

PUBLIC SCHOOL FUND INVESTMENT BOARD
MEETING AGENDA, MAY 16, 2022

VIDEO CONFERENCE VIA ZOOM LINK:

<https://us02web.zoom.us/j/85272424782?pwd=NQtiMKQJePEaEMT0nGVDy3zWasrG1q.1>

Meeting ID: 852 7242 4782

Passcode: 9eh0Q0

One tap mobile

+12532158782,,85272424782#,,,,*434069# US

+13462487799,,85272424782#,,,,*434069# US

Public School Fund Investment Board Members

Dave Young	- Colorado State Treasurer – Board Chair
Peter Calamari	- Platte River Equity
Jerome DeHerrera, Esq.	- Achieve Law Group
Wendy Dominguez	- Innovest Portfolio Solutions
Christine Scanlan	- State Land Board Commissioners

- | | | |
|-------|---|-----------------------------|
| I. | Call to Order | D. Young Noon |
| II. | Roll Call | D. Young |
| III. | Approval of Minutes from February 28, 2022 Board Meeting | D. Young 12:03 |
| IV. | Approval of Minutes from April 11, 2022 Special Board Meeting | D. Young 12:04 |
| V. | Parametric Russian Holdings Update | Callan 12:05 (5 min) |
| VI. | Investment Consultant RFP Update* | S. Zimbelman 12:10 (15 min) |
| | a. Callan contract end date – June 30, 2022 | |
| VII. | Vote on 1 year extension: MacKay Shields | Callan 12:25 (5 min) |
| | a. Current year end July 20, 2022; total contract end 2025 | |
| VIII. | Annual IPS Review | S. Zimbelman 12:30 (10 min) |
| IX. | Market Update (Qtr. 1 – Ending March 31, 2022) | Callan 12:40 (10 min) |
| X. | Performance Report (FY Qtr. 3 – Ending March 31, 2022) | Callan 12:50 (15 min) |
| XI. | Cash deployment Update | Callan 1:05 (5 min) |
| XII. | Review of unrealized gains/losses | S. Zimbelman 1:10 (5 min) |
| XIII. | Fund Manager Presentation: Janus Henderson | Janus 1:15 (30 min) |
| XIV. | Review 2022 Board Meeting Calendar | S. Zimbelman 1:45 (5 min) |
| XV. | Other Business | 1:50 (5 min) |
| | a. House Bill 1146 Update | |

XVI. Public Comment 1:55 (5 min)

XVII. Board Adjournment 2:00

Future Meeting Dates:

August 15, 2022 Noon

November 14, 2022 Noon

*Portions of this meeting may be held in executive session for the purpose of obtaining privileged legal advice from the Attorney General's Office relating to the Board's proposed investment consultant contract, consistent with CRS 24-6-402(3)(a)(II).



Public School Fund Investment Board Meeting
Meeting Minutes February 28, 2022
Held Via Zoom

**Board Members in
Attendance:**

Dave Young
Peter Calamari
Jerome DeHerrera
Wendy Dominguez
Christine Scanlan

12:01 – 12:02 PM Welcome, roll call

12:03 – 12:04 PM Meeting minutes from the November 15, 2021 Board Meeting

Mr. Calamari made a motion to approve the November 15, 2021 Meeting minutes.
Ms. Scanlan seconded the motion. The motion passed at 12:04 pm.

- Dave Young – Yes
- Peter Calamari – Yes
- Jerome DeHerrera – Excused*
- Wendy Dominguez – Yes
- Christine Scanlan – Yes
 - *Jerome DeHerrera joined the meeting at 12:08

12:04 – 12:18 PM Investment Consultant RFP Update

Sarah Zimbelman provided an update on the Asset Consultant RFP. One inquiry was received in regards to the Board considering alternate contract structures other than the 2 years plus 3 one-year extensions that is stipulated in the RFP. The Board would consider alternate contract structures but both the RFP stipulated contract structure and the proposed alternate structure to be considered must be priced in the RFP response. This inquiry response was posted to the VSS. RFP responses are due Friday March 4th, 2022. The next step in the process will be the evaluation process. Ms. Zimbelman proposed to the Board that a board member chair the evaluation committee which would include herself, Eric Rothaus (Deputy Treasurer), Grant Sullivan (Attorney General's Office), and an outside subject matter expert. Ms. Dominguez volunteered to be the board member to chair the evaluation effort. Treasurer Young asked if the Proposer would be done by the Board. Ms. Zimbelman responded that most likely the evaluation committee would take care of these interviews if they were deemed necessary. The plan would be for the evaluation committee to reduce RFP responses to the top three. Those responders would then present to the Board on April 11th. A Board vote would take place at the end of this meeting to select the successful proposer. Ms. Dominguez asked if this meeting would take place from Noon to 4pm on the 11th. Ms. Zimbelman replied that she

would send out a meeting notice for noon to 3pm on the 11th for the finalist presentations and board vote.

12:18 – 12:40 PM House Bill 1164 Update

Treasurer Young discussed House Bill 1164 to the Board which will be brought before the House Education Committee on March 24th. Treasurer Young stated that it may be appropriate for the Board to take a position on the Bill as it directly pertains to the Board's work. Treasurer Young, as Treasurer, will be testifying in support of the Bill. The Bill has three main sections: the first dealing with staggering board member terms, the second creates a working group which is designed to study a variety of issues around the Permanent Fund, the public school fund, and the constitutional and statutory requirements that deal with these funds. In addition, it addresses the techniques that the Board requests of its consultants and asset managers to create a better return for the fund. Last, is the expansion of the time frame in which realized losses can be offset by realized gains. Mr. Calamari raised asked Treasurer Young to clarify what the options are for the working group or what might change with this working group. Treasurer Young said that legislation stipulates who's supposed to be on the working group and the timeline on which they are supposed to operate as well as the topics they are supposed to address. Ms. Scanlan raised a question as to whether the working group would specifically look at the requirement for the Permanent Fund to make the required \$21M annual distribution to the Public School Fund. Treasurer Young replied that yes, this is part of the working group's charter. Ms. Scanlan also asked Treasurer Young if he had any specific examples of alternate structures he would recommend if the Permanent Fund structure, as it exists today was no longer used. Treasurer Young responded that he doesn't necessarily have anything specific in mind, but that he would like to have the working group consider this topic and provide its thoughts. He provided the example of the State of Wyoming's sovereign wealth fund as a potential example. Treasurer Young ended by stating to the Board that if the Board wanted to take a position of support for this bill through a motion, he thought it was appropriate to do that. Mr. DeHerrera made a motion that the Board take a position of support on House Bill 1164 as it stands. Ms. Dominguez seconded the motion. The motion passes.

- Dave Young – Yes
- Peter Calamari – Abstain
- Jerome DeHerrera – Yes
- Wendy Dominguez – Yes
- Christine Scanlan – Yes

12:40 – 1:12 PM Market Update and Performance Report (Ending 12/31/21)

Treasurer Young suggested that this part of the meeting be started by addressing Governor Polis's call for the State Government to divest of all Russian owned assets, including any that may be held by the PSPF, in response to the Russian war on Ukraine. Ms. Janet Becker-Wold (Callan) stated that all, with the exception of Parametric, responded that they do not hold any Russian securities. Parametric, which is the company that handles the equity portion of the portfolio through the investment in EFTs, has a portion of the portfolio invested in an emerging markets ETF which does hold Russian securities. Dan Ryan, portfolio manager from Parametric stated that there were

three companies on the sanctions list in the emerging markets ETF. This exposure makes up about 0.05% or 5 basis points of the Permanent Fund's Parametric portfolio. Mr. Ryan stated that as of today the shares are still held in the ETF and that it was unclear at this moment what MSCI, the index provider, and Blackrock and iShares, the ETF manager, plan to do with Russian holdings in the ETF. Russian markets have been essentially closed making any sort of trading essentially impossible. Mr. Ryan also stated that it appears MSCI seems to be indicating that it is considering removing Russia from its index. Ms. Becker-Wold recommended getting more information on what MSCI plans to do with the emerging markets ETF. Individual securities cannot be sold off from the ETF holding, the only option would be to sell the entire emerging markets ETF holding if the Russian holdings are not removed from the index. Ms. Dominguez asked if the fund could potentially do a developed markets ETF holding for the time being if the emerging markets ETF needs to be sold. Ms. Becker-Wold recommended that because this is a rapidly changing situation that the Board wait to see what MSCI is going to do over the next several days. Treasurer Young asked what would be an appropriate time frame to which Ms. Becker-Wold responded a week. Ms. Dominguez asked what the impact to our realized gain/loss position would be if we sold off our holdings in the emerging markets EFT. Mr. Ryan thought it would be in a net gain position, but explained that the portfolio holds several tranches in the emerging markets ETF and that some of these tranches could be at a net loss. The Board agreed on meeting in one week, if necessary, once more information is known around MSCI and iShares plans for the emerging markets ETF.

Market update and portfolio performance presentation by Alex Browning from Callan.

1:12 – 1:30 Asset Allocation & Cash deployment discussion

Presentation by Janet Becker-Wold

Ms. Becker-Wold recommended allocating available cash for investing to the equity, high yield and preferred securities portfolios. This deployment keeps the fund within the target ranges as specified in the Fund's IPS. Sarah Zimbelman clarified with the Board that none of the new funds going to equity would be invested into the emerging markets ETF for the time being.

1:30 – 1:35 Review of unrealized gains/losses

Sarah Zimbelman reviewed the Fund's Financial Report

1:35 – 1:50 PM Fund Manager Presentation: Parametric

Presentation by Dan Ryan, Senior Director – Relationship Management
Jim Reber, Managing Director - Portfolio Management

1:50 – 1:51 PM Other Business

Sarah Zimbelman will send out emails to Board members to check availability for a follow-up meeting regarding emerging markets ETF.

1:51 – 1:53 PM Public comments

- Written Comments

- There were no written comments.
- Verbal Comments
 - There were no verbal comments.

The meeting was adjourned at 1:54 pm.

Next Meeting

- May 16, 2022 at Noon



Public School Fund Investment Board Meeting
Meeting Minutes April 11, 2022
Held Via Zoom

Board Members in

Attendance:

Dave Young
Peter Calamari
Jerome DeHerrera
Wendy Dominguez
Christine Scanlan

12:00 – 12:05 PM Welcome, roll call

- Dave Young – Yes
- Peter Calamari – Yes
- Jerome DeHerrera – Excused
- Wendy Dominguez – Yes
- Christine Scanlan – Excused

12:05 – 12:41 PM Callan Finalist Presentation

Presentation from Alex Browning (Callan) and Janet Becker-Wold (Callan) on behalf of Callan for their response to the Asset Consultant RFP. Mr. Calamari asked Ms. Becker-Wold if the Board is unable to change the constitutional limitations on the types of assets the Fund can hold, specifically owning private assets or alternative investments, what would Callan recommend to fill that allocation? She responded that they would recommend putting that allocation towards public market equities and high yield asset categories. Treasurer Young asked if all constitutional limitations regarding asset types were lifted how would that change the current equity portion of the portfolio. Ms. Janet Becker-Wold responded that they may consider active management for certain portions of the portfolio, such as the small-cap component. Ms. Dominguez asked Mr. Browning and Ms. Becker-Wold to address how they handle potentially perceived conflicts of interest for their consulting piece of the business when part of their business is also advising investment managers. Ms. Becker-Wold responded they have one small piece of their business, the institutional consulting business, which is a completely separate P&L from the remainder of the business and none of the asset owner consultants are involved in that piece of the business in any way. Ms. Dominguez also asked a question regarding Callan's professional liability insurance coverage, that their proposed coverage limits in the contract didn't line up with the provided proof of insurance certificates. Ms. Becker-Wold was not sure about this but said she would follow-up with the Board after reaching out to their insurance team.

12:41 – 12:55 PM Asset Consultant Search Board Discussion

Ms. Dominguez commented that as the Board representative on the evaluation committee she felt it was a very thorough process and that having

Randy Baum from the Denver Employee Retirement Plan as an external subject matter expert on the committee was very useful. She also noted that as someone working in the industry it shouldn't be seen as a negative that Callan was the only RFP response because most advisors in this space evaluate the likelihood of actually being awarded the contract before dedicating resources to the lengthy task of putting together a proposal response. Discussion included comments that Callan is a high-caliber, top-tier firm, that they are large enough to support the Board's needs but are still highly focused on customization, and that there were no significant concerns from the evaluation committee on their proposal response.

Ms. Dominguez made a motion to hire Callan as the Public School Permanent Fund Asset Consultant. Mr. Calamari seconded this motion.

- Dave Young – Yes
- Peter Calamari – Yes
- Jerome DeHerrera – Excused
- Wendy Dominguez – Yes
- Christine Scanlan – Excused

This motion passes

1:55 – 1:57 PM Public comments

- Written Comments
 - There were no written comments.
- Verbal Comments
 - There were no verbal comments.

Next Meeting

- May 16, 2022 at Noon

The meeting was adjourned at 1:57 pm.

INVESTMENT POLICY STATEMENT

For

The Colorado Public School Fund Investment Board

Fund Description (State Constitution: Article IX, Section 3; CRS 22-41-101/106)

IPS Approved: March 11, 2021

Table of Contents

Fund Description	3
Purpose	4
Investment Objective	4
Distribution Policy	5
Role of the Public School Fund Investment Board (PSFIB)	5
Role of the Portfolio Administrator	6
Role of the Investment Consultant	6
Role of Investment Managers	6
Trades and Exchanges	7
Liquidity	7
Strategic Asset Allocation.....	8
Rebalancing Guidelines.....	8
Asset Class Objectives.....	9
Performance Measurement	9
Appendix I: Investment Manager Guidelines	11
Appendix II: Current and Historical Legislative Changes Affecting the PSPF	17

Fund Description

(State Constitution: Article IX, Section 3; CRS 22-41-101/106)

The State Public School Fund, d/b/a the Public School Permanent Fund (PSPF), was created under Colo. Const. art. IX, § 3, and CRS 22-41-101, et seq., and consists of a portion of the proceeds from the sale or use of such lands as have been or may be granted to the state by the federal government for state school educational purposes.

The State Treasurer is the custodian of the PSPF. Investments in the fund are directed by The Public School Fund Investment Board (PSFIB), created in 2016 under CRS 22-41-104(2). The PSFIB consists of five members: the State Treasurer, who serves as the Chair of the Board, one member of the State Board of Land Commissioners, and three members appointed by the State Treasurer. The State Treasurer and two other voting members of the PSFIB constitute a quorum of the Board. Except for the State Treasurer, members of the PSFIB serve two-year terms and may not serve more than three consecutive terms. The State Board of Land Commissioners or the State Treasurer may remove their appointed members for any cause that renders the member incapable of discharging or unfit to discharge his or her duty to the PSFIB.

The public purpose for the creation of the PSFIB is to facilitate reasonable growth in the PSPF through lawful investments authorized under CRS 24-36-109 (time deposits under 2 years), CRS 24-36-112 (deposits in savings and loan associations under 3 years), CRS 24-36-113 (fixed income securities denominated in United States Dollars), CRS 24-36-111.5 (real property owned by a school district), CRS 22-41-104 (stock mutual funds, index funds, other instruments that are not a direct investment in a corporation, and bonds issued by school districts), and other lawful financial assets as specified in the PSFIB's Investment Policy.

The State Constitution, article IX, § 3, states that this fund shall forever remain inviolate and intact. Interest and income is expended in the maintenance of the schools of the State and distributed amongst the several counties and school districts of the State in accordance with CRS 22-41-102 and related statutory provisions. Except as otherwise provided by law, no part of the PSPF, principal or interest and income, can be transferred to any other fund or used or appropriated. The State, by appropriation, must supply all losses of principal if not offset by a gain on an exchange or sale pursuant to section 2-3-103 (5), C.R.S, or section 22-41-104 (2).

Purpose

The purpose of this Investment Policy Statement (IPS) is to assist the PSFIB in effectively supervising, monitoring, and evaluating the investments of the PSPF.

The investment program is defined in the various sections of the IPS by:

- Stating in a written document the PSFIB's expectations, objectives, and guidelines for the investment of all assets.
- Setting forth an investment structure for managing all assets. This structure includes various asset classes, investment management styles, asset allocation and acceptable ranges that, in total, are expected to produce a sufficient level of overall diversification and total investment return over the long-term.
- Providing guidelines for certain investment portfolios that control the level of overall risk and liquidity assumed in that portfolio, so that the PSPF is managed in accordance with stated objectives. Manager specific guidelines are contained within Appendix I of this IPS.
- Encouraging effective communications among the PSFIB, the Investment Consultant(s), the Investment Managers, State Treasury, State Land Board, and other stakeholders.
- Establishing formalized criteria to monitor, evaluate, and compare the performance results achieved by the investment managers on a regular basis.
- Complying with all fiduciary, prudence, and due diligence requirements that experienced investment professionals would utilize, and with all applicable laws, rules, and regulations from various local, state, and federal political entities that may impact the PSPF's assets.

This IPS has been formulated, based upon consideration by the PSFIB of the financial implications of a wide range of policies, and describes the prudent investment process that the PSFIB deems appropriate. Although the PSFIB seeks to set forth an investment policy that provides broad overarching guidance, this IPS is not designed to be comprehensive as to all investment scenarios that may arise, nor can it account for all contingencies that may impact the PSPF. This IPS is subject to modification or revision at the PSFIB's discretion. The IPS will be reviewed at least annually to ensure it reflects the goals and objectives of the PSPF and the PSFIB.

Investment Objective

The primary investment objective of the PSFIB is to securely invest PSPF assets for the intergenerational benefit of public schools and in a manner that complies with the "Uniform Prudent Investor Act," (§ 15-1.1-101, et seq., C.R.S.). Since the PSPF is to remain inviolate and intact, and not subject to appropriation by the General Assembly, the

overall objective of the PSFIB is to preserve, protect, and grow the principal of the PSPF with a prudent level of risk over a long-term time horizon.

Distribution Policy

As per CRS 22-41-102, the order of distribution of interest or income earned on the investment of the moneys in the PSPF is as follows:

- the first \$21 million for FY 2017-18, FY 2018-19, FY 2019-20, and every fiscal year thereafter, is credited to the public school fund created by CRS 22-54-114 for distribution as provided by that section;
- an amount annually appropriated by the General Assembly shall be used to pay the expenses of the PSFIB, including but not limited to the services of Investment Managers and consultant(s);
- for FY 2017-18 and FY 2018-19, any interest or income exceeding \$21 million plus the PSFIB's expenses, up to \$31 million plus the cost of the PSFIB's expenses, is credited to the public school capital construction assistance fund created in CRS 22-43.7-104(5);
- for FY 2019-20, and every fiscal year thereafter, any interest or income exceeding \$21 million plus the PSFIB's expenses, up to \$41 million plus the cost of the PSFIB's expenses, is credited to the public school capital construction assistance fund created in CRS 22-43.7-104(5); and
- any excess interest or income over \$31 million for FY 2017-18 and FY 2018-19, or \$41 million for FY 2019-20 and future fiscal years, net of the PSFIB's expenses, is credited as specified by the Colorado General Assembly, taking into consideration the recommendations of the PSFIB.
 - Note there was a recommendation made by the PSFIB under CRS 22-41-102(3)(f)(IV) and (3)(g)(IV) that excess interest or income over these levels be reinvested back into the PSPF. This was approved by the PSFIB at its April 10, 2017 meeting.

Role of the Public School Fund Investment Board (PSFIB)

Under CRS 22-41-102.5(3), the PSFIB shall direct the State Treasurer on how to securely invest moneys deposited in the PSPF for the intergenerational benefit of public schools and in a manner that complies with the "Uniform Prudent Investor Act", (§ 15-1.1-101, et seq., C.R.S.). The prudent investor rule requires trustees and fiduciaries to exercise reasonable care, skill, and caution when considering the purposes, terms, distribution requirements, and other circumstances of a trust, like the PSPF. The PSFIB's investment and management decisions respecting individual assets must be evaluated not in isolation but in the context of the total Trust portfolio and as part of an overall investment strategy having risk and return objectives reasonably suited to a trust such as the PSPF.

The PSFIB considers a number of relevant factors in investing and managing PSPF assets. These include but are not limited to general economic conditions; the possible effects of inflation or deflation; the overall risk of the portfolio; the role that each investment or course of action plays within the overall portfolio; expected interest and

income; capital appreciation; liquidity needs; correlation among asset classes; and, preservation of capital.

Role of the Portfolio Administrator

The Portfolio Administrator will act in coordination with the PSFIB with the overarching goal of ensuring the PSFIB and PSPF are in compliance with their respective legal obligations and investment policy(s). Other duties will include coordinating investment managers, consultant(s), State Treasury, custodian(s), and the PSFIB on matters relating to Board business.

Role of the Investment Consultant

The role of the investment consultant, as described in more detail in the Statement of Work (Exhibit A) included in their contract, is to support the PSFIB in matters concerning asset allocation, investment structure, manager selection, and performance measurement. The investment consultant is also expected to keep the PSFIB apprised of developments and trends in the capital markets and investment management industry.

Role of Investment Managers

The role of investment managers is to manage PSPF assets under their care, custody, and/or control in accordance with their respective contracts, the IPS objectives, and guidelines set forth in Appendix I. In doing so it is expected that each investment manager will:

- Exercise investment discretion (including holding cash equivalents as an alternative) within the IPS objectives and guidelines set forth herein.
- Promptly inform the Chair of the PSFIB, the Portfolio Administrator, and the Investment Consultant(s) in writing regarding all significant and/or material matters and changes pertaining to the investment of PSPF assets, including, but not limited to:
 - A. Investment strategy
 - B. Portfolio structure
 - C. Tactical approaches
 - D. Ownership
 - E. Organizational structure
 - F. Financial condition
 - G. Professional staff
 - H. Recommendations for guideline changes
 - I. All material legal, SEC, and/or other regulatory agency proceedings affecting the firm.
- Utilize the same care, skill, prudence, and due diligence under the circumstances then prevailing that experienced, investment professionals acting in a like capacity and fully familiar with such matters would use in like activities for similar programs with like aims in accordance and compliance with all applicable laws, rules and

regulations from local, state, and federal bodies as it pertains to fiduciary duties and responsibilities.

- Acknowledge and agree in writing annually to their fiduciary responsibility to fully comply with the relevant portions of the IPS as set forth herein, and as modified in the future, as well as guidelines specified in their individual contracts.
- Immediately notify the Chair of the PSFIB, the Portfolio Administrator, and the Investment Consultant(s) if they are not in full compliance with the IPS and/or their respective contract or separate account guidelines, and provide plans to move into compliance. Work with the notified parties to establish a reasonable timeline for getting into compliance, keeping in mind the best interests of the portfolio.

Trades and Exchanges

Investment managers are granted discretionary authority to buy, sell, or exchange securities in the daily management of their individual portfolios. All investment managers will use reasonable efforts to ensure that realized losses are neutralized with realized gains within 12 months of the PSPF's June 30 fiscal year-end. The PSFIB will review the total portfolio realized and unrealized gain/loss position quarterly to identify opportunities where unrealized gains and losses across all investment advisors/managers may be matched to manage the total portfolio realized gain/loss position.

Liquidity

Sufficient liquidity must be maintained to ensure that all operational requirements are met and that the overall quality and marketability of the portfolio is maintained. Both short-term cash needs and long-term projections will be reviewed on a regular basis to establish an appropriate level of liquidity.

Strategic Asset Allocation

The Strategic Asset Allocation and rebalancing ranges are as follows:

Table 1

ASSET CLASSES	STRUCTURE	Lower Limit	Strategic Allocation	Upper Limit
<u>Equities:</u>				
	Domestic Equity	14%	18.0%	22%
	International Equity	8%	12.0%	16%
Total Equities		24%	30.0%	36%
<u>Fixed Income:</u>				
	Market Duration Bonds	45%	52.5%	60%
	Short Duration Bonds	5%	7.5%	10%
Total Fixed Income		60%	60.0%	70%
<u>High Income Strategies:</u>				
	High Yield Fixed Income	4.5%	8.5%	12.5%
	Preferred Securities	0%	1.5%	3.0%
Total High Income Strategies		5%	10.0%	15%
Total Portfolio			100%	

The Strategic Asset Allocation may change over time based on the PSFIB's assessment of current and long-term market conditions as well as distribution needs. This IPS will be modified accordingly.

The Strategic Asset Allocation is expected to meet the distribution objective of a minimum of \$21 million per year, net of annually appropriated investment manager fees and Board expenses and, provide prudent growth in the corpus within the constraints established in state statute.

Rebalancing Guidelines

Individual investment managers have the authority to rebalance within their own portfolio.

The asset allocation of the PSPF will be reviewed monthly by the Portfolio Administrator and at least quarterly by the PSFIB. The goal of the review is to evaluate whether action should be taken to rebalance the PSPF toward the IPS strategic asset allocation ranges.

When available, cash inflows will be deployed in a manner consistent with the strategic asset allocation and individual asset class structures. The PSFIB may deviate from the aforementioned allocation of cash inflows if deemed to be in the best interest of the PSPF.

In situations where the PSPF is outside the Strategic Asset Allocation rebalancing ranges, the Portfolio Administrator, in consultation with the Investment Consultant(s) and/or Investment Managers, will prepare rebalancing recommendations for the PSFIB to evaluate. Actions authorized by the PSFIB must take into consideration transaction costs and the impact on PSPF's realized gain and loss position.

All actions authorized by the PSFIB will be executed by the Portfolio Administrator as soon as practicable with guidance provided by the PSFIB as needed or requested.

Asset Class Objectives

Equity

The purpose of the equity portfolio is to provide exposure to broad economic growth through commingled exposure to stocks both domestically and abroad. The implementation may be through multiple mutual funds or exchange traded funds as long as the overall composition mirrors the target exposures.

The following security types are prohibited: individual equity securities, funds with insufficient liquidity profiles, and derivatives.

Market Duration Fixed Income

The purpose of market duration fixed income is to provide income and diversification to other asset classes in the Fund.

Short Duration Fixed Income

The purpose of the short duration portfolio is to provide capital preservation with a higher yield than cash and a means to manage net realized losses in the overall portfolio.

High Income Strategies

The purpose of the allocation to High Income Strategies is to provide higher potential cash yield to the fund while also diversifying the interest rate risk of the Market Duration Fixed Income allocation with moderate equity risk.

Cash

There is no strategic target allocation to cash. Cash will be held primarily to fund distributions or allocations to existing or new asset classes as needed.

Performance Measurement

Composites and individual portfolios will be measured against appropriate market indices and peer groups, where appropriate.

Total Fund

Total Fund performance will be measured using weighted blend of asset class benchmarks reflecting the current Strategic Asset Allocation of 60% Fixed Income, 30% Equities, and 10% High Income Strategies.

Fixed Income Composite

The total fixed income composite will utilize a blended benchmark representing the strategic allocation to sub-asset class strategies – 87.5 % Bloomberg Aggregate Index and 12.5 % Bloomberg 1-3 Year Government/Credit Index.

- Colorado State Treasury Market Duration Fixed Income Portfolio: Total rate of return performance for the portfolio will be measured against the Bloomberg U.S. Aggregate Index taking into account statutory constraints prescribed on income distribution and neutralizing realized gains/losses per CRS 22-41-102-104 and the State Constitution, article IX, § 3. The portfolio will also be measured relative to Callan's Core Bond Peer Group.
- Short Duration Fixed Income Composite: Total performance will be measured against the Bloomberg 1-3 Year Government/Credit Index and Callan's Short Duration Bond Peer Group.

Equity Composite

The equity portfolio will be measured against a blended benchmark comprised of 60% Russell 3000 Index / 40% MSCI ACWI x-U.S. Index. As the portfolio composition is customized, there is no comparable peer group.

High Income Strategies Composite

The total high income strategies composite will utilize a blended benchmark representing the strategic allocation to sub-asset class strategies – 85% Bloomberg U.S. Corporate High Yield Index and 15% ICE BofA U.S. All Capital Securities Index.

Appendix I: Investment Manager Guidelines

A. Colorado State Treasury Managed Market Duration Portfolio

The primary investment opportunity set is securities eligible for inclusion in the Bloomberg U.S. Aggregate index. Exceptions to this rule are itemized below under Additional Investment Opportunities.

Duration:

The effective duration of the portfolio shall be normally within +/- 30% of the Bloomberg U.S. Aggregate Index.

Bloomberg Aggregate Index Rules

- Must have at least one year to final maturity regardless of call features.
- Must have at least \$300 million par amount outstanding. Asset-backed securities must have at least \$500 million deal size and \$25 million tranche size. For commercial mortgage-backed securities, the original transaction must have a minimum deal size of \$500 million, and a minimum tranche size of \$25 million; the current outstanding transaction size must be at least \$300 million to remain in the index.
- Must be rated investment-grade (Baa3/BBB- or higher) by at least two of the following ratings agencies: Moody's, S&P, Fitch. If only two of the three agencies rate the security, the lower rating is used to determine index eligibility. If only one of the three agencies rates a security, the rating must be investment-grade.
- Must be fixed rate, although it can carry a coupon that steps up or changes according to a predetermined schedule.
- Must be dollar-denominated and non-convertible.
- Must be publicly issued. However, 144A securities with Registration Rights and Reg-S issues are included.

Additional Investment Opportunities

- Investment grade Collateralized Mortgage Obligation (CMO) tranches

B. Externally managed Short Duration Portfolio

The main objective for the management of the Portfolio is to outperform the primary benchmark, the Bloomberg U.S. 1-3 Year Government/Credit Bond Index, in a risk adjusted manner over a full market cycle.

A custom secondary benchmark, reflecting the ability to allocate to out of benchmark securities, will be composed of 85% Bloomberg 1-3 Year Government/Credit Index and 15% BofAML 1-3 Year BB U.S. Cash Pay High Yield Index (J1A1).

Guidelines for the portfolio are as follows:

Investment Universe and Limitations: The account managed by Contractor on behalf of PSFIB will invest in corporate bonds and notes; government securities, including agencies; bank loans; mortgage and asset backed securities. The Portfolio may invest in U.S. dollar denominated securities issued by non-U.S. issuers and/or entities, although it intends to primarily invest in securities issued by U.S. issuers and/or entities. Investment types not explicitly allowed in these guidelines may still be used by the Contractor if deemed to be appropriate by Contractor in the exercise of its fiduciary duty to PSFIB. The PSFIB's permission will be sought by Contractor if the investment type is intended to be a primary strategy of the Portfolio, defined as more than 10% of net assets in the Portfolio.

Allowable Investments: The Portfolio managed by Contractor on behalf of PSFIB may include the following (subject to the limitations below):

- Corporate Credits;
- Preferreds;
- 144A securities; excluding 144A Reg S securities
- U.S. Treasuries and Agencies;
- Foreign Government Securities;
- Commercial loans, including bank loans, bridge loans, debtor-in-possession ("DIP") loans, and mezzanine loans; and
- Asset and mortgage backed securities, including, but not limited to commercial mortgage backed securities, collateralized mortgage obligations, collateralized loan obligations and to be announced mortgage backed securities.

General Restrictions: The Portfolio managed by Contractor on behalf of PSFIB shall be subject to the following restrictions:

- The duration of the Portfolio will generally be +25/-40% of the Bloomberg U.S. 1-3 Year Government/Credit Bond Index.
- The Portfolio will generally not invest more than 10% of its net assets in cash and cash equivalents.
- The maximum issuer position size will be limited to 5% of net assets at the time of purchase, excluding those issued by the U.S. Government and its agencies.

- No more than 10% of the net assets will be invested in preferred securities. The Portfolio will not hold equity securities.
- The Portfolio may invest up to 10% of net assets, at time of purchase, in illiquid securities. 144A securities determined to be liquid by Contractor will not be considered in the illiquid concentration.
- The portfolio may invest up to 25% in non-investment grade bonds with a minimum rating of BB-/Ba3 at the time of purchase. Non-investment grade bonds are defined as bonds that are rated BB+ or lower by Standard & Poor's Rating Service and Fitch Inc., or Ba1 by Moody's Investor Services. Unrated securities will be treated as non-investment grade.
- In the event a security is downgraded below BB- after purchase, the Contractor must immediately notify the Chair of the PSFIB, the Portfolio Administrator and the Investment Consultant(s). The security must be sold as soon as practical, keeping in mind the best interests of the portfolio.
- Split rated securities will be evaluated as follows:
 - i. If the security is rated by all three rating agencies, the middle rating will apply
 - ii. If the security is rated by all three rating agencies with two or more ratings the same, the majority rating applies.
 - iii. If the security is only rated by two agencies, the lowest rating applies.
- Securities that are not rated by any of the three major rating agencies, Standard & Poor's, Moody's, or Fitch, will be considered unrated.

Derivatives: The Portfolio managed by Contractor on behalf of PSFIB may invest in U.S. Treasury futures. The use of derivatives may not result in leverage in the portfolio and must be fully collateralized by cash or cash equivalents.

C. Equity Portfolio

An external investment manager will manage a global equity portfolio for the PSFIB that seeks to adhere to the PSFIB's gain/loss realization requirements with a predicted tracking error within approximately 1% of the composite benchmark. The Portfolio will invest in Exchange Traded Funds ("ETFs") selected for inclusion in the portfolio based upon their contribution to the portfolio's country/region allocation, market capitalization, industry weightings, and other fundamental characteristics.

Benchmark: 60% Russell 3000 Index / 40% MSCI ACWI ex-U.S. Index

Eligible Securities: All U.S.-traded ETFs and '40 Act Mutual Funds, defined to be an "open-end company" as stated in section 5(a)(1) of the Investment Company Act of 1940.

Prohibited Securities: The following security types are prohibited:

- Individual equity securities;
- Funds with insufficient liquidity profiles; and,
- Derivatives (including currency forwards).

Rebalancing: No scheduled rebalancing. The investment manager will review the portfolio with the PSFIB and/or the Portfolio Administrator on a quarterly basis in relation to the benchmark and will discuss potential rebalancing trades at that time.

Realized Gain/Loss Off-Set: The day-to-day management of the portfolio will seek to avoid net realized losses over the State Fiscal Year (July 1-June 30). Upon the PSFIB's request, the investment manager may realize gains or losses consistent with the Board's policies. The investment manager will review the portfolio with the PSFIB and/or the Board's Portfolio Administrator on a quarterly basis to discuss current unrealized positions.

Treatment of Dividends: Dividends will not be reinvested, unless otherwise instructed by the PSFIB. Available dividends shall be distributed by the custodian to the PSFIB on at least a quarterly basis.

D. High Yield Fixed Income

Objective / Reference Benchmark: The objective of this portfolio is to provide high yield fixed income exposure benchmarked against the Bloomberg U.S. Corporate High Yield Index and to invest assets in a manner that complies with the PSFIB's Investment Policy Statement, the Uniform Prudent Investor Act (§ 15-1.1-101, et seq., C.R.S.), Colorado statutes and constitutional provisions governing the Fund (§ 22-41-101, et seq., C.R.S. & Colorado Constitution art. IX, § 3).

Realized Gain/Loss: The Contractor will coordinate with the PSPF Portfolio Administrator, Investment Consultant, Colorado Treasurer's Office, and other third party service providers to aggregate and monitor realized and unrealized gains and losses to ensure that net realized losses are minimized and, when they do occur, immediately coordinate efforts to activate plans to offset such losses with realized gains from other aspects of the Fund, in order to ensure compliance with § 22-41-102 and 104, C.R.S.

Earned Income: Earned income, not including capital gains, on the portfolio shall be swept from the account on a monthly basis. Sufficient liquidity must be maintained to ensure that all operational requirements are met and that the overall quality and marketability of the portfolio is maintained.

Credit Quality Guidelines: Invest in a diversified portfolio of high yield debt securities which are primarily in the lower rating categories of recognized rating agencies:

Moody's:	Baa1 to Caa3 or
S&P:	BBB+ to CCC-

For temporary defensive and cash management purposes, the portfolio may invest in cash and debt securities (including cash equivalents) rated A- or higher.

Ratings for compliance purposes will be calculated on the middle rating of the available ratings by S&P, Moody's, and Fitch. If only two of the three agencies are available, the lower rating will be used (Bloomberg Rating Methodology). These ratings will be applied to both the portfolio and the benchmark.

Permitted Investments: Debt securities in which the portfolio may invest include all types of debt obligations such as bonds, debentures, notes, bank debt, bank loan participations, commercial paper and U.S. Government securities (including obligations, such as repurchase agreements, secured by such instruments).

Convertible bonds are considered as fixed income hybrids whose properties more closely resemble bonds subject to the limit below.

The portfolio may not hold single name common stock or preferred stock.

The portfolio may invest in public and private placement securities, including Rule 144As with and without registration rights.

The portfolio may invest in securities of non-U.S. issuers if they are denominated in U.S. dollars.

Concentration Limits: Unrated securities must be considered to be of comparable quality by MacKay Shields and would not comprise more than 15% of the portfolio.

Securities rated CCC+ or below or of comparable quality will not exceed the greater of 1.5x the Index weight or 15% of the portfolio.

Foreign Securities will not exceed the greater of 2.0 times the Index weight or 25% of the portfolio. Emerging market securities, defined as those in which the issuer has a Country of Risk that is not included in the Developed Market countries list by the Bloomberg Indices, will not exceed 10% of the portfolio. Foreign Securities will be identified by the issuer's Country of Risk as defined by Bloomberg.

The portfolio may hold up to 5% in hybrid securities as described above.

The portfolio may participate, purchase, obtain, or exchange for a security (except for common stock and preferred stock) as part of a corporate action, reorganization, or workout.

The maximum holding for any single issuer will be 4% of the portfolio at the time of purchase (excluding government and agency issuers).

The maximum exposure to a single industry (measured on a Bloomberg Level 4 basis) will be the greater of 10% the portfolio's market value or 1.5x the Index weight.

Compliance: If the portfolio is not in full compliance with (i) the Contract, (ii) the Statement of Work, (iii) the Investment Policy Statement for the PSFIB and (iv) these Investment Guidelines, the Contractor shall immediately notify the Chair of the PSFIB, the PSFIB's administrator, and investment consultant and provide plans to move into compliance. The Contractor shall work with the notified parties to establish a reasonable timeline for getting into compliance, keeping in mind the best interests of the Fund.

Appendix II: Current and Historical Legislative Changes Affecting the PSPF

HB 20-1418: Public School Finance (signed into law June 30, 2020)

Section 49 sweeps the revenue received by the state for the 2020-21 state fiscal year for natural resources purchased or extracted from state lands and the use of state lands that would otherwise go into the permanent school fund and instead places the revenue in the state public school fund for use for school finance.

HB 19-1055: Public School Cap Construction Financial Assistance (signed into law May 21, 2019)

Beginning July 1, 2019, the act requires all state retail marijuana excise tax revenue to be credited to the assistance fund.

HB 18-1070: Additional Public School Capital Construction Funding (signed into law May 30, 2018)

For state fiscal years commencing on and after July 1, 2018, the act increases the amount of retail marijuana excise tax revenue credited to the public school capital construction assistance fund (assistance fund) to the greater of 90% of the revenue annually collected or the first \$40 million of such revenue. Previously, the first \$40 million of state retail marijuana excise tax revenue annually collected was credited to the assistance fund and the remainder of the revenue was credited to the permanent school fund.

INVESTMENT POLICY STATEMENT

For

The Colorado Public School Fund Investment Board

Fund Description (State Constitution: Article IX, Section 3; CRS 22-41-101/106)

IPS Approved: March 11, 2021

Comment [AB1]: Update as appropriate

Table of Contents

Fund Description	3
Purpose	4
Investment Objective	4
Distribution Policy	5
Role of the Public School Fund Investment Board (PSFIB)	5
Role of the Portfolio Administrator	6
Role of the Investment Consultant	6
Role of Investment Managers	6
Trades and Exchanges	7
Liquidity	7
Strategic Asset Allocation	8
Rebalancing Guidelines	8
Asset Class Objectives	9
Performance Measurement	9
Appendix I: Investment Manager Guidelines	11
Appendix II: Current and Historical Legislative Changes Affecting the PSPF	17

Fund Description

(State Constitution: Article IX, Section 3; CRS 22-41-101/106)

The State Public School Fund, d/b/a the Public School Permanent Fund (PSPF), was created under Colo. Const. art. IX, § 3, and CRS 22-41-101, et seq., and consists of a portion of the proceeds from the sale or use of such lands as have been or may be granted to the state by the federal government for state school educational purposes.

The State Treasurer is the custodian of the PSPF. Investments in the fund are directed by The Public School Fund Investment Board (PSFIB), created in 2016 under CRS 22-41-104(2). The PSFIB consists of five members: the State Treasurer, who serves as the Chair of the Board, one member of the State Board of Land Commissioners, and three members appointed by the State Treasurer. The State Treasurer and two other voting members of the PSFIB constitute a quorum of the Board. Except for the State Treasurer, members of the PSFIB serve two-year terms and may not serve more than three consecutive terms. The State Board of Land Commissioners or the State Treasurer may remove their appointed members for any cause that renders the member incapable of discharging or unfit to discharge his or her duty to the PSFIB.

The public purpose for the creation of the PSFIB is to facilitate reasonable growth in the PSPF through lawful investments authorized under CRS 24-36-109 (time deposits under 2 years), CRS 24-36-112 (deposits in savings and loan associations under 3 years), CRS 24-36-113 (fixed income securities denominated in United States Dollars), CRS 24-36-111.5 (real property owned by a school district), CRS 22-41-104 (stock mutual funds, index funds, other instruments that are not a direct investment in a corporation, and bonds issued by school districts), and other lawful financial assets as specified in the PSFIB's Investment Policy.

The State Constitution, article IX, § 3, states that this fund shall forever remain inviolate and intact. Interest and income is expended in the maintenance of the schools of the State and distributed amongst the several counties and school districts of the State in accordance with CRS 22-41-102 and related statutory provisions. Except as otherwise provided by law, no part of the PSPF, ~~either~~ principal or interest and income, can be transferred to any other fund or used or appropriated. The State, by appropriation, must supply all losses of principal if not offset by a gain on an exchange or sale in the fund as detailed in Section IX: Trades & Exchanges, pursuant to section 2-3-103 (5), C.R.S., or section 22-41-104 (2).

Purpose

The purpose of this Investment Policy Statement (IPS) is to assist the PSFIB in effectively supervising, monitoring, and evaluating the investments of the PSPF.

The investment program is defined in the various sections of the IPS by:

- Stating in a written document the PSFIB's expectations, objectives, and guidelines for the investment of all assets.
- Setting forth an investment structure for managing all assets. This structure includes various asset classes, investment management styles, asset allocation and acceptable ranges that, in total, are expected to produce a sufficient level of overall diversification and total investment return over the long-term.
- Providing guidelines for certain investment portfolios that control the level of overall risk and liquidity assumed in that portfolio, so that the PSPF is managed in accordance with stated objectives. Manager specific guidelines are contained within Appendix I of this IPS.
- Encouraging effective communications among the PSFIB, the Investment Consultant(s), the Investment Managers, State Treasury, State Land Board, and other stakeholders.
- Establishing formalized criteria to monitor, evaluate, and compare the performance results achieved by the investment managers on a regular basis.
- Complying with all fiduciary, prudence, and due diligence requirements that experienced investment professionals would utilize, and with all applicable laws, rules, and regulations from various local, state, and federal political entities that may impact the PSPF's assets.

This IPS has been formulated, based upon consideration by the PSFIB of the financial implications of a wide range of policies, and describes the prudent investment process that the PSFIB deems appropriate. Although the PSFIB seeks to set forth an investment policy that provides broad overarching guidance, this IPS is not designed to be comprehensive as to all investment scenarios that may arise, nor can it account for all contingencies that may impact the PSPF. This IPS is subject to modification or revision at the PSFIB's discretion. The IPS will be reviewed at least annually to ensure it reflects the goals and objectives of the PSPF and the PSFIB.

Investment Objective

The primary investment objective of the PSFIB is to securely invest PSPF assets for the intergenerational benefit of public schools and in a manner that complies with the "Uniform Prudent Investor Act," (§ 15-1.1-101, et seq., C.R.S.) ~~codified at article 1.1 of title 15 of the Colorado Revised Statutes.~~ Since the PSPF is to remain inviolate and intact, and not subject to appropriation by the General Assembly, the overall objective of

Comment [AB2]: To standardize the reference throughout the document.

the PSFIB is to preserve, protect, and grow the principal of the PSPF with a prudent level of risk over a long-term time horizon.

Distribution Policy

As per CRS 22-41-102, the order of distribution of interest or income earned on the investment of the moneys in the PSPF is as follows:

- the first \$21 million for FY 2017-18, FY 2018-19, FY 2019-20, and every fiscal year thereafter, is credited to the public school fund created by CRS 22-54-114 for distribution as provided by that section;
- an amount annually appropriated by the General Assembly shall be used to pay the expenses of the PSFIB, including but not limited to the services of Investment Managers and consultant(s);
- for FY 2017-18 and FY 2018-19, any interest or income exceeding \$21 million plus the PSFIB's expenses, up to \$31 million plus the cost of the PSFIB's expenses, is credited to the public school capital construction assistance fund created in CRS 22-43.7-104(5);
- for FY 2019-20, and every fiscal year thereafter, any interest or income exceeding \$21 million plus the PSFIB's expenses, up to \$41 million plus the cost of the PSFIB's expenses, is credited to the public school capital construction assistance fund created in CRS 22-43.7-104(5); and
- any excess interest or income over \$31 million for FY 2017-18 and FY 2018-19, or \$41 million for FY 2019-20 and future fiscal years, net of the PSFIB's expenses, is credited as specified by the Colorado General Assembly, taking into consideration the recommendations of the PSFIB.
 - Note there was a recommendation made by the PSFIB under CRS 22-41-102(3)(f)(IV) and (3)(g)(IV) that excess interest or income over these levels be reinvested back into the PSPF. This was approved by the PSFIB at its April 10, 2017 meeting.

Role of the Public School Fund Investment Board (PSFIB)

Under CRS 22-41-102.5(3), the PSFIB shall direct the State Treasurer on how to securely invest moneys deposited in the PSPF for the intergenerational benefit of public schools and in a manner that complies with the "Uniform Prudent Investor Act", ([§ 15-1.1-101, et seq., C.R.S.](#)~~codified at article 1.1 of title 15 of the Colorado Revised Statutes~~). The prudent investor rule ~~is discussed in CRS 15-1.1-101, et seq., and~~ requires trustees and fiduciaries to exercise reasonable care, skill, and caution when considering the purposes, terms, distribution requirements, and other circumstances of a trust, like the PSPF. The PSFIB's investment and management decisions respecting individual assets must be evaluated not in isolation but in the context of the total Trust portfolio ~~as a whole~~ and as part of an overall investment strategy having risk and return objectives reasonably suited to a trust such as the PSPF.

The PSFIB considers a number of relevant factors in investing and managing PSPF assets. These include but are not limited to general economic conditions; the possible

effects of inflation or deflation; the overall risk of the portfolio; the role that each investment or course of action plays within the overall portfolio; expected interest and income; capital appreciation; liquidity needs; correlation among asset classes; and preservation of capital.

Role of the Portfolio Administrator

The Portfolio Administrator will act in coordination with the PSFIB with the overarching goal of ensuring the PSFIB and PSPF are in compliance with their respective legal obligations and investment policy(s). Other duties will include coordinating investment managers, consultant(s), State Treasury, custodian(s), and the PSFIB on matters relating to Board business.

Role of the Investment Consultant

The role of the investment consultant, as described in more detail in the Statement of Work (Exhibit A) included in their contract, is to support the PSFIB in matters concerning asset allocation, investment structure, manager selection, and performance measurement. The investment consultant is also expected to keep the PSFIB apprised of developments and trends in the ~~investment capital markets and the~~ investment management ~~arena~~ industry.

Role of Investment Managers

The role of investment managers is to manage PSPF assets under their care, custody, and/or control in accordance with their respective contracts, the IPS objectives, and guidelines set forth in Appendix I. In doing so it is expected that each investment manager will:

- Exercise investment discretion (including holding cash equivalents as an alternative) within the IPS objectives and guidelines set forth herein.
- Promptly inform the Chair of the PSFIB, the Portfolio Administrator, and the Investment Consultant(s) in writing regarding all significant and/or material matters and changes pertaining to the investment of PSPF assets, including, but not limited to:
 - A. Investment strategy
 - B. Portfolio structure
 - C. Tactical approaches
 - D. Ownership
 - E. Organizational structure
 - F. Financial condition
 - G. Professional staff
 - H. Recommendations for guideline changes
 - I. All ~~material~~ legal ~~material~~, SEC, and/or other regulatory agency proceedings affecting the firm.

- Utilize the same care, skill, prudence, and due diligence under the circumstances then prevailing that experienced, investment professionals acting in a like capacity and fully familiar with such matters would use in like activities for similar programs with like aims in accordance and compliance with all applicable laws, rules and regulations from local, state, and federal bodies as it pertains to fiduciary duties and responsibilities.
- Acknowledge and agree in writing annually to their fiduciary responsibility to fully comply with the relevant portions of the IPS as set forth herein, and as modified in the future, as well as guidelines specified in their individual contracts.
- Immediately notify the Chair of the PSFIB, the Portfolio Administrator, and the Investment Consultant(s) if they are not in full compliance with the IPS and/or their respective contract or separate account guidelines, and provide plans to move into compliance. Work with the notified parties to establish a reasonable timeline for getting into compliance, keeping in mind the best interests of the portfolio.

Trades and Exchanges

Investment managers are granted discretionary authority to buy, sell, or exchange securities in the daily management of their individual portfolios. All investment managers will use reasonable efforts to ensure that realized losses are neutralized with realized gains within 12 months of the PSPF's June 30 fiscal year-end. The PSFIB will review the total portfolio realized and unrealized gain/loss position quarterly to identify opportunities where unrealized gains and losses across all investment advisors/managers may be matched to manage the total portfolio realized gain/loss position.

Liquidity

Sufficient liquidity must be maintained to ensure that all operational requirements are met and that the overall quality and marketability of the portfolio is maintained. Both short-term cash needs and long-term projections will be reviewed on a regular basis to establish an appropriate level of liquidity.

Strategic Asset Allocation

The Strategic Asset Allocation and rebalancing ranges are as follows:

Table 1

ASSET CLASSES	STRUCTURE	Lower Limit	Strategic Allocation	Upper Limit
<u>Equities:</u>				
	Domestic Equity	14%	18.0%	22%
	International Equity	8%	12.0%	16%
Total Equities		24%	30.0%	36%
<u>Fixed Income:</u>				
	Market Duration Bonds	45%	52.5%	60%
	Short Duration Bonds	5%	7.5%	10%
Total Fixed Income		60%	60.0%	70%
<u>High Income Strategies:</u>				
	High Yield Fixed Income	4.5%	8.5%	12.5%
	Preferred Securities	0%	1.5%	3.0%
Total High Income Strategies		5%	10.0%	15%
Total Portfolio			100%	

The Strategic Asset Allocation may change over time based on the PSFIB's assessment of current and long-term market conditions, and as well as distribution needs. This IPS will be modified accordingly.

The Strategic Asset Allocation is expected to meet the distribution objective of a minimum of \$21 million per year, net of annually appropriated investment manager fees and Board expenses and, provide prudent growth in the corpus within the constraints established in state statute.

Rebalancing Guidelines

Individual investment managers have the authority to rebalance within their own portfolio.

The asset allocation of the PSPF will be reviewed monthly by the Portfolio Administrator and at least quarterly by the PSFIB. The goal of the review is to evaluate whether action should be taken to rebalance the PSPF toward the IPS strategic asset allocation ranges.

Comment [AB3]: Sarah, Is this currently feasible from an operational standpoint and being done?

When available, cash inflows will be deployed in a manner consistent with the strategic asset allocation and individual asset class structures. The PSFIB may deviate from the aforementioned allocation of cash inflows if deemed to be in the best interest of the PSPF.

In situations where the PSPF is outside the Strategic Asset Allocation rebalancing ranges, the Portfolio Administrator, in consultation with the Investment Consultant(s) and/or Investment Managers, will prepare rebalancing recommendations for the PSFIB to evaluate. Actions authorized by the PSFIB must take into consideration transaction costs and the impact on PSPF's realized gain and loss position.

All actions authorized by the PSFIB will be executed by the Portfolio Administrator as soon as practicable with guidance provided by the PSFIB as needed or requested.

Asset Class Objectives

Equity

The purpose of the equity portfolio is to provide exposure to broad economic growth through commingled exposure to stocks both domestically and abroad. The implementation may be through multiple mutual funds or exchange traded funds as long as the overall composition mirrors the target exposures.

The following security types are prohibited: individual equity securities, funds with insufficient liquidity profiles, and derivatives.

Market Duration Fixed Income

The purpose of market duration fixed income is to provide income and diversification to other asset classes in the Fund.

Short Duration Fixed Income

The purpose of the short duration portfolio is to provide capital preservation with a higher yield than cash and a means to manage net realized losses in the overall portfolio.

High Income Strategies

The purpose of the allocation to High Income Strategies is to provide higher potential cash yield to the fund while also diversifying the interest rate risk of the Market Duration Fixed Income allocation with moderate equity risk.

Cash

There is no strategic target allocation to cash. Cash will be held primarily to fund distributions or allocations to existing or new asset classes as needed.

Performance Measurement

Composites and individual portfolios will be measured against appropriate market indices and peer groups, where appropriate.

Total Fund

Total Fund performance will be measured ~~by a using static a~~ weighted blend of asset class benchmarks reflecting the current Strategic Asset Allocation of 60-% Fixed Income, 30% Equities, and 10-% High Income Strategies.

Fixed Income Composite

The total fixed income composite will utilize a blended benchmark representing the strategic allocation to sub-asset class strategies – 87.5 % Bloomberg ~~Barclays~~ Aggregate Index and 12.5 % Bloomberg ~~Barclays~~ 1-3 Year Government/Credit Index.

- Colorado State Treasury Market Duration Fixed Income Portfolio: Total rate of return performance for the portfolio will be measured against the Bloomberg ~~Barclays~~ U.S. Aggregate Index taking into account statutory constraints prescribed on income distribution and neutralizing realized gains/losses per CRS 22-41-102-104 and the State Constitution, article IX, § 3. The portfolio will also be measured relative to Callan's Core Bond Peer Group.
- Short Duration Fixed Income Composite: Total performance will be measured against the Bloomberg ~~Barclays~~ 1-3 Year Government/Credit Index and Callan's Short Duration Bond Peer Group.

Equity Composite

The equity portfolio will be measured against a blended benchmark comprised of 60% Russell 3000 Index / 40% MSCI ACWI x ~~USU.S.~~ Index. As the portfolio composition is customized, there is no comparable peer group.

High Income Strategies Composite

The total high income strategies composite will utilize a blended benchmark representing the strategic allocation to sub-asset class strategies – 85% Bloomberg ~~Barclays~~ U.S. Corporate High Yield Index and 15% ICE BofA U.S. All Capital Securities Index.

Appendix I: Investment Manager Guidelines

A. Colorado State Treasury Managed Market Duration Portfolio

The primary investment opportunity set is securities eligible for inclusion in the Bloomberg ~~Barclays~~-U.S. Aggregate index. Exceptions to this rule are itemized below under Additional Investment Opportunities.

Duration:

The effective duration of the portfolio shall be normally within +/- 30% of the Bloomberg ~~Barclays~~-U.S. Aggregate Index.

Bloomberg ~~Barclays~~-Aggregate Index Rules

- Must have at least one year to final maturity regardless of call features.
- Must have at least \$300 million par amount outstanding. Asset-backed securities must have at least \$500 million deal size and \$25 million tranche size. For commercial mortgage-backed securities, the original transaction must have a minimum deal size of \$500 million, and a minimum tranche size of \$25 million; the current outstanding transaction size must be at least \$300 million to remain in the index.
- Must be rated investment-grade (Baa3/BBB- or higher) by at least two of the following ratings agencies: Moody's, S&P, Fitch. If only two of the three agencies rate the security, the lower rating is used to determine index eligibility. If only one of the three agencies rates a security, the rating must be investment-grade.
- Must be fixed rate, although it can carry a coupon that steps up or changes according to a predetermined schedule.
- Must be dollar-denominated and non-convertible.
- Must be publicly issued. However, 144A securities with Registration Rights and Reg-S issues are included.

Additional Investment Opportunities

- Investment grade Collateralized Mortgage Obligation (CMO) tranches

B. Externally managed Short Duration Portfolio

The main objective for the management of the Portfolio is to outperform the primary benchmark, the Bloomberg ~~Barclays~~ U.S. 1-3 Year Government/Credit Bond Index, in a risk adjusted manner over a full market cycle.

A custom secondary benchmark, reflecting the ability to allocate to out of benchmark securities, will be composed of 85% Bloomberg ~~Barclays~~ 1-3 Year Government/Credit Index and 15% BofAML 1-3 Year BB ~~USU.S.~~ Cash Pay High Yield Index (J1A1).

Guidelines for the portfolio are as follows:

Investment Universe and Limitations: The account managed by Contractor on behalf of PSFIB will invest in corporate bonds and notes; government securities, including agencies; bank loans; mortgage and asset backed securities. The Portfolio may invest in U.S. dollar denominated securities issued by non-U.S. issuers and/or entities, although it intends to primarily invest in securities issued by U.S. issuers and/or entities. Investment types not explicitly allowed in these guidelines may still be used by the Contractor if deemed to be appropriate by Contractor in the exercise of its fiduciary duty to PSFIB. The PSFIB's permission will be sought by Contractor if the investment type is intended to be a primary strategy of the Portfolio, defined as more than 10% of net assets in the Portfolio.

Allowable Investments: The Portfolio managed by Contractor on behalf of PSFIB may include the following (subject to the limitations below):

- Corporate Credits;
- Preferreds;
- 144A securities; excluding 144A Reg S securities
- ~~USU.S.~~ Treasuries and Agencies;
- Foreign Government Securities;
- Commercial loans, including bank loans, bridge loans, debtor-in-possession ("DIP") loans, and mezzanine loans; and
- Asset and mortgage backed securities, including, but not limited to commercial mortgage backed securities, collateralized mortgage obligations, collateralized loan obligations and to be announced mortgage backed securities.

