	Market Cap Weighted Index	Factor-Based Canadian Equity
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	QARP
Market behavior	Trend Following	Relative return

!

QARP stands for Quality At Reasonable Price. We are finding companies of quality trading at attractive multiples that consistently generate wealth for its shareholders.

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Methodology

Quantitative Modeling

HOW IT WORKS

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

WHY IT WORKS

By rigorously adhering to this stock 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.

HOW

Philosophy

Factor-Based (FB)

1. QARP (Quality At Reasonable Price)

The end goal is to invest in quality companies trading at attractive multiples that consistently generate wealth for their shareholders.

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. Low Turnover

Excessive portfolio churning increases trading costs for an investor. It also means a lack of confidence, decisiveness and tax awareness.

Overview

Our Investment Process

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 companies from our defined universe.

4. Simulation

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

5. Portfolio

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

6. Monitoring

Monitor the portfolio, rebalance and carry out performance attribution.

Universe

Factors

Ranking

Simulation

Portfolio

Monitoring

PROCESS

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Universe

Our Investment Environment

2.5

$billion of market cap minimum. This is what we consider a large cap in Canada although it is usually $6 billion in the United States.

10

$million of average daily liquidity for the past month expressed as price x volume.

CANADA

250

Stocks passing the universe filter. They are all part of the S&P TSX Composite.

25

Stocks in our portfolio, are chosen from the best ranking decile.

Factor

Our Selection Method

We backtested in our universe hundreds of factors individually to find the ones generating the most alpha over the last two investment cycles. We then select the best factors using four criterions shown below:

Single Factor: P/E Ratio (TTM)
Hypothesis: Lower is better
Period tested: 1999-2017

#3 Stable Deciles

#4 Low Portfolio Turnover

#2 Rising Slope

#1 High Top Decile

Annualized Returns

S&P/TSX TR · 0_10 · 10_20 · 20_30 · 30_40 · 40_50 · 50_60 · 60_70 · 70_80 · 80_90 · 90_100

Highest P/E Decile ⟵ Universe Ranked by Decile ⟶ Lowest P/E Decile

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Ranking

Based on Our Factor Selection

Q_{uality}

(1ˢᵗ part)

Earnings Quality (EPSQ) ↑

This ratio is calculated as the Operating Cash Flow minus Earnings and then divided by Total Assets.

What: Is the company manipulating accruals in its financial statements?

Why: The interpretation of this ratio is that higher is always better.

Debt Reduction (DCHG) ↓

This ratio is the difference between Long-Term Debt to Capital TTM and Long-Term Debt to Capital PTM.

What: Is the company successfully reducing its debt level from last year?

Why: The interpretation of this ratio is that lower is always better.

Free Cash Flow Margin (FCFM) ↑

This ratio measures the percent of the Free Cash Flow TTM compared to Total Revenues TTM.

What: How many dollars of free cash flow gets for each dollar of sales?

Why: The interpretation of this ratio is that higher is always better.

Dividend Yield (DIVY) ↑

This ratio is calculated as the Projected Dividend divided by the current Price, multiplied by 100.

What: How much Dividends are paid by the company relative to its Price?

Why: The interpretation of this ratio is that higher is always better.

Ranking

Based on Our Factor Selection

Quality
(2nd part)

Value
(1st part)

Total Yield (TOTY) ↑

This ratio is calculated as the Buyback Yield added to the Dividend Yield, multiplied by 100.

What: How much is the company giving back to their shareholders?

Why: The interpretation of this ratio is that higher is always better.

Long Term Beta (LVOL) ↓

This ratio measures the systematic risk of a security in comparison to the whole market.

What: How volatile are the shares of a company relative to the market?

Why: The interpretation of this ratio is that lower is always better.

Price / Earnings Ratio (PERA) ↓

This ratio is calculated by dividing the current Price by the sum of the Diluted Earnings Per Share from Continuing Operations Before Extraordinary Items and Accounting Changes over the last four quarters.

What: How much investors are willing to pay per dollar of Earnings?

