



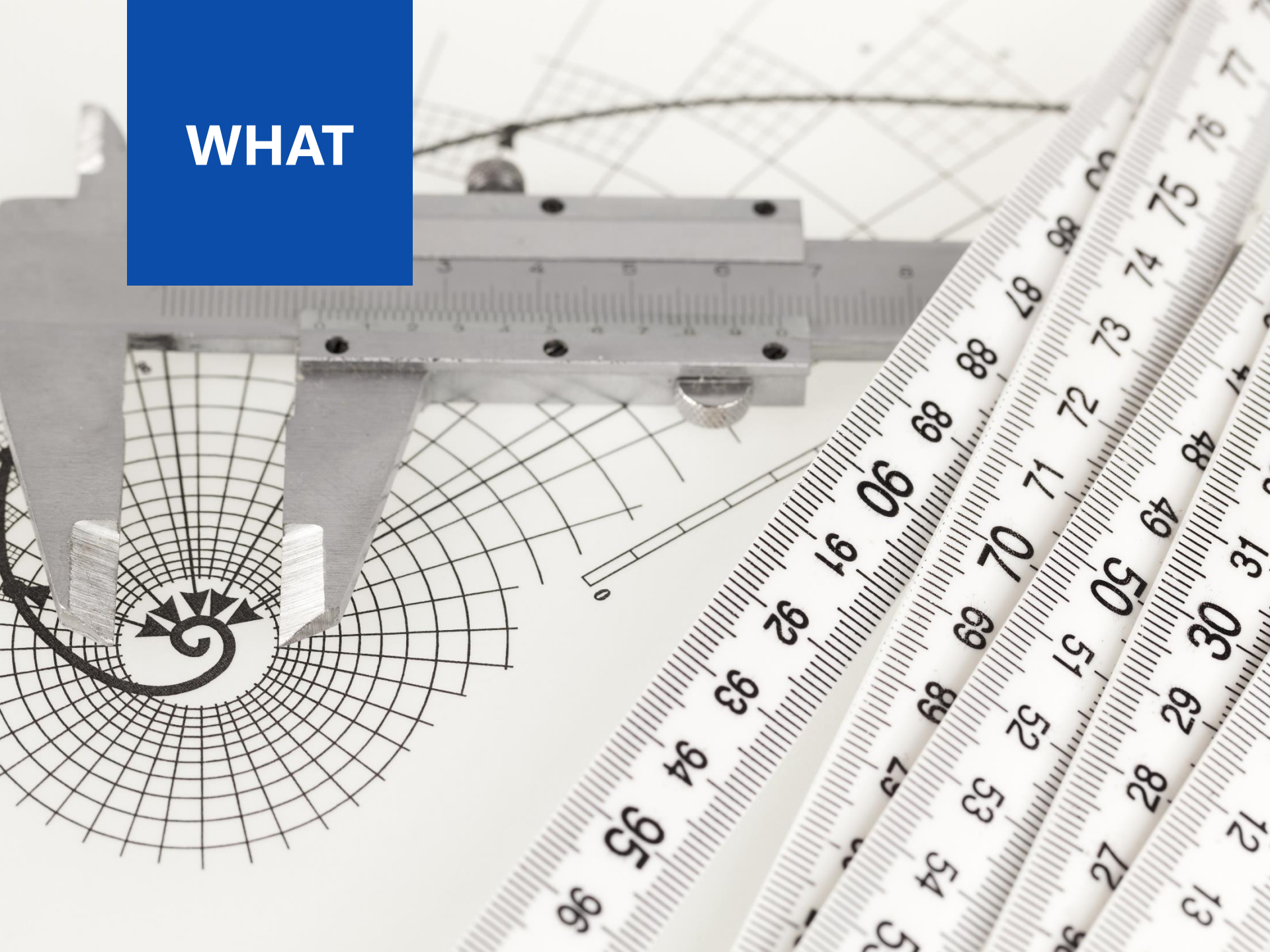
# US TACTICAL BOND

FACTOR-BASED MODEL PORTFOLIO STRATEGY



2019/06

**WHAT**



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# Summary

## Key Points in a Nutshell

1

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

2

The portfolio gained an annualized return of 7.3% since 2004. It has proven to outperform on a relative basis against the Barclays US Aggregate 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.





# Objectives

## Setting a Way to Achieve Success

The portfolio is designed for potential investors with low risk tolerance seeking exposure to US 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 Barclays US Aggregate TR Index.
- 3 Maximize tax efficiency by using very liquid and low fee US listed ETFs.

# Characteristics

## Comparison of Smart Beta Strategies

	Market Cap Weighted Index	Factor-Based US 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.