General Restrictions: The Portfolio managed by Contractor on behalf of PSFIB shall be subject to the following restrictions:

- The duration of the Portfolio will generally be +25/-40% of the Bloomberg ~~Barclays~~ U.S. 1-3 Year Government/Credit Bond Index.
- The Portfolio will generally not invest more than 10% of its net assets in cash and cash equivalents.
- The maximum issuer position size will be limited to 5% of net assets at the time of purchase, excluding those issued by the U.S. Government and its agencies.

- No more than 10% of the net assets will be invested in preferred securities. The Portfolio will not hold equity securities.
- The Portfolio may invest up to 10% of net assets, at time of purchase, in illiquid securities. 144A securities determined to be liquid by Contractor will not be considered in the illiquid concentration.
- The portfolio may invest up to 25% in non-investment grade bonds with a minimum rating of BB-/Ba3 at the time of purchase. Non-investment grade bonds are defined as bonds that are rated BB+ or lower by Standard & Poor's Rating Service and Fitch Inc., or Ba1 by Moody's Investor Services. Unrated securities will be treated as non-investment grade.
- In the event a security is downgraded below BB- after purchase, the Contractor must immediately notify the Chair of the PSFIB, the Portfolio Administrator and the Investment Consultant(s). -The security must be sold as soon as practical, keeping in mind the best interests of the portfolio.
- Split rated securities will be evaluated as follows:
 - i. If the security is rated by all three rating agencies, the middle rating will apply
 - ii. If the security is rated by all three rating agencies with two or more ratings the same, the majority rating applies.
 - iii. If the security is only rated by two agencies, the lowest rating applies.
- Securities that are not rated by any of the three major rating agencies, Standard & Poor's, Moody's, or Fitch, will be considered unrated.

Derivatives: The Portfolio managed by Contractor on behalf of PSFIB may invest in U.S. Treasury futures. The use of derivatives may not result in leverage in the portfolio and must be fully collateralized by cash or cash equivalents.

C. Equity Portfolio

An external investment manager will manage a global equity portfolio for the PSFIB that seeks to adhere to the PSFIB's gain/loss realization requirements with a predicted tracking error within approximately 1% of the composite benchmark. The Portfolio will invest in Exchange Traded Funds ("ETFs") selected for inclusion in the portfolio based upon their contribution to the portfolio's country/region allocation, market capitalization, industry weightings, and other fundamental characteristics.

Benchmark: 60% Russell 3000 Index / 40% MSCI ACWI ex-[USU.S.](#) Index

Eligible Securities: All [USU.S.](#)-traded ETFs and '40 Act Mutual Funds, defined to be an "open-end company" as stated in section 5(a)(1) of the Investment Company Act of 1940.

Prohibited Securities: The following security types are prohibited:

- Individual equity securities;
- Funds with insufficient liquidity profiles; and,
- Derivatives (including currency forwards).

Rebalancing: No scheduled rebalancing. The investment manager will review the portfolio with the PSFIB [and/or the Portfolio Administrator](#) on a quarterly basis in relation to the benchmark and will discuss potential rebalancing trades at that time.

Realized Gain/Loss Off-Set: The day-to-day management of the portfolio will seek to avoid net realized losses over the State Fiscal Year (July 1-June 30). Upon the PSFIB's request, the investment manager may realize gains or losses consistent with the Board's policies. The investment manager will review the portfolio with the PSFIB and/or the Board's Portfolio Administrator on a quarterly basis to discuss current unrealized positions.

Treatment of Dividends: Dividends will not be reinvested, unless otherwise instructed by the PSFIB. Available dividends shall be distributed by the custodian to the PSFIB on at least a quarterly basis.

D. High Yield Fixed Income

Objective / Reference Benchmark: The objective of this portfolio is to provide high yield fixed income exposure benchmarked against the Bloomberg ~~Barclays~~ [USU.S.](#) Corporate High Yield Index and to invest assets in a manner that complies with the ~~INVESTMENT BOARD's~~ [PSFIB's](#) Investment Policy Statement, the Uniform Prudent Investor Act (§ 15-1.1-101, et seq., C.R.S.), Colorado statutes and constitutional provisions governing the Fund (§ 22-41-101, et seq., C.R.S. & Colorado Constitution art. IX, § 3).

Realized Gain/Loss: The Contractor will coordinate with the PSPF Portfolio Administrator, Investment Consultant, Colorado Treasurer's Office, and other third party service providers to aggregate and monitor realized and unrealized gains and losses to ensure that net realized losses are minimized and, when they do occur, immediately coordinate efforts to activate plans to offset such losses with realized gains from other aspects of the Fund, in order to ensure compliance with § 22-41-102 and 104, C.R.S.

Earned Income: Earned income, not including capital gains, on the portfolio shall be swept from the account on a monthly basis. Sufficient liquidity must be maintained to ensure that all operational requirements are met and that the overall quality and marketability of the portfolio is maintained.

Credit Quality Guidelines: Invest in a diversified portfolio of high yield debt securities which are primarily in the lower rating categories of recognized rating agencies:

Moody's:	Baa1 to Caa3 or
S&P:	BBB+ to CCC-

For temporary defensive and cash management purposes, the portfolio may invest in cash and debt securities (including cash equivalents) rated A- or higher.

Ratings for compliance purposes will be calculated on the middle rating of the available ratings by S&P, Moody's, and Fitch. If only two of the three agencies are available, the lower rating will be used (Bloomberg ~~Barclays~~ [Rating Methodology](#)). These ratings will be applied to both the portfolio and the benchmark.

Permitted Investments: Debt securities in which the portfolio may invest include all types of debt obligations such as bonds, debentures, notes, bank debt, bank loan participations, commercial paper and [USU.S.](#) Government securities (including obligations, such as repurchase agreements, secured by such instruments).

Convertible bonds are considered as fixed income hybrids whose properties more closely resemble bonds subject to the limit below.

The portfolio may not hold single name common stock or preferred stock.

The portfolio may invest in public and private placement securities, including Rule 144As with and without registration rights.

The portfolio may invest in securities of non-USU.S. issuers if they are denominated in USU.S. dollars.

Concentration Limits: Unrated securities must be considered to be of comparable quality by MacKay Shields and would not comprise more than 15% of the portfolio.

Securities rated CCC+ or below or of comparable quality will not exceed the greater of 1.5x the Index weight or 15% of the portfolio.

Foreign Securities will not exceed the greater of 2.0 times the Index weight or 25% of the portfolio. Emerging market securities, defined as those in which the issuer has a Country of Risk that is not included in the Developed Market countries list by the Bloomberg Barclays Indices, will not exceed 10% of the portfolio. Foreign Securities will be identified by the issuer's Country of Risk as defined by Bloomberg.

The portfolio may hold up to 5% in hybrid securities as described above.

The portfolio may participate, purchase, obtain, or exchange for a security (except for common stock and preferred stock) as part of a corporate action, reorganization, or workout.

The maximum holding for any single issuer will be 4% of the portfolio at the time of purchase (excluding government and agency issuers).

The maximum exposure to a single industry (measured on a Bloomberg Barclays Level 4 basis) will be the greater of 10% the portfolio's market value or 1.5x the Index weight.

Compliance: If the portfolio is not in full compliance with (i) the Contract, (ii) the Statement of Work, (iii) the Investment Policy Statement for the INVESTMENT BOARD PSFIB and (iv) these Investment Guidelines, the Contractor shall immediately notify the Chair of the INVESTMENT BOARD PSFIB, the INVESTMENT BOARD's PSFIB's administrator, and investment consultant and provide plans to move into compliance. The Contractor shall work with the notified parties to establish a reasonable timeline for getting into compliance, keeping in mind the best interests of the Fund.

Appendix II: Current and Historical Legislative Changes Affecting the PSPF

Comment [AB4]: Are there any relevant updates to this Appendix?

HB 20-1418: Public School Finance (signed into law June 30, 2020)

Section 49 sweeps the revenue received by the state for the 2020-21 state fiscal year for natural resources purchased or extracted from state lands and the use of state lands that would otherwise go into the permanent school fund and instead places the revenue in the state public school fund for use for school finance.

HB 19-1055: Public School Cap Construction Financial Assistance (signed into law May 21, 2019)

Beginning July 1, 2019, the act requires all state retail marijuana excise tax revenue to be credited to the assistance fund.

HB 18-1070: Additional Public School Capital Construction Funding (signed into law May 30, 2018)

For state fiscal years commencing on and after July 1, 2018, the act increases the amount of retail marijuana excise tax revenue credited to the public school capital construction assistance fund (assistance fund) to the greater of 90% of the revenue annually collected or the first \$40 million of such revenue. Previously, the first \$40 million of state retail marijuana excise tax revenue annually collected was credited to the assistance fund and the remainder of the revenue was credited to the permanent school fund.

May 16, 2022



Colorado Public School Permanent Fund

First Quarter 2022
Performance Review

Janet Becker-Wold, CFA
Senior Vice President & Manager

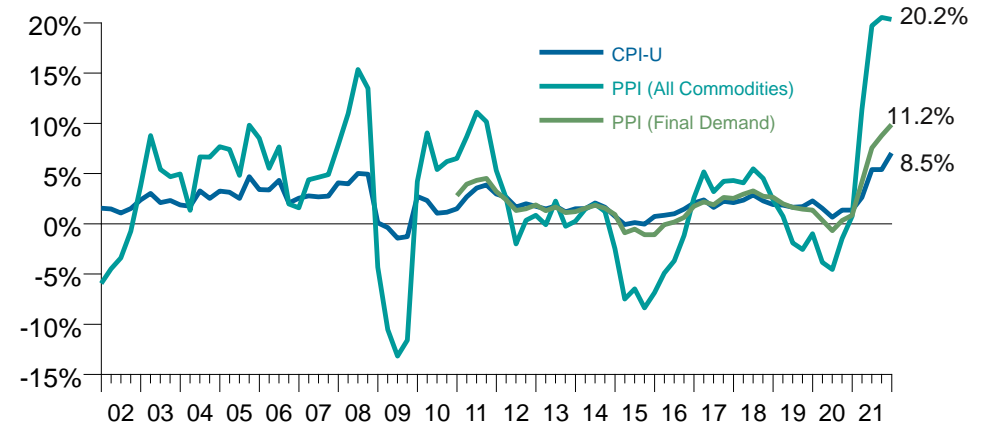
Alex Browning
Senior Vice President

U.S. Economy—Summary

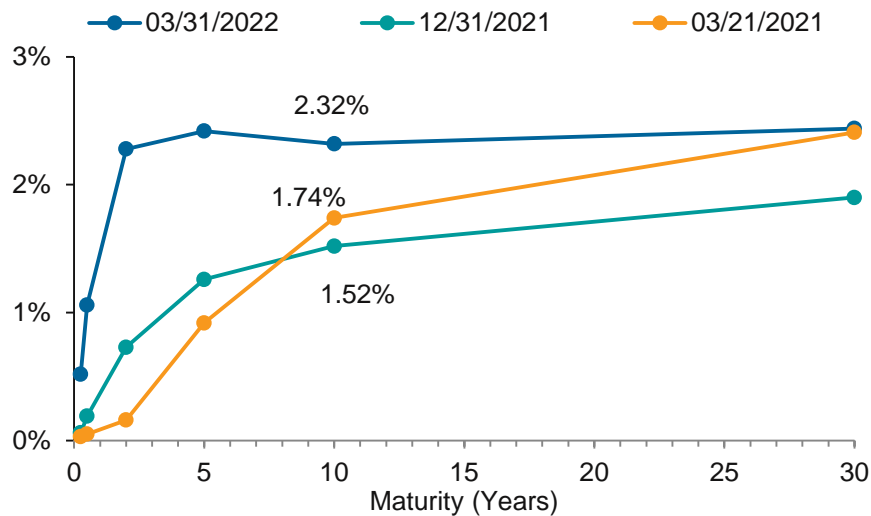
First Quarter 2022

- The advance estimate of first quarter GDP showed a 1.4% decline after climbing 6.9% in the fourth quarter.
- Inflation remains elevated in 2022. The CPI climbed 8.5% year-over-year as of March.
- The Federal Reserve made its first 0.25% rate hike of the year on March 16, followed by a 0.50% hike on May 4.
- The labor market remains a source of strength with unemployment falling to 3.6% in March.

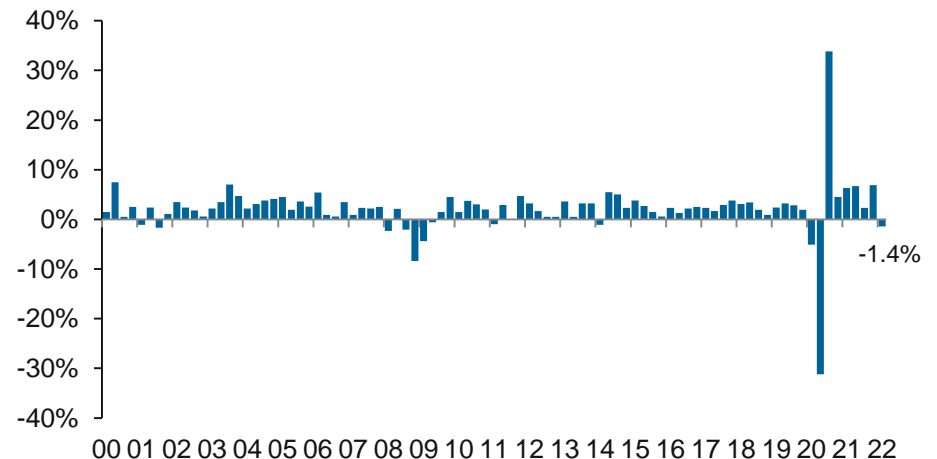
Inflation Year-Over-Year



U.S. Treasury Yield Curves



Quarterly Real GDP Growth



Sources: Bloomberg, Bureau of Labor Statistics, Callan. GDP reflective of 4Q21.

Callan Periodic Table of Investment Returns

Cumulative Returns Ending March 31, 2022						Monthly Returns		
Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Jan 2022	Feb 2022	Mar 2022
Real Estate	Real Estate	Large Cap Equity	Large Cap Equity	Large Cap Equity	Large Cap Equity	Real Estate	Real Estate	Large Cap Equity
7.17%	27.29%	18.92%	15.99%	14.01%	14.64%	2.34%	2.34%	3.71%
Large Cap Equity	Large Cap Equity	US Small-Mid	US Small-Mid	US Small-Mid	US Small-Mid	Emerging Market Equity	US Small-Mid	Real Estate
-4.60%	15.65%	13.79%	11.57%	9.99%	12.09%	-1.89%	1.13%	2.34%
Dev ex-U.S. Equity	Dev ex-U.S. Equity	Real Estate	Real Estate	Real Estate	Real Estate	U.S. Fixed Income	High Yield	US Small-Mid
-4.81%	3.04%	10.31%	8.91%	9.21%	9.92%	-2.15%	-1.03%	1.59%
High Yield	US Small-Mid	Dev ex-U.S. Equity	Dev ex-U.S. Equity	Dev ex-U.S. Equity	Dev ex-U.S. Equity	High Yield	U.S. Fixed Income	Dev ex-U.S. Equity
-4.84%	0.34%	8.55%	7.14%	5.41%	6.25%	-2.73%	-1.12%	1.16%
US Small-Mid	High Yield	Emerging Market Equity	Emerging Market Equity	High Yield	High Yield	Dev ex-U.S. Equity	Dev ex-U.S. Equity	High Yield
-5.82%	-0.66%	4.94%	5.98%	5.03%	5.75%	-4.41%	-1.56%	-1.15%
U.S. Fixed Income	U.S. Fixed Income	High Yield	High Yield	Emerging Market Equity	Emerging Market Equity	Large Cap Equity	Emerging Market Equity	Emerging Market Equity
-5.93%	-4.15%	4.58%	4.69%	4.69%	3.36%	-5.17%	-2.99%	-2.26%
Emerging Market Equity	Emerging Market Equity	U.S. Fixed Income	U.S. Fixed Income	U.S. Fixed Income	U.S. Fixed Income	US Small-Mid	Large Cap Equity	U.S. Fixed Income
-6.97%	-11.37%	1.69%	2.14%	1.87%	2.24%	-8.32%	-2.99%	-2.78%

Sources: ● Bloomberg Barclays Aggregate ● Bloomberg Barclays Corp High Yield ● Bloomberg Barclays Global Aggregate ex US
 ● NCREIF ODCE Val Wtd ● MSCI World ex USA ● MSCI Emerging Markets ● Russell 2500 ● S&P 500

Contributors to Recent Inflation: Primary Categories

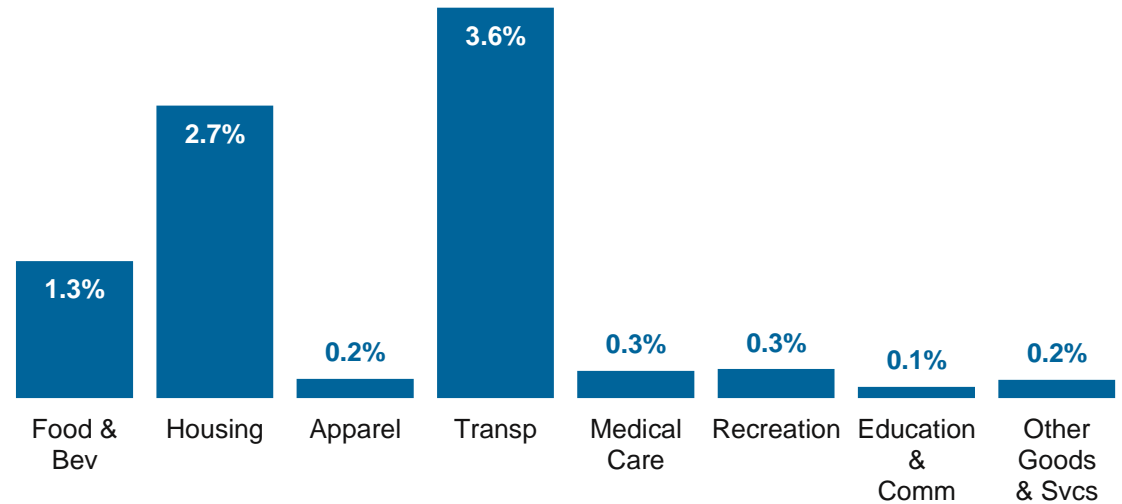
Transportation, including new and used cars, parts, and gasoline, saw a spike in inflation.

- Year-over-year prints are almost three times higher than any other category.
- With a meaningful 18% weight in the index*, transportation also has the highest weighted contribution to headline CPI.

Housing and food and beverage have also been significant contributors to headline CPI.

- Inflation within these categories has been far lower than transportation, but their large index weights make them meaningful contributors to overall inflation.

Contribution to March 2022 YOY Inflation



Primary Category	Primary Category Weight	Year-over-Year Change											
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
All Items	100.0%	4.2%	5.0%	5.4%	5.4%	5.3%	5.4%	6.2%	6.8%	7.0%	7.5%	7.9%	8.5%
Food & Bev	14.3%	2.3%	2.1%	2.4%	3.4%	3.7%	4.5%	5.1%	5.8%	6.0%	6.7%	7.6%	8.5%
Housing	42.4%	2.6%	2.9%	3.1%	3.4%	3.5%	3.9%	4.5%	4.8%	5.1%	5.7%	5.9%	6.4%
Apparel	2.5%	1.9%	5.6%	4.9%	4.2%	4.2%	3.4%	4.3%	5.0%	5.8%	5.3%	6.6%	6.8%
Transportation	18.2%	14.9%	20.0%	21.5%	19.4%	17.8%	16.6%	18.7%	21.1%	21.1%	20.8%	21.1%	22.6%
Medical Care	8.5%	1.5%	0.9%	0.4%	0.3%	0.4%	0.4%	1.3%	1.7%	2.2%	2.5%	2.4%	2.9%
Recreation	5.1%	2.1%	1.6%	2.4%	3.5%	3.4%	3.5%	3.9%	3.2%	3.3%	4.7%	5.0%	4.8%
Education & Communication	6.4%	1.7%	1.9%	2.1%	1.1%	1.2%	1.7%	1.8%	1.7%	1.6%	1.6%	1.6%	1.5%
Other Goods & Svcs	2.7%	2.7%	2.7%	2.5%	2.9%	3.5%	3.4%	4.2%	4.4%	4.5%	4.9%	5.6%	5.5%

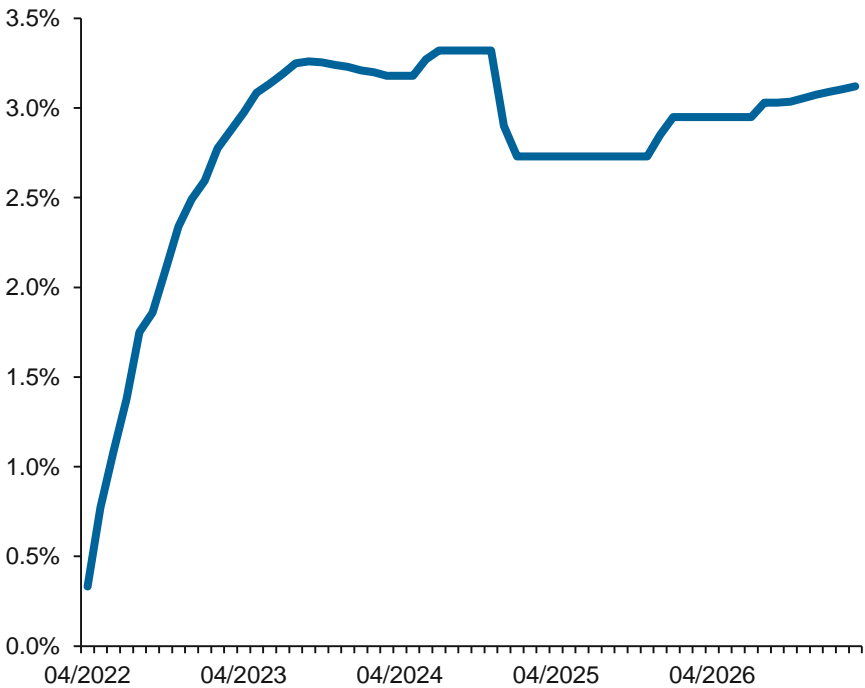
*Category weights received a revision for 2022. The Transportation weight is up from 15% to 18% with this revision.

Source: U.S. Bureau of Labor Statistics

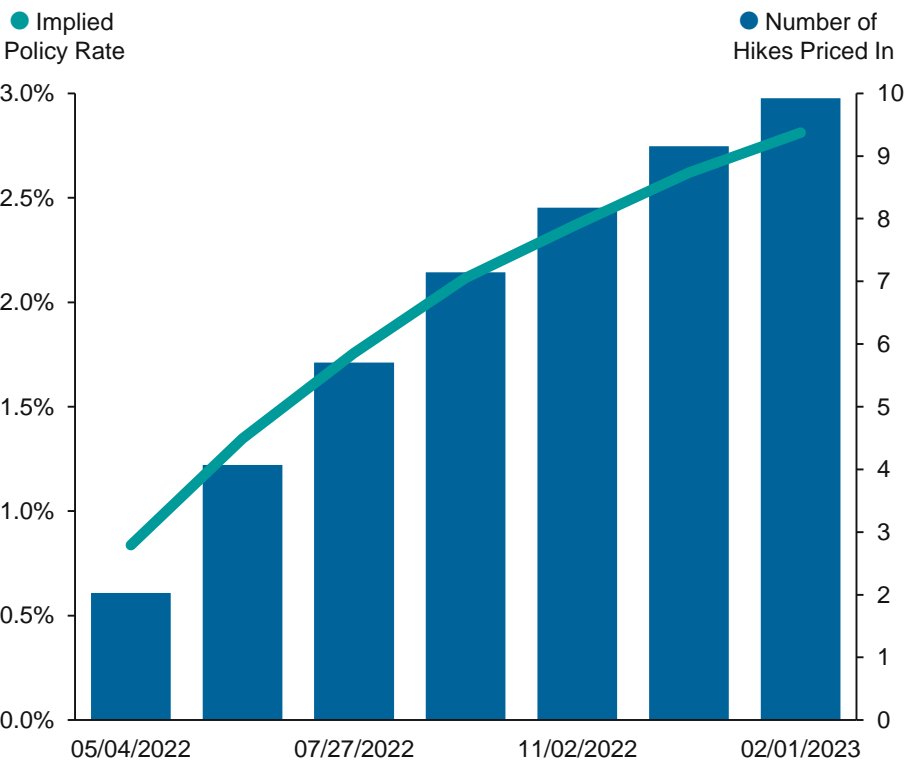
Markets Pricing in Aggressive Hikes

U.S. Fed Rate Expectations: Higher terminal U.S. rate expectations, but relatively short cycle

Fed Fund Futures



Markets Pricing in 10 25 bps hikes by early 2023



Source: Bloomberg

S&P 500 Valuation Measures

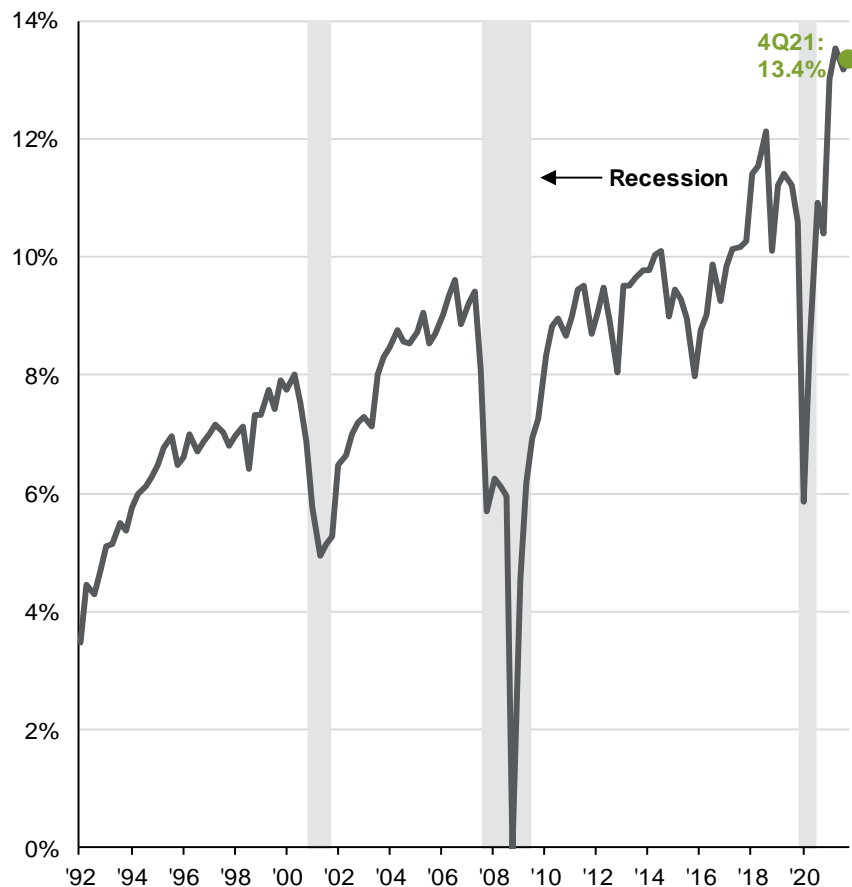


Source: JPMorgan, Guide to the Markets, March 31, 2022

Profit Margins and Input Costs

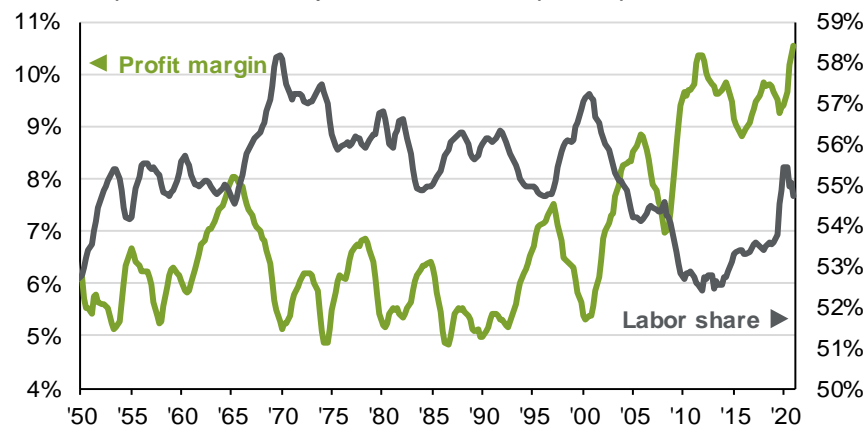
S&P 500 profit margins

Quarterly operating earnings/sales



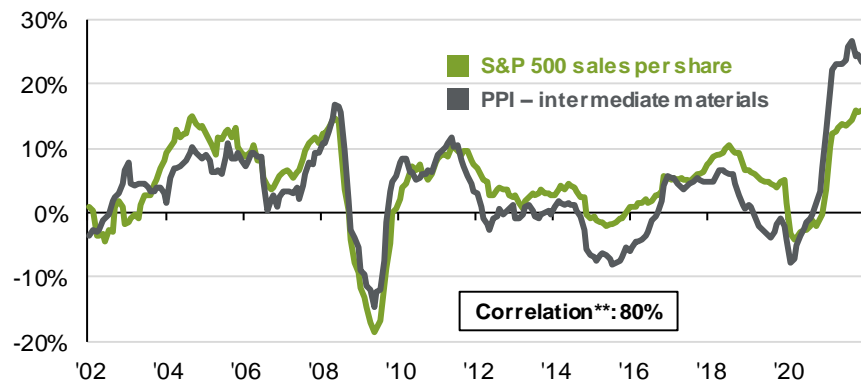
Labor share of income and profit margins*

Compensation and adjusted after-tax corporate profits as % of GDP



S&P 500 sales per share and PPI for intermediate materials

Year-over-year % change, monthly, last 20 years



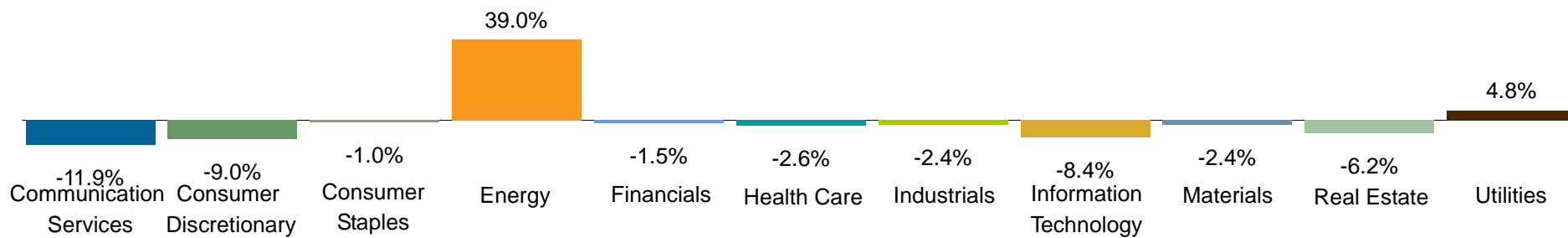
Source: JPMorgan, Guide to the Markets, March 31, 2022

U.S. Equity Performance: 1Q22

Returns take a step back given increased macro uncertainty

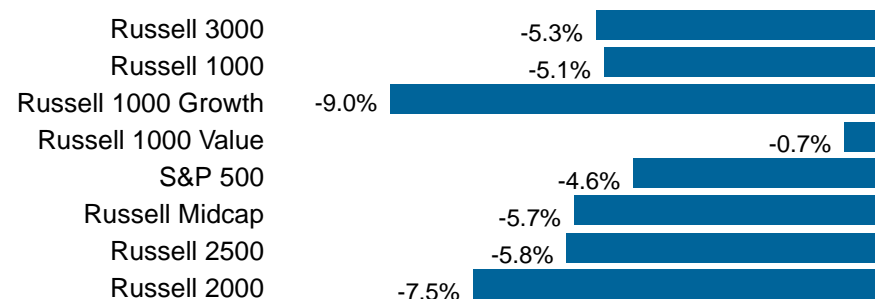
- The S&P 500 Index fell 4.6% in 1Q, but was down more than 12% early in March before staging a rally into quarter-end.
- Value stocks sharply outpaced growth across capitalizations, with the spread exceeding 10% in both mid and small caps and just over 8% in large caps.
- Energy (+39%) was the best-performing sector given a 33% spike in WTI crude oil prices. Commodity-linked Basic Materials and Utilities sectors also performed well on a relative basis.
- Communication Services (-12%), Consumer Discretionary (-9%), and Information Technology (-8%) were the worst-performing sectors.
- Uncertainty over rates, inflation, and geopolitical tensions all contributed to a volatile and risk averse environment.
- Interestingly, the Russell Dynamic Index (-4.3%) outperformed the Russell Defensive Index (-5.9%) during the 1Q downturn. Quality did not hold up as well as expected in some sectors.

Industry Sector Quarterly Performance (S&P 500)

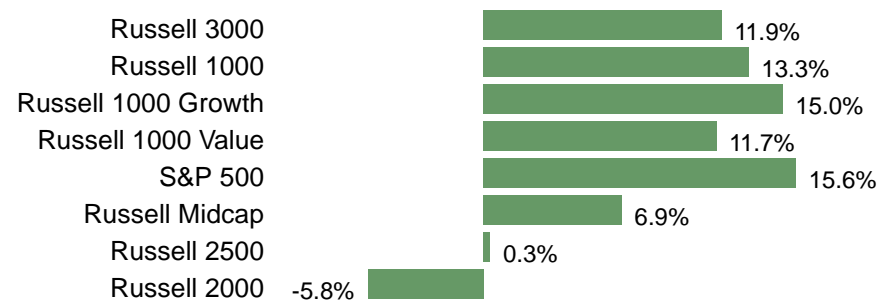


Sources: FTSE Russell, S&P Dow Jones Indices

U.S. Equity: Quarterly Returns



U.S. Equity: One-Year Returns



Global ex-U.S. Equity Performance: 1Q22

War in Ukraine stoked market volatility

- In the aftermath of invading Ukraine, Russia faced condemnation and sanctions that crippled its stocks, bonds, and currency and shocked the global markets.
- The fog of war exacerbated inflationary concerns and led energy prices to surge as Russia is the second-largest natural gas provider and the third-largest oil producer in the world.
- Energy exporters notably outperformed importers.

Fears of COVID-19

- A resurgence of COVID-19 cases in Europe and Asia, specifically in China, weighed on global recovery.
- China's zero-COVID policy has injected doubt into the 2022 GDP growth projection of 5.5%, already its lowest annual target in more than 25 years.

Growth vs. value

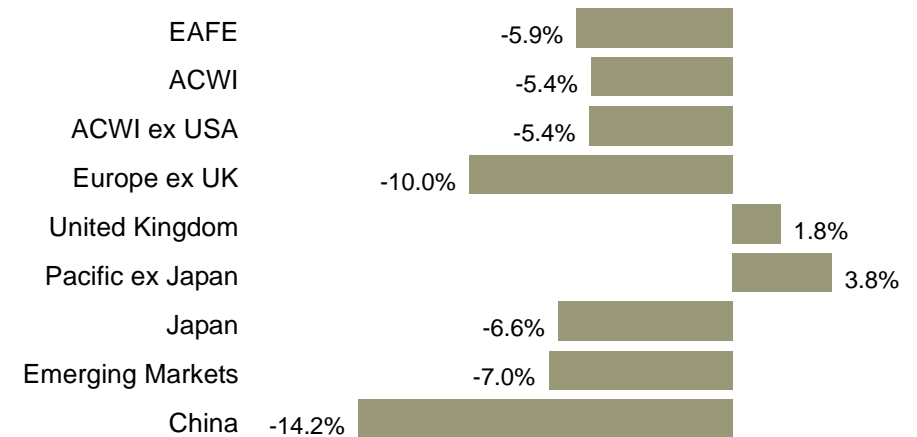
- Value sectors such as Energy, Materials, and Financials were in favor relative to growth sectors like Consumer Discretionary and Information Technology due to a combination of recession fears and tightening monetary cycle.
 - However, Energy was the worst performer within Emerging Markets due to the removal of Russia from indices with effectively zero value.

U.S. dollar vs. other currencies

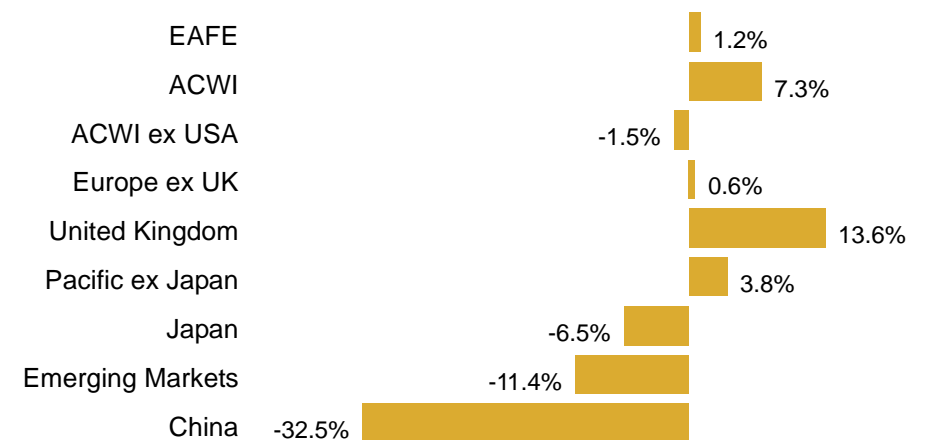
- With the uncertainty of war, the U.S. dollar strengthened against other major currencies.

Source: MSCI

Global Equity: Quarterly Returns



Global Equity: One-Year Returns



U.S. Fixed Income Performance: 1Q22

Bonds hit hard as rates rose sharply

- Bloomberg Aggregate worst quarterly return since 1980
- Curve flattened; as of 3/31 5-year UST yield 10 bps higher than 10-year UST yield (2.42% vs 2.32%)
- TIPS outperformed nominal Treasuries and 10-year breakeven spreads widened to 2.84% from 2.56% as of year-end.
- Fed raised rates by 25 bps with many more hikes expected this year.

Credit sectors underperformed

- Investment grade corporates underperformed duration-matched U.S. Treasuries by 145 bps; RMBS by 71 bps.
- High yield “benefited” from less interest rate sensitivity and relatively higher exposure to the energy sector; excess return vs. U.S. Treasuries was 92 bps.
- Defaults remain low (less than 1%) and yield breached 6%.

Leveraged loans performed relatively well

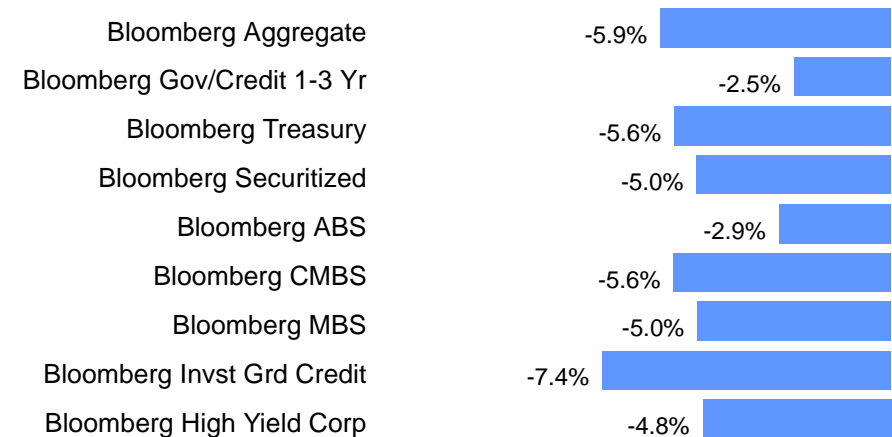
- Helped by floating rate coupons / low duration

Securitized sectors performed relatively well

- Consumer ABS held up the best within the sector due to its shorter duration profile and solid consumer spending.
- Conduit CMBS traded in line as economy re-opens.
- Agency MBS saw duration extend by 0.4 yr due to higher rates (deters refinancing and slows payments to monthly mins).

Sources: Bloomberg, S&P Dow Jones Indices

U.S. Fixed Income: Quarterly Returns



U.S. Fixed Income: One-Year Returns



Recent Activity and Plan Performance

Quarterly Total Fund Highlights

As of March 31, 2022

CO PSPF ended the quarter with \$1.30 billion in assets, down \$56.5 million from Q4 2021 after income and distributions and net new investments.

- Investment losses were \$69.6 million while cash inflows were \$13.2 million over the quarter

The Total Fund lost 5.2% (+25 bps to Target) for the quarter and fell 0.5% (+35 bps to Target) for the trailing year.

The Total Equity Composite slid 5.5% and gained 6.2% for the quarter and year, respectively.

- Domestic Equity fell 5.3% for the quarter and rose 11.7% for the year.
- International Equity lagged the U.S. declining 5.8% and 1.7% for the quarter and year, respectively.

The Fixed Income Composite led its benchmark by 15 basis points with a return of -5.4%. For the year, the Composite fell 3.7%.

- The Market Duration bond portfolio outperformed its benchmark by 17 basis points with a return of -5.8%. For the year, the portfolio was down 4.0%.
- The Janus Short Duration bond portfolio outperformed its benchmark by 3 basis points with a return of -2.5%. The portfolio lost 1.9% for the year.

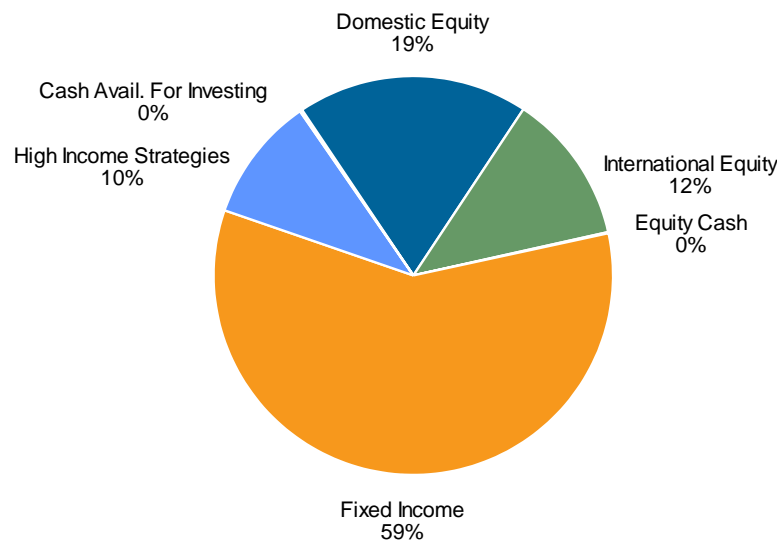
The High Income Strategies Composite outperformed its benchmark for the quarter by 1.5% with a return of -3.6%. For the trailing year, the Composite is up 0.5%, 1.5% ahead of the benchmark.

- The MacKay Shields' high yield bond portfolio lost 3.4% and gained 0.8% for the quarter and year, respectively.
- The Principal Spectrum preferred securities portfolio returned -4.8% and -1.4% for the quarter and year, respectively.

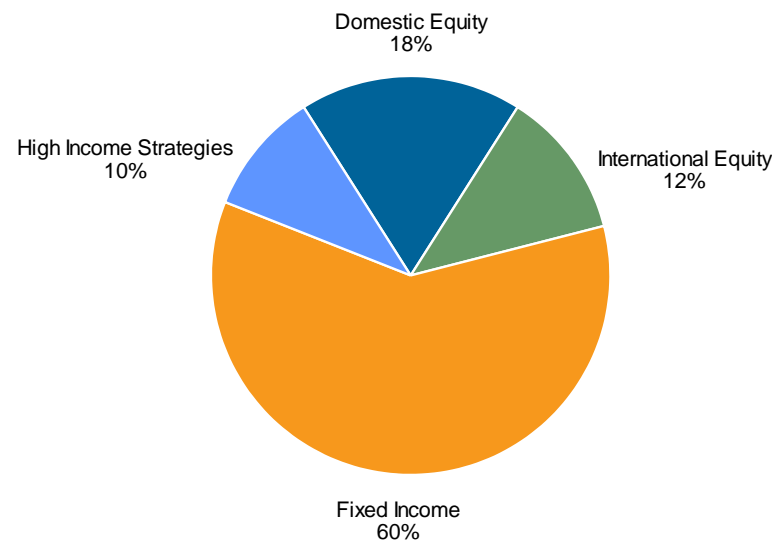
Total Fund Asset Allocation

March 31, 2022

Actual Asset Allocation



Target Asset Allocation



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equity	242,410	18.7%	18.0%	0.7%	9,085
International Equity	158,574	12.2%	12.0%	0.2%	3,024
Equity Cash	1,245	0.1%	0.0%	0.1%	1,245
Fixed Income	761,412	58.7%	60.0%	(1.3%)	(16,335)
High Income Strategies	131,558	10.1%	10.0%	0.1%	1,934
Cash Avail. For Investing	1,047	0.1%	0.0%	0.1%	1,047
Total	1,296,245	100.0%	100.0%		

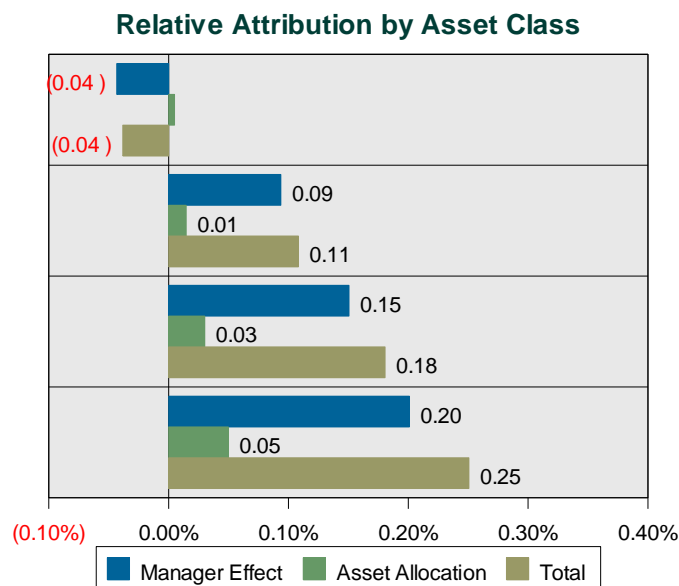
Asset Distribution

	March 31, 2022				December 31, 2021	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Total Equity	\$402,228,078	31.03%	\$18,353,938	\$(21,734,076)	\$405,608,216	29.98%
Domestic Equity	\$242,409,530	18.70%	\$8,639,910	\$(12,674,436)	\$246,444,056	18.22%
iShares S&P 1500 ETF (1)	242,409,530	18.70%	8,639,910	(12,674,436)	246,444,056	18.22%
International Equity	\$158,573,682	12.23%	\$8,673,745	\$(9,059,665)	\$158,959,603	11.75%
iShares MSCI Emerging ETF (1)	40,914,907	3.16%	(660,962)	(3,224,493)	44,800,362	3.31%
iShares MSCI Canada ETF (1)	16,257,587	1.25%	914,019	713,766	14,629,801	1.08%
iShares Core MSCI EAFE ETF (1)	101,401,188	7.82%	8,420,687	(6,548,938)	99,529,439	7.36%
Equity Cash	1,244,866	0.10%	1,040,283	26	204,558	0.02%
Total Fixed Income	\$761,411,636	58.74%	\$(5,628,002)	\$(43,046,193)	\$810,085,831	59.89%
Market Duration	\$663,014,948	51.15%	\$(5,283,163)	\$(40,525,235)	\$708,823,346	52.40%
Colorado Treasurer's Portfolio	663,014,948	51.15%	(5,283,163)	(40,525,235)	708,823,346	52.40%
Short Duration	\$98,396,688	7.59%	\$(344,839)	\$(2,520,958)	\$101,262,485	7.49%
Janus Henderson Short Duration (2)	98,396,688	7.59%	(344,839)	(2,520,958)	101,262,485	7.49%
High Income Strategies	\$131,558,027	10.15%	\$437,855	\$(4,888,163)	\$136,008,336	10.05%
High Yield Fixed Income	\$112,732,002	8.70%	\$377,150	\$(3,903,545)	\$116,258,397	8.59%
Mackay Shield US High Yield (3)	112,732,002	8.70%	377,150	(3,903,545)	116,258,397	8.59%
Preferred Securities	\$18,826,025	1.45%	\$60,705	\$(984,618)	\$19,749,939	1.46%
Principal Preferred Securities (3)	18,826,025	1.45%	60,705	(984,618)	19,749,939	1.46%
Cash Available For Investing	\$1,047,292	0.08%	\$1,790	\$37,903	\$1,007,599	0.07%
Total Fund	\$1,296,245,033	100.0%	\$13,165,580	\$(69,630,529)	\$1,352,709,982	100.0%

The Fund ended the quarter at \$1.30 billion, down \$56.5 million from December 31, after distributions. There were net new investments of \$13.2 million and \$69.6 million in investment losses.

One-Quarter Performance Attribution

As of March 31, 2022



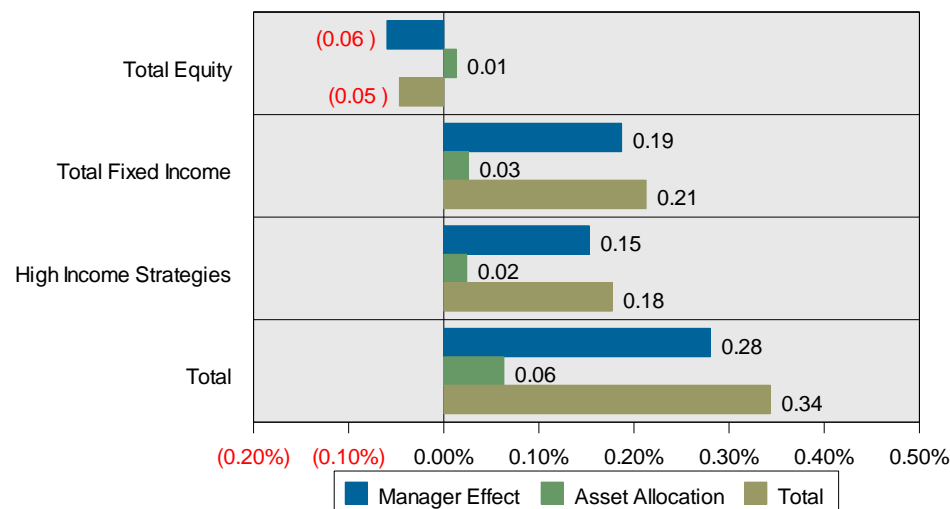
Relative Attribution Effects for Quarter ended March 31, 2022

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Total Equity	30%	30%	(5.49%)	(5.34%)	(0.04%)	0.00%	(0.04%)
Total Fixed Income	60%	60%	(5.35%)	(5.50%)	0.09%	0.01%	0.11%
High Income Strategies	10%	10%	(3.58%)	(5.06%)	0.15%	0.03%	0.18%
Total			(5.16%)	(5.41%)	+ 0.20%	+ 0.05%	0.25%

One Year Performance Attribution

As of March 31, 2022

One Year Relative Attribution Effects



One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Total Equity	28%	28%	6.22%	6.44%	(0.06%)	0.01%	(0.05%)
Total Fixed Income	63%	63%	(3.68%)	(3.96%)	0.19%	0.03%	0.21%
High Income Strategies	9%	9%	0.49%	(0.97%)	0.15%	0.02%	0.18%
Total			(0.54%)	(0.89%)	+ 0.28%	+ 0.06%	0.34%

Manager & Composite Cumulative Returns

As of March 31, 2022

	Last Quarter	Last Year	Last 5 Years	Last 10 Years
Total Equity	(5.49%)	6.22%	-	-
60% Russell 3000/40% ACWI ex US	(5.34%)	6.44%	11.93%	10.79%
Domestic Equity	(5.30%)	11.69%	-	-
Russell 3000 Index	(5.28%)	11.92%	15.40%	14.28%
International Equity	(5.81%)	(1.70%)	-	-
MSCI ACWI ex US	(5.44%)	(1.48%)	6.76%	5.55%
Total Fixed Income	(5.35%)	(3.68%)	2.20%	2.21%
Total Fixed Income Benchmark (1)	(5.50%)	(3.96%)	2.08%	1.89%
Market Duration	(5.76%)	(3.98%)	2.21%	2.22%
Colorado Treasurer's Portfolio (2)	(5.76%)	(3.98%)	2.21%	2.22%
PSPF Custom Benchmark (3)	(5.93%)	(4.15%)	2.14%	1.92%
Short Duration	(2.49%)	(1.85%)	-	-
Janus Henderson Short Duration	(2.49%)	(1.85%)	-	-
Blmbg Gov/Cred 1-3 Yr	(2.49%)	(2.91%)	1.26%	1.09%
85% 1-3YR G/C; 15% 1-3YR BB (4)	(2.52%)	(2.53%)	1.64%	1.61%
High Income Strategies	(3.58%)	0.49%	-	-
High Income Strategies Benchmark (5)	(5.06%)	(0.97%)	4.67%	-
High Yield Fixed Income	(3.36%)	0.81%	-	-
Mackay Shield US High Yield	(3.36%)	0.81%	-	-
Blmbg High Yield	(4.84%)	(0.66%)	4.69%	5.75%
Preferred Securities	(4.83%)	(1.37%)	-	-
Principal Preferred Securities	(4.83%)	(1.37%)	-	-
ICE BofA US All Cap Secs	(6.33%)	(2.73%)	4.51%	-
Total Fund w/o CAI (6)	(5.16%)	(0.54%)	3.93%	3.07%
Total Fund Benchmark (6)	(5.41%)	(0.89%)	4.09%	2.88%

Manager & Composite Fiscal Year Returns

	6/2021- 3/2022	FY 2021	FY 2020	FY 2019	FY 2018
Total Equity	(0.81%)	41.59%	1.82%	5.64%	-
60% Russell 3000/40% ACWI ex US	(0.65%)	40.77%	1.90%	5.92%	11.78%
Domestic Equity	3.34%	44.30%	6.40%	8.85%	-
Russell 3000 Index	3.40%	44.16%	6.53%	8.98%	14.78%
International Equity	(6.94%)	37.78%	(4.71%)	0.67%	-
MSCI ACWI ex US	(6.60%)	35.72%	(4.80%)	1.29%	7.28%
Total Fixed Income	(5.48%)	(0.27%)	8.79%	7.38%	(0.39%)
Total Fixed Income Benchmark (1)	(5.51%)	(0.26%)	8.28%	7.52%	(0.40%)
Market Duration	(5.91%)	(0.55%)	9.26%	7.77%	(0.39%)
Colorado Treasurer's Portfolio (2)	(5.91%)	(0.55%)	9.26%	7.77%	(0.39%)
PSPF Custom Benchmark (3)	(5.87%)	(0.33%)	8.74%	7.87%	(0.40%)
Short Duration	(2.51%)	2.33%	4.41%	-	-
Janus Henderson Short Duration	(2.51%)	2.33%	4.41%	-	-
Blmbg Gov/Cred 1-3 Yr	(2.95%)	0.44%	4.20%	4.27%	0.21%
85% 1-3YR G/C; 15% 1-3YR BB (4)	(2.78%)	1.70%	3.94%	4.59%	0.44%
High Income Strategies	(1.97%)	-	-	-	-
High Income Strategies Benchmark (5)	(3.68%)	15.13%	0.46%	7.58%	2.39%
High Yield Fixed Income	(1.59%)	-	-	-	-
Mackay Shield US High Yield	(1.59%)	-	-	-	-
Blmbg High Yield	(3.31%)	15.37%	0.03%	7.48%	2.62%
Preferred Securities	(4.15%)	-	-	-	-
Principal Preferred Securities	(4.15%)	-	-	-	-
ICE BofA US All Cap Secs	(5.78%)	13.67%	2.86%	8.12%	1.14%
Total Fund w/o CAI (6)	(3.72%)	8.30%	7.37%	6.94%	(0.36%)
Total Fund Benchmark (6)	(3.83%)	7.98%	7.87%	7.49%	0.01%

Performance Footnotes

- (1) Current quarter's Total Fixed Income Benchmark consists of 87.5% Bloomberg U.S. Aggregate and 12.5% Bloomberg Gov/Credit 1-3 Yrs.
 - (2) Includes cash returns starting July 2017.
 - (3) The PSPF Fixed Income Portfolio Custom Benchmark consisted of 37% U.S. Treasury 1-10 Year Index, 34% Mortgages 0-10 Year WAL Index, 19% AAA U.S. Agencies 1-10 Year Index and 10% U.S. Corporates AAA Rated 1-10 Years Index through March 31, 2017, 100% Bloomberg U.S. Aggregate, thereafter.
 - (4) Benchmark consists of 85% Bloomberg 1-3 Year Government/Credit Index and 15% BofAML 1-3 Year BB US Cash Pay High Yield Index.
 - (5) Benchmark consists of 85% Blmbg High Yield Index and 15% ICE BofA US All Cap Secs Index.
 - (6) Current quarter's Total Fund Benchmark consists of 18.0% Russell 3000, 12.0% MSCI ACWI ex US, 52.5% Bloomberg U.S. Aggregate, 7.5% Bloomberg Gov/Credit 1-3 Yrs, 8.5% Bloomberg US High Yield and 1.5% ICE BofA U.S. All Capital Securities Index.
- *All composites and manager returns are shown gross-of-fees.