Why: The interpretation of this ratio is that lower is always better.

Discounted Free Cash Flow / Assets (FCFA) ↑

This ratio is calculated as the output of a Discounted Free Cash Flow model, based on the next five years and using the Mean Long Term Growth as the discount rate, divided by the Assets of the company.

What: How much Discounted Free Cash Flow per unit of Assets is the company making?

Why: The interpretation of this ratio is that higher is always better.

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Ranking

Based on Our Factor Selection

V
alue

(2nd part)

Discounted Free Cash Flow / Equity (FCFE) ↑

This ratio is calculated as the output of a Discounted Free Cash Flow model, based on the next five years and using the Mean Long Term Growth as the discount rate, divided by the Equity of the company.

What: How much Discounted Free Cash Flow per unit of Equity is the company making?

Why: The interpretation of this ratio is that higher is always better.

Discounted Free Cash Flow / EV (FCFV) ↑

This ratio is calculated as the output of a Discounted Free Cash Flow model, based on the next five years and using the Mean Long Term Growth as the discount rate, divided by the EV of the company.

What: How much Discounted Free Cash Flow per unit of EV is the company making?

Why: The interpretation of this ratio is that higher is always better.

Operating Income / EV (OPIV) ↑

This ratio is calculated as the Operating Income After Depreciation divided by Enterprise Value (EV).

What: How much Operating Income per unit of EV is the company making?

Why: The interpretation of this ratio is that higher is always better.

Ranking
Based on Our Factor Selection

Momentum

Analyst Revisions 1W (REV1)   ↑

This ratio is calculated as a scaled difference between Next Fiscal Year EPS Mean of today vs last week.

What: Was there any weekly EPS revisions and how large were they?

Why: The interpretation of this ratio is that higher is always better.

Analyst Revisions 4W (REV4)   ↑

This ratio is calculated as a scaled difference between Next Fiscal Year EPS Mean of today vs 4 weeks ago.

What: Was there any monthly EPS revisions and how large were they?

Why: The interpretation of this ratio is that higher is always better.

Trend (TREN)   ↑

This ratio is calculated as 20-Day EMA divided by the 200-Day EMA and measures the price slope.

What: Is the company's price trading in a medium-term uptrend?

Why: The interpretation of this ratio is that higher is always better.

Pullback (PULL)   ↑

This ratio is calculated as the 11-Day Exponential Moving Average divided by the Current Price.

What: Has the company's price experienced a short term pullback?

Why: The interpretation of this ratio is that higher is always better.

Simulation

Our Portfolio Rules and Filters

G General Rules

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

- Approximately 25 stocks are held with 30% max weight deviation:
  Avg W: 4.0% | Min W: 2.8% | Max W: 5.2%

- 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 Buy Rules

- No penny stocks are allowed. In other words, no stocks below $1.00 are part of the simulation.

- Stocks with stale financial statements with SEDAR are excluded from the buy list.

- Minimum Daily Total Liquidity of at least $5M in the last week and a Market Cap > $2.5B.

- Shareholder's Equity Total must be above zero at inclusion.

S Sell Rules

- Sell stocks when its ranking falls below three deciles.

- Trim stocks weights back to 7.5% and below if their individual weights in the portfolio goes above 7.5%.

- We force positions in the universe even if they are replaced inside our universe.

- Sell stocks with weight below 2.5% and if it's been more than 252 trading days.