# 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.

A close-up, black and white photograph of several interlocking metal gears. The gears are made of a polished, reflective metal, likely steel, and their teeth are sharply defined. The lighting creates strong highlights and shadows, emphasizing the texture and mechanical nature of the components. A blue rectangular box is overlaid in the top-left corner, containing the word "HOW" in white, bold, sans-serif capital letters.

**HOW**

# 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

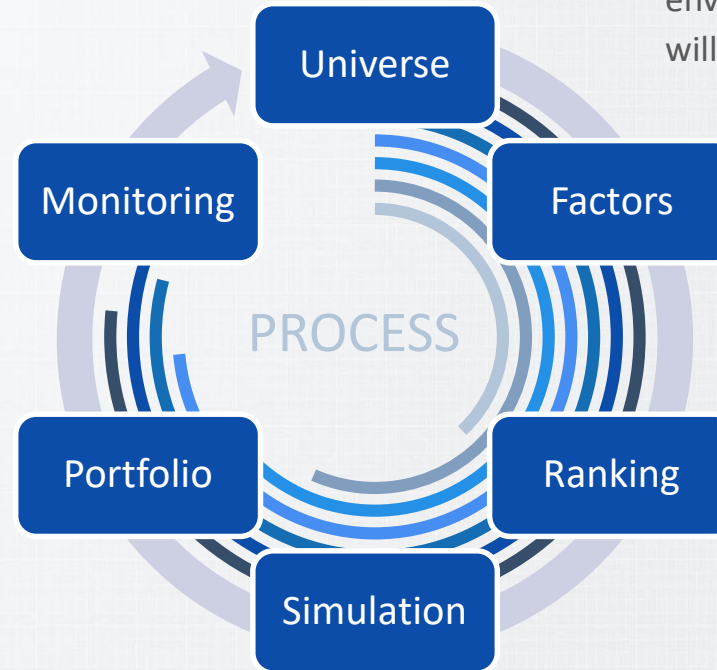
Monitor the portfolio, rebalance and carry out performance attribution.

### 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.



### 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.

# Universe

## Barclays US Aggregate Index

300

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

20

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



8,000

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

10

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

# Ranking

## Factor-Based Model

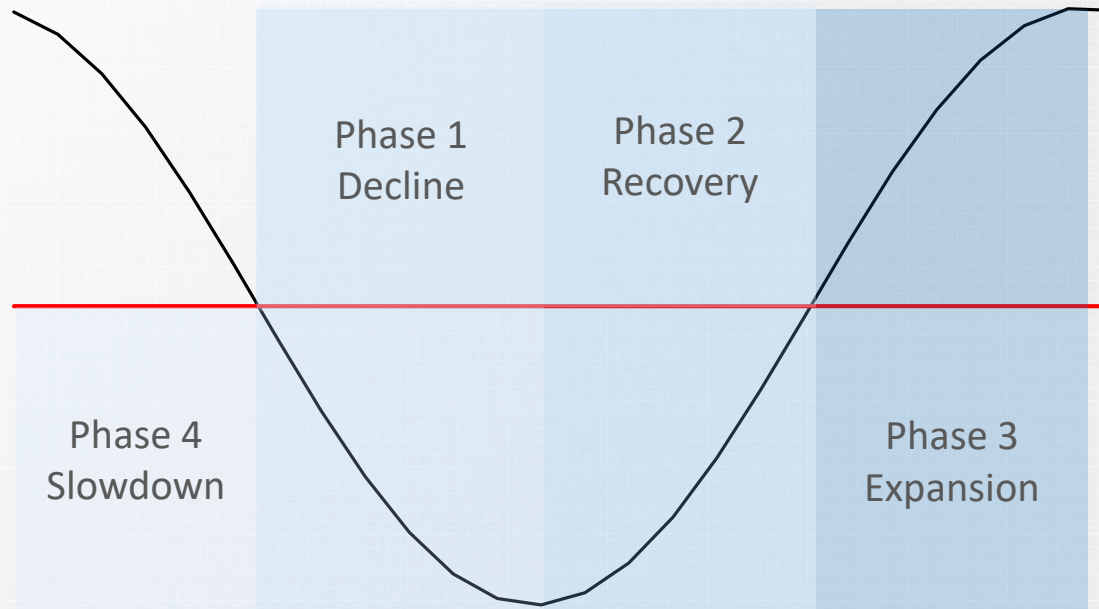
The ranking system is an equal weighted of the four factors. Each factor will be briefly explained hereafter.



# Quality

## Factor-Based Sub-Model

We use the Leading Economic Index (LEI) to define four business cycle phases.