Callan Updates

Published Research Highlights from 1Q22

Alternatives Focus, a new quarterly publication



Callan 2022-2031 Capital Markets Assumptions



2022 Defined Contribution Trends Survey



Periodic Table Collection: Year-End 2021

2017	2018	2019	2020	2021
Emerging Markets	Real Estate Funds	Large Cap	Small Cap	Large Cap
37.28%	7.36%	31.49%	19.96%	28.71%
Dev ex-U.S. Equity	Cash Equivalent	Small Cap	Large Cap	Real Estate Funds
24.21%	1.87%	25.52%	18.40%	21.02%
Large Cap	U.S. Fixed	Dev ex-U.S. Equity	Emerging Markets	Small Cap
21.83%	0.01%	22.49%	18.31%	14.82%
Small Cap	High Yield	Emerging Markets	Global ex-U.S. Fixed	Dev ex-U.S. Equity
14.65%	-2.08%	18.44%	10.11%	12.62%

Recent Blog Posts

Hedge Funds and Ukraine: A Guide for Institutional Investors

Joe McGuane

Why It Was a Tough 4Q21 for Large Cap Growth Managers

David Wang

DOL Shifts Tone on Private Equity in DC Plans

Patrick Wisdom

Additional Reading

Private Equity Trends quarterly newsletter

Active vs. Passive quarterly charts

Capital Markets Review quarterly newsletter

Monthly Updates to the Periodic Table

Market Pulse Flipbook quarterly markets update

Real Estate Indicators market outlook

Callan Institute Events

Upcoming conferences, workshops, and webinars

Callan College

Intro to Investments – Learn the Fundamentals

This course is for institutional investors, including trustees and staff members of public plans, corporate plans, and nonprofits. This session familiarizes trustees and staff with basic investment theory, terminology, and practices.

Join our next LIVE session in San Francisco (1½-day session):
July 26–27, 2022

Join our next VIRTUAL session via Zoom (3 sessions, 2–3 hours each):
September 20–22, 2022

Mark Your Calendar

2022 June Regional Workshops

June 7, 2022 – Atlanta
June 9, 2022 – Portland

2022 October Regional Workshops

October 18, 2022 – Denver
October 20, 2022 – San Francisco

Watch your email for further details and an invitation.

Webinars & Research Café Sessions

Research Café: Private Equity Fee Study

May 11, 2022 – 9:30am (PT)

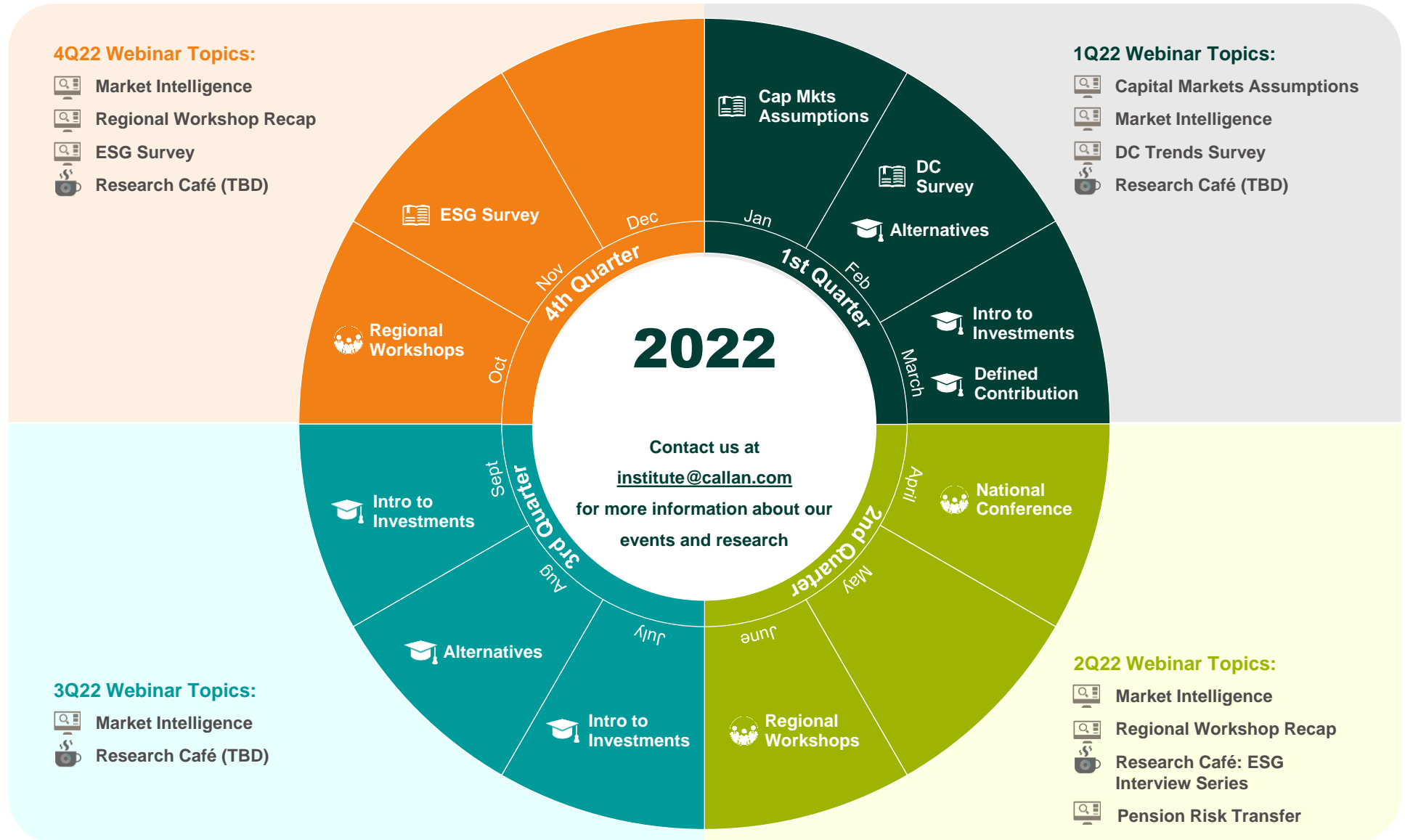
Webinar: Pension Risk Transfer

May 18, 2022 – 9:30am (PT)

Market Intelligence

July 15, 2022 – 9:30am (PT)

Content Calendar – Callan Institute



Callan Updates

Firm updates by the numbers, as of March 31, 2022

Total Associates: ~200

Ownership

- 100% employees
- All shareholders own less than 10% of the firm
- 67% of employees are equity owners
- 55% of shareholders identify as women or minority

Leadership Changes

- Greg Allen, CEO & Chief Research Officer, is now also Callan's Diversity, Equity & Belonging Executive Sponsor
- Lauren Mathias, SVP, non-U.S. equities consultant and head of the Callan Connects program, is now also Callan's DEB Champion

"Our focus is to build on all of the diversity work we've done over the years to bring change to our firm and our industry. Like many firms, we know we have a ways to go, and we're confident that the strategy we've developed will help us make meaningful, lasting change now and in the future."

- Lauren Mathias, senior vice president and DEB Champion, on Callan's new Diversity, Equity & Belonging program

Total General and Investment Consultants: more than 55

Total Specialty and Research Consultants: more than 60

Total CFA/CAIA/FRMs: ~55

Total Institutional Investor Clients: more than 400

AUA: more than \$3 trillion



March 31, 2022

CO Public School Permanent Fund

Investment Measurement Service
Quarterly Review

Information contained herein includes confidential, trade secret and proprietary information. Neither this Report nor any specific information contained herein is to be used other than by the intended recipient for its intended purpose or disseminated to any other person without Callan's permission. Certain information herein has been compiled by Callan and is based on information provided by a variety of sources believed to be reliable for which Callan has not necessarily verified the accuracy or completeness of or updated. This content may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact. This content is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation. Past performance is no guarantee of future results. For further information, please see the Appendix section in your investment measurement service quarterly review report for Important Information and Disclosures.

Table of Contents
CO Public School Permanent Fund
March 31, 2022

Actual vs.Target Asset Allocation	1
--	----------

Equity	
Total Equity	10
Domestic Equity	12
International Equity	16

Fixed Income	
Total Fixed Income	21

Market Duration	
Colorado Treasurer's Portfolio	26

Short Duration	
Janus Henderson Short Duration	31

High Income Strategies	
High Income Strategies	37

High Yield Fixed Income	
Mackay Shield US High Yield	40

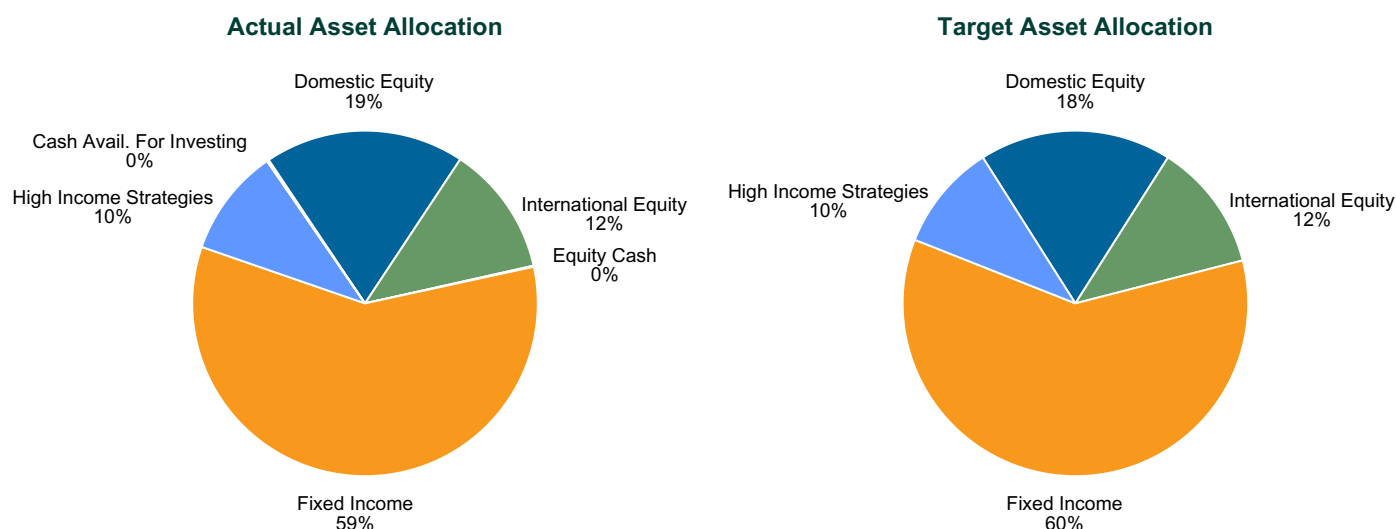
Preferred Securities	
Principal Preferred Securities	45

Research & Education	50
---------------------------------	-----------

Disclosures	53
--------------------	-----------

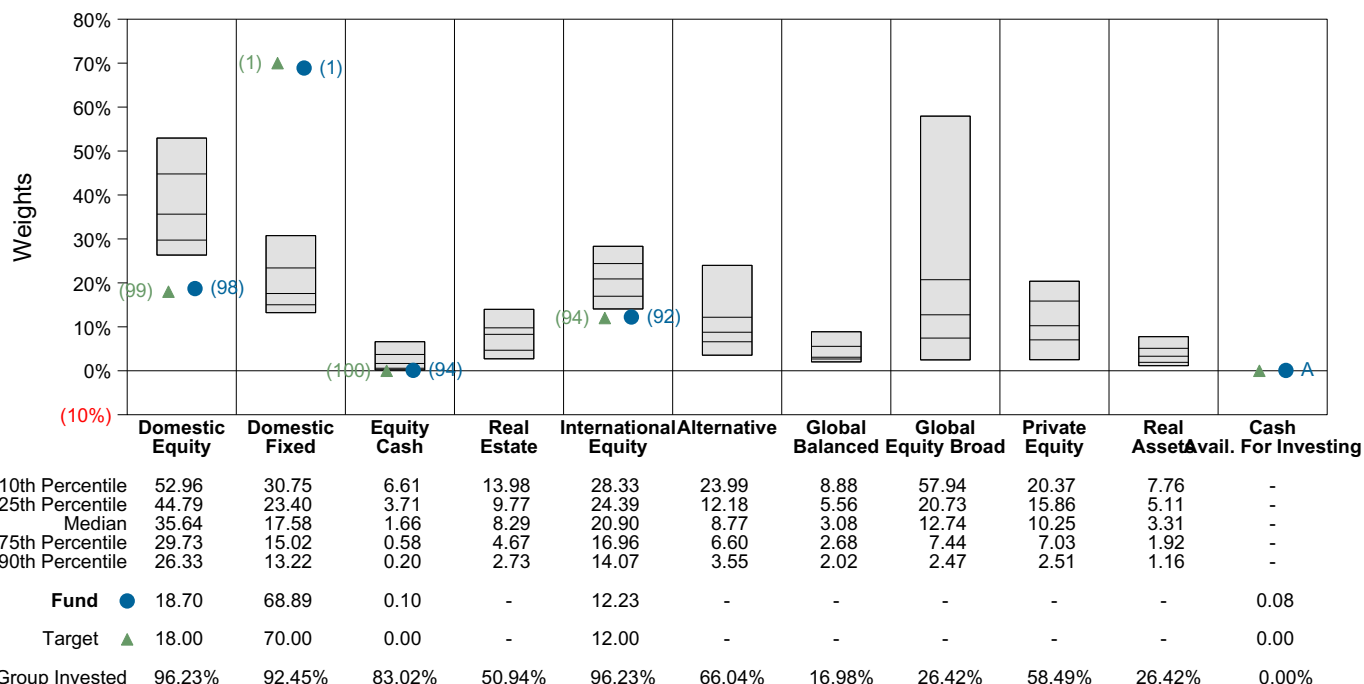
Actual vs Target Asset Allocation As of March 31, 2022

The top left chart shows the Fund's asset allocation as of March 31, 2022. The top right chart shows the Fund's target asset allocation as outlined in the investment policy statement. The bottom chart ranks the fund's asset allocation and the target allocation versus the Callan Endow/Foundation - Mid (100M-1B).



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equity	242,410	18.7%	18.0%	0.7%	9,085
International Equity	158,574	12.2%	12.0%	0.2%	3,024
Equity Cash	1,245	0.1%	0.0%	0.1%	1,245
Fixed Income	761,412	58.7%	60.0%	(1.3%)	(16,335)
High Income Strategies	131,558	10.1%	10.0%	0.1%	1,934
Cash Avail. For Investing	1,047	0.1%	0.0%	0.1%	1,047
Total	1,296,245	100.0%	100.0%		

Asset Class Weights vs Callan Endow/Foundation - Mid (100M-1B)



* Current Quarter Target = 52.5% Blmbg Aggregate, 18.0% Russell 3000 Index, 12.0% MSCI ACWI ex US, 8.5% Blmbg HY Corp, 7.5% Blmbg Gov/Cred 1-3 Yr and 1.5% ICE All US Cap Secs.

Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of March 31, 2022, with the distribution as of December 31, 2021. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

Asset Distribution Across Investment Managers

	March 31, 2022				December 31, 2021	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Total Equity	\$402,228,078	31.03%	\$18,353,938	\$(21,734,076)	\$405,608,216	29.98%
Domestic Equity	\$242,409,530	18.70%	\$8,639,910	\$(12,674,436)	\$246,444,056	18.22%
iShares S&P 1500 ETF (1)	242,409,530	18.70%	8,639,910	(12,674,436)	246,444,056	18.22%
International Equity	\$158,573,682	12.23%	\$8,673,745	\$(9,059,665)	\$158,959,603	11.75%
iShares MSCI Emerging ETF (1)	40,914,907	3.16%	(660,962)	(3,224,493)	44,800,362	3.31%
iShares MSCI Canada ETF (1)	16,257,587	1.25%	914,019	713,766	14,629,801	1.08%
iShares Core MSCI EAFE ETF (1)	101,401,188	7.82%	8,420,687	(6,548,938)	99,529,439	7.36%
Equity Cash	1,244,866	0.10%	1,040,283	26	204,558	0.02%
Total Fixed Income	\$761,411,636	58.74%	\$(5,628,002)	\$(43,046,193)	\$810,085,831	59.89%
Market Duration	\$663,014,948	51.15%	\$(5,283,163)	\$(40,525,235)	\$708,823,346	52.40%
Colorado Treasurer's Portfolio	663,014,948	51.15%	(5,283,163)	(40,525,235)	708,823,346	52.40%
Short Duration	\$98,396,688	7.59%	\$(344,839)	\$(2,520,958)	\$101,262,485	7.49%
Janus Henderson Short Duration (2)	98,396,688	7.59%	(344,839)	(2,520,958)	101,262,485	7.49%
High Income Strategies	\$131,558,027	10.15%	\$437,855	\$(4,888,163)	\$136,008,336	10.05%
High Yield Fixed Income	\$112,732,002	8.70%	\$377,150	\$(3,903,545)	\$116,258,397	8.59%
Mackay Shield US High Yield (3)	112,732,002	8.70%	377,150	(3,903,545)	116,258,397	8.59%
Preferred Securities	\$18,826,025	1.45%	\$60,705	\$(984,618)	\$19,749,939	1.46%
Principal Preferred Securities (3)	18,826,025	1.45%	60,705	(984,618)	19,749,939	1.46%
Cash Available For Investing	\$1,047,292	0.08%	\$1,790	\$37,903	\$1,007,599	0.07%
Total Fund	\$1,296,245,033	100.0%	\$13,165,580	\$(69,630,529)	\$1,352,709,982	100.0%

(1) Funded in December 2017.

(2) Funded in November 2018.

(3) Funded in July 2020.

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended March 31, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

Returns for Periods Ended March 31, 2022

	Last Quarter	Last Year	Last 5 Years	Last 10 Years
Total Equity	(5.49%)	6.22%	-	-
60% Russell 3000/40% ACWI ex US	(5.34%)	6.44%	11.93%	10.79%
Domestic Equity	(5.30%)	11.69%	-	-
Russell 3000 Index	(5.28%)	11.92%	15.40%	14.28%
International Equity	(5.81%)	(1.70%)	-	-
MSCI ACWI ex US	(5.44%)	(1.48%)	6.76%	5.55%
Total Fixed Income	(5.35%)	(3.68%)	2.20%	2.21%
Total Fixed Income Benchmark (1)	(5.50%)	(3.96%)	2.08%	1.89%
Market Duration	(5.76%)	(3.98%)	2.21%	2.22%
Colorado Treasurer's Portfolio (2)	(5.76%)	(3.98%)	2.21%	2.22%
PSPF Custom Benchmark (3)	(5.93%)	(4.15%)	2.14%	1.92%
Short Duration	(2.49%)	(1.85%)	-	-
Janus Henderson Short Duration	(2.49%)	(1.85%)	-	-
Blmbg Gov/Cred 1-3 Yr	(2.49%)	(2.91%)	1.26%	1.09%
85% 1-3YR G/C; 15% 1-3YR BB (4)	(2.52%)	(2.53%)	1.64%	1.61%
High Income Strategies	(3.58%)	0.49%	-	-
High Income Strategies Benchmark (5)	(5.06%)	(0.97%)	4.67%	-
High Yield Fixed Income	(3.36%)	0.81%	-	-
Mackay Shield US High Yield	(3.36%)	0.81%	-	-
Blmbg High Yield	(4.84%)	(0.66%)	4.69%	5.75%
Preferred Securities	(4.83%)	(1.37%)	-	-
Principal Preferred Securities	(4.83%)	(1.37%)	-	-
ICE BofA US All Cap Secs	(6.33%)	(2.73%)	4.51%	-
Total Fund w/o CAI (6)	(5.16%)	(0.54%)	3.93%	3.07%
Total Fund Benchmark (6)	(5.41%)	(0.89%)	4.09%	2.88%

(1) Current quarter's Total Fixed Income Benchmark consists of 88.4% Bloomberg U.S. Aggregate and 11.6% Bloomberg Gov/Credit 1-3 Yrs.

(2) Includes cash returns starting July 2017.

(3) The PSPF Fixed Income Portfolio Custom Benchmark consisted of 37% U.S. Treasury 1-10 Year Index, 34% Mortgages 0-10 Year WAL Index, 19% AAA U.S. Agencies 1-10 Year Index and 10% U.S. Corporates AAA Rated 1-10 Years Index through March 31, 2017, 100% Bloomberg U.S. Aggregate, thereafter.

(4) Benchmark consists of 85% Bloomberg 1-3 Year Government/Credit Index and 15% BofAML 1-3 Year BB US Cash Pay High Yield Index.

(5) Benchmark consists of 85% Blmbg High Yield Index and 15% ICE BofA US All Cap Secs Index.

(6) Current quarter's Total Fund Benchmark consists of 16.4% Russell 3000, 10.9% MSCI ACWI ex US, 57.0% Bloomberg U.S. Aggregate, 7.5% Bloomberg Gov/Credit 1-3 Yrs, 7.0% Bloomberg US High Yield and 1.3% ICE BofA U.S. All Capital Securities Index. See pg. 5 for full benchmark history. The Total Fund return calculations do not include Cash Available for Investing.

*All composites and manager returns are shown gross-of-fees.

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended June 30. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

	6/2021- 3/2022	FY 2021	FY 2020	FY 2019	FY 2018
Total Equity	(0.81%)	41.59%	1.82%	5.64%	-
60% Russell 3000/40% ACWI ex US	(0.65%)	40.77%	1.90%	5.92%	11.78%
Domestic Equity	3.34%	44.30%	6.40%	8.85%	-
Russell 3000 Index	3.40%	44.16%	6.53%	8.98%	14.78%
International Equity	(6.94%)	37.78%	(4.71%)	0.67%	-
MSCI ACWI ex US	(6.60%)	35.72%	(4.80%)	1.29%	7.28%
Total Fixed Income	(5.48%)	(0.27%)	8.79%	7.38%	(0.39%)
Total Fixed Income Benchmark (1)	(5.51%)	(0.26%)	8.28%	7.52%	(0.40%)
Market Duration	(5.91%)	(0.55%)	9.26%	7.77%	(0.39%)
Colorado Treasurer's Portfolio (2)	(5.91%)	(0.55%)	9.26%	7.77%	(0.39%)
PSPF Custom Benchmark (3)	(5.87%)	(0.33%)	8.74%	7.87%	(0.40%)
Short Duration	(2.51%)	2.33%	4.41%	-	-
Janus Henderson Short Duration	(2.51%)	2.33%	4.41%	-	-
Blmbg Gov/Cred 1-3 Yr	(2.95%)	0.44%	4.20%	4.27%	0.21%
85% 1-3YR G/C; 15% 1-3YR BB (4)	(2.78%)	1.70%	3.94%	4.59%	0.44%
High Income Strategies	(1.97%)	-	-	-	-
High Income Strategies Benchmark (5)	(3.68%)	15.13%	0.46%	7.58%	2.39%
High Yield Fixed Income	(1.59%)	-	-	-	-
Mackay Shield US High Yield	(1.59%)	-	-	-	-
Blmbg High Yield	(3.31%)	15.37%	0.03%	7.48%	2.62%
Preferred Securities	(4.15%)	-	-	-	-
Principal Preferred Securities	(4.15%)	-	-	-	-
ICE BofA US All Cap Secs	(5.78%)	13.67%	2.86%	8.12%	1.14%
Total Fund w/o CAI (6)	(3.72%)	8.30%	7.37%	6.94%	(0.36%)
Total Fund Benchmark (6)	(3.83%)	7.98%	7.87%	7.49%	0.01%

(1) Current quarter's Total Fixed Income Benchmark consists of 88.4% Bloomberg U.S. Aggregate and 11.6% Bloomberg Gov/Credit 1-3 Yrs.

(2) Includes cash returns starting July 2017.

(3) The PSPF Fixed Income Portfolio Custom Benchmark consisted of 37% U.S. Treasury 1-10 Year Index, 34% Mortgages 0-10 Year WAL Index, 19% AAA U.S. Agencies 1-10 Year Index and 10% U.S. Corporates AAA Rated 1-10 Years Index through March 31, 2017, 100% Bloomberg U.S. Aggregate, thereafter.

(4) Benchmark consists of 85% Bloomberg 1-3 Year Government/Credit Index and 15% BofAML 1-3 Year BB US Cash Pay High Yield Index.

(5) Benchmark consists of 85% Blmbg High Yield Index and 15% ICE BofA US All Cap Secs Index.

(6) Current quarter's Total Fund Benchmark consists of 16.4% Russell 3000, 10.9% MSCI ACWI ex US, 57.0% Bloomberg U.S. Aggregate, 7.5% Bloomberg Gov/Credit 1-3 Yrs, 7.0% Bloomberg US High Yield and 1.3% ICE BofA U.S. All Capital Securities Index. See pg. 5 for full benchmark history. The Total Fund return calculations do not include Cash Available for Investing.

*All composites and manager returns are shown gross-of-fees.

Total Fund Benchmark Definition

Inception to Dec 31, 2017

Market Duration	PFSF Fixed Income Benchmark	100%
-----------------	-----------------------------	------

January 1st, 2018 - December 31th, 2018

US Equity	Russell 3000 Index	12.00%
International Equity	MSCI ACWI ex US	8.00%
Market Duration	Bloomberg Barclays Aggregate	72.00%
Short Duration	Bloomberg Barclays Gov/Cred 1-3 Yr	8.00%

January 1st, 2019 - September 30th, 2020

US Equity	Russell 3000 Index	12.00%
International Equity	MSCI ACWI ex US	8.00%
Market Duration	Bloomberg Barclays Aggregate	72.00%
Short Duration	Bloomberg Barclays Gov/Cred 1-3 Yr	8.00%

October 1st, 2020 - March 31st, 2021

US Equity	Russell 3000 Index	12.00%
International Equity	MSCI ACWI ex US	8.00%
Market Duration	Bloomberg Barclays Aggregate	67.50%
Short Duration	Bloomberg Barclays Gov/Cred 1-3 Yr	7.50%
High Yield	Bloomberg Barclays US High Yield	4.25%
Preferred Securities	ICE BofA U.S. All Capital Securities Index	0.75%

April 1st, 2021 - June 30th, 2021

US Equity	Russell 3000 Index	14.70%
International Equity	MSCI ACWI ex US	9.80%
Market Duration	Bloomberg Barclays Aggregate	61.50%
Short Duration	Bloomberg Barclays Gov/Cred 1-3 Yr	7.50%
High Yield	Bloomberg Barclays US High Yield	5.50%
Preferred Securities	ICE BofA U.S. All Capital Securities Index	1.00%

July 1st, 2021 - September 30, 2021

US Equity	Russell 3000 Index	16.35%
International Equity	MSCI ACWI ex US	10.90%
Market Duration	Bloomberg Barclays Aggregate	57.00%
Short Duration	Bloomberg Barclays Gov/Cred 1-3 Yr	7.50%
High Yield	Bloomberg Barclays US High Yield	7.00%
Preferred Securities	ICE BofA U.S. All Capital Securities Index	1.25%

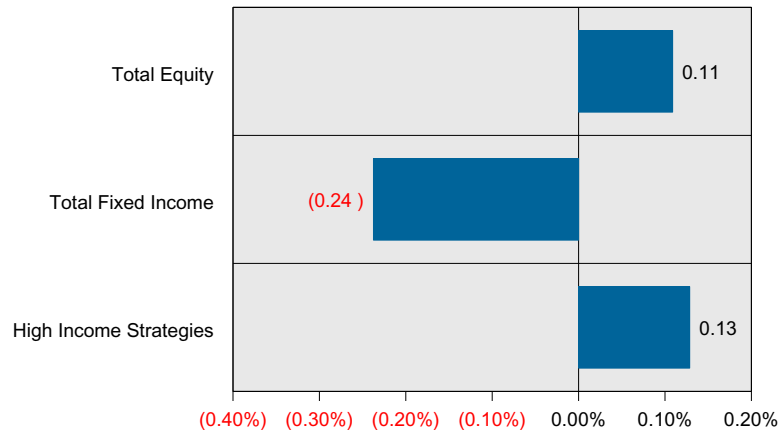
October 1st, 2021 - Current

US Equity	Russell 3000 Index	18.00%
International Equity	MSCI ACWI ex US	12.00%
Market Duration	Bloomberg Barclays Aggregate	52.50%
Short Duration	Bloomberg Barclays Gov/Cred 1-3 Yr	7.50%
High Yield	Bloomberg Barclays US High Yield	8.50%
Preferred Securities	ICE BofA U.S. All Capital Securities Index	1.50%

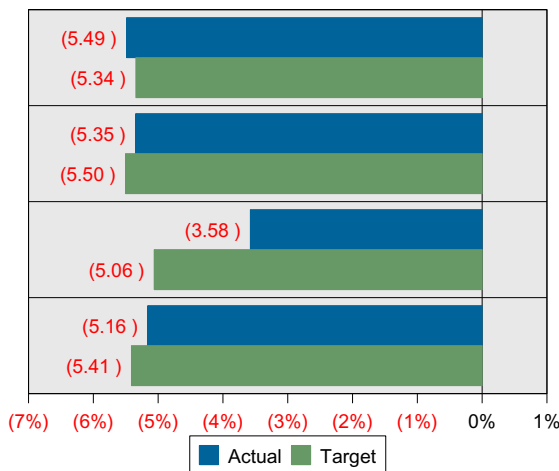
Quarterly Total Fund Relative Attribution - March 31, 2022

The following analysis approaches Total Fund Attribution from the perspective of relative return. Relative return attribution separates and quantifies the sources of total fund excess return relative to its target. This excess return is separated into two relative attribution effects: Asset Allocation Effect and Manager Selection Effect. The Asset Allocation Effect represents the excess return due to the actual total fund asset allocation differing from the target asset allocation. Manager Selection Effect represents the total fund impact of the individual managers excess returns relative to their benchmarks.

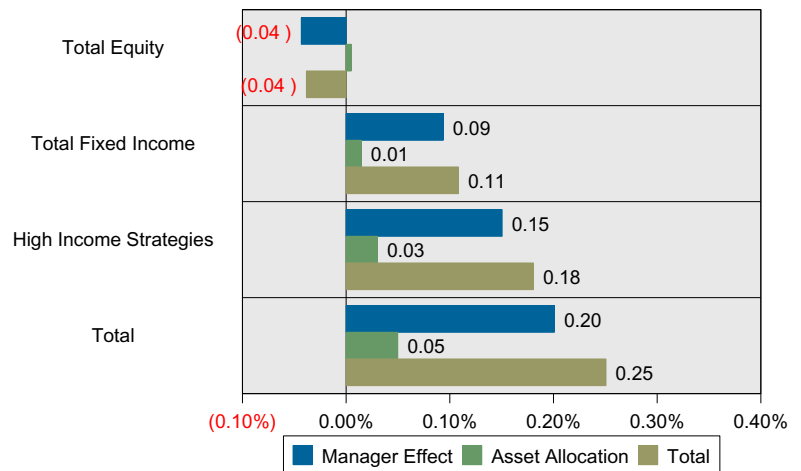
Asset Class Under or Overweighting



Actual vs Target Returns



Relative Attribution by Asset Class



Relative Attribution Effects for Quarter ended March 31, 2022

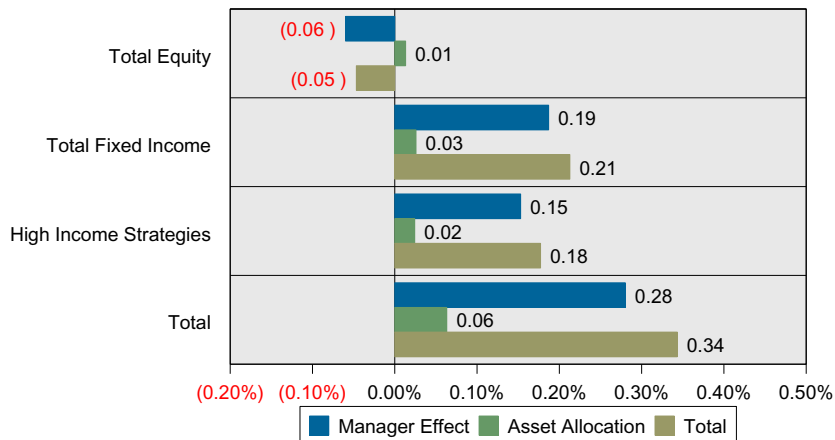
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Total Equity	30%	30%	(5.49%)	(5.34%)	(0.04%)	0.00%	(0.04%)
Total Fixed Income	60%	60%	(5.35%)	(5.50%)	0.09%	0.01%	0.11%
High Income Strategies	10%	10%	(3.58%)	(5.06%)	0.15%	0.03%	0.18%
Total			(5.16%)	(5.41%)	+ 0.20%	+ 0.05%	0.25%

* Current Quarter Target = 52.5% Blmbg Aggregate, 18.0% Russell 3000 Index, 12.0% MSCI ACWI ex US, 8.5% Blmbg HY Corp, 7.5% Blmbg Gov/Cred 1-3 Yr and 1.5% ICE All US Cap Secs.

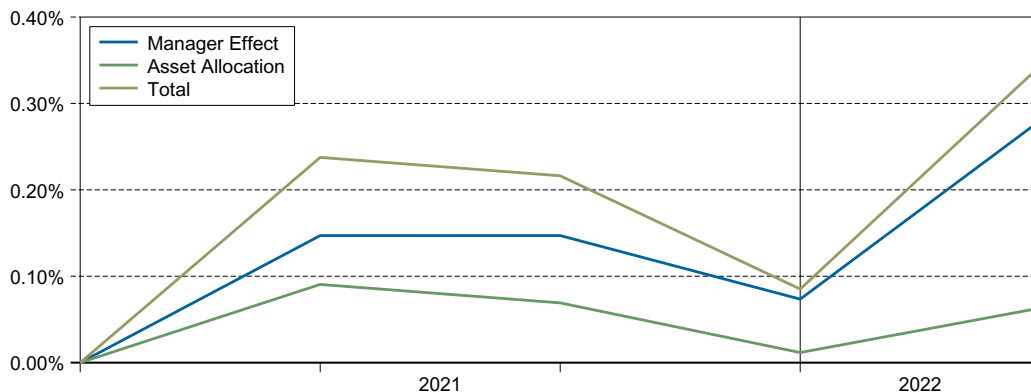
Cumulative Total Fund Relative Attribution - March 31, 2022

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

One Year Relative Attribution Effects



Cumulative Relative Attribution Effects



One Year Relative Attribution Effects

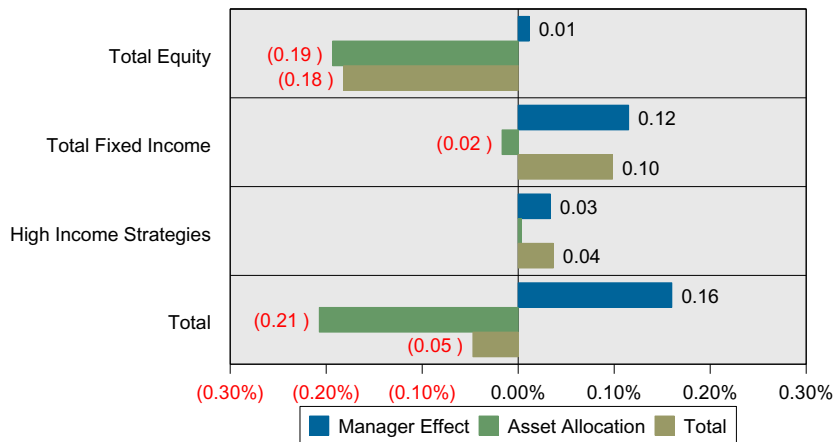
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Total Equity	28%	28%	6.22%	6.44%	(0.06%)	0.01%	(0.05%)
Total Fixed Income	63%	63%	(3.68%)	(3.96%)	0.19%	0.03%	0.21%
High Income Strategies	9%	9%	0.49%	(0.97%)	0.15%	0.02%	0.18%
Total			(0.54%)	(0.89%)	+ 0.28%	+ 0.06%	0.34%

* Current Quarter Target = 52.5% Blmbg Aggregate, 18.0% Russell 3000 Index, 12.0% MSCI ACWI ex US, 8.5% Blmbg HY Corp, 7.5% Blmbg Gov/Cred 1-3 Yr and 1.5% ICE All US Cap Secs.

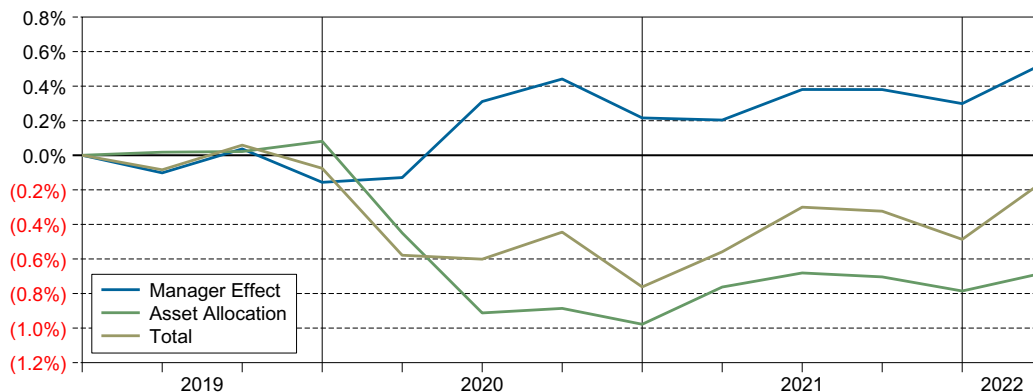
Cumulative Total Fund Relative Attribution - March 31, 2022

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

Three Year Annualized Relative Attribution Effects



Cumulative Relative Attribution Effects



Three Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Total Equity	23%	23%	13.94%	13.88%	0.01%	(0.19%)	(0.18%)
Total Fixed Income	73%	74%	1.79%	1.65%	0.12%	(0.02%)	0.10%
High Income Strategies	4%	4%	-	-	0.03%	0.00%	0.04%
Total			4.86%	4.90%	+ 0.16%	+ (0.21%)	(0.05%)

* Current Quarter Target = 52.5% Blmbg Aggregate, 18.0% Russell 3000 Index, 12.0% MSCI ACWI ex US, 8.5% Blmbg HY Corp, 7.5% Blmbg Gov/Cred 1-3 Yr and 1.5% ICE All US Cap Secs.

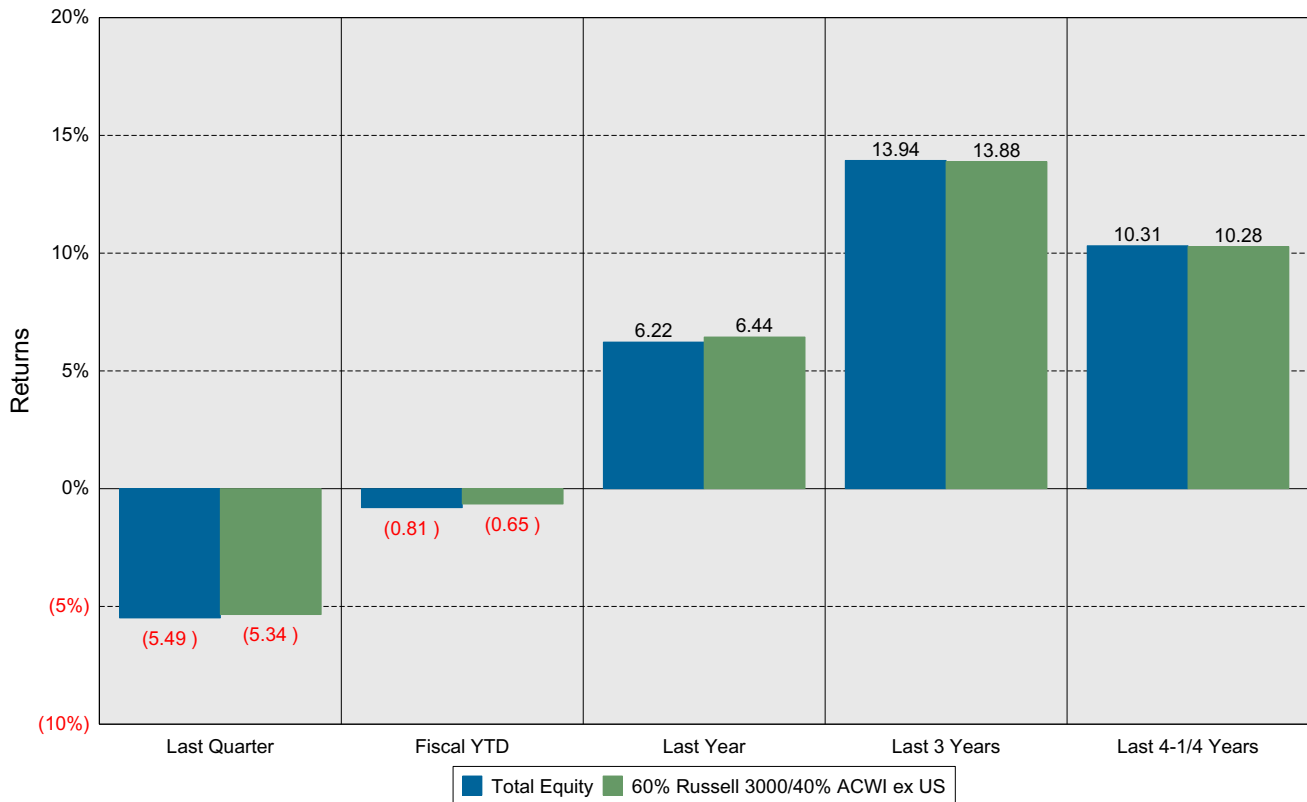
Total Equity Period Ended March 31, 2022

Inception Date

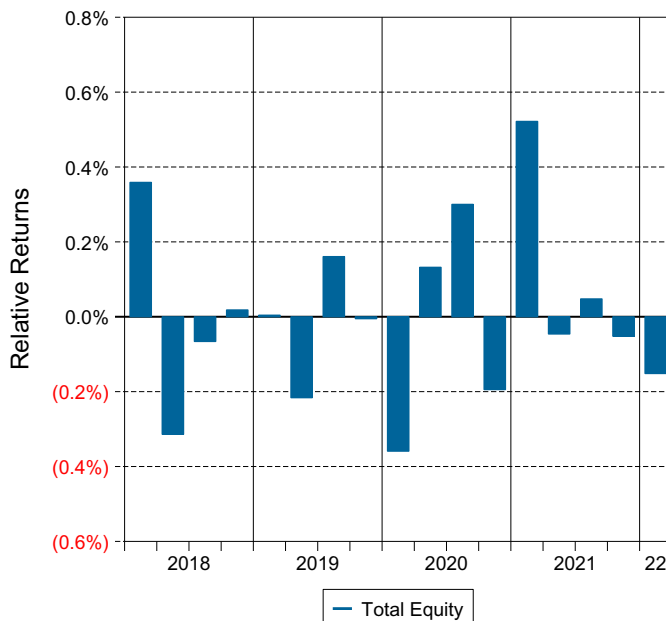
Parametric was funded December 12th, 2017.

Quarterly Summary and Highlights

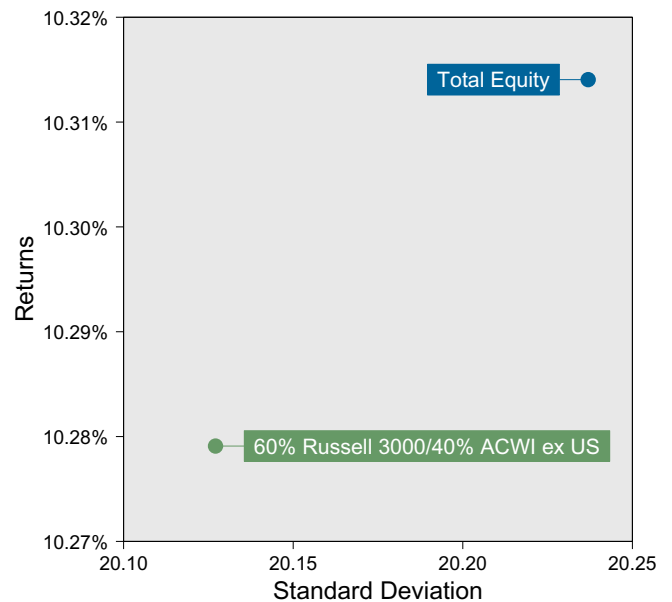
- Total Equity's portfolio underperformed the 60% Russell 3000/40% ACWI ex US by 0.14% for the quarter and underperformed the 60% Russell 3000/40% ACWI ex US for the year by 0.21%.



Relative Returns vs 60% Russell 3000/40% ACWI ex US



Annualized Four and One-Quarter Year Risk vs Return



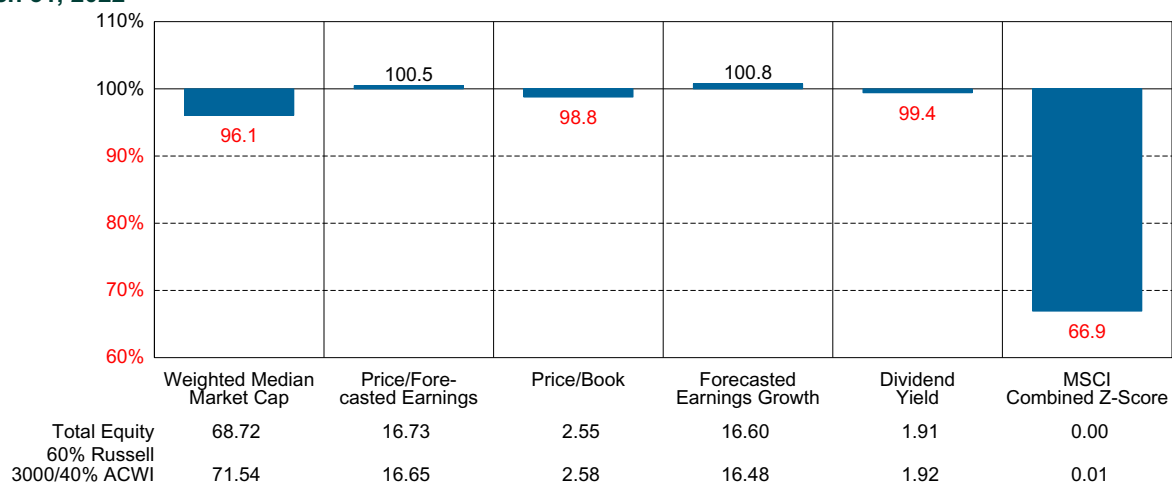
Total Equity

Equity Characteristics Analysis Summary

Portfolio Characteristics

This graph compares the manager's portfolio characteristics relative to the benchmark's portfolio characteristics.

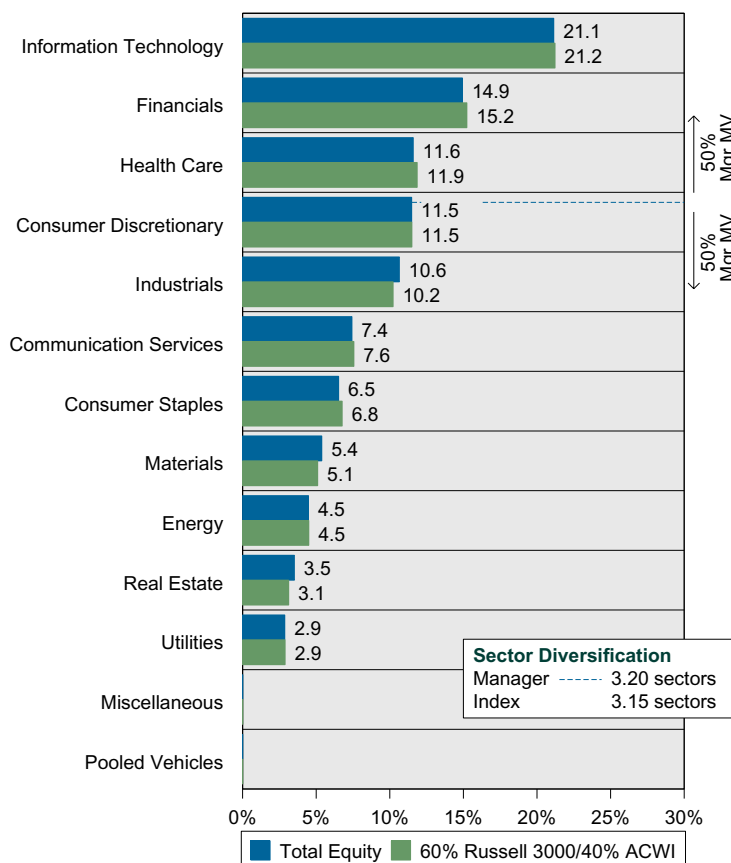
Portfolio Characteristics Relative to 60% Russell 3000/40% ACWI as of March 31, 2022



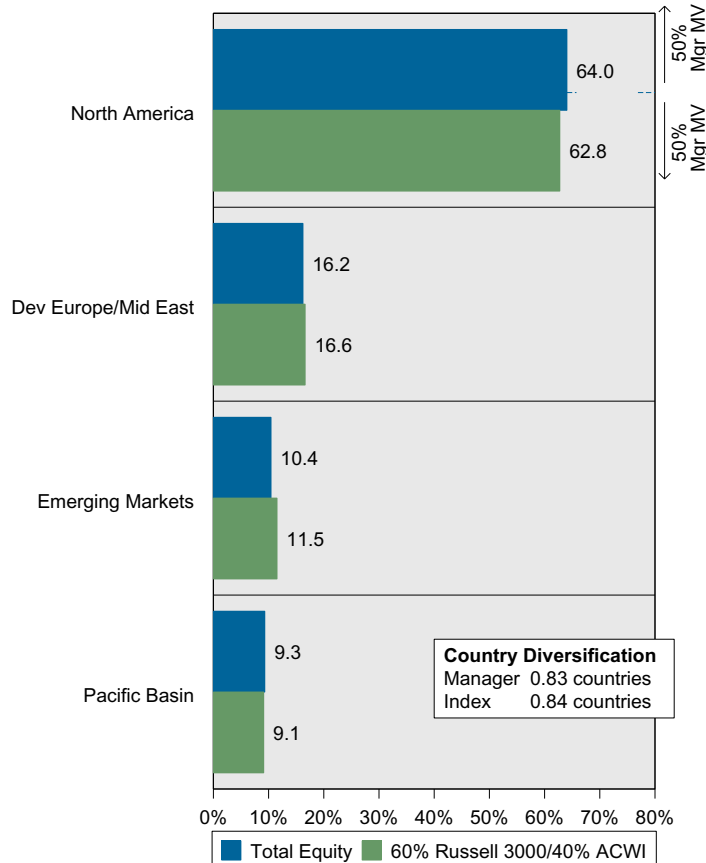
Sector Weights

The graph below contrasts the manager's sector weights for the most recent quarter with those of the benchmark. The regional allocation chart also compares the manager's geographical region weights with those of the benchmark.

Sector Allocation March 31, 2022



Regional Allocation March 31, 2022



Domestic Equity Period Ended March 31, 2022

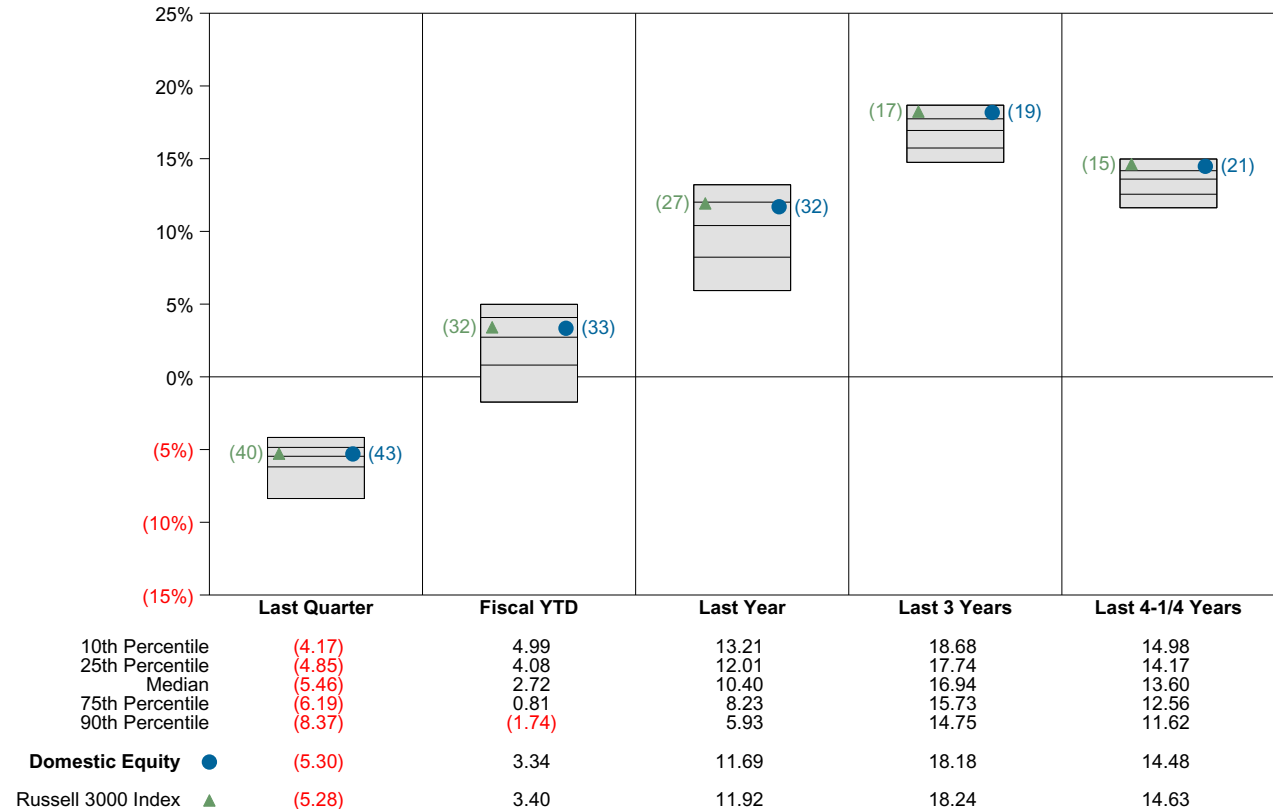
Inception Date

Parametric was funded December 12th, 2017.

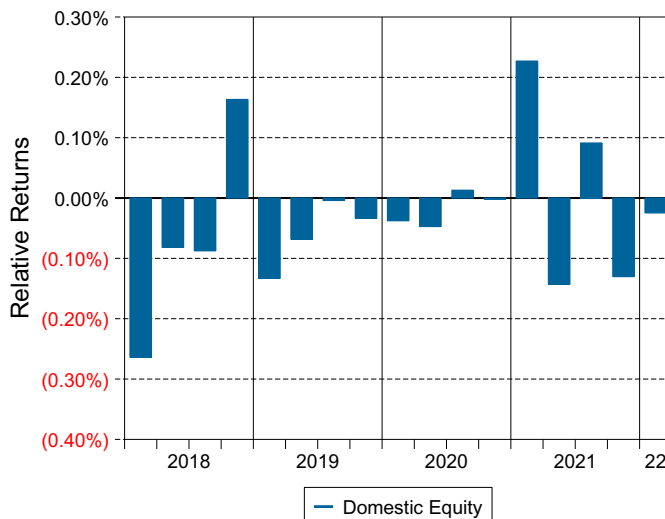
Quarterly Summary and Highlights

- Domestic Equity's portfolio posted a (5.30)% return for the quarter placing it in the 43 percentile of the EF- Domestic Equity group for the quarter and in the 32 percentile for the last year.
- Domestic Equity's portfolio underperformed the Russell 3000 Index by 0.02% for the quarter and underperformed the Russell 3000 Index for the year by 0.23%.