Portfolio

Historical Performance

Chart legend: Factor-Based — S&P/TSX TR
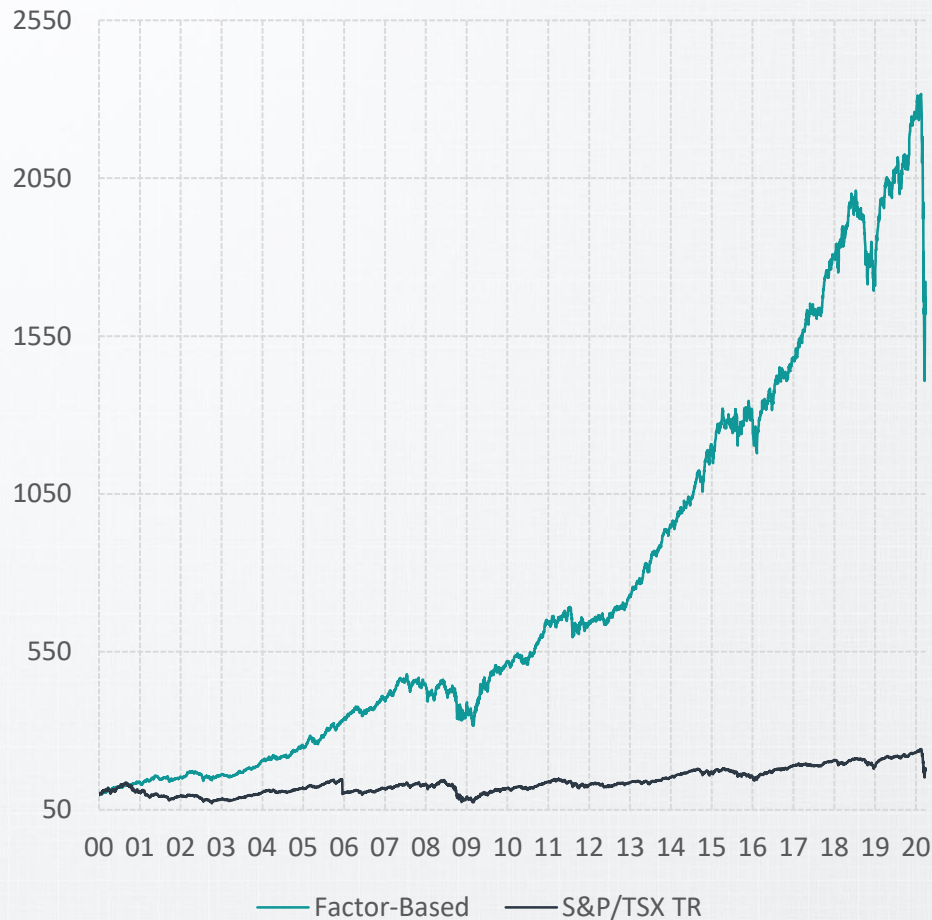
Key Portfolio Statistics

Annualized Return (%) (S&P/TSX TR = 3.0)	15.1
Maximum Drawdown (%) (S&P/TSX TR = -49.4)	-39.2
Portfolio Turnover (%) (S&P/TSX TR = 6.3)	72.4
Index Correlation (S&P/TSX TR = 1.00)	0.65
Sharpe Ratio (S&P/TSX TR = 0.14)	1.11

Since Inception (January 1st, 2000)

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WHY

Statistics

Calendar Performance

Yearly

Returns (%)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Factor-Based	39.7	10.1	3.6	28.0	24.9	31.5	20.8	11.0	-18.1	41.5
S&P/TSX TR	7.4	-12.6	-12.4	26.7	14.5	-15.2	17.3	9.8	-33.0	35.1
Difference	32.3	22.7	16.1	1.3	10.4	46.7	3.6	1.1	14.9	6.5

Returns (%)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Factor-Based	23.9	-0.4	13.1	30.9	26.5	7.7	13.5	22.1	-2.4	27.6	-23.1
S&P/TSX TR	17.6	-8.7	7.2	13.0	10.6	-8.3	21.1	9.1	-8.9	22.9	-20.9
Difference	6.3	8.3	5.9	18.0	16.0	16.0	-7.6	13.0	6.5	4.7	-2.2

Monthly

Returns (%)	04-19	05-19	06-19	07-19	08-19	09-19	10-19	11-19	12-19	01-20	02-20	03-20
Factor-Based	2.4	-2.3	3.3	1.3	-0.5	2.3	-1.3	6.8	0.0	-0.2	-6.0	-18.0
S&P/TSX TR	3.2	-3.1	2.5	0.3	0.4	1.7	-0.9	3.6	0.5	1.7	-5.9	-17.4
Difference	-0.8	0.7	0.8	0.9	-0.9	0.6	-0.4	3.2	-0.5	-1.9	-0.1	-0.6