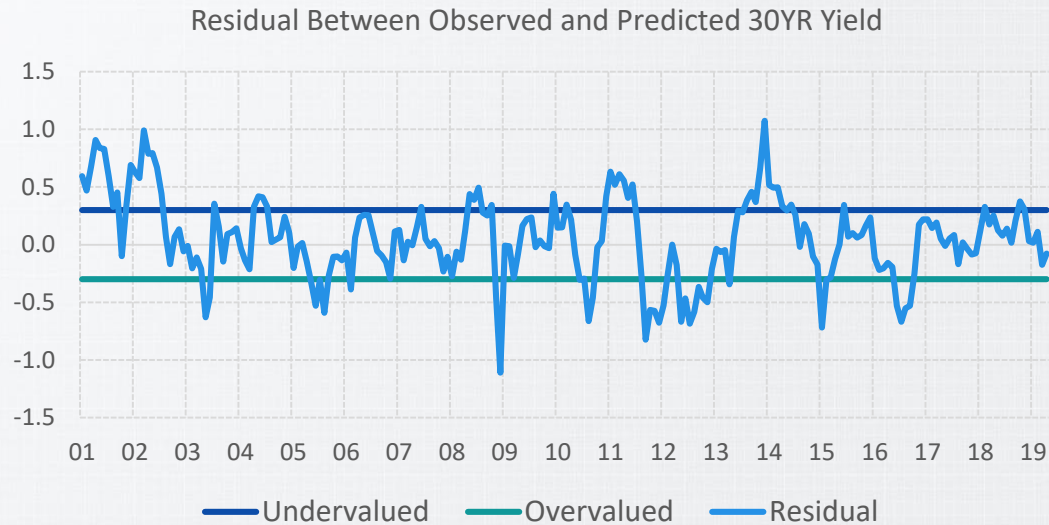


We overweight/underweight bonds of varying quality and maturity based on current Phase.

# Value

## Factor-Based Sub-Model

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

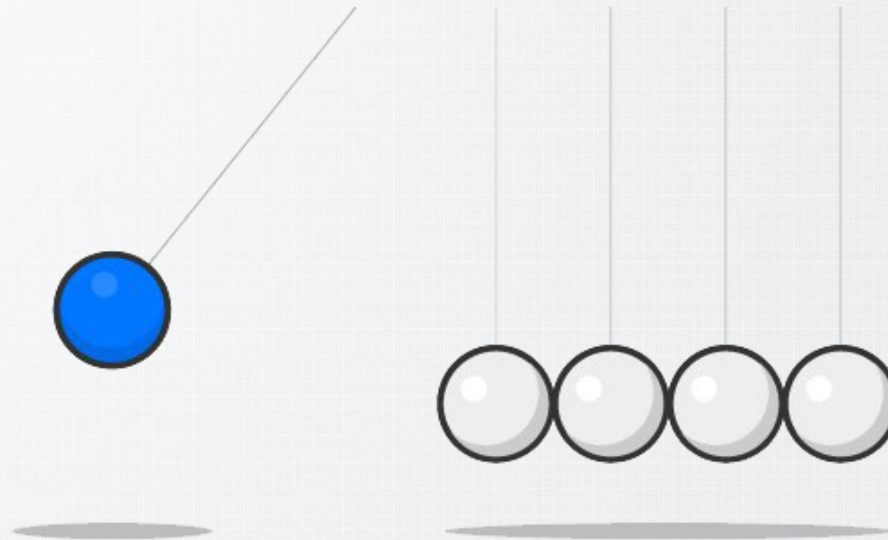


We overweight/underweight bonds of varying quality and maturity based on residual extreme levels.

# 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.

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# 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