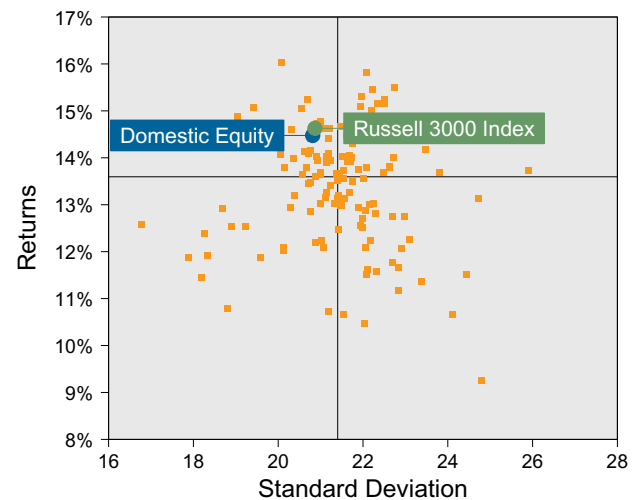
Performance vs EF- Domestic Equity (Gross)



Relative Return vs Russell 3000 Index



EF- Domestic Equity (Gross) Annualized Four and One-Quarter Year Risk vs Return

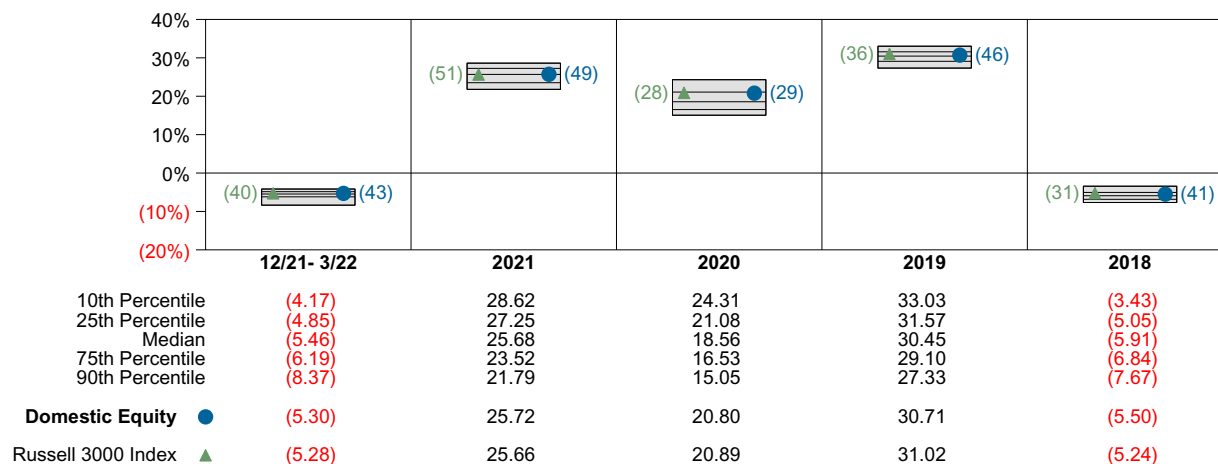


Domestic Equity Return Analysis Summary

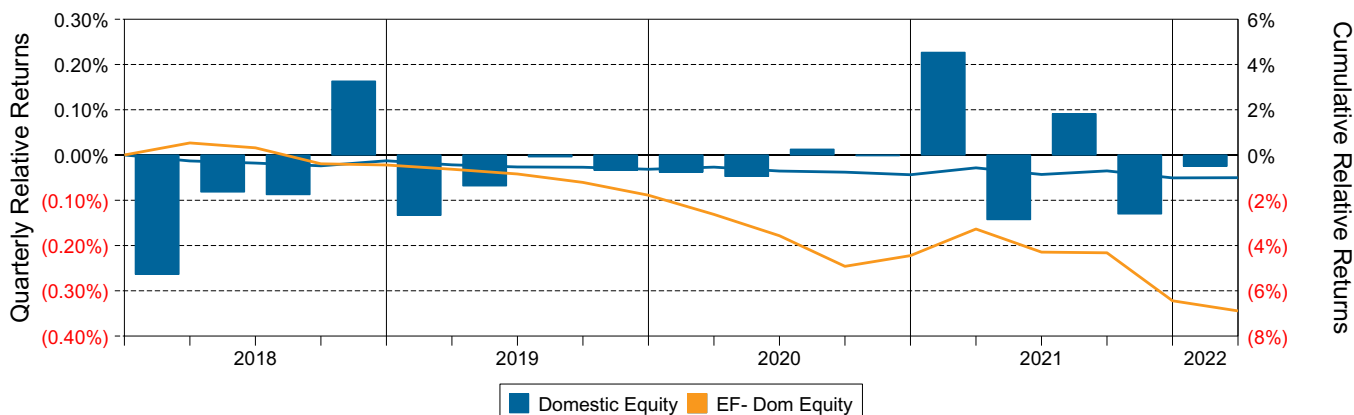
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

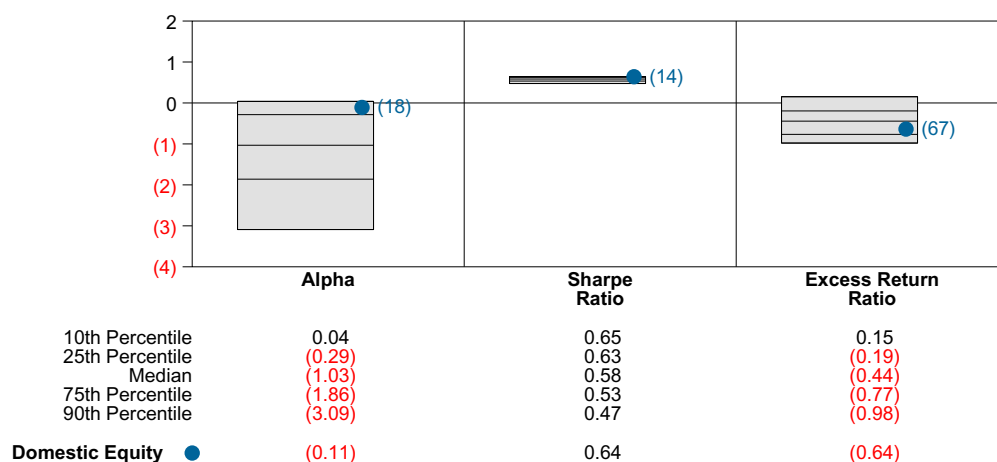
Performance vs EF- Domestic Equity (Gross)



Cumulative and Quarterly Relative Returns vs Russell 3000 Index



Risk Adjusted Return Measures vs Russell 3000 Index Rankings Against EF- Domestic Equity (Gross) Four and One-Quarter Years Ended March 31, 2022

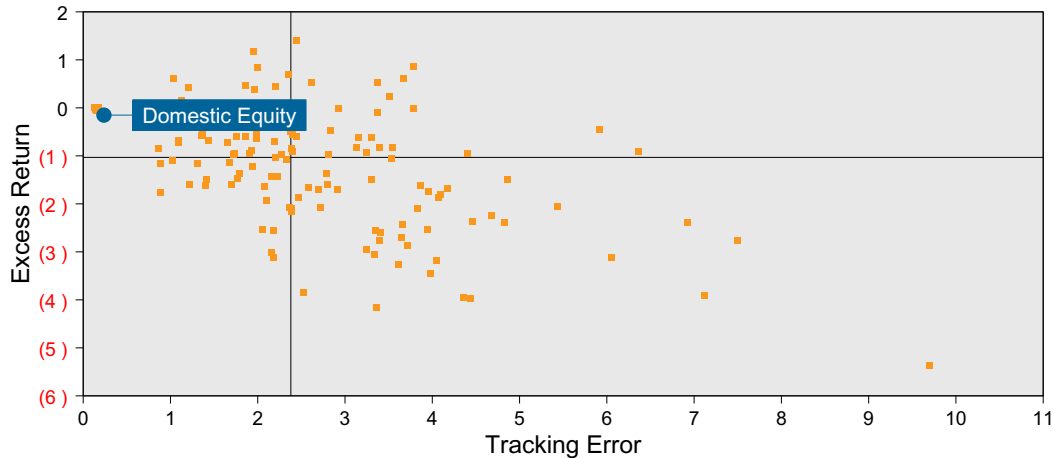


Domestic Equity Risk Analysis Summary

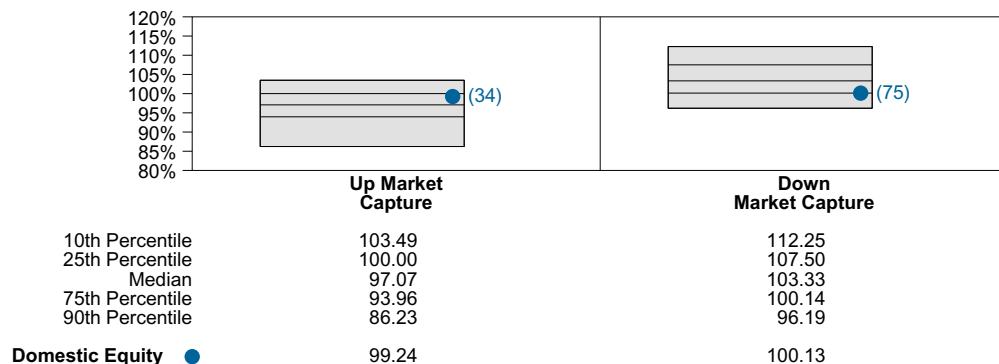
Risk Analysis

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows Up and Down Market Capture. The last two charts show the ranking of the manager's risk statistics versus the peer group.

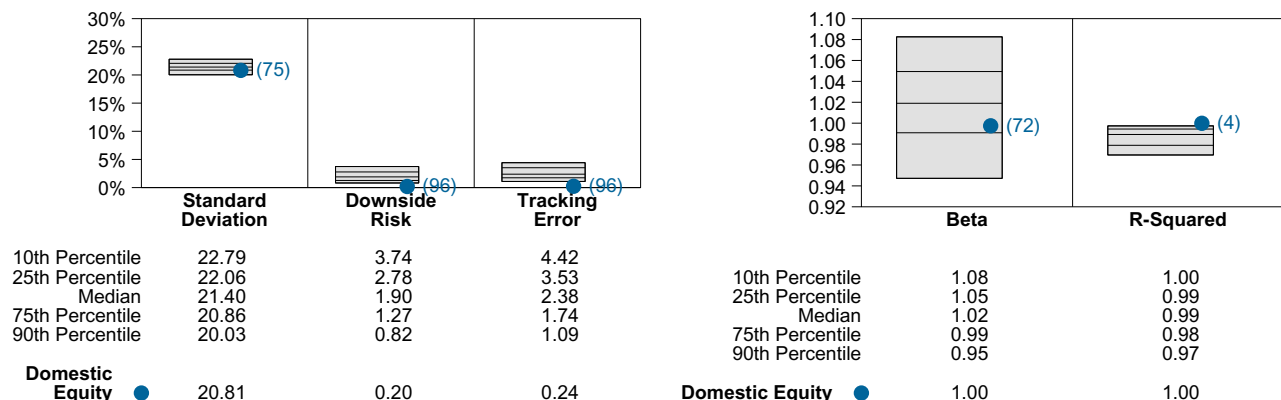
Risk Analysis vs EF- Domestic Equity (Gross) Four and One-Quarter Years Ended March 31, 2022



Market Capture vs Russell 3000 Index Rankings Against EF- Domestic Equity (Gross) Four and One-Quarter Years Ended March 31, 2022



Risk Statistics Rankings vs Russell 3000 Index Rankings Against EF- Domestic Equity (Gross) Four and One-Quarter Years Ended March 31, 2022

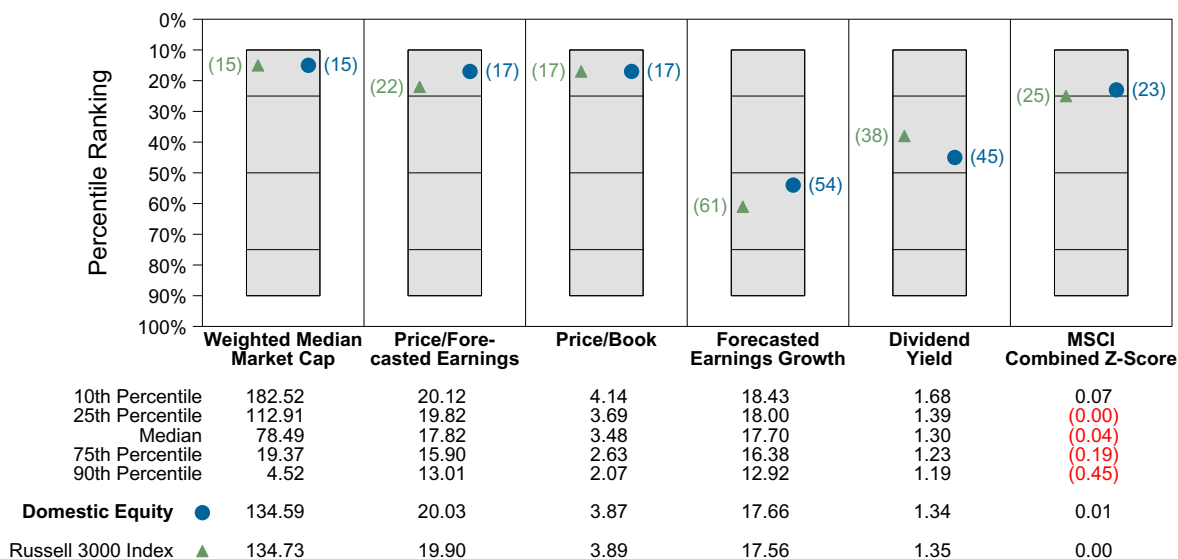


Domestic Equity Equity Characteristics Analysis Summary

Portfolio Characteristics

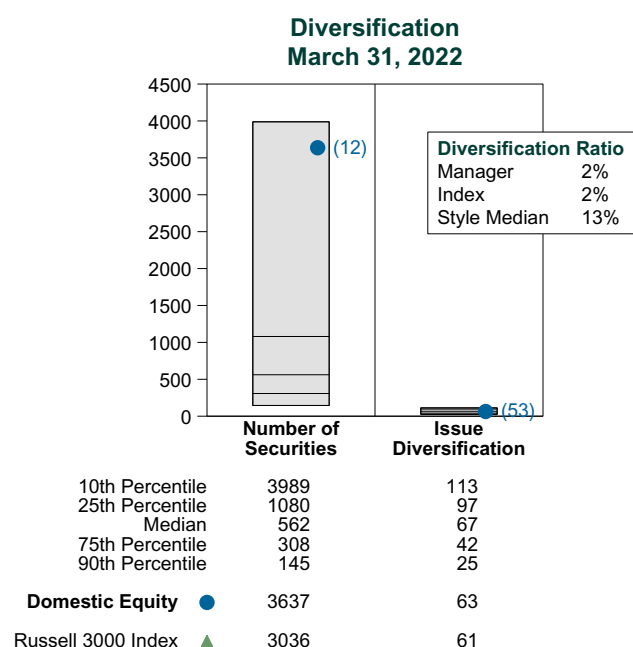
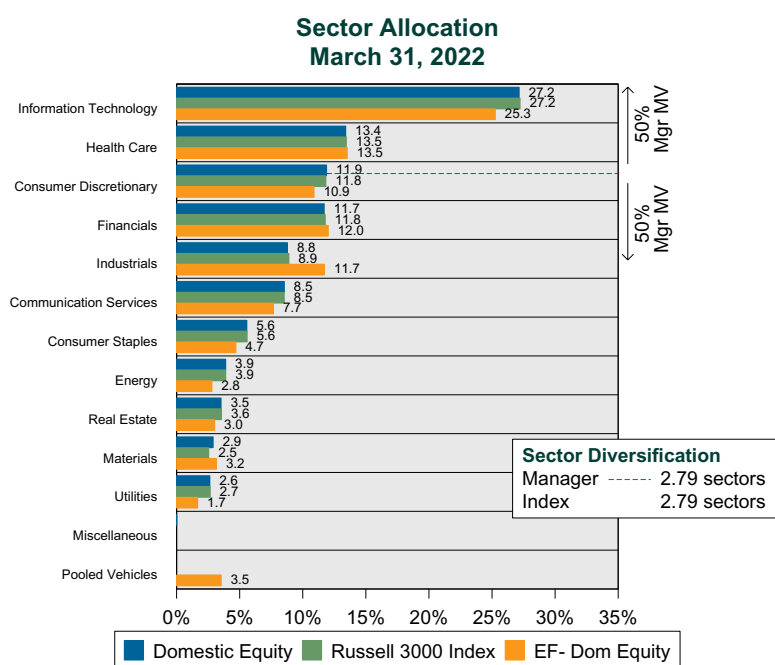
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against EF- Domestic Equity as of March 31, 2022



Sector Weights

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. Diversification by number and concentration of holdings are also compared to the benchmark and peer group. Issue Diversification represents by count, and Diversification Ratio by percent, the number of holdings that account for half of the portfolio's market value.



International Equity Period Ended March 31, 2022

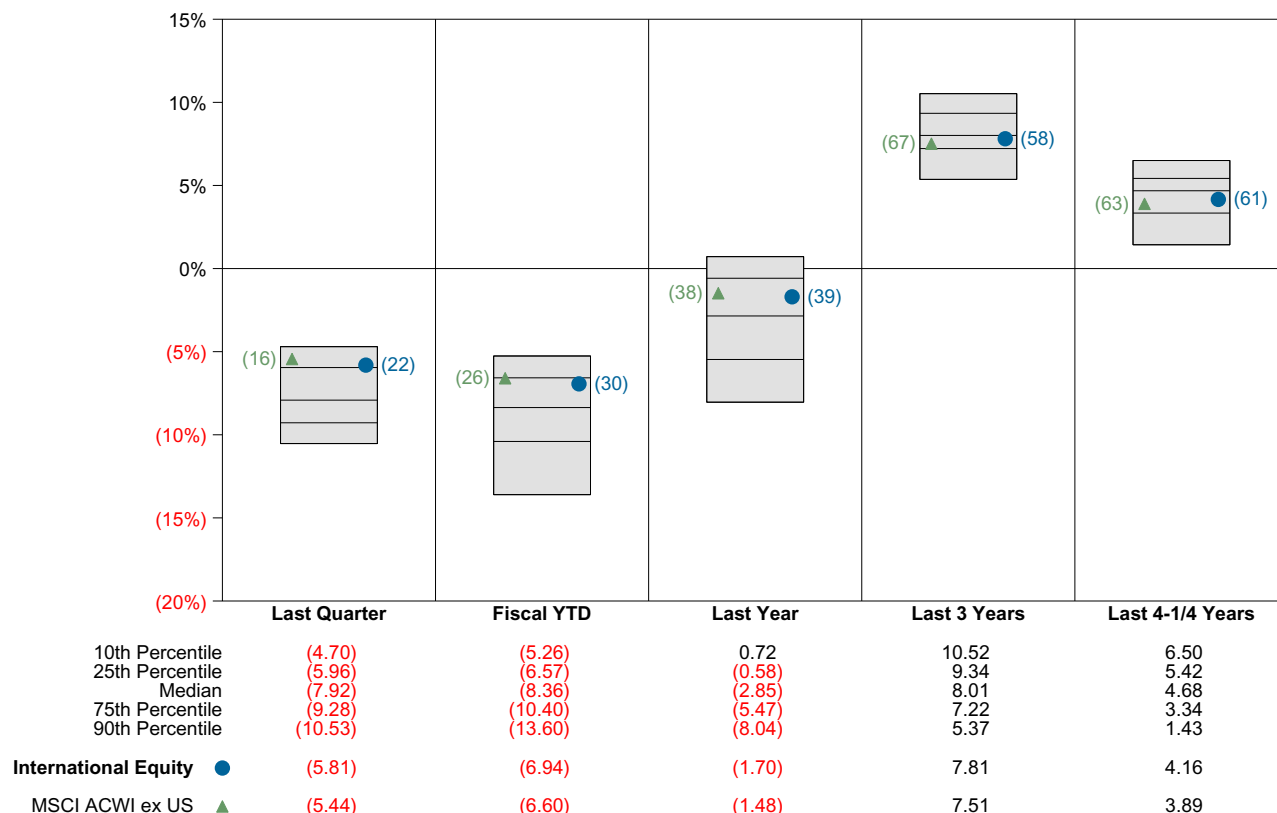
Inception Date

Parametric was funded December 12th, 2017.

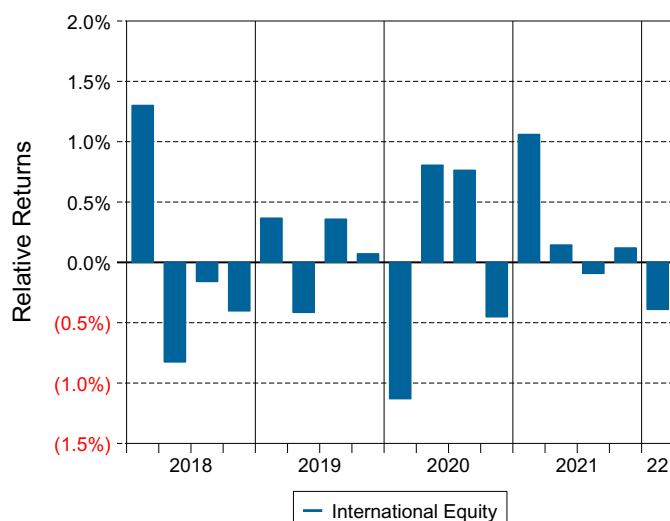
Quarterly Summary and Highlights

- International Equity's portfolio posted a (5.81)% return for the quarter placing it in the 22 percentile of the EF-International Equity group for the quarter and in the 39 percentile for the last year.
- International Equity's portfolio underperformed the MSCI ACWI ex US by 0.37% for the quarter and underperformed the MSCI ACWI ex US for the year by 0.21%.

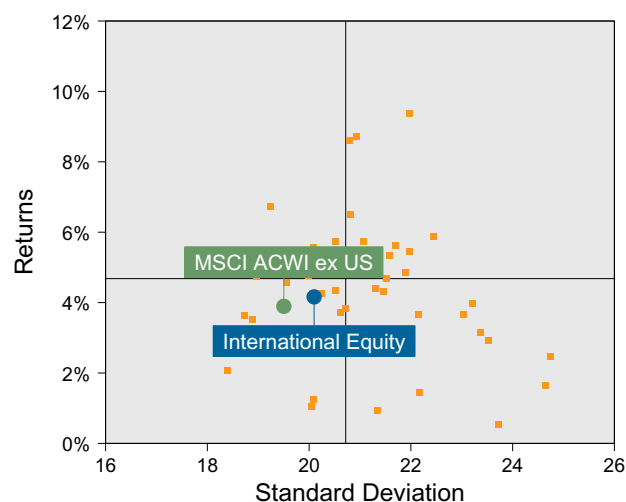
Performance vs EF- International Equity (Gross)



Relative Return vs MSCI ACWI ex US



EF- International Equity (Gross) Annualized Four and One-Quarter Year Risk vs Return

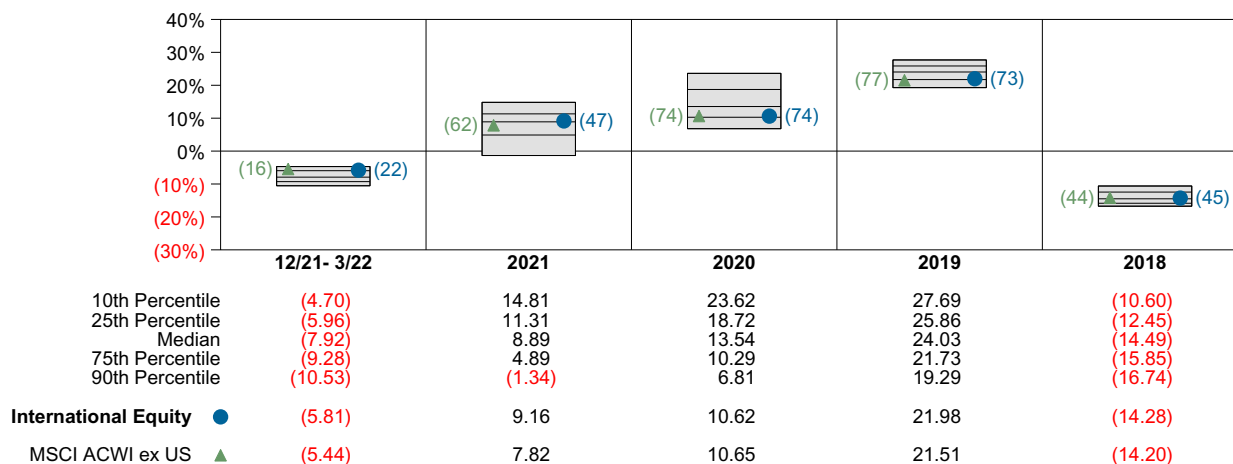


International Equity Return Analysis Summary

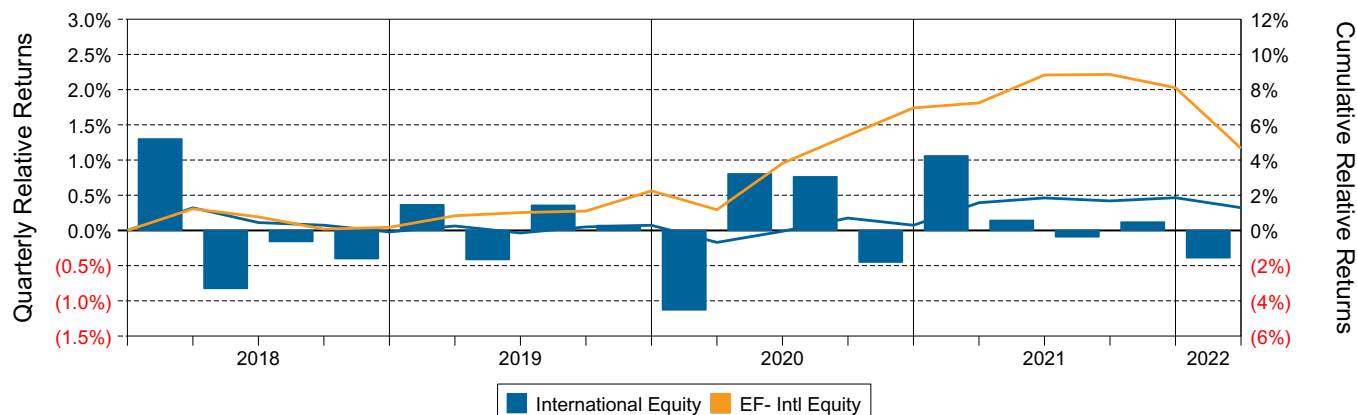
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

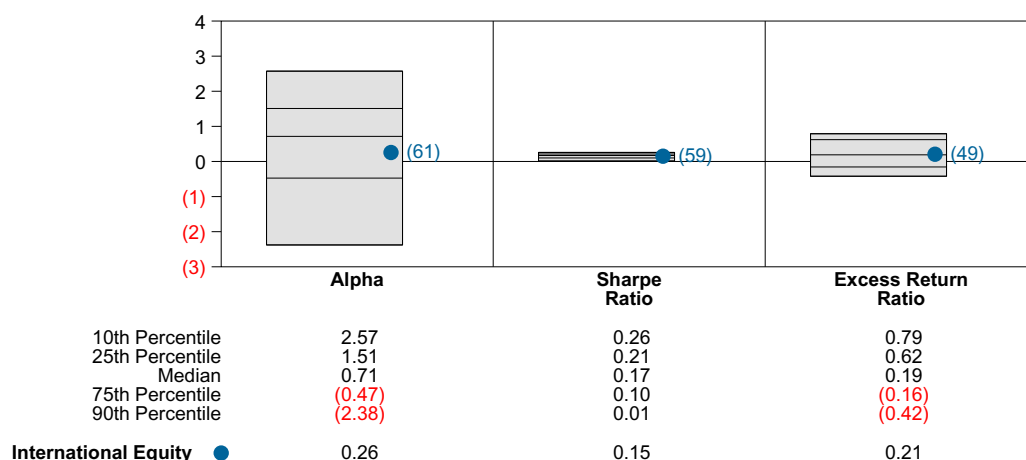
Performance vs EF- International Equity (Gross)



Cumulative and Quarterly Relative Returns vs MSCI ACWI ex US



Risk Adjusted Return Measures vs MSCI ACWI ex US Rankings Against EF- International Equity (Gross) Four and One-Quarter Years Ended March 31, 2022

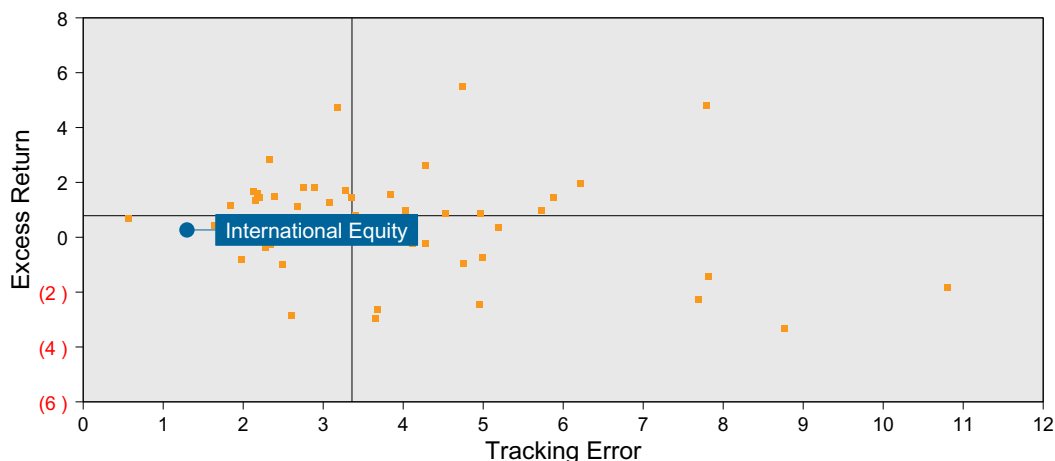


International Equity Risk Analysis Summary

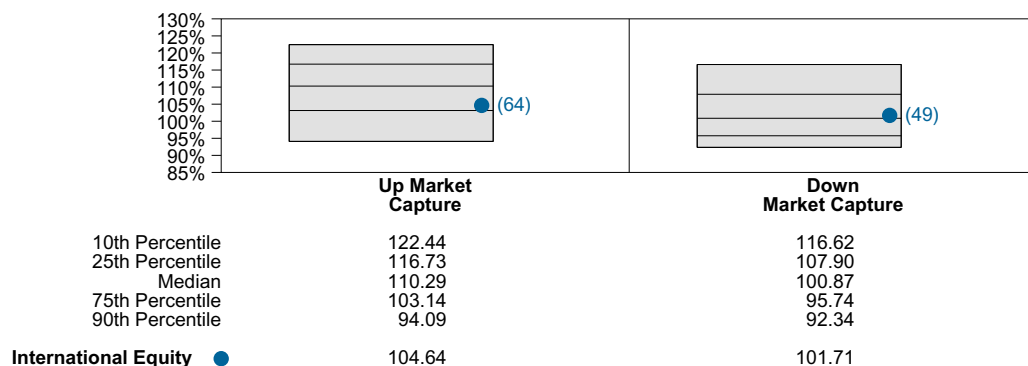
Risk Analysis

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows Up and Down Market Capture. The last two charts show the ranking of the manager's risk statistics versus the peer group.

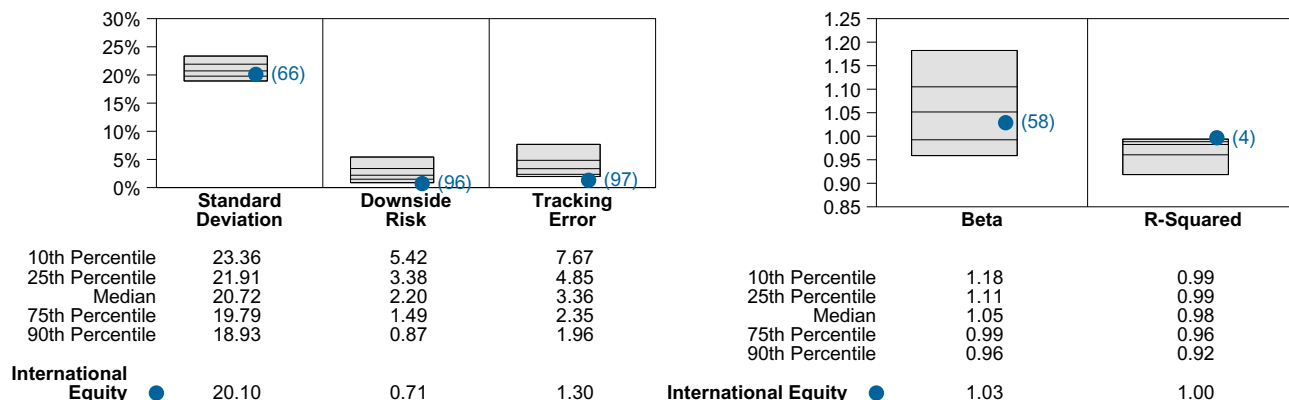
Risk Analysis vs EF- International Equity (Gross) Four and One-Quarter Years Ended March 31, 2022



Market Capture vs MSCI ACWI ex US Rankings Against EF- International Equity (Gross) Four and One-Quarter Years Ended March 31, 2022



Risk Statistics Rankings vs MSCI ACWI ex US Rankings Against EF- International Equity (Gross) Four and One-Quarter Years Ended March 31, 2022

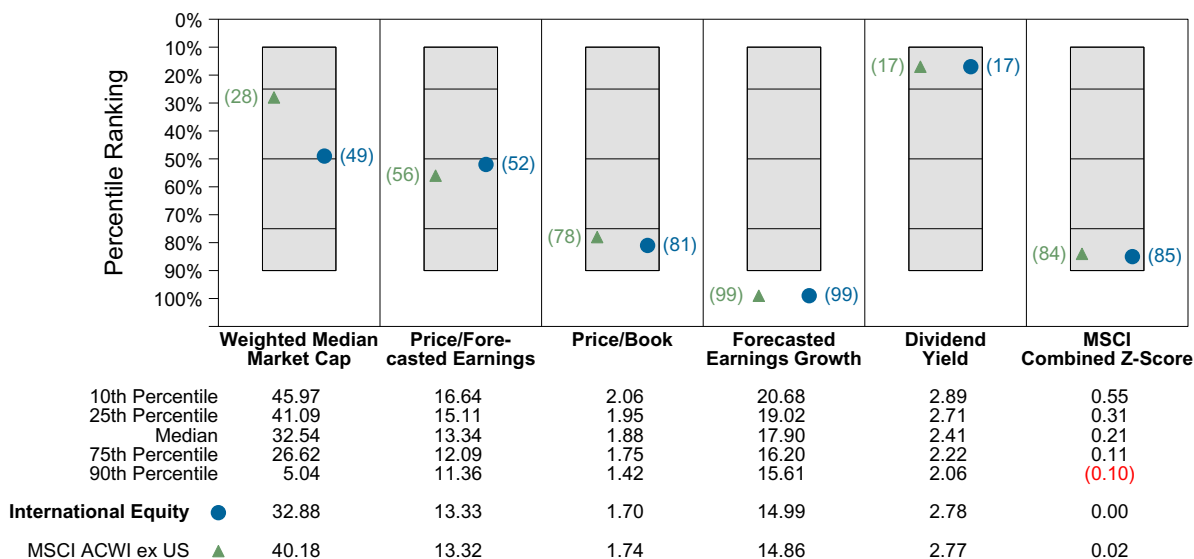


International Equity Equity Characteristics Analysis Summary

Portfolio Characteristics

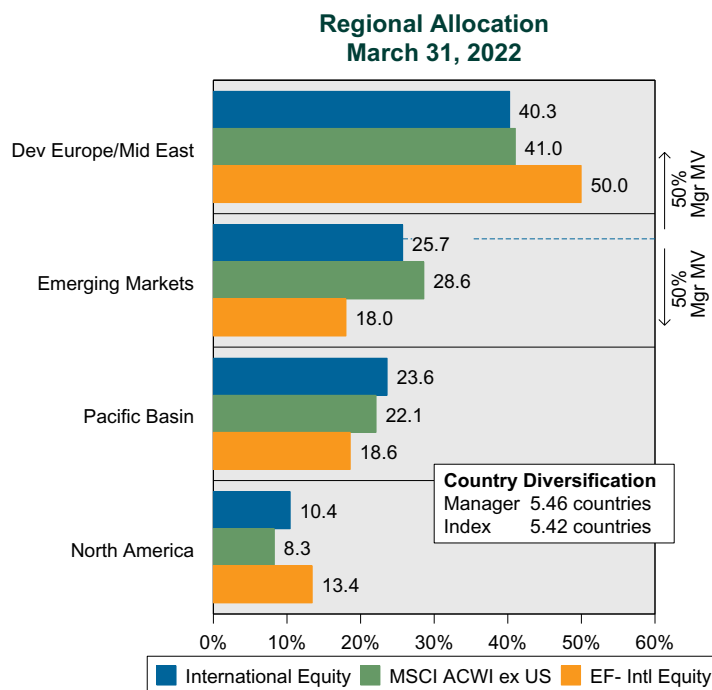
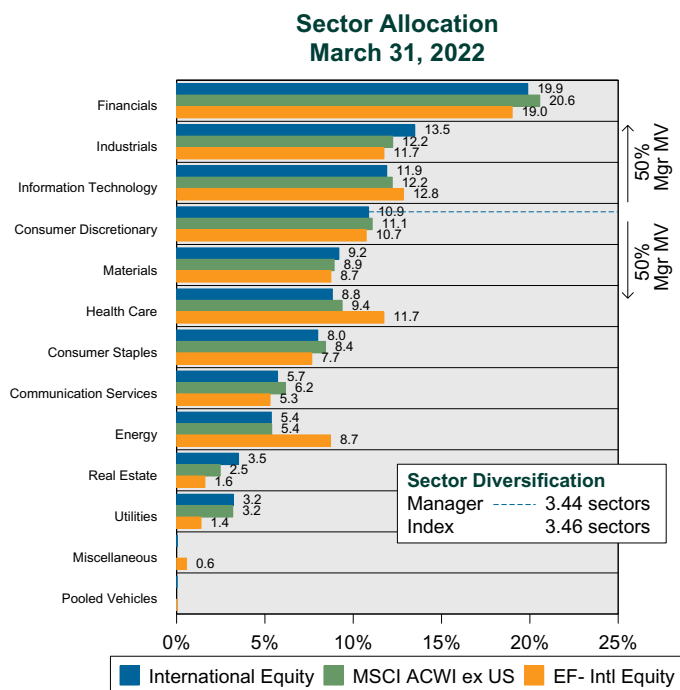
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against EF- International Equity as of March 31, 2022



Sector Weights

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. The regional allocation chart compares the manager's geographical region weights with those of the benchmark as well as the median region weights of the peer group.



Total Fixed Income Period Ended March 31, 2022

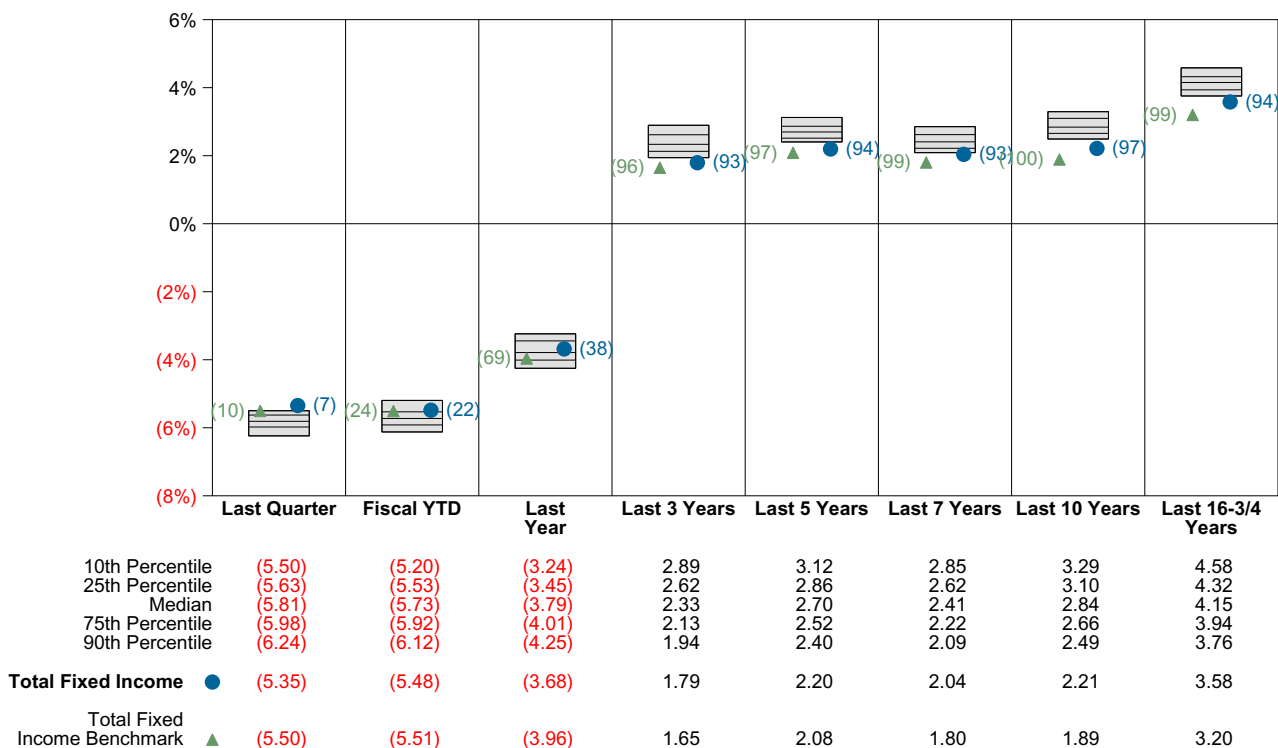
Benchmark Definition

Total Fixed Income Benchmark consists of 100% PFSF Fixed Income Benchmark through December 31, 2018, 90% Bloomberg U.S. Aggregate and 10% Bloomberg Gov/Credit 1-3 Yrs through March 31, 2021, 89% Bloomberg U.S. Aggregate and 11% Bloomberg Gov/Credit 1-3 Yrs through June 30, 2021 and 88% Bloomberg U.S. Aggregate and 12% Bloomberg Gov/Credit 1-3 Yrs, thereafter.

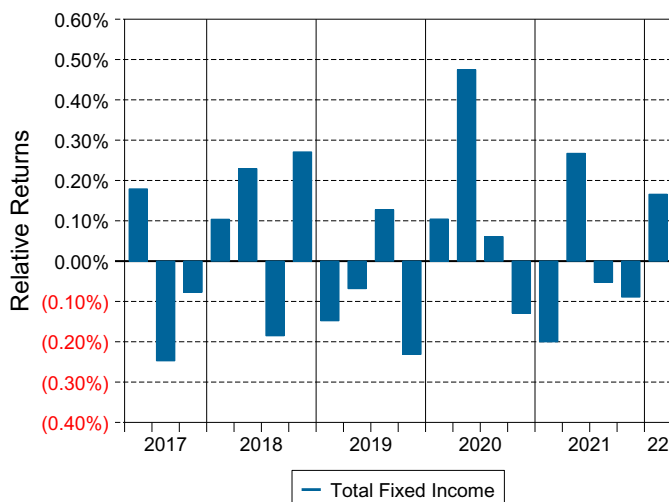
Quarterly Summary and Highlights

- Total Fixed Income's portfolio posted a (5.35)% return for the quarter placing it in the 7 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 38 percentile for the last year.
- Total Fixed Income's portfolio outperformed the Total Fixed Income Benchmark by 0.16% for the quarter and outperformed the Total Fixed Income Benchmark for the year by 0.28%.

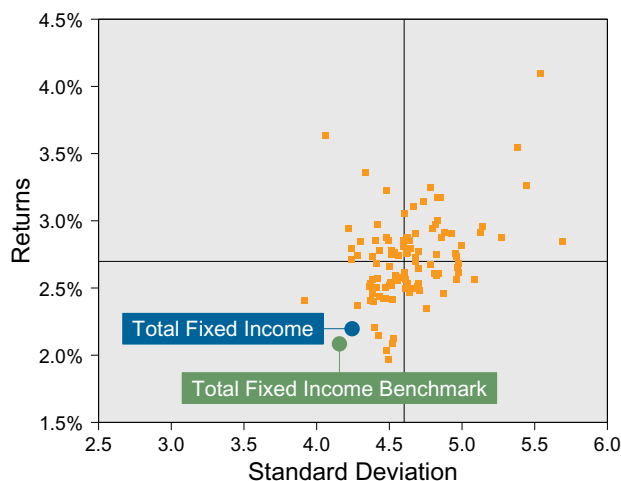
Performance vs Callan Core Bond Fixed Income (Gross)



Relative Returns vs Total Fixed Income Benchmark



Callan Core Bond Fixed Income (Gross) Annualized Five Year Risk vs Return

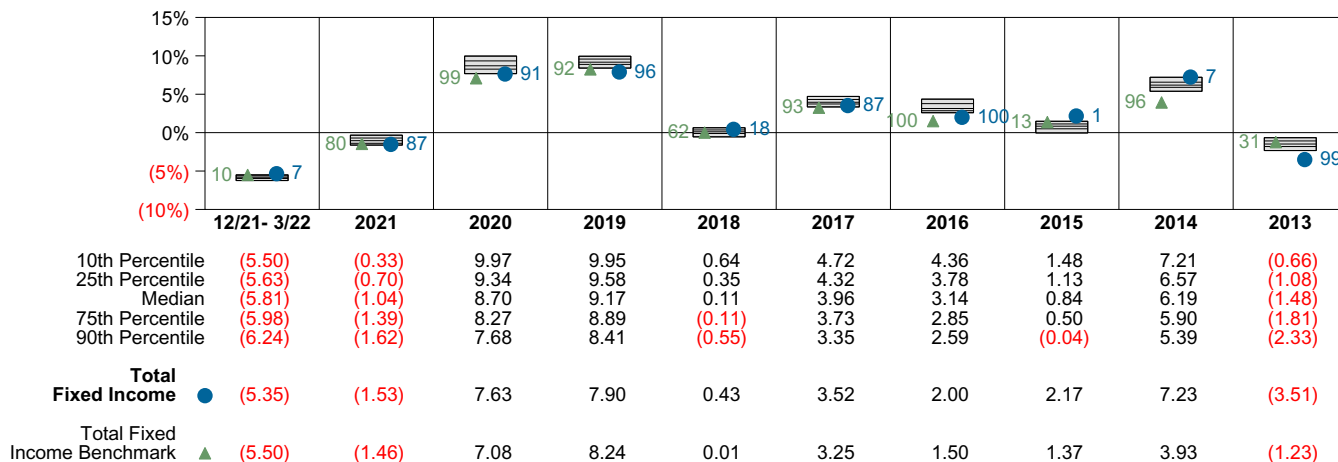


Total Fixed Income Return Analysis Summary

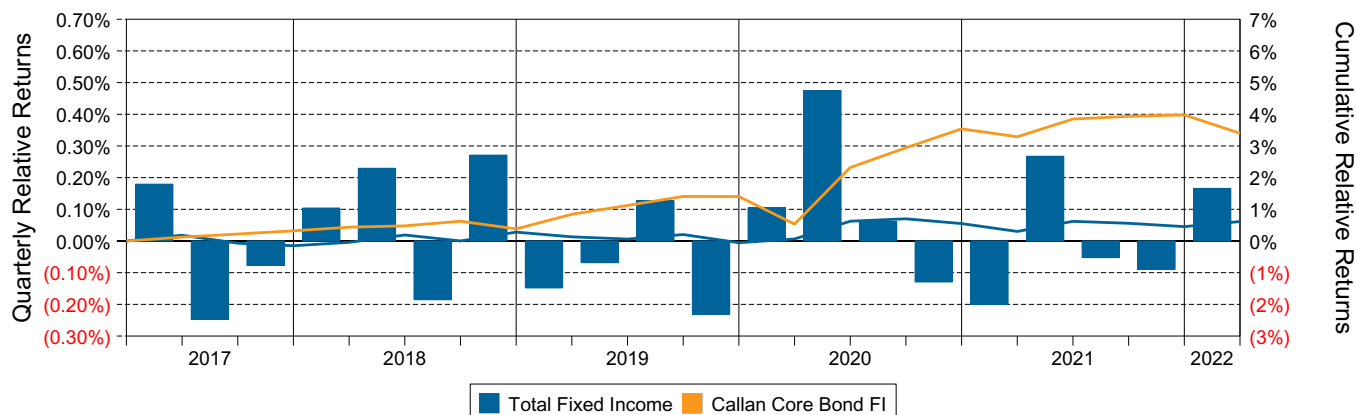
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

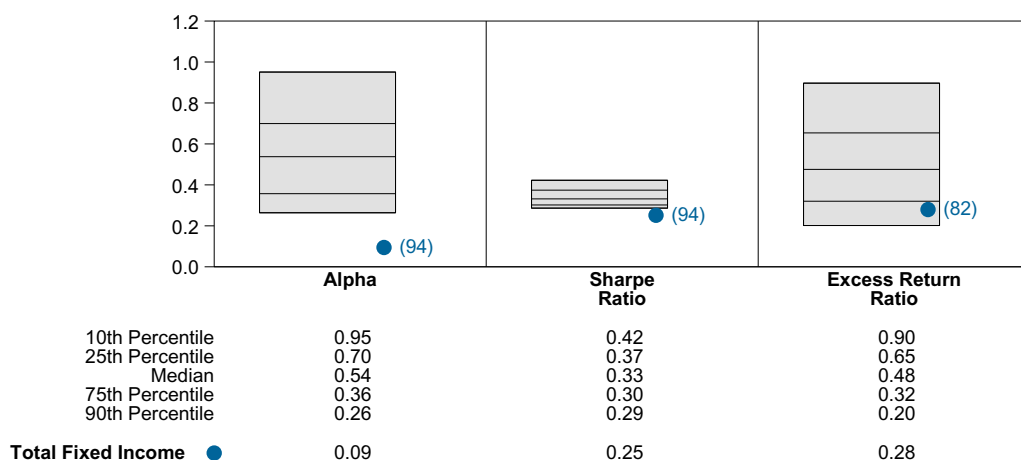
Performance vs Callan Core Bond Fixed Income (Gross)



Cumulative and Quarterly Relative Returns vs Total Fixed Income Benchmark



Risk Adjusted Return Measures vs Total Fixed Income Benchmark Rankings Against Callan Core Bond Fixed Income (Gross) Five Years Ended March 31, 2022

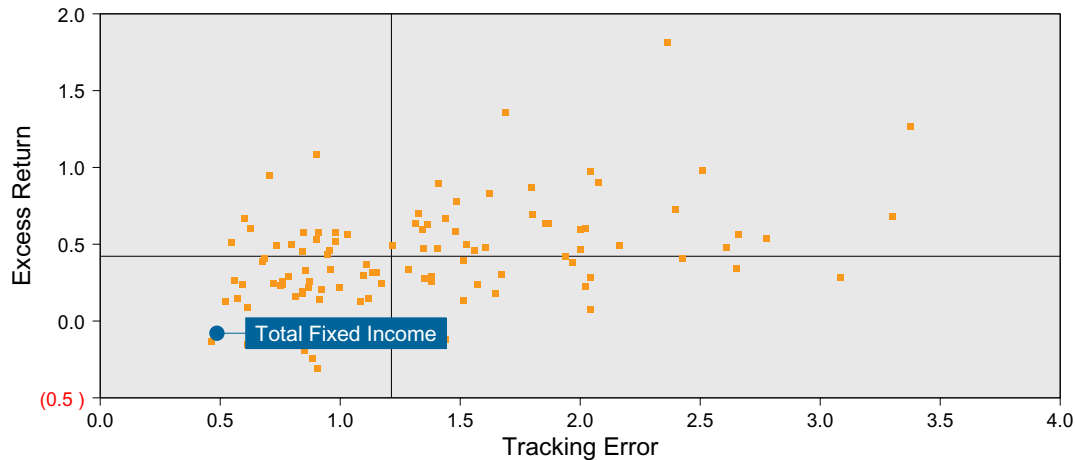


Total Fixed Income Risk Analysis Summary

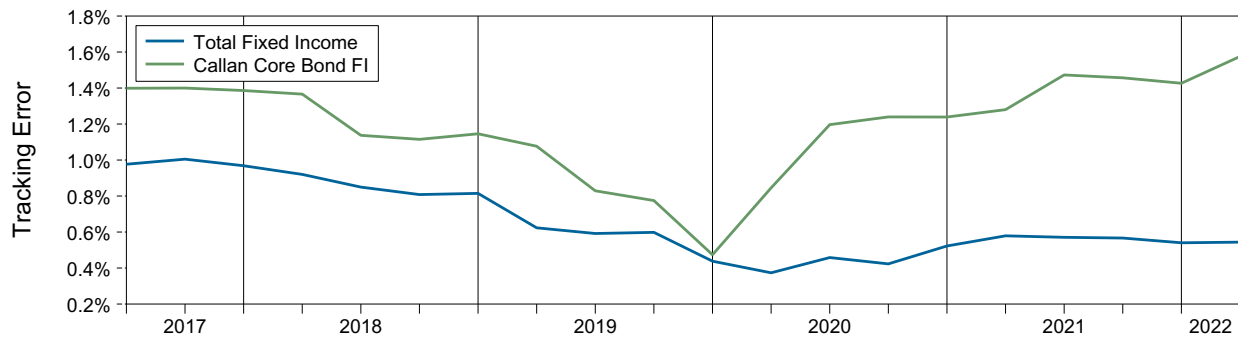
Risk Analysis

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows tracking error patterns versus the benchmark over time. The last two charts show the ranking of the manager's risk statistics versus the peer group.

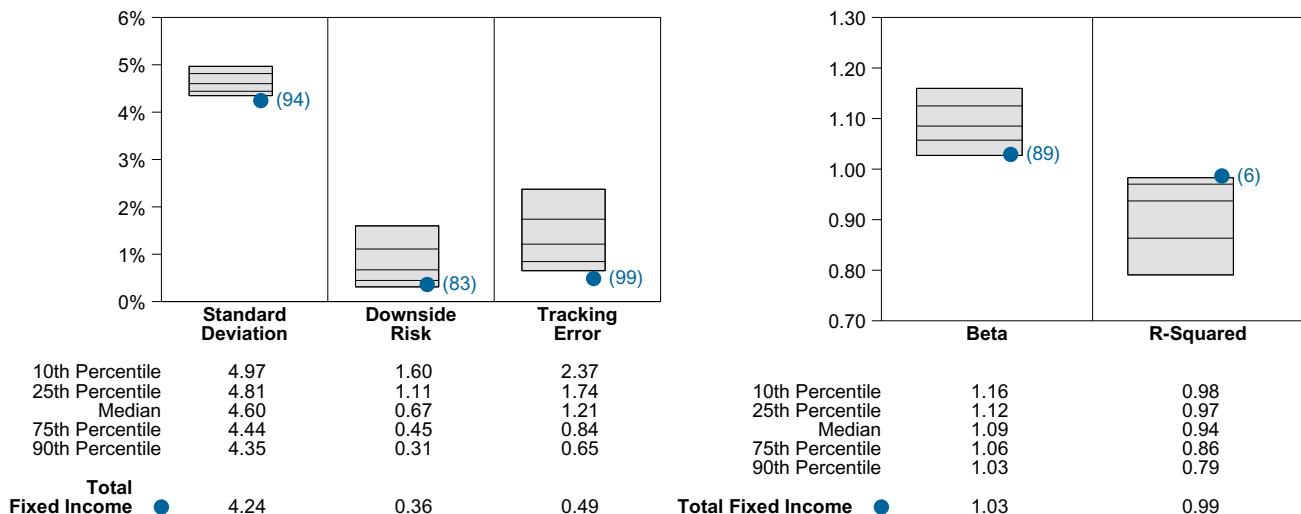
Risk Analysis vs Callan Core Bond Fixed Income (Gross) Five Years Ended March 31, 2022



Rolling 12 Quarter Tracking Error vs Total Fixed Income Benchmark



Risk Statistics Rankings vs Total Fixed Income Benchmark Rankings Against Callan Core Bond Fixed Income (Gross) Five Years Ended March 31, 2022

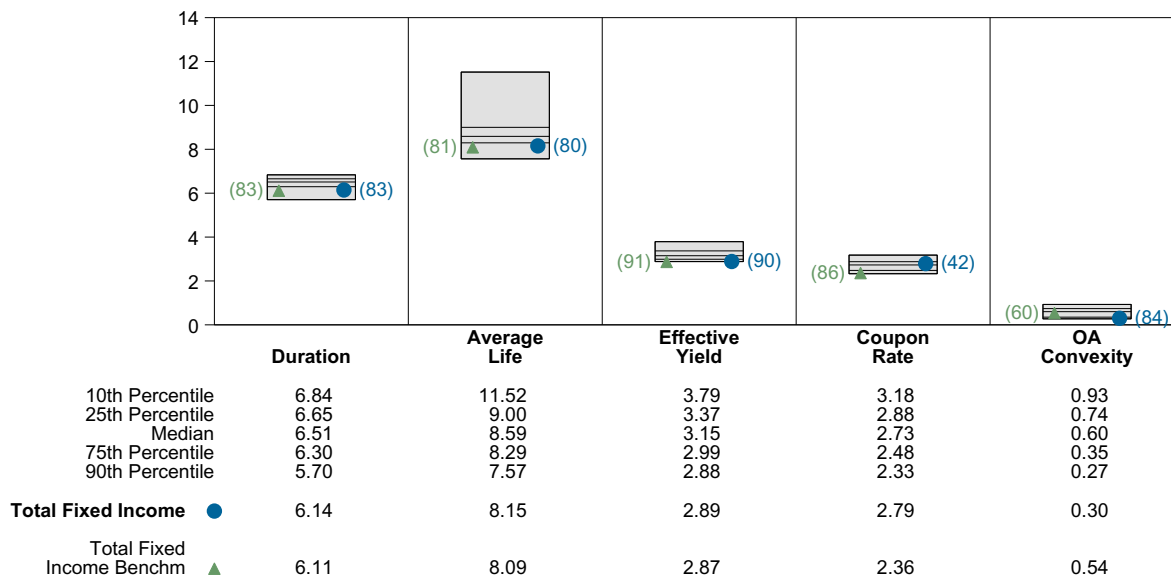


Total Fixed Income Bond Characteristics Analysis Summary

Portfolio Characteristics

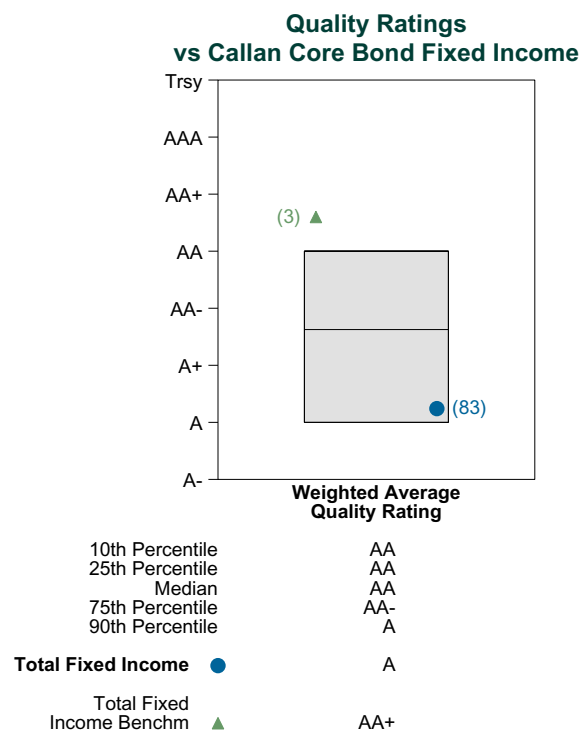
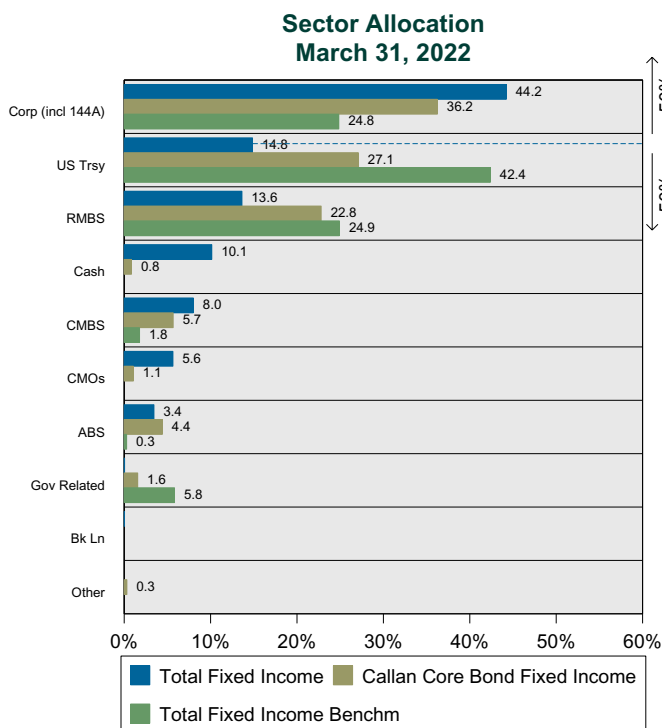
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Fixed Income Portfolio Characteristics Rankings Against Callan Core Bond Fixed Income as of March 31, 2022



Sector Allocation and Quality Ratings

The first graph compares the manager's sector allocation with the average allocation across all the members of the manager's style. The second graph compares the manager's weighted average quality rating with the range of quality ratings for the style.

