## PUBLIC SCHOOL FUND INVESTMENT BOARD MEETING AGENDA, AUGUST 15, 2022

#### **VIDEO CONFERENCE VIA ZOOM LINK:**

https://us02web.zoom.us/j/88564674593?pwd=N3UwYUF2MmZDR3NpQ3NsOWUzZldJQT09

Meeting ID: 885 6467 4593 Passcode: fwft1y One tap mobile

+17193594580,,88564674593#,,,,\*749251# US +16699009128,,88564674593#,,,,\*749251# US

#### **Public School Fund Investment Board Members**

XII.

Cash deployment Update

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 May 16, 2022 Board Meeting	D. Young 12:03				
IV.	Equity Portfolio Manager RFP Update  a. Parametric contract end date – October 31, 2022	S. Zimbelman 12:05 (5 min)				
V.	Board Member Renewal  a. Peter Calamari – End of 2 <sup>nd</sup> Term 8/31/2022  b. Christine Scanlan – End of 1 <sup>st</sup> Term 8/31/2022  c. Wendy Dominguez – End of 1 <sup>st</sup> Term 11/30/2022  d. Jerome DeHerrera – End of 1 Term 11/30/2022	D. Young 12:10 (5 min)				
VI.	Vote on 1 year extension: Janus Henderson*  a. Current year end October 11, 2022; total contract end 2023	Callan 12:15 (5 min)				
VII.	Vote on 1 year extension: Portfolio Administrator (S. Zimbelman)* a. Current year end October 25, 2022; total contract end 2026	E. Rothaus 12:20 (5 min)				
VIII.	OMA education/review Communication and Open Meetings Policy	AG Office 12:25 (25 min)				
IX.	Annual Report	S. Zimbelman 12:50 (5 min)				
Χ.	Market Update (Qtr. 2 – Ending June 30, 2022)	Callan 12:55 (10 min)				
XI.	Performance Report (FY Qtr. 4 – Ending June 30, 2022)	Callan 1:05 (15 min)				

Callan 1:20 (5 min)

XIII. Fund Manager Presentation: Bond Portfolio M. More 1:25 (25 min)

a. Colorado Department of the Treasury, Maruti More, Chief Investment Officer

XIV. Other Business 1:50 (5 min)

a. House Bill 1146 Working Group Update

b. Update on 4th Quarter Board Meeting

XV. Public Comment 1:55 (5 min)

XVI. Board Adjournment 2:00

#### **Future Meeting Dates:**

November 14, 2022 Noon

<sup>\*</sup>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 vote on the extension of the Portfolio Administrator contract and Short-Duration Portfolio Manager contract, consistent with CRS 24-6-402(3)(a)(II).



## Public School Fund Investment Board Meeting Meeting Minutes May 16, 2022 Held Via Zoom

## Board Members in Attendance:

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

#### 12:02 - 12:04 PM Welcome, roll call

#### 12:04 – 12:05 PM Meeting minutes from the February 28, 2022 Board Meeting

Ms. Scanlan made a motion to approve the February 28, 2022 meeting minutes. Ms. Dominguez seconded the motion. The motion passed at 12:05 pm.

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

### 12:05 – 12:06 PM Meeting minutes from the April 11, 2022 Board Meeting

Ms. Scanlan made a motion to approve the April 11, 2022 meeting minutes. Ms. Dominguez seconded the motion. The motion passed at 12:06 pm.

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

## 12:06 – 12:09 PM Parametric Russian Holdings Update

Ms. Janet Becker-Wold (Callan) gave the board an update on the Parametric Russian Holdings. Ms. Becker-Wold informed the board that while our investment in the emerging markets ETF still has Russian holdings, all the prices of these holdings have been marked down to zero. Ms. Becker-Wold asked the Board to think about whether it would be comfortable investing additional funds back into the Emerging Markets ETF now that the Russian holdings have been priced at zero as part of the quarterly rebalancing. This item will be addressed further in the rebalancing item on the agenda.

#### 12:09 – 12:20 PM Investment Consultant RFP Update

Ms. Sarah Zimbelman (Portfolio Administrator) gave an update on the Investment RFP. Ms. Zimbelman updated the Board that Grant Sullivan (Attorney General's Office) was working on the contract with Callan. As part of that process Callan requested that the contract structure be a 5-year contract rather than a 2-year contract with 3 one-year extensions. Mr. Alex Browning (Callan) and Ms. Becker-Wold added that their request also allows for a bi-lateral no-fault 30-day termination at any time and that the request is really a planning horizon issue. Ms. Zimbelman turned this request to the board for discussion. Mr. Calamari asked what the structure is of the current contract. Mr. Sullivan answered that it was a 3-year contract with two 1-year renewals. Mr. Sullivan clarified that the Board would be comfortable with a 5-year contract with no interim renewal periods. Ms. Dominguez made a motion to change the contract structure with Callan to a 5-year contract period for the upcoming contract to commence on July 1, 2022. Mr. Calamari seconded the motion. The motion passed at 12:20 pm.

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

### 12:20 - 12:28 PM Vote on 1 year extension: MacKay Shields

MacKay Shields's current 1-year contract ends on July 20, 2022. Ms. Becker-Wold commented that Callan feels that MacKay Shields is a really good fit for our portfolio and that they recommend keeping MacKay Shields on. Mr. Calamari asked that Callan provide at the next meeting a comparison of a few of the High Yield competitors' performance as compared to MacKay Shields. Ms. Becker-Wold commented that they like MacKay Shields because they are bit more conservative than some of their competitors and don't dip down to as low of credit quality bonds as some of their competitors. Treasurer Young asked if the terms in the contract are such that if we are unsatisfied at any point, we are able to terminate. Ms. Becker-Wold confirmed along with Mr. Sullivan that yes this is the case. Ms. Dominguez made a motion that based on the recommendation of the Board's consultants at Callan to extend MacKay Shields contract for 1-year. Mr. Calamari seconded the motion. The motion passed at 12:28 pm.

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

#### 12:28 - 12:39 PM Annual IPS Review

Mr. Browning (Callan) went through Callan's recommended updates to the IPS. Mr. Browning asked if portfolio rebalancing was being looked at by the Portfolio Administrator on a monthly basis as stated in the IPS. Ms. Zimbelman responded that this is currently only being done quarterly. Mr. Browning also pointed out that even in a volatile market we have not been at risk of violating our target ranges as stipulated in the IPS while only reviewing this data quarterly. Mr. Calamari expressed that he was fine with removing the "monthly" language and sticking with "at least quarterly" which allows the Board to look at the data at

least quarterly but also on a more frequent basis if needed. Ms. Becker-Wold also commented that she along with Mr. Browning and Ms. Zimbelman receive a monthly balances report that they each review. The Board agreed that the language should be changed to "at least quarterly" with "monthly" language removed. Mr. Browning also asked if Appendix 2 should be updated to reflect any legislative changes. Mr. Sullivan asked is House Bill 1146 passed and Treasurer Young responded that it did. Mr. Sullivan recommended that a few sentences be added to Appendix 2 to reflect that House Bill 1146 passed. Ms. Zimbelman and Mr. Sullivan will work on this update. Mr. Calamari made a motion to approve the changes to the IPS as presented. Ms. Scanlan seconded the motion. The motion passed at 12:39 pm.

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

### 12:40 – 12:55 PM Market Update (Qtr. 1 – Ending March 31, 2022)

Presentation by Mr. Alex Browning (Callan)

### 12:55 – 1:05 PM Performance Report (FY Qtr. 3 – Ending March 31, 2022)

Presentation by Ms. Janet Becker-Wold (Callan)

## 1:05 - 1:13 PM Cash deployment Update

The PSPF has \$28M from revenues from the Land Board to deploy. Ms. Becker-Wold presented Callan's recommendation for this deployment. Ms. Becker-Wold asked the Board that of the recommended funds going to Parametric, if they are comfortable with Parametric rebalancing back into the Emerging Markets ETF now that the Russian securities have been removed from the benchmark. Treasurer Young asked what the money coming in from the Land Board is attributable to. Mr. Bill Ryan (State Land Board) responded that it is oil and gas revenue. Ms. Becker-Wold confirmed that any new cash flows into the emerging markets ETF would not go towards any Russian securities since they have been removed from the benchmark. The Board expressed that they are comfortable with rebalancing into the Emerging Markets ETF with the new funds.

### 1:13 – 1:15 PM Review of unrealized gains/losses

Sarah Zimbelman reviewed the Fund's Financial Report

## 1:15 – 1:17 PM Review 2022 Board Meeting Calendar

Sarah Zimbelman reviewed the Board Meeting Calendar and mentioned that the Board will be starting another RFP process for the Equity Portfolio Manager (currently Parametric) as the current 5-year contract expires at the end of October 2022.

#### 1:17 – 1:50 PM Fund Manager Presentation: Janus Henderson

Presentation by Greg Wilensky - Head of U.S. Fixed Income, Portfolio Manager

Michael Keough - Portfolio Manager

#### 1:50 - 1:58 PM Other Business

Treasurer Young updated the Board that House Bill 1146 had passed. Eric Rothaus (Deputy Treasurer) reminded the Board that the Bill creates staggered terms for board members, redefines the time-period in which realized losses must be offset, adds some flexibility to the \$21M that goes to BEST, and creates a working group to study various aspects of the Permanent Fund. Next steps include plotting out a schedule for the working group.

#### 1:58 - 2:00 PM Public comments

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

The meeting was adjourned at 2:01 pm.

## **Next Meeting**

• August 15, 2022 at Noon

## Equity Manager RFP Schedule

Activity	Date	Time (MST)		
1. RFP published on VSS System	07/28/2022	N/A		
2. Prospective Proposer's Inquiry Deadline No inquiries accepted after this date	08/05/2022	4:00 PM		
3. Response to written inquiries on Vendor Self Serve (VSS) (ESTIMATED*)	08/12/2022	N/A		
4. Proposal Submission Deadline	08/26/2022	4:00 PM		
5. Evaluation of Written Proposals (ESTIMATED*)	August 26 to September 16, 2022			
6. Reference calls and letters of clarification questions (ESTIMATED* - If applicable per Investment Board's evaluation)	August 26 to Septer	nber 16, 2022		
7. Proposer Interviews (ESTIMATED* – If applicable per Investment Board's evaluation)	August 26 to Septer	nber 16, 2022		
8. Finalist Presentations/Proposal Selection (ESTIMATED*)	September 28, 2022			
9. Desired initial Performance Period	11/1/2022 - 10/31/2023			

<sup>\*</sup>As the evaluation process is dependent upon the number of proposals received, their length, and board members' schedules; all dates post proposal submission are strictly estimated.

## **Returns and Peer Group Rankings - Trailing Periods**

Returns for Periods Ended June 30, 2022

**Group: Callan Short Fixed Inc (Percentile Rankings in Parentheses)** 

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
DFA Sh-Trm Ext Qual;I	(1.63) (94)	<b>(5.74)</b> (97)	(0.78) (99)	0.51 (99)	0.92 (98)	1.11 (85)
IncomeR&M:1-3 Year	(0.72) (28)	(3.43) (41)	0.88 (22)	1.51 (27)	1.47 (38)	1.49 (38)
Janus Henderson:Short Dur Fixed	(2.36) (96)	(5.46) (96)	0.54 (58)	1.37 (51)	1.46 (41)	1.60 (27)
Callan Short Fixed Inc*	(0.86)	(3.63)	0.59	1.37	1.41	1.41
Blmbg:Gov/Cred 1-3 Yr	(0.63) (20)	(3.56) (45)	0.31 (86)	1.07 (93)	1.04 (94)	1.01 (91)

Note: The Janus Henderson strategy allows for and carries exposure to high yield.

\*Results reflect group median.



## **Returns and Peer Group Rankings - Trailing Periods**

Excess Returns for Periods Ended June 30, 2022

**Group: Callan Short Fixed Inc (Percentile Rankings in Parentheses)** 

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
DFA Sh-Trm Ext Qual;I	(1.00) (94)	(2.18) (97)	(1.09) (99)	(0.56) (99)	(0.12) (98)	0.10 (85)
IncomeR&M:1-3 Year	(0.09) (28)	0.13 (41)	0.57 (22)	0.44 (27)	0.44 (38)	0.48 (38)
Janus Henderson:Short Dur Fixed	(1.73) (96)	(1.90) (96)	0.23 (58)	0.30 (51)	0.42 (41)	0.59 (27)
Callan Short Fixed Inc*	(0.23)	(0.06)	0.28	0.30	0.37	0.40



<sup>\*</sup>Results reflect group median.

## **Returns and Peer Group Rankings - Calendar Years**

Returns for Periods Ended June 30, 2022

**Group: Callan Short Fixed Inc (Percentile Rankings in Parentheses)** 

Blmbg:Gov/Cred 1-3 Yr	(3.11) (40)	(0.47) (78)	3.33 (80)	4.03 (78)	1.60 (66)	0.84 (82)	1.28 (70)	0.65 (88)	0.77 (86)	0.64 (53)
Callan Short Fixed Inc*	(3.26)	(0.22)	3.96	4.52	1.69	1.30	1.55	0.90	1.11	0.65
Janus Henderson:Short Dur Fixed	(5.41) (96)	0.46 (12)	5.36 (6)	4.76 (32)	1.53 (77)	1.82 (19)	2.13 (26)	0.90 (50)	1.26 (26)	2.00 (1)
IncomeR&M:1-3 Year	(3.01) (34)	(0.26) (53)	4.64 (25)	4.35 (59)	1.72 (43)	1.21 (60)	1.67 (43)	1.03 (25)	1.18 (42)	0.96 (12)
DFA Sh-Trm Ext Qual;I	(5.08) (95)	(0.60) (86)	2.24 (91)	4.51 (51)	1.34 (89)	1.97 (16)	2.06 (32)	1.15 (12)	1.68 (8)	0.41 (74)
	2 Qtrs. 2022	2021	2020	2019	2018	2017	2016	2015	2014	2013



<sup>\*</sup>Results reflect group median.

## **Returns and Peer Group Rankings - Calendar Years**

Excess Returns for Periods Ended June 30, 2022

**Group: Callan Short Fixed Inc (Percentile Rankings in Parentheses)** 

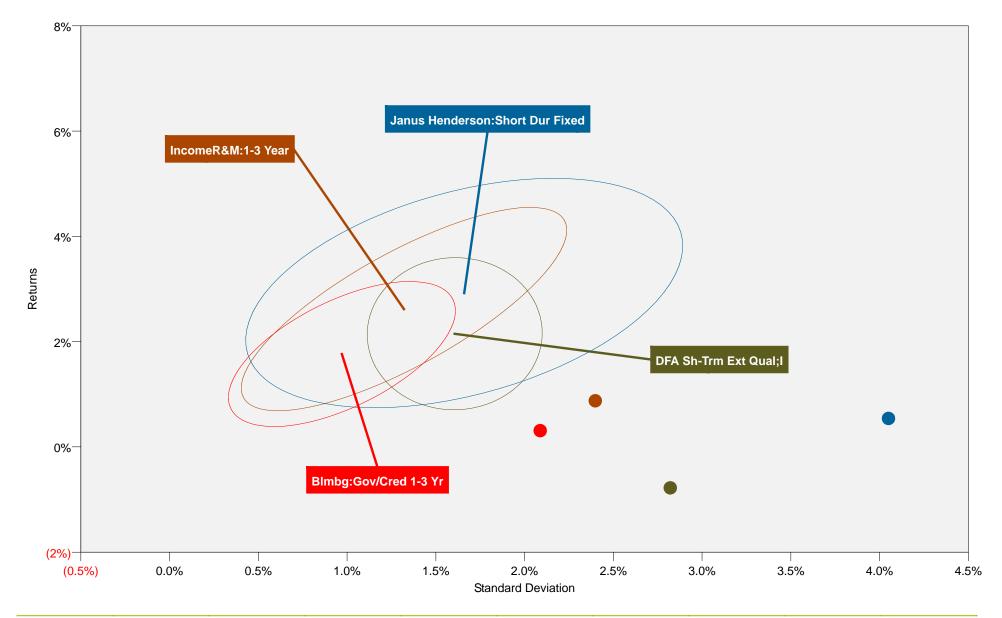
	2 Qtrs. 2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
DFA Sh-Trm Ext Qual;I	(1.98) (95)	(0.13) (86)	(1.09) (91)	0.48 (51)	(0.26) (89)	1.12 (16)	0.78 (32)	0.50 (12)	0.91 (8)	<b>(0.24)</b> (74)
IncomeR&M:1-3 Year	0.10 (34)	0.22 (53)	1.31 (25)	0.32 (59)	0.12 (43)	0.37 (60)	0.39 (43)	0.38 (25)	0.41 (42)	0.32 (12)
Janus Henderson:Short Dur Fixed	(2.31) (96)	0.93 (12)	2.03 (6)	0.73 (32)	(0.07) (77)	0.98 (19)	0.85 (26)	0.25 (50)	0.49 (26)	1.35 (1)
Callan Short Fixed Inc*	(0.15)	0.25	0.62	0.49	0.09	0.46	0.27	0.25	0.35	0.01



<sup>\*</sup>Results reflect group median.

## **Risk/Reward Structure**

Rolling 3 Year Risk/Reward for 12 Years Ended June 30, 2022 Group: Callan Short Fixed Inc (Ellipse with Median at Central Axis)



## Public School Fund Investment Board

2022 Board Training Senior Assistant Attorney General Skip Spear

## TOPICS

1. Mandatory Training

2. Open Meetings Law (OML)

3. Colorado Open Records Act (CORA)

# Mandatory Training

## Colorado Revised Statutes Title 22, Article 41

The Board is created by statute, § 22-41-102.5.

- Direct the Treasurer on how to invest money in the public school fund, 102.5(3).
- Establish necessary policies for the fund, 102.5(4).
- Contract with professional fund managers for advice and support, 102.5(5).

## Training Required by Law

All statutorily created boards in Colorado *must* receive annual training on:

• Understanding the requirements of the Colorado Open Meetings Law.

• Understanding the requirements of the Colorado Open Records Act.

§ 24-3.7-102(d) and (e), C.R.S.

# Open Meetings Law

## Purpose

"It is declared to be a matter of statewide concern and the policy of this state that the formation of public policy is public business and may not be conducted in secret." § 24-6-401.

The overriding concern is government transparency.

All board "meetings" must be open to the public.

# What is a meeting?

Statutory definition: "any kind of gathering, convened to discuss public business, in person, by telephone, electronically or by other means of communication." § 24-6-402(1)(b).

The open meetings law applies to any meeting of "two or more members of any state public body at which any public business is discussed or at which any formal action may be taken." § 24-6-402(2)(a).

This does not include chance meetings of Board members or social gatherings at which the discussion of public business is not the central purpose. § 24-6-402(2)(e).

## Electronic Mail

Any email that concerns "pending legislation or other public business" is subject to the OML.

## Excepted Email:

- Email "that does not relate to the merits or substance of pending legislation or other public business." The term "merits or substance" means "any discussion, debate, or exchanges of ideas, either generally or specifically, related to the essence of any public policy proposition, specific proposal, or any other matter being concerned by the governing entity."
- Email "regarding scheduling and availability."
- Email that is sent "for the purpose of forwarding information, responding to an inquiry from [a non-member], or posing a question for later discussion."
- § 24-6-402(2)(d)(III).

# Notice Requirements

Full and timely (24-hour) public notice of a board meeting is required for:

1. Any meeting where a majority or quorum of the board is expected to be in attendance.

or

2. Any meeting at which the adoption of any proposed policy, position, resolution, rule, regulation, or formal action occurs.

§ 24-6-402(2)(c).

## Full Notice

Notice should be posted on the Treasurer's website and include:

- 1. Who will attend—full board or only a subset.
- 2. Where or how the meeting will take place—physical address, dial in information if it will be telephonic, or access information if it will be on the web.
- 3. The date and time of the meeting.
- 4. An agenda or list of topics to be covered.

# Records of Meetings

Minutes of the meeting must be taken and promptly recorded. § 24-6-402(2)(d).

Audio of the meeting must be recorded if the Board did so prior to August 8, 2001. § 24-6-402(2)(d.5).

## **Executive Session**

The only time you may exclude the public from a Board meeting is during an executive session.

Because we want to be as transparent as possible when acting as government officials, the circumstances when executive session may be entered into are very limited.

## Topics for Executive Session

The following topics are the *only* topics that may be addressed in executive session:

- Legal advice.
- Personnel matters and employee negotiations.
- Purchase or sale of property.
- Matters required to be kept confidential by law.

§ 24-6-402(3)(a) and (b).

# Executive Session—Legal Advice

Legal advice is generally limited to you asking a specific question of your attorney, and the attorney providing an answer.

It is *never* acceptable for Board members to substantively discuss an issue or deliberate while in executive session.

# Executive Session-Procedural Requirements § 24-6-402(3)

(3)(a) The members of a state public body subject to this part 4, upon the announcement by the state public body to the public of the topic for discussion in the executive session, including specific citation to the provision of this subsection (3) authorizing the body to meet in an executive session and identification of the particular matter to be discussed in as much detail as possible without compromising the purpose for which the executive session is authorized, and the affirmative vote of two-thirds of the entire membership of the body after such announcement, may hold an executive session only at a regular or special meeting and for the sole purpose of considering any of the matters enumerated in subsection (3)(b) of this section or the following matters; except that no adoption of any proposed policy, position, resolution, rule, regulation, or formal action, except the review, approval, and amendment of the minutes of an executive session recorded pursuant to subsection (2)(d.5)(I) of this section, shall occur at any executive session that is not open to the public:

(I) The purchase of property for public purposes, or the sale of property at competitive bidding, if premature disclosure of information would give an unfair competitive or bargaining advantage to a person whose personal, private interest is adverse to the general public interest. No member of the state public body shall use this paragraph (a) as a subterfuge for providing covert information to prospective buyers or sellers. Governing boards of state institutions of higher education including the regents of the university of Colorado may also consider the acquisition of property as a gift in an executive session, only if such executive session is requested by the donor.

(II) Conferences with an attorney representing the state public body concerning disputes involving the public body that are the subject of pending or imminent court action, concerning specific claims or grievances, or for purposes of receiving legal advice on specific legal questions. Mere presence or participation of an attorney at an executive session of a state public body is not sufficient to satisfy the requirements of this subsection (3). (III) Matters required to be kept confidential by federal law or rules, state statutes, or in accordance with the requirements of any joint rule of the senate and house of representatives pertaining to lobbying practices or workplace harassment or workplace expectations policies;

(IV) Specialized details of security arrangements or investigations, including defenses against terrorism, both domestic and foreign, and including where disclosure of the matters discussed might reveal information that could be used for the purpose of committing, or avoiding prosecution for, a violation of the law;

(V) Determining positions relative to matters that may be subject to negotiations with employees or employee organizations; developing strategy for and receiving reports on the progress of such negotiations; and instructing negotiators:

(VI) With respect to the board of regents of the university of Colorado and the board of directors of the university of Colorado hospital authority created pursuant to article 21 of title 23, C.R.S., matters concerning the modification, initiation, or cessation of patient care programs at the university hospital operated by the university of Colorado hospital authority pursuant to part 5 of article 21 of title 23, C.R.S., (including the university of Colorado psychiatric hospital), and receiving reports with regard to any of the above, if premature disclosure of information would give an unfair competitive or bargaining advantage to any person or entity; (VII) With respect to nonprofit corporations incorporated pursuant to section 23-5-121(2), C.R.S., matters concerning trade secrets, privileged information, and confidential commercial, financial, geological, or geophysical data furnished by or obtained from any person;

(VIII) With respect to the governing board of a state institution of higher education and any committee thereof, consideration of nominations for the awarding of honorary degrees, medals, and other honorary awards by the institution and consideration of proposals for the naming of a building or a person or persons.

(b)(I) All meetings held by members of a state public body subject to this part 4 to consider the appointment or employment of a public official or employee or the dismissal, discipline, promotion, demotion, or compensation of, or the investigation of charges or complaints against, a public official or employee shall be open to the public unless said applicant, official, or employee requests an executive session. Governing boards of institutions of higher education including the regents of the university of Colorado may, upon their own affirmative vote, hold executive sessions to consider the matters listed in this paragraph (b). Executive sessions may be held to review administrative actions regarding investigation of charges or complaints and attendant investigative reports against students where public disclosure could adversely affect the person or persons involved, unless the students have specifically consented to or requested the disclosure of such matters. An executive session may be held only at a regular or special meeting of the state public body and only upon the announcement by the public of the topic for discussion in the executive session and the affirmative vote of two-thirds of the entire membership of the body after such announcement.

(II) The provisions of subparagraph (I) of this paragraph (b) shall not apply to discussions concerning any member of the state public body, any elected official, or the appointment of a person to fill the office of a member of the state public body or an elected official or to discussions of personnel policies that do not require the discussion of matters personal to particular employees.

(c) Notwithstanding the provisions of paragraphs (a) and (b) of this subsection (3), the state board of parole created in part 2 of article 2 of title 17, C.R.S., may proceed in executive session to consider matters connected with any parole proceedings under the jurisdiction of said board; except that no final parole decisions shall be made by said board while in executive session. Such executive session may be held only at a regular or special meeting of the state board of parole and only upon the affirmative vote of two-thirds of the membership of the board present at such meeting.

(d) Notwithstanding any provision of paragraph (a) or (b) of this subsection (3) to the contrary, upon the affirmative vote of two-thirds of the members of the governing board of an institution of higher education who are authorized to vote, the governing board may hold an executive session in accordance with the provisions of this subsection (3).

# Colorado Open Records Act

## Purpose

It is the public policy of Colorado that all public records shall be open for inspection by any person at reasonable times. § 24-72-201.

Like the OML, the overriding concern underlying CORA is government transparency.

Certain records that the board and board members create are subject to public inspection.

# Applies to Writings

A writing includes "books, papers, maps, photographs, cards, tapes, recordings, or other documentary materials, regardless of physical form or characteristics" as well as "digitally stored data, including without limitation electronic mail messages" and text messages. § 24-72-202(7).

Everything that has some physical or electronic form will be considered a writing and potentially a public record.

# When a Writing is a Public Record

All writings are public records if they are:

- 1. Made, maintained or kept by the board or its members.
- 2. Used in the performance of a public function or involving the receipt of public funds.

§ 24-72-202(6).

# Public Inspection

In general, a person has the right to obtain copies of public records within three days of requesting copies.

A public member who is denied copies of public records may initiate a lawsuit to obtain those records and, if successful, is entitled to an award of their attorney fees.

§ 24-72-204(5).

# Questions?

## Callan

C III

August 15, 2022

## Colorado Public School Fund Investment Board

Second Quarter 2022

Janet Becker-Wold, CFA

Senior Vice President

**Alexander Browning** 

Senior Vice President

## Callan

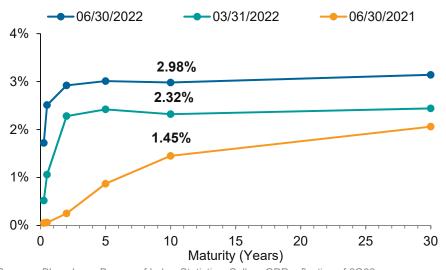
**Economic and Market Update** 

# **U.S. Economy—Summary**

#### Second Quarter 2022

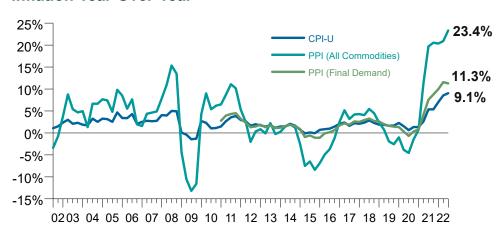
- The advance estimate shows real GDP fell -0.9% during the second quarter, following a -1.6% contraction in the first quarter.
- Inflation remains elevated in 2022. The CPI climbed 9.1% year-over-year as of June.
- The Federal Reserve made consecutive 0.75% rate hikes on July 27<sup>th</sup> and June 15<sup>th</sup> (the target range is now 2.25 – 2.50%), with more rate hikes planned in 2022.
- The labor market remains a source of strength with unemployment remaining at 3.6% in June.

# **U.S. Treasury Yield Curves**

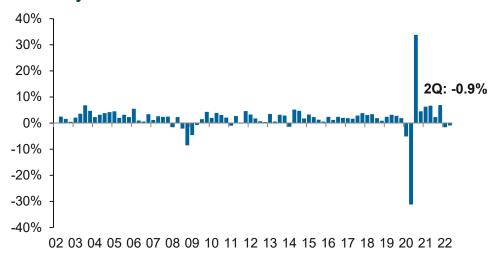


Sources: Bloomberg, Bureau of Labor Statistics, Callan. GDP reflective of 2Q22.

#### Inflation Year-Over-Year



#### **Quarterly Real GDP Growth**





# **Contributors to Recent Inflation: Primary Categories**

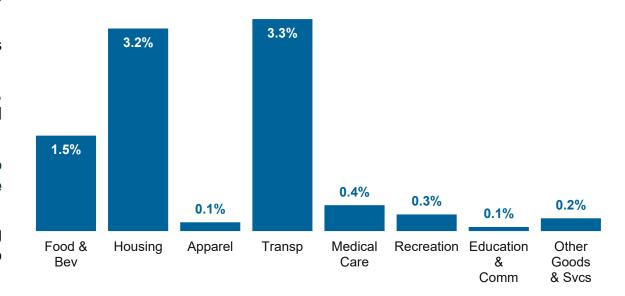
# Transportation, including new and used cars, parts, and gasoline, continues to experience high inflation.

- Year-over-year prints are almost two 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 is rising while transportation inflation appears to have leveled off.

#### **Contribution to June 2022 YOY Inflation**



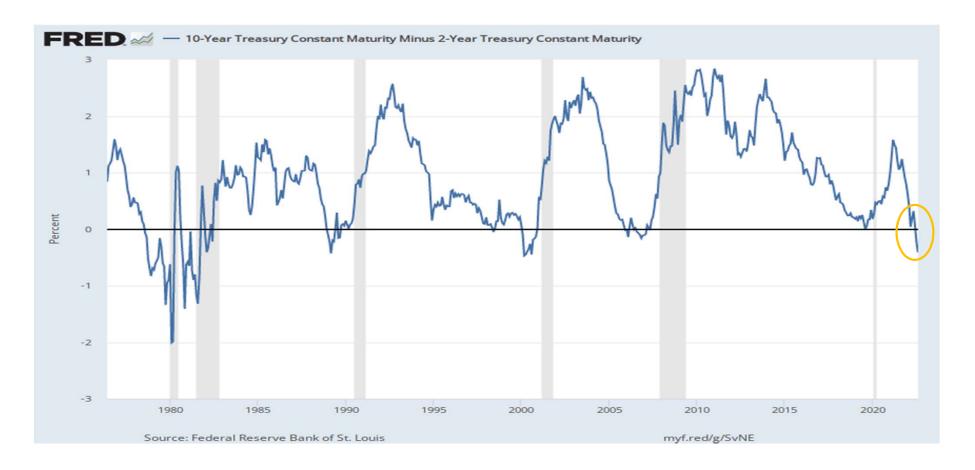
	Primary		Year-over-Year Change										
Primary Category	Category Weight	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
All Items	100.0%	5.4%	5.3%	5.4%	6.2%	6.8%	7.0%	7.5%	7.9%	8.5%	8.3%	8.6%	9.1%
Food & Bev	14.3%	3.4%	3.7%	4.5%	5.1%	5.8%	6.0%	6.7%	7.6%	8.5%	9.0%	9.7%	10.0%
Housing	42.4%	3.4%	3.5%	3.9%	4.5%	4.8%	5.1%	5.7%	5.9%	6.4%	6.5%	6.9%	7.3%
Apparel	2.5%	4.2%	4.2%	3.4%	4.3%	5.0%	5.8%	5.3%	6.6%	6.8%	5.4%	5.0%	5.2%
Transportation	18.2%	19.4%	17.8%	16.6%	18.7%	21.1%	21.1%	20.8%	21.1%	22.6%	19.9%	19.4%	19.7%
Medical Care	8.5%	0.3%	0.4%	0.4%	1.3%	1.7%	2.2%	2.5%	2.4%	2.9%	3.2%	3.7%	4.5%
Recreation	5.1%	3.5%	3.4%	3.5%	3.9%	3.2%	3.3%	4.7%	5.0%	4.8%	4.3%	4.5%	4.6%
Education & Communication	6.4%	1.1%	1.2%	1.7%	1.8%	1.7%	1.6%	1.6%	1.6%	1.5%	1.0%	0.8%	0.8%
Other Goods & Svcs	2.7%	2.9%	3.5%	3.4%	4.2%	4.4%	4.5%	4.9%	5.6%	5.5%	5.7%	6.3%	6.7%

<sup>\*</sup>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



# What is the bond market saying about the probability of recession?

### 2-Year vs. 10-Year Treasury Spread (As of August 5, 2022)



- -The 2-Year to 10-Year Treasury spread went negative two days in April and was negative for most of July
- A negative spread indicates a yield curve inversion it does not necessarily forecast a recession, but most recessions were preceded by a yield curve inversion.

Source: Federal Reserve Bank of St. Louis



#### **Recession Watch**

#### Common definition of recession: two consecutive quarters of decline in GDP

- –Actual definition: The National Bureau of Economic Research (NBER) Business Cycle Dating Committee defines a recession as "a significant decline in economic activity that is spread across the economy and that lasts more than a few months."
- -The Committee considers duration, depth and dispersion of an economic slowdown.

#### Indicators to watch:

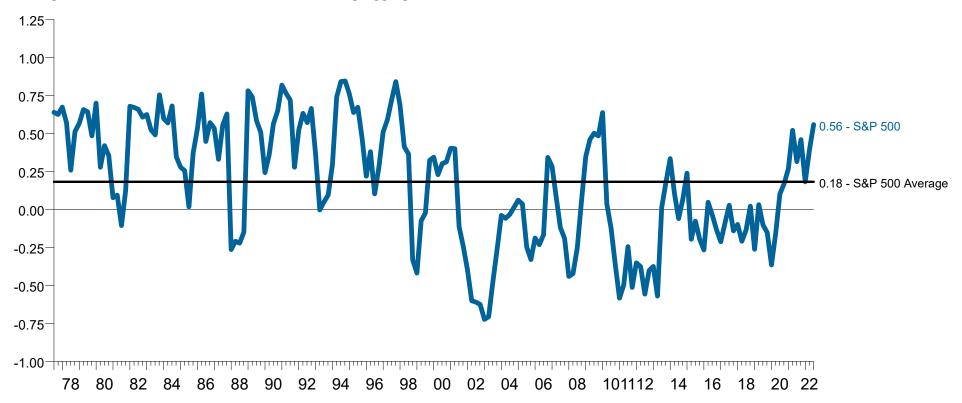
- -GDP declined in 1Q and 2Q22.
- -Housing market is weakening with higher mortgage rates.
- Job market remains strong, with substantial job creation year to date; job listings remain larger than the number of seekers.
  - Initial unemployment claims are creeping up: a leading indicator.
- Purchasing Manager's Index (PMI) is showing initial signs of recession in the Business Activity and Output indexes;
   PMI is also a leading indicator.
- -Exports have weakened with slowing growth overseas, geopolitical uncertainty, and a strong dollar.
- -Inflation remains historically high, sapping purchasing power and eroding confidence.
- -Federal Reserve is committed to raising interest rates to combat inflation; median Fed Funds projection is 3.4% by end of 2022.
- -Fed's resolve may be tested if economy slows sharply in the second half of the year.



### **Did Diversification Fail in 2022?**

Stocks and bonds down together in 1Q and 2Q

Rolling 12 Month Correlation of S&P 500 to Bloomberg Aggregate for 45 Years Ended June 30, 2022



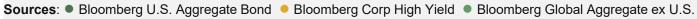
Are we seeing a return to a regime of higher correlation between stocks and bonds, potentially lessening the diversification benefit of bonds to stocks?

Source: Callan



# **Callan Periodic Table of Investment Returns**

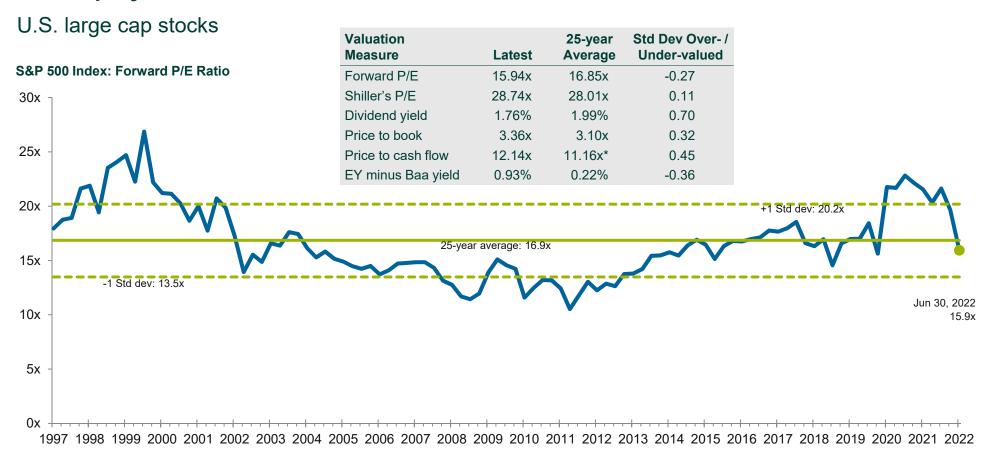
		Annual	Returns			Cumulative Returns					
2016	2017	2018	2019	2020	2021	15 Years	10 Years	5 Years	3 Years	1 Year	Last Qtr.
Small Cap Equity	Emerging Market Equity	U.S. Fixed Income	Large Cap Equity	Small Cap Equity	Large Cap Equity	U.S. Fixed Income	U.S. Fixed Income				
21.31%	37.28%	0.01%	31.49%	19.96%	28.71%	8.54%	12.96%	11.31%	10.60%	-10.29%	-4.69%
High Yield	Dev ex-U.S. Equity	High Yield	Small Cap Equity	Large Cap Equity	Real Estate	Small Cap Equity	Small Cap Equity	Small Cap Equity	Small Cap Equity	Large Cap Equity	High Yield
17.13%	24.21%	-2.08%	25.52%	18.40%	27.21%	6.33%	9.35%	5.17%	4.21%	-10.62%	-9.83%
Large Cap Equity	Large Cap Equity	Global ex-U.S. Fixed Income	Real Estate	Emerging Market Equity	Small Cap Equity	High Yield	Real Estate	Real Estate	Dev ex-U.S. Equity	Real Estate	Global ex-U.S. Fixed Income
11.96%	21.83%	-2.15%	23.06%	18.31%	14.82%	5.78%	5.59%	2.89%	1.70%	-12.75%	-11.01%
Emerging Market Equity	Small Cap Equity	Large Cap Equity	Dev ex-U.S. Equity	Global ex-U.S. Fixed Income	Dev ex-U.S. Equity	U.S. Fixed Income	Dev ex-U.S. Equity	Dev ex-U.S. Equity	Emerging Market Equity	High Yield	Emerging Market Equity
11.19%	14.65%	-4.38%	22.49%	10.11%	12.62%	3.26%	5.37%	2.66%	0.57%	-12.81%	-11.45%
Real Estate	Real Estate	Real Estate	Emerging Market Equity	Dev ex-U.S. Equity	High Yield	Real Estate	High Yield	Emerging Market Equity	High Yield	Dev ex-U.S. Equity	Dev ex-U.S. Equity
4.99%	11.42%	-4.74%	18.44%	7.59%	5.28%	2.81%	4.47%	2.18%	0.21%	-16.76%	-14.66%
Dev ex-U.S. Equity	Global ex-U.S. Fixed Income	Small Cap Equity	High Yield	U.S. Fixed Income	U.S. Fixed Income	Emerging Market Equity	Emerging Market Equity	High Yield	Real Estate	Global ex-U.S. Fixed Income	Large Cap Equity
2.75%	10.51%	-11.01%	14.32%	7.51%	-1.54%	2.00%	3.07%	2.10%	-0.18%	-18.78%	-16.10%
U.S. Fixed Income	High Yield	Dev ex-U.S. Equity	U.S. Fixed Income	High Yield	Emerging Market Equity	Dev ex-U.S. Equity	U.S. Fixed Income	U.S. Fixed Income	U.S. Fixed Income	Small Cap Equity	Small Cap Equity
2.65%	7.50%	-14.09%	8.72%	7.11%	-2.54%	1.55%	1.54%	0.88%	-0.93%	-25.20%	-17.20%
Global ex-U.S. Fixed Income	U.S. Fixed Income	Emerging Market Equity	Global ex-U.S. Fixed Income	Real Estate	Global ex-U.S. Fixed Income	Emerging Market Equity	Real Estate				
1.49%	3.54%	-14.57%	5.09%	-8.18%	-7.05%	1.42%	-1.06%	-1.75%	-5.07%	-25.28%	-17.23%



<sup>●</sup> FTSE EPRA Nareit Developed ● MSCI World ex USA ● MSCI Emerging Markets ● Russell 2000 ● S&P 500



# **U.S. Equity Market: Valuation Metrics**



- -All valuation measures except P/E are now within +/- one standard deviation of 25-year averages.
- -Forward P/E has fallen below the long-term average, but earnings will drop further if we enter a recession, suggesting more pain for stock prices.
- -Earnings for the coming quarters will provide additional clarity on valuations.