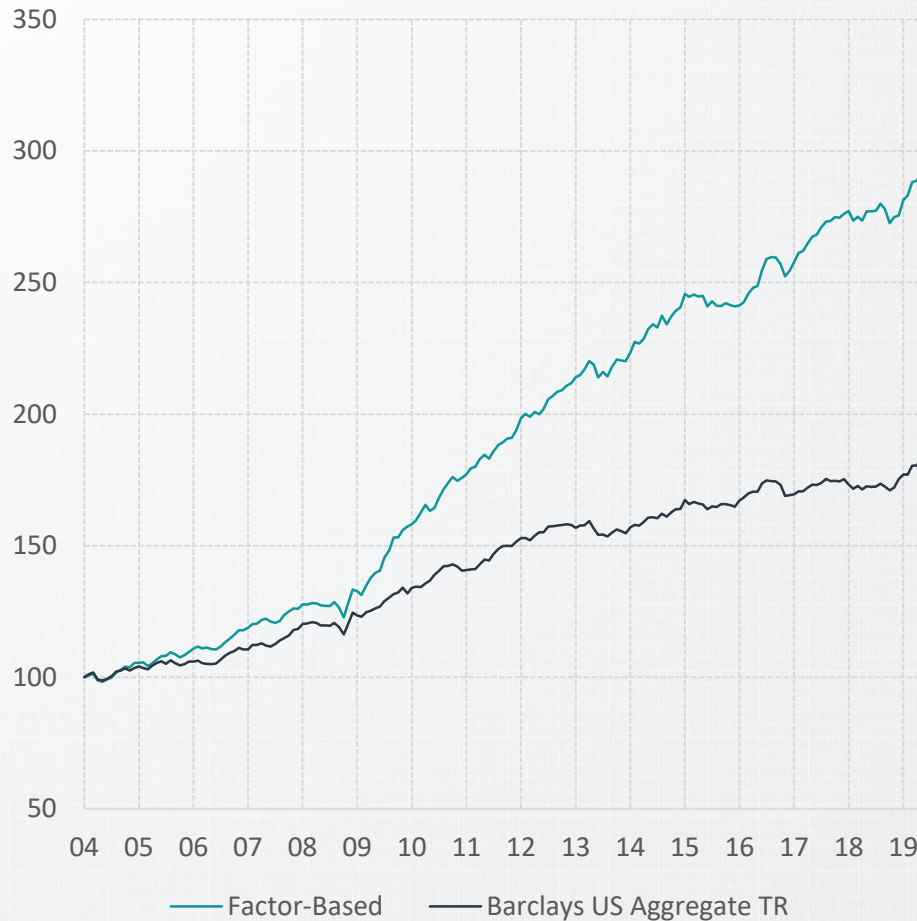
- The 10 ETFs must be held at all times, only the weighting of each position is adjusted.





# Portfolio

## Historical Performance



## Key Portfolio Statistics

**Annualized Return (%)**  
(Barclays US Aggregate TR = 4.1) **7.3**

**Standard Deviation (%)**  
(Barclays US Aggregate TR = 3.2) **3.8**

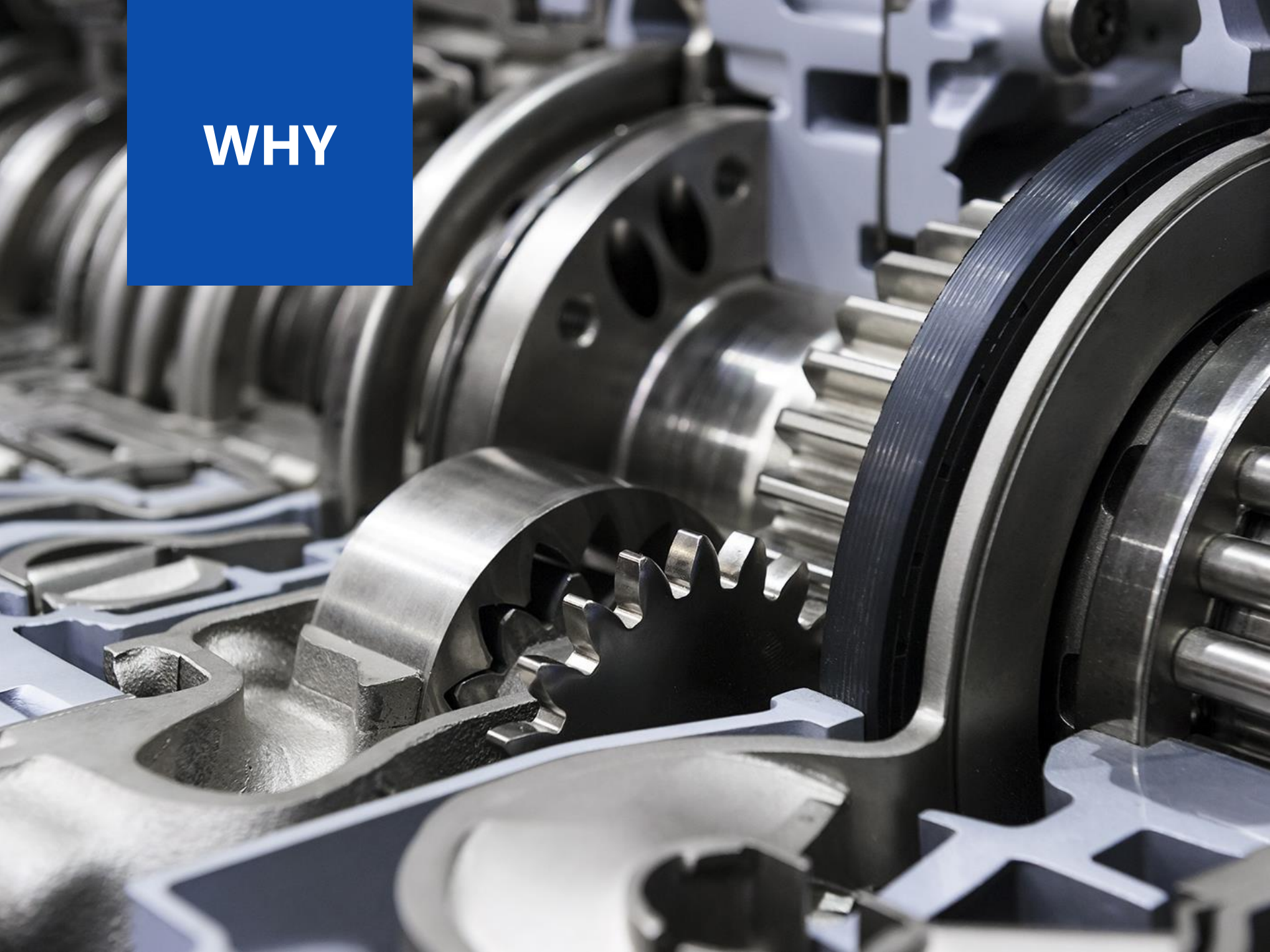
**Maximum Drawdown (%)**  
(Barclays US Aggregate TR = -3.8) **-4.6**