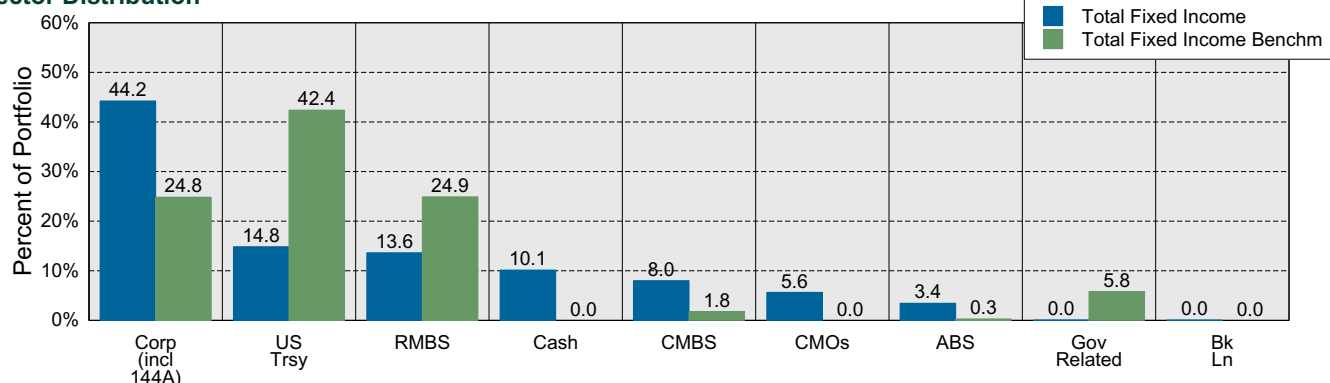


Total Fixed Income Portfolio Characteristics Summary As of March 31, 2022

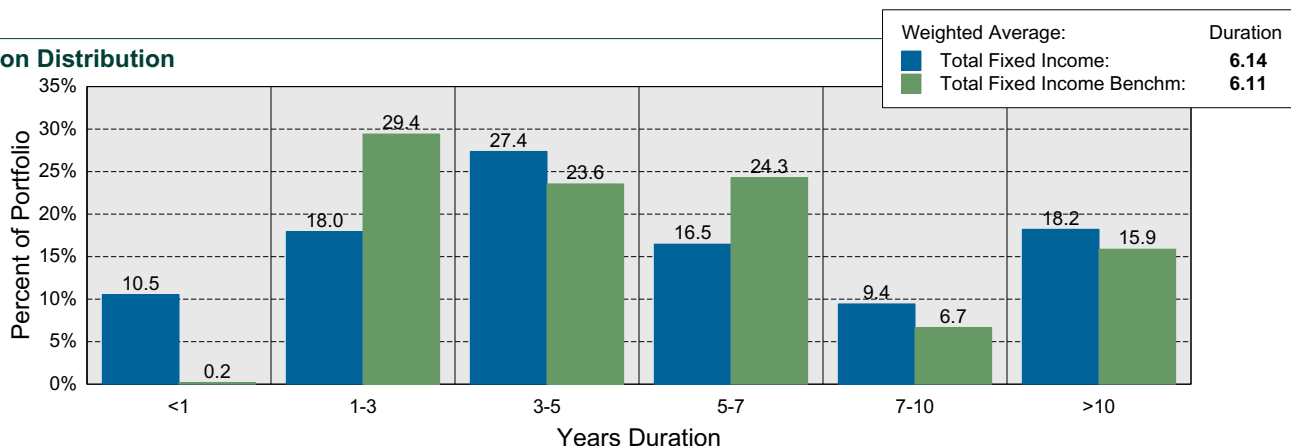
Portfolio Structure Comparison

The charts below compare the structure of the portfolio to that of the index from the three perspectives that have the greatest influence on return. The first chart compares the two portfolios across sectors. The second chart compares the duration distribution. The last chart compares the distribution across quality ratings.

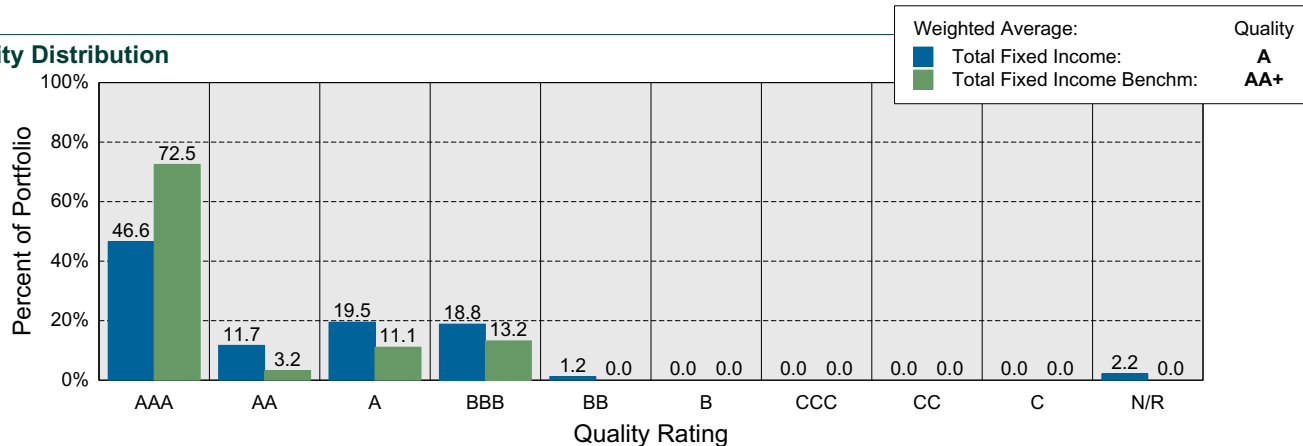
Sector Distribution



Duration Distribution



Quality Distribution



Colorado Treasurer's Portfolio Period Ended March 31, 2022

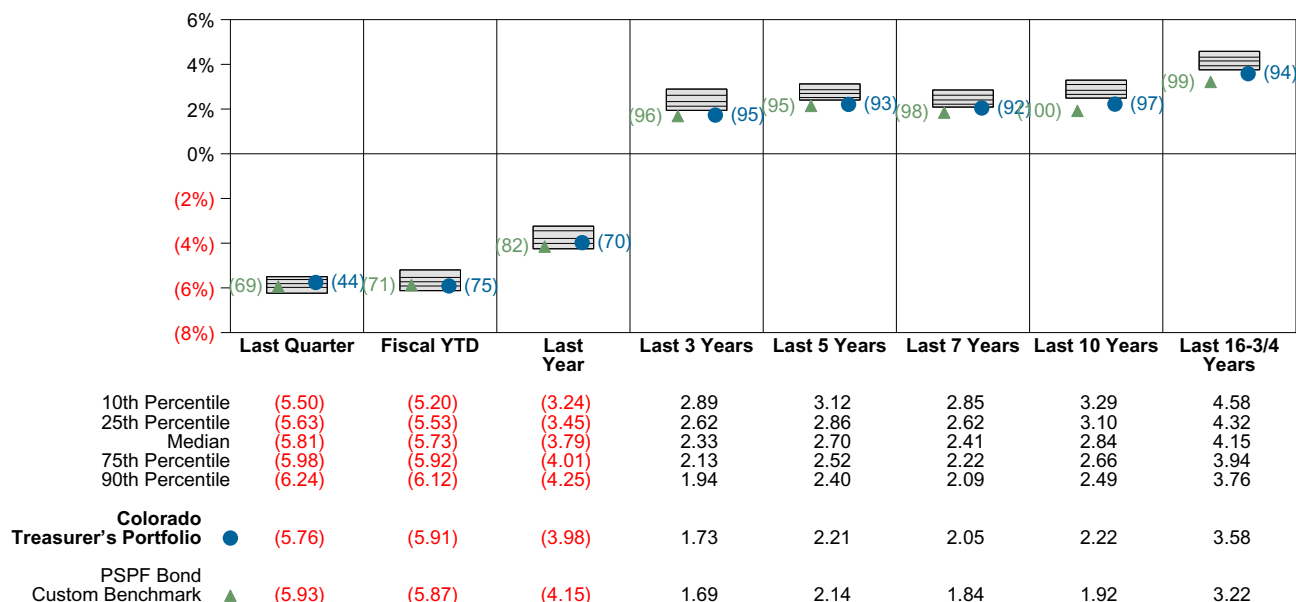
Investment Philosophy

The Fixed Income Portfolio is managed by the Colorado State Treasury and was initially funded in 3Q 2005. The PSPF Custom Benchmark consisted of 37% U.S. Treasury 1-10 Year Index, 34% Mortgages 0-10 Year WAL Index, 19% AAA U.S. Agencies 1-10 Year Index and 10% U.S. Corporates AAA Rated 1-10 Years Index through March 31, 2017 and the Bloomberg U.S. Aggregate thereafter. It is important to note that the Fixed Income Portfolio has historically been managed under a buy and hold mandate for investment yield. The Callan Core Bond Fixed Income Manager Universe used to construct the floating bar chart exhibit below, representing 77 core fixed income managers and products, is largely composed of products following a total return mandate. The School Fund bond portfolio is subject to statutorily imposed net loss restrictions. As such, relative performance comparison of the Fixed Income Portfolio to this universe may not be entirely representative of relative performance.

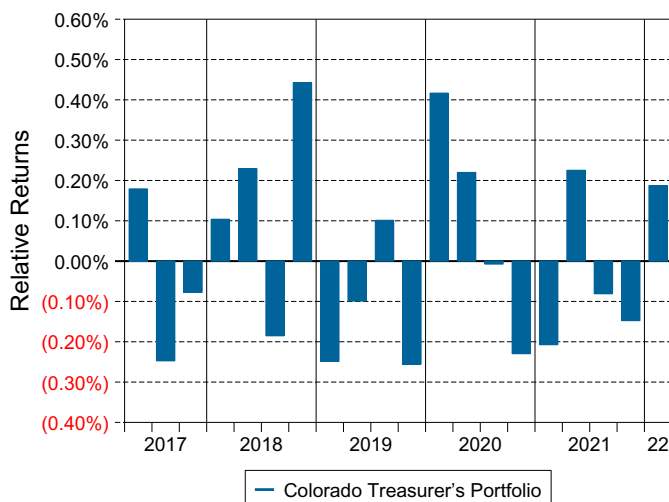
Quarterly Summary and Highlights

- Colorado Treasurer's Portfolio's portfolio posted a (5.76)% return for the quarter placing it in the 44 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 70 percentile for the last year.
- Colorado Treasurer's Portfolio's portfolio outperformed the PSPF Bond Custom Benchmark by 0.18% for the quarter and outperformed the PSPF Bond Custom Benchmark for the year by 0.18%.

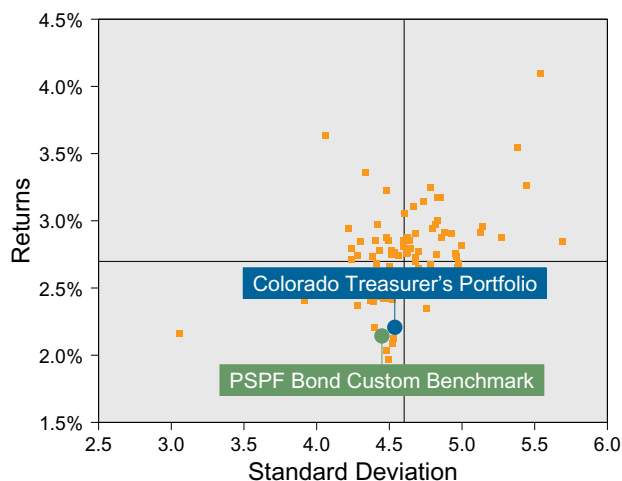
Performance vs Callan Core Bond Fixed Income (Gross)



Relative Returns vs PSPF Bond Custom Benchmark



Callan Core Bond Fixed Income (Gross) Annualized Five Year Risk vs Return

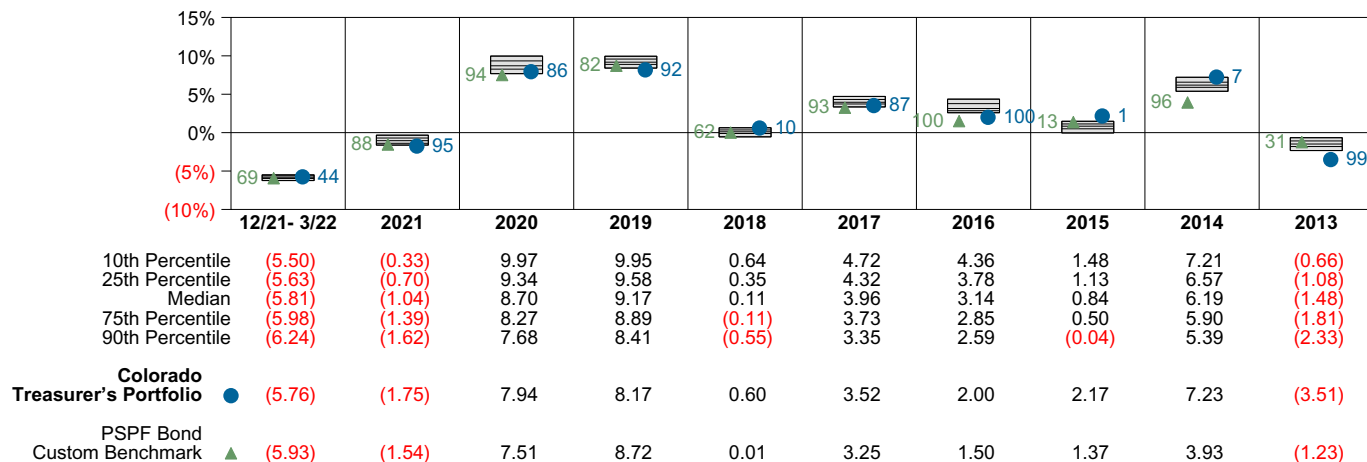


Colorado Treasurer's Portfolio Return Analysis Summary

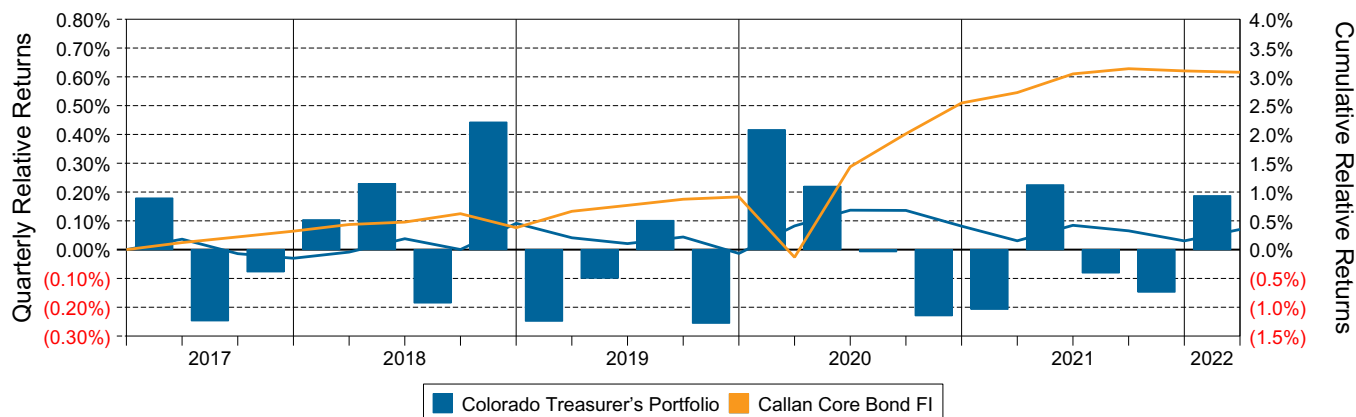
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

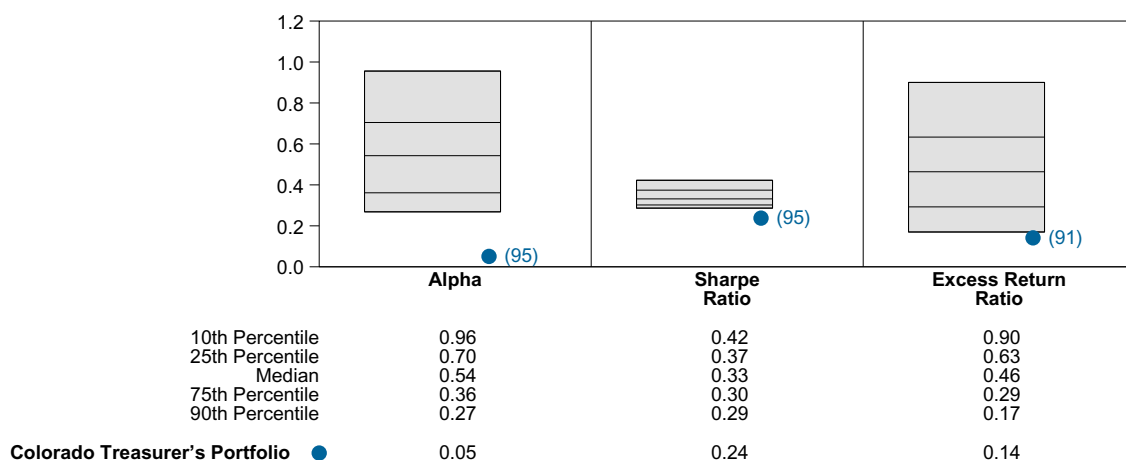
Performance vs Callan Core Bond Fixed Income (Gross)



Cumulative and Quarterly Relative Returns vs PSPF Bond Custom Benchmark



Risk Adjusted Return Measures vs PSPF Bond Custom Benchmark Rankings Against Callan Core Bond Fixed Income (Gross) Five Years Ended March 31, 2022

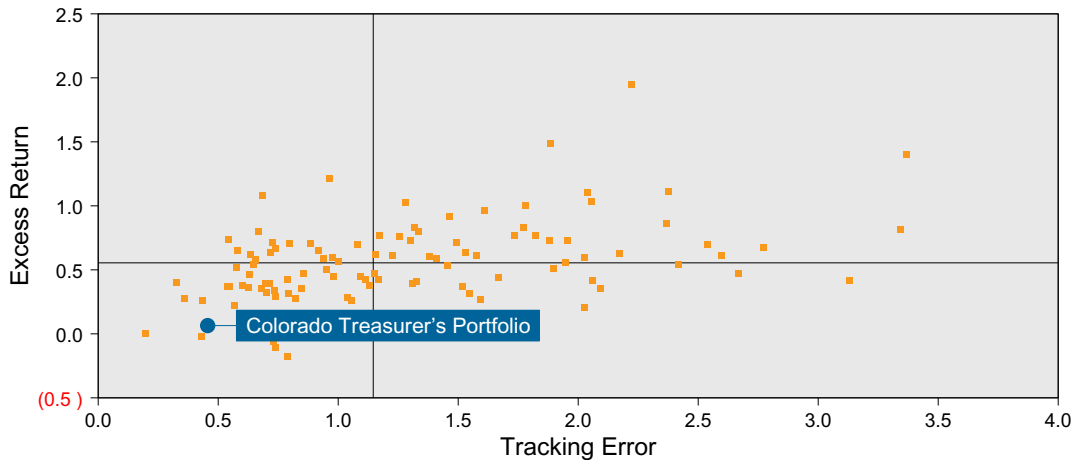


Colorado Treasurer's Portfolio Risk Analysis Summary

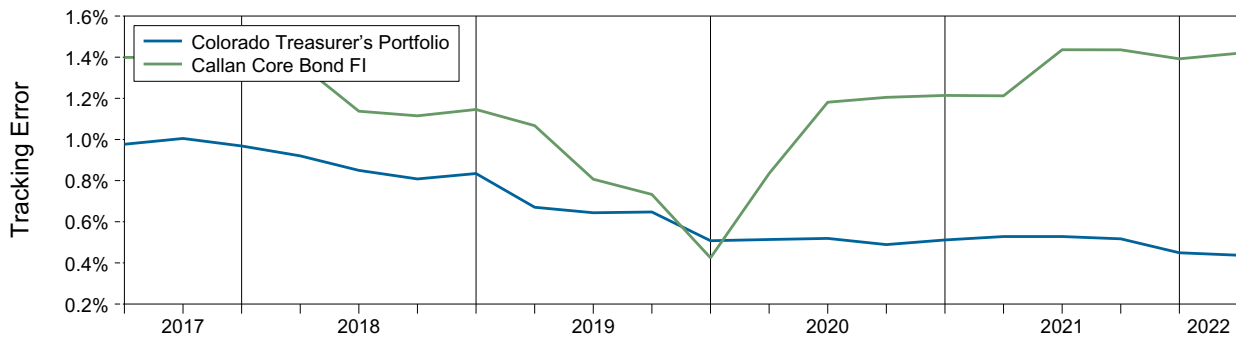
Risk Analysis

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows tracking error patterns versus the benchmark over time. The last two charts show the ranking of the manager's risk statistics versus the peer group.

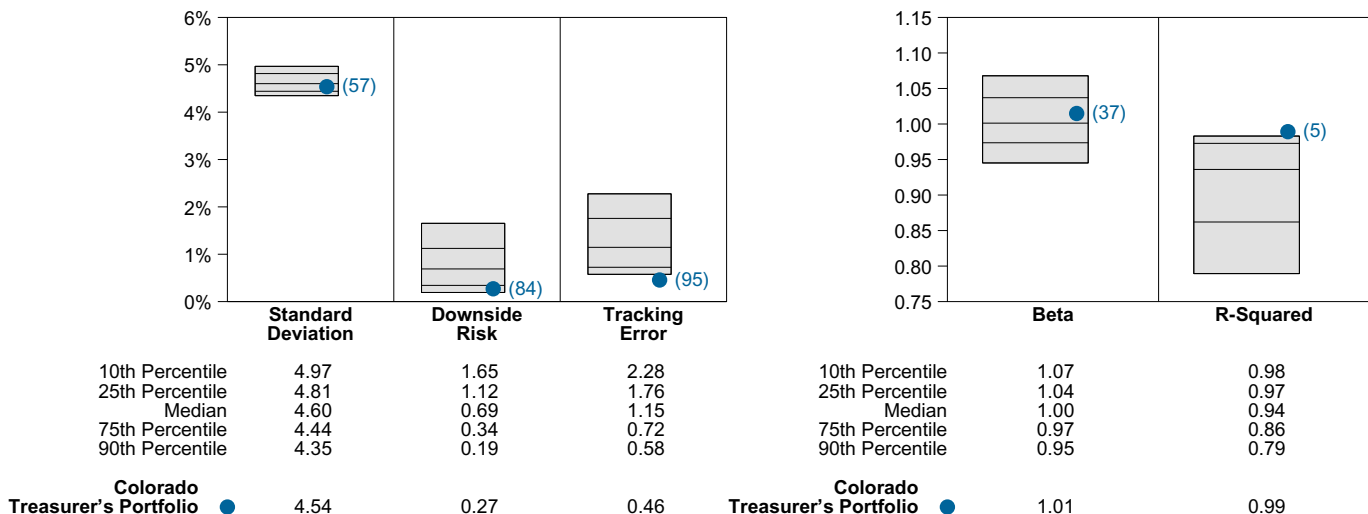
Risk Analysis vs Callan Core Bond Fixed Income (Gross) Five Years Ended March 31, 2022



Rolling 12 Quarter Tracking Error vs PSPF Bond Custom Benchmark



Risk Statistics Rankings vs PSPF Bond Custom Benchmark Rankings Against Callan Core Bond Fixed Income (Gross) Five Years Ended March 31, 2022

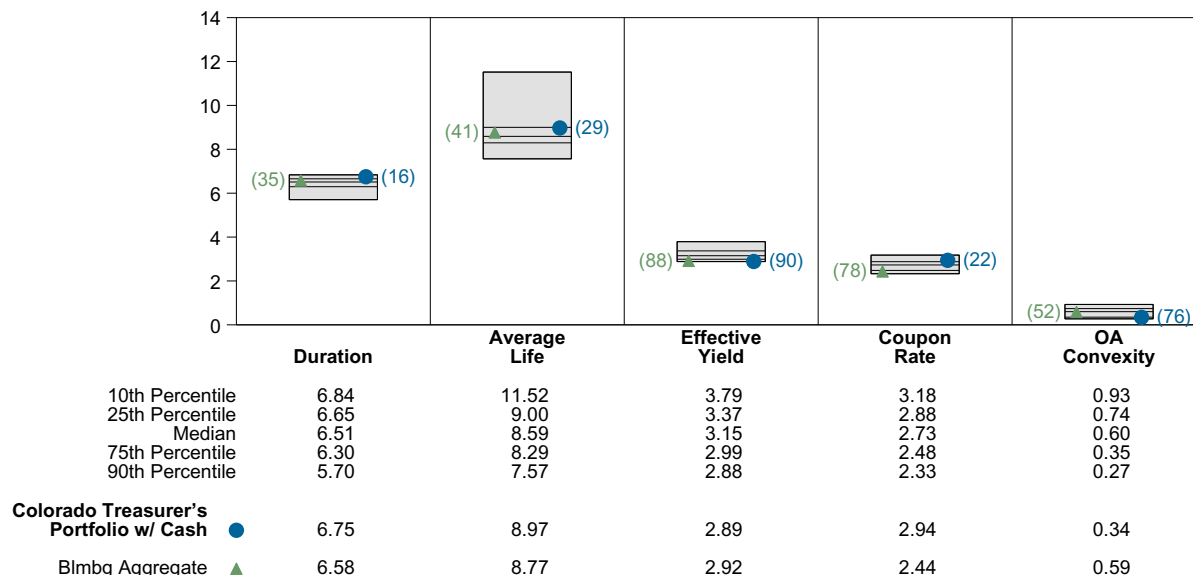


Colorado Treasurer's Portfolio w/ Cash Bond Characteristics Analysis Summary

Portfolio Characteristics

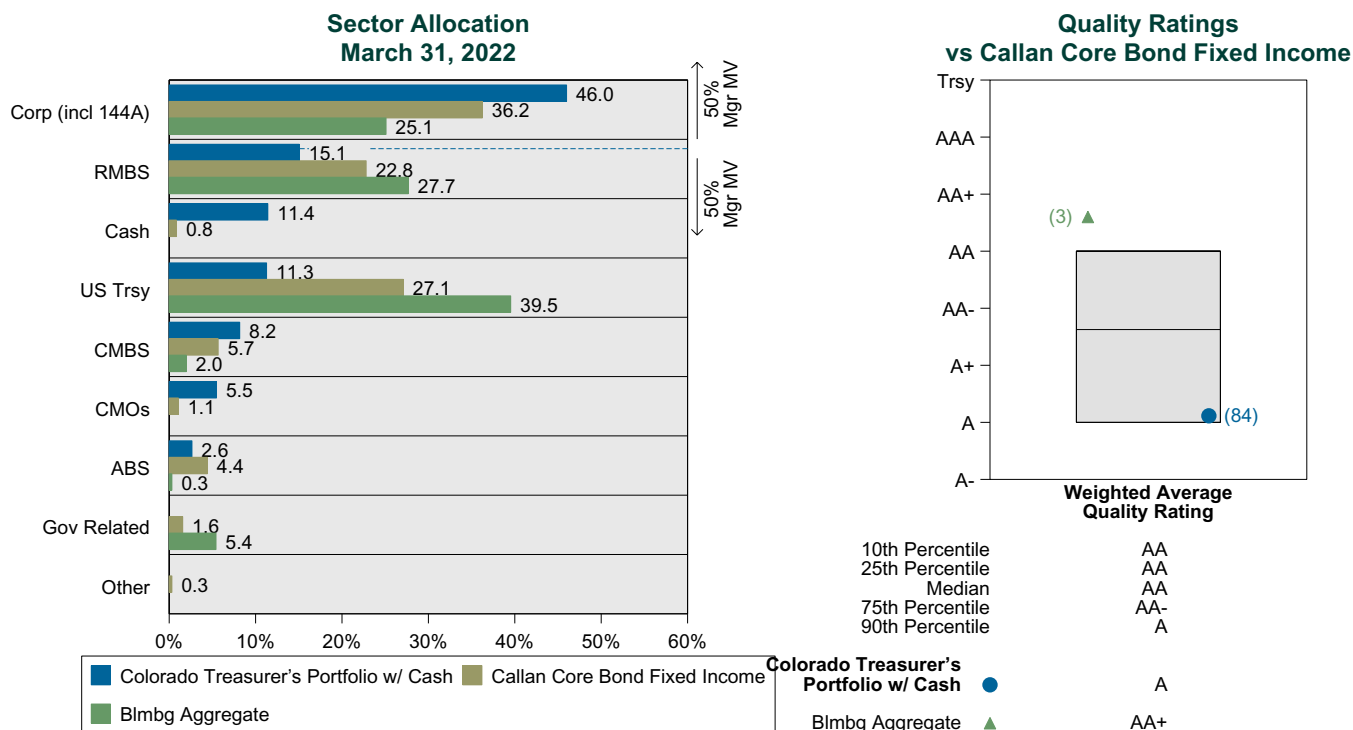
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style. Fixed Income Portfolio characteristics includes Cash Pool allocation.

Fixed Income Portfolio Characteristics Rankings Against Callan Core Bond Fixed Income as of March 31, 2022



Sector Allocation and Quality Ratings

The first graph compares the manager's sector allocation with the average allocation across all the members of the manager's style. The second graph compares the manager's weighted average quality rating with the range of quality ratings for the style.



Colorado Treasurer's Portfolio w/ Cash

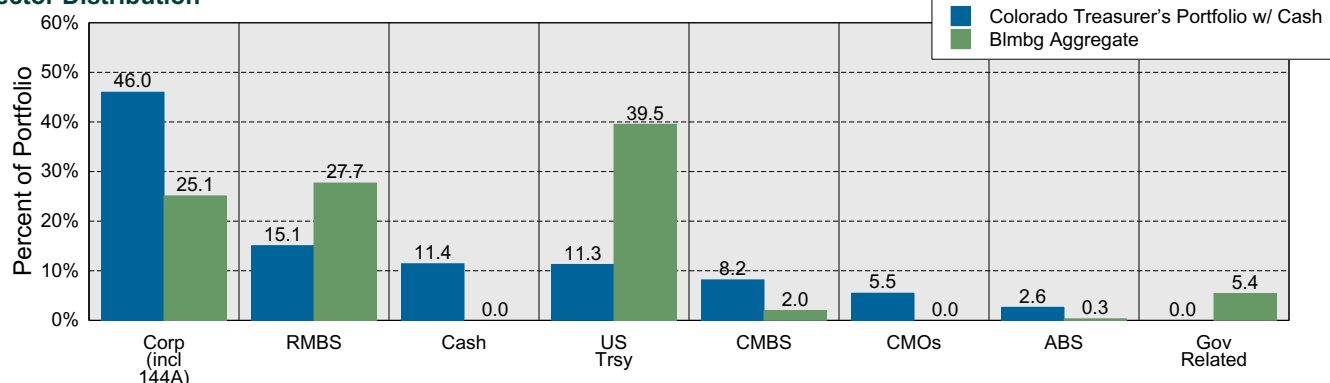
Portfolio Characteristics Summary

As of March 31, 2022

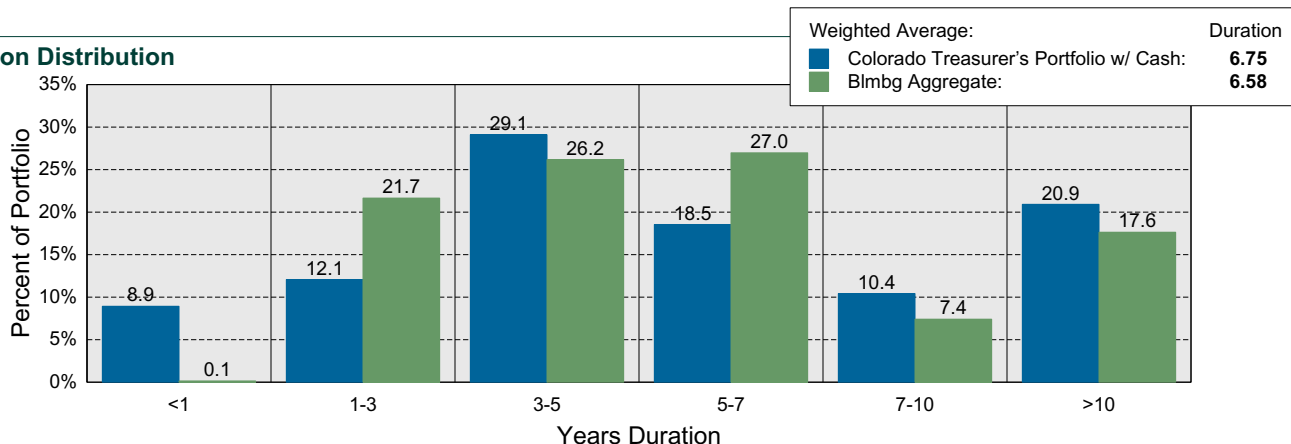
Portfolio Structure Comparison

The charts below compare the structure of the portfolio to that of the index from the three perspectives that have the greatest influence on return. The first chart compares the two portfolios across sectors. The second chart compares the duration distribution. The last chart compares the distribution across quality ratings.

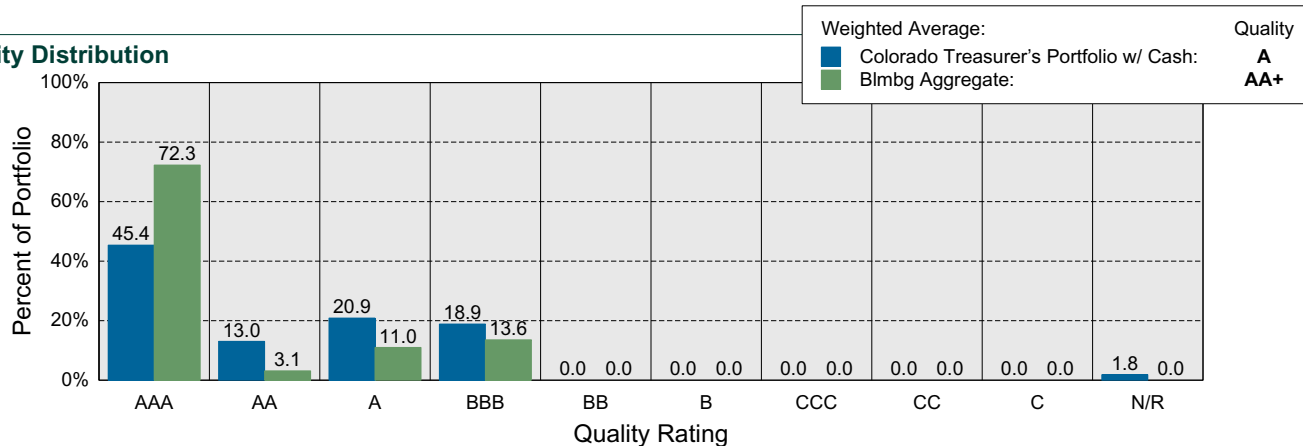
Sector Distribution



Duration Distribution



Quality Distribution



Janus Henderson Short Duration Period Ended March 31, 2022

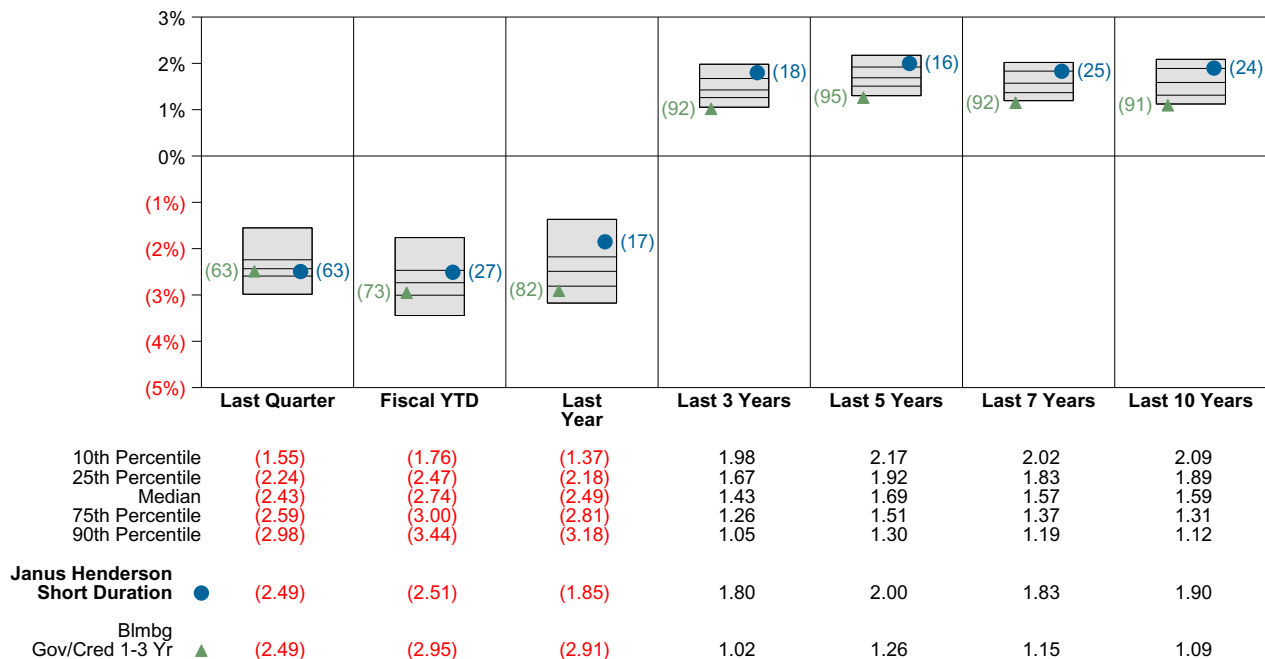
Investment Philosophy

Janus Henderson believes a bottom-up, fundamentally driven investment process that focuses on credit-oriented investments can generate risk-adjusted outperformance over time. A comprehensive bottom-up view drives decision-making at a macro level, enabling them to make informed decisions about allocations to all sectors of the fixed income universe. The Short Duration Fixed Income strategy emphasizes risk-adjusted performance and capital preservation with value generated principally from prudent credit selection and credit sector positioning. The Janus Henderson short duration portfolio was funded November 9th, 2018. Prior returns represent the manager's composite returns.

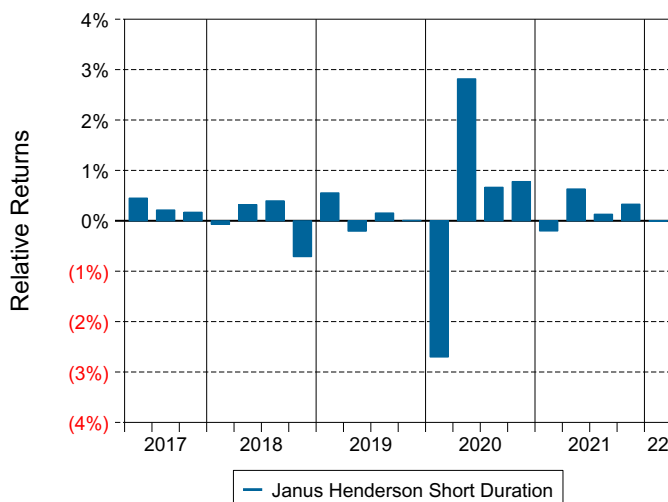
Quarterly Summary and Highlights

- Janus Henderson Short Duration's portfolio posted a (2.49)% return for the quarter placing it in the 63 percentile of the Callan Short Term Fixed Income group for the quarter and in the 17 percentile for the last year.
- Janus Henderson Short Duration's portfolio underperformed the Blmbg Gov/Cred 1-3 Yr by 0.01% for the quarter and outperformed the Blmbg Gov/Cred 1-3 Yr for the year by 1.06%.

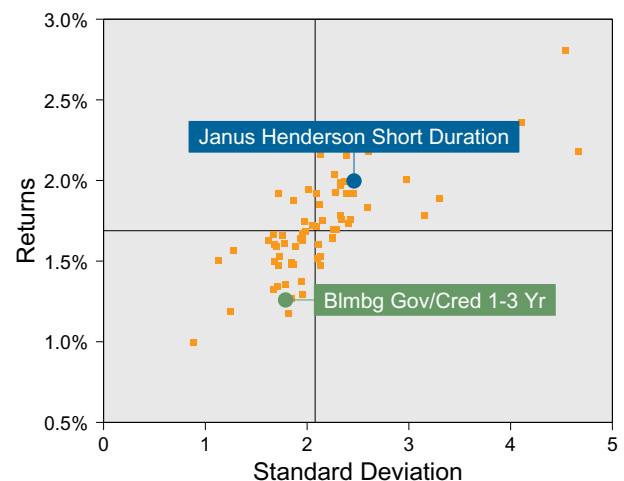
Performance vs Callan Short Term Fixed Income (Gross)



Relative Return vs Blmbg Gov/Cred 1-3 Yr



Callan Short Term Fixed Income (Gross) Annualized Five Year Risk vs Return

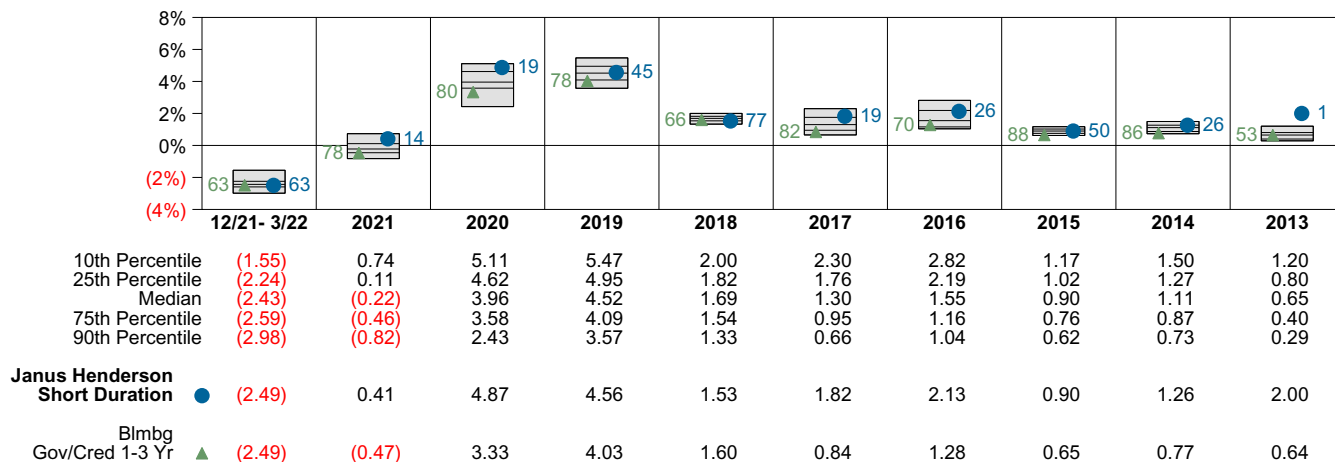


Janus Henderson Short Duration Return Analysis Summary

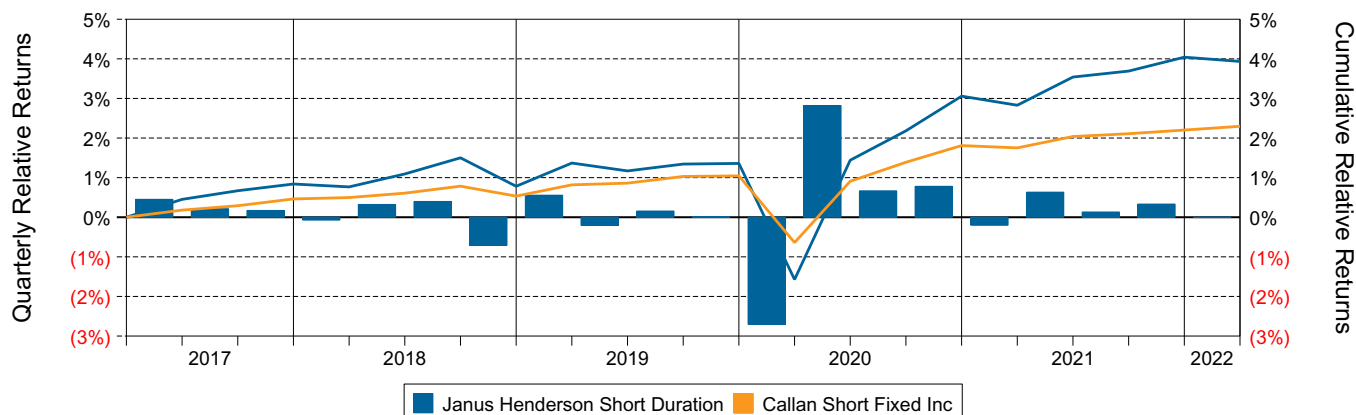
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

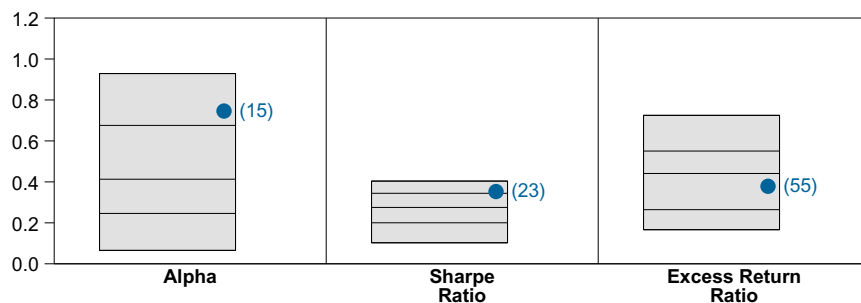
Performance vs Callan Short Term Fixed Income (Gross)



Cumulative and Quarterly Relative Returns vs Bmbg Gov/Cred 1-3 Yr



Risk Adjusted Return Measures vs Bmbg Gov/Cred 1-3 Yr Rankings Against Callan Short Term Fixed Income (Gross) Five Years Ended March 31, 2022

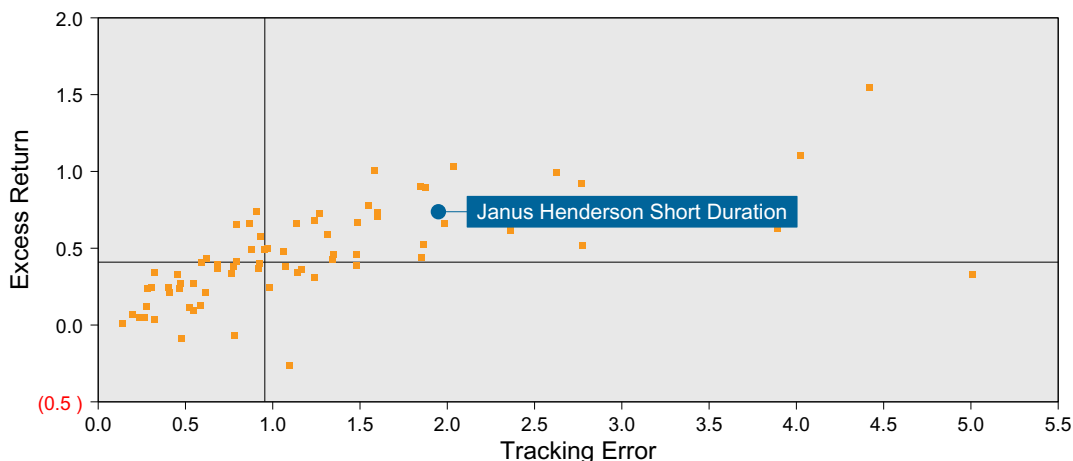


Janus Henderson Short Duration Risk Analysis Summary

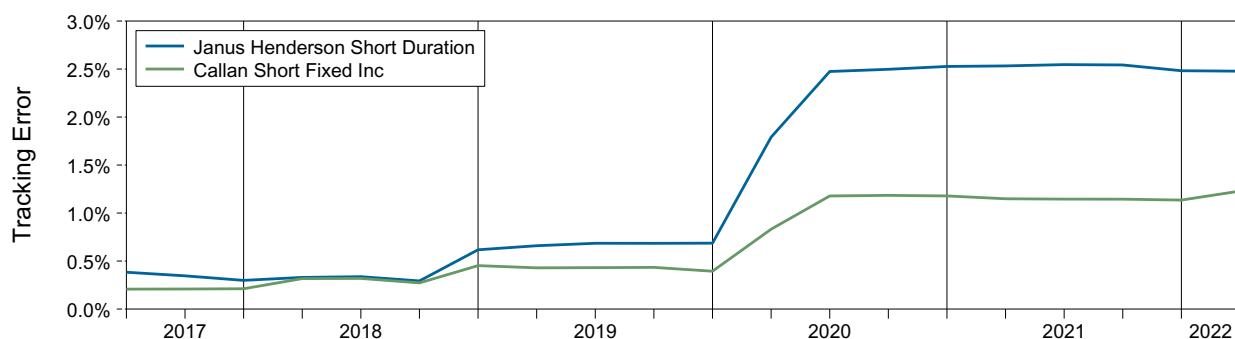
Risk Analysis

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows tracking error patterns versus the benchmark over time. The last two charts show the ranking of the manager's risk statistics versus the peer group.

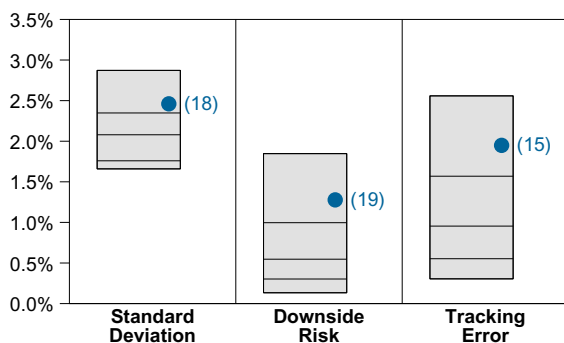
Risk Analysis vs Callan Short Term Fixed Income (Gross) Five Years Ended March 31, 2022



Rolling 12 Quarter Tracking Error vs Blmbg Gov/Cred 1-3 Yr

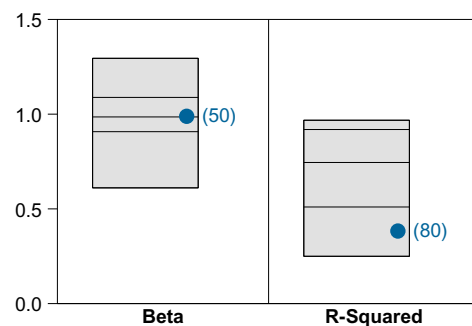


Risk Statistics Rankings vs Blmbg Gov/Cred 1-3 Yr Rankings Against Callan Short Term Fixed Income (Gross) Five Years Ended March 31, 2022



10th Percentile	2.87	1.85	2.56
25th Percentile	2.35	1.00	1.57
Median	2.08	0.55	0.95
75th Percentile	1.76	0.30	0.55
90th Percentile	1.66	0.13	0.30

Janus Henderson Short Duration ● 2.46 1.28 1.95



10th Percentile	1.29	0.97
25th Percentile	1.09	0.92
Median	0.99	0.74
75th Percentile	0.91	0.51
90th Percentile	0.61	0.25

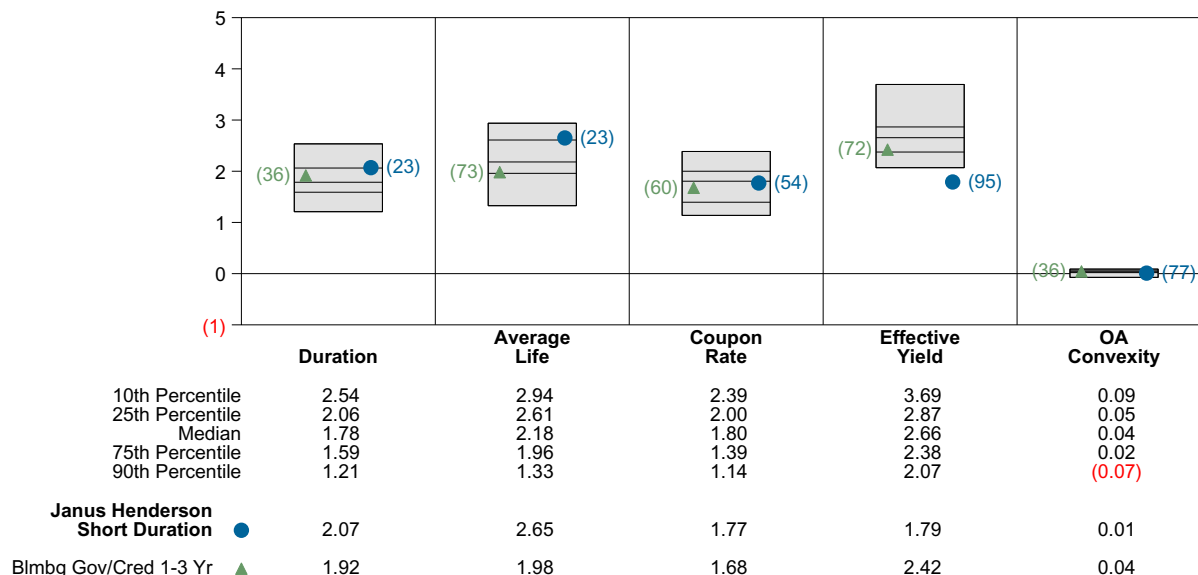
Janus Henderson Short Duration ● 0.99 0.38

Janus Henderson Short Duration Bond Characteristics Analysis Summary

Portfolio Characteristics

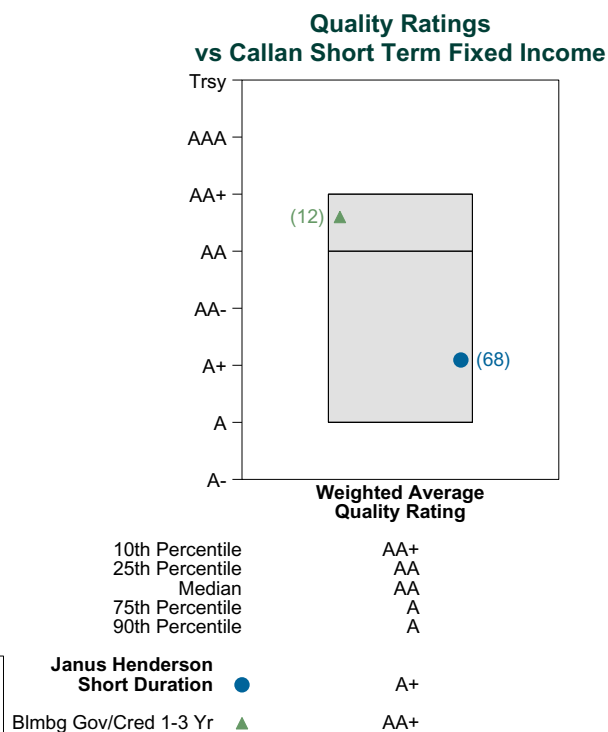
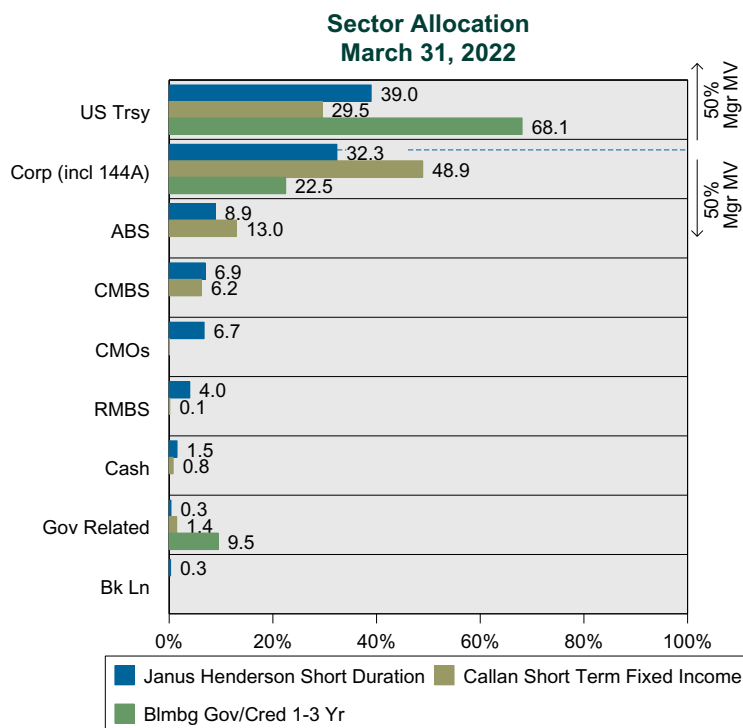
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style. Fixed Income Portfolio characteristics includes Cash Pool allocation.