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Statistics

Trailing Performance

Legend: ■ Factor-Based   ■ S&P/TSX TR   ■ Difference

Period	Factor-Based	S&P/TSX TR	Difference
YTD	-23.1	-20.9	-2.2
1M	-18.0	-17.4	-0.6
3M	-23.1	-20.9	-2.2
6M	-18.9	-18.4	-0.5
1Y	-13.5	-14.2	0.7
3Y	3.2	-1.9	5.1
5Y	6.2	0.9	5.3
10Y	12.3	4.1	8.2
SI	15.1	3.0	12.1
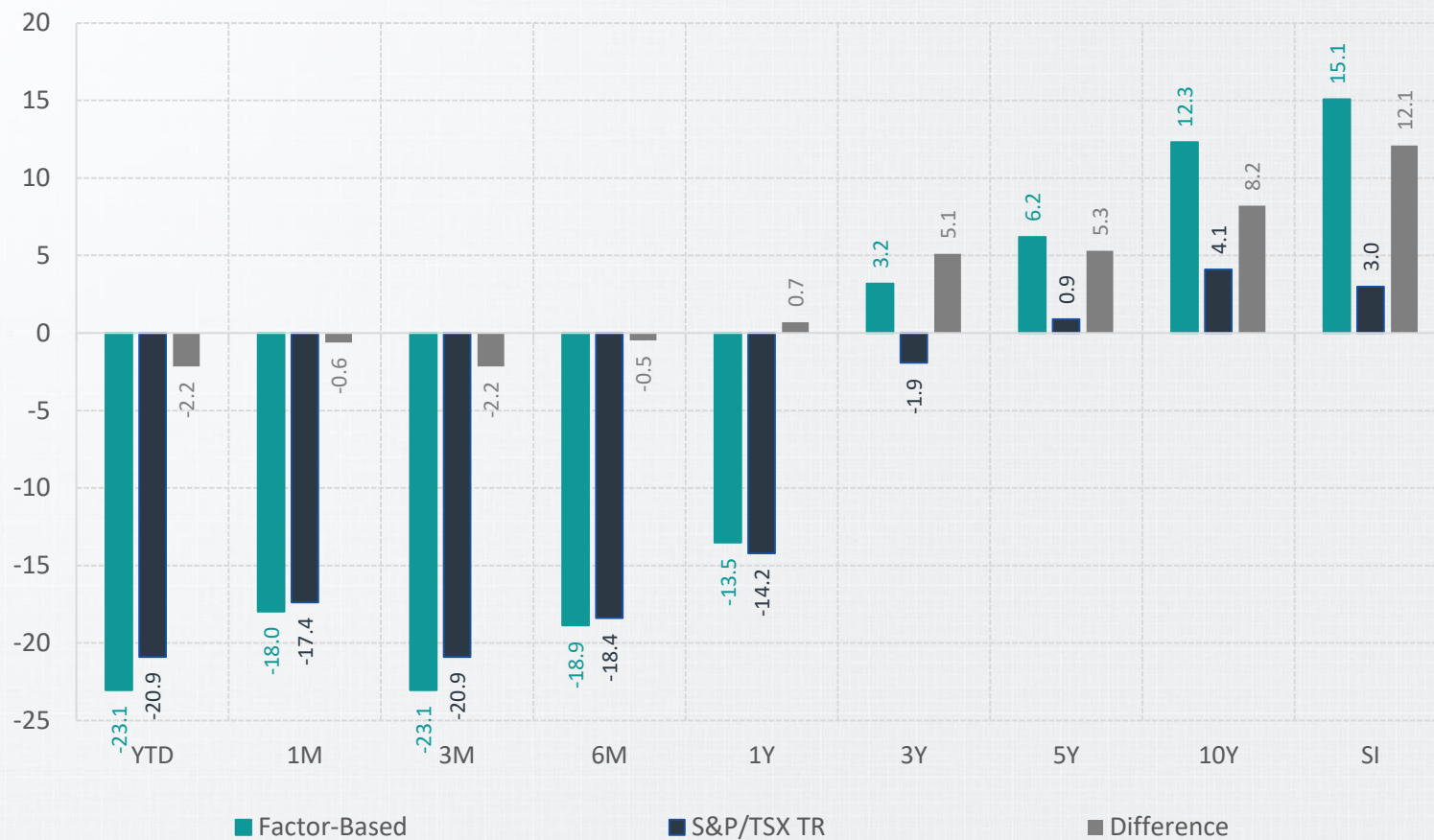
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Return & Risk Measurements