**Index Correlation**  
(Barclays US Aggregate TR = 1.00) **0.79**

**Sharpe Ratio**  
(Barclays US Aggregate TR = 0.86) **1.52**

Since Inception (January 1<sup>st</sup>, 2004)

**WHY**



# Statistics

## Calendar Performance

### Yearly

Calendar Returns	2004	2005	2006	2007	2008	2009	2010	2011
Factor-Based	5.4	4.0	7.5	6.9	5.8	18.0	11.7	10.3
Barclays US Aggregate TR	5.2	5.9	6.5	7.8	4.2	-2.0	6.0	0.5
Difference	0.2	-1.9	0.9	-1.0	1.6	20.0	5.8	9.8

Calendar Returns	2012	2013	2014	2015	2016	2017	2018	YTD
Factor-Based	9.3	4.0	9.3	0.2	5.6	8.5	-0.2	6.3
Barclays US Aggregate TR	4.2	-2.0	6.0	0.5	2.6	3.5	0.0	4.8
Difference	5.1	6.0	3.3	-0.4	2.9	5.0	-0.2	1.5

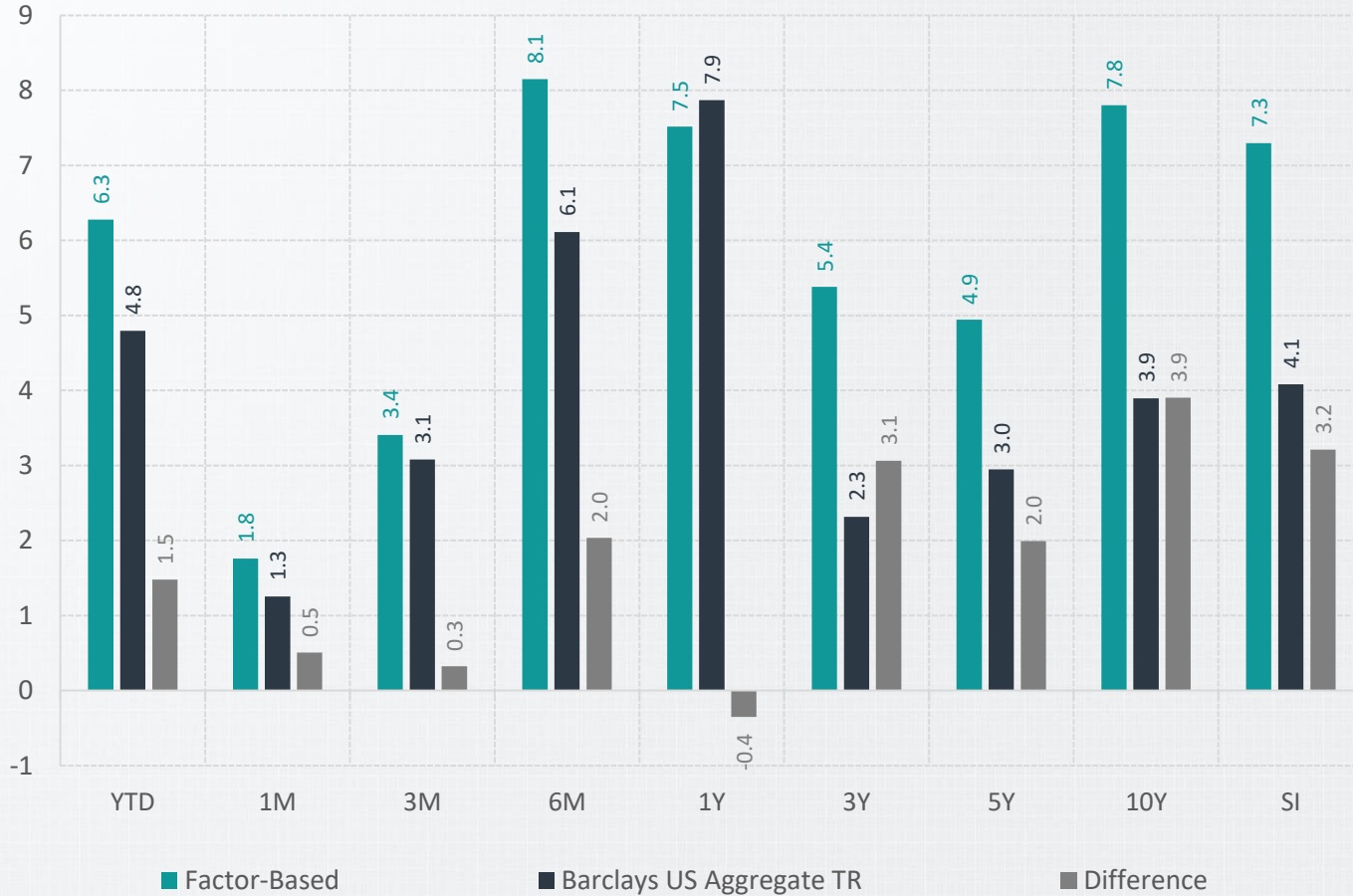
### Monthly

Calendar Returns	07-18	08-18	09-18	10-18	11-18	12-18	01-19	02-19	03-19	04-19	05-19	06-19
Factor-Based	0.1	1.0	-0.7	-2.0	0.9	0.2	2.2	0.6	1.8	0.2	1.4	1.8
Barclays US Aggregate TR	0.0	0.6	-0.6	-0.8	0.6	1.8	1.1	-0.1	1.9	0.0	1.8	1.3
Difference	0.0	0.3	-0.1	-1.2	0.3	-1.6	1.1	0.6	-0.1	0.2	-0.4	0.5