Sources: FactSet, FRB, Robert Shiller, S&P Dow Jones Indices, Thomson Reuters, J.P. Morgan Asset Management

Price-to-earnings is price divided by consensus analyst estimates of earnings per share for the next 12 months as provided by IBES since March 1997 and by FactSet since January 2022. Current next 12-months consensus earnings estimates are \$233. Average P/E and standard deviations are calculated using 25 years of history. Shiller's P/E uses trailing 10-years of inflation-adjusted earnings as reported by companies. Dividend yield is calculated as the next 12-months consensus dividend divided by most recent price. Price-to-book ratio is the price divided by book value per share. Price-to-cash flow is price divided by NTM cash flow. EY minus Baa yield is the forward earnings yield (consensus analyst estimates of EPS over the next 12 months divided by price) minus the Moody's Baa seasoned corporate bond yield. Std. dev. over-/under-valued is calculated using the average and standard deviation over 25 years for each measure. \*P/CF is a 20-year average due to cash flow availability.

Guide to the Markets – U.S. Data are as of June 30, 2022.

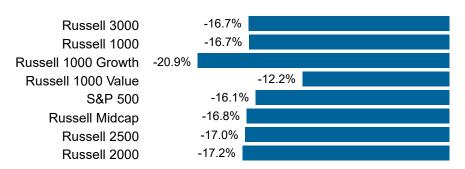


# **U.S. Equity Performance: 2Q22**

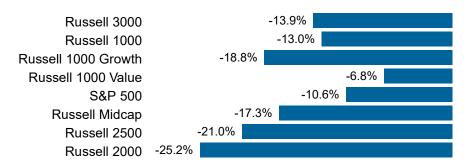
#### Worst first half since 1970

- The S&P 500 dropped by 16.1% in 2Q22; all major U.S. indices across styles and market cap ranges were negative in the quarter.
- All sectors posted negative returns over the quarter. Energy continues to be the best-performing sector, and it is the only sector that has posted positive returns YTD 2022.
- Large cap stocks nominally outpaced smaller cap stocks in the quarter. The performance spread between the Russell 1000 and the Russell 2000 Index was around 50 basis points.
- Value stocks have outperformed growth stocks across the market capitalization spectrum.
- Consumer Discretionary (-26%), Communication Services (-21%), and Information Technology (-20%) were the worstperforming sectors.
- Rising interest rates and inflation along with geopolitical headlines all contributed to a volatile and risk-averse environment.

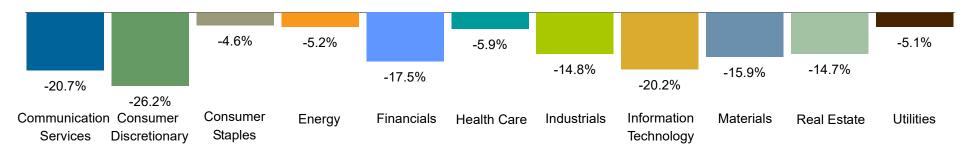
#### **U.S. Equity: Quarterly Returns**



#### **U.S. Equity: One-Year Returns**



#### **Industry Sector Quarterly Performance (S&P 500)**



Sources: FTSE Russell. S&P Dow Jones Indices



# Global/Global ex-U.S. Equity Performance: 2Q22

#### Fears of recession

- The war in Ukraine pushed an already fragile supply chain, energy demand/supply imbalances, and inflationary environment into fears of a recession.
- Slowing global growth and recession risk became clearer toward quarter-end, leading investors toward higher-quality and lower-volatility areas of the market to offer protection.

#### Wide divergence in country returns

- Optimism that the worst is behind China's COVID-19 lockdown buoyed the country to the only positive return in the quarter.
- Meanwhile Japan suffered from a weak yen, slowing growth, and continued supply chain disruptions.

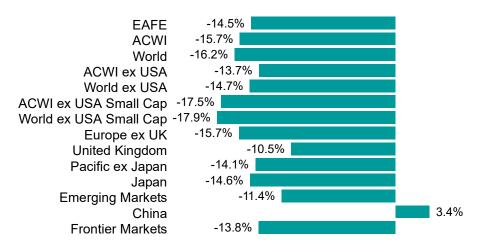
#### Growth vs. value

- Value continues to outperform growth as most monetary policies focus on tightening.
  - Energy was the only sector with positive year-to-date results.
- Information Technology had the worst sector return as interest rate increases dampened long duration growth attractiveness.

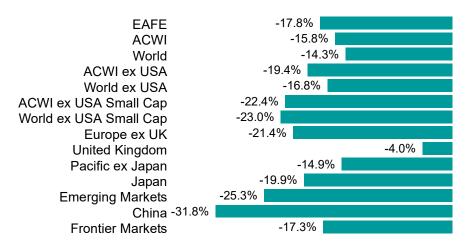
#### U.S. dollar vs. other currencies

 The U.S. dollar strengthened further against other major currencies given its global dominance and perceived safety.

#### **Global Equity: Quarterly Returns**



#### **Global Equity: One-Year Returns**



Source: MSCI



# **U.S. Fixed Income Performance: 2Q22**

#### Bonds hit hard as rates rose sharply (again)

- Worst six-month return for Bloomberg US Aggregate in history
- Yield curve flirted with inversion but 2-year/10-year yield spread was slightly positive at quarter-end.
- TIPS underperformed nominal Treasuries, and 10-year breakeven spreads fell to 2.33% from 2.84% at 3/31/22.
- Fed raised rates by 75 bps, the largest increase since 1994, with further hikes expected.
  - Market pricing reflects Fed Funds rate of 3.4% at year-end.

#### **Spread sectors underperformed**

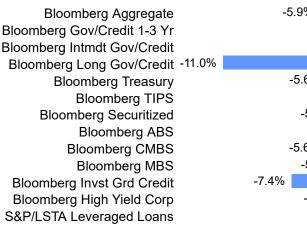
- Investment grade corporates underperformed like-duration
   U.S. Treasuries by 205 bps, RMBS by 98 bps.
- High yield underperformed as spreads widened; excess return vs. U.S. Treasuries was -792 bps.
  - Hurt by equity market performance and worries over the impact of higher rates on the economy
  - Yield-to-worst 8.9%
- Leveraged loans held up relatively well with lower-quality credits generally underperforming.

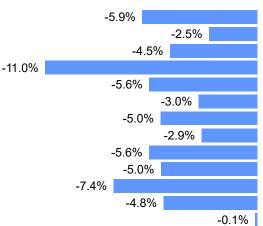
### Securitized sectors continue to hang in

- Agency RMBS spreads widened in response to increased rate volatility.
- ABS spreads tightened, led by credit cards.

Sources: Bloomberg, S&P Dow Jones Indices

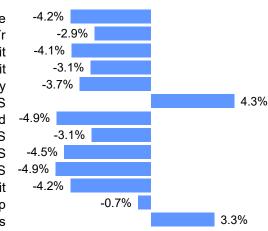
#### **U.S. Fixed Income: Quarterly Returns**





#### U.S. Fixed Income: One-Year Returns

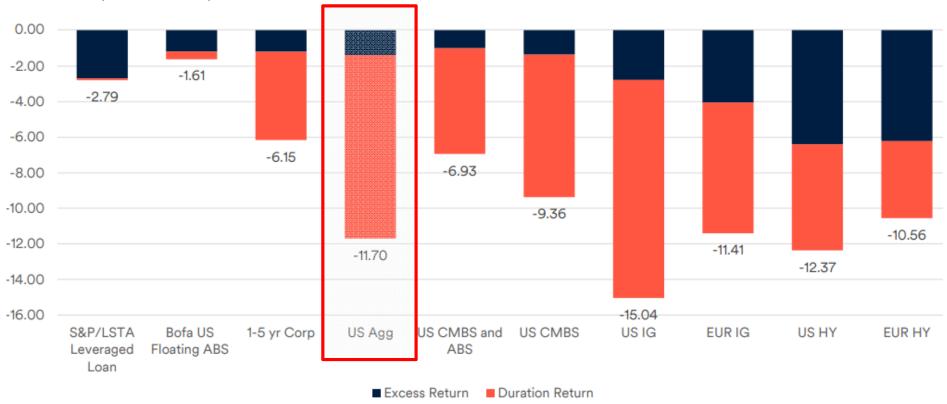
Bloomberg Aggregate
Bloomberg Gov/Credit 1-3 Yr
Bloomberg Intmdt Gov/Credit
Bloomberg Long Gov/Credit
Bloomberg Treasury
Bloomberg TIPS
Bloomberg Securitized
Bloomberg ABS
Bloomberg CMBS
Bloomberg MBS
Bloomberg Invst Grd Credit
Bloomberg High Yield Corp
S&P/LSTA Leveraged Loans



### **Fixed Income Overview**

Fixed income returns have been predominately driven by rates





# Interest rates significantly increased

- -First-half returns worst since inflation of 1970s
- -Global phenomenon driven by recent inflationary pressure
- -All fixed income asset classes have been negatively impacted.
- -Developed market duration becoming more compelling after broad repricing

Source: Schroders



# **July 2022 Market Update**

Returns for Periods Ending July 31, 2022

_	July 2022	Year to Date
Russell:3000 Index	9.4	(13.7)
MSCI:ACWI ex US	3.4	(15.6)
Blmbg:Agg ldx	2.4	(8.2)
Blmbg:Gov/Cred 1-3 Yr	0.5	(2.6)
Blmbg:HY Corp	5.9	(9.1)



**Recent Activity and Plan Performance** 



# **Quarterly Total Fund Highlights**

### As of June 30, 2022

CO PSPF ended the quarter with \$1.2 billion in assets, down \$89.5 million from Q1 2022 after income and distributions and net new investments.

Investment losses were \$106.1 million while cash inflows were \$16.6 million over the quarter

The Total Fund lost 8.2% for the quarter and fell 11.6% for the fiscal year.

The Total Equity Composite slid 15.2% and lost 15.9% for the quarter and fiscal year, respectively.

- Domestic Equity fell 16.7% for the quarter and 14.0% for the year.
- International Equity beat the U.S. for the quarter, declining 12.9%. For the fiscal year, International Equity lagged the U.S. with a loss of 19.0%.

The Fixed Income Composite lagged its benchmark by 34 basis points with a return of -4.5%. For the fiscal year, the portfolio lost 9.8%, behind the benchmark by 30 basis points.

- The Market Duration bond portfolio trailed its benchmark by 23 basis points with a return of -4.9%. For the fiscal year, the portfolio was down 10.6%.
- The Janus Short Duration bond portfolio underperformed its benchmark by 79 basis points with a return of -1.9%. The portfolio lost 4.3% for the fiscal year.

The High Income Strategies Composite outperformed its benchmark for the quarter by 2.0% with a return of -7.6%. For the fiscal year, the Composite down 9.4%, 3.5% ahead of the benchmark.

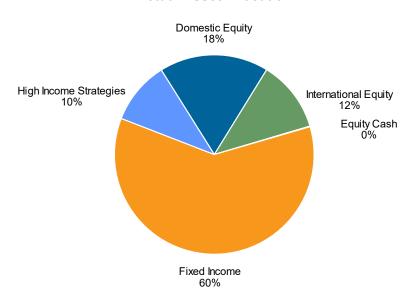
- The MacKay Shields' high yield bond portfolio lost 7.6% and 9.1% for the quarter and fiscal year, respectively.
- The Principal Spectrum preferred securities portfolio returned -7.3% and -11.1% for the quarter and fiscal year, respectively.



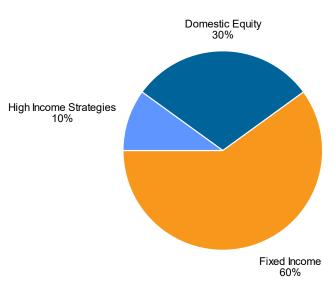
# **Total Fund Asset Allocation**

# June 30, 2022

#### **Actual Asset Allocation**



#### **Target Asset Allocation**



	\$000s	Weight		Percent	\$000s
Asset Class	Actual	Actual	Target	Difference	Difference
Domestic Equity	213,322	17.7%	18.0%	(0.3%)	(3,892)
International Equity	140,349	11.6%	12.0%	(0.4%)	(4,461) 1,654
Equity Cash · ´	1,654	0.1%	0.0%	0.1%	`1,654´
Fixed Income	728,280	60.4%	60.0%	0.4%	4,232
High Income Strategies	123,141	10.2%	10.0%	0.2%	2,466
Total	1.206.746	100.0%	100.0%		

### **Asset Distribution**

	June 30, 2	2022			March 31,	2022
	Market Value	Weight	Net New Inv.	Inv. Return	<b>Market Value</b>	Weight
(1) Total Equity	\$354,193,210	29.35%	\$13,473,972	\$(61,508,840)	\$402,228,078	31.03%
Domestic Equity	\$213,322,225	17.68%	\$11,847,289	\$(40,934,593)	\$242,409,530	18.70%
iShares S&P 1500 ETF	213,322,225	17.68%	11,847,289	(40,934,598)	242,409,535	18.70%
International Equity	\$140,348,734	11.63%	\$2,350,123	\$(20,575,071)	\$158,573,682	12.23%
iShares MSCI Emerging ETF	40,718,329	3.37%	4,223,662	(4,420,241)	40,914,907	3.16%
iShares MSCI Canada ETF	14,250,648	1.18%	566,038	(2,572,977)	16,257,587	1.25%
iShares Core MSCI EAFE ETF	85,379,757	7.08%	(2,439,578)	(13,581,854)	101,401,188	7.82%
Equity Cash	522,251	0.04%	(723,440)	825	1,244,866	0.10%
Total Fixed Income	\$728,279,630	60.35%	\$1,420,650	\$(34,552,656)	\$761,411,636	58.74%
Market Duration	\$625,693,031	51.85%	\$(4,665,106)	\$(32,656,812)	\$663,014,948	51.15%
Colorado Treasurer's Portfolio	625,693,031	51.85%	(4,665,106)	(32,656,812)	663,014,948	51.15%
Short Duration	\$102,586,599	8.50%	\$6,085,756	\$(1,895,844)	\$98,396,688	7.59%
(2) Janus Henderson	102,586,599	8.50%	6,085,756	(1,895,844)	98,396,688	7.59%
High Income Strategies	\$123,141,000	10.20%	\$1,636,453	\$(10,053,481)	\$131,558,027	10.15%
High Yield Fixed Income	\$105,128,398	8.71%	\$1,037,397	\$(8,641,001)	\$112,732,002	8.70%
(3) Mackay Shield US High Yield	105,128,398	8.71%	1,037,397	(8,641,001)	112,732,002	8.70%
Preferred Securities	\$18,012,601	1.49%	\$599,056	\$(1,412,480)	\$18,826,025	1.45%
(4) Principal Preferred Securities	18,012,601	1.49%	599,056	(1,412,480)	18,826,025	1.45%
Cash Available For Investing	\$1,131,763	0.09%	\$57,749	\$26,722	\$1,047,292	0.08%
Total Fund	\$1,206,745,602	100.0%	\$16,588,824	\$(106,088,254)	\$1,296,245,033	100.0%

The Fund ended the quarter at \$1.2 billion, down \$89.5 million from March 31, after distributions. There were net new investments of \$16.6 million and \$106.1 million in investment losses.

<sup>(4)</sup> Funded in July 2020.



<sup>(1)</sup> Funded in December 2017.

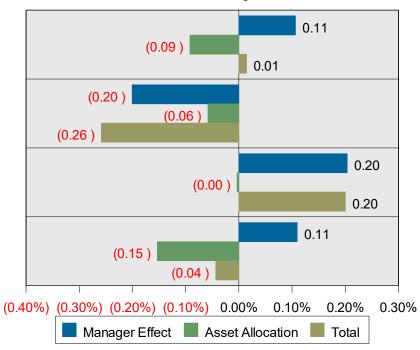
<sup>(2)</sup> Funded in November 2018.

<sup>(3)</sup> Funded in July 2020.

# **One-Quarter Performance Attribution**

# As of June 30, 2022

### **Relative Attribution by Asset Class**



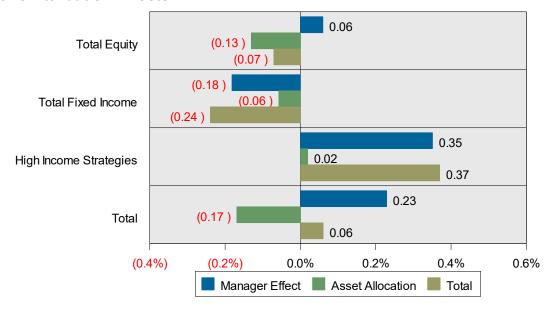
#### Relative Attribution Effects for Quarter ended June 30, 2022

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Total Equity Total Fixed Income	31% 59%	30% 60%	(15.17%) (4.53%)	(15.51%) (4.19%)	0.11% (0.20%)	(0.09%) (0.06%)	0.01% (0.26%)
High Income Strategies	10%	10%	(7.56%)	(9.56%)	0.20%	(0.00%)	0.20%′
Total			(8.16%) =	(8.12%) +	0.11% +	(0.15%)	(0.04%)

# **One Year Performance Attribution**

# As of June 30, 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	30%	29%	(15.85%)	(16.06%)	0.06%	(0.13%)	(0.07%)
Total Fixed Income	61%	61%	(9.76%)	(9.46%)	(0.18%)	(0.06%)	(0.24%)
High Income Strategies	10%	10%	(9.38%)	(12.89%)	0.35%	0.02%	0.37%
Total			(11.58%) =	(11.64%) +	0.23% +	(0.17%)	0.06%

# **Manager & Composite Cumulative Returns**

As of June 30, 2022

		Year		Last	Last
	Last	to	Last	5	10
	Quarter	Date	Year	Years	Years
Total Equity	(15.17%)	(19.82%)	(15.85%)	-	_
60% Russell 3000/40% ACWI ex US	(15.51%)	(20.03%)	(16.06%)	7.35%	9.49%
Domestic Equity	(16.72%)	(21.14%)	(13.95%)	-	-
Russell 3000 Index	(16.70%)	(21.10%)	(13.87%)	10.60%	12.57%
International Equity	(12.93%)	(17.99%)	(18.97%)	-	-
MSCI ACWI ex US	(13.73%)	(18.42%)	(19.42%)	2.50%	4.83%
Total Fixed Income	(4.53%)	(9.63%)	(9.76%)	0.93%	1.63%
Total Fixed Income Benchmark (1)	(4.19%)	(9.46%)	(9.46%)	0.92%	1.32%
Market Duration	(4.92%)	(10.40%)	(10.55%)	0.85%	1.59%
Colorado Treasurer's Portfolio (2)	(4.92%)	(10.40%)	(10.55%)	0.85%	1.59%
PSPF Custom Benchmark (3)	(4.69%)	(10.35%)	(10.29%)	0.88%	1.30%
Short Duration	(1.87%)	(4.31%)	(4.33%)	-	-
Janus Henderson Short Duration	(1.87%)	(4.31%)	(4.33%)	-	-
Blmbg Gov/Cred 1-3 Yr	(0.63%)	(3.11%)	(3.56%)	1.07%	1.01%
85% 1-3YR G/C; 15% 1-3YR BB (4)	(1.08%)	(3.58%)	(3.83%)	1.32%	1.46%
High Income Strategies	(7.56%)	(10.87%)	(9.38%)	-	-
High Income Strategies Benchmark (5)	(9.56%)	(14.13%)	(12.89%)	2.11%	-
High Yield Fixed Income	(7.62%)	(10.73%)	(9.09%)	-	-
Mackay Shield US High Yield	(7.62%)	(10.73%)	(9.09%)	-	-
Blmbg High Yield	(9.83%)	(14.19%)	(12.81%)	2.10%	4.47%
Preferred Securities	(7.26%)	(11.74%)	(11.11%)	-	-
Principal Preferred Securities	(7.26%)	(11.74%)	(11.11%)	-	-
ICE BofA US All Cap Secs	(8.02%)	(13.84%)	(13.33%)	2.07%	
Total Fund w/o CAI (6)	(8.16%)	(12.90%)	(11.58%)	1.84%	2.09%
Total Fund Benchmark (6)	(8.12%)	(13.09%)	(11.64%)	2.04%	1.88%
rotai i uliu Delicililaik (U)	(0.1270)	(13.0370)	(11.0470)	2.04 /0	1.0070

Performance footnotes defined on page 22.



# **Manager & Composite Fiscal Year Returns**

	FY 2022	FY 2021	FY 2020	FY 2019	FY 2018
Total Equity	(15.85%)	41.59%	1.82%	5.64%	-
60% Russell 3000/40% ACWI ex US	(16.06%)	40.77%	1.90%	5.92%	11.78%
Domestic Equity	(13.95%)	44.30%	6.40%	8.85%	-
Russell 3000 Index	(13.87%)	44.16%	6.53%	8.98%	14.78%
International Equity	(18.97%)	37.78%	(4.71%)	0.67%	-
MSCI ACWI ex US	(19.42%)	35.72%	(4.80%)	1.29%	7.28%
otal Fixed Income	(9.76%)	(0.27%)	8.79%	7.38%	(0.39%)
Total Fixed Income Benchmark (1)	(9.46%)	(0.26%)	8.28%	7.52%	(0.40%)
Market Duration	(10.55%)	(0.55%)	9.26%	7.77%	(0.39%)
Colorado Treasurer's Portfolio (2)	(10.55%)	(0.55%)	9.26%	7.77%	(0.39%)
PSPF Custom Benchmark (3)	(10.29%)	(0.33%)	8.74%	7.87%	(0.40%)
Short Duration	(4.33%)	2.33%	4.41%	-	-
Janus Henderson Short Duration	(4.33%)	2.33%	4.41%	-	-
Blmbg Gov/Cred 1-3 Yr	(3.56%)	0.44%	4.20%	4.27%	0.21%
85% 1-3YR G/C; 15% 1-3YR BB (4)	(3.83%)	1.70%	3.94%	4.59%	0.44%
High Income Strategies	(9.38%)	8.82%	_	_	_
High Income Strategies Benchmark (5)	(12.89%)	15.13%	0.46%	7.58%	2.39%
High Yield Fixed Income	(9.09%)	8.61%	-	-	-
Mackay Shield US High Yield	(9.09%)	8.61%	-	-	-
Blmbg High Yield	(12.81%)	15.37%	0.03%	7.48%	2.62%
Preferred Securities	(11.11%)	10.00%	-	-	-
Principal Preferred Securities	(11.11%)	10.00%	-	-	-
ICE BofA US All Cap Secs	(13.33%)	13.67%	2.86%	8.12%	1.14%
Fotal Fund w/o CAI (6)	(11.58%)	8.30%	7.37%	6.94%	(0.36%)
Total Fund Benchmark (6)	(11.64%)	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

Callan Updates

# **Published Research Highlights from 2Q22**

Research Café: ESG Interview Series



Investing in Data Centers: The Real Assets of the Digital Age



Webinar: Pension Risk Transfer



Do Active Fixed Income Managers Add Value With Sector Rotation?



#### **Recent Blog Posts**

Best Practices to Make Sure Investors and Their Managers Are in Sync

Jan Mende

Rising Interest Rates Spur Look at Structured Credit

Nathan Wong

SEC Proposes
Rule to
Enhance ESG
Disclosures for
Investments

Kristin Bradbury

#### **Additional Reading**

Alternatives Focus 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 Alternatives

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 alternative investments like private equity, hedge funds, and real estate and how they can play a key role in any portfolio. In our "Callan College" on Alternatives, you will learn about the importance of allocations to alternatives, and how to consider integrating, evaluating, and monitoring them.

**Join our next VIRTUAL session via Zoom** (2 sessions, 3 hours each): August 24-25, 2022

#### 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 VIRTUAL session via Zoom** (3 sessions, 2–3 hours each): September 20–22, 2022

#### **Mark Your Calendar**

#### **2022 October Regional Workshops**

October 18, 2022

Denver

October 20, 2022 San Francisco

#### Callan Institute's 2023 National Conference

April 2-4, 2023 Scottsdale, Arizona

Watch your email for further details and an invitation.

#### Webinars & Research Café Sessions

#### **Market Intelligence**

October 14, 2022 – 9:30am (PT)



### **Content Calendar—Callan Institute**





# **Callan Updates**

Firm updates by the numbers, as of June 30, 2022

Total Associates: ~200

**Ownership** 

-100% employees

-67% of employees are equity owners

-55% of shareholders identify as women or minority

**Total General and Investment Consultants: more than 55** 

**Total Specialty and Research Consultants: more than 80** 

Total CFA/CAIA/FRMs: more than 55

**Total Institutional Investor Clients: more than 475** 

Assets Under Advisement: more than \$4 trillion

#### **Key Hires**

- Craig Chaikin, CFA, SVP, Denver Consulting
- Emily Hylton, SVP, Atlanta Consulting
- Christina Mays, VP, Real Assets Consulting
- Nicole Wubbena, SVP, Global Manager Research

"Callan has been offering alternatives investment consulting services for more than 30 years. The demand for our services is greater than ever as institutional investors increase their allocations to alternative investments. As a result, we've been expanding our already robust research resources and capabilities to support them." — Pete Keliuotis, EVP, Callan's Alternatives Consulting Group



# Callan

June 30, 2022

**CO Public School Permanent Fund** 

Investment Measurement Service Quarterly Review

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# Recession Call Waits For NBER Committee

**ECONOMY** 

Despite two consecutive quarters of a decline in QDP, the United States is not officially in a recession—until a committee of the National Bureau of Economic Research determines that we are. The stock market, however, is not waiting and has already priced one in.

# Pain Is Widespread For Bond Investors

FIXED INCOME

The Bloomberg US
Aggregate Bond Index
PAGE posted its worst sixmonth return in its history. Market
pricing reflects a Fed Funds rate
of 3.4% at year-end. Double-digit
negative returns were widespread
across developed markets, and all
EM indices saw losses as well.

# Illiquidity Premium Slowly Adjusting

PRIVATE CREDIT

The illiquidity premium between public and private credit had been whittled down close to zero, but we are seeing a slow adjustment. Fundraising slowed in the first half of 2022 as interest rate hikes and market volatility led to investor uncertainty.

# Challenges Galore As Stocks, Bonds Fall

INSTITUTIONAL INVESTORS

All investor types saw returns fall over the last year ending 2Q22, given the drops in both stocks and bonds. Uncertainty in 2022 creates challenges for planning. Investors have to factor in the invasion of Ukraine, inflation, market declines, higher rates, and recession concerns.

#### Private RE Delivers; REITs Underperform

REAL ESTATE/REAL ASSETS

Core real estate delivered another robust quarter, although returns are expected to moderate for the rest of this year and into next. REITs both globally and in the United States lagged equities. Real assets saw widespread losses, with the notable exception of energy.

# Tough Environment Leads to Losses

HEDGE FUNDS/MACs

Hedge funds mostly fell in 2Q22 amid a confluence of major macroeconomic forces. Macro managers remained the best-performing strategy for the first half of 2022. Most of the managers in the Callan Multi-Asset Class (MAC) Style Groups generated negative returns, gross of fees.

# Most Major Indices Fall by Double Digits

EQUITY

The S&P 500 plunged 16.1% in 2Q22; all major U.S. indices across styles and market cap ranges also fell. Global indices followed suit; slowing global growth became clearer toward quarter-end, leading investors toward higher-quality and lower-volatility areas of the market.

#### Persistence Amid Volatile Environment

PRIVATE EQUITY

First-half private equity fundraising and deal activity declined from last year's frenzied levels but volumes remained strong. With the public equity sell-off in 2Q, distributions have been the largest casualty as the strong seller's market has receded.

# DC Index Falls in 1Q22, After 4Q21 Gain

**DEFINED CONTRIBUTION** 

The Callan DC Index™ fell 5.3% in 1Q22; the Age 45 Target Date Fund dropped 5.9%. Target date funds (TDFs) received the largest net inflows during the quarter. U.S. large cap had the largest percentage decrease in allocation; TDFs saw the largest increase.

# Broad Market Quarterly Returns

U.S. Equity Russell 3000



Global ex-U.S. Equity MSCI ACWI ex USA



U.S. Fixed Income Bloomberg Agg



Global ex-U.S. Fixed Income Bloomberg Global Agg ex US



Sources: Bloomberg, FTSE Russell, MSCI

#### Recession—Are We There Yet?

#### **ECONOMY** | Jay Kloepfer

GDP in 2Q22 fell 0.9%, after declining 1.6% in 1Q—so are we already in a recession? If so, that was fast; growth in 4Q21 was a rockin' 6.9%. The stock market already thinks so; investors fully priced in a recession during the first half of 2022, with particularly large declines in April and June and a bear market by midyear. Over history, the stock market moves to price in a recession well before the economic data begin to show a decline.

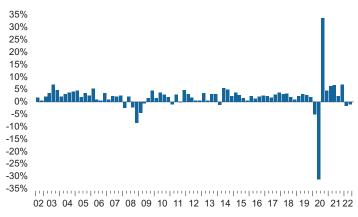
It turns out two consecutive quarters of falling GDP is a nice rule of thumb, but it is not the official definition of recession. So what is, and who gets to decide? First, the decider: the rather grandly named National Bureau of Economic Research Business Cycle Dating Committee. Second, the definition: "a significant decline in economic activity that is spread across the country and lasts more than a few months." The committee uses a number of measures of economic activity, and leans particularly hard on real personal income and nonfarm payroll employment. Interestingly, GDP is used sparingly; the focus of recession dating is typically on a monthly determination of peaks and troughs, while GDP is reported only quarterly.

Data preferences from this arcane Dating Committee aside, two consecutive quarters of GDP decline is still news, even if it does not necessarily indicate recession. The sources of the decline in 2Q GDP included a large decrease in private inventory investment, which subtracted 2 percentage points from GDP. The inventory drop was led by a decrease in retail trade, mainly general merchandise stores, along with motor vehicle dealers. Other detractors to growth were both residential and non-residential fixed investment; and federal, state, and local government spending.

Offsetting the declines were increases in exports and personal consumption expenditures (PCE). The rise in PCE reflected an increase in services (food services, accommodations, and health care) that was partly offset by a decrease in spending on goods (led by food and beverages). So ... more spending

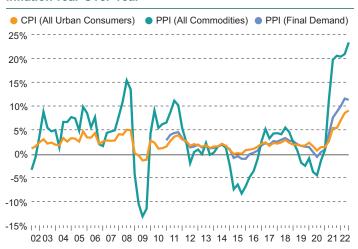
#### **Quarterly Real GDP Growth**

(20 Years)



Source: Bureau of Economic Analysis

#### Inflation Year-Over-Year



Source: Bureau of Labor Statistics

on restaurants and hotels and Airbnbs, and less food at home, even with the sharp rise in prices at the grocery store.

What is especially interesting is that the rise in the dollar helped imports and didn't seem to hurt exports, which is very weird, since that rise makes our exports more expensive and our imports cheaper. Exports fell sharply in 1Q as Russia invaded Ukraine, yet as the war intensified, exports shot back up in 2Q, growing by 18% and contributing almost 2 percentage points to GDP growth. Returning to the premise of the Dating Committee, that much more than GDP growth

should define a recession, somewhat anomalous components of GDP accounted for the declines in 1Q and 2Q. Both guarters were driven by huge changes in exports and inventories, neither of which are usually so important to a given quarter's GDP growth, and do not often reverse the course of growth coming from the rest of the economy. Other data on the broad economy during the first half of 2022 do not necessarily point to a recession, at least not yet. The job market was very robust through both 1Q and 2Q, as the U.S. economy added more than 2.7 million new jobs; since the invasion of Ukraine in February, the job market averaged almost 400,000 new jobs per month, substantially above the 200,000-250,000 rate that indicates an expanding economy. We still have room to recover from the pandemic, however, as we are half a million jobs short of the level set in February 2020.

Disposable personal income increased 6.6% in 2Q, in contrast to a decline of 1.3% in 1Q. Despite this robust growth, incomes could not keep up with inflation, which began ramping up in April 2021. After kicking off the year at 7.5% in January, inflation as measured by the CPI-U index has only gone up each month, reaching 9.1% in the June report. As a result, real disposable personal income (take-home pay, adjusted for inflation) decreased 0.5% in 2Q; while disappointing, this report was substantially better than in 1Q, when real disposable income fell an alarming 7.8%.

The mayhem in the capital markets continued during 2Q, as both stocks and bonds responded to the Fed and the ECB aggressively raising interest rates, Russia's war in Ukraine, concerns about an incipient recession, another COVID surge, and global economic weakness. However, the U.S. economy is still growing robustly. There may be something to this Dating

The Long-Term View

	1				
La desa		_		Ended	
Index	2Q22	1 Yr	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	-16.7	-13.9	10.6	12.6	8.1
S&P 500	-16.1	-10.6	11.3	13.0	8.0
Russell 2000	-17.2	-25.2	5.2	9.4	7.4
Global ex-U.S. Equity					
MSCI EAFE	-14.5	-17.8	2.2	5.4	3.9
MSCI ACWI ex USA	-13.7	-19.4	2.5	4.8	
MSCI Emerging Markets	-11.4	-25.3	2.2	3.1	
MSCI ACWI ex USA Small Cap	-17.5	-22.4	2.6	6.2	5.7
Fixed Income					
Bloomberg Agg	-4.7	-10.3	0.9	1.5	4.4
90-Day T-Bill	0.1	0.2	1.1	0.6	2.0
Bloomberg Long G/C	-12.3	-20.1	1.0	2.6	6.1
Bloomberg Gl Agg ex US	-11.0	-18.8	-1.8	-1.1	2.8
Real Estate					
NCREIF Property	3.2	21.5	8.9	9.7	9.5
FTSE Nareit Equity	-17.0	-6.3	5.3	7.4	8.7
Alternatives					
CS Hedge Fund	-2.3	1.9	4.8	4.7	6.3
Cambridge PE*	-1.5	22.0	20.7	16.5	15.4
Bloomberg Commodity	-5.7	24.3	8.4	-0.8	1.8
Gold Spot Price	-7.5	2.0	7.8	1.2	7.0
Inflation – CPI-U	3.1	9.1	3.9	2.6	2.5

\*Data for most recent period lags. Data as of 3/31/22.

Sources: Bloomberg, Bureau of Economic Analysis, Credit Suisse, FTSE Russell, MSCI, NCREIF, Refinitiv/Cambridge, S&P Dow Jones Indices

Committee's methodical approach. The caveat to its work is that calling turning points relies on government data reported with lags, so the Committee can only designate a recession after it starts. We may be "there," but we will not know until the Committee decides.

#### **Recent Quarterly Economic Indicators**

	2Q22	1Q22	4Q21	3Q21	2Q21	1Q21	4Q20	3Q20
Employment Cost–Total Compensation Growth	5.1%	4.5%	4.0%	3.7%	2.9%	2.6%	2.5%	2.4%
Nonfarm Business–Productivity Growth	-6.2%*	-7.3%	6.3%	-3.9%	3.2%	2.2%	-2.8%	6.2%
GDP Growth	-0.9%	-1.6%	6.9%	2.3%	6.7%	6.3%	4.5%	33.8%
Manufacturing Capacity Utilization	79.8%	79.2%	78.6%	77.5%	76.8%	75.7%	75.0%	73.3%
Consumer Sentiment Index (1966=100)	57.8	63.1	69.9	74.8	85.6	80.2	79.8	75.6

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, IHS Economics, Reuters/University of Michigan

### **Returns Fall Amid Challenging Environment**

#### **INSTITUTIONAL INVESTORS**

#### Investors' performance holds up relatively well

- All investor types saw returns decline over the last year ending 2Q22, given the drops in both stocks and bonds over the same period.
- Relatively, their returns held up well, with all investor types outperforming broad U.S. equities and most topping the Bloomberg US Aggregate Bond Index. The sole exception was corporate defined benefit (DB) plans, not surprising given their typically heavy allocations to fixed income.
- Over much longer periods, all institutional investor types have seen returns roughly in line with a 60% S&P 500/40% Aggregate mix.

#### Strategic planning focus alters

- Drops in both stocks and bonds YTD have changed discussions about asset allocation.
- The questions that investors are focused on now include:
  - How does a yield of 4% change the demand for yield substitutes: investment grade credit, bank loans, high yield, private credit—maybe even real estate and infrastructure?
  - How should investors handle rebalancing, which is a natural outcome of a market downturn, except when everything goes down?

- What should they do about alternatives, which are now over target allocations?
- Uncertainty in the first half of 2022 creates new challenges for planning. Investors are trying to factor in the invasion of Ukraine, inflation, market declines, higher rates, and recession concerns into their decision-making.
- Geopolitical uncertainty has lessened the enthusiasm for emerging market overweights, and raised questions with a number of investors about the value of global ex-U.S. equity broadly to a U.S.-based investor.