Fixed Income Portfolio Characteristics Rankings Against Callan Short Term Fixed Income as of March 31, 2022



Sector Allocation and Quality Ratings

The first graph compares the manager's sector allocation with the average allocation across all the members of the manager's style. The second graph compares the manager's weighted average quality rating with the range of quality ratings for the style.

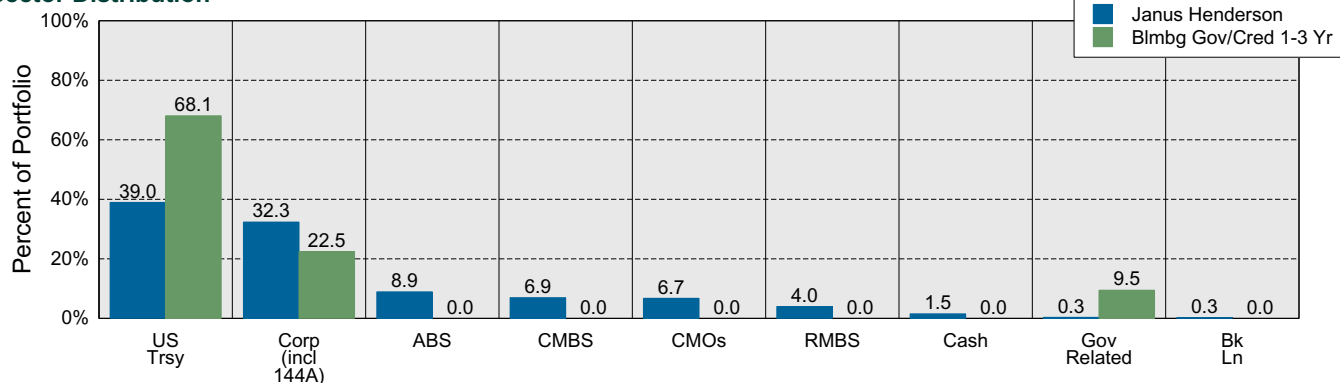


Janus Henderson Portfolio Characteristics Summary As of March 31, 2022

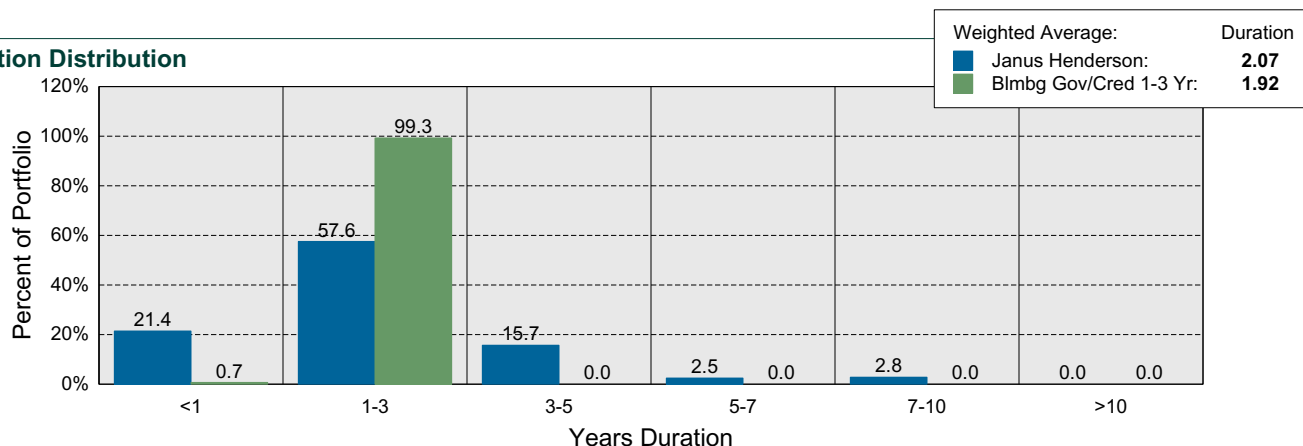
Portfolio Structure Comparison

The charts below compare the structure of the portfolio to that of the index from the three perspectives that have the greatest influence on return. The first chart compares the two portfolios across sectors. The second chart compares the duration distribution. The last chart compares the distribution across quality ratings.

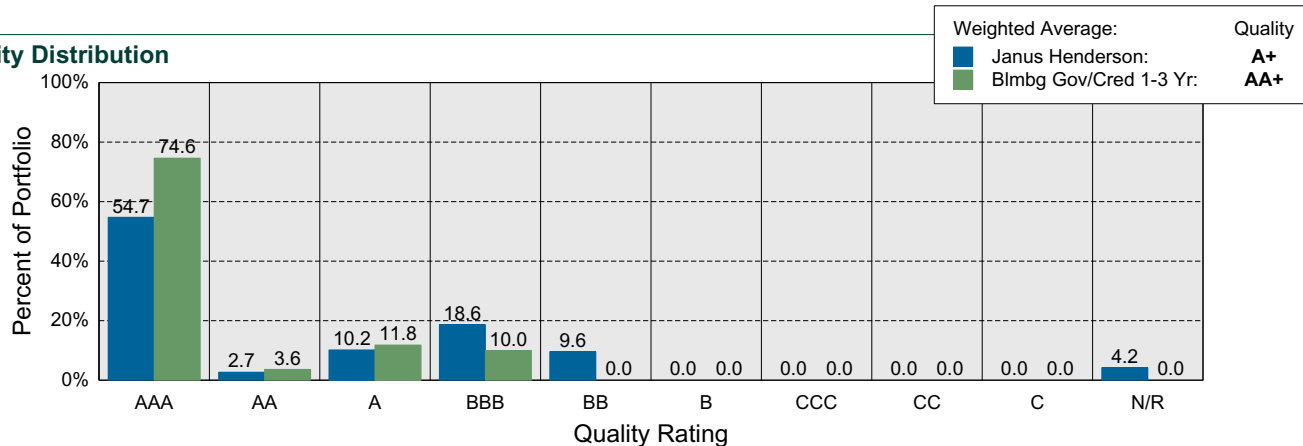
Sector Distribution



Duration Distribution



Quality Distribution



High Income Strategies Period Ended March 31, 2022

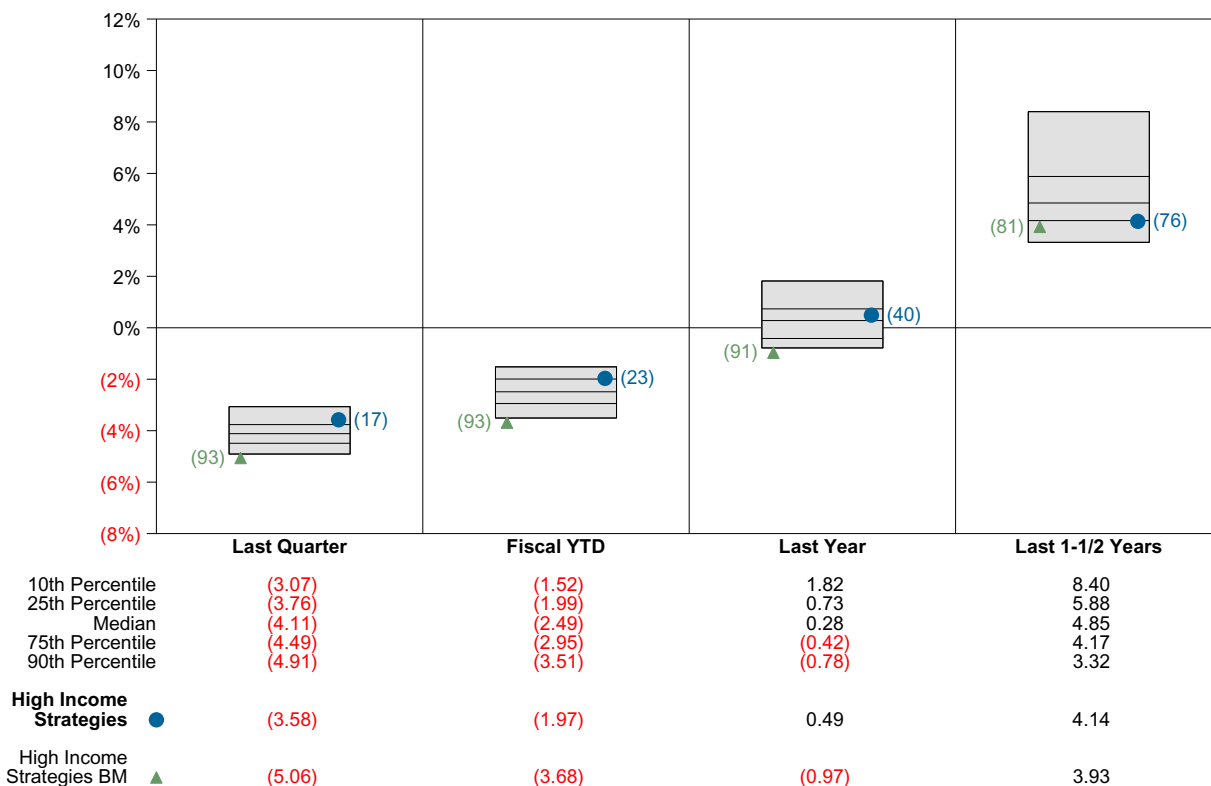
Benchmark Definition

The High Income Strategies Benchmark consists of 85% Blmbg High Yield Index and 15% ICE BofA US All Cap Secs Index.

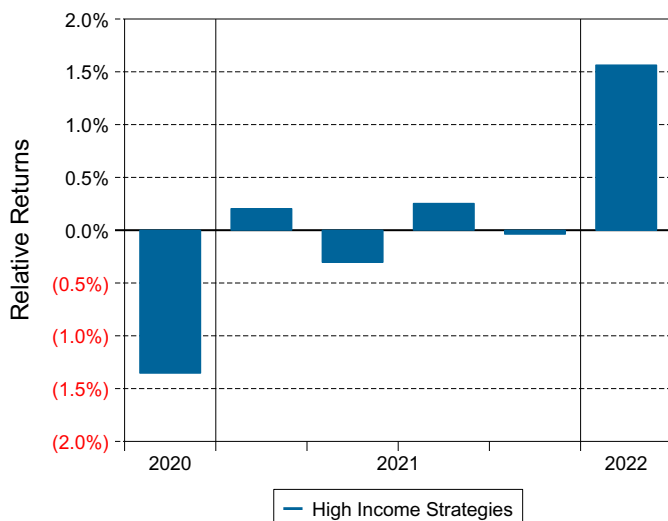
Quarterly Summary and Highlights

- High Income Strategies's portfolio posted a (3.58)% return for the quarter placing it in the 17 percentile of the Callan High Yield Fixed Income group for the quarter and in the 40 percentile for the last year.
- High Income Strategies's portfolio outperformed the High Income Strategies BM by 1.48% for the quarter and outperformed the High Income Strategies BM for the year by 1.46%.

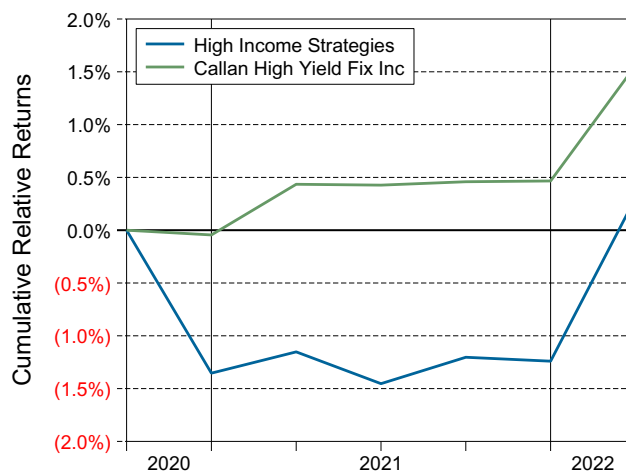
Performance vs Callan High Yield Fixed Income (Gross)



Relative Return vs High Income Strategies BM



Cumulative Returns vs High Income Strategies BM

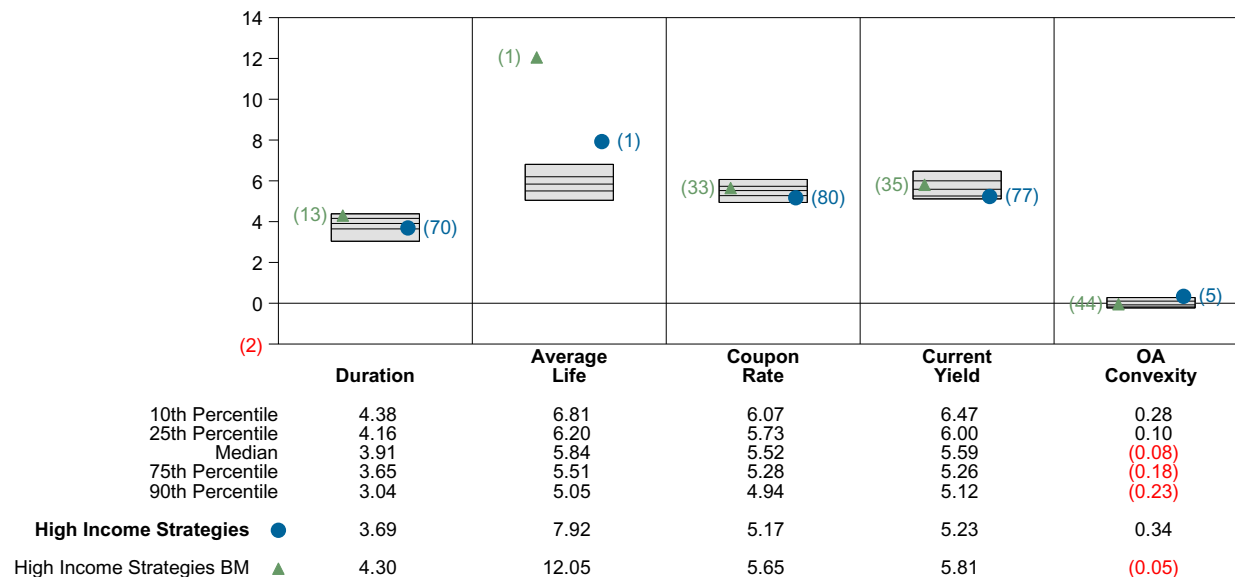


High Income Strategies Bond Characteristics Analysis Summary

Portfolio Characteristics

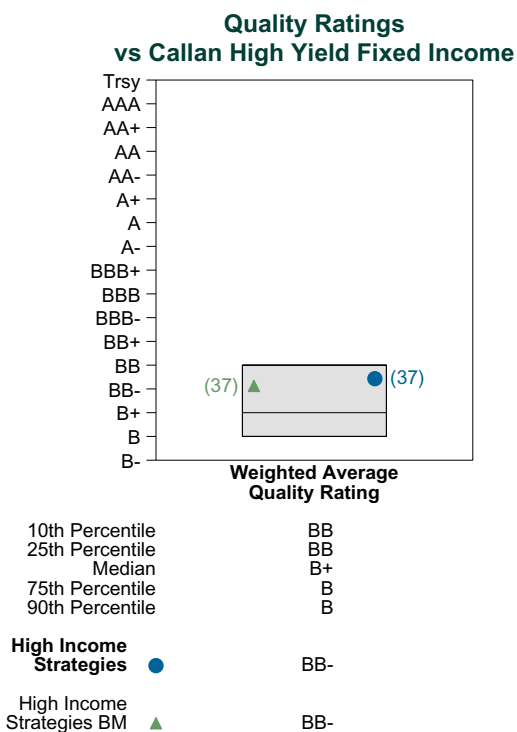
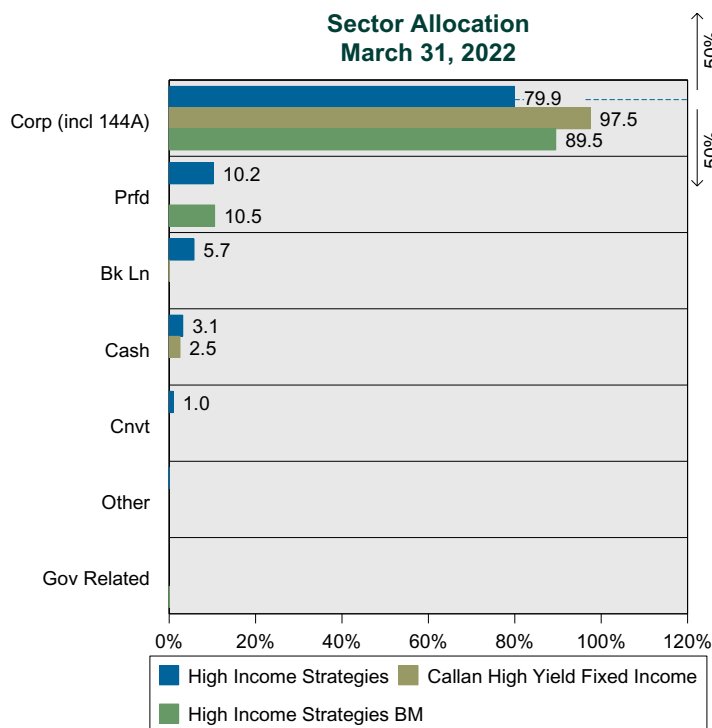
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style. Fixed Income Portfolio characteristics includes Cash Pool allocation.

Fixed Income Portfolio Characteristics Rankings Against Callan High Yield Fixed Income as of March 31, 2022



Sector Allocation and Quality Ratings

The first graph compares the manager's sector allocation with the average allocation across all the members of the manager's style. The second graph compares the manager's weighted average quality rating with the range of quality ratings for the style.

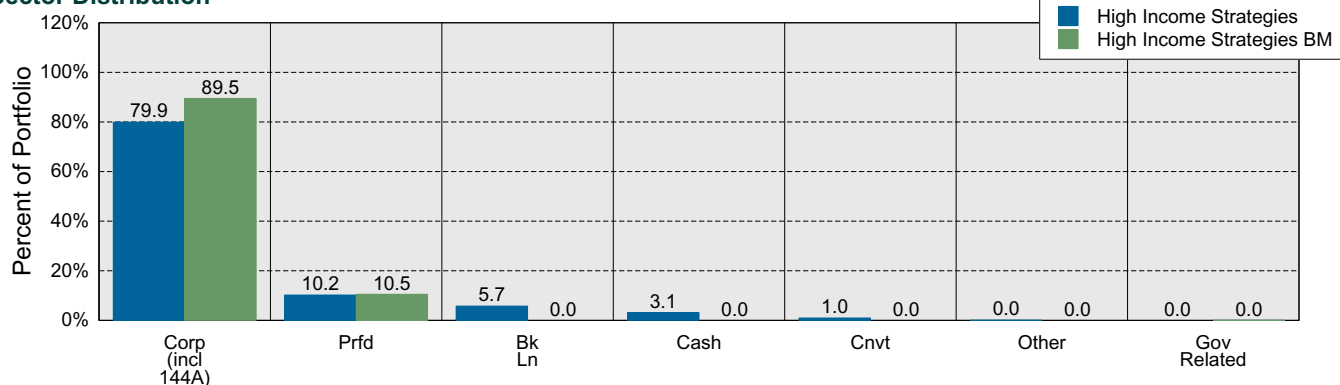


High Income Strategies Portfolio Characteristics Summary As of March 31, 2022

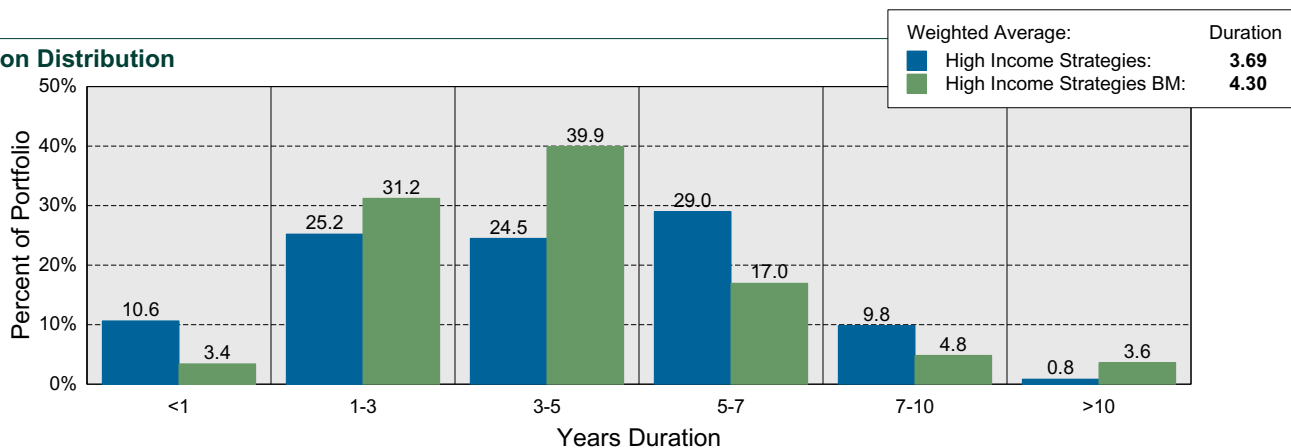
Portfolio Structure Comparison

The charts below compare the structure of the portfolio to that of the index from the three perspectives that have the greatest influence on return. The first chart compares the two portfolios across sectors. The second chart compares the duration distribution. The last chart compares the distribution across quality ratings.

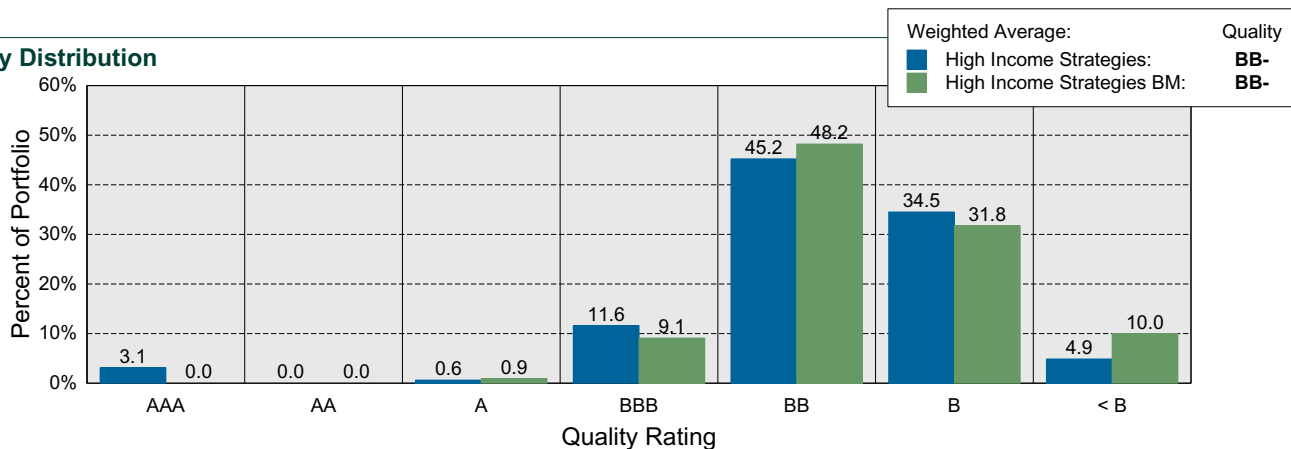
Sector Distribution



Duration Distribution



Quality Distribution



Mackay Shield US High Yield Period Ended March 31, 2022

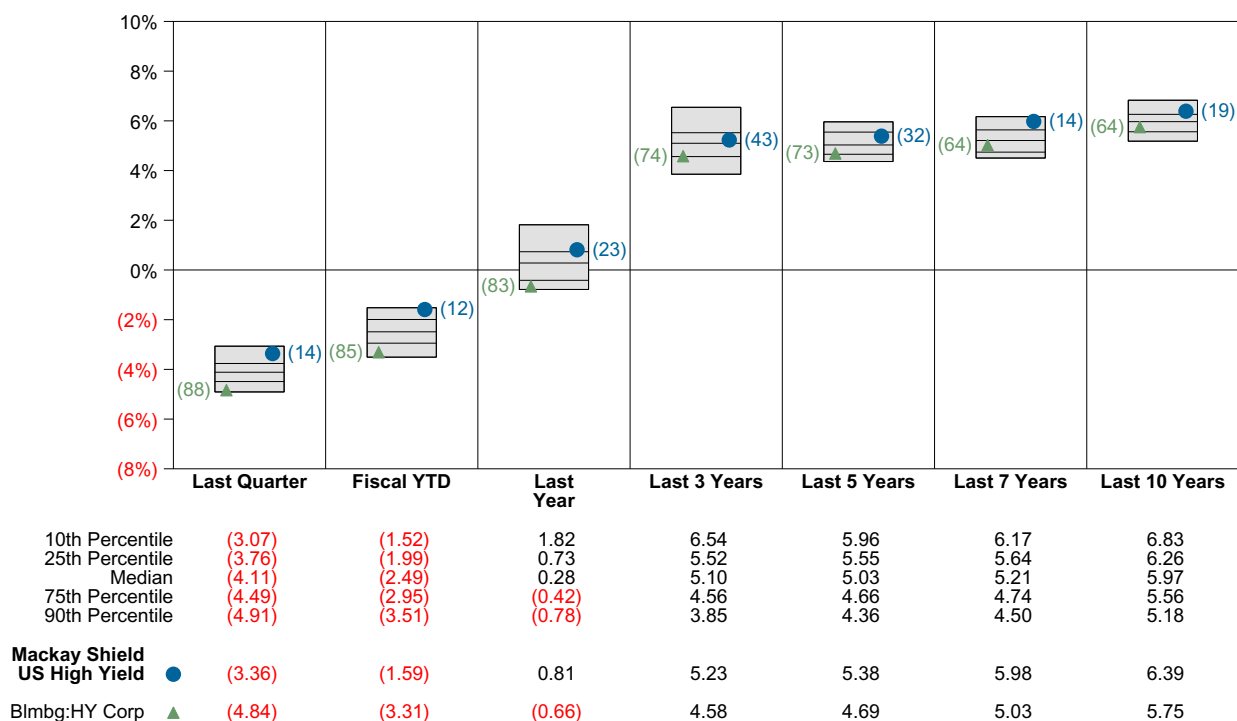
Investment Philosophy

Mackay relies on rigorous fundamental analysis to select companies with strong free cash flow and asset coverage in its quest to maximize yield, adjusted for default risk. The strategy is well diversified with sector and quality weights a residual of the security selection process. Mackay believes that long-term value is best created by avoiding downside risk (i.e. defaults) while selecting companies with attractive valuations and a catalyst for spread compression. Mackay Shield US High Yield was funded July 24, 2020. Returns prior to inception reflect the manager's high yield composite returns.

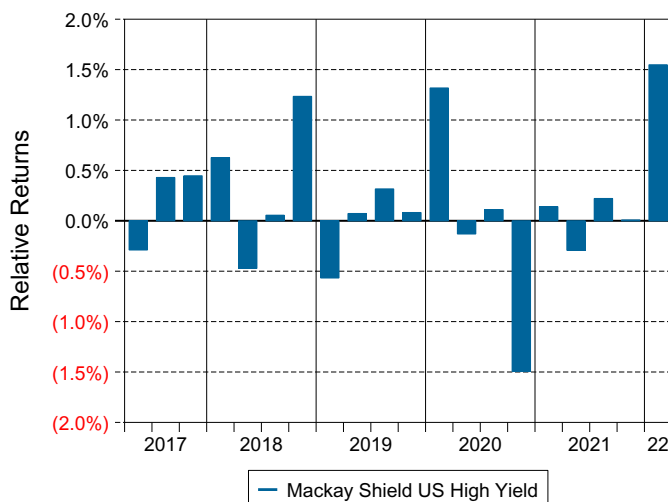
Quarterly Summary and Highlights

- Mackay Shield US High Yield's portfolio posted a (3.36)% return for the quarter placing it in the 14 percentile of the Callan High Yield Fixed Income group for the quarter and in the 23 percentile for the last year.
- Mackay Shield US High Yield's portfolio outperformed the Blmbg:HY Corp by 1.47% for the quarter and outperformed the Blmbg:HY Corp for the year by 1.47%.

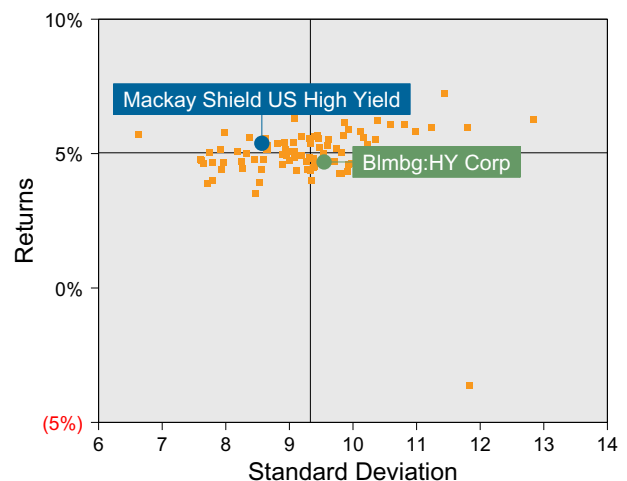
Performance vs Callan High Yield Fixed Income (Gross)



Relative Return vs Blmbg:HY Corp



Callan High Yield Fixed Income (Gross) Annualized Five Year Risk vs Return

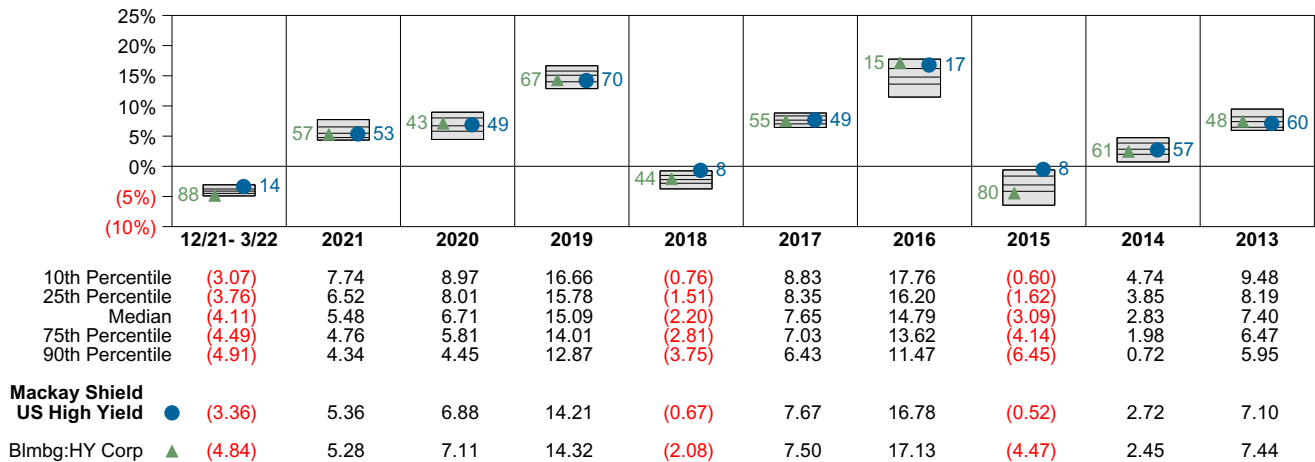


Mackay Shield US High Yield Return Analysis Summary

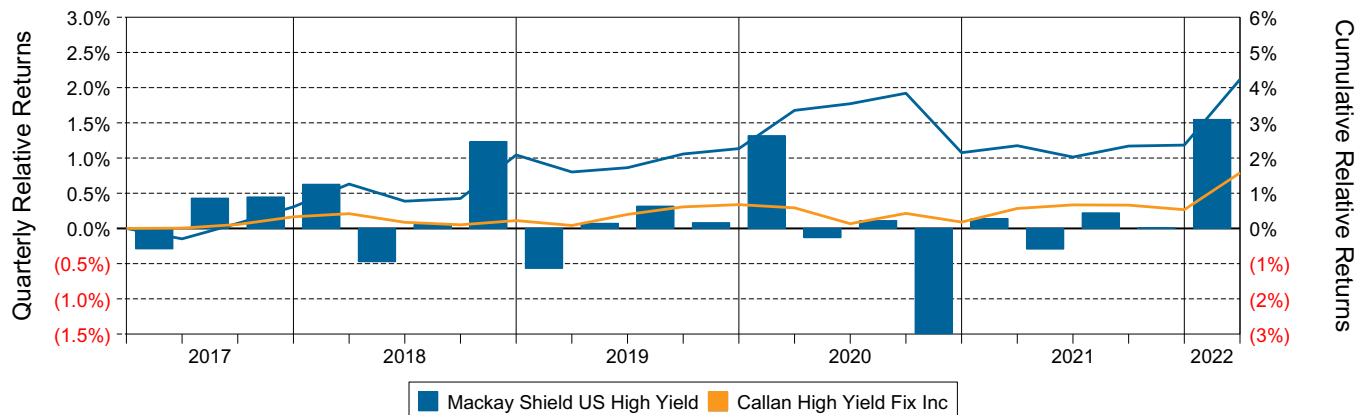
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

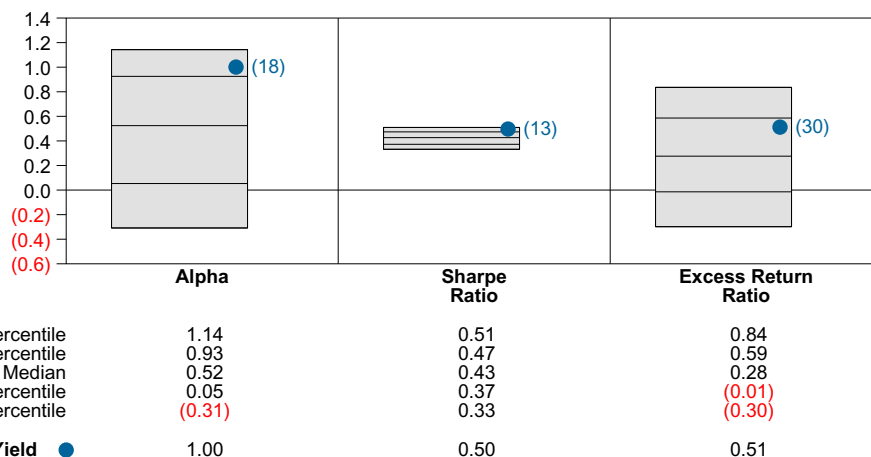
Performance vs Callan High Yield Fixed Income (Gross)



Cumulative and Quarterly Relative Returns vs Blmbg:HY Corp



Risk Adjusted Return Measures vs Blmbg:HY Corp Rankings Against Callan High Yield Fixed Income (Gross) Five Years Ended March 31, 2022

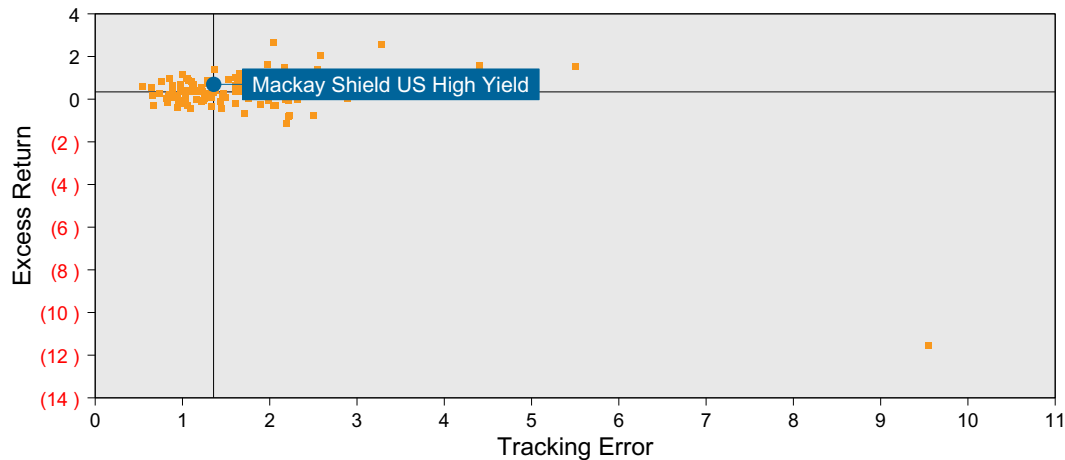


Mackay Shield US High Yield Risk Analysis Summary

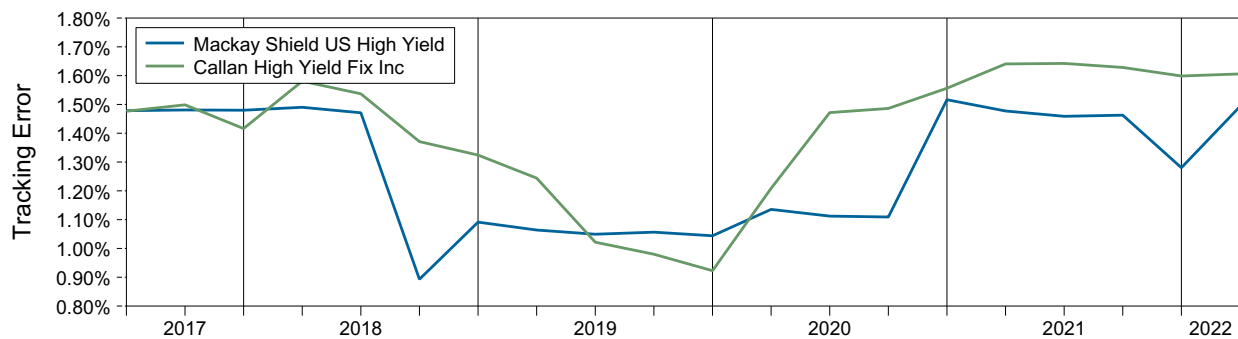
Risk Analysis

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows tracking error patterns versus the benchmark over time. The last two charts show the ranking of the manager's risk statistics versus the peer group.

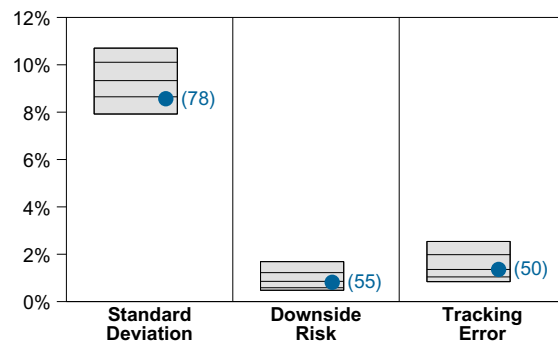
Risk Analysis vs Callan High Yield Fixed Income (Gross) Five Years Ended March 31, 2022



Rolling 12 Quarter Tracking Error vs Blmbg:HY Corp

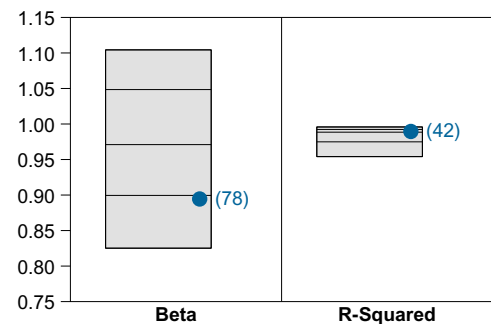


Risk Statistics Rankings vs Blmbg:HY Corp Rankings Against Callan High Yield Fixed Income (Gross) Five Years Ended March 31, 2022



10th Percentile	10.70	1.69	2.54
25th Percentile	10.11	1.22	1.98
Median	9.33	0.86	1.36
75th Percentile	8.65	0.59	1.04
90th Percentile	7.92	0.48	0.84

Mackay Shield US High Yield ● 8.57 0.82 1.36



10th Percentile	1.10	1.00
25th Percentile	1.05	0.99
Median	0.97	0.99
75th Percentile	0.90	0.97
90th Percentile	0.83	0.95

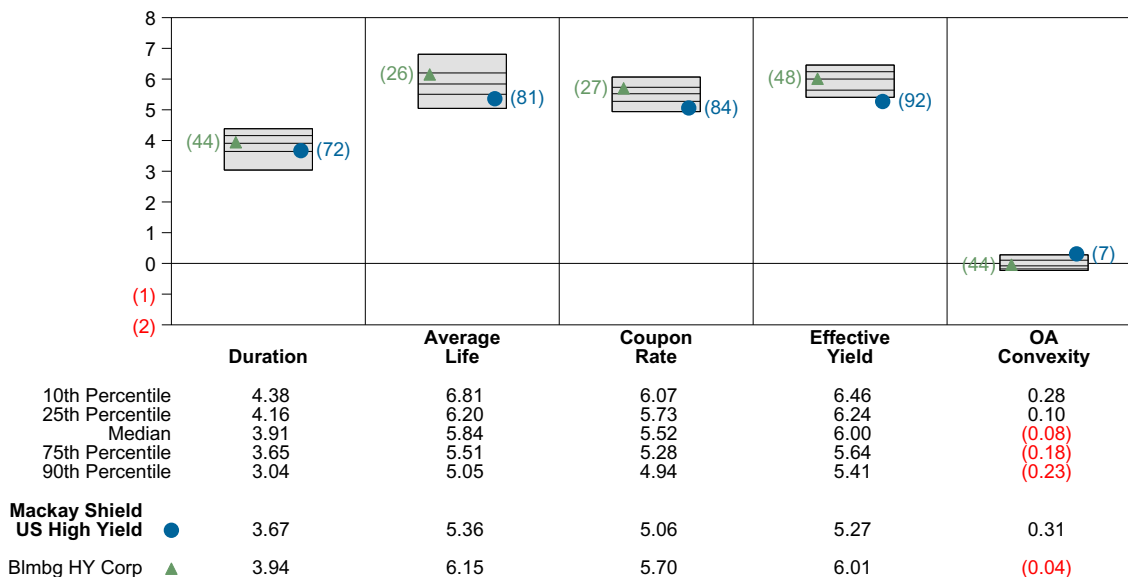
Mackay Shield US High Yield ● 0.89 0.99

Mackay Shield US High Yield Bond Characteristics Analysis Summary

Portfolio Characteristics

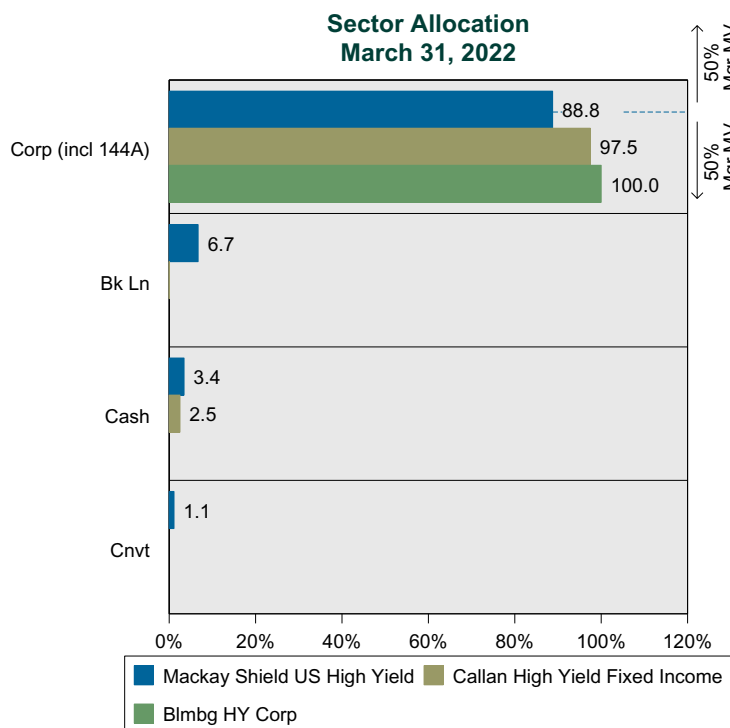
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style. Fixed Income Portfolio characteristics includes Cash Pool allocation.

Fixed Income Portfolio Characteristics Rankings Against Callan High Yield Fixed Income as of March 31, 2022

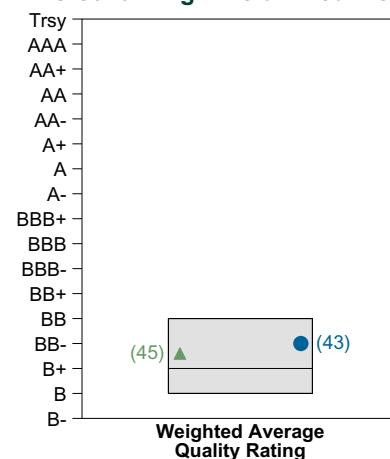


Sector Allocation and Quality Ratings

The first graph compares the manager's sector allocation with the average allocation across all the members of the manager's style. The second graph compares the manager's weighted average quality rating with the range of quality ratings for the style.



Quality Ratings vs Callan High Yield Fixed Income



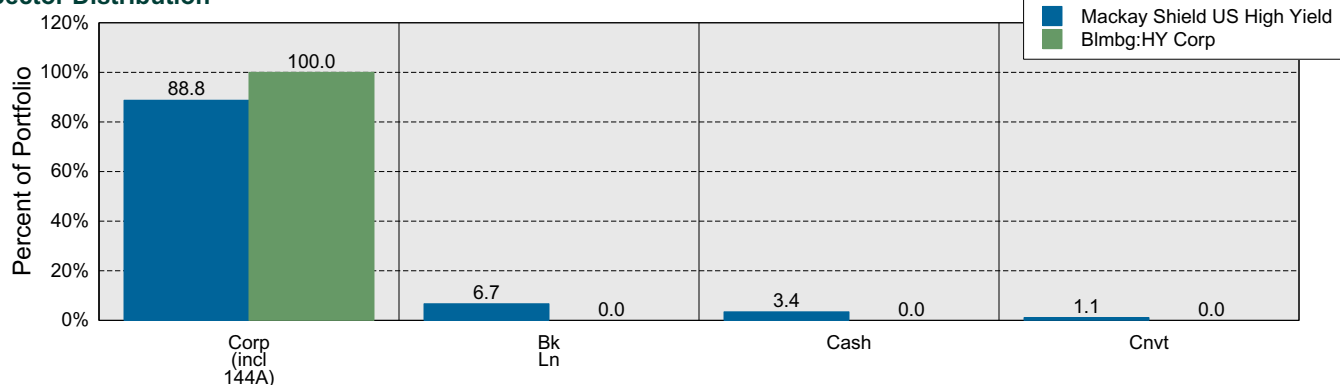
10th Percentile	BB
25th Percentile	BB
Median	B+
75th Percentile	B
90th Percentile	B
Mackay Shield US High Yield	BB-
Blmbg HY Corp	BB-

Mackay Shield US High Yield Portfolio Characteristics Summary As of March 31, 2022

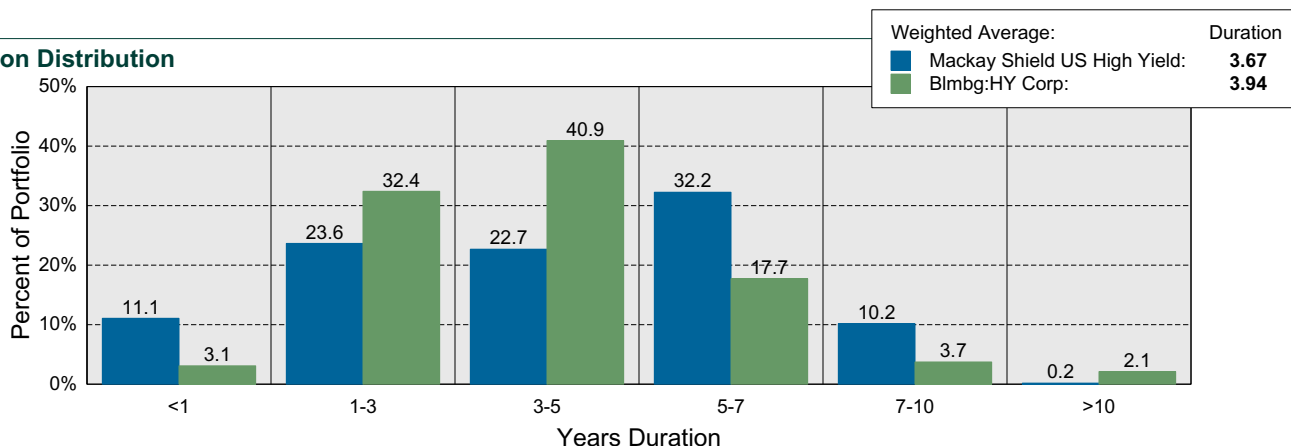
Portfolio Structure Comparison

The charts below compare the structure of the portfolio to that of the index from the three perspectives that have the greatest influence on return. The first chart compares the two portfolios across sectors. The second chart compares the duration distribution. The last chart compares the distribution across quality ratings.

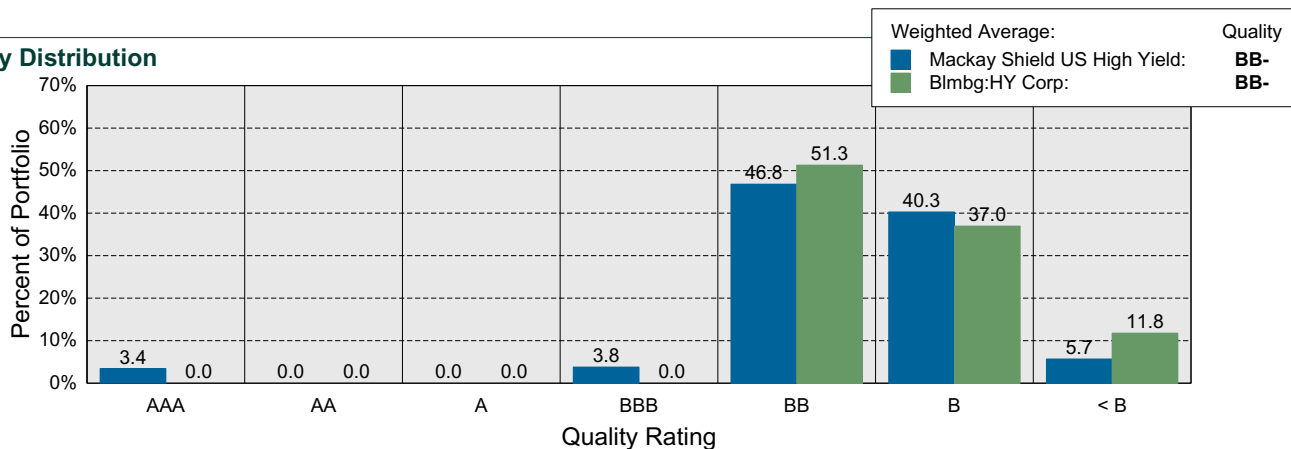
Sector Distribution



Duration Distribution



Quality Distribution



Principal Preferred Securities Period Ended March 31, 2022

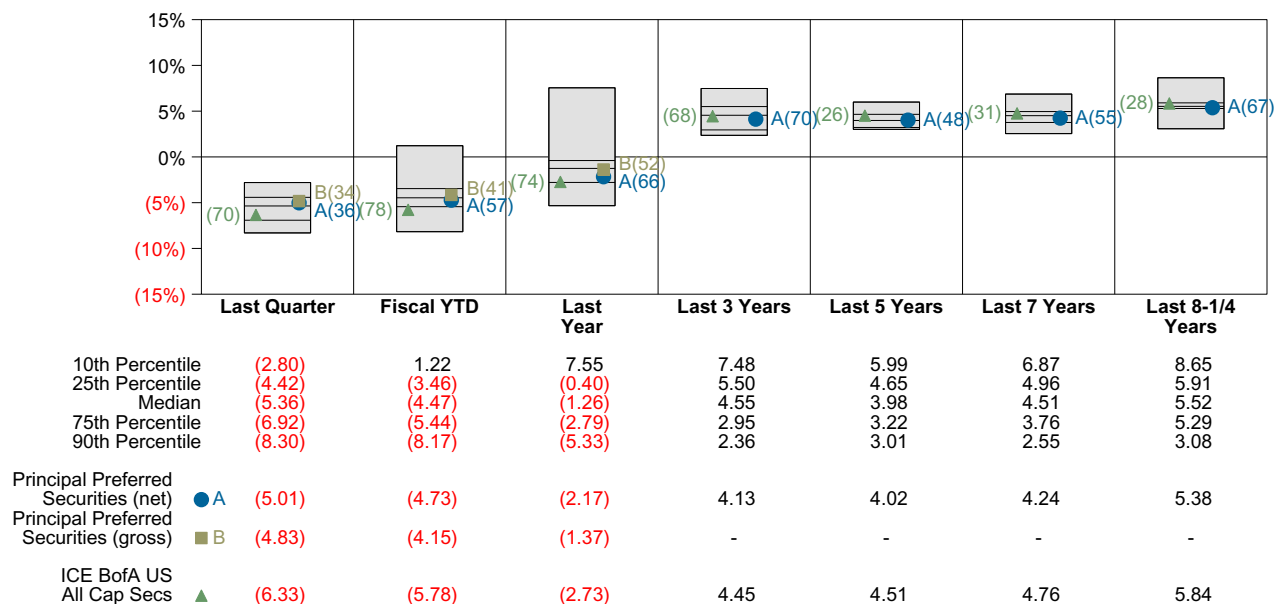
Investment Philosophy

Spectrum is a wholly owned subsidiary of Principal Global Investors. The firm has an exclusive focus on preferred securities globally. The firm employs an active approach to managing this sector with an emphasis on income as well as total return. Preferred securities are structurally subordinated fixed income investments that come in many flavors, each with unique structures and with many different labels. Common characteristics, however, are that they are subordinate to senior investment grade debt, pay a specified coupon, and are callable by the issuer. Credit quality typically ranges from BBB+ to BB. Coupon payments can be deferrable, non-deferrable and cumulative or non-cumulative. These attributes make the instruments complex and active management requires skill and experience in this sector. Principal Preferred Securities was funded July 30, 2020. Returns prior to inception reflect the Principal Preferred Securities mutual fund historical returns.

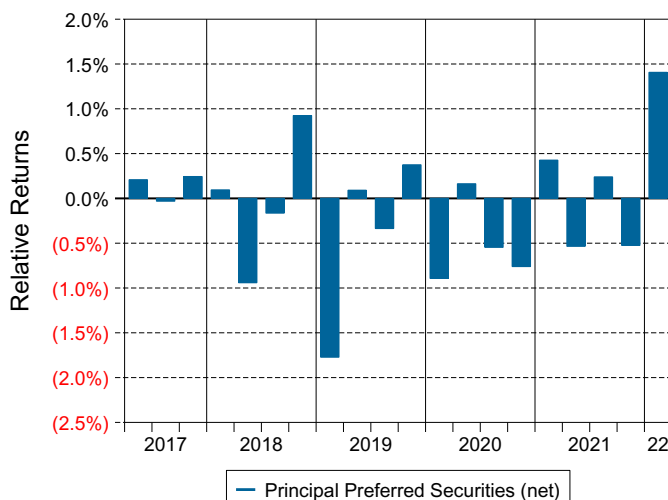
Quarterly Summary and Highlights

- Principal Preferred Securities (net)'s portfolio posted a (5.01)% return for the quarter placing it in the 36 percentile of the Morningstar Preferred Stock Funds group for the quarter and in the 66 percentile for the last year.
- Principal Preferred Securities (net)'s portfolio outperformed the ICE BofA US All Cap Secs by 1.32% for the quarter and outperformed the ICE BofA US All Cap Secs for the year by 0.56%.