# Statistics

## Trailing Performance



# Statistics

## Return & Risk Measurements

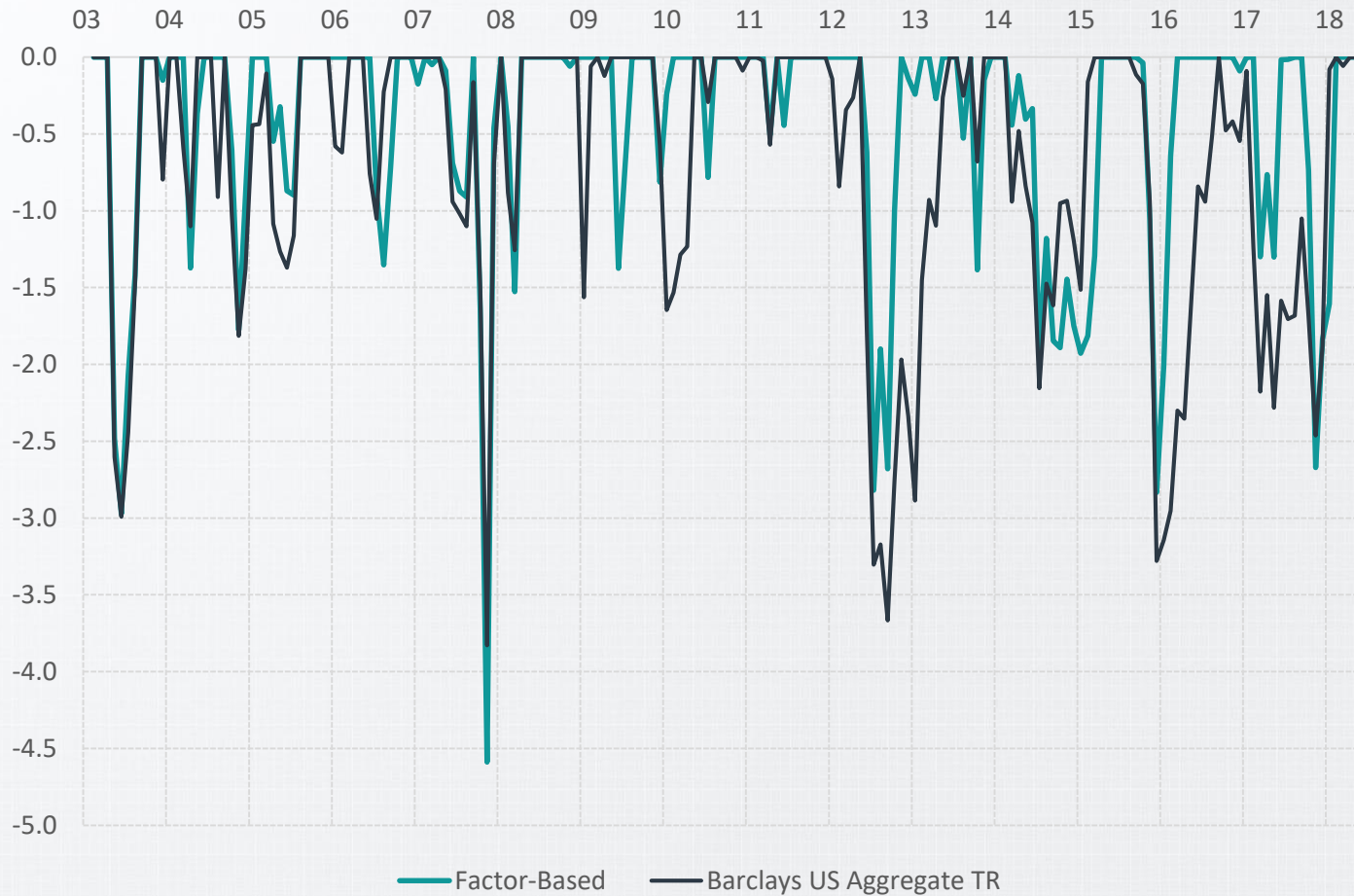
Trailing 3 Year	Factor-Based	Barclays US Aggregate TR	Difference
Ann. Return (%)	5.4	2.3	3.1
Standard Dev. (%)	3.5	3.1	0.3
Max Drawdown (%)	<b>-2.8</b>	<b>-3.3</b>	0.4
Sharpe Ratio	1.3	0.5	0.8
Sortino Ratio	1.63	0.62	1.01
Index Correlation	0.82	1.00	<b>-0.18</b>
Upside Capture	1.38	0.00	1.38
Downside Capture	0.66	0.00	0.66
Portfolio Beta	0.91	1.00	<b>-0.09</b>
Portfolio Alpha (%)	3.06	0.00	3.06

Since Inception	Factor-Based	Barclays US Aggregate TR	Difference
Ann. Return (%)	7.3	4.1	3.2
Standard Dev. (%)	3.8	3.2	0.6
Max Drawdown (%)	<b>-4.6</b>	<b>-3.8</b>	<b>-0.8</b>
Sharpe Ratio	1.5	0.9	0.7
Sortino Ratio	2.13	1.21	0.92
Index Correlation	0.79	1.00	<b>-0.21</b>
Upside Capture	1.32	0.00	1.32
Downside Capture	0.63	0.00	0.63
Portfolio Beta	0.94	1.00	<b>-0.06</b>
Portfolio Alpha (%)	3.21	0.00	3.21