#### Quarterly Returns, Callan Database Groups

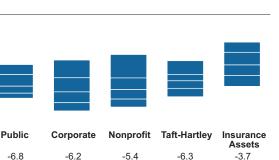
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-5%

-10%

-15%

Source: Callan



(6/30/22)

10th Percentile 25th Percentile -8.2 -8.6 -8.6 -8.1 -5.1 Median -9.7 -10.5 -10.2 -9.0 -6.8 75th Percentile -10.7-12.0-11.5 -10 O -8.3 -9.7 90th Percentile -13.1-12.5-11.1

#### Callan Database Median and Index Returns\* for Periods Ended 6/30/22

Database Group	Quarter	1 Year	3 Years	5 Years	10 Years	20 Years
Public Database	-9.7	-9.4	5.9	6.4	7.8	7.1
Corporate Database	-10.5	-13.1	3.6	5.0	6.8	6.6
Nonprofit Database	-10.2	-10.6	5.2	5.9	7.3	6.9
Taft-Hartley Database	-9.0	-7.7	6.1	6.8	8.1	6.8
Insurance Assets Database	-6.8	-8.6	2.2	3.3	3.9	4.9
All Institutional Investors	-9.9	-10.1	5.2	6.0	7.5	6.9
Large (>\$1 billion)	-8.8	-7.9	6.1	6.7	7.8	7.2
Medium (\$100mm - \$1bn)	-10.1	-10.4	5.2	6.0	7.5	6.8
Small (<\$100 million)	-10.1	-10.7	4.8	5.6	7.1	6.6
60% S&P 500/40% Bloomberg Agg	-11.5	-10.2	6.5	7.5	8.6	7.2

<sup>\*</sup>Returns less than one year are not annualized.

Source: Callan. Callan's database includes the following groups: public defined benefit (DB) plans, corporate DB plans, nonprofits, insurance assets, and Taft-Hartley plans. Approximately 10% to 15% of the database constituents are Callan's clients. All database group returns presented gross of fees. Past performance is no guarantee of future results. Reference to or inclusion in this report of any product, service, or entity should not be construed as a recommendation, approval, affiliation, or endorsement of such product, service, or entity by Callan.

- Real assets are under review with growing inflation concerns.
  - Renewed interest in inflation-sensitive investments that many investors had grown weary of such as energy, commodities, and other natural resources
  - Steadily growing interest in infrastructure among public plans

#### **Corporate DB plan priorities**

- In general, strong interest in de-risking continues despite rise in yields. Higher yields make for a better entry point into long duration, but how much higher can long-term yields go? Plans on a glidepath tied to funded status are adhering to de-risking their portfolio as funded status improves.
- Total return-oriented plans enjoyed a strong 1Q22 as rates rose, but most of these plans gave back some funded status improvement as equities continued their decline in June.
- We are having some discussions about pension risk transfer.

#### **Public DB plan priorities**

- 2020-21 gains drove improvements in funded status.
- Low projected returns mean downward pressure on actuarial discount rates. Moving to lower discount rates has not typically led to substantial changes in asset allocation, but perhaps greater comfort that the current risk posture has a better chance of achieving the plan discount rate.

- How will inflation impact large public plans?
- U.S. equity studies in 2Q22 saw large public plans examining fewer active managers and increasing the allocation to passive in an effort to increase net-of-fee returns. Global ex-U.S. equity studies recognize that foreign markets continue to lag but active managers, especially style-focused managers, are beating the indices net of fees.

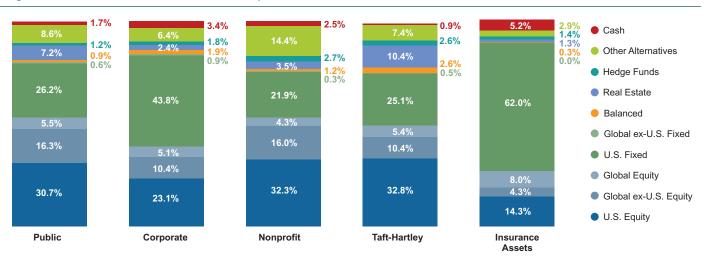
#### Defined contribution (DC) plan priorities

- House passed SECURE 2.0 Act; Senate has two versions moving through committees.
- Final version uncertain, but may include allowing CITs in 403(b) plans and pushing RMDs back to age 75
- Target date funds have been adding allocations to growth assets across the spectrum of retirement cohorts to increase income replacement ratios in light of low expected returns across asset classes. Fee sensitivity has led to more passive in large cap U.S. equity.

#### Nonprofit priorities

They continue to expand the depth and breadth of their private markets investments in light of both high valuations in public markets growth assets and the potential for high inflation to erode the real values of their assets and distributions.

#### Average Asset Allocation, Callan Database Groups



Note: charts may not sum to 100% due to rounding. Other alternatives include but is not limited to: diversified multi-asset, private credit, private equity, and real assets. Source: Callan

### **Equity**

#### **U.S. Equities**

#### All major indices fall

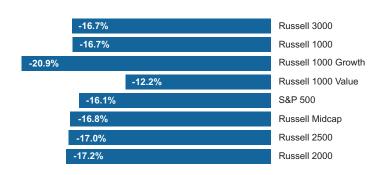
- The S&P 500 plunged 16.1% in 2Q22; all major U.S. indices across styles and market cap ranges fell in the quarter.
- All sectors posted negative returns in the quarter. Energy continued to be the best-performing sector, and the only sector that has posted a gain year-to-date (YTD).
- Large cap stocks nominally outpaced smaller cap stocks.
   The performance spread between the Russell 1000 and the Russell 2000 Index was around 50 basis points.
- Value stocks have outperformed growth stocks across the market capitalization spectrum.
- Consumer Discretionary (-26%), Communication Services (-21%), and Information Technology (-20%) were the worstperforming sectors.

#### Volatile environment hits equity markets

- Rising interest rates and inflation along with geopolitical headlines all contributed to a volatile and risk-averse environment.
- Macroeconomic headlines and data releases will continue to impact equity markets.
- Inflation, rising interest rates, and supply-chain disruptions are all headwinds for equity markets.
- Active large cap growth managers have underperformed the Russell 1000 Growth Index meaningfully recently.
- Large tech firms that have sold-off (e.g., Meta) have become an increasingly large proportion of the value index.

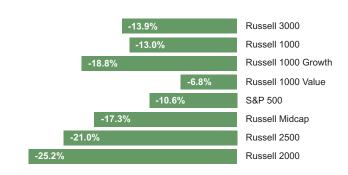
- Federal Reserve interest rate hikes may derail the economy, resulting in lower corporate earnings in the near- to intermediate-term.
- With a potential economic slowdown, sell-side analysts have been cutting corporate earnings estimates.
- Longer-duration growth assets, such as growth stocks, are vulnerable during periods of high inflation because of higher interest rates discounting way-out future earnings.

#### U.S. Equity: Quarterly Returns (6/30/22)



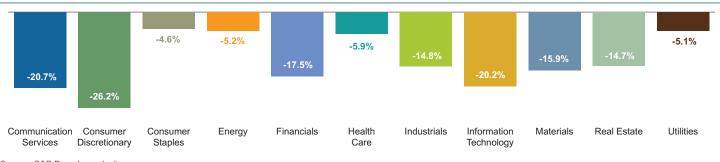
#### U.S. Equity: One-Year Returns

(6/30/22)



Sources: FTSE Russell and S&P Dow Jones Indices

#### **Quarterly Performance of Industry Sectors** (6/30/22)



Source: S&P Dow Jones Indices

#### **Global Equity**

- The war in Ukraine tested an already fragile supply chain, led to energy demand/supply imbalances, and created an inflationary environment that sparked fears of a recession.
- Slowing global growth and recession risk became clearer toward quarter-end, leading investors toward higher-quality and lower-volatility areas of the market to offer protection.

#### Wide divergence in country returns

- Optimism that the worst is behind China's COVID-19 lockdown buoyed the country to the only gain in 2Q22.
- Japan suffered from a weak yen, slowing growth, and continued supply chain disruptions.

#### Growth vs. value

- Value continued to outperform growth as most monetary policies focus on tightening.
- Energy was the only sector with positive YTD results.
- Information Technology had the worst sector return as interest rate increases dampened long duration growth attractiveness.

#### U.S. dollar vs. other currencies

The U.S. dollar strengthened further against other major currencies given its global dominance and perceived safety.

#### The rise of the dollar

- The dollar hit a 20-year high after rising roughly 10% YTD.
- The dollar hit parity with the euro; first time since 2002.
- The yen dipped to a 24-year low against the dollar.
- Strong dollar may burden global ex-U.S. markets.

#### Strong currency yields purchasing power

- Dollar-denominated debt compounded by depreciating local currencies weighed on the economy.
- The dollar and global ex-U.S. equity have exhibited negative correlation over the past four decades.

#### EM has fared better relative to prior downturns

- EM historically declined 26% during prior S&P 500 drawdowns greater than 10%.
- As of 2Q22, EM has corrected by 18% YTD.

#### Global ex-U.S. Equity: Quarterly Returns (U.S. Dollar, 6/30/22)



#### Global ex-U.S. Equity: One-Year Returns (U.S. Dollar, 6/30/22)



Source: MSCI

#### China presents upside opportunity

- Although divergence of China and EM ex-China is notable, China may support EM should fears of a U.S. recession fuel further drawdown.
- China offers favorable growth and valuation relative to other emerging markets.

# **Fixed Income**

#### **U.S. Fixed Income**

# Bonds hit hard as rates rise sharply (again)

- Bloomberg US Aggregate Bond Index posted its worst sixmonth return in its history.
- Yield curve flirted with inversion, but 2-year/10-year yield spread was slightly positive at quarter-end.
- TIPS underperformed nominal Treasuries, and 10-year breakeven spreads fell to 2.33% from 2.84% at 3/31/22.
- Fed raised rates by 75 bps, the largest increase since 1994, with further hikes expected.
- Market pricing reflects Fed Funds rate of 3.4% at year-end.

# Spread sectors underperformed

- Investment grade corporates underperformed like-duration
   U.S. Treasuries by 205 bps; RMBS by 98 bps.
- High yield underperformed as spreads widened; excess return vs. U.S. Treasuries was -792 bps, hurt by equity market performance and worries over the impact of higher rates on the economy.
- Leveraged loans held up relatively well with lower-quality credits generally underperforming.

## Securitized sectors continue to hang in

- Agency RMBS spreads widened in response to increased rate volatility.
- ABS spreads tightened, led by credit cards.

# **Municipal Bonds**

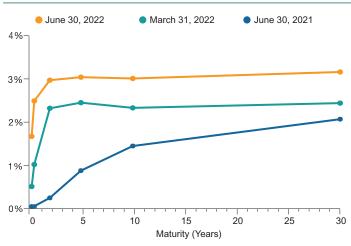
# Returns hurt by rising rates

- Lower quality continued to underperform
- BBB: -4.5%; AAA: -2.5% (YTD BBB: -11.3%; AAA: -8.5%)
- Munis outperformed U.S.Treasuries (Bloomberg US Treasury:
   -3.8%)

#### Valuations relative to U.S. Treasuries at fair value

- 10-year AAA Muni/10-year U.S. Treasury yield ratio roughly 90%; in line with 10-year average
- Municipal Bond Index after-tax yield = 5.4% (source: Eaton Vance)

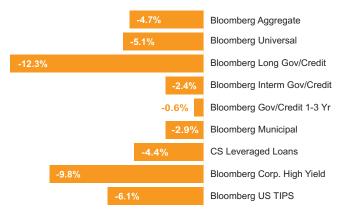
## **U.S. Treasury Yield Curves**



Source: Bloomberg

## **U.S. Fixed Income: Quarterly Returns**

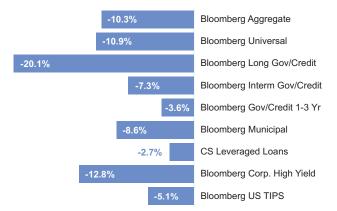
(6/30/22)



Sources: Bloomberg and Credit Suisse

# **U.S. Fixed Income: One-Year Returns**

(6/30/22)



Sources: Bloomberg and Credit Suisse

## FIXED INCOME (Continued)

# Supply/demand

- Outflows of \$76 billion YTD; highest cycle outflow since data series began in 1992
- YTD supply down 14% vs. last year

# **Global Fixed Income**

# Negative returns driven by broad interest rate increases

- U.S. dollar continued to appreciate vs. yen, euro, and pound.
- Double-digit negative returns were widespread across developed markets.

# Inflation and global recession fears drag on EMD

- All countries in the USD-denominated JPM EMBI Global Diversified Index posted negative returns, hurt by rising rates in the U.S.
- Local currency markets across the JPM GBI-EM Global Diversified were down only slightly, but USD strength eroded returns for U.S. investors.

# Interest rates significantly increased

- First-half returns worst since inflation of 1970s
- Global phenomenon driven by recent inflationary pressure
- All fixed income asset classes negatively impacted
- Developed market duration becoming more compelling after broad repricing

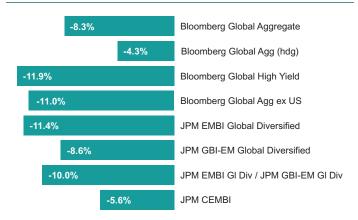
# Change in 10-Year Global Government Bond Yields



Source: Bloomberg

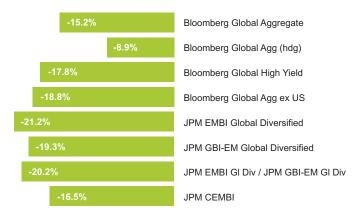
Japan 1 bps

#### **Global Fixed Income: Quarterly Returns** (6/30/22)



Sources: Bloomberg and JPMorgan Chase

#### Global Fixed Income: One-Year Returns (6/30/22)



Sources: Bloomberg and JPMorgan Chase

# **Private RE Delivers; REITs Underperform**

## REAL ESTATE/REAL ASSETS | Munir Iman

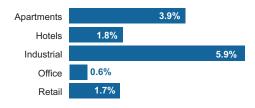
# Robust quarter for private real estate

Core real estate delivered another robust quarter, with strong fundamentals in the Industrial and Multifamily sectors; the NFI-ODCE Index (value-weighted, net of fees) gained 4.5% in 2Q22 and 12.0% year-to-date (YTD). Real estate returns are expected to moderate to 10% in 2022 and 8% in 2023.

- Income returns were positive across all sectors.
- Transaction volumes are slowing as interest rates rise and economic uncertainty increases.
- Industrial and Multifamily sectors are expected to see continued rent growth.
- Office vacancy is expected to stay above long-term averages for the near term.
- Property types with steady cash flows are experiencing cap rate compression due to the demand for logistics facilities coupled with the housing shortage.

### **Sector Quarterly Returns by Property Type**

(6/30/22)



Source: NCREIF

# Public real estate lags

REITs, both in the United States and globally, underperformed in 2Q22.

- The FTSE EPRA Nareit Developed Index, a measure of global REITs, fell 17.4% in 2Q22 compared to a 15.8% drop for global equities (MSCI World).
- The FTSE Nareit Equity REITs index, measuring U.S. REITs, dropped 17.0%, in contrast with the S&P 500 Index, which lost 16.1%.
- REITs are now trading at a discount to NAV and offer relative value given the strength of underlying fundamentals

# Real assets see widespread drops

Following very strong 1Q results, real assets as a group posted negative returns in 2Q as concerns over slowing global growth mounted.

- A lone exception was the energy-heavy S&P GSCI Index, which eked out a 2.0% gain during the quarter while the Bloomberg Commodity TR Index fell 5.7%.
- WTI Crude closed the quarter at \$106/barrel, up from \$100 on 3/31/22 and \$76 at year-end. Gold (S&P Gold Spot Price Index: -7.5%), listed infrastructure (DJB Global Infrastructure: -7.1%), REITs (MSCI US REIT: -16.9%), and TIPS (Bloomberg TIPS: -6.1%) declined.

# Callan Database Median and Index Returns\* for Periods Ended 6/30/22

Private Real Assets	Quarter	Year to Date	1 Year	3 Years	5 Years	10 Years	15 Years
Real Estate ODCE Style	5.0	12.2	27.9	12.3	10.2	10.6	6.2
NFI-ODCE (value-weighted, net)	4.5	12.0	28.3	11.7	9.6	10.2	6.0
NCREIF Property	3.2	8.7	21.5	10.2	8.9	9.7	7.2
NCREIF Farmland	2.6	5.3	11.0	6.6	6.4	9.6	10.6
NCREIF Timberland	1.9	5.1	12.0	5.0	4.3	5.7	5.1
Public Real Estate							
Global Real Estate Style	-17.2	-20.6	-12.2	1.9	5.0	6.9	3.9
FTSE EPRA Nareit Developed	-17.4	-20.7	-13.5	-1.1	1.9	4.7	2.0
Global ex-U.S. Real Estate Style	-18.5	-21.5	-20.6	-1.2	3.7	6.2	1.4
FTSE EPRA Nareit Dev ex US	-17.7	-20.4	-21.1	-5.0	-0.2	3.3	0.1
U.S. REIT Style	-16.7	-20.0	-6.3	6.0	7.0	8.4	6.8
FTSE EPRA Nareit Equity REITs	-17.0	-20.2	-6.3	4.0	5.3	7.4	5.8

\*Returns less than one year are not annualized. Sources: Callan, FTSE Russell, NCREIF

# **Persistence Amid Volatility**

# PRIVATE EQUITY | Gary Robertson

Fundraising 

Based on preliminary data, final closes for private equity partnerships in 2Q22 totaled \$233 billion of commitments in 486 partnerships. (Unless otherwise noted, all data in this commentary come from PitchBook.) The dollar volume was up 3% from 1Q22, but the number of funds fell 11%. For the first half, 2022 commitments are running 13% behind those of a year ago, with the number of funds down by 39%. While the figures point to a decline from 2021, the first-half results are in fact tracking to match last year's total because the second half of 2021 weakened as public equity markets grew volatile.

Buyouts ► New buyout transactions by count fell 12% from 1Q22 to 2,668, and disclosed deal value dropped 42% to \$125 billion. YTD numbers also saw declines of 16% in number of investments and 7% in disclosed value. Average buyout prices remained comparable to 2021, with a similar pattern in average leverage multiples.

VC Investments ► New rounds of financing in venture capital companies totaled 10,244, with \$125 billion of announced value. The number of investments preliminarily fell 24% from 1Q22, and announced value fell 25%. YTD numbers held up stronger, down only 15% for rounds and 13% for disclosed value.

Exits ► There were 522 private M&A exits of private equitybacked companies, with disclosed values totaling \$122 billion. The preliminary private sale count fell 18% and the announced dollar volume dropped 26%. There were 42 private equitybacked IPOs in 2Q22 raising an aggregate \$7 billion, down 7% by count, with issuance being unchanged from 1Q22.

Venture-backed M&A exits totaled 680 transactions with disclosed value of \$23 billion. The number of sales declined 12% from 1Q22, and announced value plunged 56%. There were 67 VC-backed IPOs in 2Q22 with a combined float of \$10 billion; the count was down 9% and the issuance grew 25%.

**Returns** ▶ With the strong downturn in public equity markets, private equity outperformance has widened given private equity's more gradual quarterly mark-to-market valuation methodology.

#### Funds Closed 1/1/22 to 6/30/22

Strategy	No. of Funds	Amt (\$mm)	Share
Venture Capital	650	156,559	34%
Growth Equity	79	61,601	13%
Buyouts	205	185,235	40%
Mezzanine Debt	7	11,021	2%
Distressed	18	26,353	6%
Energy	5	1,930	0%
Secondary and Other	58	11,743	3%
Fund-of-Funds	12	4,325	1%
Totals	1,034	458,767	100%

Source: PitchBook (Figures may not total due to rounding.)

# Private Equity Performance (%) (Pooled Horizon IRRs through 3/31/22\*)

Strategy	Quarter	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years	25 Years
All Venture	-3.6	22.2	35.0	27.5	20.3	14.9	12.1	24.6
Growth Equity	-3.9	17.9	26.5	22.5	16.8	14.3	14.5	15.9
All Buyouts	-0.5	24.6	22.9	20.1	15.7	11.7	14.7	13.6
Mezzanine	1.5	17.2	13.3	12.7	11.9	10.5	11.0	10.3
Credit Opportunities	2.0	12.4	8.4	8.0	8.9	8.8	9.8	9.8
Control Distressed	3.0	33.5	20.8	15.6	13.3	11.1	12.3	12.3
All Private Equity	-1.5	22.6	24.9	21.0	16.1	12.4	13.6	14.6
S&P 500	-4.6	15.7	18.9	16.0	14.6	10.3	9.3	9.4
Russell 3000	-5.3	11.9	18.2	15.4	14.3	10.1	9.4	9.5

Note: Private equity returns are net of fees. Sources: Refinitiv/Cambridge and S&P Dow Jones Indices \*Most recent data available at time of publication

Note: Transaction count and dollar volume figures across all private equity measures are preliminary figures and are subject to update in subsequent versions of the Capital Markets Review and other Callan publications.

# **Appealing to Investors in Low-Yield Climate**

# PRIVATE CREDIT | Catherine Beard

# Illiquidity premium close to zero

- U.S. corporate yields rose dramatically at the end of 2021 and the first six months of 2022, due to higher interest rates from tighter Fed policy and a widening of high yield spreads. Spreads widened because of weaker credit conditions as the U.S. economic outlook worsened.
- The illiquidity premium between public and private credit had been whittled down close to zero, but we are seeing a slow adjustment with SOFR widening out 200 bps and new private loan pricing at a 75-100 bps wider spread. A full adjustment between the public and private markets may take several quarters.
- Private credit fundraising was robust leading into the COVID dislocation, with a particular focus on direct lending and distressed strategies.
- Fundraising slowed in the first half of 2022 as rate hikes and market volatility led to investor uncertainty.
- For mature private credit programs, demand for diversifying strategies is increasing to capture opportunities outside of traditional sponsor-backed direct lending.

## A permanent part of portfolios

- Core yield and income-generating characteristics remain attractive in private credit portfolios, in spite of the shrinking illiquidity premium.
- Despite the shift from a low-yield environment, private credit has become a permanent asset class in many portfolios.

## Attractive inflation-resistant characteristics

Many direct lending assets are floating rate, which can add protection against rising rates.

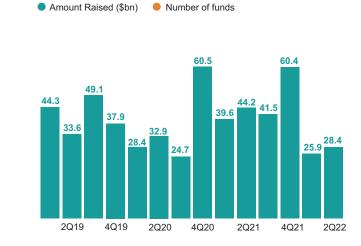
# Distressed cycle on horizon a growing opportunity

- Distressed opportunities in U.S. and Europe are expected to increase across both corporate and non-corporate assets.
  - Enhances importance of seasoned workout talent across sub-strategy types
  - Brings the need for increased underwriting discipline

# Continued evolution of pockets of opportunity

Opportunities include those that offer diversification through differentiated collateral and/or low correlation to public markets, including specialty finance, asset-backed lending, and niche areas.

# Private Credit Fundraising (\$bn)





# **Tough Environment Leads to Losses**

# HEDGE FUNDS/MACs | Joe McGuane

Global markets sold off significantly in 2Q22 amid pressure from high inflation, rising interest rates, and Russia's invasion of Ukraine. In this challenging environment, hedge funds as a whole declined during 2Q, as equity hedge managers had a second quarter of disappointing returns. Event-driven strategies continued to struggle, as their deep value equity positions were the main detractor during the first half of the year while their credit positions held up fairly well. Relative value strategies remained in positive territory, as some managers continued to profit off a rising rate environment while others have been successful in capital structure arbitrage given the volatility in credit and equity markets. Macro managers remained the best-performing strategy for the first half of 2022, as commodity trading was the biggest driver of performance. Strong contributions also came from quantitative strategies.

# **Hedge Fund Style Group Returns**

(6/30/22)



Sources: Callan, Credit Suisse, Federal Reserve

# Callan Peer Group Median and Index Returns\* for Periods Ended 6/30/22

Hedge Fund Universe	Quarter	Year to Date	1 Years	3 Years	5 Years	10 Years
Callan Institutional Hedge Fund Peer Group	-0.7	0.7	3.7	5.6	5.5	6.3
Callan Fund-of-Funds Peer Group	-2.8	-4.5	-4.5	4.8	4.4	5.0
Callan Absolute Return FOF Style	-0.3	1.1	3.4	5.4	4.9	5.0
Callan Core Diversified FOF Style	-2.4	-4.1	-3.9	4.8	4.0	4.7
Callan Long/Short Equity FOF Style	-7.7	-11.5	-12.3	3.2	3.9	5.2
BB GS Cross Asset Risk Premia 6% Vol Idx	4.4	5.0	3.4	-0.1	2.6	4.2
HFRI Fund Weighted Index	-4.9	-5.8	-5.7	6.1	5.1	5.0
HFRI Fixed Convertible Arbitrage	-4.4	-5.0	-2.1	6.1	4.9	5.1
HFRI Distressed/Restructuring	-3.7	-2.5	-1.6	7.4	5.6	5.7
HFRI Emerging Markets	-6.7	-13.0	-15.3	2.6	2.6	3.8
HFRI Equity Market Neutral	0.7	0.2	2.1	2.6	2.5	3.1
HFRI Event-Driven	-6.4	-7.6	-7.1	5.0	4.3	5.2
HFRI Relative Value	-2.6	-1.9	-1.0	3.6	3.6	4.5
HFRI Macro	1.8	8.6	8.0	7.8	5.3	3.1
HFRI Equity Hedge	-8.0	-12.0	-12.2	6.5	5.5	5.9
HFRI Multi-Strategy	-7.0	-8.8	-12.1	4.3	2.0	3.5
HFRI Merger Arbitrage	-2.9	-1.6	0.5	5.8	5.0	4.3
90-Day T-Bill + 5%	1.3	2.6	5.2	5.6	6.1	5.6

\*Net of fees. Sources: Bloomberg GSAM, Callan, Credit Suisse, Hedge Fund Research

The median manager in the Callan Institutional Hedge Fund Peer Group fell 0.7%. Within this style group of 50 peers, the average rates manager gained 1.5%, driven by interest rate volatility. Meanwhile, hedged credit managers lost 4.6% from both performing and distressed credit.

Within the HFRI indices, the best-performing strategy last quarter was again macro (+1.8%), aided by its exposure to commodities and rates trading. Equity hedge strategies had another difficult quarter (-8.0%), as growth-heavy managers experienced a sell-off.

Across the Callan Hedge FOF Database, the median Absolute Return FOF fell 0.3%, as a focus on lower beta strategies held up during the quarter. Meanwhile, the median Callan Long-Short Equity FOF dropped 7.7%, as a growth bias among managers continued to be a drag on performance. The median Callan Core Diversified FOF declined 2.4%, as macro strategies were able to offset some of the negative performance from equity hedge and event-driven managers.

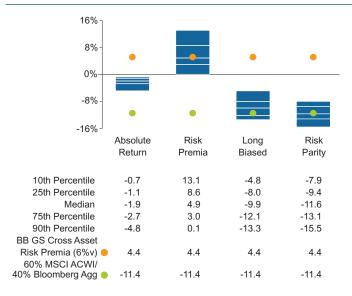
Measuring the quarter's performance of alternative risk premia, the Bloomberg GSAM Risk Premia Index increased 4.4% based upon a 6% volatility target. The median manager of the Callan Multi-Asset Class (MAC) Style Groups generated negative returns, gross of fees, consistent with their underlying risk exposures. For example, the median Callan Long Biased MAC manager fell 9.9%, as exposure to equity and fixed income continued to be a drag on performance. The Callan Risk Parity MAC index, which typically targets an equal risk-weighted allocation to the major asset classes with leverage, was down 11.6%. The Callan Risk Premia MAC held up the best during the quarter, up 4.9%.

### **MAC Style Group Returns**

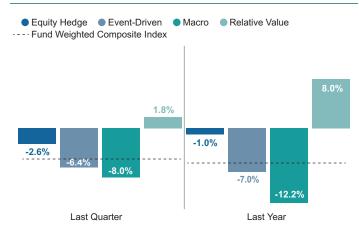
(6/30/22)

# **HFRI Hedge Fund Strategy Returns**

(6/30/22)



Source: HFRI



Sources: Bloomberg, Callan, Eurekahedge, S&P Dow Jones Indices

# DC Index Falls in 1Q22, Reversing 4Q21 Gain

# **DEFINED CONTRIBUTION | Patrick Wisdom**

# Performance: Index falls to begin year

- The Callan DC Index™ fell 5.3% in 1Q22, a reversal from its 4Q21 gain (5.0%).
- The Age 45 Target Date Fund dropped 5.9%.

# **Growth Sources: Losses drive decline in balances**

- Balances within the DC Index declined by 5.4% after a 4.4% increase the previous quarter.
- Investment returns (-5.3%) primarily drove the decline.

### **Turnover: Net transfers rise**

- Turnover (i.e., net transfer activity levels within DC plans) increased to 0.42% from the previous guarter's 0.19%.
- The Index's historical average (0.57%) remained unchanged and signaled that most participants have not drastically altered their allocations.

# Net Cash Flow Analysis: TDFs stay atop leaderboard

- Target date funds (TDFs) received the largest net inflows in the Index, followed closely by stable value.
- Investors transferred assets out of U.S. large-cap equity (-47.4%), U.S. small/mid-cap equity (-16.5%), and global ex-U.S. equity (-3.1%).

## **Equity Allocation: Exposure falls slightly**

The Index's overall allocation to equity (72.0%) fell from the previous quarter's level (72.8%), driven by both investor outflows and declines in equity markets.

# Asset Allocation: U.S. equity falls; target date funds gain

- U.S. large cap (26.9%) and U.S. small/mid cap (8.3%) had the largest percentage decreases in allocation.
- Target date funds (32.6%) and stable value (8.6%) had the largest percentage increases.

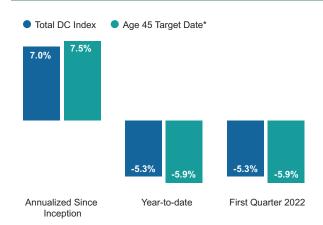
## Prevalance of Asset Class: Balanced funds dip again

The prevalence of a balanced fund (43.2%) decreased again to its lowest level since the inception of the Index in 2006.

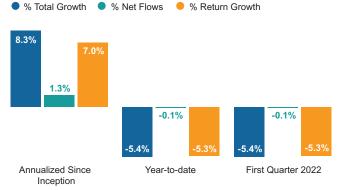
Underlying fund performance, asset allocation, and cash flows of more than 100 large defined contribution plans representing approximately \$400 billion in assets are tracked in the Callan DC Index.

#### **Investment Performance**

(3/31/22)



# **Growth Sources** (3/31/22)



# **Net Cash Flow Analysis (1Q22)**

(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	48.4%
Stable Value	42.2%
U.S. Fixed Income	-17.1%
U.S. Large Cap	-47.4%
Total Turnover**	0.42%

Data provided here is the most recent available at time of publication.

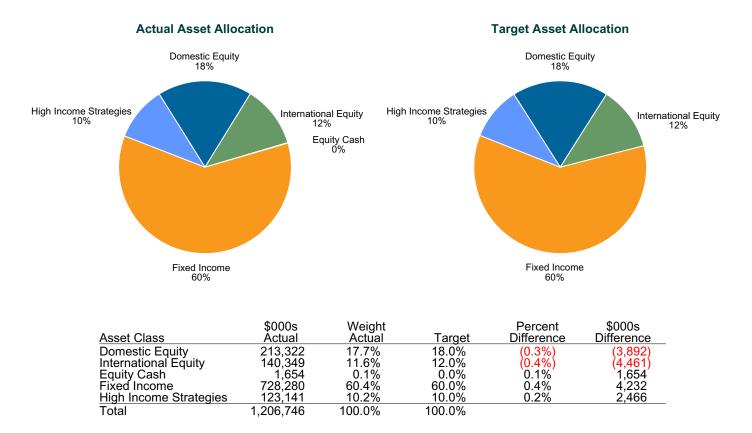
Source: Callan DC Index

Note: DC Index inception date is January 2006.

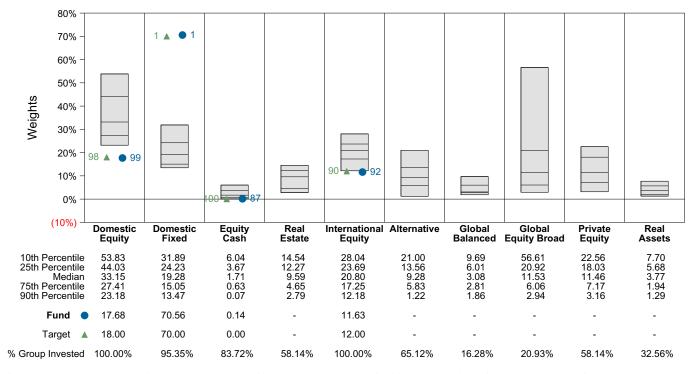
- The Age 45 Fund transitioned from the average 2035 TDF to the 2040 TDF in June 2018.
- \*\* Total Index "turnover" measures the percentage of total invested assets (transfers only, excluding contributions and withdrawals) that moved between asset classes.

# Actual vs Target Asset Allocation As of June 30, 2022

The top left chart shows the Fund's asset allocation as of June 30, 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 Weights vs Callan Endow/Foundation - Mid (100M-1B)



<sup>\*</sup> 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 June 30, 2022, with the distribution as of March 31, 2022. 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**

	June 30, 2	2022		March 31, 2022			
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight	
(1) Total Equity	\$354,193,210	29.35%	\$13,473,972	\$(61,508,840)	\$402,228,078	31.03%	
Domestic Equity	\$213,322,225	17.68%	\$11,847,289	\$(40,934,593)	\$242,409,530	18.70%	
iShares S&P 1500 ETF	213,322,225	17.68%	11,847,289	(40,934,598)	242,409,535	18.70%	
International Equity	\$140,348,734	11.63%	\$2,350,123	\$(20,575,071)	\$158,573,682	12.23%	
iShares MSCI Emerging ETF	40,718,329	3.37%	4,223,662	(4,420,241)	40,914,907	3.16%	
iShares MSCI Canada ETF	14,250,648	1.18%	566,038	(2,572,977)	16,257,587	1.25%	
iShares Core MSCI EAFE ETF	85,379,757	7.08%	(2,439,578)	(13,581,854)	101,401,188	7.82%	
Equity Cash	522,251	0.04%	(723,440)	825	1,244,866	0.10%	
Total Fixed Income	\$728,279,630	60.35%	\$1,420,650	\$(34,552,656)	\$761,411,636	58.74%	
Market Duration	\$625,693,031	51.85%	\$(4,665,106)	\$(32,656,812)	\$663,014,948	51.15%	
Colorado Treasurer's Portfolio	625,693,031	51.85%	(4,665,106)	(32,656,812)	663,014,948	51.15%	
Short Duration	\$102,586,599	8.50%	\$6,085,756	\$(1,895,844)	\$98,396,688	7.59%	
(2) Janus Henderson	102,586,599	8.50%	6,085,756	(1,895,844)	98,396,688	7.59%	
High Income Strategies	\$123,141,000	10.20%	\$1,636,453	\$(10,053,481)	\$131,558,027	10.15%	
High Yield Fixed Income	\$105,128,398	8.71%	\$1,037,397	\$(8,641,001)	\$112,732,002	8.70%	
(3) Mackay Shield US High Yield	105,128,398	8.71%	1,037,397	(8,641,001)	112,732,002	8.70%	
Preferred Securities	\$18,012,601	1.49%	\$599,056	\$(1,412,480)	\$18,826,025	1.45%	
(4) Principal Preferred Securities	18,012,601	1.49%	599,056	(1,412,480)	18,826,025	1.45%	
Cash Available For Investing	\$1,131,763	0.09%	\$57,749	\$26,722	\$1,047,292	0.08%	
Total Fund	\$1,206,745,602	100.0%	\$16,588,824	\$(106,088,254)	\$1,296,245,033	100.0%	



<sup>(1)</sup> Funded in December 2017.

<sup>(2)</sup> Funded in November 2018.

<sup>(3)</sup> Funded in July 2020. (4) 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 June 30, 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 June 30, 2022

	Last Quarter	Year to Date	Last Year	Last 5 Years	Last 10 Years
Total Equity	(15.17%)	(19.82%)	(15.85%)	-	-
60% Russell 3000/40% ACWI ex US	(15.51%)	(20.03%)	(16.06%)	7.35%	9.49%
Domestic Equity	(16.72%)	(21.14%)	(13.95%)	-	-
Russell 3000 Index	(16.70%)	(21.10%)	(13.87%)	10.60%	12.57%
International Equity	(12.93%)	(17.99%)	(18.97%)	-	_
MSCI ACWI ex US	(13.73%)	(18.42%)	(19.42%)	2.50%	4.83%
Total Fixed Income	(4.53%)	(9.63%)	(9.76%)	0.93%	1.63%
Total Fixed Income Benchmark (1)	(4.19%)	(9.46%)	(9.46%)	0.92%	1.32%
Market Duration	(4.92%)	(10.40%)	(10.55%)	0.85%	1.59%
Colorado Treasurer's Portfolio (2)	(4.92%)	(10.40%)	(10.55%)	0.85%	1.59%
PSPF Custom Benchmark (3)	(4.69%)	(10.35%)	(10.29%)	0.88%	1.30%
Short Duration	(1.87%)	(4.31%)	(4.33%)	-	-
Janus Henderson Short Duration	(1.87%)	(4.31%)	(4.33%)	-	-
Blmbg Gov/Cred 1-3 Yr	(0.63%)	(3.11%)	(3.56%)	1.07%	1.01%
85% 1-3YR G/C; 15% 1-3YR BB (4)	(1.08%)	(3.58%)	(3.83%)	1.32%	1.46%
High Income Strategies	(7.56%)	(10.87%)	(9.38%)	-	-
High Income Strategies Benchmark (5)	(9.56%)	(14.13%)	(12.89%)	2.11%	-
High Yield Fixed Income	(7.62%)	(10.73%)	(9.09%)	-	-
Mackay Shield US High Yield	(7.62%)	(10.73%)	(9.09%)	-	-
Blmbg High Yield	(9.83%)	(14.19%)	(12.81%)	2.10%	4.47%
Preferred Securities	(7.26%)	(11.74%)	(11.11%)	-	-
Principal Preferred Securities	(7.26%)	(11.74%)	(11.11%)	-	-
ICE BofA US All Cap Secs	(8.02%)	(13.84%)	(13.33%)	2.07%	-
Total Fund w/o CAI (6)	(8.16%)	(12.90%)	(11.58%)	1.84%	2.09%
Total Fund Benchmark (6)	(8.12%)	(13.09%)	(11.64%)	2.04%	1.88%
	(5= /5/	(.0.0070)	( , . , . ,	=.0.70	

<sup>\*</sup>All composites and manager returns are shown gross-of-fees.



<sup>(1)</sup> Current quarter's Total Fixed Income Benchmark consists of 88.4% Bloomberg U.S. Aggregate and

<sup>11.6%</sup> Bloomberg Gov/Credit 1-3 Yrs.

<sup>(2)</sup> Includes cash returns starting July 2017.

<sup>(3)</sup> The PSPF Fixed Income Portfolio Custom Benchmark consisted of 37% U.S. Treasury 1-10 Year Index, 34% Mortgages

<sup>0-10</sup> 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.

<sup>(4)</sup> Benchmark consists of 85% Bloomberg 1-3 Year Government/Credit Index and 15% BofAML

<sup>1-3</sup> Year BB US Cash Pay High Yield Index.