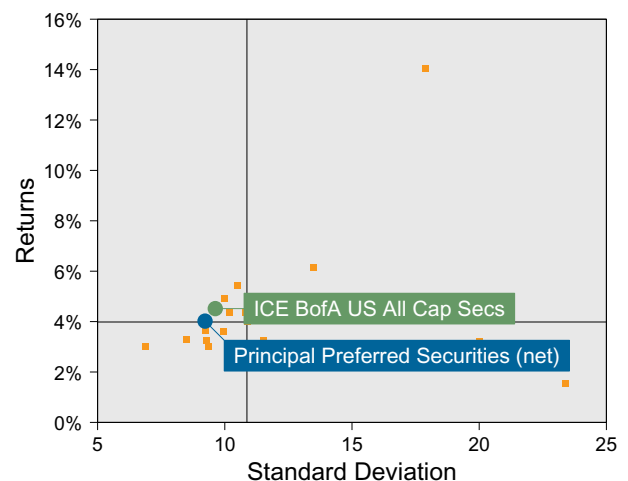
Performance vs Morningstar Preferred Stock Funds (Net)



Relative Return vs ICE BofA US All Cap Secs



Morningstar Preferred Stock Funds (Net) Annualized Five Year Risk vs Return

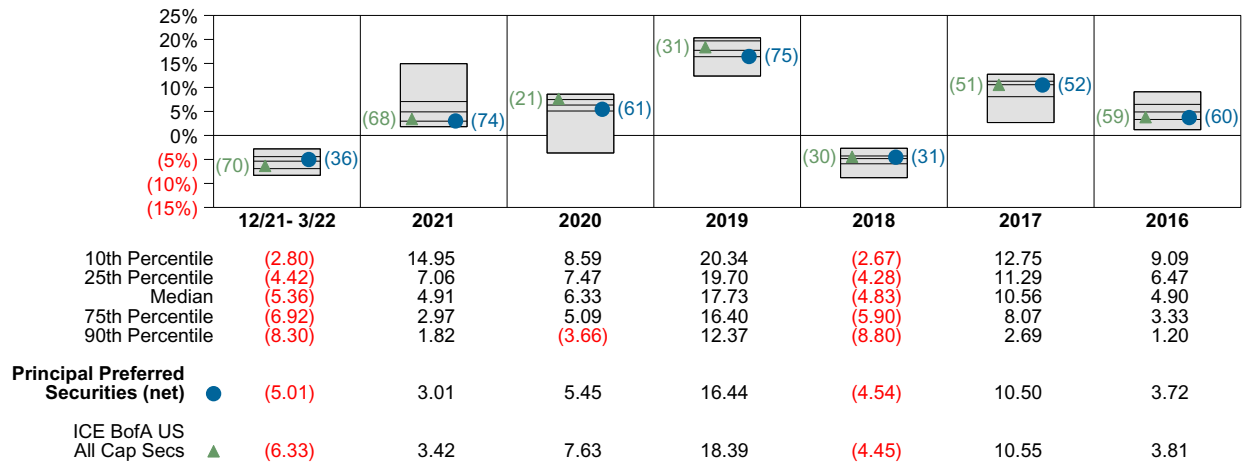


Principal Preferred Securities (net) Return Analysis Summary

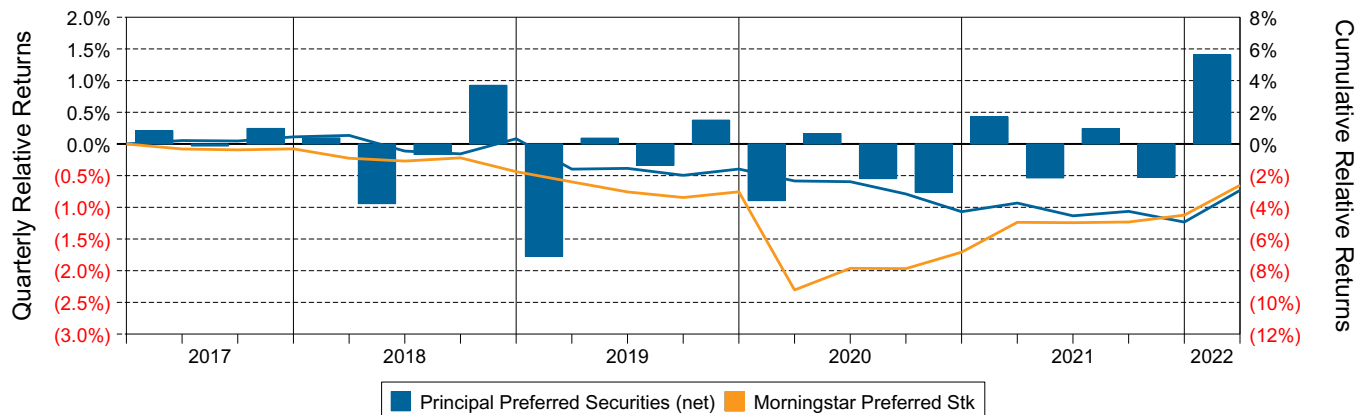
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

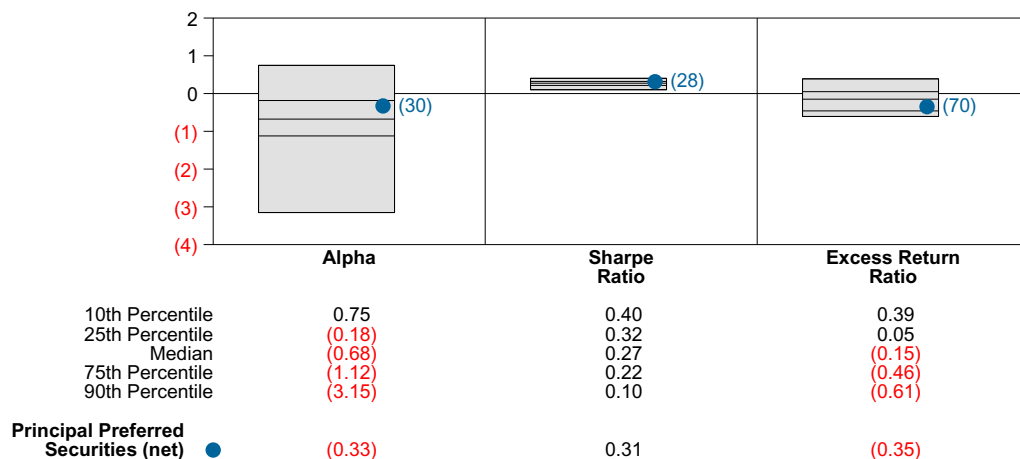
Performance vs Morningstar Preferred Stock Funds (Net)



Cumulative and Quarterly Relative Returns vs ICE BofA US All Cap Secs



Risk Adjusted Return Measures vs ICE BofA US All Cap Secs Rankings Against Morningstar Preferred Stock Funds (Net) Five Years Ended March 31, 2022

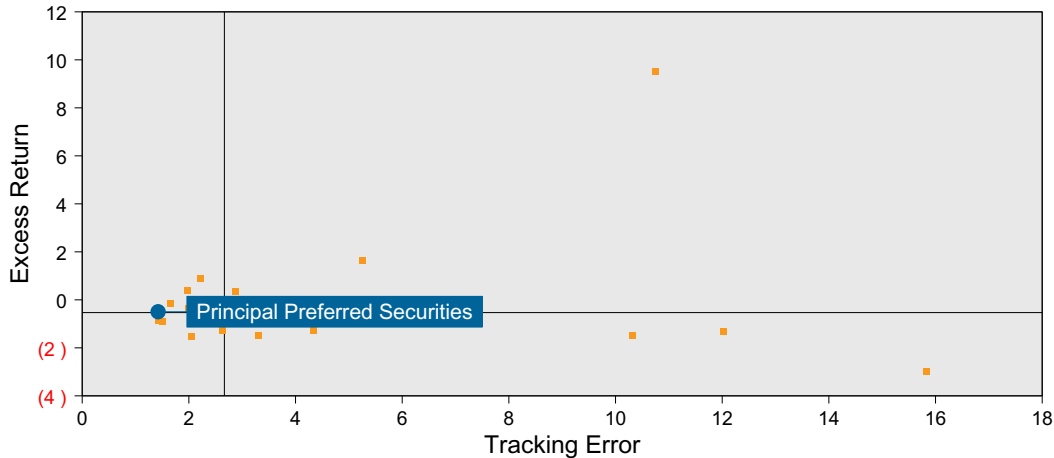


Principal Preferred Securities Risk Analysis Summary

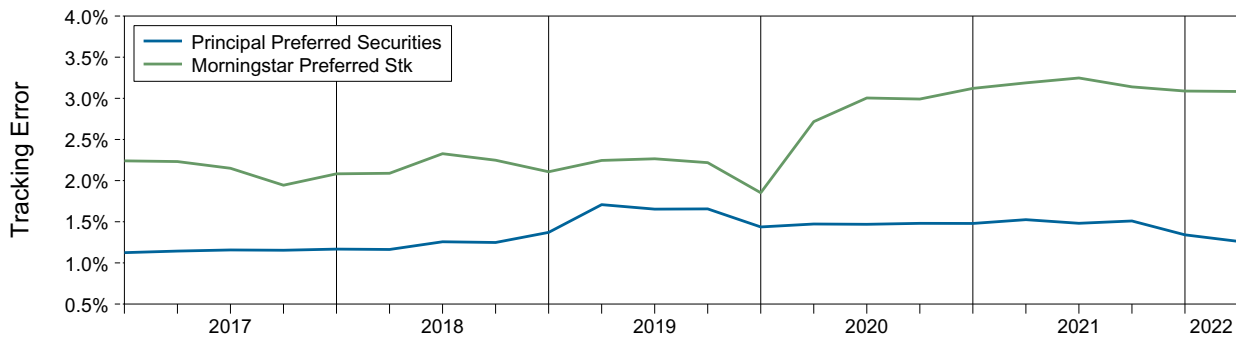
Risk Analysis

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows tracking error patterns versus the benchmark over time. The last two charts show the ranking of the manager's risk statistics versus the peer group.

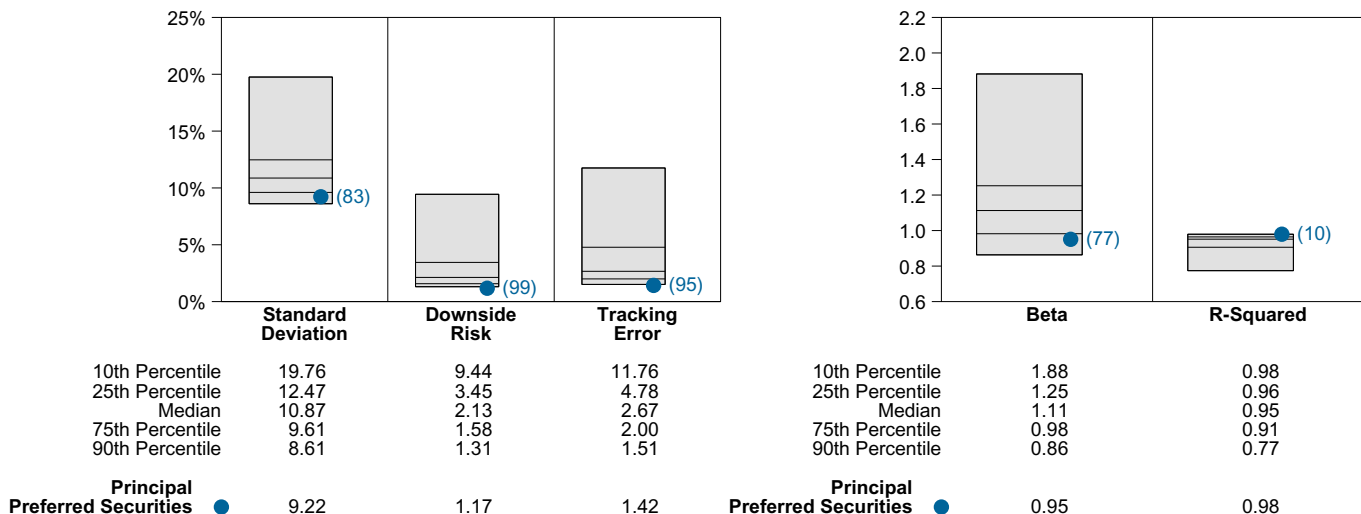
Risk Analysis vs Morningstar Preferred Stock Funds (Net) Five Years Ended March 31, 2022



Rolling 12 Quarter Tracking Error vs ICE BofA US All Cap Secs



Risk Statistics Rankings vs ICE BofA US All Cap Secs Rankings Against Morningstar Preferred Stock Funds (Net) Five Years Ended March 31, 2022

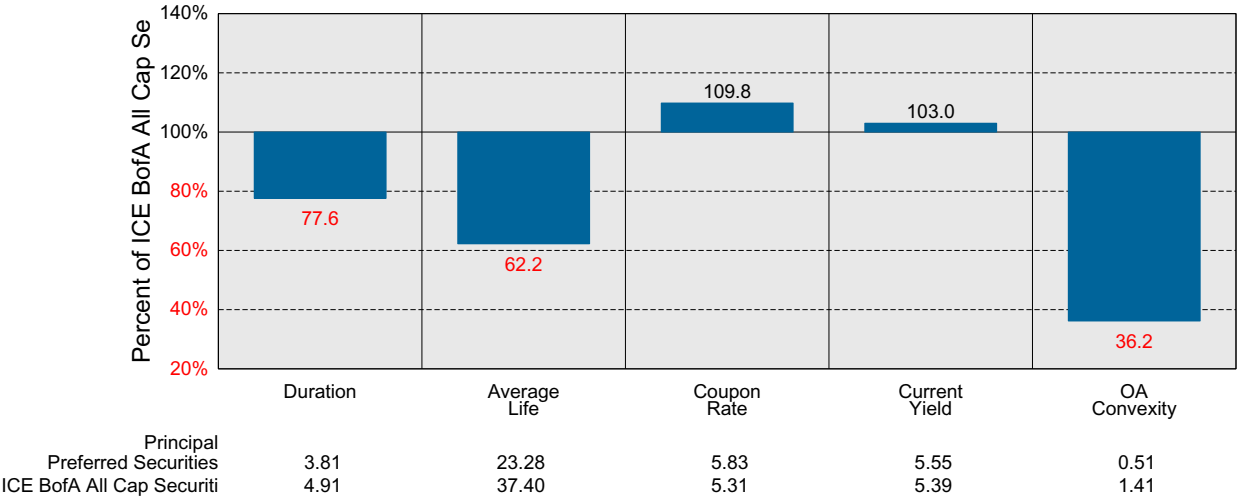


Principal Preferred Securities Bond Characteristics Analysis Summary

Portfolio Characteristics

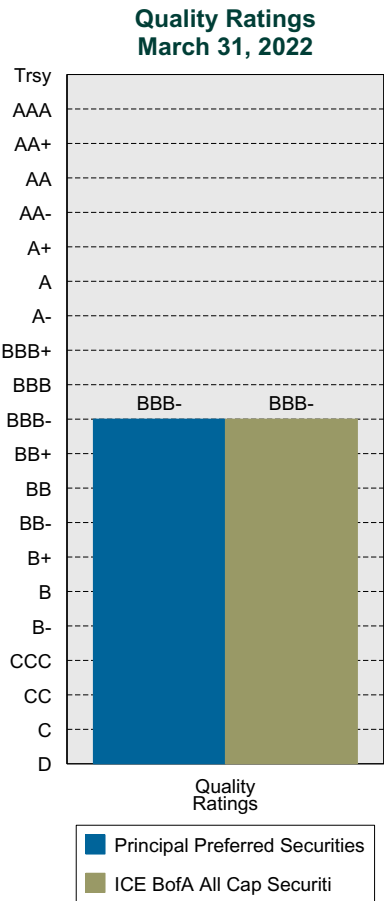
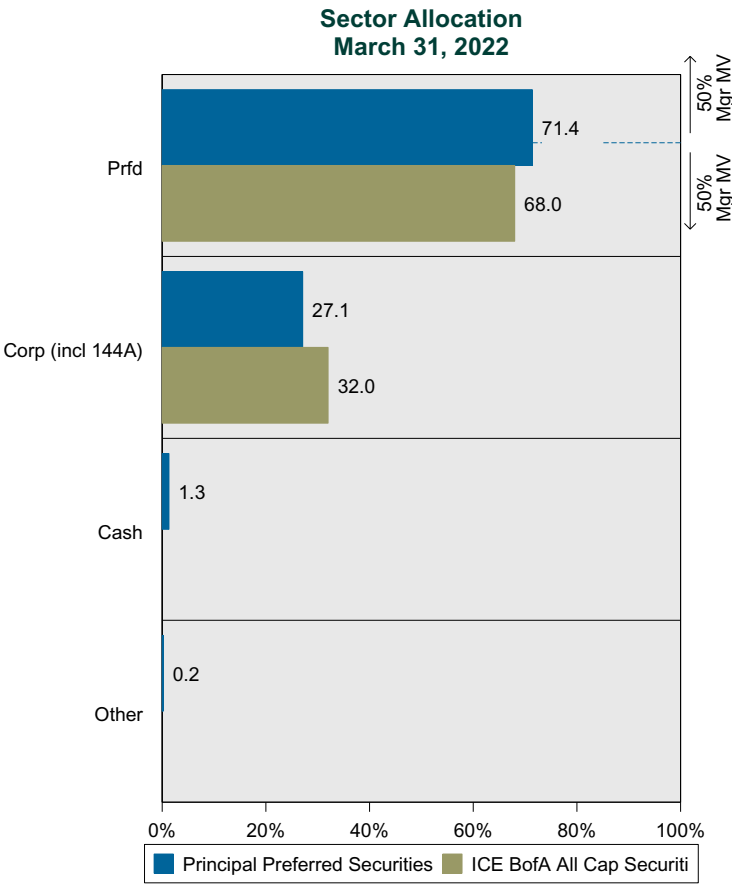
This graph compares the manager’s portfolio characteristics with the range of characteristics for the portfolios which make up the manager’s style group. This analysis illustrates whether the manager’s current holdings are consistent with other managers employing the same style. Fixed Income Portfolio characteristics includes Cash Pool allocation.

Portfolio Characteristics Relative to ICE BofA All Cap Securiti
as of March 31, 2022



Sector Allocation and Quality Ratings

The first graph compares the manager’s sector weights for the most recent quarter with those of the benchmark. The second graph compares the manager’s weighted average quality rating with those of the benchmark.

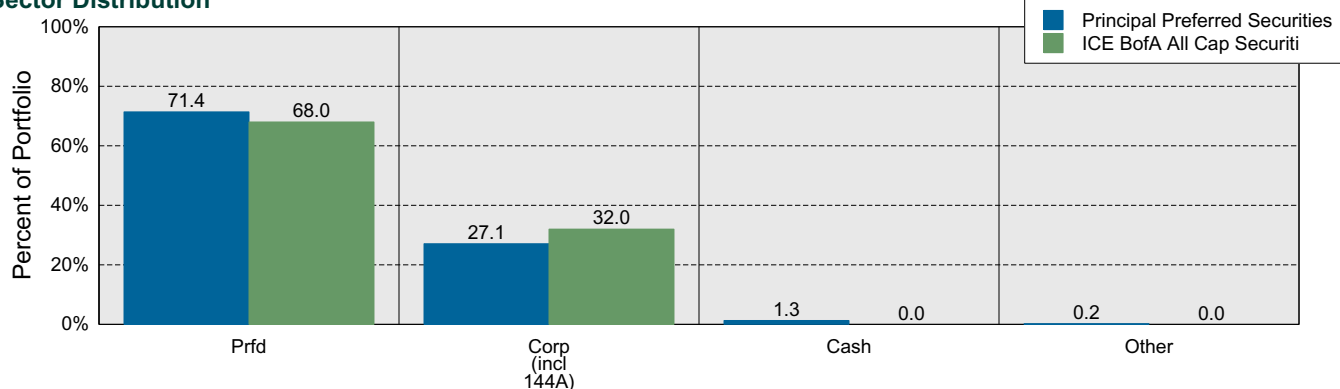


Principal Preferred Securities Portfolio Characteristics Summary As of March 31, 2022

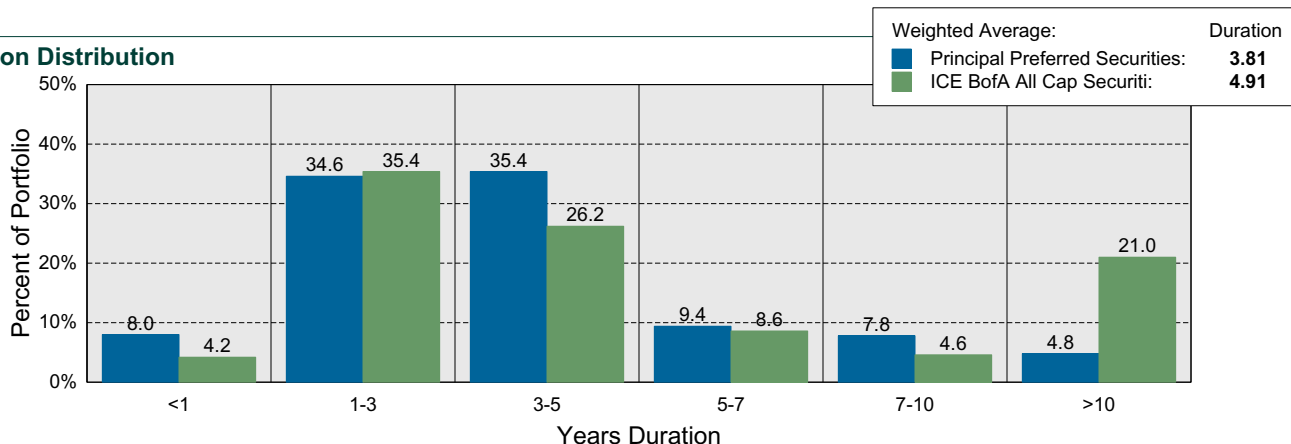
Portfolio Structure Comparison

The charts below compare the structure of the portfolio to that of the index from the three perspectives that have the greatest influence on return. The first chart compares the two portfolios across sectors. The second chart compares the duration distribution. The last chart compares the distribution across quality ratings.

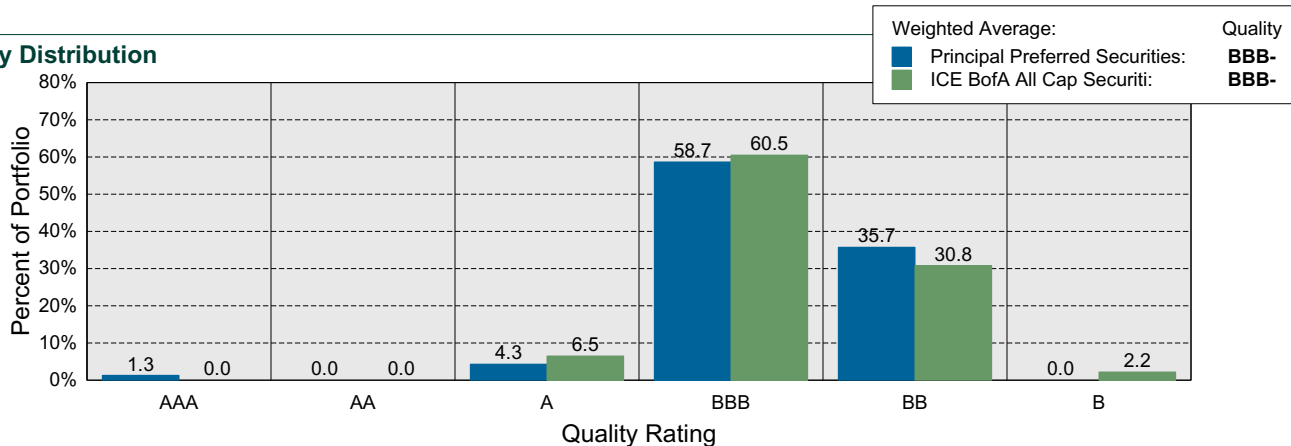
Sector Distribution



Duration Distribution



Quality Distribution



Quarterly Highlights

The Callan Institute provides research to update clients on the latest industry trends and carefully structured educational programs to enhance the knowledge of industry professionals. Visit www.callan.com/research-library to see all of our publications, and www.callan.com/blog to view our blog. For more information contact Barb Gerraty at 415-274-3093 / institute@callan.com.

New Research from Callan's Experts

Alternatives Focus: Outlook for Hedge Funds | Joe McGuane analyzes hedge fund performance in 2021 and provides his outlook for the asset class in 2022.

2022-2031 Capital Markets Assumptions | A white paper detailing the process involved in creating our 2022-2031 Capital Markets Assumptions and the reasoning behind them. You can also view our interactive webpage and charticle featuring this year's assumptions.

2022 Defined Contribution Trends Survey | This survey provides extensive information for DC plan sponsors to use in improving and benchmarking their plans.

Callan Periodic Table of Investment Returns & Collection | The Periodic Table of Investment Returns depicts annual returns for key asset classes, ranked from best to worst performance for each calendar year. Expanding upon our Classic Periodic Table, the Collection offers additional versions focused on equity, fixed income, institutional investors, and alternatives such as real estate, private equity, and hedge funds. Other tables compare the performance of key indices to zero and to inflation.

Blog Highlights

DOL Weighs in on Cryptocurrencies in DC Plans | The U.S. Department of Labor issued a compliance assistance bulletin, which does not carry the force of law, regarding offering cryptocurrency investments in a defined contribution plan, with a number of stern warnings about the potential fiduciary challenges.

Hedge Funds and Ukraine: A Guide for Institutional Investors | This post provides an analysis of the performance of hedge funds through the end of February, categorized by strategy type, and how they have been grappling with the Ukraine crisis.

Why It Was a Tough 4Q21 for Large Cap Growth Managers |

With rising case counts stemming from the Omicron variant, and concerns about interest rates and inflation, volatility in the markets spiked in 4Q21. For large cap growth investment managers, pro-cyclical positioning generally hurt portfolios given those fears. More than 90% of large cap growth managers underperformed the benchmark for the quarter.

Risky Business Update: Rising Inflation and Continued Uncertainty Challenge Investors | Using our proprietary Capital Markets Assumptions, we found that investors in 2022 needed to take on over five times as much risk as they did 30 years ago to earn the same nominal return.

Quarterly Periodicals

Private Equity Trends, 4Q21 | A high-level summary of private equity activity in the quarter through all the investment stages

Active vs. Passive Charts, 4Q21 | A comparison of active managers alongside relevant benchmarks over the long term

Market Pulse Flipbook, 4Q21 | A quarterly market reference guide covering trends in the U.S. economy, developments for institutional investors, and the latest data on the capital markets

Capital Markets Review, 4Q21 | Analysis and a broad overview of the economy and public and private market activity each quarter across a wide range of asset classes

Hedge Fund Quarterly, 4Q21 | Commentary on developments for hedge funds and multi-asset class (MAC) strategies

Real Assets Reporter, 4Q21 | A summary of market activity for real assets and private real estate during the quarter

Events

A complete list of all upcoming events can be found on our website: callan.com/events-education.

Please mark your calendar and look forward to upcoming invitations:

Research Café: How to Navigate Private Equity Fees and Terms (webinar)

May 11, 2022 at 9:30am PT

June Regional Workshop

June 7, 2022 – Atlanta

June 9, 2022 – Portland

For more information about events, please contact Barb Gerraty: 415-274-3093 / gerraty@callan.com

Education: By the Numbers

50+

Unique pieces of research the Institute generates each year

525

Attendees (on average) of the Institute's annual National Conference

3,700

Total attendees of the "Callan College" since 1994

Education

Founded in 1994, the "Callan College" offers educational sessions for industry professionals involved in the investment decision-making process.

Introduction to Investments

July 26-27, 2022 – San Francisco

September 20-22 – Virtual

This program familiarizes institutional investor trustees and staff and asset management advisers with basic investment theory, terminology, and practices. Our virtual session is held over three days with virtual modules of 2.5-3 hours, while the in-person session lasts one-and-a-half days. This course is designed for individuals with less than two years of experience with asset-management oversight and/or support responsibilities. Virtual tuition is \$950 per person and includes instruction and digital materials. In-person tuition is \$2,350 per person and includes instruction, all materials, breakfast and lunch on each day, and dinner on the first evening with the instructors.

Additional information including registration can be found at: callan.com/events/



"Research is the foundation of all we do at Callan, and sharing our best thinking with the investment community is our way of helping to foster dialogue to raise the bar across the industry."

Greg Allen, CEO and Chief Research Officer

List of Callan's Investment Manager Clients

Confidential – For Callan Client Use Only

Callan takes its fiduciary and disclosure responsibilities to clients very seriously. We recognize that there are numerous potential conflicts of interest encountered in the investment consulting industry, and that it is our responsibility to manage those conflicts effectively and in the best interest of our clients. At Callan, we employ a robust process to identify, manage, monitor, and disclose potential conflicts on an ongoing basis.

The list below is an important component of our conflicts management and disclosure process. It identifies those investment managers that pay Callan fees for educational, consulting, software, database, or reporting products and services. We update the list quarterly because we believe that our fund sponsor clients should know the investment managers that do business with Callan, particularly those investment manager clients that the fund sponsor clients may be using or considering using. Please note that if an investment manager receives a product or service on a complimentary basis (e.g., attending an educational event), they are not included in the list below. Callan is committed to ensuring that we do not consider an investment manager's business relationship with Callan, or lack thereof, in performing evaluations for or making suggestions or recommendations to its other clients. Please refer to Callan's ADV Part 2A for a more detailed description of the services and products that Callan makes available to investment manager clients through our Institutional Consulting Group, Independent Adviser Group, and Fund Sponsor Consulting Group. Due to the complex corporate and organizational ownership structures of many investment management firms, parent and affiliate firm relationships are not indicated on our list.

Fund sponsor clients may request a copy of the most currently available list at any time. Fund sponsor clients may also request specific information regarding the fees paid to Callan by particular fund manager clients. Per company policy, information requests regarding fees are handled exclusively by Callan's Compliance department.

Manager Name

abrdn (Aberdeen Standard Investments)
Acadian Asset Management LLC
Adams Street Partners, LLC
AEGON USA Investment Management Inc.
AllianceBernstein
Allianz
Allspring Global Investments
American Century Investments
Amundi US, Inc.
Antares Capital LP
AQR Capital Management
Ares Management LLC
Ariel Investments, LLC
Aristotle Capital Management, LLC
Atlanta Capital Management Co., LLC
AXA Investment Managers
Baillie Gifford International, LLC
Baird Advisors

Manager Name

Barings LLC
Baron Capital Management, Inc.
Barrow, Hanley, Mewhinney & Strauss, LLC
BentallGreenOak
BlackRock
Blackstone Group (The)
BNY Mellon Asset Management
Boston Partners
Brandes Investment Partners, L.P.
Brandywine Global Investment Management, LLC
Brookfield Asset Management
Brown Brothers Harriman & Company
Burgundy Asset Management
Capital Group
Carillon Tower Advisers
CastleArk Management, LLC
Chartwell Investment Partners
ClearBridge Investments, LLC

Manager Name
Cohen & Steers Capital Management, Inc.
Columbia Threadneedle Investments North America
Comgest
Credit Suisse Asset Management, LLC
Crescent Capital Group LP
DePrince, Race & Zollo, Inc.
Dimensional Fund Advisors L.P.
Doubleline
Duff & Phelps Investment Management Co.
DWS
EARNEST Partners, LLC
Epoch Investment Partners, Inc.
Fayez Sarofim & Company
Federated Hermes, Inc.
Fidelity Institutional Asset Management
Fiera Capital Corporation
First Hawaiian Bank Wealth Management Division
First Sentier Investors
Fisher Investments
Franklin Templeton
Fred Alger Management, LLC
GAM (USA) Inc.
Garrett Investment Advisors, LLC
GlobeFlex Capital, L.P.
GoldenTree Asset Management, LP
Goldman Sachs
Golub Capital
Guggenheim Investments
GW&K Investment Management
Harbor Capital Group Trust
Hardman Johnston Global Advisors LLC
Heitman LLC
Hotchkis & Wiley Capital Management, LLC
Impax Asset Management LLC
Income Research + Management Inc.
Insight Investment
Intech Investment Management LLC
Intercontinental Real Estate Corporation
Invesco
J O Hambro Capital Management Limited

Manager Name
J.P. Morgan
Janus
Jennison Associates LLC
Jobs Peak Advisors
Jupiter Asset Management
KeyCorp
Lazard Asset Management
LGIM America
Lincoln National Corporation
Longview Partners
Loomis, Sayles & Company, L.P.
Lord Abbett & Company
LSV Asset Management
MacKay Shields LLC
Macquarie Asset Management
Manning & Napier Advisors, LLC
Manulife Investment Management
Marathon Asset Management, L.P.
McKinley Capital Management, LLC
Mellon
MetLife Investment Management
MFS Investment Management
MidFirst Bank
MLC Asset Management
Mondrian Investment Partners Limited
Montag & Caldwell, LLC
Morgan Stanley Investment Management
MUFG Union Bank, N.A.
Natixis Investment Managers
Neuberger Berman
Newton Investment Management
Ninety One North America, Inc.
Northern Trust Asset Management
Nuveen
P/E Investments
Pacific Investment Management Company
Pantheon Ventures
Parametric Portfolio Associates LLC
Partners Group (USA) Inc.
Pathway Capital Management, LP

Manager Name

Peregrine Capital Management, LLC

PFM Asset Management LLC

PGIM Fixed Income

PGIM Quantitative Solutions LLC

Pictet Asset Management

PineBridge Investments

Polen Capital Management, LLC

Principal Global Investors

Putnam Investments, LLC

RBC Global Asset Management

Regions Financial Corporation

Richard Bernstein Advisors LLC

Robeco Institutional Asset Management, US Inc.

Rothschild & Co. Asset Management US

S&P Dow Jones Indices

Schroder Investment Management North America Inc.

Segall Bryant & Hamill

SLC Management

Smith Graham & Co. Investment Advisors, L.P.

State Street Global Advisors

Strategic Global Advisors, LLC

Manager Name

T. Rowe Price Associates, Inc.

The TCW Group, Inc.

Thompson, Siegel & Walmsley LLC

Thornburg Investment Management, Inc.

Timberland Investment Resources, LLC

Tri-Star Trust Bank

UBS Asset Management

VanEck

Versus Capital Group

Victory Capital Management Inc.

Virtus Investment Partners, Inc.

Vontobel Asset Management

Voya

Vulcan Value Partners, LLC

Walter Scott & Partners Limited

WCM Investment Management

Wellington Management Company, LLP

Western Asset Management Company LLC

Westfield Capital Management Company, LP

William Blair & Company LLC

Rebalancing Recommendation: \$28.3 million in Cash Available For Investing

Asset values as of April 30, 2022

Target		4/30/2022 Actual (\$)	Changes Per Target (\$)	Additional Funds No Mkt Dur Bonds (\$)	No Mkt Dur Bonds Total New MV (\$)	New MV %	% Diff From Target
52.5%	BOND	632,463,346	24,890,789		632,463,346	50.5%	-2.0%
7.5%	SHORT DURATION	96,939,180	(3,031,447)	7,000,000	103,939,180	8.3%	0.8%
30.0%	EQUITY	369,005,925	6,625,009	17,450,000	386,455,925	30.9%	0.9%
8.5%	HIGH YIELD	107,682,412	(1,253,648)	2,500,000	110,182,412	8.8%	0.3%
1.5%	PREFERRED SECURITIES	18,205,600	575,947	850,000	19,055,600	1.5%	0.0%
	CASH AVAILABLE	28,306,651	(27,806,651)	506,651	506,651	0.0%	0.0%
100.0%		1,252,603,114	(0)	28,306,651	1,252,603,114	100%	0.0%

Callan and the Portfolio Administrator have reviewed the asset allocation and recommend that the Cash Available for Investing be deployed into all asset classes excluding market duration bonds.

Given heightened market volatility, in lieu of funding market duration bonds, cash deployed to short duration.

The new asset allocation deviates slightly from the Target and is well within the established rebalancing ranges.

The \$17.5 million additional funding to Parametric (equity) will be invested 60% U.S. and 40% non-US equity (per policy).

\$500,000 is held back in cash per Treasury to assist with timing issues regarding income earned and bond price amortizations.

Fund Activity	9 Months Ended March 31, 2022	FY End June 30, 2021	FY End June 30, 2020	FY End June 30, 2019
Beginning Fund Value (Cash + Investments)	1,333,667,415	1,260,932,051	1,148,213,997	1,033,797,716
Transfers to PSPF:				
State Land Board Rents, Royalties, & NSE Funds	34,799,331	515,169	61,534,527	65,778,937
Marijuana Excise Tax allocation	-	-	-	5,849,826
Escheats Fund	51,032	109,211	158,354	83,705
Realized Gains / (Losses)	4,592,846	7,300,693	8,891,469	256,256
Change in unrealized Market Gain/ (Loss)	(77,798,527)	64,810,291	42,133,704	42,447,558
Ending Market Value	1,295,312,096	1,333,667,415	1,260,932,051	1,148,213,997
*Received SLB funds of \$26.6M in April 2022, total of \$61.4M YTD				
Income / Expense Summary	9 Months Ended March 31, 2022	FY End June 30, 2021	FY End June 30, 2020	FY End June 30, 2019
Total Portfolio Earned Income	23,783,999	21,914,280	31,463,648	29,792,092
Total Expenses	(565,663)	(544,785)	(561,082)	(428,146)
change in income receivable	(293,618)	(434,043)	(507,951)	(194,801)
Net Income Available for Distribution	22,924,718	20,935,452	30,394,615	29,169,145
*\$21M to School Fund met in February				
**Next \$20M to BEST (\$1.9M as of March)				

2022 PLANNING - PUBLIC SCHOOL FUND INVESTMENT BOARD

February 28 Quarterly Meeting

Fund Manager presentation: Parametric
Asset Allocation modeling (total fund level)
Investment Consultant RFP Update

Q-4 Market Update
FY Q-2 Performance Report
YTD Financial Report & Forecast
Rebalancing / Review of unrealized gains/losses

May 16 Quarterly Meeting

Vote on Investment Consultant (May hold separate Meeting in April)
Vote on 1 year extension: MacKay Shields (July 20; total contract end 2025)
Asset class structure review (at portfolio level)
Annual review of IPS
Fund Manager presentation: Janus Henderson

Q-1 Market Update
FY Q-3 Performance Report
YTD Financial Report & Forecast
Rebalancing / Review of unrealized gains/losses

August 15 Quarterly Meeting

Vote on 1 year extension: Janus Henderson (Oct. 11; total contract end 2023)
Vote on Parametric (Nov. 1; total contract end 2022 - May require RFP)
Vote on 1 year extension: Portfolio Administrator (Oct. 25; total contract end 2026)
Tentative: OMA education and review of Communication and Open Meetings Policy required every 3 years
Fund Manager presentation: Maruti More
Review fiscal year end report for submission to State agencies
Board Membership (terms end in August)

Q-2 Market Update
FY End Q-4 Performance Report
YTD Financial Report & Forecast
Rebalancing / Review of unrealized gains/losses

November 14 Quarterly Meeting

Fund Manager presentation: MacKay Shields
Review of Spectrum Preferred Securities Fund - Steve Solomon
Conflict of Interest Policy Acknowledgement & Disclosure
Education presentation by Callan

Q-3 Market Update
FY Q-1 Performance Report
YTD Financial Report & Forecast
Rebalancing / Review of unrealized gains/losses

Other Dates to be set:

New Board member orientation - progression of asset allocation; reporting; IPS
OMA education and review of Communication and Open Meetings Policy required every 3 years
Scheduled for August 2022 (next due Aug. 2025)

SHORT DURATION FIXED INCOME

Q1 2022 Portfolio Review

Presented to:



State of Colorado
Public School Fund
Investment Board

Callan



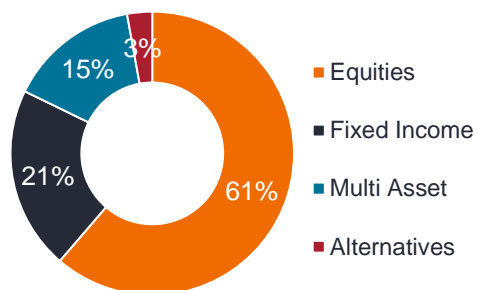
CONTENTS

- Overview – Why Short Duration
- Market/Portfolio Review
- Outlook
- Portfolio Composition and Characteristics
- Appendix

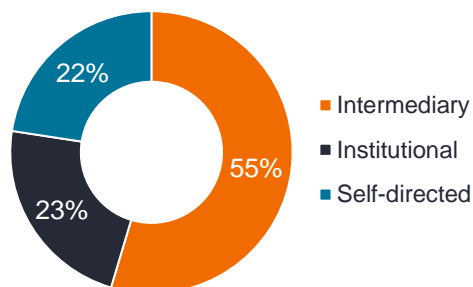
FIRM OVERVIEW

Assets under management: \$361.0B

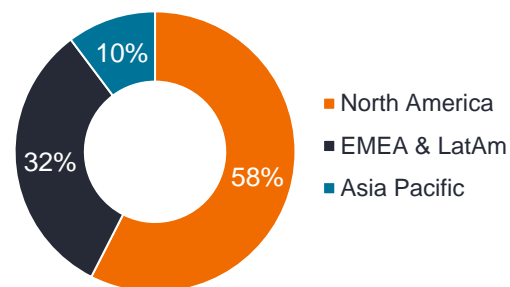
AUM by Capability



AUM by Client Type



AUM by Client Location



KEY STATISTICS

\$361.0B | £274.2B | €324.4B assets under management



**More than
2,000**
Employees worldwide



23
Offices worldwide



12
Portfolio manager
average years at firm



22
Portfolio manager
average years' financial
industry experience

Source: Janus Henderson Investors, as of March 31, 2022.

Note: AUM data excludes Exchange-Traded Note (ETN) assets.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION



WHY JHI SHORT DURATION STRATEGY

A highly liquid, diversified source of income with limited downside risk

- Short duration
 - Low sensitivity to rising interest rates
- Diversified portfolio with high average credit quality
 - Low default risk that can help navigate an end-of-cycle economic environment
- Material yield advantage over cash
 - A significant cushion against further increases in rates and spreads

PERFORMANCE REVIEW

State of Colorado Public School Fund Investment Board

Performance (%)	Q1 2022	1 Year	Since Inception (11/9/18)	YTD*	Since Inception (11/9/18)*
Account – Gross of Fees	-2.66	-2.04	2.14	-3.55	1.82
Account – Net of Fees	-2.71	-2.24	1.93	-3.61	1.61
Bloomberg 1-3 Year Gov't/Credit Index	-2.49	-2.91	1.61	-3.01	1.41
Bloomberg 1-3 Year (85%)/ICE BofA Cash Pay HY BB 1-3Y (15%)	-2.52	-2.53	1.98	-3.18	1.73
Difference (Gross vs. Primary Benchmark)	-0.17	+0.87	+0.53	-0.54	+0.41
Difference (Net vs. Primary Benchmark)	-0.22	+0.67	+0.32	-0.60	+0.20

Calendar Year Performance (%)	2021	2020	2019
Account – Gross of Fees	0.39	4.84	4.55
Account – Net of Fees	0.19	4.63	4.34
Bloomberg 1-3 Year Gov't/Credit Index	-0.47	3.33	4.03
Bloomberg 1-3 Year (85%)/ICE BofA Cash Pay HY BB 1-3Y (15%)	0.08	3.70	4.72
Difference (Gross vs. Primary Benchmark)	+0.86	+1.51	+0.52
Difference (Net vs. Primary Benchmark)	+0.66	+1.30	+0.31

Source: Janus Henderson Investors, as of March 31, 2022 (*as of April 30, 2022).

Note: Primary benchmark: Bloomberg 1-3 Year Gov't/Credit Index.

Past performance cannot guarantee future results. Investing involves risk, including the possible loss of principal and fluctuation of value. Returns greater than one year are annualized. All returns reflect the reinvestment of dividends and other earnings.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

PERFORMANCE ATTRIBUTION – OVERVIEW

State of Colorado Public School Fund Investment Board

One Year Attribution (3/31/21 – 3/31/22)

One Year Performance

State of Colorado Public School Fund (gross) -2.04% vs.
Bloomberg Barclays 1-3 Year Gov't/Credit Index -2.91%

	Attribution (%)
Yield Curve Effect	0.56
Total Excess Performance	0.49
Asset Allocation	0.43
Security Selection	0.06
Portfolio vs Benchmark Price	-0.01
Total Outperformance	1.05

Source: Janus Henderson Investors, as of March 31, 2022.

Note: Performance attribution reflect returns gross of advisory fees and may differ from actual returns as they are based on end of day holdings. Attribution is calculated by geometrically linking daily returns for the portfolio and index.

Yield Curve Effect reflects performance driven by changes in the yield curve and the effect of yield that comes from the yield curve, as opposed to yield derived from credit risk. Portfolio vs. Bench Price is an adjustment to remove the effect of pricing differences of some securities in the portfolio and index due to different pricing sources.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

PERFORMANCE ATTRIBUTION – SECTOR LEVEL

State of Colorado Public School Fund Investment Board

One Year Attribution (3/31/21 – 3/31/22)

	State of CO Public School Fund Investment Board			Bloomberg Barclays 1-3 Year Gov't/Credit Index			Attribution		
Group	Average Weight (%)	Total Return (%)	Excess Return (%)	Average Weight (%)	Total Return (%)	Excess Return (%)	Asset Allocation	Security Selection	Total Excess Performance
Gov't. – Treasuries	30.83	-2.32	0.00	67.61	-3.06	0.00	-0.01	0.00	-0.01
TIPS	3.46	1.82	5.37	—	—	—	0.19	—	0.19
Government Related	0.26	-1.81	1.80	9.98	-2.75	-0.24	0.02	0.01	0.02
Corporates – IG	29.10	-3.29	-0.03	22.41	-2.58	-0.10	0.02	0.06	0.07
Corporates – HY	8.35	-0.99	2.42	0.02	-1.67	-1.43	0.20	—	0.20
Bank Loans	1.02	2.09	2.05	—	—	—	0.01	—	0.01
U.S. MBS	5.01	-1.56	0.69	—	—	—	0.05	—	0.05
ABS	8.96	-1.44	0.50	—	—	—	0.06	—	0.06
CMBS	6.30	-0.16	-0.14	—	—	—	-0.01	—	-0.01
CMO	4.55	-0.88	-0.88	—	—	—	-0.08	—	-0.08
CLO	1.22	0.72	0.72	—	—	—	0.00	—	0.00
Cash and Equivalents	1.89	—	—	—	—	—	0.00	—	0.00
Total	100.00		0.45	100.00		-0.04	0.43	0.06	0.49

Source: Janus Henderson Investors, as of March 31, 2022. Sector allocation – Bloomberg Barclays.

Note: Performance attribution reflect returns gross of advisory fees and may differ from actual returns as they are based on end of day holdings. Attribution is calculated by geometrically linking daily returns for the portfolio and index.

Total excess performance compares the excess return of a grouping in the portfolio to the excess return of that grouping in the benchmark and the excess return of that grouping in the benchmark to the benchmark overall, factoring in any difference in weight. Excess return is calculated by comparing the performance of a security to a hypothetical duration-matched security with no credit risk and rolling up securities by grouping.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

MARKET/PORTFOLIO REVIEW

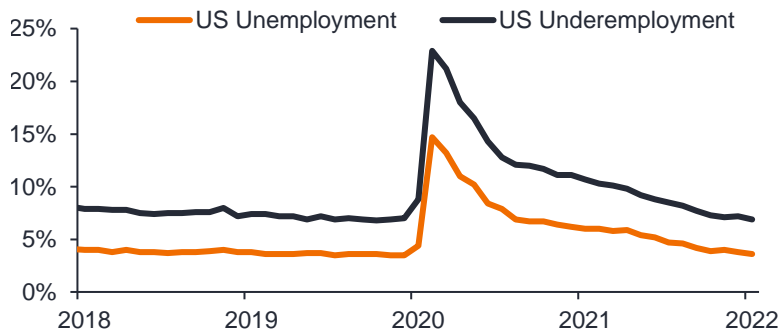
FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

Janus Henderson
— INVESTORS —

LABOR MARKET TIGHTNESS AND SUPPLY CONSTRAINTS CAUSED CONCERNS

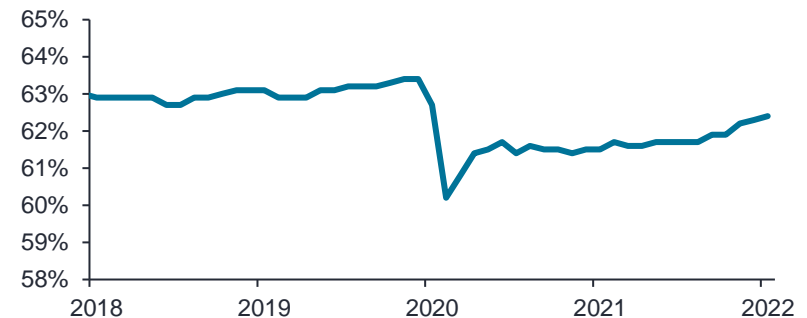
Unemployment Rate

(3/31/18 – 3/31/22)



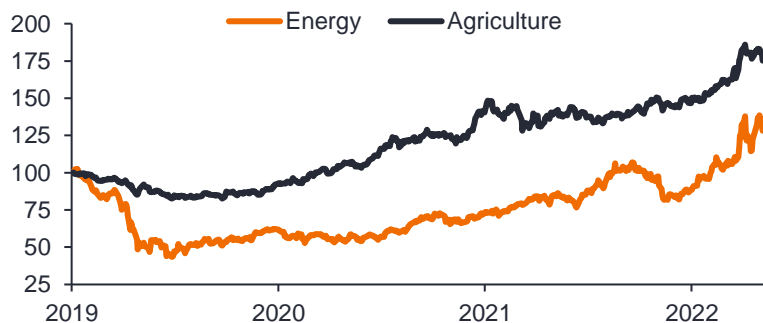
Labor Participation Rate

(3/31/18 – 3/31/22)



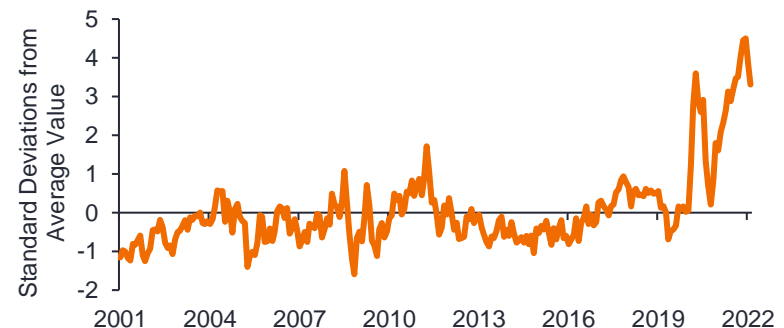
Commodities

(12/31/19 – 3/31/22)



Supply Constraints

(1/1/01 – 2/28/22)



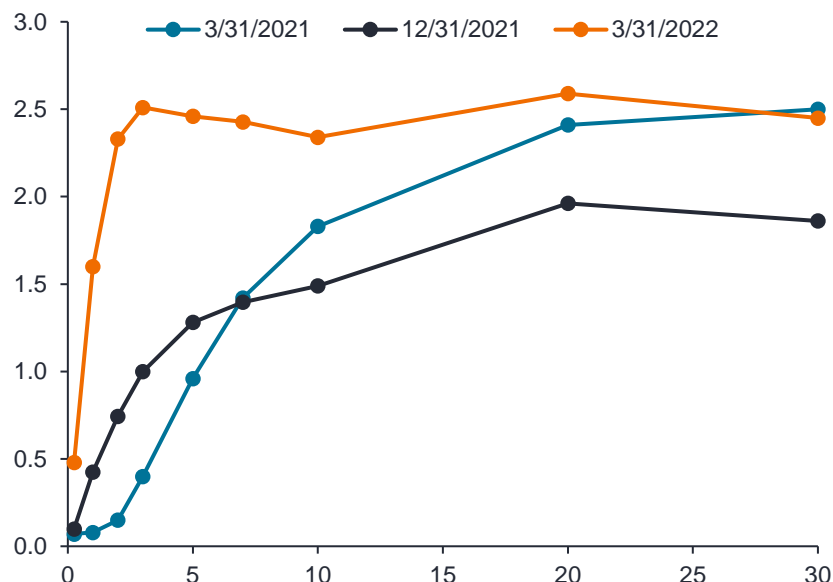
Source: Bloomberg, U.S. Census Bureau and Wolfe Research, Bureau of Labor Statistics, as of date indicated.

Note: Commodities chart indexed to 100.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

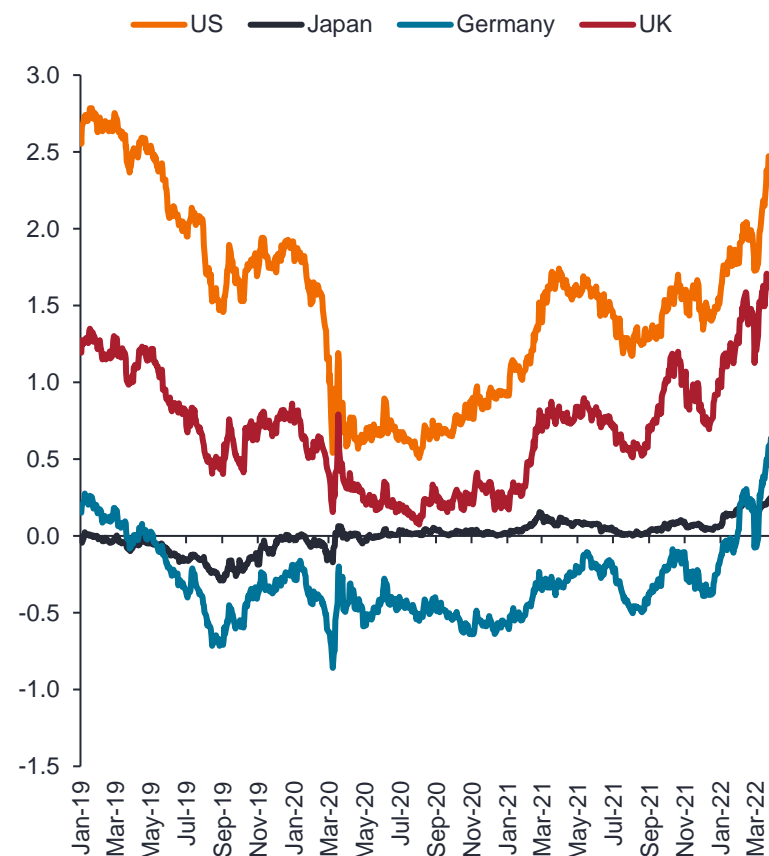
FRONT-END YIELDS SPIKE AND CURVE FLATTENS

U.S. Yield Curve (%)



Curve	3 Month	6 Month	1 Year	3 Year	5 Year	10 Year	30 Year
3/31/21	0.07	0.04	0.08	0.40	0.96	1.83	2.50
12/31/21	0.10	0.22	0.43	1.00	1.28	1.49	1.86
3/31/22	0.48	1.01	1.60	2.51	2.46	2.34	2.45
Change 4Q – 1Q	+0.38	+0.79	+1.17	+1.51	+1.18	+0.85	+0.59

10 Year Global Treasury Yields (%)

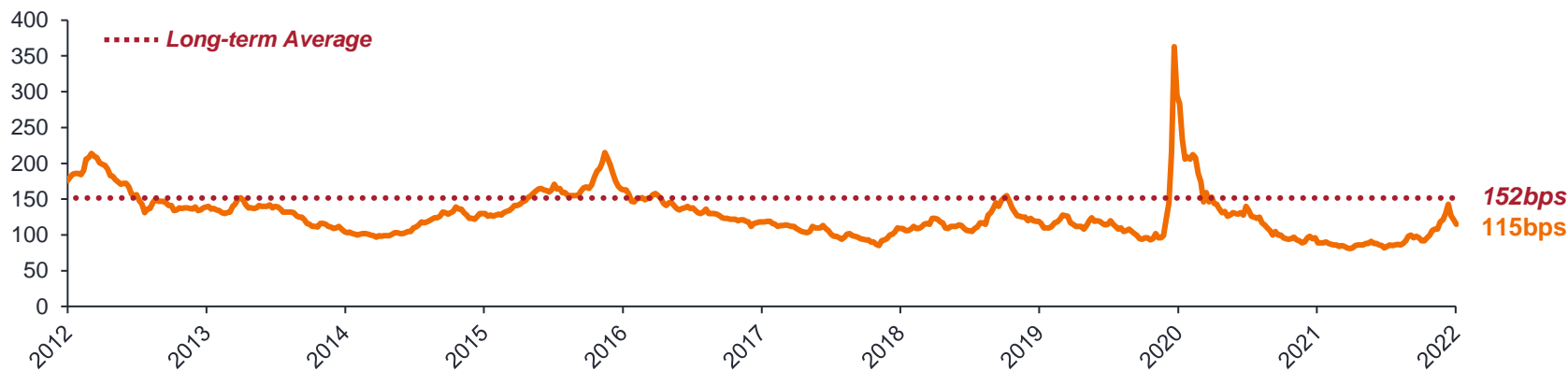


Source: Bloomberg, as of March 31, 2022.

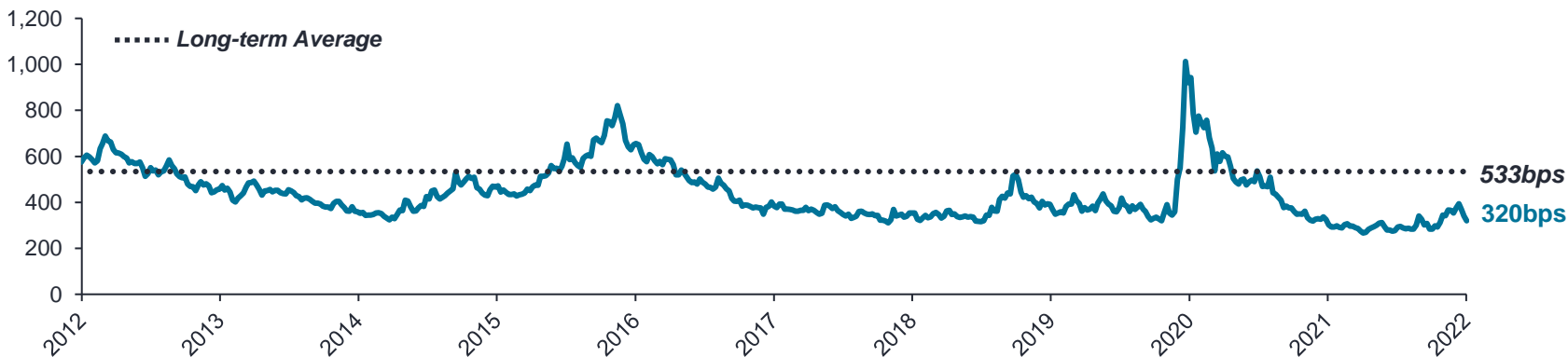
FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

SPREADS WIDEN IN THE FIRST QUARTER

Investment Grade Credit Spreads (bps)



High Yield Credit Spreads (bps)



Source: Bloomberg, as of March 31, 2022. Long-term average dates back to March 31, 2000.