Trailing 3 Year	Factor-Based	S&P/TSX TR	Difference
Annualized Return (%)	3.2	-1.9	5.1
Standard Deviation (%)	15.1	14.1	1.0
Max Drawdown (%)	-39.2	-37.2	-2.0
Portfolio Turnover	72.4	6.3	66.1
Sharpe Ratio	0.27	-0.12	0.39
Sortino Ratio	0.29	-0.14	0.43
Index Correlation	0.94	1.00	-0.06
R-Squared	0.88	1.00	-0.12
Beta	1.01	1.00	0.01
Alpha (%) (Annualized)	5.11	0.00	5.11

Since Inception	Factor-Based	S&P/TSX TR	Difference
Annualized Return (%)	15.1	3.0	12.1
Standard Deviation (%)	11.5	15.3	-3.8
Max Drawdown (%)	-39.2	-49.4	10.2
Portfolio Turnover	72.4	6.3	66.1
Sharpe Ratio	1.11	0.14	0.96
Sortino Ratio	1.45	0.17	1.28
Index Correlation	0.65	1.00	-0.35
R-Squared	0.42	1.00	-0.58
Beta	0.49	1.00	-0.51
Alpha (%) (Annualized)	12.09	0.00	12.09

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Statistics

Rolling Maximum Drawdown
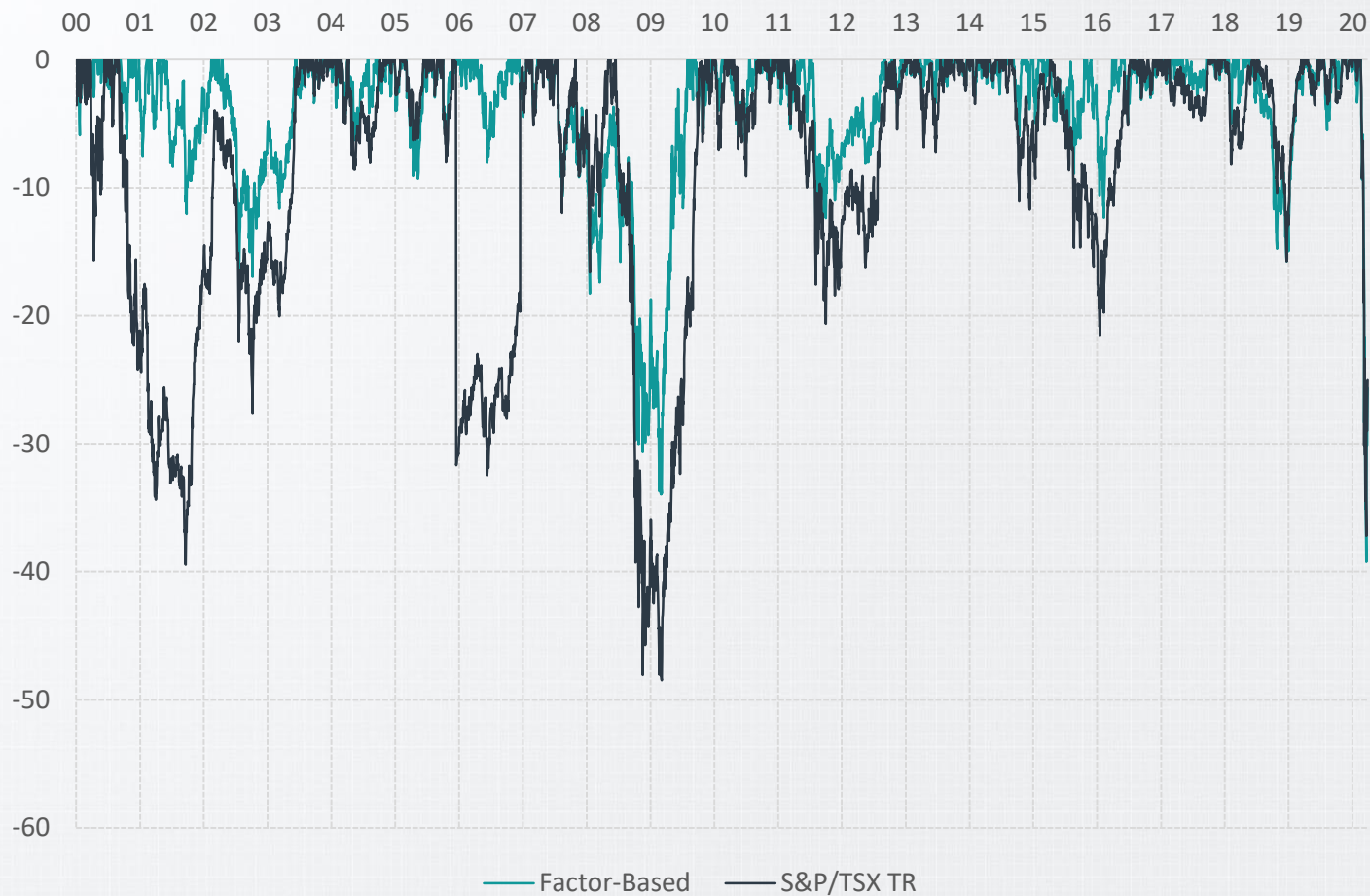
Statistics

Outperformance in Different Market Conditions

Value Added

Monthly Value Added

Category	Value
Down <-10	13.2
Down -5/-10	3.6
Down 0/-5	1.4
Up 0-5	0.0
Up 5-10	-0.8
Up >10	-5.3
All periods	0.9
All up	-0.1
All down	2.5

Strategy - S&P/TSX TR Monthly Returns (%)

Occurences

Monthly Occurences

Category	Value
Down <-10	5
Down -5/-10	18
Down 0/-5	72
Up 0-5	131
Up 5-10	16
Up >10	2
All periods	244
All up	150
All down	94

S&P/TSX TR Monthly Returns (%)