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

<sup>(6)</sup> Current quarter's Total Fund Benchmark consists of 16.4% Russell 3000, 10.9% MSCI ACWI ex US,

<sup>57.0%</sup> 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.

# **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.

	FY 2022	FY 2021	FY 2020	FY 2019	FY 2018
Total Equity	(15.85%)	41.59%	1.82%	5.64%	-
60% Russell 3000/40% ACWI ex US	(16.06%)	40.77%	1.90%	5.92%	11.78%
Domestic Equity	(13.95%)	44.30%	6.40%	8.85%	-
Russell 3000 Index	(13.87%)	44.16%	6.53%	8.98%	14.78%
International Equity	(18.97%)	37.78%	(4.71%)	0.67%	-
MSCI ACWI ex US	(19.42%)	35.72%	(4.80%)	1.29%	7.28%
Total Fixed Income	(9.76%)	(0.27%)	8.79%	7.38%	(0.39%)
Total Fixed Income Benchmark (1)	(9.46%)	(0.26%)	8.28%	7.52%	(0.40%)
Market Duration	(10.55%)	(0.55%)	9.26%	7.77%	(0.39%)
Colorado Treasurer's Portfolio (2)	(10.55%)	(0.55%)	9.26%	7.77%	(0.39%)
PSPF Custom Benchmark (3)	(10.29%)	(0.33%)	8.74%	7.87%	(0.40%)
Short Duration	(4.33%)	2.33%	4.41%	-	-
Janus Henderson Short Duration	(4.33%)	2.33%	4.41%	-	-
Blmbg Gov/Cred 1-3 Yr	(3.56%)	0.44%	4.20%	4.27%	0.21%
85% 1-3YR G/C; 15% 1-3YR BB (4)	(3.83%)	1.70%	3.94%	4.59%	0.44%
High Income Strategies	(9.38%)	8.82%	_	_	-
High Income Strategies Benchmark (5)	(12.89%)	15.13%	0.46%	7.58%	2.39%
High Yield Fixed Income	(9.09%)	8.61%	-	-	-
Mackay Shield US High Yield	(9.09%)	8.61%	-	=	-
Blmbg High Yield	(12.81%)	15.37%	0.03%	7.48%	2.62%
Preferred Securities	(11.11%)	10.00%	-	-	-
Principal Preferred Securities	(11.11%)	10.00%	-	-	-
ICE BofA US All Cap Secs	(13.33%)	13.67%	2.86%	8.12%	1.14%
Total Fund w/o CAI (6)	(11.58%)	8.30%	7.37%	6.94%	(0.36%)
Total Fund Benchmark (6)	(11.64%)	7.98%	7.87%	7.49%	0.01%
rotar runa Denominarit (0)	(11.0770)	1.0070	1.01 /0	1.40/0	0.0170

<sup>\*</sup>All composites and manager returns are shown gross-of-fees.



<sup>(1)</sup> Current quarter's Total Fixed Income Benchmark consists of 88.4% Bloomberg U.S. Aggregate and

<sup>11.6%</sup> Bloomberg Gov/Credit 1-3 Yrs.

<sup>(2)</sup> Includes cash returns starting July 2017.

<sup>(3)</sup> The PSPF Fixed Income Portfolio Custom Benchmark consisted of 37% U.S. Treasury 1-10 Year Index, 34% Mortgages

<sup>0-10</sup> 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.

<sup>(4)</sup> Benchmark consists of 85% Bloomberg 1-3 Year Government/Credit Index and 15% BofAML

<sup>1-3</sup> Year BB US Cash Pay High Yield Index.

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

<sup>(6)</sup> Current quarter's Total Fund Benchmark consists of 16.4% Russell 3000, 10.9% MSCI ACWI ex US,

<sup>57.0%</sup> 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.

# **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	12.009
International Equity	MSCI ACWI ex US	8.009
Market Duration	Bloomberg Barclays Aggregate	72.009
Short Duration	Bloomberg Barclays Gov/Cred 1-3 Yr	8.009
January 1st, 2019 - September	30th, 2020	
US Equity	Russell 3000 Index	12.009
International Equity	MSCI ACWI ex US	8.00%
Market Duration	Bloomberg Barclays Aggregate	72.009
Short Duration	Bloomberg Barclays Gov/Cred 1-3 Yr	8.00%
October 1st, 2020 - March 31s	t. 2021	
US Equity	Russell 3000 Index	12.009
International Equity	MSCI ACWI ex US	8.009
Market Duration	Bloomberg Barclays Aggregate	67.50°
Short Duration	Bloomberg Barclays Gov/Cred 1-3 Yr	7.509
High Yield	Bloomberg Barclays US High Yield	4.259
Preferred Securities	ICE BofA U.S. All Capital Securities Index	0.75%
April 1st, 2021 - June 30th, 202	Russell 3000 Index	14.709
US Equity International Equity	MSCI ACWI ex US	9.809
Market Duration	Bloomberg Barclays Aggregate	61.509
Short Duration	Bloomberg Barclays Gov/Cred 1-3 Yr	7.509
High Yield	Bloomberg Barclays US High Yield	5.509
Preferred Securities	ICE BofA U.S. All Capital Securities Index	1.00%
July 1st, 2021 - September 30, 2	2024	
US Equity	Russell 3000 Index	16.359
International Equity	MSCI ACWI ex US	10.909
Market Duration	Bloomberg Barclays Aggregate	57.00°
Short Duration	Bloomberg Barclays Aggregate  Bloomberg Barclays Gov/Cred 1-3 Yr	7.509
High Yield	Bloomberg Barclays US High Yield	7.009
Preferred Securities	ICE BofA U.S. All Capital Securities Index	1.259
October 1st, 2021 - Current		
US Equity	Russell 3000 Index	18.00°
International Equity	MSCI ACWI ex US	12.009
Market Duration	Bloomberg Barclays Aggregate	52.50°
Short Duration	Bloomberg Barclays Gov/Cred 1-3 Yr	7.509
High Yield	Bloomberg Barclays US High Yield	8.50
<b>5</b>	J	2.30

ICE BofA U.S. All Capital Securities Index



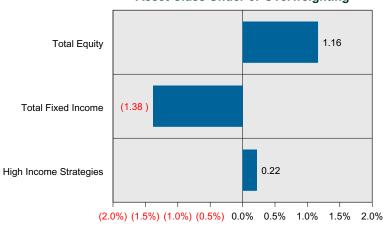
Preferred Securities

1.50%

# **Quarterly Total Fund Relative Attribution - June 30, 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.

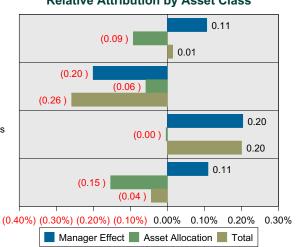
# **Asset Class Under or Overweighting**



# **Actual vs Target Returns**

# (15.17)**Total Equity** (15.51)(4.53)Total Fixed Income (4.19)(7.56)High Income Strategies (9.56)(8.16) Total (8.12)(10%)(20%)(15%)(5%)0% Actual Target

# **Relative Attribution by Asset Class**



## Relative Attribution Effects for Quarter ended June 30, 2022

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Total Equity Total Fixed Income High Income Strategi	31% 59% es 10%	30% 60% 10%	(15.17%) (4.53%) (7.56%)	(15.51%) (4.19%) (9.56%)	0.11% ( <mark>0.20%)</mark> 0.20%	(0.09%) (0.06%) (0.00%)	0.01% (0.26%) 0.20%
Total		1070	(8.16%) =		0.11% +	(0.15%)	(0.04%)

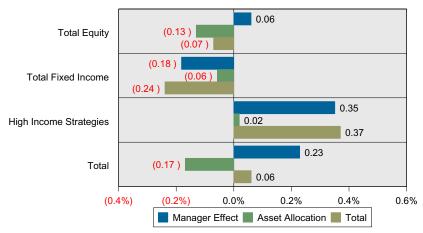
<sup>\*</sup> Current Quarter Target = 52.5% Blmbg Aggregate, 18.0% Russell 3000 Index, 12.0% MSCI ACWI ex US, 8.5% Blmbg HY Corp, 7.5% Blmbg Gov/Cred 1-3 Yr and 1.5% ICE All US Cap Secs.



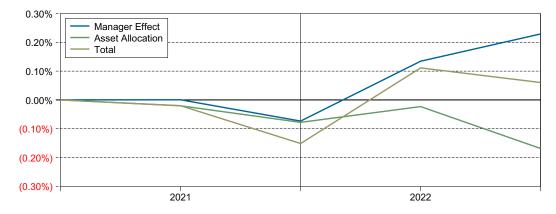
# **Cumulative Total Fund Relative Attribution - June 30, 2022**

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 Total Equity Total Fixed Income High Income Strategie	Effective Actual Weight 30% 61% s 10%	Effective Target Weight 29% 61% 10%	Actual Return (15.85%) (9.76%) (9.38%)	Target Return (16.06%) (9.46%) (12.89%)	Manager Effect 0.06% (0.18%) 0.35%	Asset Allocation (0.13%) (0.06%) 0.02%	Total Relative Return (0.07%) (0.24%) 0.37%
Total			(11.58%) =	(11.64%) +	0.23% +	· (0.17%)	0.06%

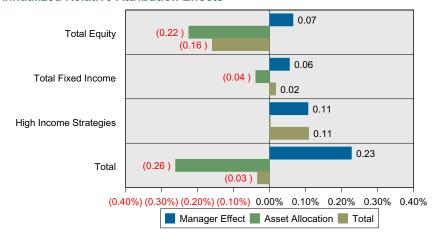
<sup>\*</sup> Current Quarter Target = 52.5% Blmbg Aggregate, 18.0% Russell 3000 Index, 12.0% MSCI ACWI ex US, 8.5% Blmbg HY Corp, 7.5% Blmbg Gov/Cred 1-3 Yr and 1.5% ICE All US Cap Secs.



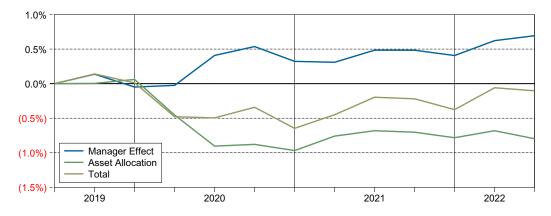
# Cumulative Total Fund Relative Attribution - June 30, 2022

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 Total Equity Total Fixed Income High Income Strategie	Effective Actual Weight 24% 71% es 5%	Effective Target Weight 23% 72% 5%	Actual Return 6.65% (0.70%)	Target Return 6.38% (0.75%)	Manager Effect 0.07% 0.06% 0.11%	Asset Allocation (0.22%) (0.04%) 0.00%	Total Relative Return (0.16%) 0.02% 0.11%
Total			0.93% =	0.96%	+ 0.23% +	(0.26%)	(0.03%)

<sup>\*</sup> 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.



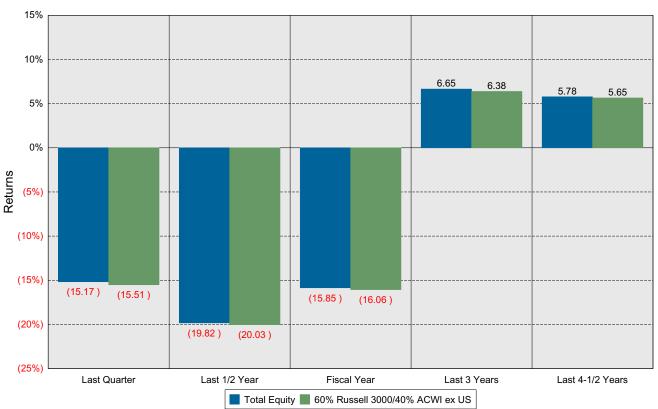
# Total Equity Period Ended June 30, 2022

# **Inception Date**

Parametric was funded December 12th, 2017.

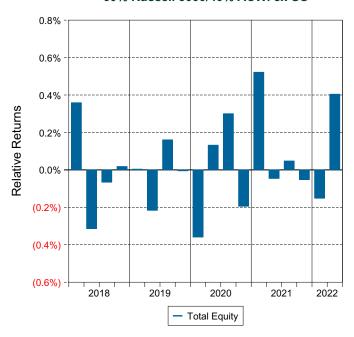
## **Quarterly Summary and Highlights**

• Total Equity's portfolio outperformed the 60% Russell 3000/40% ACWI ex US by 0.34% for the quarter and outperformed 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-Half Year Risk vs Return





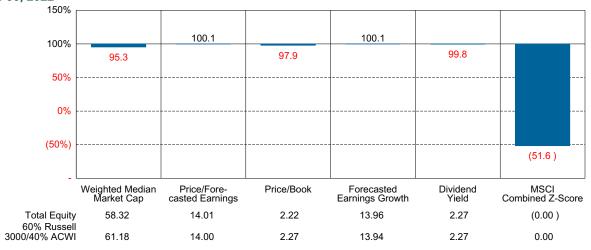


# Total Equity Equity Characteristics Analysis Summary

## **Portfolio Characteristics**

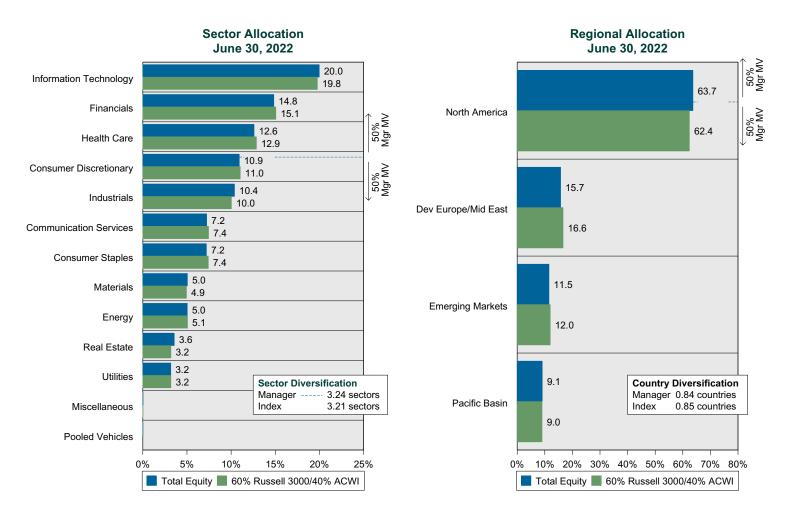
This graph compares the manager's portfolio characteristics relative to the benchmark's portfolio characteristics.

# Portfolio Characteristics Relative to 60% Russell 3000/40% ACWI as of June 30, 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.





# Domestic Equity Period Ended June 30, 2022

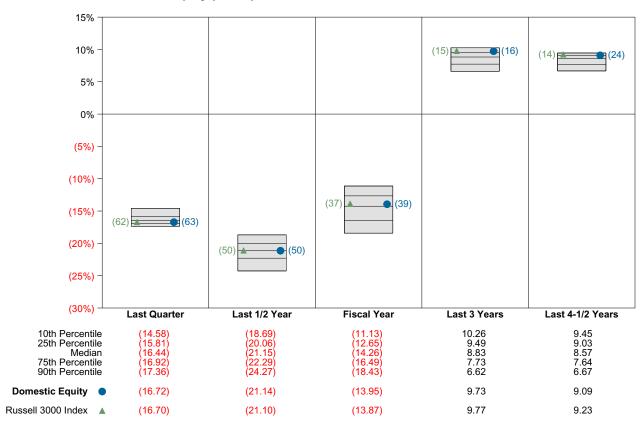
# **Inception Date**

Parametric was funded December 12th, 2017.

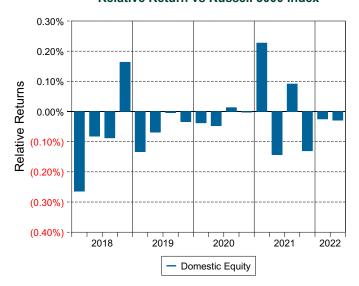
# **Quarterly Summary and Highlights**

- Domestic Equity's portfolio posted a (16.72)% return for the quarter placing it in the 63 percentile of the EF- Domestic Equity group for the quarter and in the 39 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 0.08%.

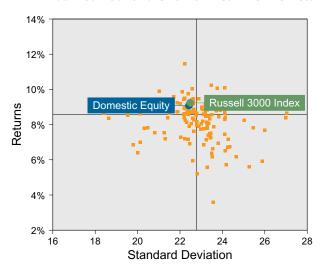
# Performance vs EF- Domestic Equity (Gross)



# Relative Return vs Russell 3000 Index



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



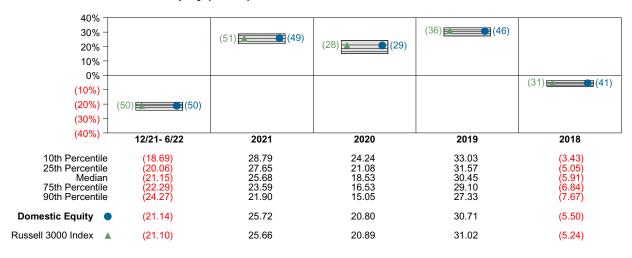


# Domestic Equity Return Analysis Summary

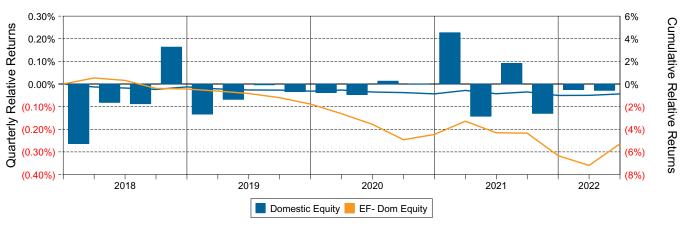
## **Return Analysis**

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.

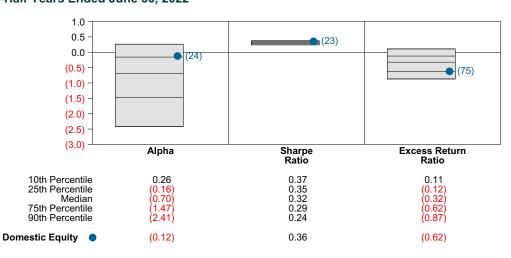
# Performance vs EF- Domestic Equity (Gross)



# **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-Half Years Ended June 30, 2022



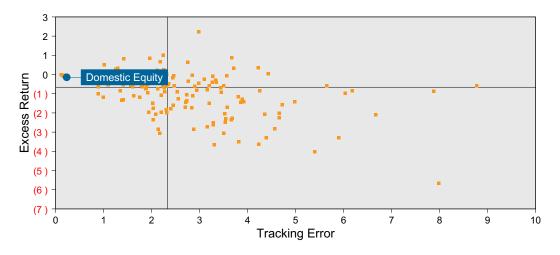


# Domestic Equity Risk Analysis Summary

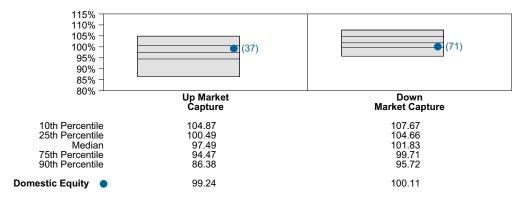
### **Risk Analysis**

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.

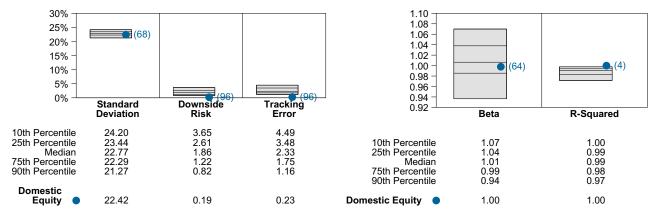
# Risk Analysis vs EF- Domestic Equity (Gross) Four and One-Half Years Ended June 30, 2022



Market Capture vs Russell 3000 Index Rankings Against EF- Domestic Equity (Gross) Four and One-Half Years Ended June 30, 2022



Risk Statistics Rankings vs Russell 3000 Index Rankings Against EF- Domestic Equity (Gross) Four and One-Half Years Ended June 30, 2022



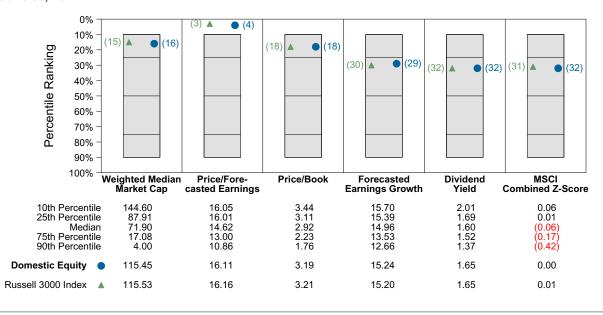


# Domestic Equity Equity Characteristics Analysis Summary

## **Portfolio Characteristics**

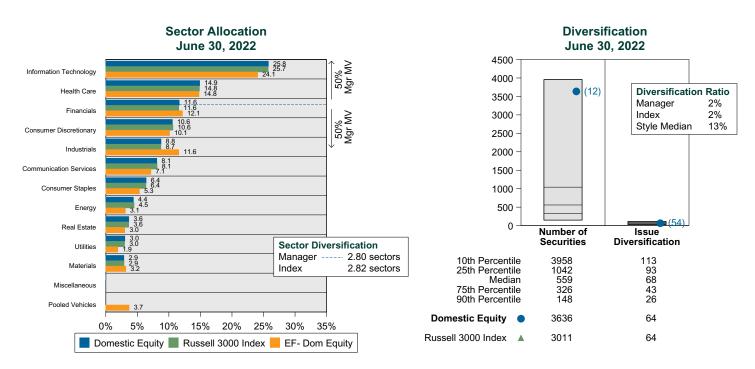
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

# Portfolio Characteristics Percentile Rankings Rankings Against EF- Domestic Equity as of June 30, 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 June 30, 2022

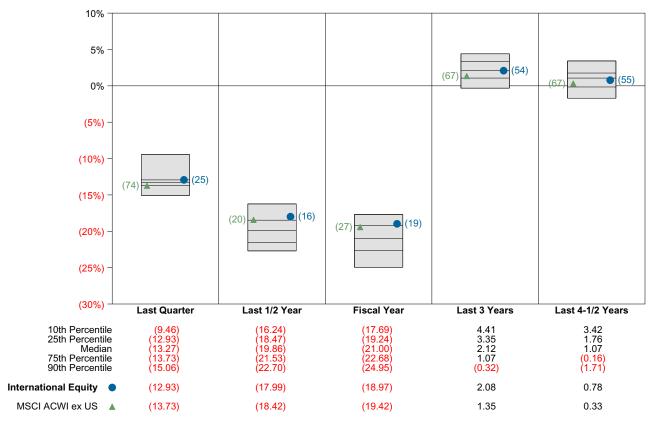
# **Inception Date**

Parametric was funded December 12th, 2017.

## **Quarterly Summary and Highlights**

- International Equity's portfolio posted a (12.93)% return for the quarter placing it in the 25 percentile of the EF-International Equity group for the quarter and in the 19 percentile for the last year.
- International Equity's portfolio outperformed the MSCI ACWI ex US by 0.79% for the quarter and outperformed the MSCI ACWI ex US for the year by 0.45%.

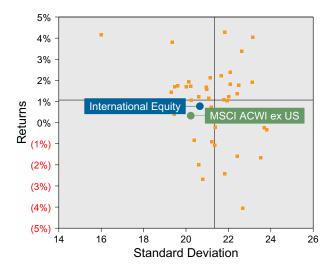
# Performance vs EF- International Equity (Gross)



# Relative Return vs MSCI ACWI ex US



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



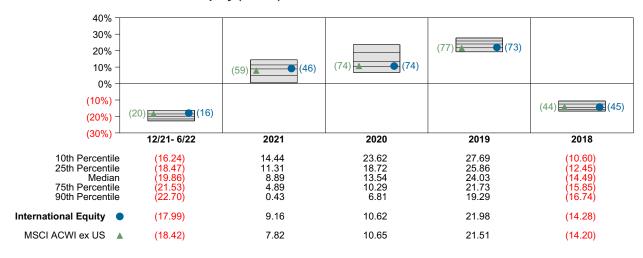


# International Equity Return Analysis Summary

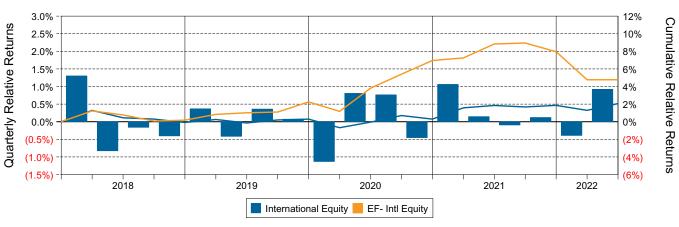
## **Return Analysis**

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.

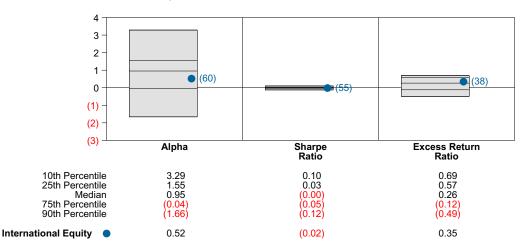
# Performance vs EF- International Equity (Gross)



# 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-Half Years Ended June 30, 2022



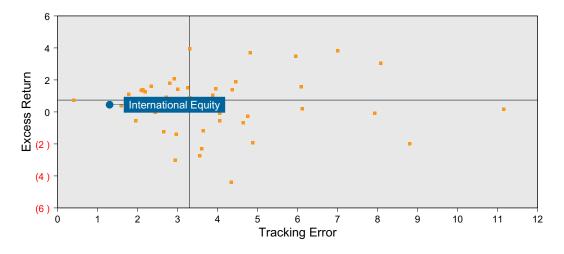


# International Equity Risk Analysis Summary

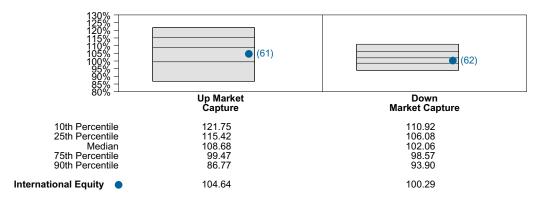
### **Risk Analysis**

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.

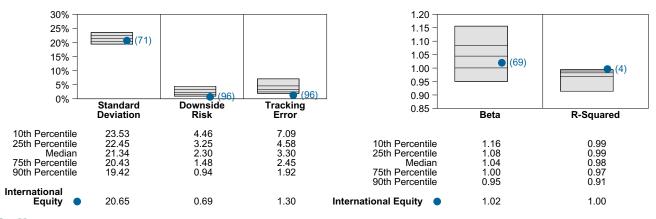
# Risk Analysis vs EF- International Equity (Gross) Four and One-Half Years Ended June 30, 2022



# Market Capture vs MSCI ACWI ex US Rankings Against EF- International Equity (Gross) Four and One-Half Years Ended June 30, 2022



# Risk Statistics Rankings vs MSCI ACWI ex US Rankings Against EF- International Equity (Gross) Four and One-Half Years Ended June 30, 2022



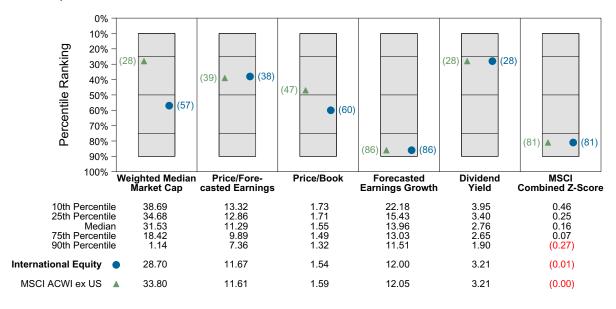


# International Equity Equity Characteristics Analysis Summary

## **Portfolio Characteristics**

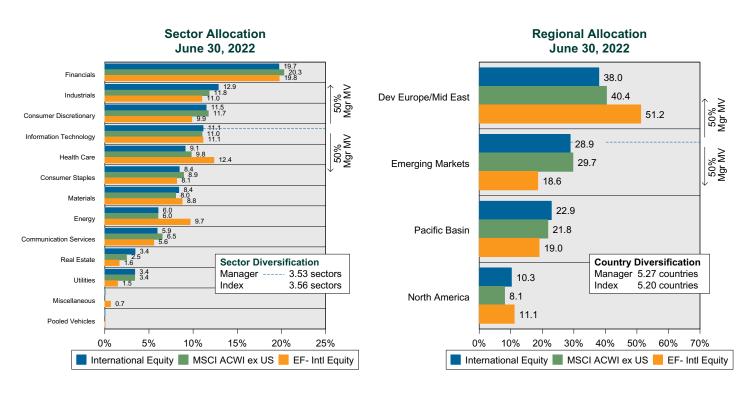
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

# Portfolio Characteristics Percentile Rankings Rankings Against EF- International Equity as of June 30, 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 June 30, 2022

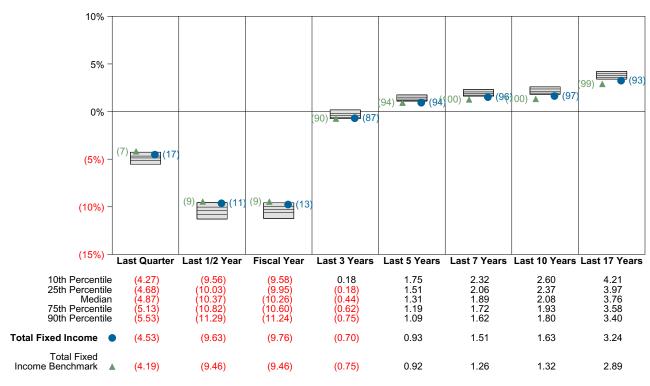
## **Benchmark Definition**

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.

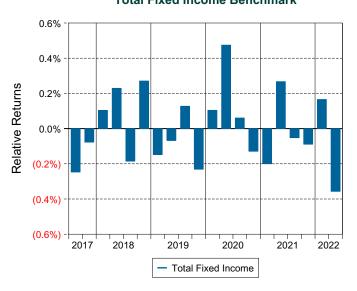
# **Quarterly Summary and Highlights**

- Total Fixed Income's portfolio posted a (4.53)% return for the quarter placing it in the 17 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 13 percentile for the last year.
- Total Fixed Income's portfolio underperformed the Total Fixed Income Benchmark by 0.34% for the quarter and underperformed the Total Fixed Income Benchmark for the year by 0.30%.

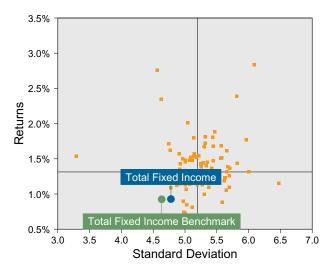
# Performance vs Callan Core Bond Fixed Income (Gross)



# Relative Returns vs Total Fixed Income Benchmark



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



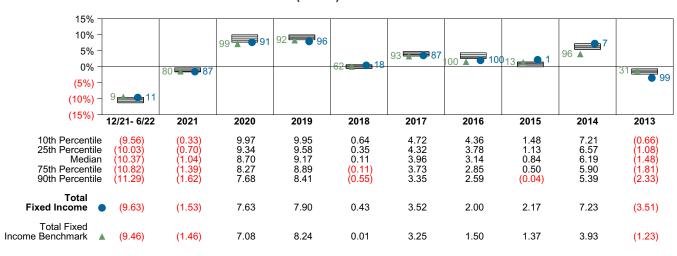


# Total Fixed Income Return Analysis Summary

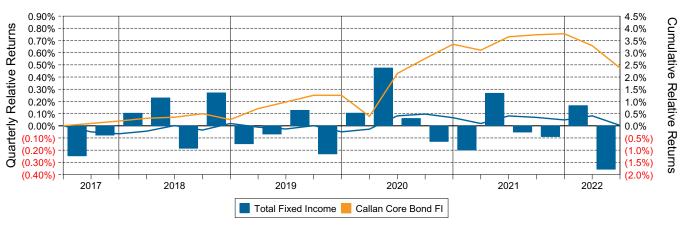
## **Return Analysis**

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.

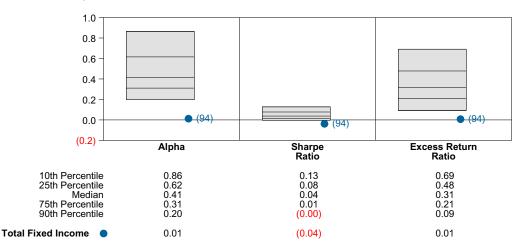
# Performance vs Callan Core Bond Fixed Income (Gross)



# 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 June 30, 2022



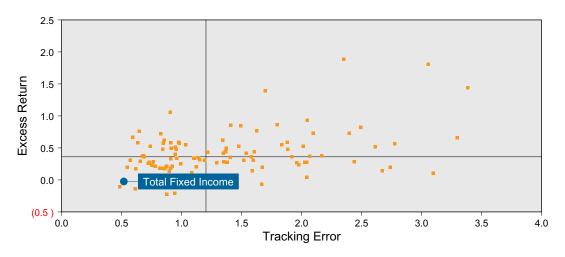


# Total Fixed Income Risk Analysis Summary

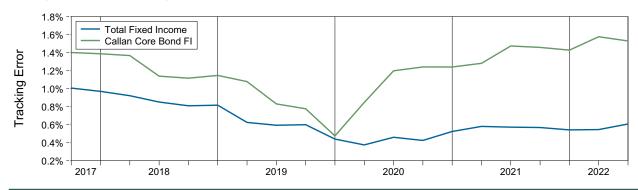
### **Risk Analysis**

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.

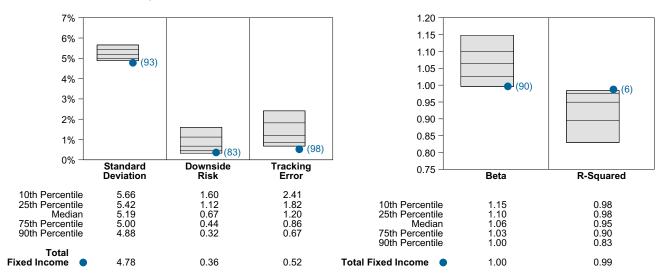
# Risk Analysis vs Callan Core Bond Fixed Income (Gross) Five Years Ended June 30, 2022



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 June 30, 2022



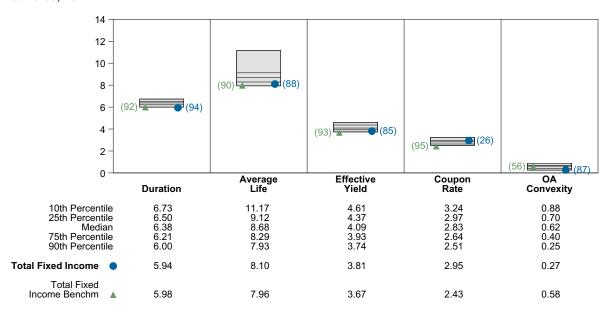


# **Total Fixed Income Bond Characteristics Analysis Summary**

## **Portfolio Characteristics**

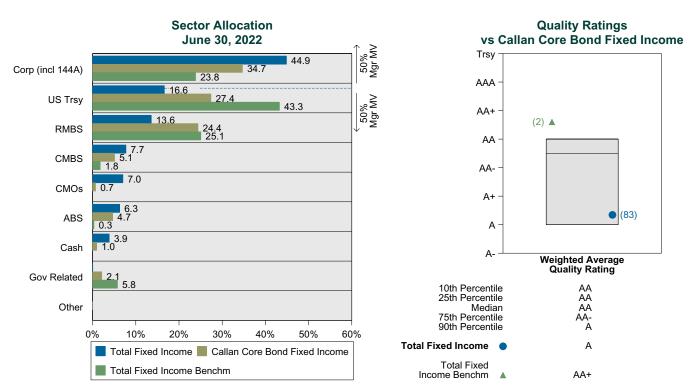
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

# Fixed Income Portfolio Characteristics Rankings Against Callan Core Bond Fixed Income as of June 30, 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.

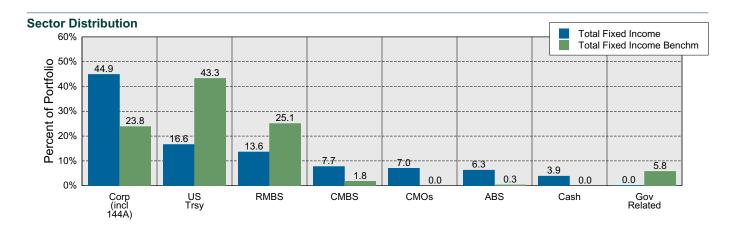


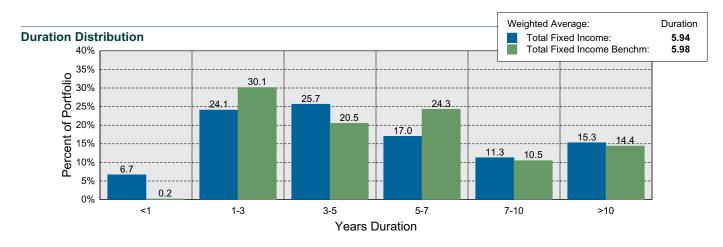


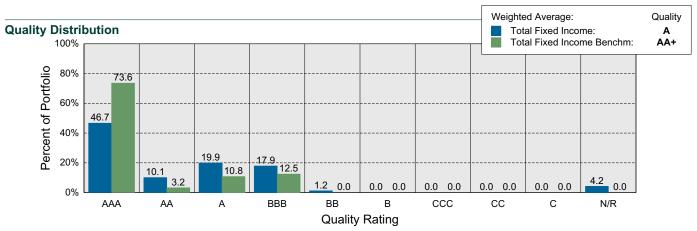
# Total Fixed Income Portfolio Characteristics Summary As of June 30, 2022

# **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.









# Colorado Treasurer's Portfolio Period Ended June 30, 2022

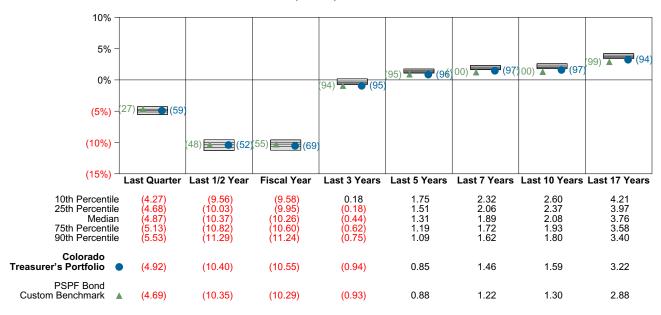
### **Investment Philosophy**

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.

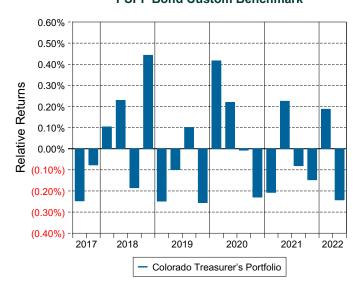
## **Quarterly Summary and Highlights**

- Colorado Treasurer's Portfolio's portfolio posted a (4.92)% return for the quarter placing it in the 59 percentile of the Callan Core Bond Fixed Income group for the quarter and in the 69 percentile for the last year.
- Colorado Treasurer's Portfolio's portfolio underperformed the PSPF Bond Custom Benchmark by 0.23% for the quarter and underperformed the PSPF Bond Custom Benchmark for the year by 0.25%.