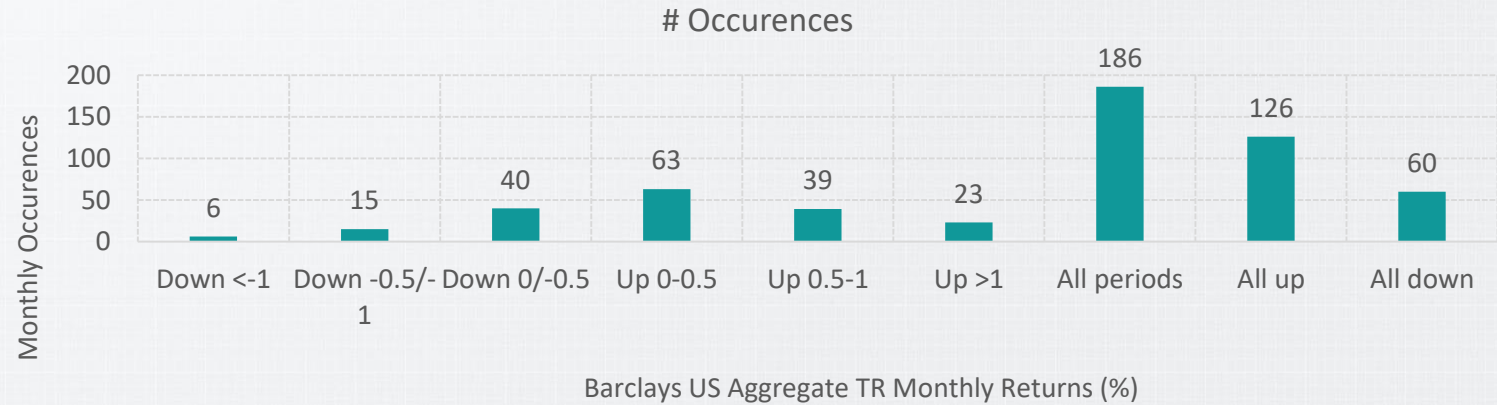
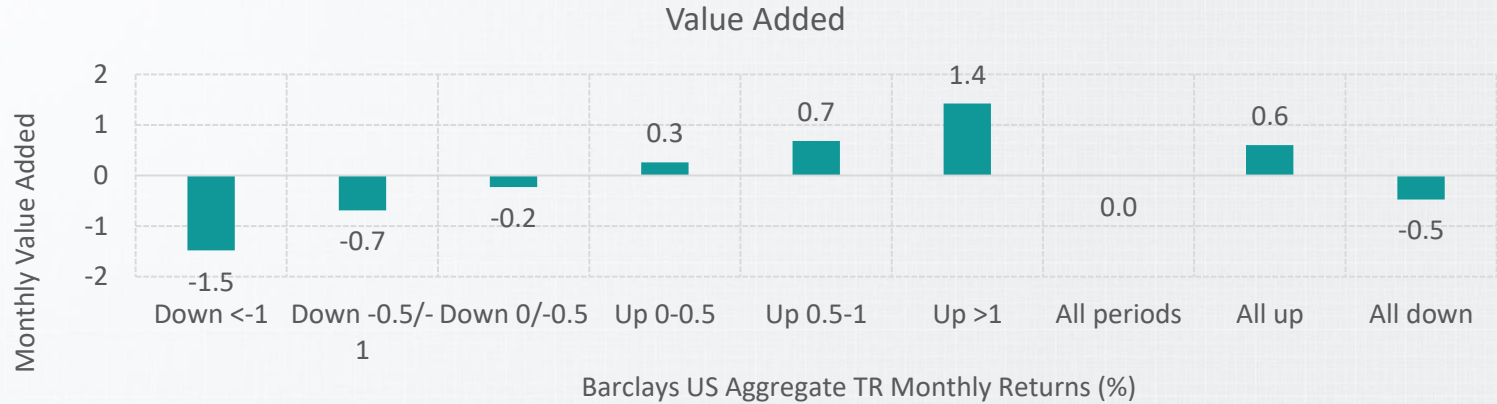
# Statistics

## Rolling Maximum Drawdown



# Statistics

## Outperformance in Different Market Conditions





# Characteristics

## Top Ten Holdings & Characteristics

Ticker	Bond Class	Weight (%)
TLT	US Long Term Govt	20.2
MUB	Municipal Bonds	16.5
MBB	Mortgage Backed	12.6
ICVT	Convertible Bonds	12.6
EMB	Emerging Market	9.6
LQD	US Corporate	9.6
HYG	US High Yield	7.9
IEF	US Intermediate Govt	6.8
SHY	US Short Term Govt	2.9
IAGG	Global Aggregate	1.3

Median	Factor-Based	Barclays US Aggregate TR
Equity Beta	0.12	-0.01
Standard Dev.	5.86%	2.98%
Distribution Yield	3.09%	2.93%
12m Trailing Yield	3.37%	2.72%
30 Day SEC Yield	2.98%	2.74%
Avg. Yield to Maturity	3.27%	2.78%
Weighted Avg. Coupon	3.82%	3.32%
Weighted Avg. Maturity	10.70	7.78
Effective Duration	7.49	5.38
Avg. Management Fee	0.19%	0.05%





# Allocation

## Sector Weights & Benchmark Deviations

Weights	Factor-Based	Barclays US Aggregate TR	Deviations
US Long Term Govt	20.2	6.9	13.2
Emerging Market	12.6	0.5	12.1
Convertible Bonds	16.5	5.9	10.6
US High Yield	9.6	0.0	9.6
US Short Term Govt	7.9	3.2	4.6
US Intermediate Govt	1.3	0.0	1.3
Mortgage Backed	2.9	9.8	-6.9
Global Aggregate	9.6	21.3	-11.6
Municipal Bonds	12.6	25.9	-13.3
US Corporate	6.8	26.6	-19.7

**WHO**



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# 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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