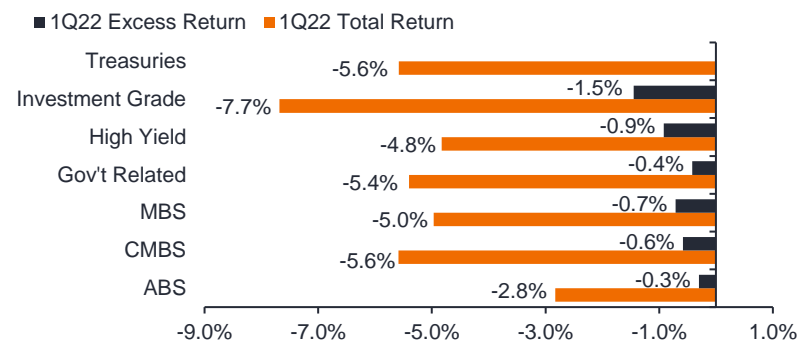
FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

RATE RISE AND SPREADS WIDENING HURT TOTAL AND EXCESS RETURNS

Spread products underperform

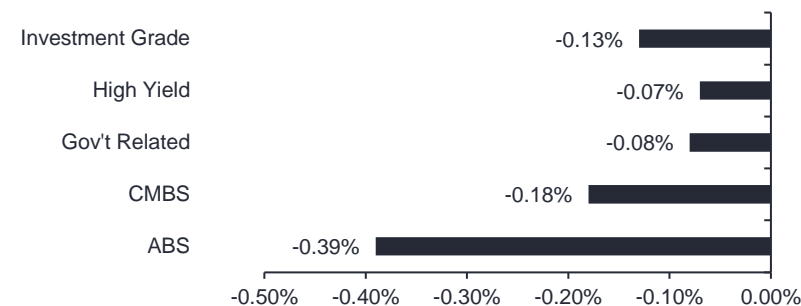
Total Return and Excess Return (%)

1Q 2022 (12/31/21 – 3/31/22)

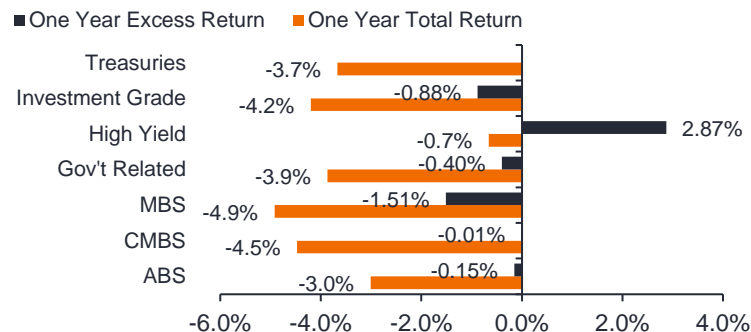


Excess Return Per Unit of DTS

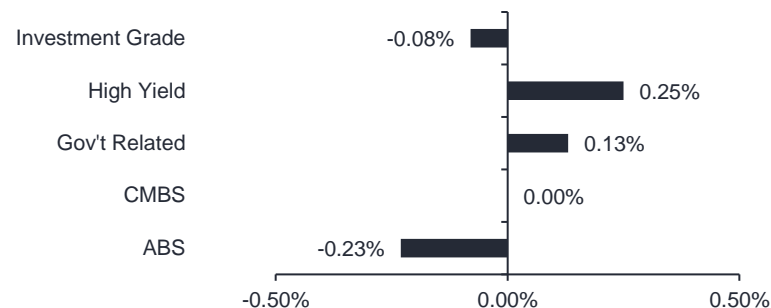
1Q 2022 (12/31/21 – 3/31/22)



One Year (3/31/21 – 3/31/22)



One Year (3/31/21 – 3/31/22)



Source: Janus Henderson Investors and Bloomberg, as of March 31, 2022.

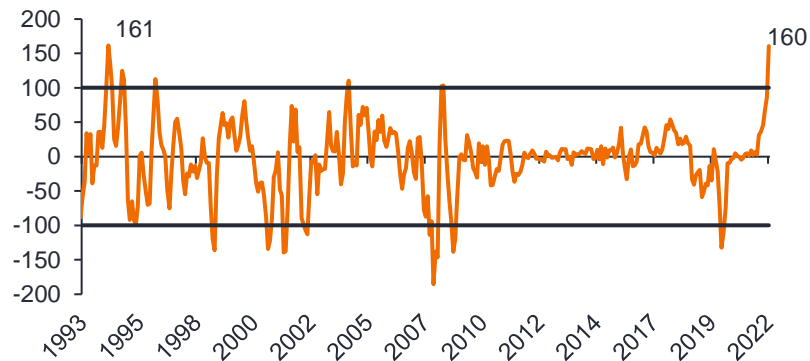
Note: Excess return is calculated vs Treasuries. Excess returns per unit of DTS are based on index monthly excess returns linked using the Carino method and divided by the average beginning of month DTS for the selected partition. DTS is Duration Times Spread.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

HIGHLY UNUSUAL QUARTER

Uncharacteristic move in rates and spreads

3M Change in 2Y Rates (Basis points)

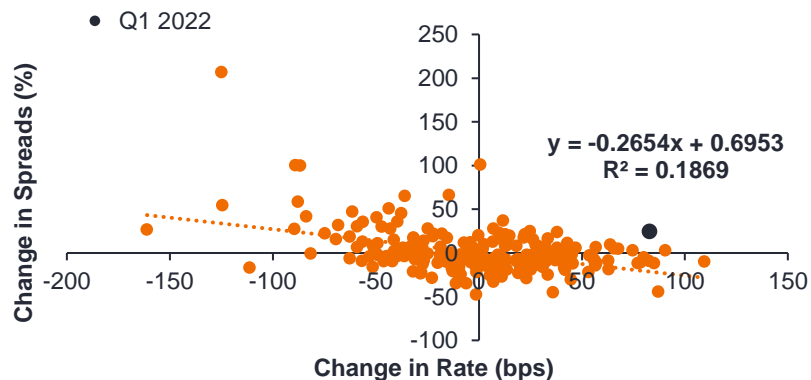


Change in Yield and Spread

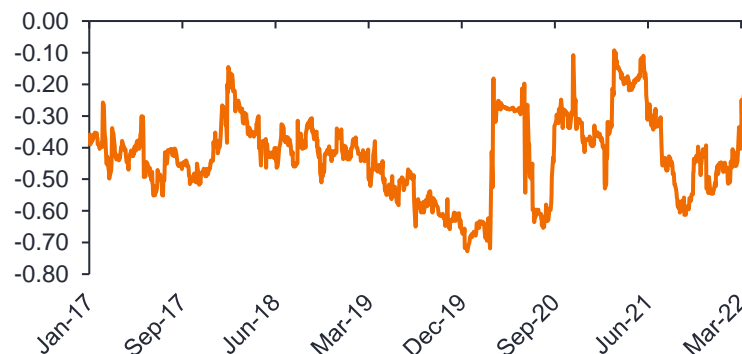
	Change	Weighted Z-score
2-Year Treasury Yield	160 bps	5.0
5-Year Treasury Yield	120 bps	3.7
10-Year Treasury Yield	83 bps	2.6
30-Year Treasury Yield	55 bps	1.8
IG Corporate Spread	24%	0.8
HY Corporate Spread	13%	0.5
CMBS Spread	25%	0.7

% IG OAS Change vs. 10- Year Yield Change

Rolling 3M Changes (December 2002 – March 2022)



Correlation of IG OAS Change and 10-Year Yield Change (Rolling 3M correlation using daily data)



Source: Janus Henderson Investors and Bloomberg, as of March 31, 2022.

Note: Weighted Z-score: Ratio of the Actual Move in market variable to the move projected by the Bloomberg Risk Model over the time period using the Weighted Risk Model.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

OUTLOOK AND POSITIONING

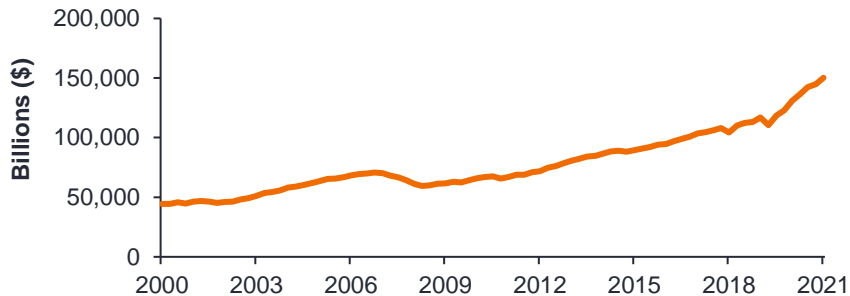
FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

Janus Henderson
— INVESTORS —

CORPORATIONS AND U.S. HOUSEHOLDS REMAIN IN A GOOD POSITION

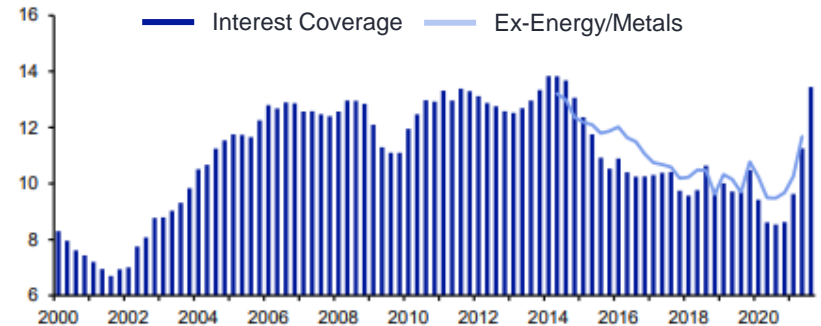
Supportive of GDP expectations

U.S. Household and Nonprofit Net Worth (Quarterly, 12/31/00 – 12/31/21)

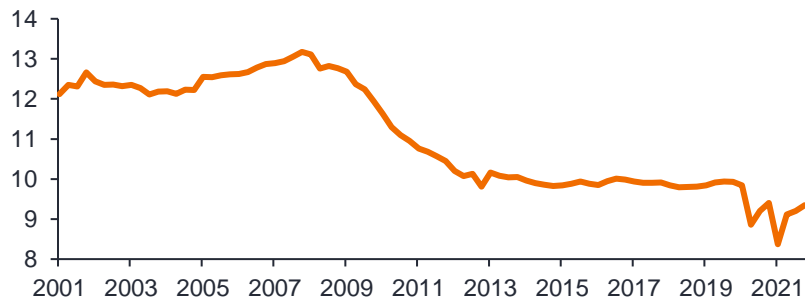


Source: Federal Reserve, Bloomberg, as of December 31, 2021.

U.S. Investment Grade Interest Coverage (1/1/00 – 12/31/21)



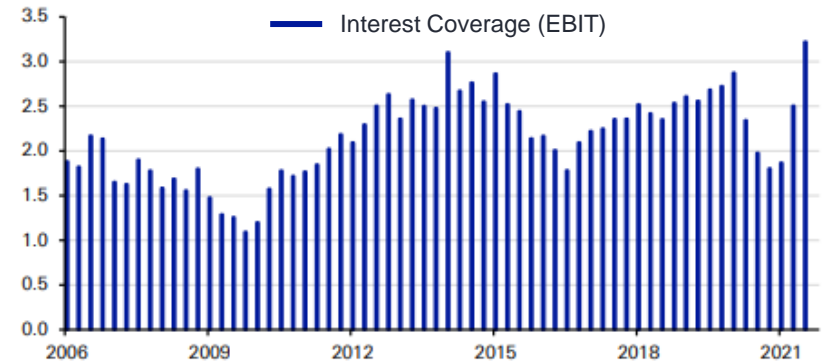
Household Debt Service Payments (% of Disposable Personal Income, 1/1/01 – 10/1/21)



Source: Federal Reserve Economic Data, as of October 2021.

Note: Quarterly data, seasonally adjusted

U.S. High Yield Interest Coverage



Source: DB, Global Credit Chart Book, Jim Reid, distributed on January 22.

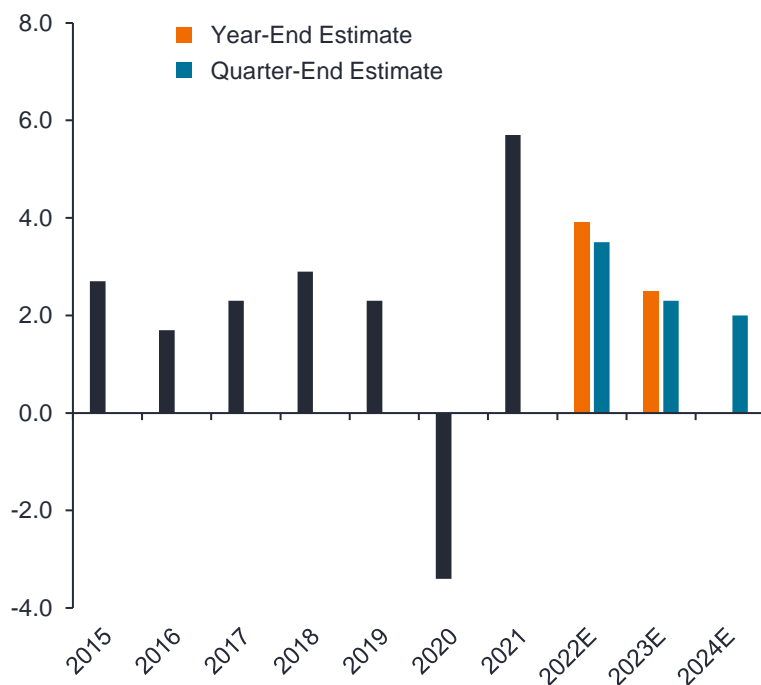
FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

US GROWTH EXPECTATIONS COMING DOWN

Expectations for corporate earnings growth remain good

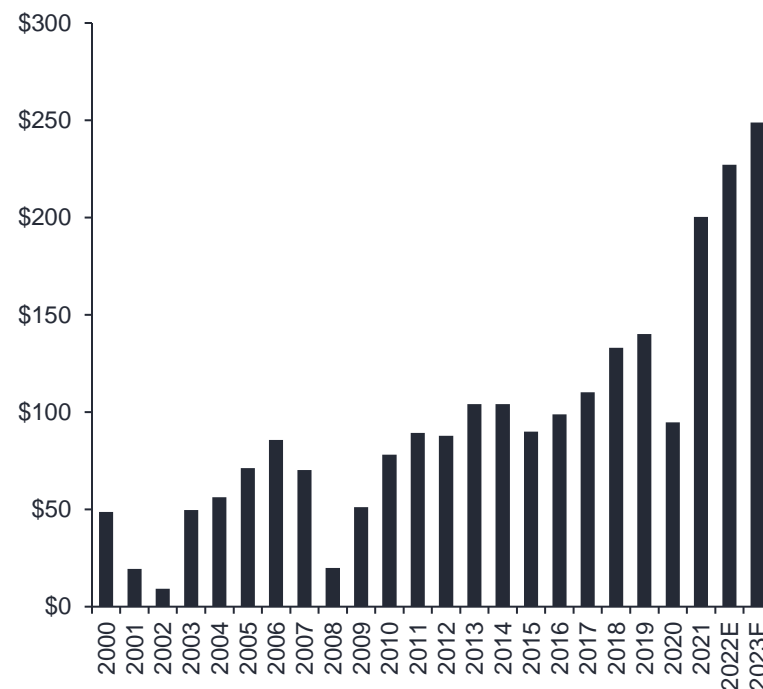
US Real GDP (YOY%)

% change, year-over-year



S&P 500 Earnings per Share

Index annual operating earnings



Source: Bloomberg; World Bank Group, as of March 31, 2022.

Note: YE'22, and '23 are based on estimates as of December 31, 2021.

QE'22, '23 and '24 are based on estimates as of March 31, 2022.

Source: S&P 500 earnings and estimate report, as of March 31, 2022.

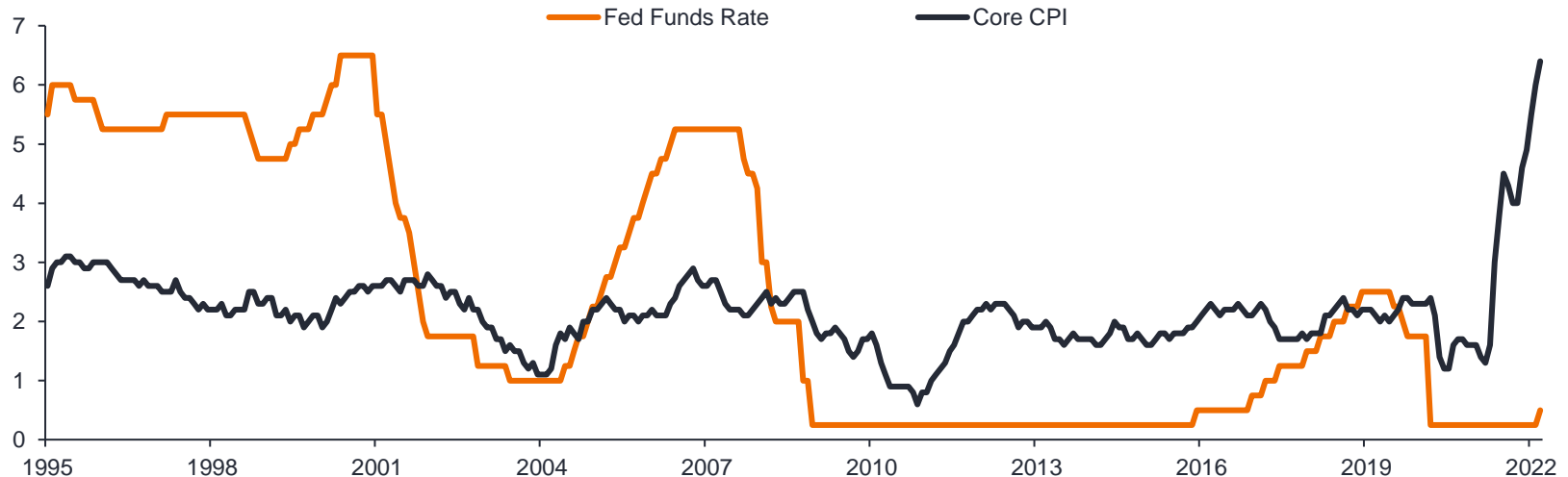
Note: YE'22 and YE'23 are estimates.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

HIGH INFLATION & LOW UNEMPLOYMENT DRIVING MORE AGGRESSIVE FED POLICY

Federal Funds Rate (%) and Core CPI (YoY)

FOMC and market expectations for the federal funds rate



“The labor market has continued to strengthen and is extremely tight... Inflation remains well above our longer-run goal of 2 percent... The median inflation projection of FOMC participants is 4.3 percent this year and falls to 2.7 percent next year and 2.3 percent in 2024; this trajectory is notably higher than projected in December, and participants continue to see risks as weighted to the upside... The median projection for the appropriate level of the federal funds rate is 1.9 percent at the end of this year, a full percentage point higher than projected in December.”

Jerome Powell, Chair of the Federal Reserve
The Federal Reserve's Press Conference – March 16, 2022

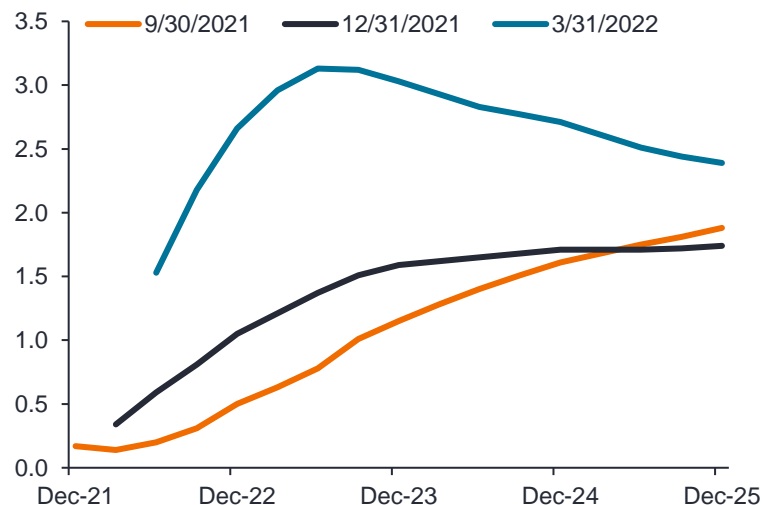
Source: Bloomberg, as of March 31, 2022.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

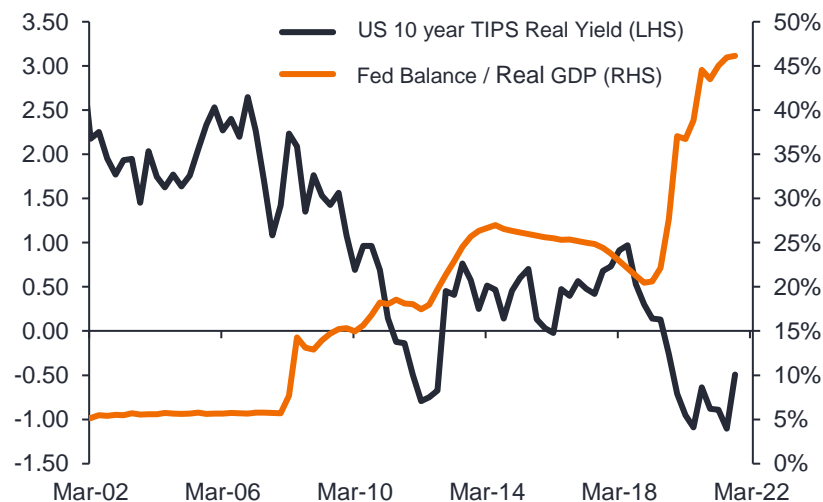
STILL MODESTLY UNDERWEIGHT INTEREST RATE RISK; REMOVED FLATTENER

- Persistent supply constraints, wage pressure, and Fed tapering still putting upward pressure on rates
- Market pricing of policy rate changes is reasonable for next 12 months; disagree with view that Fed will lower policy rate later in 2023; curve should steepen
- Real yields still too low: expect real yields to rise further as Fed shrinks balance sheet

3 Month USD LIBOR Forwards (%)



Federal Reserve Balance Sheet/Real GDP



Source: Bloomberg Research, as of March 31, 2022.

Note: Data implied from market levels and not guaranteed.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

VALUATIONS CHEAPENING BUT CONCERNS AROUND FUTURE ECONOMIC ENVIRONMENT RISING

Option Adjusted Spread (bps)

(12/31/99 – 3/31/22)

Index	12/31/2020	3/31/2021	6/30/2021	9/30/2021	12/31/2021	3/31/2022	Current Percentile Ranking (%)
Investment Grade Corporate Bond Index	96	91	80	84	92	115	33.5%
High Yield Corporate Bond Index	360	310	268	289	283	320	9.0%
BBB-Rated Corporate Bond Index	121	112	100	104	113	140	28.3%
BB-Rated Corporate Bond Index	264	227	200	203	194	226	15.2%
B-Rated Corporate Bond Index	379	334	294	327	313	335	15.8%
CMBS Index	81	71	59	61	68	85	36.1%
ABS Index	33	35	22	29	38	57	35.5%

Source: Bloomberg, as of March 31, 2022.

Note: Percentile ranking calculated using month end data.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

FIXED INCOME PORTFOLIO THEMES

Ideas spanning corporates and securitized assets

UP IN QUALITY



- Shifting credit to AAA/AA/A rated securities by selling HY BBs and Bs
- Prefer As to BBBs and BBBs to BBs
- Added high quality front end securitized
- HY allocation focused on Rising Stars / Cross Overs

SECURITIZED



- Diversification and carry per unit of risk – short and high quality
- Discount priced CMBS in strong sectors like industrial and logistics with cash out incentive for sponsors

RESIDENTIAL MBS



- Residential Mortgage Credit
- Agency eligible investor pools issued in Private Label Securitizations
- Reduced agency MBS underweight as spreads and volatility have risen

FINANCIALS



- Heavy primary issuance driving high quality Banking dislocations
- Attractive new issue discounts on top of wide valuations
- Screens very attractive with quantitative tools
- Strong balance sheets and capital ratios

PORTFOLIO COMPOSITION

Characteristics	State of CO Public School Fund Investment Board	Bloomberg Barclays 1-3 Year Gov't/Credit Index
Number of Issues	223	1,630
Yield to Worst (%)	2.79	2.37
Effective Duration	2.07	1.84
DTS*	2.05	0.20

Asset Allocation (%)	(as of 3/31/21)		(as of 3/31/22)	
	Portfolio	Benchmark	Portfolio	Benchmark
Treasuries	18.1	66.5	39.0	68.7
Inflation Linked	—	—	—	—
Corporate – Inv Grade	40.5	22.6	24.6	21.7
Corporate – High Yield	10.2	—	7.8	—
Bank Loans	0.6	—	0.3	—
MBS	3.4	—	4.0	—
CMO	4.0	—	6.7	—
ABS	9.8	—	8.9	—
CMBS	5.1	—	7.0	—
Gov't. Related	0.2	10.2	0.3	9.1
Cash & Equivalent	3.4	—	1.5	—

Source: Janus Henderson Investors, as of March 31, 2022.

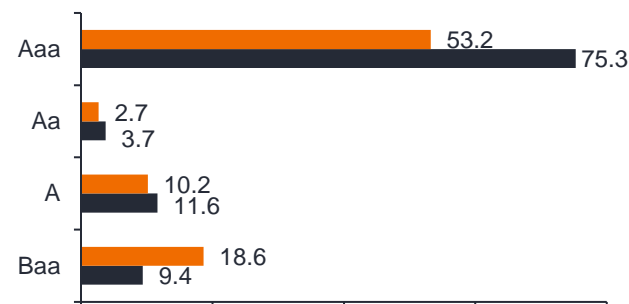
Note: Bond credit quality ratings provided by Barclays and reflect the middle rating received from Moody's, Standard & Poor's and Fitch, where all three agencies have provided a rating. If only two agencies rate a security, the lowest rating is used. If only one agency rates a security, that rating is used. Ratings are measured on a scale that ranges from Aaa (highest) to D (lowest). Equity equivalents may include common and preferred stock.

***Duration Times Spread (DTS)** is the market standard method for measuring the credit volatility of a corporate bond. It is calculated by simply multiplying two readily available bond characteristics: the spread-durations and the credit spread. Portfolio includes 4.2% of securities that are in the index but not rated by S&P or Moody's, but that have a rating by Fitch.

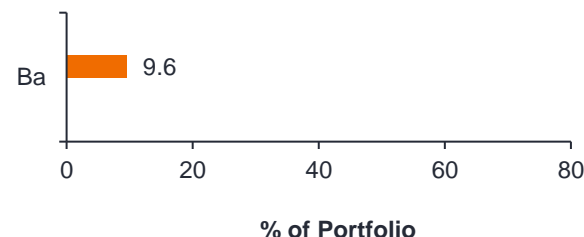
Credit Quality – Blended Credit Rating

■ State of Colorado Public School Fund Investment Board
■ Bloomberg Barclays 1-3 Year Gov't/Credit Index

Investment Grade



Below Investment Grade



APPENDIX

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

EXECUTIVE SUMMARY

State of Colorado Public School Fund Investment Board – as of March 31, 2022

Quarterly Review

- The Portfolio underperformed its benchmark, the Bloomberg Barclays 1-3 Year Gov't/Credit Index, for the quarter ended March 31, 2022.
- Our overweight to credit sectors, including out-of-index exposure to high yield corporate bonds and securitized products such as collateralized mortgage obligations (CMOs), commercial mortgage-backed securities (CMBS) and asset-backed securities, detracted.
- Relative underperformance was driven by the Fund's positioning relative to the U.S. Treasury yield curve.

Portfolio Positioning

- As the Fed became increasingly hawkish, short-dated yields rose, and the Ukraine crisis deepened, we increased the Fund's duration (a measure of sensitivity to interest rate changes). Our objective is to generate moderate income from credit spread sectors while limiting drawdowns. To do this, we construct the portfolio with credit risk and a modest amount of interest rate risk. Historically these two risk factors have negative correlations, for example as Treasury yields rise, credit spreads tighten. However, during the quarter Treasury yields and credit spreads both moved sharply higher with a positive correlation, so both factors detracted from performance.
- We reduced our exposure to bank loans and collateralized loan obligations (CLOs); these floating-rate markets had strong performance over the quarter as a result of the rapid rise in interest rates. Proceeds were used to add back to investment-grade corporate bonds whose valuations became more attractive with the quarter's underperformance. Within securitized products, we added to our CMBS allocation in sectors that we thought would be more likely to outperform irrespective of the strength of the broader economy, such as multi-family housing. Finally, we shifted some of our MBS exposure into CMOs backed by investor-owned homes that had cheapened as a result of supply-related technical factors.

Source: Janus Henderson Investors, as of March 31, 2022.

Note: *Duration Times Spread (DTS) is the market standard method for measuring the credit volatility of a corporate bond. It is calculated by simply multiplying two readily available bond characteristics: the spread-durations and the credit spread.

Summary Information

Inception Date	Nov 9, 2018
Assets	\$98,219,247
Yield-to-Worst	2.79
Effective Duration	2.07
Duration Times Spread (DTS)*	2.05

Sector Allocation	Weight %
Treasuries	39.0
Inflation Linked	—
Corporate – Inv Grade	24.6
Corporate – High Yield	7.8
Bank Loans	0.3
MBS	4.0
CMO	6.7
ABS	8.9
CMBS	7.0
Government Related	0.3
Cash & Equivalents	1.5

PERFORMANCE ATTRIBUTION – OVERVIEW

State of Colorado Public School Fund Investment Board

Q1 2022 Attribution (12/31/21 – 3/31/22)

	Attribution (%)
Yield Curve Effect	0.16
Total Excess Performance	-0.27
Asset Allocation	-0.21
Security Selection	-0.06
Portfolio vs Benchmark Price	0.01
Total Outperformance	-0.10

Key Takeaways – Performance Drivers

Q1 2022 Performance:

State of Colorado Public School Fund (gross) -2.59% vs.
Bloomberg Barclays 1-3 Year Gov't/Credit Index -2.49%

- Relative underperformance was driven by our asset allocation overweight to spread risk. Out-of-index allocations to collateralized mortgage obligations (CMO), commercial mortgage-backed securities (CMBS), and high yield corporate bonds detracted from relative returns.
- Positioning relative to the U.S. Treasury yield curve contributed to returns.
- Positioning in U.S. agency mortgage-backed securities (MBS) supported relative results.
- At the industry and security level, our selection within investment-grade corporate bonds detracted from relative returns.

Source: Janus Henderson Investors, as of March 31, 2022.

Note: Performance attribution reflect returns gross of advisory fees and may differ from actual returns as they are based on end of day holdings. Attribution is calculated by geometrically linking daily returns for the portfolio and index.

Yield Curve Effect reflects performance driven by changes in the yield curve and the effect of yield that comes from the yield curve, as opposed to yield derived from credit risk. Portfolio vs. Bench Price is an adjustment to remove the effect of pricing differences of some securities in the portfolio and index due to different pricing sources.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

PERFORMANCE ATTRIBUTION – SECTOR LEVEL

State of Colorado Public School Fund Investment Board

Q1 2022 Attribution (12/31/21 – 3/31/22)

	State of CO Public School Fund Investment Board			Bloomberg Barclays 1-3 Year Gov't/Credit Index			Attribution		
Group	Average Weight (%)	Total Return (%)	Excess Return (%)	Average Weight (%)	Total Return (%)	Excess Return (%)	Asset Allocation	Security Selection	Total Excess Performance
Gov't. – Treasuries	37.95	-2.07	0.00	68.64	-2.52	0.00	-0.03	0.00	-0.03
TIPS	0.50	-2.48	0.58	—	—	—	0.00	—	0.00
Government Related	0.34	-2.92	-0.17	9.61	-2.39	-0.28	0.02	0.00	0.02
Corporates – IG	23.20	-3.61	-0.70	21.76	-2.48	-0.40	0.00	-0.06	-0.06
Corporates – HY	8.45	-3.49	-0.41	—	—	—	-0.03	—	-0.03
Bank Loans	1.23	0.28	0.31	—	—	—	-0.01	—	-0.01
U.S. MBS	4.11	-4.36	0.06	—	—	—	0.01	—	0.01
ABS	8.21	-1.89	-0.26	—	—	—	-0.01	—	-0.01
CMBS	7.00	-0.85	-0.80	—	—	—	-0.05	—	-0.05
CMO	6.32	-3.67	-1.64	—	—	—	-0.11	—	-0.11
CLO	1.80	-0.18	-0.12	—	—	—	0.00	—	0.00
Cash and Equivalents	1.13	—	—	—	—	—	0.00	—	0.00
Total	100.00		-0.38	100.00		-0.11	-0.21	-0.06	-0.27

Source: Janus Henderson Investors, as of March 31, 2022. Sector allocation – Bloomberg Barclays.

Note: Performance attribution reflect returns gross of advisory fees and may differ from actual returns as they are based on end of day holdings. Attribution is calculated by geometrically linking daily returns for the portfolio and index.

Total excess performance compares the excess return of a grouping in the portfolio to the excess return of that grouping in the benchmark and the excess return of that grouping in the benchmark to the benchmark overall, factoring in any difference in weight. Excess return is calculated by comparing the performance of a security to a hypothetical duration-matched security with no credit risk and rolling up securities by grouping.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

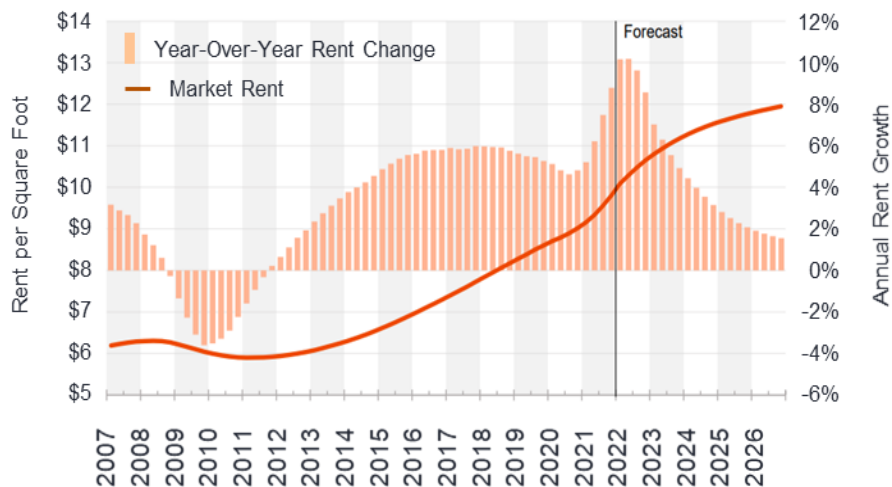
CMBS: INDUSTRIAL COMMERCIAL REAL ESTATE

Attractive Fundamentals, Relative Value, and Convexity

Industrial commercial real estate has benefited from secular tailwinds (e.g. rise of E-commerce) and a massive supply shortage, resulting in sustained rent growth and continued increases in asset values.

Recent significant increases in borrowing costs have not outweighed the equity cash out opportunity for property owners.

Industrial Rent Growth: Base Case Forecast



Source: Janus Henderson Investors, as of March 31, 2022.

	CMBS (new) AAA	CMBS (2020) AAA
Loan Coupon Spread	271 bps	225 bps
Origination LTV - Total Debt	79%	63.9%
Mark-to-Market LTV - Total Debt	79%	43.9%
Potential Equity Cashout %	0%	35.1%

SASB CMBS offers larger than normal spread pick-up vs. corporates. Sector property price appreciation results in more attractive investment opportunities in secondary CMBS bonds.

- Lower Mark-to-Market LTV
- Discount dollar prices results in returns upside due to positive convexity

	CMBS (new) AAA	CMBS (2020) AAA	Single-A Corp
Tranche LTV (MtM)	28%	22%	15-20%
Spread (Max Ext)	155 bps	123 bps	60 bps
Spread (Early Takeout)	163 bps	235 bps	60 bps
Price	99.75	99.19	Varies
WAL (Max Ext)	5.0 yrs	3.6 yrs	5.0 yrs
WAL (Early Takeout)	2.0 yrs	0.6 yrs	5.0 yrs

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

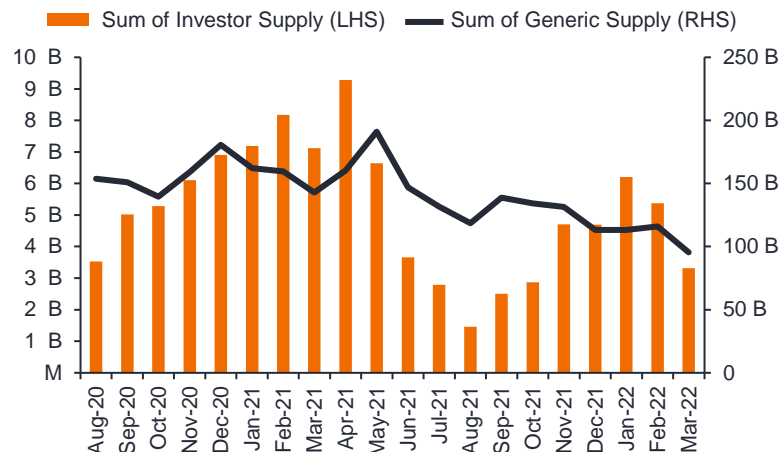
AGENCY MORTGAGES IN PRIVATE LABEL WRAPPERS

Investor supply / demand imbalances create opportunity in agency mortgage market

KEY TAKEAWAYS

- In January 2021, new Trump era regulations limit GSEs' acquisitions of investor loans forcing originators to use private-label securitizations (PLS)
- Increased supply of PLS caused them to underperform
- After Biden's election, the new FHSA director suspended the previous administration's amendments to the PSPA
- Supply/demand imbalances of PLS should be temporary as originators now package investor loans into Agency MBS
- Technicals are supportive of PLS at current valuations as they maintain comparable risk profiles relative to Agency MBS (i.e. de minimis credit risk)
- PLS offer attractive prepayment preservation as the refinancing process is cumbersome/expensive for investor versus generic loans

Investor Property Supply



Private-Label Security vs Agency Mortgage

Bond	Rating	OAS	OAD	OAC	ZV
Private-Label Security	AAA	70	5.40	(1.2)	103
Agency Investor 3s	AAA	18	5.34	(1.4)	84

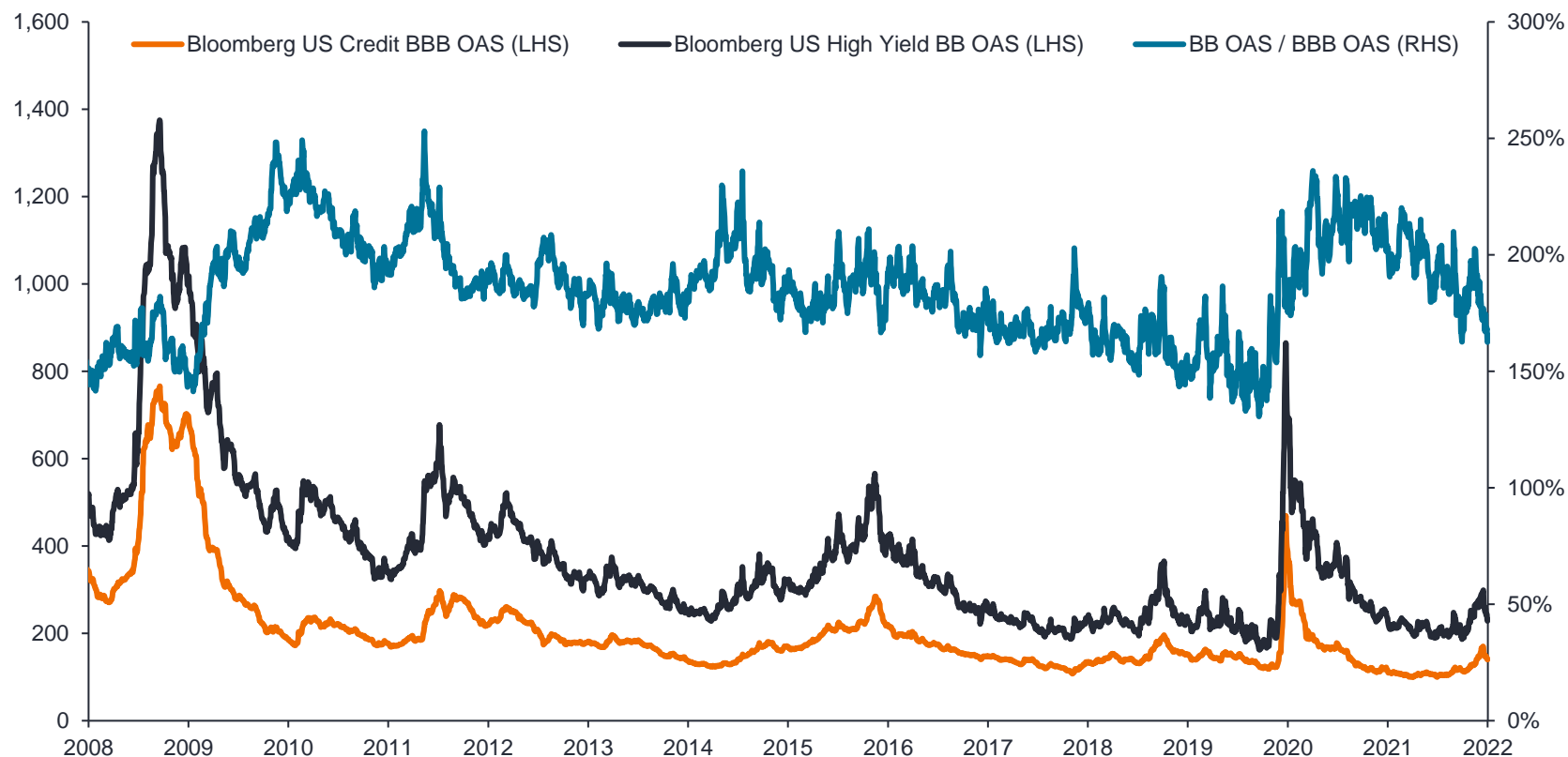
Source: Janus Henderson Investors, as of March 31, 2022.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

BB-RATED LOOK LESS ATTRACTIVE VERSUS BBB AS SPREAD RATIO COMPRESSES

BBB and BB Option Adjusted Spread (OAS)

(12/31/07 – 3/31/22)



Source: Bloomberg, as of March 31, 2022.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

SHORT DURATION FLEXIBLE BOND FUND TEAM AND RESEARCH SUPPORT



Jim Cielinski, CFA
Global Head of Fixed Income
Head of Corporate Credit
(39 years)



Greg Wilensky, CFA
Head of U.S. Fixed Income
Portfolio Manager
(29 years)



Michael Keough
Portfolio Manager
(16 years)



Seth Meyer, CFA
Portfolio Manager
(24 years)



Phil Gronniger, CFA
Client Portfolio Manager
(23 years)

Credit Research

(21 Analysts, 16 average years)

John Lloyd

Co-head of Global Credit
Research, Portfolio Manager
(24 years)

Andrew Griffiths

Co-head of Global Credit
Research, Analyst
(28 years)

Securitized Research

(11 Analysts, 10 average years)

John Kerschner, CFA

Head of U.S. Securitized Products, Portfolio Manager
(32 years)

Firm Resources

Quantitative Research

2 Analysts
(13 average years)

Risk Management

5 Analysts
(13 average years)

Fixed Income Trading

13 Traders
(22 average years)

Equity Research

35 Analysts
(17 average years)

Source: Janus Henderson Investors, as of March 31, 2022.

Note: Years refer to financial industry experience.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

GLOBALLY INTEGRATED FIXED INCOME PLATFORM

Team culture of research, partnership and sharing of global insights

\$95B in Fixed Income AUM*

113 FI Investment Professionals

- 41 portfolio managers
- 49 research analysts
- 13 trader/dealers
- 9 client portfolio managers

20 Years Experience

Portfolio managers' average years in financial industry

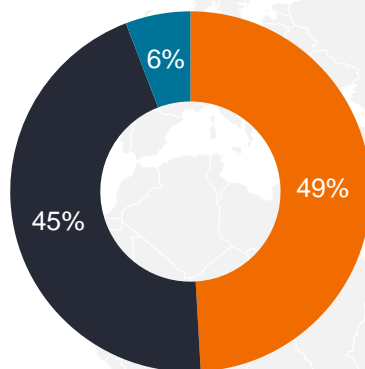
16 Years Experience

Global credit analysts average years in financial industry

Global Team

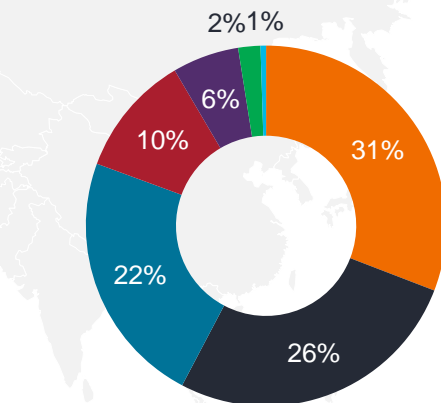
Based in London, Denver,
Newport Beach, Sydney, Melbourne

AUM by Client Type



Institutional	\$37.2B
Intermediary	\$34.0B
Self Directed	\$4.3B

AUM by Client Location



United Kingdom	\$23.3B
North America	\$20.5B
Australia	\$17.5B
Continental Europe	\$7.9B
Japan	\$4.4B
Middle East	\$1.2B
Asia ex-Japan	\$346M
Latin America	\$291M

Source: Janus Henderson Investors, as of March 31, 2022.

Note: *Includes \$19B of fixed income AUM from asset allocation strategies.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

KEY STRENGTHS

Janus Henderson Flexible Bond Fund



OUR TEAM

- Culture of **collaboration** and **global integration** is the cornerstone to our team's success
- **Research-first** mentality
- Centralized research and debate forums, de-centralized and nimble portfolio decision making



DISCIPLINED RISK BUDGETING

- Disciplined investment process targets repeatable performance
- **Structural foundation**, a better starting point
- Objective translation of research into portfolio positioning



HIGH CONVICTION

- High-conviction idea generation across a diverse set of return sources
- Bottom-up research most consistent driver of value add
- **Dynamic allocation** through market cycles

Note: Any risk management process discussed includes an effort to monitor and manage risk which should not be confused with and does not imply low risk or the ability to control certain risk factors.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

INVESTMENT PROCESS OVERVIEW

Driving repeatable outcomes by combining research insights with a disciplined process



GLOBAL RESEARCH

Culture of collaboration and global integration

STRUCTURAL FOUNDATION



**Client Objectives
Market Inefficiencies**

DYNAMIC ALLOCATION



Rates | Spreads | Sector

SECURITY SELECTION



**Corporate | Securitized |
Government**



RISK MANAGEMENT

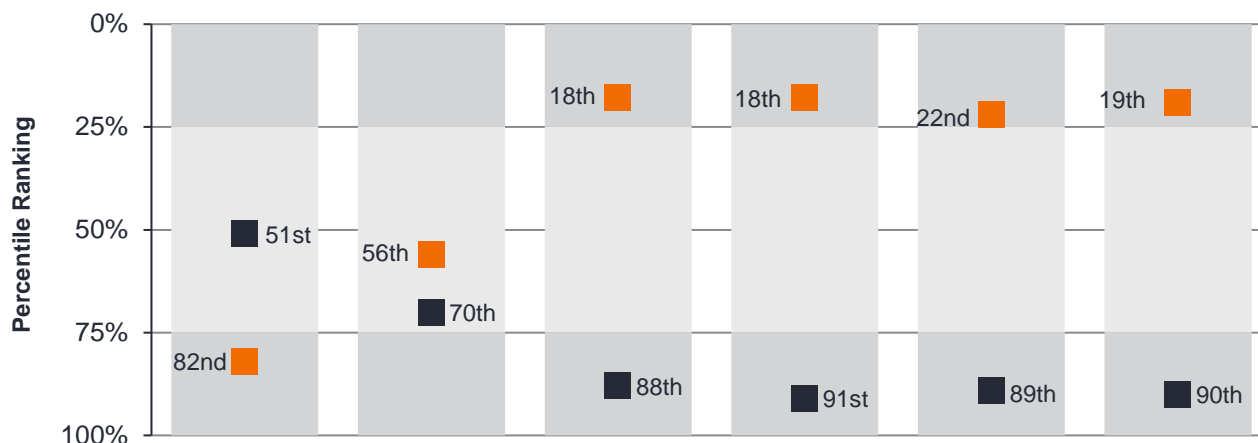
Embedded at every step

Note: There is no assurance that the investment process will consistently lead to successful investing.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

HISTORY OF OUTPERFORMANCE

Short Duration composite as of March 31, 2022



Performance – USD (%)	Q1 2022	1 Year	3 Year	5 Year	10 Year	Since Inception
Composite (Gross)	-3.12	-2.59	1.83	2.01	1.90	4.20
Composite (Net)	-3.26	-3.13	1.27	1.45	1.45	3.65
Bloomberg 1-3 Year U.S. Gov't/Credit Index	-2.49	-2.91	1.02	1.26	1.09	3.50
Difference (gross vs index)	-0.63	+0.32	+0.81	+0.75	+0.81	+0.70

Source: Janus Henderson Investors, as of March 31, 2022. eVestment® is a registered trademark of eVestment Alliance.

Note: Composite: Janus Henderson Short Duration, gross of fees, in USD. Returns greater than one year are annualized.

Benchmark: Bloomberg 1-3 Year U.S. Government/Credit Index. Composite Inception: January 1, 1993.

Past performance cannot guarantee future results. Investing involves risk, including the possible loss of principal and fluctuation of value. Returns greater than one year are annualized. Please see the appendix for the GIPS® compliant presentation and important disclosures.

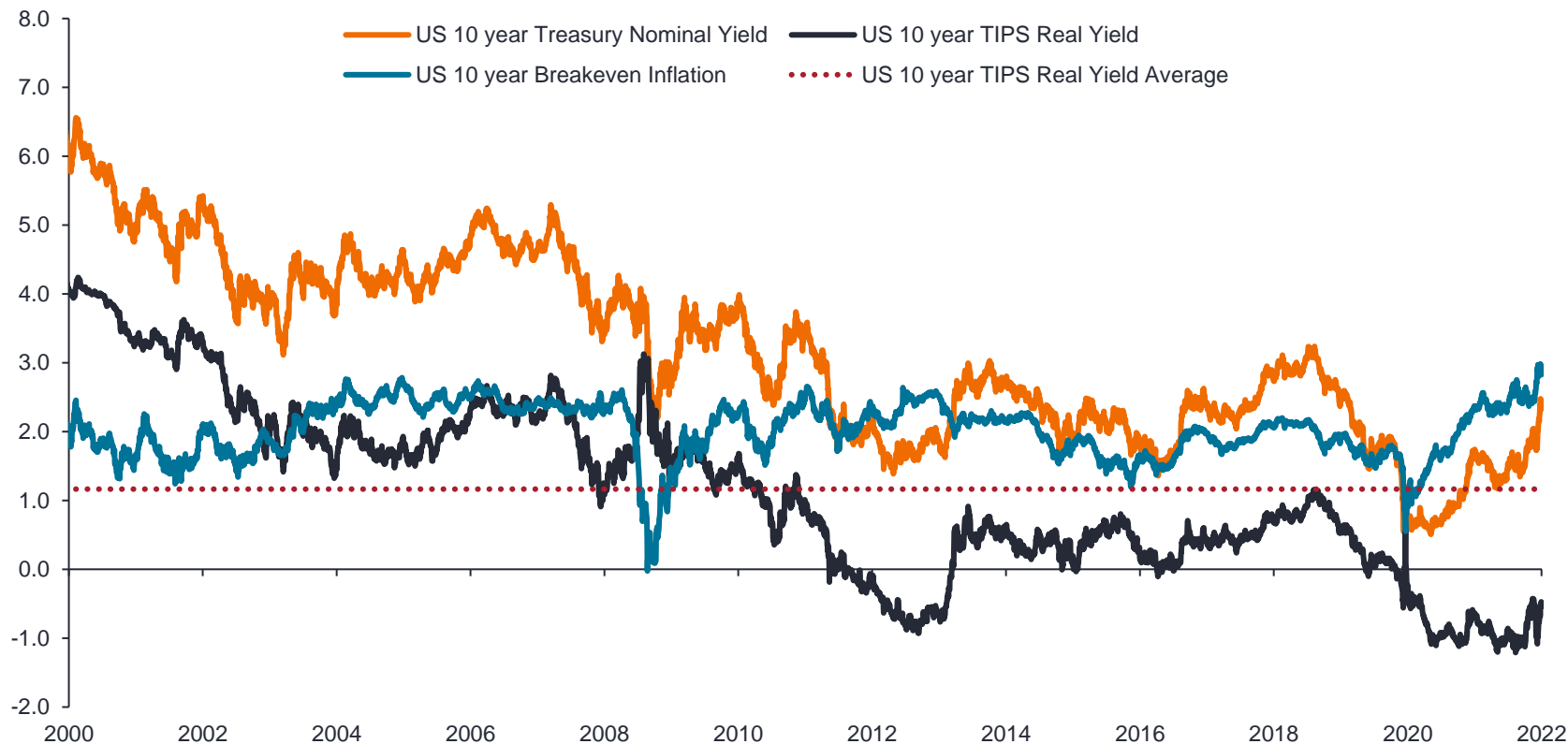
eVestment software has been used to create the rankings exhibits. A fee was paid for the use of the software. The results are gross of fees and are annualized for periods greater than one year. The percentile rank was among 234, 234, 230, 226, 190 and 46 managers for the 1Q22, 1-, 3-, 5-, 10-year and Since Inception periods, respectively, as of March 31, 2022.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

REAL YIELDS ARE STILL LOW

Yields (%)

(12/31/99 – 3/31/22)



Source: Bloomberg, as of March 31, 2022.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

BIOGRAPHIES



Greg Wilensky, CFA

**Head of U.S. Fixed Income,
Portfolio Manager**

Greg Wilensky is Head of U.S. Fixed Income and Portfolio Manager at Janus Henderson Investors, a position he has held since 2020. He is responsible for co-managing the Core Plus and Short Duration strategies as well as the fixed income portion of the Balanced strategy, all since 2020. Additionally, he co-manages the Sustainable & Impact Core Bond ETF. Prior to joining the firm, Mr. Wilensky served as senior vice president, director of the U.S. multi-sector fixed income team and held several director and portfolio manager positions that spanned short duration, inflation-protected fixed income, securitized assets and multi-asset strategies at AllianceBernstein from 1996 to 2019. Prior to that, he was a treasury manager – corporate finance at AT&T Corp. from 1993 to 1996.

Mr. Wilensky received his bachelor of science degree in business administration from Washington University, graduating *magna cum laude*. He also earned an MBA with high honors from the University of Chicago. Mr. Wilensky holds the Chartered Financial Analyst designation and has 29 years of financial industry experience.

Source: Janus Henderson, as of March 31, 2022.



Michael Keough

Portfolio Manager

Michael Keough is a Portfolio Manager at Janus Henderson Investors responsible for co-managing the Core Plus, Global Investment Grade, Short Duration and Intermediate Fixed Income strategies. Additionally, he co-manages the U.S. Corporate Credit, Long Duration strategies and the Sustainable Corporate Bond ETF. Mr. Keough has also co-managed the fixed income portion of the Balanced strategy since 2019. He joined Janus as a research analyst in 2007. Prior to his investment management career, he served as a captain in the United States Air Force working as a defense acquisition officer.

Mr. Keough received his bachelor of science degree in business management from the United States Air Force Academy, where he was recognized as a Distinguished Graduate in the management department. He has 16 years of financial industry experience.

BIOGRAPHIES



Seth Meyer, CFA
Portfolio Manager

Seth Meyer is a Portfolio Manager at Janus Henderson Investors responsible for co-managing the High Yield, Global High Yield, Multi-Sector Credit, Short Duration and Short Duration High Yield strategies. Mr. Meyer was promoted to assistant portfolio manager supporting primarily the High Yield and Short Duration High Yield strategies in 2012. He joined Janus in 2004 as a product manager covering a variety of equity and fixed income strategies before becoming a credit analyst. Prior to Janus, he was a consultant relations manager at OppenheimerFunds.

Mr. Meyer received his bachelor of science degree in business administration with a concentration in finance from the University of Colorado. He holds the Chartered Financial Analyst designation and has 24 years of financial industry experience.



Phil Gronniger, CFA
Client Portfolio Manager

Phil Gronniger is a Client Portfolio Manager for the Balanced and fixed income strategies at Janus Henderson Investors, a position he has held since 2014. Before this, he was a senior product manager for the Balanced and fixed income strategies with the firm since 2010. Prior to this, Mr. Gronniger was a vice president and portfolio manager for Financial Counselors, Inc. where he managed fixed income strategies for institutional clients and large-cap growth portfolios for private clients since 2007. Prior to that, he was as an analyst as well as a fixed income and an equity trader at Financial Counselors, Inc. since 1998.

Mr. Gronniger received his bachelor of science degree in business administration from the University of Missouri – Kansas City. He holds the Chartered Financial Analyst designation and has 23 years of financial industry experience.

Source: Janus Henderson, as of March 31, 2022.

FOR CONFIDENTIAL CLIENT USE ONLY / NOT FOR PUBLIC VIEWING OR DISTRIBUTION

Contact us

151 Detroit Street, Denver, CO 80206

janushenderson.com



Important information

The views presented are as of the date published. They are for information purposes only and should not be used or construed as investment, legal or tax advice or as an offer to sell, a solicitation of an offer to buy, or a recommendation to buy, sell or hold any security, investment strategy or market sector. Nothing in this material shall be deemed to be a direct or indirect provision of investment management services specific to any client requirements. Opinions and examples are meant as an illustration of broader themes, are not an indication of trading intent, and are subject to change at any time due to changes in market or economic conditions. It is not intended to indicate or imply that any illustration/example mentioned is now or was ever held in any portfolio. No forecasts can be guaranteed and there is no guarantee that the information supplied is complete or timely, nor are there any warranties with regard to the results obtained from its use. In preparing this document, Janus Henderson Investors has reasonable belief to rely upon the accuracy and completeness of all information available from public sources. Past performance is no guarantee of future results. Investing involves risk, including the possible loss of principal and fluctuation of value.

Janus Henderson is a trademark of Janus Henderson Group plc or one of its subsidiaries. © Janus Henderson Group plc.

Janus Capital Management LLC serves as investment adviser

C-0522-43459 07-30-22