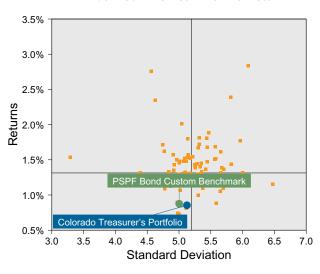
## Performance vs Callan Core Bond Fixed Income (Gross)



# Relative Returns vs PSPF Bond Custom Benchmark



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



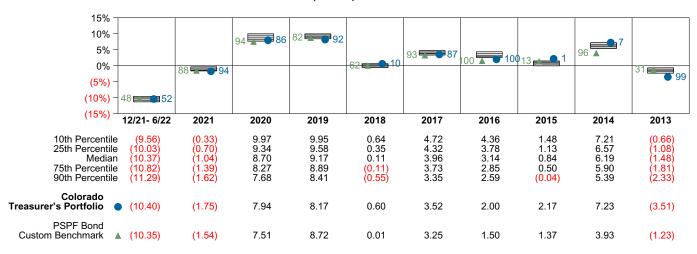


# Colorado Treasurer's Portfolio Return Analysis Summary

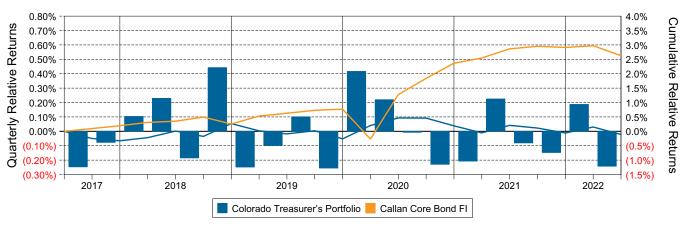
## **Return Analysis**

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.

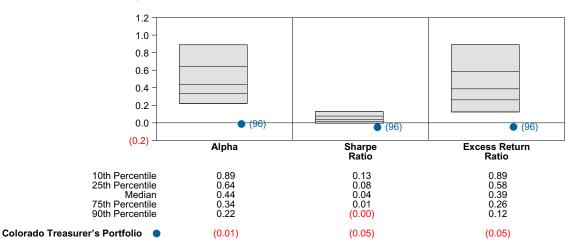
# Performance vs Callan Core Bond Fixed Income (Gross)



# 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 June 30, 2022



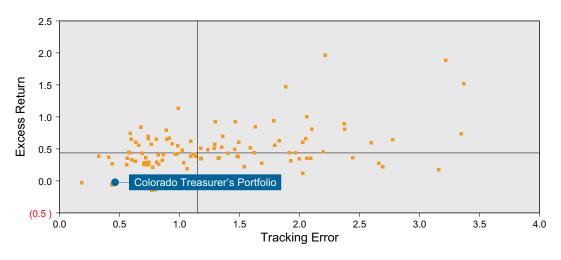


# Colorado Treasurer's Portfolio Risk Analysis Summary

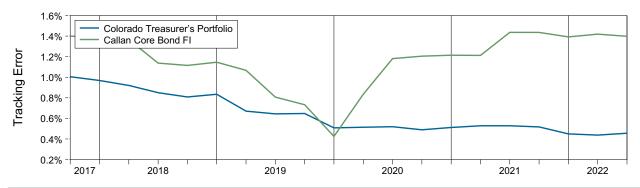
#### **Risk Analysis**

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.

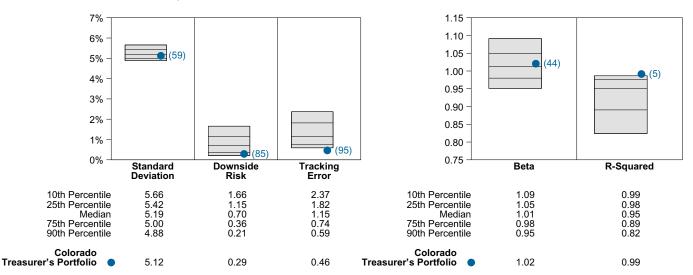
### Risk Analysis vs Callan Core Bond Fixed Income (Gross) Five Years Ended June 30, 2022



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 June 30, 2022



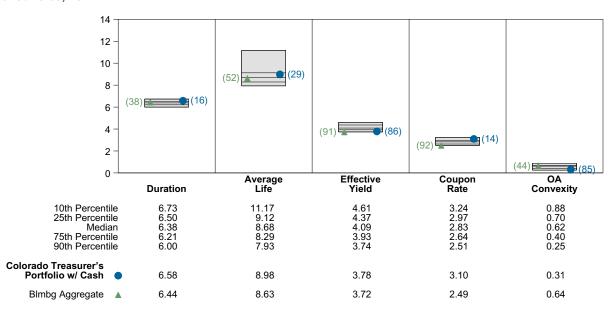


#### Colorado Treasurer's Portfolio w/ Cash Bond Characteristics Analysis Summary

#### **Portfolio Characteristics**

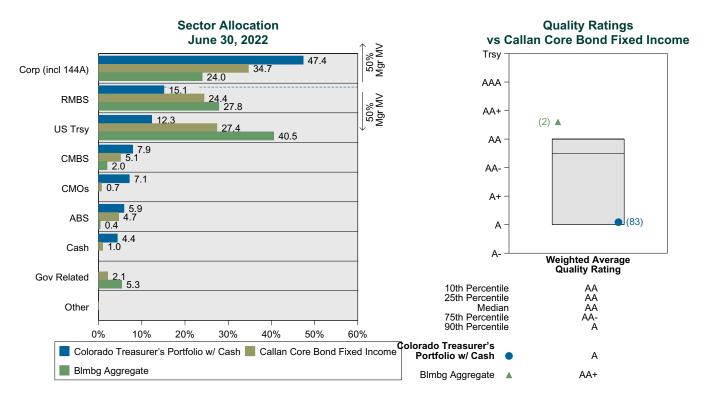
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style. Fixed Income Portfolio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

#### Fixed Income Portfolio Characteristics Rankings Against Callan Core Bond Fixed Income as of June 30, 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.

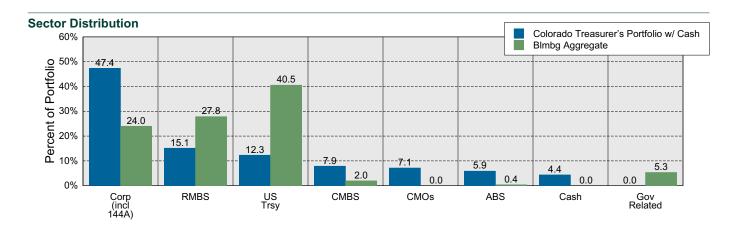


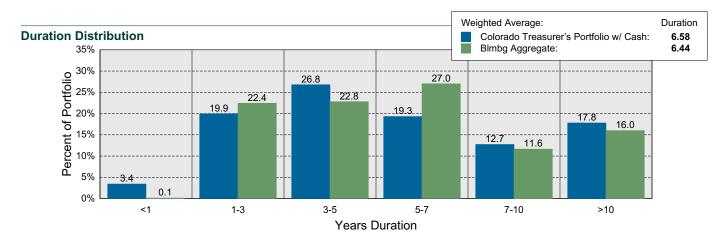


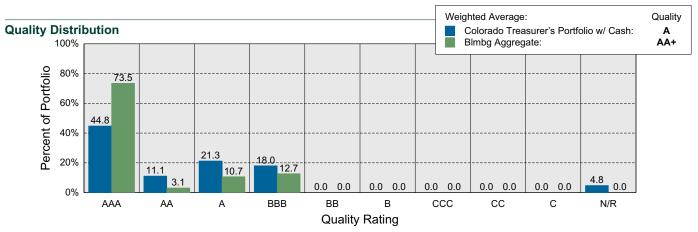
#### Colorado Treasurer's Portfolio w/ Cash Portfolio Characteristics Summary As of June 30, 2022

#### **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.









### Janus Henderson Short Duration Period Ended June 30, 2022

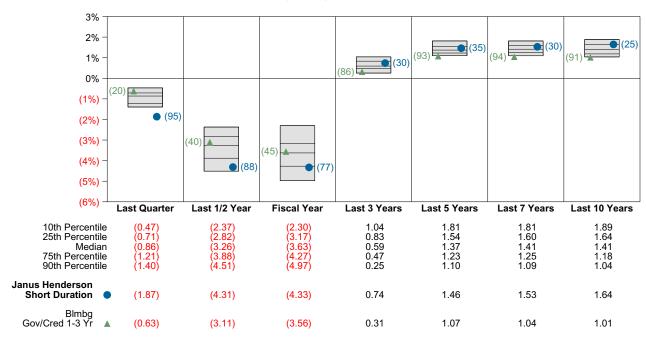
#### **Investment Philosophy**

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.

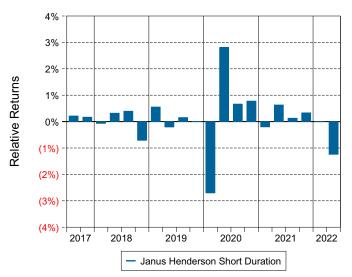
#### **Quarterly Summary and Highlights**

- Janus Henderson Short Duration's portfolio posted a (1.87)% return for the quarter placing it in the 95 percentile of the Callan Short Term Fixed Income group for the quarter and in the 77 percentile for the last year.
- Janus Henderson Short Duration's portfolio underperformed the Blmbg Gov/Cred 1-3 Yr by 1.23% for the quarter and underperformed the Blmbg Gov/Cred 1-3 Yr for the year by 0.76%.

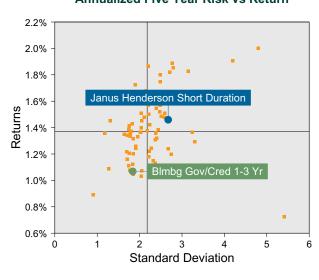
#### Performance vs Callan Short Term Fixed Income (Gross)



#### Relative Return vs Blmbg Gov/Cred 1-3 Yr



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



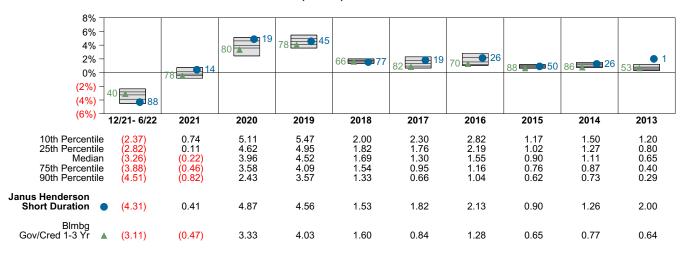


# Janus Henderson Short Duration Return Analysis Summary

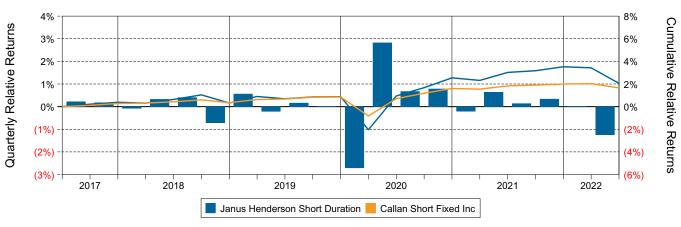
#### **Return Analysis**

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.

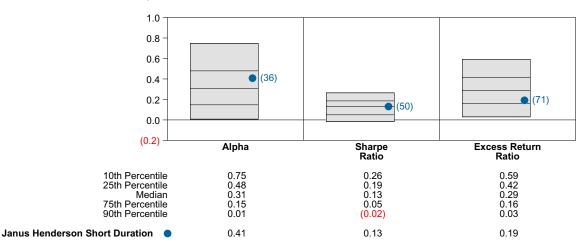
#### Performance vs Callan Short Term Fixed Income (Gross)



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



Risk Adjusted Return Measures vs Blmbg Gov/Cred 1-3 Yr Rankings Against Callan Short Term Fixed Income (Gross) Five Years Ended June 30, 2022



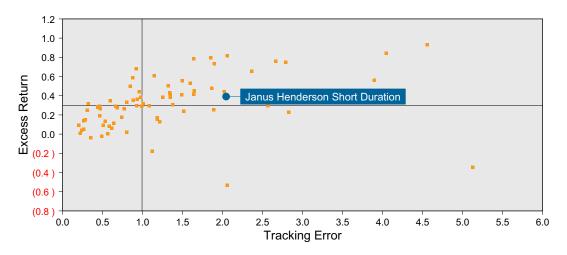


# Janus Henderson Short Duration Risk Analysis Summary

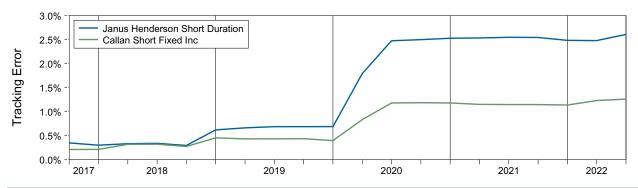
#### **Risk Analysis**

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.

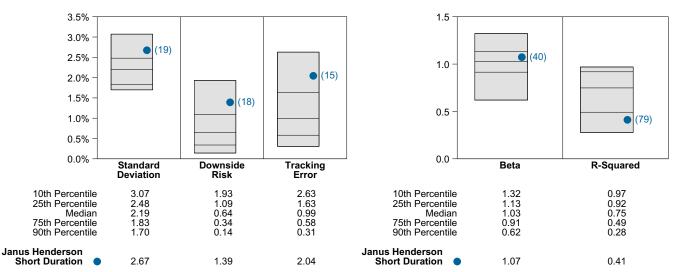
### Risk Analysis vs Callan Short Term Fixed Income (Gross) Five Years Ended June 30, 2022



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 June 30, 2022



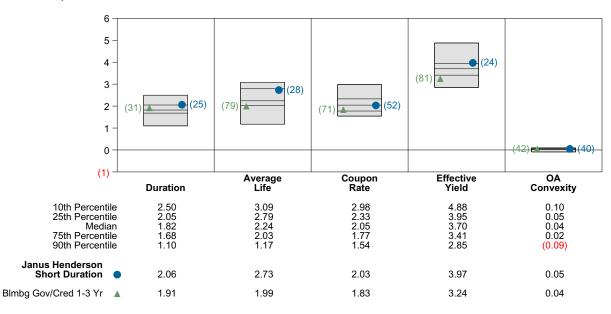


# Janus Henderson Short Duration Bond Characteristics Analysis Summary

#### **Portfolio Characteristics**

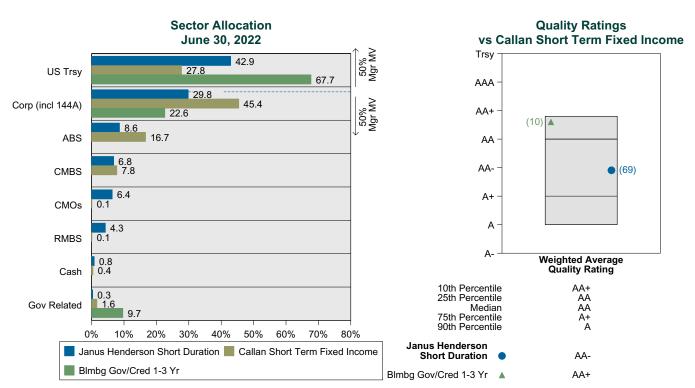
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style. Fixed Income Portfolio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

#### Fixed Income Portfolio Characteristics Rankings Against Callan Short Term Fixed Income as of June 30, 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.

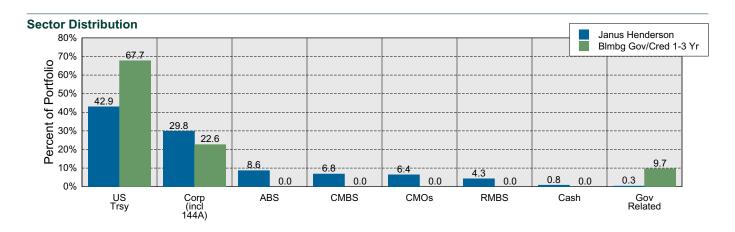


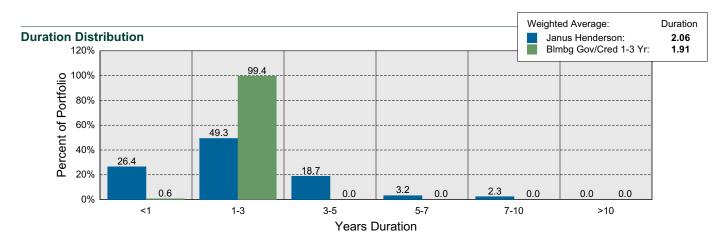


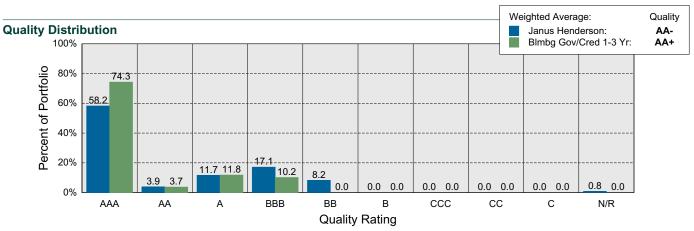
#### Janus Henderson Portfolio Characteristics Summary As of June 30, 2022

#### **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.









#### High Income Strategies Period Ended June 30, 2022

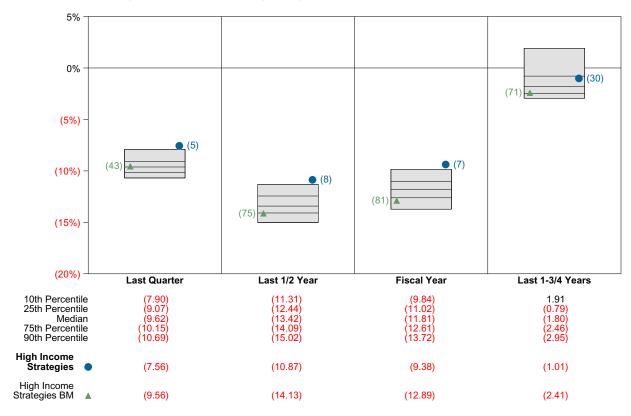
#### **Benchmark Definition**

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 (7.56)% return for the quarter placing it in the 5 percentile of the Callan High Yield Fixed Income group for the quarter and in the 7 percentile for the last year.
- High Income Strategies's portfolio outperformed the High Income Strategies BM by 1.99% for the quarter and outperformed the High Income Strategies BM for the year by 3.51%.

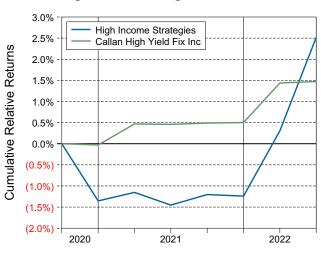
#### Performance vs Callan High Yield Fixed Income (Gross)



#### Relative Return vs High Income Strategies BM



#### Cumulative Returns vs High Income Strategies BM



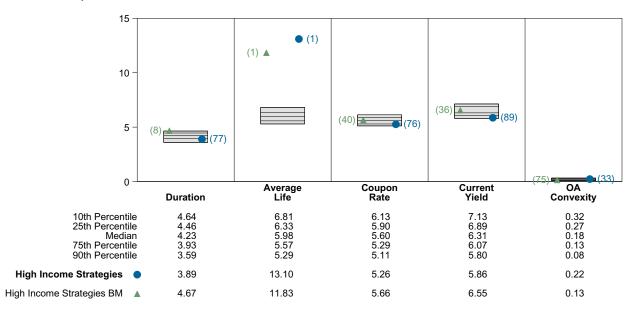


# High Income Strategies Bond Characteristics Analysis Summary

#### **Portfolio Characteristics**

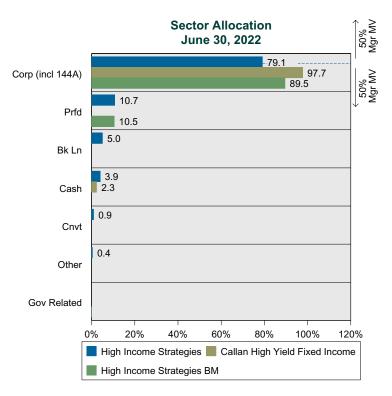
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style. Fixed Income Portfolio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

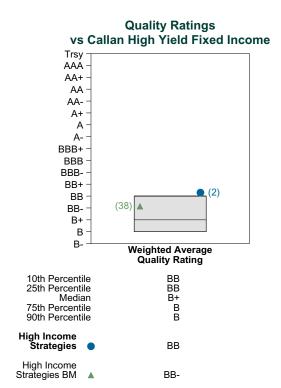
#### Fixed Income Portfolio Characteristics Rankings Against Callan High Yield Fixed Income as of June 30, 2022



#### **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.



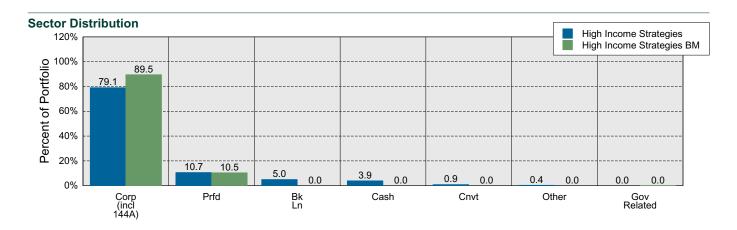


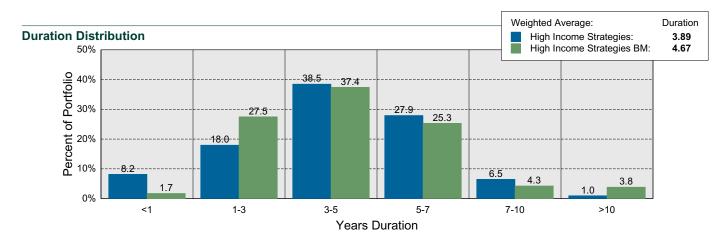


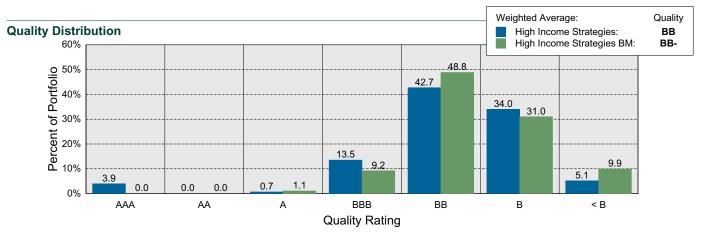
#### High Income Strategies Portfolio Characteristics Summary As of June 30, 2022

#### **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.









### Mackay Shield US High Yield Period Ended June 30, 2022

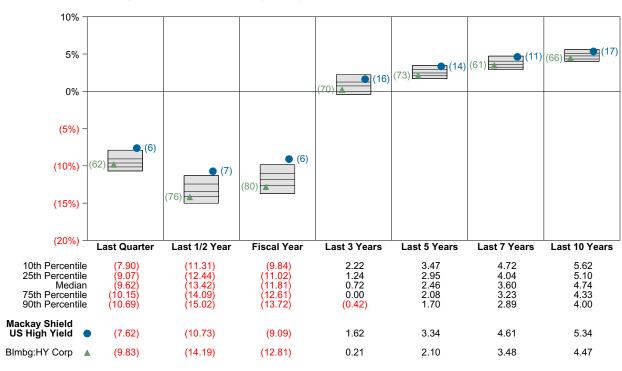
#### **Investment Philosophy**

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.

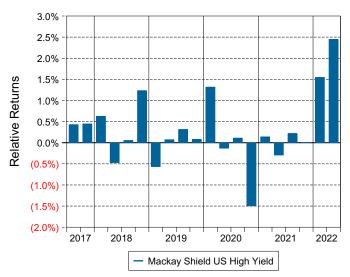
#### **Quarterly Summary and Highlights**

- Mackay Shield US High Yield's portfolio posted a (7.62)% return for the quarter placing it in the 6 percentile of the Callan High Yield Fixed Income group for the quarter and in the 6 percentile for the last year.
- Mackay Shield US High Yield's portfolio outperformed the Blmbg:HY Corp by 2.21% for the quarter and outperformed the Blmbg:HY Corp for the year by 3.72%.

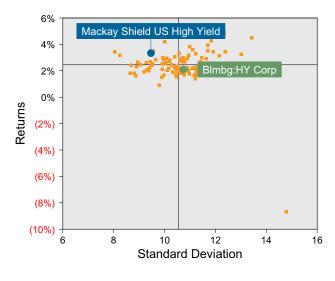
#### Performance vs Callan High Yield Fixed Income (Gross)



#### Relative Return vs Blmbg:HY Corp



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



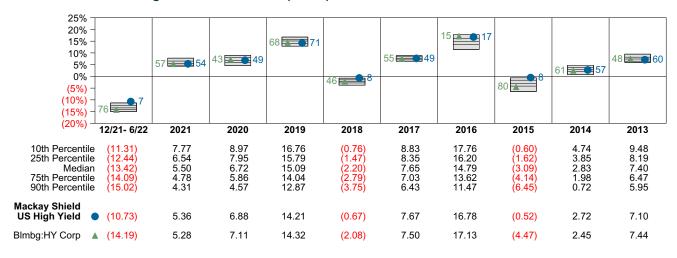


# Mackay Shield US High Yield Return Analysis Summary

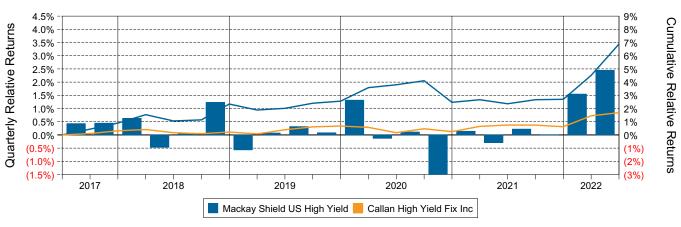
#### **Return Analysis**

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.

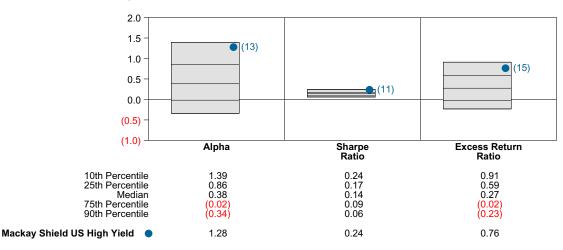
#### Performance vs Callan High Yield Fixed Income (Gross)



#### 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 June 30, 2022



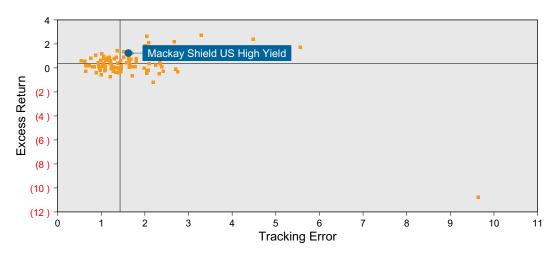


# Mackay Shield US High Yield Risk Analysis Summary

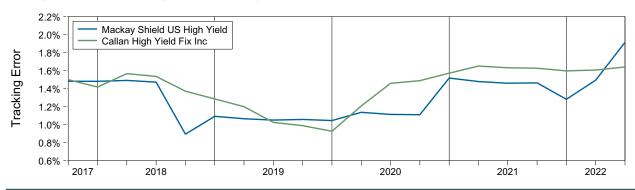
#### **Risk Analysis**

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.

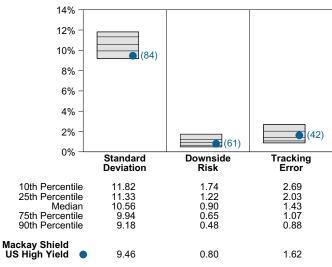
### Risk Analysis vs Callan High Yield Fixed Income (Gross) Five Years Ended June 30, 2022

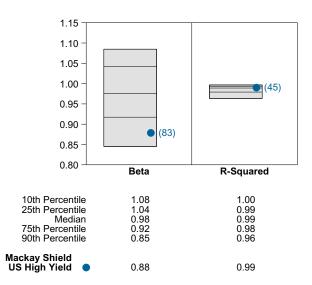


#### Rolling 12 Quarter Tracking Error vs Blmbg:HY Corp



Risk Statistics Rankings vs Blmbg:HY Corp Rankings Against Callan High Yield Fixed Income (Gross) Five Years Ended June 30, 2022





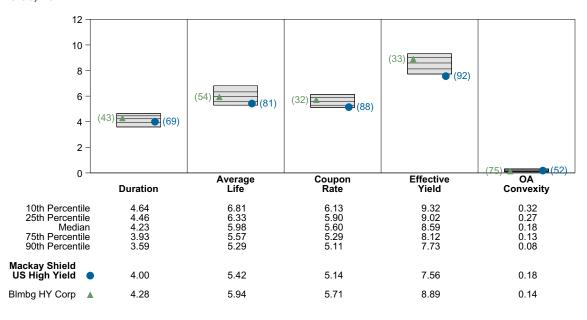


#### Mackay Shield US High Yield Bond Characteristics Analysis Summary

#### **Portfolio Characteristics**

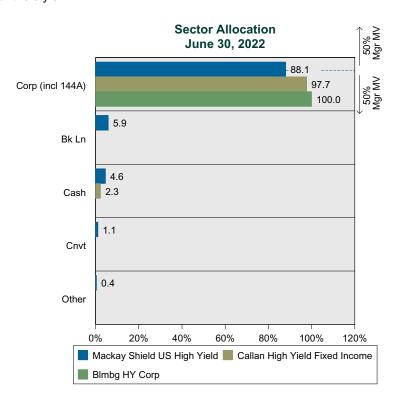
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style. Fixed Income Portfolio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

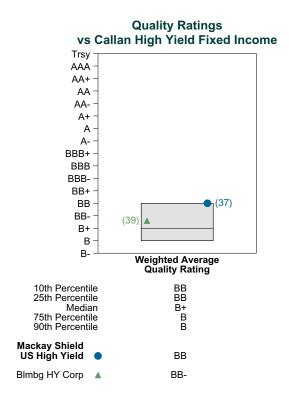
#### Fixed Income Portfolio Characteristics Rankings Against Callan High Yield Fixed Income as of June 30, 2022



#### **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.



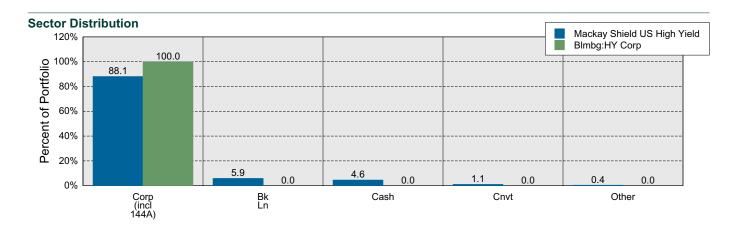


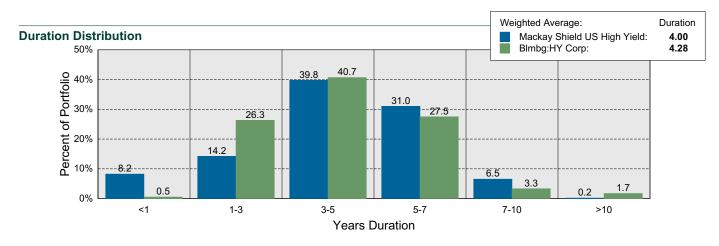


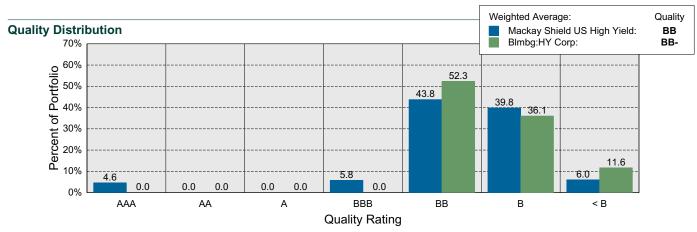
#### Mackay Shield US High Yield Portfolio Characteristics Summary As of June 30, 2022

#### **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.









### Principal Preferred Securities Period Ended June 30, 2022

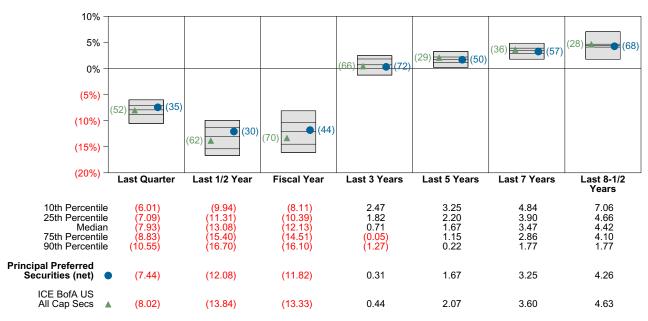
#### **Investment Philosophy**

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.

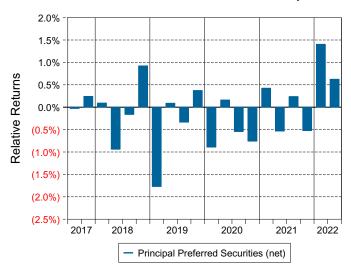
#### **Quarterly Summary and Highlights**

- Principal Preferred Securities (net)'s portfolio posted a (7.44)% return for the quarter placing it in the 35 percentile of the Morningstar Preferred Stock Funds group for the quarter and in the 44 percentile for the last year.
- Principal Preferred Securities (net)'s portfolio outperformed the ICE BofA US All Cap Secs by 0.58% for the quarter and outperformed the ICE BofA US All Cap Secs for the year by 1.52%.

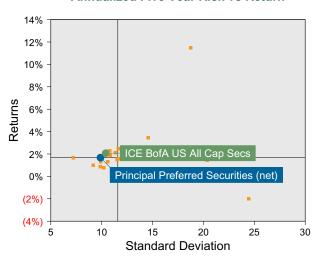
#### Performance vs Morningstar Preferred Stock Funds (Net)



#### Relative Return vs ICE BofA US All Cap Secs



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



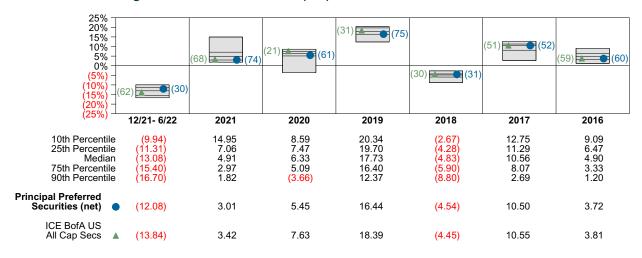


#### Principal Preferred Securities (net) Return Analysis Summary

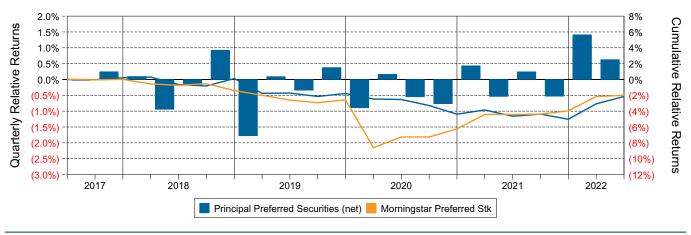
#### **Return Analysis**

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.

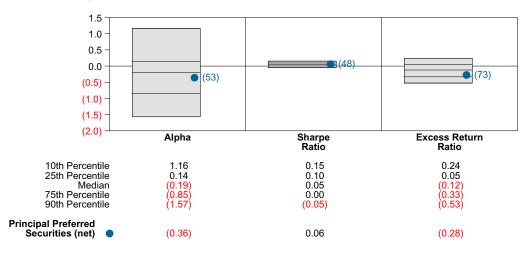
#### Performance vs Morningstar Preferred Stock Funds (Net)



#### 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 June 30, 2022



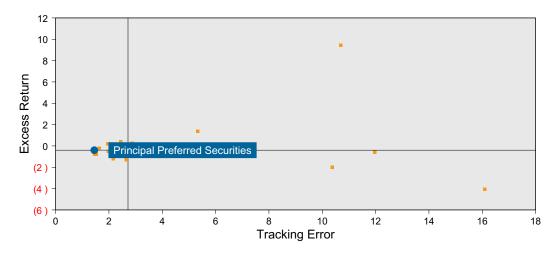


# Principal Preferred Securities Risk Analysis Summary

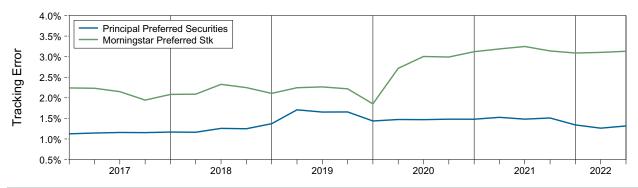
#### **Risk Analysis**

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.