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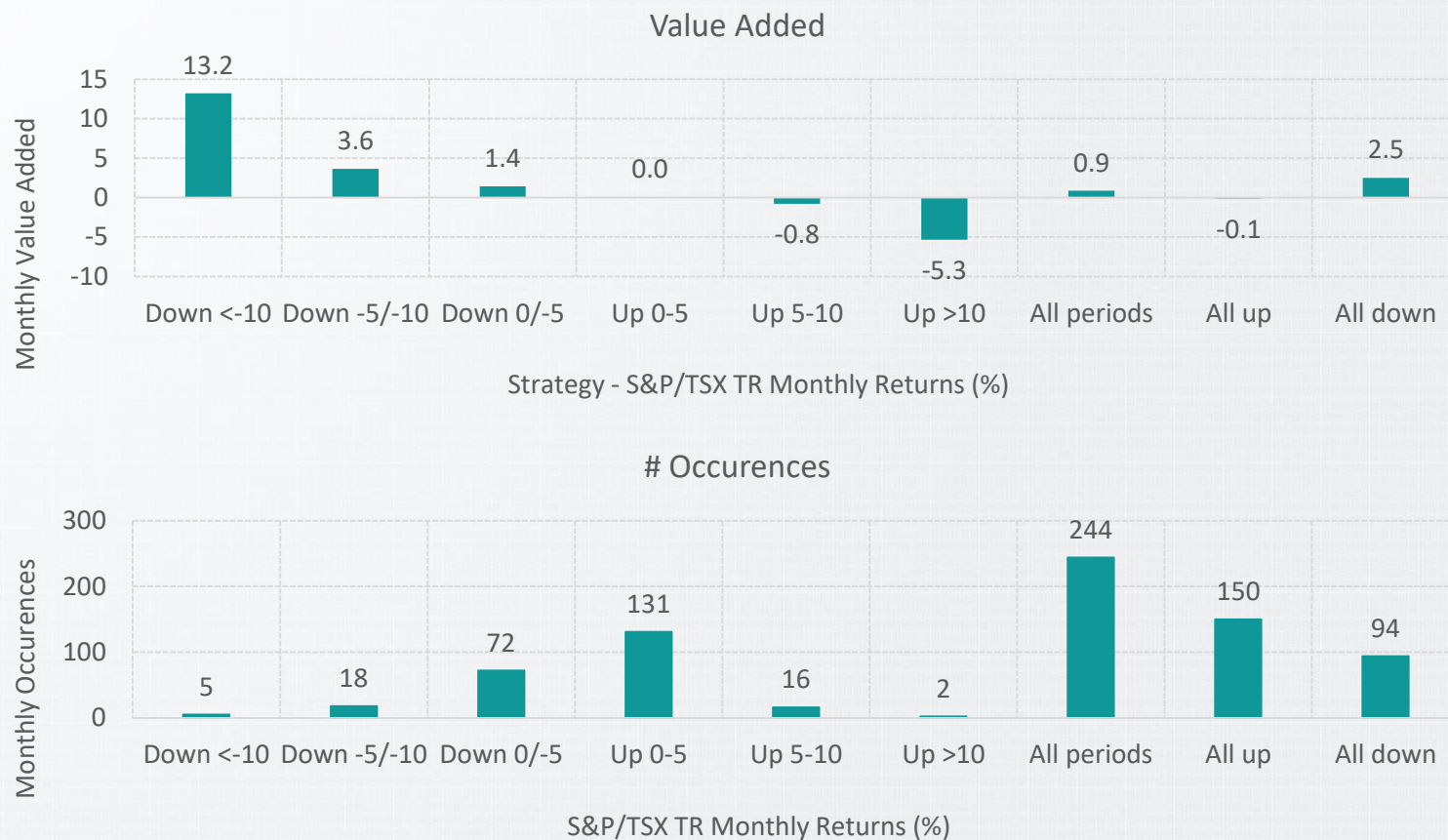
Characteristics

Top Ten Holdings & Fundamentals

Ticker	Weight (%)	Sector
L:CN	6.2	Staples
RNW:CN	5.8	Utilities
NPI:CN	5.1	Utilities
QBR.B:CN	5.0	Telecom
RBA:CN	4.8	Industrials
OTEX:CN	4.8	Info Tech
CCA:CN	4.5	Telecom
ATD.B:CN	4.3	Staples
ACO.X:CN	4.3	Utilities
BCE:CN	4.2	Telecom

Median	Factor-Based	S&P/TSX TR
Market Cap ($B)	20.4	3.5
Price / Earnings	13.8	12.9
Price / Book	2.5	1.5
Price / Sales	1.7	1.9
Price / Cash Flow	7.2	7.7
Return on Equity	13.7	9.6
Dividend Yield	3.2	2.5
5Y EPS Growth	10.1	10.0
Debt / Equity	0.9	0.8
5Y Beta	0.77	1.00

Allocation

Sector Weights & Benchmark Deviations

Weights	Factor-Based	S&P/TSX TR		Deviations
Telecom	17.0	6.4	10.6	
Staples	14.6	4.5	10.1	
Info Tech	16.7	7.0	9.7	
Utilities	15.2	5.7	9.5	
Discretionary	2.9	3.5	-0.6	
Health Care	0.0	1.0		-1.0
Industrials	8.8	11.9		-3.1
Energy	2.1	13.2		-11.1
Materials	0.0	11.7		-11.7
Financials	21.1	35.1		-14.0

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

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