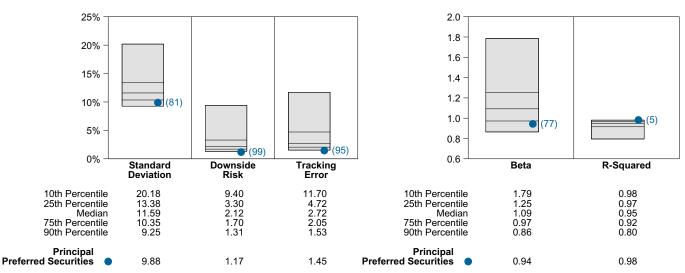
### Risk Analysis vs Morningstar Preferred Stock Funds (Net) Five Years Ended June 30, 2022



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 June 30, 2022



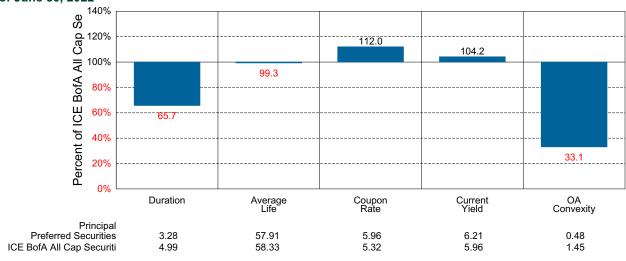


# Principal Preferred Securities Bond Characteristics Analysis Summary

#### **Portfolio Characteristics**

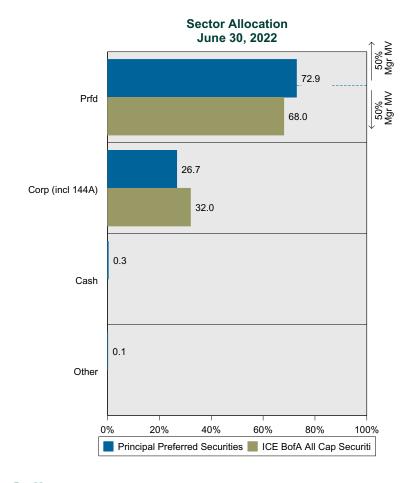
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style. Fixed Income Portfolio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

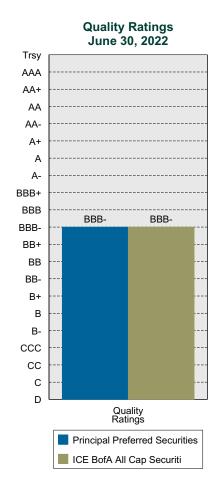
### Portfolio Characteristics Relative to ICE BofA All Cap Securiti as of June 30, 2022



#### **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.



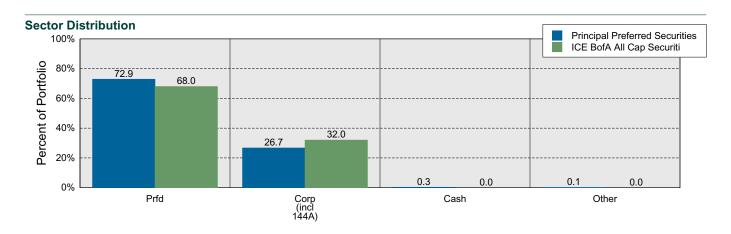


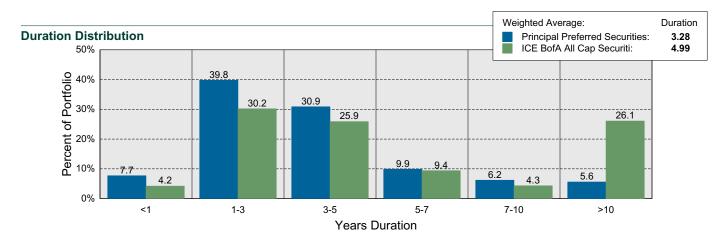


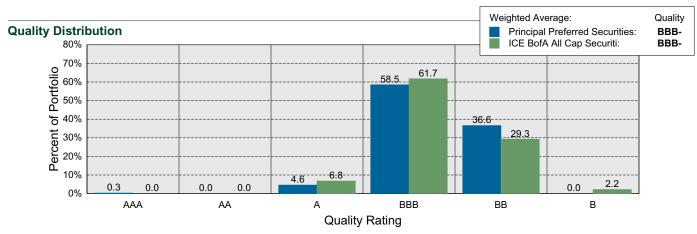
#### Principal Preferred Securities Portfolio Characteristics Summary As of June 30, 2022

#### **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.













2nd Quarter 2022

#### **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**

Research Cafe: ESG Interview Series | Mark Wood of Callan discusses with Jon Hale, Director of ESG Strategy at Morningstar, the evolving definition of sustainable investments.

Research Cafe: Private Equity | In this session, private equity experts Ashley Kahn and Jonathan Farr provide actionable insights for institutional investors to help them negotiate with private equity managers, and offer private equity managers crucial information about how their peers determine fees and terms. This session also includes a special feature on credit line usage.

#### Investing in Data Centers: The Real Assets of the Digital Age |

Lauren Sertich discusses investing in data centers, a growing sector in which institutional investors have more investment options as the universe of qualified managers/operators rapidly expands.

**Do Active Fixed Income Managers Add Value With Sector Rotation?** | Kevin Machiz analyzes whether institutional investors could take a DIY approach to strategic sector allocations and forego sector rotation within fixed income and still achieve results comparable to active managers. Our study found that the average manager has added value with sector rotation.

#### **Blog Highlights**

SEC Proposes Rule to Enhance and Standardize Climate-Related Disclosures | The U.S. Securities and Exchange Commission unveiled its proposed rule amendments designed to improve and standardize disclosures around climate change risks for public companies.

<u>Unprecedented Territory—and the Inherent Limits of Diversification</u> | Stock and bond markets around the globe were down together for the first four months of 2022. How often does that happen? Did diversification fail us?

#### Rising Interest Rates Spur Look at Structured Credit

Structured credit has seen increased interest from institutional investors as they explore ways to adapt their fixed income portfolios for an expected environment of rising rates.

#### Hedge Fund Strategies: A Guide for Institutional Investors

| Hedge fund strategies are beginning to see renewed interest from institutional investors seeking diversification benefits and downside protection. But these strategies can be complex; this explainer educates investors about investing in these strategies.

#### **Quarterly Periodicals**

<u>Private Equity Update</u>, <u>1Q22</u> | A high-level summary of private equity activity in the quarter through all the investment stages

Active vs. Passive Charts, 1Q22 | A comparison of active managers alongside relevant benchmarks over the long term

Market Pulse Flipbook, 1Q22 | A quarterly market reference guide covering trends in the U.S. economy, developments for institutional investors, and the latest data on the capital markets

<u>Capital Markets Review, 1Q22</u> | Analysis and a broad overview of the economy and public and private markets activity each quarter across a wide range of asset classes

Hedge Fund Update, 1Q22 | Commentary on developments for hedge funds and multi-asset class (MAC) strategies

Real Assets Update, 1Q22 | A summary of market activity for real assets and private real estate during the quarter

<u>Private Credit Update</u>, <u>1Q22</u> | A review of performance and fundraising activity for private credit 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:

#### **October Regional Workshop**

Oct. 18, 2022 - Denver, CO

Oct. 20, 2022 - San Francisco, CA

#### **2023 National Conference**

April 2-4, 2023 - Scottsdale, AZ

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

#### **Education: By the Numbers**

Unique pieces of research the Institute generates each year

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 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					
Black Creek Investment Management Inc.					
BlackRock					
Blackstone Group (The)					
Blue Vista Capital Management, LLC					
BNY Mellon Asset Management					
Boston Partners					
Brandes Investment Partners, L.P.					
Brandywine Global Investment Management, LLC					
Brookfield Asset Management					
Brown Brothers Harriman & Company					
Brown Investment Advisory & Trust Company					
Capital Group					
Carillon Tower Advisers					
CastleArk Management, LLC					

**Manager Name** 

**Chartwell Investment Partners** 

CIBC Asset Management Inc,

ClearBridge Investments, LLC

Cohen & Steers Capital Management, Inc.

Columbia Threadneedle Investments North America

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.

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

**Manager Name** 

J.P. Morgan

Janus

Jennison Associates LLC

Jobs Peak Advisors

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

Mellor

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.

Nomura Asset Management U.S.A. 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.

Tri-Star Trust Bank

**UBS Asset Management** 

VanEck

Versus Capital Group

Victory Capital Management Inc.

Virtus Investment Partners, Inc.

Vontobel Asset Management

Voya

Walter Scott & Partners Limited

Washington Capital Management, Inc.

WCM Investment Management

Wellington Management Company, LLP

Western Asset Management Company LLC

Westfield Capital Management Company, LP

Westwood Holdings Group, Inc.

William Blair & Company LLC



### Rebalancing Recommendation: \$29.9 million in Cash Available For Investing

Asset values as of July 31, 2022

		7/31/2022	7/31/2022	Proposed	New	New	% Diff
Target		Actual (\$)	Actual (%)	Rebalancing	MV \$	MV %	From Target
52.5%	BOND	646,000,206	51.5%	10,000,000	656,000,206	51.0%	-1.5%
7.5%	SHORT DURATION	103,105,779	8.2%	-	103,105,779	8.0%	0.5%
30.0%	EQUITY	379,197,984	30.2%	17,425,000	396,622,984	30.9%	0.9%
8.5%	HIGH YIELD	108,325,954	8.6%	1,000,000	109,325,954	8.5%	0.0%
1.5%	PREFERRED SECURITIES	18,742,841	1.5%	1,000,000	19,742,841	1.5%	0.0%
	CASH AVAILABLE	29,921,477		(29,425,000)	496,477	0.0%	0.0%
100.0%		1,285,294,241	100%	-	1,285,294,241	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 short duration bonds as shown above.

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.

# Colorado Department of the Treasury



Public School Fund Investment (PSPF)
Bond Portfolio Presentation
August 15, 2022

Maruti D. Moré, CFA, Chief Investment Officer Elliott Bostrom, CFA, Corporate Research/Trading Robert Cummings, CFA, MBS/ABS Research/Trading, Compliance Angelic Rein, MBA, Investment Analyst, Operations/Trading Assistant











### Sections

**Compliance Review:** PSPF Bond Portfolio is in compliance with IPS Guidelines, except one limitation, recommend exemption from the IPS Guidelines

Performance: The portfolio has outperformed the benchmark: MTD, YTD, 3yr, 5yr, 10yr, for 17 years since inception in July 2005

**Portfolio Review:** Portfolio is well positioned to benefit from yield curve inversion/economic slowdown/recession fears focused on higher quality holdings

Market Review: YTD yields have gone up and the Treasury yield curve inverted

**Outlook:** Expect continued yield curve inversion, economic slowdown/recession, wider credit spreads based on long term yield curve cycles, business cycles, credit spread cycles, and sunspot cycles

**Investment Strategy:** Maintain neutral portfolio duration and OAS spread advantage over market benchmarks with relatively higher quality liquid bonds

**Portfolio Holdings/Transactions** 











# **Compliance Review**

PSPF Bond Portfolio in Compliance with the IPS Manager Guidelines, with the exception of MBS/CMOs under 1yr maturity with \$320K O/S.

Proposed revision to the IPS:

Allow holdings under 1yr to final maturity as an exception to the rule.



#### 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











# Performance

Effective Date	Account Name	Return Type	Market Value	% of Total	One Month	Three Months	Calendar Year to Date	One Year	Three Years	Five Years	Ten Years	Inception to Date (July 2005)
7/31/2022	ST OF CO TREAS PUB SCH	Gross of Fees	640,340,821.95	3.00	2.62	1.41	(8.05)	(9.12)	(.13)	1.31	1.77	3.36
7/31/2022	^BARCAP US AGGREGATE INDEX *	Gross of Fees			2.44	1.49	(8.16)	(9.12)	(.21)	1.28	1.46	3.01
		Excess			.18	(.08)	.11	(.00)	.08	.03	.30	.35

Source: Principal Financial/Wells Fargo









### Portfolio Review











Portfolio: CST - PSPF	Benchmark: (LBUSTRUU) Bloomberg US Agg Total F	Return Value Unhe	,
	- 99		
Equity	Port	Bench	+\-
#	166	12597	
Par Amount	660260684	26915045140	-26254784456
Mkt Val	606702121	25722095447	-25115393325
Market Value (%)	100.00	100.00	-0.00
Book Val	629405323.69		
Unrealized G/L	-40105402.11		
Bk Yield	2.69		
Book Px	103.27		
Px Close	94.53	95.21	
Coupon	3.191	2.580	0.612
Yield to Worst	3.59	3.37	0.22
Yield to Maturity	3.52	3.36	0.16
Cur Yld	3.36	2.65	0.71
Net Cur Yld	3.68	3.43	0.25
OAS	72.14	47.51	24.63
Option Adjusted Duration	6.40	6.42	-0.02
BES	16.73	8.98	7.76
Contribution to Duration	6.40	6.42	-0.02
Option Adjusted Convexity	0.612	0.524	0.088
OASD	6.42	6.38	0.04
CTSD	6.42	6.38	0.04
DTS	6.10	4.62	1.48
Avg Life	8.45	8.50	-0.06
1Y ctrb	0.04	0.10	-0.07
2Y ctrb	0.19	0.25	-0.06
3Y ctrb	0.67	0.52	0.15
5Y ctrb	0.90	0.78	0.11
7Y ctrb	0.70	0.87	-0.16
10Y ctrb	1.03	1.03	0.00
20Y ctrb	1.92	1.65	0.27
30Y ctrb	0.96	1.23	-0.27
Moody's	Aa3	Aa2	
S&P	A+	AA	
Fitch	AA	AA+	



### Portfolio Review Continued...











Market Review



- Treasuries sold off massively fearing higher inflation expectations and aggressive Fed tightening, 2/30 yield curve ratio is steadily inverting to the current ratio of 104% matching the last inversion that took place on 2/21/06 at 104% (top\_right) which was followed by the record steepening at 6% on 3/31/21
- Inverted yield curve ratio over 100% foreshadows recession within 12 months, the US Economy is already in a technical recession after the first inversion on 3/31/22
- The Federal Reserve has raised the Fed Funds rate twice by 75 bp on 6/15 and 7/27 and the probability of another hike of 75bp on 9/21 is priced in pushing the FF rate to 3.61% by 3/22/2023 from the current rate of 2.33% (left) with continued aggressive Fed tightening in the aftermath of unexpectedly strong July payroll growth of 528K and Unemployment Rate of just 3.5%



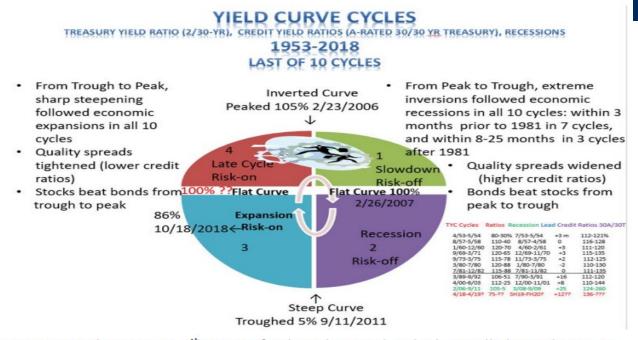








## Outlook



 We are currently entering 4<sup>th</sup> stage of risk-on late cycle which usually lasts short 1-2 years max before recession starts







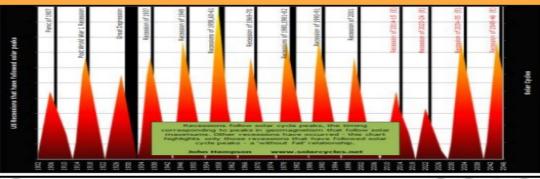




### Outlook Continued...









Over the last 77 years (from 1935), all 7 cyclical maximums of the solar activity overlapped closely with the US recessions, thus predicting (or triggering?) 8 out of 13 recessions officially identified by NBER (including one "double-deep" recession). Over the last 64 years (from 1948), all 6 maximums of the solar activity were preceded by minimums of the US unemployment rate, and the spikes in the unemployment rate followed with lags of 2-3 years. On the world scale, over the last 44 years (for which the data is available), all 4 maximums of the solar activity overlapped with minimums of the unemployment rate in the G7 countries, followed by its spikes within 2-3 years. From 1965, when consistent recession dating is available for all G7 countries, nearly 3/5 of the recessions started in the 3 years around and after the sunspot maximums. Was it a mere coincidence or a part of a Monthly averages of the sunspot numbers show that the quantity of sunspots visible on the sun fluctuates with an approximate 11-year cycle known as the "solar cycle", which was first discovered in 1843 by Heinrich Schwabe. Sunspot populations quickly rise and more slowly fall on an irregular cycle of 11 years. Significant variations in the length of this cycle are known over longer spans of time. The cycles are numbered since 1750 (cycle 1 = 1755 minimum to 1766 minimum). Currently, the 24th cycle is unfolding from a minimum in December 2008 towards its projected maximum in May 2013.

The current Solar Cycle 25th count 114 on the left. SpaceWeatherLive.com



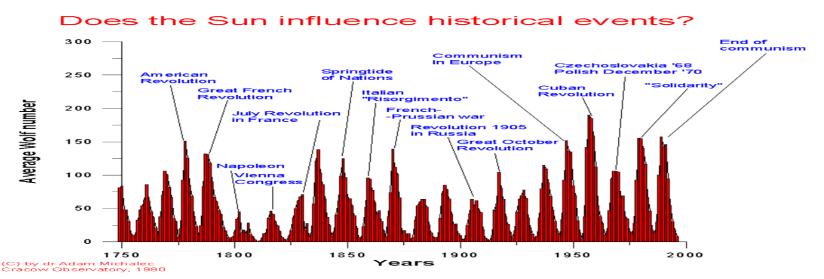








## Outlook Continued...



 From the list above, subjective and incomplete as it is, curious correspondence is seen between historical events and moments of maxima of solar activity.









# Investment Strategy

- Yield curve inversion likely to continue with short rates rising more than long rates.
- Sticky core inflation and a slow, steady easing of labor market conditions suggest short rates are likely to rise into year-end as the Fed easing
  call gives way to a more gradual pace of rate hikes or, at best, a steady policy course next year. This suggests 2023 rate cuts will be pushed out
  to 2024 or beyond, causing the 2-year note to reverse back toward 3.5% while the Fed continues to focus policy on returning inflation to its
  target.
- This focus on inflation over labor market conditions should increase the FOMC's credibility, leading to a continued strong dollar and long rates heading towards 3% as short rates correct.
- Although rates are expected to rise at both ends of the coupon space, the curve is expected to stay 25-50 basis points inverted by the year end.
- Credit spreads likely to be higher due to tighter global monetary policies, supply shortages, and higher inflation, global economic slowdown/recession risks.
- Maintain yield advantage over yield benchmark and OAS spread advantage over market benchmark with relatively higher quality and liquid bonds.
- Maintain portfolio duration close to benchmark duration with a shorter bias within 5% and minimize K rate duration risks in the short end with a
  preference for longer bonds.









# Portfolio Holdings/Transactions

<u>Holdings</u> (14-17)

Transactions (18-19)









# Contacting Us

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twitter.com/ColoTreasurer



linkedin.com/company/colorado-department-of-the-treasury











	User Name	MARUT	TIMORE																															
	Portfolio	PSPF																																
	Benchmark	(LBUS	TRUU) B	Bloomberg US A	gg Total Retur																													
	As-of Date	8/4/202																																
		USD																																
		1 - 0		Par Amount	Mkt Val	Mari	ket Value	W.V.	Px Close	Cour		V	ield to W		Viol	d to Matu	elte.		Cur Yld			OAS		a mtelba	stion to	Duratio		Aven I ide		and COD	Eitah	Mah. (2)	S&P (undl)	Eitab /
		Deat						200		Coup				0.000	2000	Control of the last	1000			(2)	Dead				Ition to			Avg Life			_	7 1 7	S&P (undi)	
10		Port	CONTRACTOR OF THE	Port cco acco	Port		Bench	+/-	-	Port Bend	-	STREET, SQUARE, SQUARE,	Bench					ort B	2.67	+/-		Bench 49.03	21.68			-	STATE	STREET, SQUARE, SQUARE	-	ort Port	NA HARMANIA	Port		Port
				660,163,883	603,241,235			0.00		3.191 2.5		11 3.69		0.19																41 A				-
ABS		ő	393	47,500,000	46,941,902	7.78	0.35	7.43		3.002 1.9		44 3.60							1.99			78.60			0.01	0.18		2.36		AA AAA				-
	AMXCA 2022-1 A			10,000,000	9,703,277	1.61			96.91			10 3.47			3.47		3.47			3.47			41.23				2.61		2.61 A		AAA	-		+
	AMXCA 2022-2 A			5,000,000	5,002,491	0.83			99.86			90 3.47		3.47			3.47				41.28		41.28				2.78		2.78		AAA			-
	BMWOT 2022-A A3			4,000,000	3,961,682	0.66			98.95			10 3.78			3.78		3.78				69.22		69.22				2.01			aa AAA				-
	DCENT 2022-A2 A			10,000,000	9,975,533	1.65			99.57			20 3.51		3.51			3.51			3.51			45.25				2.78		2.78 A		AAA			
	DROCK 2022-1 A			5,000,000	4,951,170	0.82		-	98.85	and the second second	1000000	70 3.54		Control Section (Control	3.54		3.54			3.54	and the latest designation of the latest des		48.15	Secretary and the			2.70		2.70		AAA			
	GMCAR 2022-2 A3			5,000,000	4,939,447	0.82			98.63			00 3.80			3.80		3.80			3.80	71.48		71.48				2.14			aa AAA				
	SYNIT 2022-A1 A			3,500,000	3,478,099	0.58			99.19			70 3.72			3.72		3.72 3				65.15		65.15				2.70			aa AAA				
	TAOT 2022-B A3			5,000,000	4,930,202	0.82		0.82	98.44	2.930	2.9	30 3.76		3.76	3.76		3.76	3.76		3.76	66.75		66.75	0.02		0.02	2.03		2.03 A	aa AAA	N.			
Age	тсу	2	593	14,000,000	13,821,916	2.29	2.00	0.30	98.02	2.396 2.0	51 0.3	46 3.26	3.28	-0.01	3.26	3.28	-0.01 2	2.44	1.98	0.47	20.31	25.87	-5.56	0.05	0.07	-0.02	2.42	4.44	-2.02 A	AA AA+	AAA			
	FHLB 2 % 03/14/25			10,000,000	9,893,725	1.64		1.64	98.01	2.375	2.3	75 3.18	3	3.18	3.18		3.18 2	2.42		2.42	12.56		12.56	0.04		0.04	2.61		2.61 A	aa AA+		STABLE	1	
	PEFCO 2.45 07/15/24			4,000,000	3,928,191	0.65		0.65	98.07	2.450	2.4	50 3.48	3	3.48	3.48		3.48 2	2.50		2.50	39.82		39.82	0.01		0.01	1.95		1.95 A	aa NR	AAA	STABLE		STABLE
CMB	S	8	3,016	48,490,000	46,850,472	7.77		5.85	96.58	3.099 3.0				-0.58	3.36				3.18			104.05			0.09			5.40	0.96 A	AA AAA	AAA			
	FHMS K-1518 A2		The same of the same of	3,120,000	2,543,862				81.51			60 3.67		3.67			3.67 3				105.78		105.78				12.96		12.96					
	FHMS K-1521 A2			4,000,000	3,347,217	0.55			83.66			84 3.70			3.70		3.70 3				105.84		105.84				13.87		13.87					
	FHMS K049 A2			5.741.000	5,673,581	0.94			98.79			10 3.40			3.40		3.40 3			3.40			35.55				2.86		2.86		AAA			
	FHMS K079 A2			10,000,000	10,351,204	1.72			103.47			26 3.25		3.25			3.25 3			3.25			39.89				5.87		5.87	AAA				
	FHMS K095 A2			7,129,000	6,941,359	1.15			97.34			85 3.21			3.21		3.21 3			3.21	40.99		40.99				6.78		6.78	7.11	AAA			
	FHMS K137 A2			3.500.000	3.229.858	0.54			92.26			47 3.32			3.32		3.32 3				65.34		65.34				9.29		9.29 A	22	1000			
	FHMS K733 A2			10,000,000	10,080,883	1.67			100.77			50 3.41		-	3.41		3.41 3			3.41			36.80				2.94		2.94 A					1
	FNA 2022-M4 A2			5,000,000	4,682,509				93.62			90 3.24			3.24		3.24 3				48.16		48.16				7.53		7.53	10	_	_	_	+
CMC		12	0	32,988,501	28,405,066				95.37			52 3.51			3.51		3.51 3			3.51			25.53				6.24		6.24	+	-		_	+
CIVIC	FHR 2497 TJ	12	0	3.613	20,405,000				99.99			00 3.81			3.81		3.81 3				155.97		155.97				0.12		0.12					+
	FHR 2516 EH			4,967	6				100.06			00 3.79			3.79		3.79 3				145.77		145.77				0.12		0.12		_	_		_
	FHR 2516 EH FHR 4375 VM			4,350,771	4.347.506				99.90			00 3.79			3.51		3.51 3			3.79	18.68		18.68				1.70		1.70			_		+
					and the second second second																						3.74		3.74	-				+
	FHR 4385 EU			9,284,000	9,135,864	1.51			98.38			00 3.45			3.45		3.45 3				22.03		22.03							_	+	-		+
	FHR 4957 W			8,395,986	6,730,535	1.12			95.45			00 3.58			3.58		3.58 3			3.58	27.17		27.17				9.81		9.81				-	-
	FNR 2021-65 BW			2,842,443	2,391,536	0.40			88.78			00 3.44			3.44		3.44 3			3.44			38.25	-			9.92		9.92		-	_		-
	GNR 2008-60 AY			73,723	831	0.00			100.76			00 3.27			3.27		3.27			3.27			37.61				0.44		0.44		-	_		+
	GNR 2010-151 DE			212,916	4,787	0.00			99.95			00 2.77			2.77		2.77 2			2.77			52.81				0.13		0.13		-			1
	GNR 2013-91 PB			1,212,925	589,431	0.10			100.13			00 3.23			3.23		3.23			3.23	-2.84		-2.84				1.11		1.11					1
	GNR 2014-141 LT			1,232,094	427,059				99.01			00 3.50			3.50		3.50			3.50	12.51		12.51				1.83		1.83					
	GNR 2017-180 VB			3,375,064	3,320,603	0.55			98.36			00 3.47			3.47		3.47			3.47			22.82				3.53		3.53					
	GNR 2021-175 LE			2,000,000	1,456,905	0.24		0.24	72.83	2.000	2.0	00 3.84		3.84	3.84		3.84 3	3.84		3.84	60.78		60.78	0.04		0.04	22.41		22.41					

2	User Name	MARUTI MOR	F						_					_	-		_			_	_	-		_				
3	Portfolio	PSPF	_																									
4	Benchmark		Bloomberg US	Agg Total Retur																								
5	As-of Date	8/4/2022																										
6	Currency	USD																										
7																												
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9		#	Par Amount			ket Value (		x Close	Coupo		Yield to Worst		d to Maturity		Cur Yld		OAS	-	ontribution to			Avg Life					S&P (undl	
10		Port Bench	Port	Port	Port	Bench	+/-	Port P	ort Bench	+/- P	ort Bench +/-	Port	Bench +/-	Po	rt Bench +/-	Port	Bench	+/-	Port Bench	n +/-	Port	Bench	+/- P	ort Por	T Por	t Port		Port
Cas	h	1 0	24.538.941	24.538.941	4.07	- 4	1.07	1.00		0.000 2.3	34 2.34	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00		0.00 AA	AAA A	AAA			
	US DOLLAR		24,538,941	24,538,941	4.07	- 4	1.07	1.00		0.000 2.3	2.34	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00		0.00 Aaa	AAA e	AAA		AAA	
Fina	incial Institutions	23 2,033	115,000,000	110,197,819	18.27	8.00 10	0.27 9	5.11 3.37	75 3.497	-0.122 4.2	8 4.44 -0.15	4.21	4.39 -0.18	3.50	3.60 -0.10	136.49	145.28	-8.79	1.03 0.47	0.56	6.93							
)	ARE 2 05/18/32		3,000,000	2,470,827	0.41	(	0.41 8	1.93 2.00	00	2.000 4.2	8 4.28	4.28	4.28	2.44	2.44	163.57		163.57	0.03	0.03	9.79		9.79 Baa	1 BBB+		STABLE		
)	BAC 1.843 02/04/25		10,000,000	9,667,804	1.60		1.60 9	6.67 1.84	13	1.843 4.1	5 4.15	3.69	3.69	1.91	1 1.91	80.44		80.44	0.02	0.02	1.50		1.50 A2	A-	AA-	POS		STABLE
	BAC 2.551 02/04/28		10,000,000	9,242,734	1.53		1.53 9	2.42 2.55	51	2.551 4.4	3 4.43	4.25	4.25	2.76	2.76	137.32		137.32	0.06	0.06	4.50	4	1.50 A2	A-	AA-	POS		STABLE
2	BAC 3.705 04/24/28		6,000,000	5,876,685	0.97	(	0.97 9	6.91 3.70	)5	3.705 4.4	4 4.44	4.42	4.42	3.82	2 3.82	153.14		153.14	0.04	0.04	4.72	4	1.72 A2	A-	AA-	POS		STABLE
3	BAC 6.11 01/29/37		2,000,000	2,247,506	0.37	(	0.37 11	2.27 6.1	10	6.110 4.9	2 4.92	4.92	4.92	5.44	5.44	222.88		222.88	0.04	0.04	14.49	14	1.49 Baa	1 BBB+	Α	POS		STABLE
ı .	BLK 3.2 03/15/27		5,000,000	5,066,552	0.84	(	0.84 10	0.09 3.20	00	3.200 3.1	8 3.18	3.18	3.18	3.20	3.20	28.48		28.48	0.04	0.04	4.61	4	1.61 Aa3	AA-		STABLE		
5	BX 2 1/2 01/10/30		5,000,000	4,432,316	0.73	(	0.73 8	8.47 2.50	00	2.500 4.3	3 4.33	4.33	4.33	2.83	2.83	155.17		155.17	0.05	0.05	7.44		7.44	A+	A+			STABLE
5	BX 2.55 03/30/32		2,000,000	1,746,779	0.29	(	0.29 8	6.45 2.55	50	2.550 4.2	8 4.28	4.28	4.28	2.95	2.95	162.15		162.15	0.02	0.02	9.65		9.65	A+	A+			STABLE
1	C 2.904 11/03/42		2,000,000	1,573,695	0.26	(	0.26 7	7.94 2.90	)4	2.904 4.6	5 4.65	4.62	4.62	3.73	3.73	139.83		139.83	0.04	0.04	19.25	19	9.25 A3	BBB+	Α	STABLE		STABLE
3	C 5 1/2 02/22/33		2,000,000	2,196,275	0.36	(	0.36 10	7.15 5.87	75	5.875 4.9	9 4.99	4.99	4.99	5.48	5.48	235.19		235.19	0.03	0.03	10.55	10	).55 Baa	2 BBB	BBB+	STABLE		STABLE
)	DLR 3.6 07/01/29		5,000,000	4,714,653	0.78	(	0.78 9	3.95 3.60	00	3.600 4.6	3 4.63	4.63	4.63	3.83	3.83	181.01		181.01	0.05	0.05	6.91	(	6.91 Baa	2 BBB	BBB	STABLE		STABLE
)	DLR 3.7 08/15/27		5,000,000	4,956,687	0.82	(	0.82 9	7.39 3.70	00	3.700 4.2	8 4.28	4.28	4.28	3.80	3.80	135.76		135.76	0.04	0.04	5.03		.03 Baa	2 BBB	BBB	STABLE		STABLE
	GS 6 3/4 10/01/37		2,000,000	2,392,974	0.40	(	0.40 11	7.32 6.75	50	6.750 5.0	9 5.09	5.09	5.09	5.75	5.75	236.89		236.89	0.04	0.04	15.16	18	5.16 Baa	2 BBB	BBB+	STABLE		STABLE
2	JPM 2.963 01/25/33		10,000,000	8,908,354	1.48		1.48 8	9.00 2.96	33	2.963 4.3	9 4.39	4.33	4.33	3.33	3.33	173.44		173.44	0.12	0.12	9.48		9.48 A2	A-	AA-	POS		STABLE
3	JPM 3.54 05/01/28		6,000,000	5,833,769	0.97	(	0.97 9	6.31 3.54	10	3.540 4.4	1 4.41	4.38	4.38	3.68	3.68	148.91		148.91	0.04	0.04	4.74	4	1.74 A2	A-	AA-	POS		STABLE
Į.	MS 3.772 01/24/29		10,000,000	9,711,830	1.61		1.61 9	7.00 3.77	72	3.772 4.3	9 4.39	4.33	4.33	3.89	3.89	148.63		148.63	0.08	0.08	5.47		5.47 A1	A-	Α	STABLE		POS
5	MS 3.95 04/23/27		5,000,000	4,969,685	0.82		0.82 9	8.27 3.98	50	3.950 4.3	4.36	4.36	4.36	4.02	2 4.02	146.50		146.50	0.03	0.03	4.72	4	1.72 Baa	1 BBB+	BBB+	STABLE		POS
6	PLD 2 1/4 04/15/30		4,000,000	3,606,849	0.60	(	0.60 8	9.48 2.25	50	2.250 3.8	3.84	3.84	3.84	2.51	1 2.51	107.85		107.85	0.04	0.04	7.70	1	7.70 A3	A	WD	STABLE		STABLE
1	UNH 3 % 04/15/27		5,000,000	5,063,574	0.84	(	0.84 10	0.24 3.37	75	3.375 3.3	3.32	3.32	3.32	3.37	7 3.37	42.69		42.69	0.04	0.04	4.70	4	1.70 A3	A+	Α	POS		STABLE
3	UNH 3.7 08/15/49		4,000,000	3,716,614	0.62	(	0.62 9	1.17 3.70	00	3.700 4.2	25 4.25	4.25	4.25	4.06	4.06	117.93		117.93	0.10	0.10	27.03	2	7.03 A3	A+	Α	POS		STABLE
)	USB 2.491 11/03/36		2,000,000	1,695,279	0.28	(	0.28 8	4.13 2.49	91	2.491 4.6	2 4.62	4.37	4.37	2.96	2.96	165.90		165.90	0.02	0.02	9.25		9.25 A2	Α	Α	NEG		STABLE
)	WELL 4 1/4 04/01/26		5,000,000	5,086,437	0.84	(	0.84 10	0.26 4.25	50	4.250 4.1	7 4.17	4.17	4.17	4.24	4.24	111.53		111.53	0.03	0.03	3.41		3.41 Baa	1 BBB+	WD	STABLE		NEG
	WELL 4 1/4 04/15/28		5,000,000	5,019,942	0.83		0.83	9.10 4.25	50	4.250 4.4	3 4.43	4.43	4.43	4.29	4.29	152.81		152.81	0.04	0.04	5.70		.70 Baa	1 BBB+	WD	STABLE		NEG
Indu	ıstrial	44 4,166	165,997,000	160,581,035	26.62	14.26 12	2.36	5.95 3.44	0 3.807	-0.367 3.8	9 4.33 -0.44	3.90	4.33 -0.44	3.54	3.92 -0.38	95.63	137.50	-41.88	1.92 1.21	0.71	10.01	13.07 -3	3.06 A2	Α	A-			
3	AAPL 3 06/20/27		5,000,000	4,996,832	0.83	(	0.83	9.56 3.00	00	3.000 3.1	0 3.10	3.10	3.10	3.01	1 3.01	15.77		15.77	0.04	0.04	4.88	4	1.88 Aaa	AA+		STABLE		
l l	ABBV 2.95 11/21/26		5,000,000	4,878,335	0.81	(	0.81 9	6.96 2.98	50	2.950 3.7			3.72	3.04	3.04			77.90	0.03	0.03	4.30	4	1.30 Baa	2 BBB+		POS		
5	ABIBB 4 1/2 06/01/50		1,000,000	985,749	0.16			7.77 4.50		4.500 4.6		4.64		4.60				160.41			27.82				BBBu	STABLE		
5	ADBE 3 1/4 02/01/25		10,000,000	10,016,207	1.66			0.13 3.29		3.250 3.1				3.25				3.07			2.25		2.25 A2			STABLE		
1	AMGN 3 % 02/21/50		1,000,000	840,933	0.14	(	0.14 8	2.56 3.37	75	3.375 4.4		4.48	4.48	4.09	4.09	143.33		143.33		0.02	27.55	2	7.55 Baa	1 A-	BBB+	STABLE		STABLE
3	AMGN 3.15 02/21/40		1,000,000	858,385	0.14			4.40 3.15	-	3.150 4.4				3.73				144.33			17.55		7.55 Baa			STABLE		STABLE
)	AMZN 3 04/13/25		4,000,000	4,029,314	0.67			9.80 3.00	-	3.000 3.0				3.01				2.81			2.69		2.69 A1		AA-	STABLE		STABLE
)	AMZN 3.3 04/13/27		4,000,000	4,040,953	0.67			0.00 3.30		3.300 3.3				3.30				38.73			4.69		1.69 A1	AA	AA-	STABLE		STABLE
l l	AMZN 4.8 12/05/34		5,000,000	5,565,185	0.92			0.50 4.80		4.800 3.7				4.34				106.33			11.84		1.84 A1		AA-	STABLE		STABLE
2	CAT 3 1/4 04/09/50		2,000,000	1,782,109	0.30			8.06 3.25		3.250 3.9		3.96		3.69				91.28			27.68		7.68 A2		Α	STABLE		STABLE
3	CSX 5 1/2 04/15/41		2,000,000	2,255,373	0.37			1.09 5.50		5.500 4.5				4.95		154.38		154.38			18.20		3.20 Baa		WD	STABLE		
l l	CVX 3.078 05/11/50		2,000,000	1,709,788	0.28			34.77 3.07		3.078 3.9				3.63				94.24			27.77		7.77 Aa2			STABLE		
5	DHI 1.3 10/15/26		5,000,000	4,424,095	0.73			8.08 1.30		1.300 4.4				1.48				152.43			4.20					STABLE		STABLE
6	DOW 5 1/4 11/15/41		1,000,000	1,030,664	0.17	(	0.17 10	1.90 5.25	0	5.250 5.0	9 5.09	5.09	5.09	5.15	5.15	198.78		198.78	0.02	0.02	18.78	18	3.78 Baa	1 BBB	BBB+	STABLE		POS
1	EMORYU 2.143 09/01/3	0	5,000,000	4,521,487	0.75			9.51 2.14		2.143 3.6				2.39				91.17	0.05	0.05		1	3.08 Aa2	2 AA				
3	ENBCN 2 1/2 02/14/25		2,000,000	1,951,689	0.32			6.42 2.50		2.500 4.0		4.00		2.59				94.02		0.01	2.53	- 2	2.53 Baa	1 BBB+	BBB+	STABLE		STABLE
)	EPD 2.8 01/31/30		1,500,000	1,362,037	0.23	(	0.23 9	0.76 2.80	00	2.800 4.2			4.25			147.17		147.17	0.01	0.01	7.49	1	7.49 Baa	1 BBB+	BBB+	STABLE		STABLE
)	GE 5 1/4 01/14/38		2.000,000	2.189.616	0.36		36 10	9.14 5.87	7.5	5.875 5.0	2 5.02	E 00	E 00	5.38	E 20	226.68		226.68	0.04	0.04	15.45	4.1	.45 Baa	4 000	000	NEG		STABLE

	User Name	MARUTI MO	ORE																								
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	Y-	#		Par Amount	Mkt Val	Market Value	(%)	x Close	Coupon		Yield to Wo	ret	Yield to Ma	aturity	Cur Yld		OAS		ontribution to	Duratio	Avg Life	M	ac hon	P Fite	h Md	ly (*) S&P (und	II) Fitch (*)
		Port Ben		Port	Port	Port Bench	+/-	No. of Concession, Name of Street, or other Persons, Name of Street, or other Persons, Name of Street, Name of	Port Bench	+/-	Port Bench		Port Benci		Port Bench	+/-	Port Bench	+/-	Port Bench		Port Bench		ort Po	STATE OF THE PERSON	The second	Port	Port
1	GM 3.1 01/12/32			4,000,000	3,349,137	0.56	0.56	83.53	3.100	3.100	5.34	5.34	5.34	5.34	3.71	3.71	267.60	267.6	0 0.04	0.04	9.44	9.44 B	aa3 Bl	BB BE	B- ST/	ABLE	POS
2	GM 4 10/06/26			5,000,000	4,966,008	0.82	0.82	98.00	4.000	4.000	4.53	4.53	4.53	4.53	4.08	4.08	154.98	154.9	0.03	0.03	4.17	4.17 B	aa3 Bi	BB BB	B- ST/	ABLE	POS
	HAL 3.8 11/15/25			4,009,000	4,034,515	0.67	0.67	99.79	3.800	3.800	3.87	3.87	3.87	3.87	3.81	3.81	77.03	77.0	3 0.02	0.02	3.28	3.28 B	aa1 BE	B+ W	D ST	ABLE	
	HAL 4.85 11/15/35			2,000,000	2,025,088	0.34	0.34	100.18	4.850	4.850	4.83	4.83	4.83	4.83	4.84	4.84	217.54	217.5	4 0.03	0.03	12.78	12.78 B	aa1 BE	B+ W	D ST/	ABLE	
	HD 2 3/4 09/15/51			4,000,000	3,184,872	0.53	0.53	78.55	2.750	2.750	4.00	4.00	4.00	4.00	3.50	3.50	101.05	101.0	0.10	0.10	29.11	29.11	12	A A	A ST	ABLE	STABLE
	KR 2.2 05/01/30			2,000,000	1,761,663		0.29			2.200		4.10		4.10		2.51			25 0.02		7.74	7.74 B	aa1 Bi	BB		ABLE	
	KR 3.95 01/15/50			2,000,000	1,824,277		0.30	90.99	3.950	3.950			4.53	4.53		4.34			0.05		27.45	27.45 B	aa1 Bi	BB	ST	ABLE	
	LMT 2.8 06/15/50			2,000,000	1,602,952	0.27	0.27	79.76	2.800	2.800	4.01	4.01	4.01	4.01	3.51	3.51	96.96	96.9	0.05	0.05	27.86	27.86	43 A	\- A	- ST/	ABLE	STABLE
)	LMT 3.55 01/15/26			2,488,000	2,517,062			100.97		3.550			3.25	3.25		3.52			27 0.01		3.20			4- A		ABLE	STABLE
0	LMT 3.9 06/15/32			5,000,000	5,148,884			102.44		3.900			3.60	3.60		3.81			0.07		9.61	9.61				ABLE	STABLE
1	MCD 4.45 03/01/47			5,000,000	5,062,816		0.84			4.450			4.49	4.49		4.48			3 0.12		24.57	24.57 B				ABLE	
2	MRO 4.4 07/15/27			5,000,000	4,969,634		0.82			4.400			4.59	4.59		4.44			23 0.04		4.94	4.94 B			B- ST/		POS
3	MRO 6.6 10/01/37			2,000,000	2,230,720			109.26		6.600			5.68	5.68		6.04			20 0.04		15.16	15.16 B					POS
4	NOVNVX 3.1 05/17/27			5,000,000	5,023,595		0.83			3.100			3.14	3.14		3.11			3 0.04		4.78	4.78		A- AA		ABLE	
5	PCAR 2.85 04/07/25			5,000,000	4,969,143		0.82			2.850		3.46		3.46		2.89			0.02		2.67			+		ABLE	
6	PG 2.3 02/01/32			5,000,000	4,633,599		0.77			2.300			3.20	3.20		2.48			6 0.06		9.49	9.49 A				ABLE	
7	RDSALN 4 1/4 05/11/35			5,000,000	5,033,635		0.83			4.125			4.15	4.15		4.14			24 0.08		12.77	12.77 A			-u ST/		
8	RTX 4 ½ 06/01/42			1,000,000	1,015,345			100.73		4.500			4.44	4.44		4.47			4 0.02		19.82	19.82 B		\- W		ABLE	
9	T 4 ½ 03/09/48			5,000,000	4,778,341		0.79			4.500			4.93	4.93		4.80			0 0.11		25.60	25.60 B			B+ ST/		STABLE
0	T 4.3 02/15/30			5,000,000	5,097,679		0.85			4.300		4.31		4.31		4.30			0.05		7.53	7.53 B			B+ ST/		STABLE
1 2	TGT 2.95 01/15/52			2,000,000	1,643,290		0.27			2.950			4.00	4.00		3.60			24 0.05		29.45	29.45				POS	STABLE
3	UPS 3.05 11/15/27			5,000,000	5,017,930		0.83			3.050			3.12	3.12		3.06			0.04		5.28	5.28		•		ABLE	
	V 3.15 12/14/25 VZ 2 ½ 11/20/50			5,000,000 5,000,000	4,992,600 3,766,535		0.83			3.150 2.875			3.34 4.45	3.34 4.45		3.17			3 0.03 30 0.11		3.36	3.36 A 28.30 B				ABLE	STABLE
	WCNCN 2.6 02/01/30			5,000,000	4,515,819		0.62			2.600			4.45	4.45		2.88			06 0.05		28.30 7.50	7.50 B					STABLE
	XOM 2.709 03/06/25			10,000,000	9,977,145		1.65			2.709		3.26		3.26		2.75			2 0.04		2.59	2.59 A				ABLE	STABLE
6 <b>1 000</b>	al Authority	1	349	5,000,000	3,911,145		-0.26		3.006 4.386				4.42 4.1			-0.14			54 0.11 0.08		27.78 14.28					ABLE	
8	UNVHGR 3,006 05/15		343	5,000,000	3,911,245			77.56		3.006		4.42		4.42		3.88			88 0.11		27.78	27.78 A				NR	
	Passthrough	36	428		60,605,962							0.14		45 0.14		0.79			67 0.57 1.53			0.95	100 A	A		1413	
0	FG A20296			98,164	2,022			105.56		5.000			3.36	3.36		3.36			0.00		3.79	3.79					
1	FG A20862			47,463	304			105.56		5.000			3.40	3.40		3.40			3 0.00		3.91	3.91					
	FG C00358			2,142	1	0.00	0.00	102.83	8.500	8,500	4.92	4.92	4.92	4.92	4.92	4.92	182.54	182.5	4 0.00	0.00	0.90	0.90					
	FG C00360			1,759	1	0.00	0.00	102.18	8.000	8.000	4.94	4.94	4.94	4.94	4.94	4.94	185.46	185.4	6 0.00	0.00	0.82	0.82					
	FG C54218			2,012	1	0.00	0.00	102.02	6.500	6.500	5.10	5.10	5.10	5.10	5.10	5.10	201.24	201.2	4 0.00	0.00	1.67	1.67					
5	FG C80239			1,702	1	0.00	0.00	102.41	8.500	8.500	5.25	5.25	5.25	5.25	5.25	5.25	215.33	215.3	3 0.00	0.00	0.86	0.86					
6	FG C90831			20,533	82	0.00	0.00	102.80	5.000	5.000	1.27	1.27	1.27	1.27	1.27	1.27	-177.03	-177.0	0.00	0.00	0.81	0.81					
7	FG D64824			10,068	21	0.00	0.00	101.79	7.000	7.000	5.47	5.47	5.47	5.47	5.47	5.47	234.83	234.8	3 0.00	0.00	1.36	1.36					
3	FG D70627			5,255	5	0.00	0.00	101.46	6.500	6.500	5.10	5.10	5.10	5.10	5.10	5.10	199.15	199.1	5 0.00	0.00	1.23	1.23					
	FG G00261			1,195	0		0.00	100.40	8.500	8.500			7.72	7.72		7.72		454.2	0.00	0.00		0.85					
	FN 440244			5,337	6	0.00	0.00	101.93	6.500	6.500	4.99	4.99	4.99	4.99	4.99	4.99	189.47	189.4	7 0.00	0.00		1.60					
	FN 520082			32,624	205		0.00	105.21	7.500	7.500		5.39	5.39	5.39	5.39	5.39	237.71	237.7	1 0.00	0.00		2.95					
	FN 725314			143,291	2,079			105.02		5.000			3.42	3.42		3.42			0.00	0.00		3.66					
	FN BF0294			4,832,894	2,275,369		0.38	99.56	3.500	3.500	3.57	3.57	3.57	3.57	3.57	3.57	55.60	55.6	0.02	0.02		6.30					
	FN BJ4787			4,786,226	1,664,010		0.28			3.500		3.64		3.64		3.64			86 0.02		8.72	8.72					
5	FN B03247			6,334,550	3,848,281	0.64	0.64	96.44	3.000	3.000	3.49	3.49	3.49	3.49	3.49	3.49	29.33	29.3	3 0.04	0.04	9.06	9.06					

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5	Currency	USD																											
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9		#	Par Amount	Mkt Val	Market Valu	e (%)	Px Close	Coupon		Yield to V	Vorst	Yield to N	Maturity		Cur Yld		(	OAS	ontri	bution to l	Ouratio	Avg l	ife	Mood	S&P F	Fitch I	Mdy (*)	S&P (undl)	Fitch (*)
0		Port Bench	Port	Port	Port Bench	+/-	Port	Port Bench	+/-	Port Bench	1 +/-	Port Bend	ch +/-	Port	Bench	+/-	Port B	lench +/-	Por	Bench	+/-	Port Ben	ch +/	- Port	Port	Port	Port	12 2	Port
36	FN BR2320		8,688,166	6,718,260	1.11	1.11	89.20	2.000	2.000	3.48	3.48	3.48	3.48	8 3.48		3.48	50.16	50	.16 0.0	8	0.08	9.18	9	.18					
7	FN CA4431		2,308,664	521,951	0.09	0.09	99.23	3.500	3.500	3.63	3.63	3.63	3.63	3.63		3.63	18.90	18	.90 0.0	0	0.00	6.02	6	.02					
3	FN CA4730		5,118,623	2,403,535	0.40	0.40	93.37	2.500	2.500	3.47	3.47	3.47	3.47	7 3.47		3.47	38.46	38	.46 0.0	2	0.02	8.44	8	.44					
9	FN CA9199		4,027,100	2,758,794	0.46	0.46	92.76	2.500	2.500	3.54	3.54	3.54	3.54	4 3.54		3.54	36.77	36	.77 0.0	3	0.03	8.70	8	.70					
)	FN CB0198		4,301,364	3,518,503	0.58	0.58	95.93	3.000	3.000	3.55	3.55	3.55	3.58	5 3.55		3.55	34.55	34	.55 0.0	14	0.04	9.43	9	.43					
1	FN FM1539		4,250,676	858,405	0.14	0.14	102.05	4.500	4.500	4.03	4.03	4.03	4.03	3 4.03		4.03	68.48	68	.48 0.0	1	0.01	5.64	5	.64					
2	FN FM1962		1,551,082	458,576	0.08	0.08	99.23	3.500	3.500	3.63	3.63	3.63	3.63	3.63		3.63	22.18	22	.18 0.0	0	0.00	6.29	6	.29					
3	FN FM1969		3,191,694	969,685	0.16	0.16	96.44	3.000	3.000	3.57	3.57	3.57	3.5	7 3.57		3.57	22.15	22	.15 0.0	1	0.01	7.52	7	.52					
4	FN FS0332		4,847,272	4,505,956	0.75	0.75	96.58	3.000	3.000	3.51	3.51	3.51	3.5	1 3.51		3.51	39.86	39	.86 0.0	14	0.04	8.20	8	.20					
45	FN FS1092		4,893,726	4,707,160	0.78	0.78	98.94	3.500	3.500	3.66	3.66	3.66	3.66	6 3.66		3.66	32.41	32	.41 0.0	14	0.04	7.82	7	.82					
46	FN FS1238		3,881,633	3,715,591	0.62	0.62	99.31	3.500	3.500	3.60	3.60	3.60	3.60	0 3.60		3.60	34.76	34	.76 0.0	3	0.03	7.42	7	.42					
17	FR QA0127		3,610,947	1,055,103	0.17	0.17	99.23	3.500	3.500	3.62	3.62	3.62	3.62	2 3.62		3.62	13.71	13	.71 0.0	1	0.01	6.85	6	.85					
8	FR QD6075		7,787,375	6,966,352	1.15	1.15	92.58	2.500	2.500	3.54	3.54	3.54	3.54	4 3.54		3.54	38.51	38	.51 0.0	7	0.07	8.94	8	.94					
19	FR RA1231		3,633,704	1,242,907	0.21	0.21	96.44	3.000	3.000	3.57	3.57	3.57	3.57	7 3.57		3.57	32.89	32	.89 0.0	1	0.01	7.65	7	.65					
0	FR RA3056		4,703,391	2,094,024	0.35	0.35	96.30	3.000	3.000	3.63	3.63	3.63	3.63	3.63		3.63	26.75	26	.75 0.0	2	0.02	7.16	7	.16					
51	FR RA7193		4,948,634	4,823,369	0.80	0.80	98.77	3.500	3.500	3.67	3.67	3.67	3.67	7 3.67		3.67	27.59	27	.59 0.0	14	0.04	8.94	8	.94					
2	FR SD1115		4,978,421	4,983,341	0.83	0.83	100.94	4.000	4.000	3.82	3.82	3.82	3.82	2 3.82		3.82	26.38	26	.38 0.0	3	0.03	6.95	6	.95					
53	FR ZT0789		3,091,389	512,050	0.08	0.08	101.24	4.000	4.000	3.73	3.73	3.73	3.73	3 3.73		3.73	35.30	35	.30 0.0	0	0.00	6.12	6	.12					
54	GN 417426		8,509	15	0.00	0.00	104.05	7.500	7.500	4.54	4.54	4.54	4.54	4 4.54		4.54	144.56	144	.56 0.0	0	0.00	1.52	1	.52					
55	GN 510705		1,854	1	0.00	0.00	102.38	7.500	7.500	6.60	6.60	6.60	6.60	0 6.60		6.60	355.54	355	.54 0.0	0	0.00	3.11	3	.11					
	vereign	1 162		4,536,509	0.75 0.9	7 -0.22	90.62	3.160 4.292	2 -1.132	4.66 4.5	52 0.14	4.66 4	.53 0.13	3 3.49	4.41	-0.92	187.75 1	161.53 26	.22 0.0	5 0.09	-0.04	7.47 15	.76 -8	.29 Baa	2 BBB	BBB-			
57	PANAMA 3.16 01/23/30	)	5,000,000	4,536,509	0.75	0.75	90.62	3.160	3.160	4.66	4.66	4.66	4.66	6 3.49		3.49	187.75	187	.75 0.0	15	0.05	7.47	7	.47 Baa	2 BBB	BBB-	STABLE		STABLE
58 <b>Su</b>	pranational	0 153			1.3	2 -1.32		1.572	2 -1.572	3.1	11 -3.11	3	.11 -3.1	1	1.62	-1.62		13.68 -13	.68	0.05	-0.05	5 3	.84 -3	.84					
59 <b>Tr</b> e	easury	10 273	80,500,000	79,187,617	13.13 40.4	3 -27.31	97.47	2.842 1.798	1.043	3.08 2.9	99 0.10	3.08 2	.99 0.10	0 2.90	1.87	1.04	-0.56	0.57 -1	.13 1.4	1 2.63	-1.22	2 13.89 7	.94 5	.96 AAA	1	AAA			
0	T 2 11/15/41		5,000,000	4,154,314	0.69	0.69	82.64	2.000	2.000	3.21	3.21	3.21	3.2	1 2.42		2.42	0.52	(	.52 0.1	1	0.11	1 19.28	19	.28 Aaa	l l	AAAu	STABLE		STABLE
1	T 2 3/4 04/30/27		10,000,000	10,021,705	1.66	1.66	99.49	2.750	2.750	2.86	2.86	2.86	2.86	6 2.76		2.76	-2.29	-2	.29 0.0	7	0.07	4.74	4	.74 Aaa		AAAu	STABLE		STABLE
2	T 2 % 05/15/27		17,500,000	17,193,393	2.85	2.85	97.72	2.375	2.375	2.89	2.89	2.89	2.89	9 2.43		2.43	0.38	(	.38 0.1	3	0.13	4.78	4	.78 Aaa		AAAu	STABLE		STABLE
3	T 3 05/15/42		3,000,000	2,942,711	0.49	0.49	97.42	3.000	3.000	3.18	3.18	3.18	3.18	8 3.08		3.08	-3.12	-3	.12 0.0	7	0.07	19.78	19	.78 Aaa		AAAu	STABLE		STABLE
4	T 3 05/15/45		3,000,000	2,904,273	0.48	0.48	96.14	3.000	3.000	3.24	3.24	3.24	3.24	4 3.12		3.12	0.47	(	.47 0.0	8	0.08	3 22.78	22	.78 Aaa		AAAu	STABLE		STABLE
5	T 3 10/31/25		7,000,000	7,051,525	1.17	1.17	99.95	3.000	3.000	3.02	3.02	3.02	3.02	2 3.00		3.00	0.77	(	.77 0.0	14	0.04	3.24	3	.24 Aaa		AAAu	STABLE		STABLE
6	T 3 11/15/44		10,000,000	9,674,660	1.60	1.60	96.08	3.000	3.000	3.25	3.25	3.25	3.25	5 3.12		3.12	0.18	0	.18 0.2	26	0.26	22.28	22	.28 Aaa		AAAu	STABLE		STABLE
7	T 3 1/4 02/15/43		13,000,000	12,998,934	2.15	2.15	98.52	3.125	3.125	3.22	3.22	3.22	3.22	2 3.17		3.17	-1.04	-1	.04 0.3	3	0.33	20.53	20	.53 Aaa		AAAu	STABLE		STABLE
3	T 3 1/2 08/15/44		10,000,000	9,969,492	1.65	1.65	98.22	3.125	3.125	3.24	3.24	3.24	3.24	4 3.18		3.18	-0.93	-(	.93 0.2	27	0.27	22.03	22	.03 Aaa		AAAu	STABLE		STABLE
)	T 3 1/4 08/15/40		2,000,000	2,276,609	0.38	0.38	112.00	3.875	3.875	3.01	3.01	3.01	3.0	1 3.46		3.46	-2.80	-2	.80 0.0	15	0.05	18.03	18	.03 Aaa		AAAu	STABLE		STABLE
0 Uti		4 1,031		23,662,752		4 1.89		3.503 3.832														1 16.09 14			A-				
1	BRKHEC 4 1/2 01/15/49	9	8,000,000	7,658,241	1.27	1.27	95.50	4.125	4.125	4.42	4.42	4.42	4.42	2 4.32		4.32	132.27		.27 0.2			26.45		.45 A1	A+	WD	STABLE		
2	CEG 3 1/4 06/01/25		7,000,000	6,854,154			97.34		3.250			4.26		6 3.34			119.40		.40 0.0			3 2.83		.83 Baa			STABLE		STABLE
3	NRUC 2 3/4 04/15/32		5,000,000	4,604,548		0.76		2.750	2.750			3.91		1 3.03		3.03			.69 0.0			9.70		.70 A1	A-		STABLE		STABLE
74	XEL 3.6 09/15/47		5,000,000	4,545,809			89.52		3.600			4.29		9 4.02			113.46		.46 0.1			25.11			A		STABLE		STABLE

# Transactions PSPF Bond Portfolio YTD 8/5/22 Maturity Date Asset Type 11/1/2041 TAXABLE MUNICIPAL BONDS

2/1/2032 CORPORATE NOTES & MTN'S

4/15/2032 CORPORATE NOTES & MTN'S

4/1/2048 CORPORATE NOTES & MTN'S

8/13/2042 CORPORATE NOTES & MTN'S

2/4/2028 CORPORATE NOTES & MTN'S

2/4/2025 CORPORATE NOTES & MTN'S

5/25/2030 FED NATL MORTGAGE ASSOCIATION

11/21/2026 CORPORATE NOTES & MTN'S

6/15/2031 CORPORATE NOTES & MTN'S

2/14/2025 CORPORATE NOTES & MTN'S

11/15/2028 CORPORATE NOTES & MTN'S

12/1/2029 CORPORATE NOTES & MTN'S

5/10/2026 CORPORATE NOTES & MTN'S

6/15/2050 CORPORATE NOTES & MTN'S

4/9/2050 CORPORATE NOTES & MTN'S

1/15/2052 CORPORATE NOTES & MTN'S

3/15/2027 ABS SOFT BULLET 12X

5/15/2045 U.S. TREASURY NOTES & BONDS

2/1/2052 FHLMC PC

Moody's

Aa2

Aa3

A2

A1

A2

A2

Baa2

Aaa

Baa2

Baa1

Aaa

Baa1

Baa1

Baa1

A3

A2

A2

Baa2

Price

97.72

99.63

115.90

108.11

100.00

100.00

102.86

100.30

98.17

93.73

99.93

111.41

99.99

107.27

94.10

93.06

88.17

97.53

91.68

**Yield Spread** 

2.98 +94.7n

2.31 +50n/+50oas

2.79 +100n/+100oas

3.07 +86.9n/+91oas

2.55 +92n/+86oas

1.84 +67n/+53oas

2.29 +63.2n/+66oas

30.4n/+51P

3.34 +129.0n/+129oas

2.52 +73n/+74oas

2.36

2.80 +31.6OAS

2.24 +26N/+31.05OAS/+ Aaa

2.22 +20/N (Swaps),+33nAaa

3.45 +137.9n/+131oas

3.79 +145.0n/+139oas

3.21 +82.9n/+84oas

3.46 +97.8n/+94oas

3.39 +90.1n/+85oas

3.40 +90.1n/+88oas

3.52 +137.0n/+140oas

S&P

ΔΔ-

Fitch

A+

AAA

Α-

AA-

AA-

AAA

AAA

AA-

A-

A+

A- AA-

BBB+

BBB

BBB+ BBB+

BBB+ BBB+

BBB+ BBB+

AA+ AAA

ВВВ+

A A

BBB+

Note

benchmark

improve yield

reduce duration

reduce duration

The bond was removed from the index in November of '21 from a call that lowered

invest above cash/mmkt rates, improve

Low HZ1 0.979% reinvest in higher vielding altermatives. \$175 K realized

reinvest sell proceeds, improve yield

Spend excess cash and improve yield

cover duration gap to be neutral to

reduce spread risk in 20yr, improve yield/return, duration neutral

shift key rate/spread exposure

improve yield, maintain 5yr ladder

improve yield, cover duration gap

CMBS: invest excess cash to increase

reduce duration, reduce exposure to

invest cash over TPOOL yield, increase

Spend excess cash while being cautious with OAD targeting >2% yield

reduce spread risk from ow corp bonds, rising credit risk for issuer

reduce spread risk, low conviction credit

deteriorating credit, low coupon, reduce

improve income, reduce duration gap

improve income, reduce duration gap

improve income, reduce duration gap

increase duration by 9 DC closer to neutral, improve income

improve yield over cash rates

Increase yield in portfolio
MBS Pool- Bank/JP Morgan seller and

Utility sector

income

spread risk

and 30yr underweight

and 30yr underweight

improve yield/return, duration neutral

1/3/2022	1/10/2022	PSPF	Buy	\$2,000,000	THE BLACKSTONE GROUP INC	2.550	3/30/2032	CORPORATE NOTES & MTN'S	99.75	2.58	+95n/+94oas		A+
1/6/2022	1/10/2022	PSPF	Sell	-\$3,500,000	PRIVATE EXPORT FUNDING CORPORATIO	3.550	1/15/2024	MISC. GOV'T GUARANTEE	105.08	1.00	11.5n/12.2 OAS	AAA	
1/6/2022	1/11/2022	PSPF	Buy	\$4,000,000	GENERAL MOTORS CO	3.100	1/12/2032	CORPORATE NOTES & MTN'S	99.90	3.11	+138n/+139oas	Baa3	ввв
1/12/2022	1/21/2022	PSPF	Buy	\$3,500,000	FED HOME LOAN MORTGAGE CORP	2.347	11/25/2031	FED HOME LOAN MORTGAGE CO	103.00	2.00	+49p/+24N/+27n	Aaa	
1/24/2022	1/25/2022	PSPF	Buy	\$5,000,000	U.S. TREASURY	2.000	11/15/2041	U.S. TREASURY NOTES & BONDS	98.21	2.11		Aaa	AA+
1/27/2022	1/31/2022	PSPF	Sell	-\$7,000,000	PRUDENTIAL FUNDING	3.000	3/10/2040	CORPORATE NOTES & MTN'S	97.83	3.16	+100.0n/+106oas	A3	Α
1/27/2022	1/31/2022	PSPF	Buy	\$10,000,000	J P MORGAN CHASE	2.963	1/25/2033	CORPORATE NOTES & MTN'S	100.23	2.94	+114.6n/+107oas	A2	A-

2.300

2.750

4.464

3.600

2.551

1.843

2.950

2.290

2.500

2.550

2.500

3.000

2.210

4.725

2.900

1.400

2.800

3.250

2.950

Coupon

2.825

Settlement Fund Trade Type

1/5/2022 PSPF Sell

2/1/2022 PSPF Buy

2/7/2022 PSPF Buy

2/3/2022 PSPF Sell

2/3/2022 PSPF Sell

2/4/2022 PSPF Buy

2/4/2022 PSPF Buy

2/7/2022 PSPF Buy

2/28/2022 PSPF Buy

2/14/2022 PSPF Buy

2/17/2022 PSPF Sell

2/17/2022 PSPF Buy

3/4/2022 PSPF Buy

3/18/2022 PSPF Buy

3/17/2022 PSPF Sell

3/28/2022 PSPF Sell

3/28/2022 PSPF Sell

4/1/2022 PSPF Buy

4/1/2022 PSPF Buy

4/1/2022 PSPF Buy

1/3/2022

1/27/2022

1/31/2022

2/1/2022

2/1/2022

2/1/2022

2/1/2022

2/3/2022

2/8/2022

2/10/2022

2/15/2022

2/15/2022

3/3/2022

3/10/2022

3/15/2022

3/24/2022

3/24/2022

3/30/2022

3/30/2022

3/30/2022

Par Amount Issuer

\$5,000,000 PROCTOR & GAMBLE

-\$5,000,000 BELL CANADA INC

-\$5,000,000 PEPSICO

\$5,000,000 ABBVIE INC

-\$5,000,000 DUKE POWER CO

\$2,000,000 ENBRIDGE INC

\$3,000,000 U.S. TREASURY

\$2,000,000 LOCKHEED MARTIN

\$2,000,000 TARGET CORP

\$2,000,000 CATERPILLAR FINANCE

-\$10.000.000 DUPONT

-\$2,000,000 EBAY

\$5,000,000 NATIONAL RURAL UTILITIES

\$10,000,000 BANK OF AMERICA CORP

\$10,000,000 BANK OF AMERICA CORP

\$5,000,000 FED NATIONAL MORTGAGE ASSN

\$7.986.262 FED HOME LOAN MORTGAGE CORP

\$10,000,000 American Express Credit Account Master

-\$7,000,000 BROADRIDGE FINANCIAL SOLUTIONS, INC

-\$2,000,000 CITY OF SAN FRANCISCO CA PUBLIC UTILI

3/31/2022	4/1/2022 P	SPF B	Buy	\$4,927,704	FED NATIONAL MORTGAGE ASSN	3.000	1/1/2052	FNMA PC	98.72	3.19	+38.6 OAS	Aaa		AAA	Increase yield in portfolio MBS Pool- \$150K Max (HLB) +24 Payup
4/5/2022	4/13/2022 F	SPF	Buy	\$5,000,000	GM CONSUMER AUTO RECEIVABLES TRU	3.100	2/16/2027	ABS AUTOMOBILES	99.98	3.13	+52i, +45.7oas	Aaa	AAA		invest excess cash
4/7/2022	4/13/2022 P	SPF B	Buy	\$5,000,000	Toyota Auto Owners Trust (TAOT)	2.930	9/15/2026	ABS AUTOMOBILES	100.00	2.95	+43i, +49.9oas	Aaa	AAA		invest excess cash
4/11/2022	4/13/2022 P	SPF B	Buy	\$4,000,000	AMAZON.COM, INC.	3.000	4/13/2025	CORPORATE NOTES & MTN'S	99.84	3.06	+32n/+33oas	A1	AA		improve yield
4/11/2022	4/13/2022 P	SPF B	Buy	\$4,000,000	AMAZON.COM, INC.	3.300	4/13/2027	CORPORATE NOTES & MTN'S	99.79	3.35	+55n/+55oas	A1	AA		improve yield
4/11/2022	4/18/2022 F	SPF B	Buy	\$3,500,000	SYNCHRONY CARD ISSUANCE TRUST (SYI	3.370	4/17/2028	ABS SOFT BULLET 12X	99.99	3.40	+67i,+64oas	Aaa	AAA		Spend excess cash while being cautious with OAD
4/13/2022	4/21/2022 P	SPF B	Buy	\$5,000,000	BARCLAYS DRYROCK ISSUANCE TRUST	3.070	2/15/2028	ABS SOFT BULLET 12X	99.98	3.10	+58i,+42oas		AAA	AAA	Spend excess cash while being cautious with OAD
4/21/2022	5/5/2022 P	SPF	Buy	\$5,000,000	LOCKHEED MARTIN	3.900	6/15/2032	CORPORATE NOTES & MTN'S	99.91	3.91	+100n/+99oas	A3	A-	Α-	replace expected redemption of LMT 3.55 1/15/26, improve yield
4/25/2022	4/27/2022 F	SPF S	ell	-\$1,000,000	BP	3.000	2/24/2050	CORPORATE NOTES & MTN'S	76.50	4.49	+158.9n/+156oas	A2	A-	A	credit concerns due to high operational exposure in high risk countries
4/26/2022	4/28/2022 P	SPF	Buy	\$4,000,000	HOME DEPOT INC	2.750	9/15/2051	CORPORATE NOTES & MTN'S	77.35	4.08	+121.2n/+121oas	A2	A	A	invest excess cash, increase yield, increase duration closer to neutral,
5/10/2022	5/18/2022 F	SPF	Buy	\$4,000,000	BMW VEHICLE OWNERS TRUST (BMWOT	3.210	8/25/2026	ABS AUTOMOBILES	99.99	3.23	+57i, +93oas	Aaa	AAA		invest excess cash, increase yield
5/17/2022	5/20/2022 P	SPF S	iell	-\$5,000,000	FED HOME LOAN MORTGAGE CORP	2.013	12/25/2035	FED HOME LOAN MORTGAGE CO	80.92	3.84	+75.9N, 74.8j, +72.	6 Aaa		AAA	Reduce allocation to lower coupon CMBS , estimated realized loss
5/17/2022	5/19/2022 F	SPF S	ell	-\$2,000,000	TEXAS INSTRUMENTS INC.	1.750	5/4/2030	CORPORATE NOTES & MTN'S	85.78	3.84	+88.1n/+85oas	Aa3	A+		sell low coupon bonds for higher coupon, Hold/Sell on operational risks
5/17/2022	5/24/2022 P	SPF	Buy	\$5,000,000	American Express Credit Account Master	3.390	5/17/2027	ABS SOFT BULLET 12X	99.98	3.42	+58i/+42.7N		AAA	AAA	invest excess cash with good valuations in ABS and shorter duration
5/18/2022	5/19/2022 P	SPF S	ell	-\$13,000,000	U.S. TREASURY	2.375	5/15/2029	U.S. TREASURY NOTES & BONDS	96.41	2.95		AAA	AA	AAA	Reallocate assets to enhance income, estimated realized loss \$1,300,000
5/19/2022	5/20/2022 P	SPF	Buy	\$3,000,000	U.S. TREASURY	3.000	5/15/2042	U.S. TREASURY NOTES & BONDS	96.45	3.24		Aaa	AA+	AAA	improve coupon/yield, increase duration to neutral
5/19/2022	5/20/2022 P	SPF B	Buy	\$7,000,000	U.S. TREASURY	3.000	10/31/2025	U.S. TREASURY NOTES & BONDS	100.60	2.82		Aaa	AA+	AAA	improve coupon/yield, increase duration to neutral
5/19/2022	5/26/2022 P	SPF	Buy	\$10,000,000	DISCOVER CARD EXECUTION NOTE TRUS	3.320	5/17/2027	ABS SOFT BULLET 12X	99.99	3.35	+58i/+44n	Aaa		AAA	Invest excess, improve yield, increase duration closer to neutral
5/24/2022	5/25/2022 P	SPF B	Buy	\$10,000,000	U.S. TREASURY	2.750	4/30/2027	U.S. TREASURY NOTES & BONDS	100.06	2.74		Aaa	AA+	AAA	Add duration, improve income
5/25/2022	5/27/2022 P	SPF S	ell	-\$2,000,000	TAIWAN SEMICONDUCTOR MANUFACTU	3.125	10/25/2041	CORPORATE NOTES & MTN'S	83.52	4.40	+123n/+126oas	Aa3	AA-		sell on credit concerns stemming from geopolitcal risks
5/26/2022	5/31/2022 F	SPF B	Buy	\$3,927,972	FED NATIONAL MORTGAGE ASSN	3.500	3/1/2052	FNMA PC	99.95	3.49	+73.2i,+27.3oas	Aaa		AAA	Increase portfolio yield and increase allocation to MBS
6/22/2022	6/24/2022 P	SPF S	ell	-\$5,000,000	REPUBLIC OF CHILE	2.550	1/27/2032	SOVEREIGN NOTES	84.50	4.56	+142.7n/+141oas	A1	A	Α-	credit concerns on impact of expected global economic slowdown
7/21/2022	7/25/2022 P	SPF B	Buy	\$4,978,421	FED HOME LOAN MORTGAGE CORP	4.000	7/1/2052	FHLMC PC	100.00	3.99	+105i,+29.2oas	Aaa	AA+	AAA	Increase portfolio yield and increase allocation to MBS
7/28/2022	7/29/2022 P	SPF	Buy	\$4,948,634	FED HOME LOAN MORTGAGE CORP	3.500	4/1/2052	FHLMC PC	99.09	3.62	+92.5i,+21oas	Aaa	AA+	AAA	Increase portfolio yield and increase allocation to MBS
7/28/2022	7/29/2022 P	SPF B	Buy	\$4,893,726	FED NATIONAL MORTGAGE ASSN	3.500	4/1/2052	FNMA PC	99.41	3.58	+89.3i,+23.5oas	Aaa	AA+	AAA	Increase portfolio yield and increase allocation to MBS
8/2/2022	8/4/2022 P	SPF S	iell	-\$1,000,000	NOVARTIS CAPITAL CORP.	2.400	9/21/2022	CORPORATE NOTES & MTN'S	99.95	2.74	10 bp OAS	A1	AA-	AA-	IPS Compliance , estimated loss \$380
8/2/2022	8/5/2022 P	SPF S	ell	-\$9,542,920	FED HOME LOAN MORTGAGE CORP	3.320	2/25/2023	FED HOME LOAN MORTGAGE COR	99.83	3.22	+35.3i, +32.3OAS			AAA	Selling under 1yr bonds for PSPF IPS

compliance

# Supplemental Slides

Supplemental Slides (21-37)



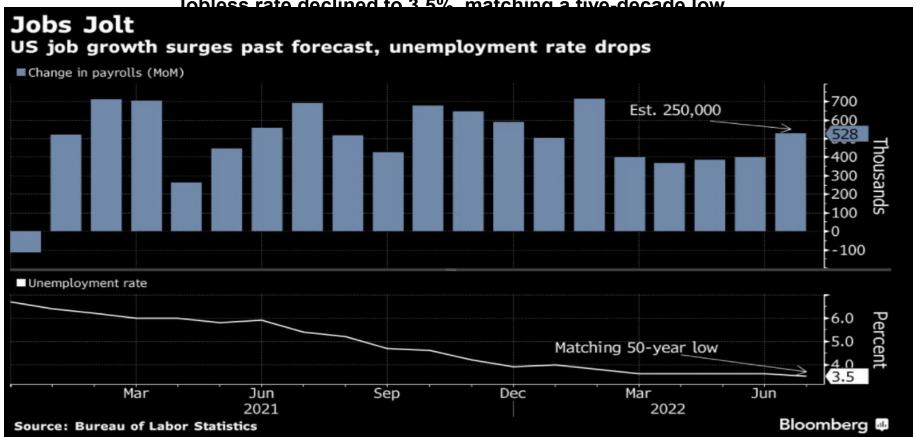




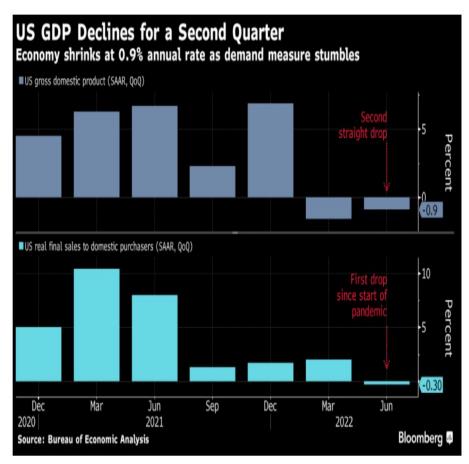


# Pressing Fed

Payrolls gain of 528,000 in July exceeded all forecasts



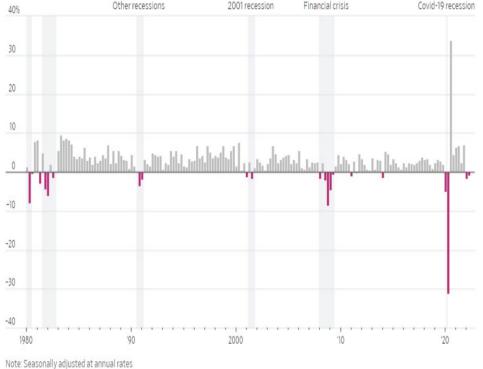
# **2Q22 GDP: Technical Recession Confirmed**



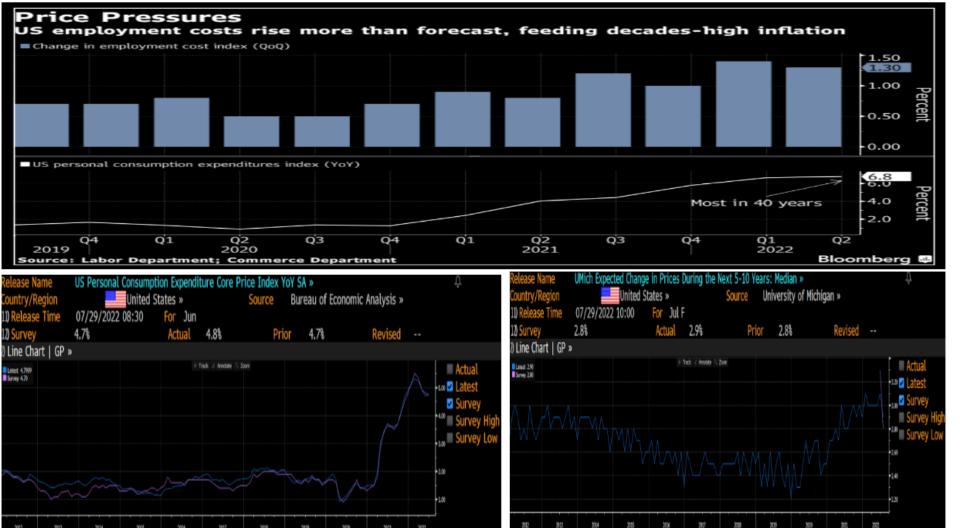
# If This Is a Recession, We Might Not Know for Months

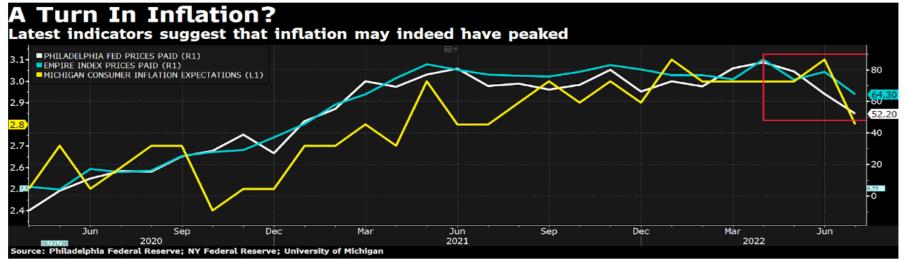
Economy's second-straight decline in output sparks debate—and the waiting game

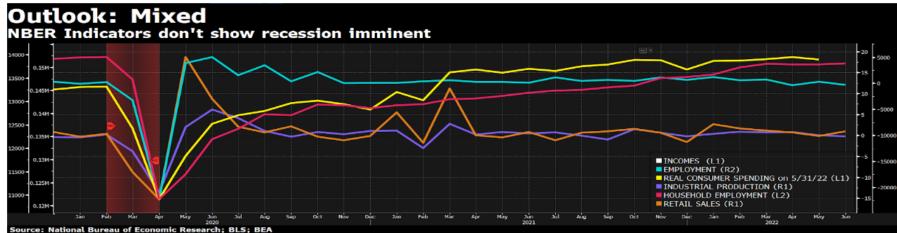
#### GDP, change from previous quarter



Note: Seasonally adjusted at annual rates Source: Commerce Department

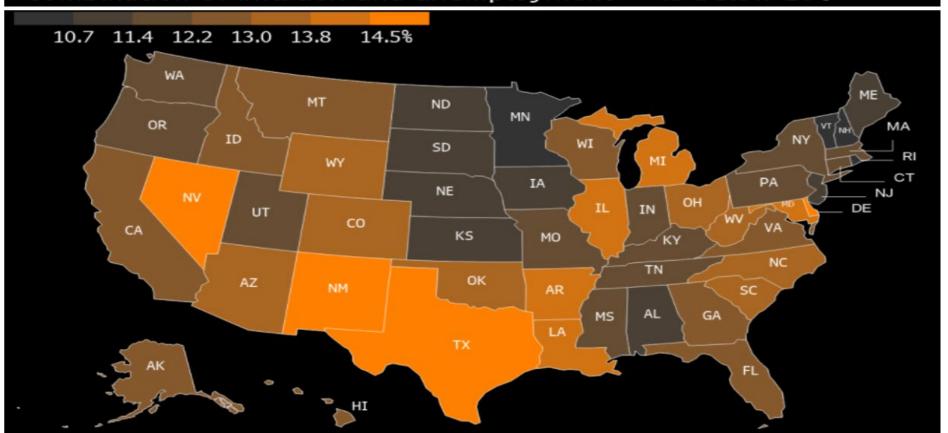






### Misery By State

New Hampshire is the only US state where the misery index -- the combination of inflation and unemployment -- is below 10%

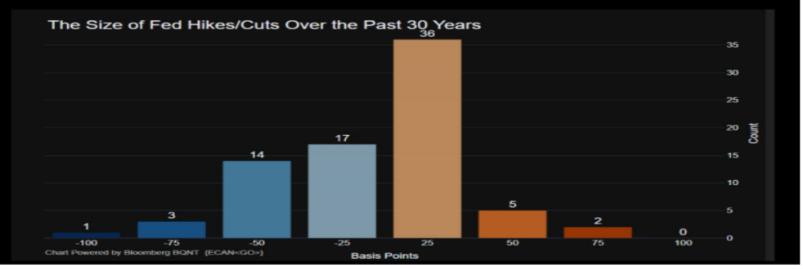


Source: Bureau of Labor Statistics, Bloomberg calculations

### Fed Raises Rates by 75 Basis Points to Clamp Down on Inflation

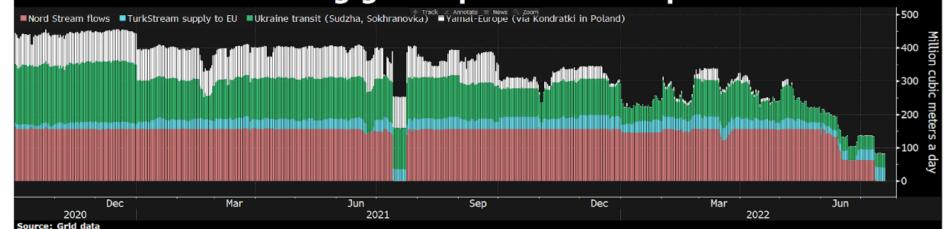
Back-to-back increases are biggest since early 1980s. FOMC anticipates ongoing hikes are likely appropriate

In Bloomberg's Economic Analyzer {ECAN <GO>}, we can see that today's hike will likely be the **third** 75 basis point hike in the past 30 years.



Looking more closely we can see that the last 75 basis point hike before June's hike was in **November 1994**. This was the only hiking cycle in 30 years that did not precede a recession, largely because that was the era where globalization took off, with Nafta coming into force in January 1994.

Tight Supply
Russia has been curbing gas shipments to Europe for months





-15.00

-10.00

45.00

23.67

■Last Price

2020

High on 02/15/21 45.00

Low on 06/14/21 10.00



### Bull and Bear Case for Crude

Signs of slowing growth and a weakening consumer have begun to proliferate, weighing on the price of crude and presenting questions about what's ahead for oil and refined products given tight supply.

ECB Rushes to Tighten as Half-Point Hike Matched by Crisis Tool

- The European Central Bank raised its key interest rate by 50 basis points, the first increase in 11 years and the biggest since 2000 as it confronts surging inflation even as recession risks mount
- "Price pressures are spreading across more and more sectors," worsened by a weakening euro, Lagarde told reporters in Frankfurt. "Most measures of underlying inflation have risen further. We expect inflation to remain undesirably high for some time."
- Thursday's rate move aligns the ECB with a global push to tighten and ends an eight-year experiment with subzero borrowing costs. The ECB said in a statement that further normalization of interest rates will be appropriate at upcoming meetings -- prompting traders

Country/Region/World	▼ C	ontribut	tor Fed		serve		_	• Year	ly • Q	uarterl
United States	Brows	e	Priva	te 🤇	Officia	al	C	ompare	to Comp	osite
		Ac	ctual/ F	orecast	S					
Indicator	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Economic Activity										
■ Real GDP (YoY%)	2.7	1.7	2.3	2.9	2.3	-3.4	5.7	1.7	1.7	1.9
Price Indices										
CPI (YoY%)	0.1	1.3	2.1	2.5	1.8	1.2	4.7			
■ PCE Price Index (YoY%)	0.2	1.0	1.8	2.2	1.5	1.2	3.9	5.2	2.6	2.2
└ Core PCE (yoy%)	1.3	1.6	1.7	2.0	1.7	1.4	3.3	4.3	2.7	2.3
Labor Market	E 0	4.0	ا م	2 0	2 7	0.1	E 4	2 7	2.0	4.1
Unemployment (%)	5.3	4.9	4.4	3.9	3.7	8.1	5.4	3.7	3.9	4.1
United States	Brows	e	• Privat	te C	Officia	ıl				
		Ac	ctual / F	orecast	S	Prob	pability	of Rece	ession	40.0%
Indicator	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024 -
Economic Activity										
■ Real GDP (YoY%)	2.7	1.7	2.3	2.9	2.3	-3.4	5.7	2.0	1.3	1.8
Price Indices										
CPI (YoY%)	0.1	1.3	2.1	2.5	1.8	1.2	4.7	8.0	3.6	2.5
■ PCE Price Index (YoY%)	0.2	1.0	1.8	2.2	1.5	1.2	3.9	6.0	3.0	2.3
└ Core PCE (yoy%)	1.3	1.6	1.7	2.0	1.7	1.4	3.3	4.7	3.1	2.3
COIE FCL (VOVa)	1.3	1.0								
Labor Market	1.3	1.0	[	[	(					
	5.3	4.9	4.4	3.9	3.7	8.1	5.4	3.7	3.9	4.2
Labor Market								3.7	3.9	4.2
Labor Market Unemployment (%) Interest Rates Central Bank Rate (%)								3.7	3.9	4.2 2.80
Labor Market Unemployment (%) Interest Rates Central Bank Rate (%) 3-Month Rate (%)	5.3 0.50 0.61	4.9 0.75 1.00	4.4 1.50 1.69	3.9 2.50 2.81	3.7 1.75 1.91	8.1 0.25 0.24	5.4 0.25 0.21	3.55 3.30	3.30 2.97	2.80 2.51
Labor Market Unemployment (%) Interest Rates Central Bank Rate (%)	5.3	4.9 0.75	4.4 1.50	3.9 2.50	3.7 1.75	8.1	5.4 0.25	3.55	3.30	2.80



#### WORLD ECONOMIC OUTLOOK UPDATE, JULY 2022

increases in emerging and developing Asia (partly because of a slowdown of activity in China and limited increases in prices of staple foods) but larger revisions for Latin America and the Caribbean (up by 3.0 percentage points) and for emerging and developing Europe (up by 2.9 percentage points).

Table 1. Overview of the World Economic Outlook Projections

(Percent change, unless noted otherwise)

		The state of the s	Ye	ar over Yea	W.				
-			100	and the same of th	Difference from April :	2022 WEO	Q4 s	over Q4 2/	
			Projection	ons	Projections 1	1/		Projecti	ons
	2020	2021	2022	2023	2022	2023	2021	2022	202
World Output	-3.1	6.1	3.2	2.9	-0.4	-0.7	4.4	1.7	3.
Advanced Economies	-4.5	5.2	2.5	1.4	-0.8	-1.0	4.7	1.3	1.
United States	-3.4	5.7	2.3	1.0	-1.4	-1.3	5.5	1.0	0.
Euro Area	-6.3	5.4	2.6	1.2	-0.2	-1.1	4.7	0.7	2
Germany	-4.6	2.9	1.2	0.8	-0.9	-1.9	1.8	0.5	1.
France	-7.9	6.8	2.3	1.0	-0.6	-0.4	4.9	0.4	1
Italy	-9.0	6.6	3.0	0.7	0.7	-1.0	6.4	0.6	1
Spain	-10.8	5.1	4.0	2.0	-0.8	-1.3	5.5	1.3	2
apan	-4.5	1.7	1.7	1.7	-0.7	-0.6	0.4	2.4	0
Inited Kingdom	-9.3	7.4	3.2	0.5	-0.5	-0.7	6.6	0.1	1
Canada	-5.2	4.5	3.4	1.8	-0.5	-1.0	3.2	2.5	1
Other Advanced Economies 3/	-1.8	5.1	2.9	2.7	-0.2	-0.3	4.6	2.0	2
merging Market and Developing Economies	-2.0	6.8	3.6	3.9	-0.2	-0.5	4.2	2.1	4
merging and Developing Asia	-0.8	7.3	4.6	5.0	-0.8	-0.6	3.8	4.0	4
China	2.2	8.1	3.3	4.6	-1.1	-0.5	3.5	4.1	3
India 4/	-6.6	8.7	7.4	6.1	-0.8	-0.8	3.9	4.1	7
ASEAN-5 5/	-3.4	3.4	5.3	5.1	0.0	-0.8	4.7	3.4	6
merging and Developing Europe	-1.8	6.7	-1.4	0.9	1.5	-0.4	6.1	-7.0	7
Russia	-2.7	4.7	-6.0	-3.5	2.5	-1.2	4.8	-13.9	-4
atin America and the Caribbean	-6.9	6.9	3.0	2.0	0.5	-0.5	3.9	1.8	2
Brazil	-3.9	4.6	1.7	1.1	0.9	-0.3	1.6	1.5	1
Mexico	-8.1	4.8	2.4	1.2	0.4	-1.3	1.2	2.9	1
fiddle East and Central Asia	-2.9	5.8	4.8	3.5	0.2	-0.2			-
Saudi Arabia	-4.1	3.2	7.6	3.7	0.0	0.1	6.7	6.9	3
Sub-Saharan Africa	-1.6	4.6	3.8	4.0	0.0	0.0			-
Nigeria	-1.8	3.6	3.4	3.2	0.0	0.1	2.4	2.1	2
South Africa	-6.3	4.9	2.3	1.4	0.4	0.0	1.8	2.2	1
Memorandum									
Vorld Growth Based on Market Exchange Rates	-3.4	5.8	2.9	2.4	-0.6	-0.7	4.4	1.6	2
European Union	-5.8	5.4	2.8	1.6	-0.1	-0.9	4.9	0.9	2
Middle East and North Africa	-3.4	5.8	4.9	3.4	-0.1	-0.2			-
merging Market and Middle-Income Economies	-2.2	7.0	3.5	3.8	-0.3	-0.5	4.3	2.0	4
ow-Income Developing Countries	0.1	4.5	5.0	5.2	0.4	-0.2			
World Trade Volume (goods and services) 6/	-7.9	10.1	4.1	3.2	-0.9	-1.2			-
dvanced Economies	-8.8	9.1	5.3	3.2	-0.3	-1.4		0.00	
merging Market and Developing Economies	-6.2	11.7	22	3.3	-1.8	-0.9			
commodity Prices (US dollars)									
OH 7/	-32.7	67.3	50.4	-12.3	-4.3	1.0	79.2	28.6	-13
vonfuel (average based on world commodity import weights)	6.7	26.1	10.1	-3.5	-1.3	-1.0	16.4	5.7	-0
World Consumer Prices 8/	3.2	4.7	8.3	5.7	0.9	0.9	5.6	8.3	4
Advanced Economies 9/	0.7	3.1	6.6	3.3	0.9	0.8	4.9	6.3	2
merging Market and Developing Economies 8/	5.2	5.9	9.5	7.3	0.8	0.8	6.1	10.0	5

Note: Real effective exchange rates are assumed to remain constant of the toxels precalling during May 30, 2022—have 27, 2022. Economies are listed on the basis of economic size. The aggregated quarterity data are seasonably adjusted. WEO = World Economic Outlook.

is Difference based on rounded figures for the current and April 2022 WEO forecasts. Countries whose forecasts have been updated relative to April 2022 WEO forecasts account for approximately 90 percent of world GDP measured at purchasing overer-parity weights.

approximately 3d percent of world 5cm measured at purchasing-power party weights, and projections account for approximately 90 percent (80 percent) of annual world (emerging market and projections) output at purchasing-power-party weights.

3/ Excludes the Group of Seven (Canada, France, Germany, Italy, Japan, United Kingdom, United States) and euro area countries.

4/ For India, data and forecasts are presented on a fiscal year basis and GDP from 2011 onward is based on GDP at market prices with fiscal year 2011/12 as a base year. 5/ Indonesia, Malaysia, Philippines, Thailand, Vietnam.

5' Indonesia, Malaysia, Philippines, Thalland, Vietnam.
6' Simple average of growth raises for export and import volumes (goods and services).

7/ Simple average of prices of UK Brent, Dubai Fateh, and West Texas Intermediate crude oil. The average price of oil in US dollars a barrel was \$89.07 in 2021; the assumed price, based on futures markets (as of June 29, 2022), is \$103.88 in 2022 and \$91.07 in 2023.
8/ Excludes Venezuela.

8/ Excludes the euro area is 7.3% in 2022 and 3.9% in 2023, that for Japan is 1.9% in 2022 and 1.3% in 2023, and that for the United States is 7.7% in 2022 and 3.0% in 2023.

### Portfolio Benchmark Profile

### U.S. Aggregate FIGI BBG002F06467

The Bloomberg US Aggregate Bond Index is a broad-based flagship benchmark that measures the investment grade, US dollar-denominated, fixed-rate taxable bond market. The index includes Treasuries, government-related and corporate securities, MBS (agency fixed-rate pass-throughs), ABS and CMBS (agency and non-agency). (Future Ticker: I00001US)

View Statistics 1	▼							As of	08/03/22
Index Name	Ticker	Count (P)	OAC	OAS	Spread	YTW	YTM	Mkt Val (mil)	OAD
US Aggregate	LBUSTRUU	12,545	0.57	0.499	63.2	3.51	3.52	25,317,708	6.48 🜟
Broad Maturity									
☐ Intermediate	LC08TRUU	9,321	-0.01	0.397	53.1	3.41	3.41	20,736,880	4.54 🖈
Quality									
- Aaa	I05743US	3,483	0.37	0.167	32.6	3.20	3.20	18,511,006	6.06
│	I05744US	1,594	1.21	0.758	82.0	3.73	3.74	784,910	7.70
	I05745US	3,443	1.11	1.150	121.5	4.12	4.12	2,750,476	7.53
└ Baa	I05746US	4,025	1.10	1.766	182.9	4.72	4.72	3,271,316	7.68
Maturity									
- 1-3 Year	LU13TRUU	2,889	0.04	0.235	25.8	3.33	3.33	5,160,508	1.94 🖈
- 3-5 Year	LU35TRUU	2,473	0.08	0.373	42.0	3.34	3.34	4,289,670	3.74
5-7 Year	I05749US	1,808	-0.15	0.404	56.6	3.40	3.40	4,980,545	5.04
7-10 Year	I05750US	2,123	0.01	0.539	80.1	3.53	3.53	6,296,579	6.79
└ 10+ Year	I05751US	3,252	3.18	0.961	109.2	3.99	3.99	4,590,407	15.27
BCLASS 1									
US Treasury	LUATTRUU	267	0.94	0.011	4.5	2.99	2.99	10,142,425	6.61
Government-Related	LD08TRUU	1,246	0.66	0.635	65.8	3.60	3.60	1,311,410	5.59
Corporate	LUACTRUU	7,203	1.15	1.413	147.9	4.38	4.38	6,179,676	7.76
■ Securitized	LD19TRUU	3,829	-0.40	0.384	72.2	3.51	3.51	7,684,197	5.43

# Benchmark Returns/Excess Returns YTD 7/29/22

					ל טוז /	/29/22						
/iew Generic Returns	▼					View Periodic Excess F	Returns					As
Index Name	Ticker	1D Rtn	MTD Rtn	YTD Rtn	Members	Index Name	Ticker	MTD Excs Rtn	YTD Excs Rtn	3M Excs Rtn	6M Excs Rtn	12M Excs Rtn
US Aggregate	LBUSTRUU	0.08%	2.44%	-8.16%	12,563	US Aggregate	LBUSTRUU	0.62	-0.88	0.39	-0.56	-0.89
Broad Maturity						Broad Maturity						
└ Intermediate	LC08TRUU	0.09%	2.17%	-5.48%	9,349	☐ Intermediate	LC08TRUU	0.58	-0.55	0.42	-0.42	-0.54
Quality						Quality						
⊢ Aaa	I05743US	0.04%	2.20%	-6.87%	3,492	Aaa	I05743US	0.49	-0.22	0.51	-0.17	-0.24
│	I05744US	0.12%	2.56%	-10.01%	1,600	├ Aa	I05744US	0.54	-1.17	0.43	-0.51	
	I05745US	0.18%	3.01%	-10.70%	3,443	- A	I05745US	0.93	-1.96	0.39	-1.08	
└ Baa	I05746US	0.24%	3.34%	-12.35%	4,028	└ Baa	I05746US	1.14	-3.32	-0.28	-2.24	-3.18
Maturity						Maturity						
- 1-3 Year	LU13TRUU	0.00%	0.53%	-2.61%	2,902	- 1-3 Year	LU13TRUU	0.10	-0.11	0.08	-0.07	
- 3-5 Year	LU35TRUU	0.07%	1.60%	-4.76%	2,434	- 3-5 Year	LU35TRUU	0.26	-0.47	0.13	-0.38	
5-7 Year	I05749US	0.13%	2.43%	-6.06%	1,811	5-7 Year	I05749US	0.48	-0.63	0.40	-0.53	
7-10 Year	I05750US	0.13%	3.60%	-8.49%	2,168	7-10 Year	I05750US	1.21	-1.14	0.86	-0.84	
└ 10+ Year	I05751US	0.06%	3.76%	-18.90%	3,248	└ 10+ Year	I05751US	0.83	-2.08	0.28	-1.12	-2.19
BCLASS 1						BCLASS 1						
US Treasury	LUATTRUU	-0.02%	1.59%	-7 <b>.</b> 69%	273	US Treasury	LUATTRUU	0.00	0.00	0.00	0.00	
Government-Related	LD08TRUU	0.11%	1.66%	-7.67%	1,265	Government-Related	LD08TRUU	0.03	-1.03		-0.74	
Corporate	LUACTRUU	0.21%	3.24%	-11.61%	7,199	■ Corporate	LUACTRUU	1.09	-2.59		-1.57	
Securitized	LD19TRUU	0.12%	3.09%	-5.87%	3,826	Securitized	LD19TRUU	1.19	-0.51	1.22	-0.42	-0.55

### Spread Product Barometer

Benchmark	Current	YTD Δ	YTD Return
5 Year Treasury	2.7%	1.3%	-4.9%
10 Year Treasury	2.7%	1.0%	-7.8%
1 Month Libor	2.4%	2.3%	0.2%



Z-Score measures how far the current spread is

spread - 1vr average) / 1vr standard deviation

deviating from the mean. e.g. 1yr Z-Score = (current

	Current Spread	YTD	WoW	MoM	D		Drive Accord	YTD 2022	Y	TD	F	Y 2021	FY	2020	121	Month Sp	read	5Y:	Spread	1 Year Lookba	ck Z-Score	5 Year Lookb	ack Z-Score
	As of 07/29 Close <sup>1</sup> (bp)	Change (bp)	Change (bp)	Change (bp)	Duration (yr) <sup>2</sup>	Yield <sup>3</sup>	Price As of 07/29 Close (\$) <sup>4</sup>	Price Change	Excess Return <sup>5</sup>	Total Return	Excess Return	Total Return	Excess Return	Total Return	Tight	Wide	Trend	Tight	Wide	Current Tight	N Wide	Current Tight	N Wide
IG All	155	57	2	-3	7.8	4.4%	95	-13.6%	-2.6%	-11.6%	1.6%	-1.0%	0.5%	9.9%	87	170	-		389	1.8	•-	0.8	•
IG AA	90	26	4	-2	9.6	3.7%	94	-12.8%	-1.2%	-10.0%	1.2%	-1.2%	0.3%	8.5%	57	103	-	41	259	1.4	•	0.6	•
IG A	123	44	3	-1	7.9	4.1%	95	-13.0%	-2.0%	-10.7%	0.9%	-1.8%	0.6%	9.9%	70	137	- Jak	64	322	1.9	•-	1.0	
IG BBB	188	73	2	-3	7.5	4.7%	95	-14.1%	-3.3%	-12,4%	2,3%	-0.4%	-0.1%	9.4%	103	205	-	103	480	2,2	•	0.7	•
EM Corp/Sov IG	211	60	-9	9	7.2	5.0%	93	-13.4%	-6.6%	-14.8%	1.7%	-0.7%	-0.9%	7.5%	145	260	-	117	408	1,0	•	0.2	<b>-</b>
EM Corp/Sov HY	948	296	-38	54	5,1	12,3%	70	-19.8%	-10,6%	-16,6%	-1,0%	-3,2%	-2,5%	4.3%	578	1031	-	308	1353	0,4		(0.4)	•
HYAI	493	173	-19	-66		7.6%	90	-12.2%	-4.8%	-9.1%	6.6%	5.3%	2,3%	7.1%	312	607	~~~	312	1137	1.4	•	1.4	•
HYBB	337	109	-15	-67	4.7 5.1	6.2%	93	-11.0%	-3.6%	-8.6%	6,2%	4.6%	4,8%	10,2%	222	440		198	920	0.5		0.9	•-
HYB	561	191	-23	-68	4.4	84%	90	-12.3%	-5.2%	-8.8%	5.9%	4.8%	0.1%	4.6%	356	685	~~~	321	1211	1.1		1.7	
HYCCC	1088	478	-33	-00 -48	4.1	12.6%	79	-18.2%	-9.0%	-12.2%	9.5%	8.6%	-2.2%	2.3%	599	1223	-	576	2050	1.9		2.1	_
																	-						
CDX IG 5Y	80	26	-6	-20	4.9	NA	101	NA.	-1.2%	-0.6%	1.0%	1,0%	-0.2%	0.1%	51	102		45	152	2.2		1.2	
CDX HY 5Y	471	169	-29	-100	4.5	NA	101	NA.	-6.1%	-4.7%	4.4%	4.5%	-5.2%	-4.8%	288	588	-	278	922	2.2		2.2	
Lev Loan All	514	103	-2	-24	4.7	7.9%	94	4.8%	-2.9%	-2.8%	5.1%	5.2%	2.6%	3.1%	398	567		353	1071	1.7		1.4	
Lev Loan BB	369	53	-1	-33	4.8	6.5%	96	-3.0%	-1.5%	-1.3%	3.0%	3.1%	0.3%	0.8%	299	421		262	855	2.2		1.4	•
Lev Loan B	547	116	<b>-</b> 3	-25	4.8	8.3%	94	-5.5%	-3.2%	-3.0%	5.1%	5.2%	3.3%	3.8%	417	606	^	379	1106	2.9	•	1.0	•
Lev Loan CCC	1265	429	9	84	4.1	15.4%	80	-12.7%	-9.0%	-8.9%	12.3%	12.4%	3.9%	4.4%	752	1282	_	746	2313	1.1	•	1.3	-
Secondary CLO AAA	185	80	0	-8	3.0	4.8%	99	-1.4%	-0.4%	-0.2%	1.4%	1.5%	1.5%	2.0%	100	200		90	400	2.0	-	1.1	•
Secondary CLO AA	268	108	0	5	4.3	5.5%	96	-4.2%	-3.0%	-2.8%	2.2%	2.3%	2.5%	3.0%	153	285		110	513	1.7	•	0.9	-
Secondary CLO A	338	128	0	33	4.9	6.1%	94	5.8%	-4.2%	-4.0%	3.5%	3.6%	2.4%	2.8%	203	358		158	625	1.9	•	1.1	•
Secondary CLO BBB	508	168	0	23	5.6	7.8%	91	8.7%	-6.5%	-6.3%	5.2%	5.3%	3.2%	3.7%	335	525		250	840	2,1	•	1.0	•
Secondary CLO BB	913	208	0	25	5.4	11.8%	86	-11,7%	-8,1%	-7.9%	10,3%	10,4%	5,6%	6.1%	680	965	- Care	513	1750	1,9	•—	1.0	1
Secondary CLO B	1403	290	0	63	4.9	16.7%		-26.4%	-22.1%	-21.9%	18.3%	18.4%	2.6%	3.1%	1088	1450		675	2500	2.4	•—	2.5	-
CRT M1	231	150	-37	-126	2	4.7%			-0.5%	-0.6%	0.9%	0.8%	0,1%	0.1%	-113	421	-		629	2,0	•	3.0	•
CRT M2	504	336	43	-31	7	7.4%	NA	NA.	0.1%	-0.4%	3.4%	3.4%	0.4%	0.4%	124	670	- Annual of the	124	1211	2.2	•-	2.3	•
Agency MBS	49	0	-12	-19	1.7	3.3%			-0.5%	-5.8%	-0.7%	-1.0%	-0.2%	3.9%	19	76	more	6	147	2.2	•	1.1	<b>—</b>
Primary CMBS AAA 10Y	165/P	96	0	5	10	4.4%			-1.3%	-10.3%	0.5%	-2.6%	1,0%	11,4%	66	170		60	225	2,4	•	2.3	•
Primary CMBS AA	260/P	155	0	10	10	5.3%			-6.0%	-14.6%	1,6%	-1.3%	1,3%	11.4%	95	265	مرسم	95	475	2.7		2.0	
Primary CMBS A	325/P	175	0	0	10	6.0%	NA	NA.	-8.1%	-16.6%	5.2%	2.5%	-1.4%	8.6%	130	335		125	650	2.5	-	1.7	
Primary CMBS BBB-	520/P	225	0	-25	10	7.9%			-7.5%	-16.1%	3.1%	0.3%	-2.5%	7.7%	250	545		225	920	2.2	•	1.3	
1 '									-1.076	-10.176	3,176	0.071	-2,076	1.170							<b>-</b>		
Muni AAA 10Y°	22	40	-14	-24	10	3.0%									-32	90	- Augusta	-44	286	2.2		1.7	
Muni AA 10Y*	53	55	-7	-32	10	3.3%	NA	NA.	NA	NA	NA.	NA.	NA.	NA	-16	134		-27	322	2.0		1.3	L
Muni A10Y*	85	66	-13	-30	10	3.6%									6	160		-3	336	0.7		0.1	I
Muni BB8 10Y*	138 NA	35	-16	-38	10	4.2%	NIA			0.00		4.00/		7.40/	43	221	Separate Separate	40	348	0,8		0,2	Ī
S&P Muni Index		NA.	NA.	NA	NA	NA	NA	NA.	NA	-6.0%	NA	1.8%	NA.	7.1%	NA	NA		NA	NA.	NA.		NA NA	

Note: /P denotes spread to SOFR Swaps

Footnote: (1), All spreads and prices are as of 07/29/2022, and are sourced from Citi Velocity, LCD and Bloomberg. (2), WAL is used for loans as a proxy for duration. Bond duration changes with the market. (3), CLO yields are calculated based on swap rates of similar duration. (4), CLO prices are derived from the most recent month-end prices and spread leavels using approximate duration of each tranche. (5) Excess return is calculated by subtracting the return of the benchmark from the total return achieved in the investment, See more details in Sources & Caveats in the next page, including an updated data source for Agency MBS.

<sup>\*</sup>Muni spreads over 10Yr TSY implied by tax-equivalent yield. Please see next slide for more details.





#### IG Index Performance by Sector (OAS-Spread)

Indices OAS Spread	Today	1W Δ	1M ∆	3M Δ	LTM A	YTD
IG	141	(4)	(19)	8	53	4
ndustrial	138	(3)	(20)	6	47	4
Basic Industry	178	(2)	(14)	24	71	6
Chemicals	161	7	(5)	28	70	6
Metals & Mining	199	(8)	(16)	25	71	5
Paper	190	(11)	(29)	16	70	6
Capital Goods	128	(5)	(23)	5	44	4
Aerospace & Defense	146	(7)	(32)	2	42	4
Building Mat	172	(3)	(12)	28	79	7
Divers. Manufacturing	131	(6)	(21)	9	52	4
Construction Machinery	53	(5)	(19)	(7)	13	1
Packaging	169	(5)	(17)	32	82	7
Environmental	112	(3)	(20)	3	45	3
Communications	171	(2)	(17)	8	58	5
Cable Satellite	188	1	(13)	6	69	5
Media Entertainment	182	(2)	(20)	14	80	7
Wireless	159	(5)	(23)	(1)	55	4
Wirelines	160	(2)	(14)	10	42	4
Consumer Cyclical	119	(2)	(20)	2	42	4
Automotive	127	(1)	(18)	14	57	5
Home Construction	191	(8)	(36)	29	101	9
Lodging	172	(6)	(19)	21	54	5
Retailers	99	(1)	(17)	3	30	3
Restaurants	111	(4)	(25)	(14)	27	2
Services	149	(6)	(24)	19	62	6
Consumer Non-Cyclical	125	(4)	(22)	1	40	3
Consumer Products	89	(3)	(19)	0	38	3
Food & Bev	123	(5)	(26)	(6)	36	3
Health Care	136	(3)	(21)	7	48 28	4
Pharmaceuticals	101	(1)	(20)	(4)		2
Supermarkets	134	(5)	(23)	(4)	34	3
Tobacco	234	(12)	(26)	33	96	8
Energy	160	(5)	(21)	11	48	4
Independent Energy	179 98	(7)	(18)	24	57	5
Integrated Energy		(4)	(22)	0	24	2
Oil Field Services Refining	161 166	(3)	(13)	10	34 47	3
	190	(5)		13	57	5
Midstream Technology	190	(6) (1)	(22)	13	46	4
	138		(22)	3	39	4
Transportation Airlines	255	(3)		78	106	11
Railroad	121	(8)	(16)	(5)	26	2
Services	121		(21)		43	3
Other Industrial	131	(4)	(24)	(6) 10	43 52	4
Other Industrial	144	(4)	(17)	10	45	3
Electric Notice	143	(4)	(17)	1	44	3
Natural Gas	152	(6)	(20)	0	59	
Other Utility	144	(4)	(14)	10	53	4
Finance	145	(6)	(18)	13	67	6
Banking	138	(6)	(16)	11	65	6
Brokerage Asset Managers	134	(5)	(22)	16	60	5
Finance Companies	251	(15)	(36)	41	141	13
Insurance	146	(3)	(18)	8	52	4
REITS	166	(7)	(15)	31	82	7

#### IG Index Performance by Rating (OAS-Spread)

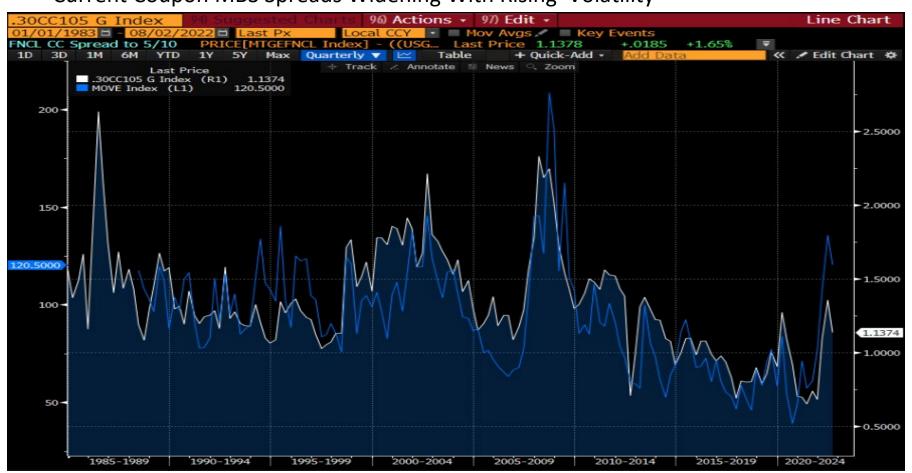
IG Indices OAS Spread	Today	1W Δ	1M Δ	3M Δ	LTM A	YTD A
Aaa	69	4	-5	2	17	16
Aa	76	0	-15	-1	20	19
A	114	-3	-16	4	43	40
Baa	175	-5	-22	14	68	62
Ba	292	-31	-121	14	68	98
В	483	-58	-170	68	132	171
Caa	902	-72	-173	172	382	347
A/Baa	62	-2	-5	10	24	22
Baa/Ba	116	-25	-99	0	0	36



#### Commentary:

- IG Corp OAS continued to pull back from the July 5<sup>th</sup> wides of 160 bps closing 141 bps yesterday, 4 bps tighter
  on the week and 19 bps tighter on the month. The A/BBB relationship still hanging out at 62 bps having started
  the year at 40 bps. Whereas the Baa/Ba relationship compressed 25 bps this week to 116 bps. TMT, Basics and
  Consumer Cyclicals lagged while Capital Goods and Energy outperformed.
  - See pg. 2 for 10-30s. Please note, 10-30s levels are pulled from Bloomberg and can result in some large variances given the volatility. 10-30s credit curves started to gradually re-steepen this week. See pg. 3-4 for 10yr/30yr spread moves, generically 10-12 bps tighter on the week.
  - August supply started with a bang coming in at ~\$60B for the week, well above \$25B-\$30B expectations and over halfway to projections for the entire month. Tech deals from Meta, Apple and Intel headlined the week but other notable issuance from Yankee Banks and some industrials as well. Concessions still elevated but handful of idiosyncratic situations printed better. At least one issuer stood down. Heavy IG issuance stands in stark contrast to the HY market with deals slowly ramping up with Citrix and Tenneco deals an overhang.

### Current Coupon MBS Spreads Widening With Rising Volatility



### MSCI BSG Profile

#### MSCI ESG Ratings



Portfolio PSPF PORT Upload



Benchmark LBUSTRUU Benchmark PSPF

#### Portfolio ESG Rating Summary

ESG Quality	Leader 17.89% above benchmark
ESG Ratings Distribution	Leaders 10.61% over benchmark Portfolio Laggards% = Benchmark Laggards%
ESG Ratings	Upward momentum 22.24% over benchmark
Distribution	Downward momentum 0.61% over benchmark

#### Carbon Risk

(t CO2e/\$M SALES)

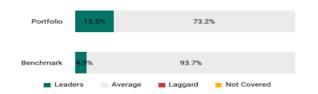
Moderate Carbon Risk 223.42% greater than benchmark



#### How the MSCI ESG Rating is calculated

	Portfolio	Benchmark
Weighted Avg ESG Score	5.86	5.96
Adjustment		
+ ESG Trend Positive	30.69%	8.45%
- ESG Trend Negative	0.61%	0.00%
- ESG Laggards	0.00%	0.00%
Adjustment Total	30.08%	8.45%
Score Adjustment	1.76	0.50
ESG Quality Score	7.62	6.46
ESG Rating	AA	A

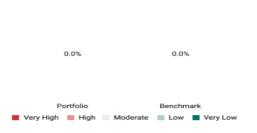
#### **ESG Ratings Distribution**



#### Reputational Risk

(Very Severe Controversy Exposure)

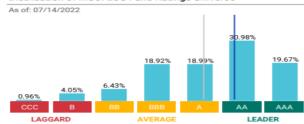
Very Low Reputational Risk Portfolio = Benchmark



#### Portfolio: PSPF PORT Upload

Benchmark : LBUSTRUU Benchmark PSPF

#### Distribution of MSCI ESG Fund Ratings Universe



#### **ESG Ratings Momentum**



#### Governance Risk

(Global Percentile)

Leaders 14.11% greater than benchmark Laggards 1.06% greater than benchmark



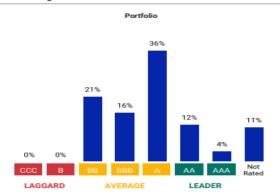
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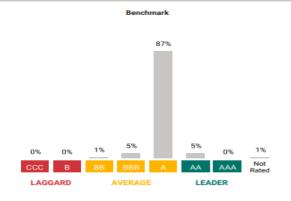
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#### **ESG Quality Scorecard**

	Portfolio Ber	nchmark	Active
ESG QUALITY SCORE(0-10)	7.6	6.5	17.9%
ENVIRONMENTAL SCORE	6.1	6.1	-1.4%
SOCIAL SCORE	4.8	7.0	-30.7%
GOVERNANCE SCORE	5.6	5.7	-1.7%

#### **ESG Rating Distribution**





Portfolio: PSPF PORT Upload
Benchmark: LBUSTRUU Benchmark PSPF

#### Environmental Risk

	Portfolio	Benchmark	Active
Carbon Risk (T CO2E/\$M SALES)	176	55	223.4%
Fossil Fuel Reserves (%)	0.0%	0.0%	0.0%
High Impact Fossil Fuel Reserves (%)	0.0%	0.0%	0.0%
Exposure to High Water Risk (%)	2.1%	0.7%	1.4%
Freshwater Withdrawal Intensity (m3/\$M SALES)	631	544	15.9%
Total Water Withdrawal Intensity (m3/\$M SALES)	535	344	55.2%
Freshwater Withdrawal Coverage (%)	8.6%	5.6%	3.0%
Total Water Withdrawal Coverage (%)	10.9%	9.2%	1.7%

#### Reputational Risk

(Very Severe Controversy Exposure)

	Portfolio	Benchmark	Active
Overall Reputation Risk (%)	0.0%	0.0%	0.0%
Environmental (%)	0.0%	0.0%	0.0%
Customer (%)	0.0%	0.0%	0.0%
Human Rights (%)	0.0%	0.0%	0.0%
Labor (%)	0.0%	0.0%	0.0%
Governance (%)	0.0%	0.0%	0.0%

#### Governance Risk

	Portfolio E	Benchmark	Active
Governance Leaders (%)	17.6%	3.5%	14.1%
Governance Laggards (%)	1.1%	0.0%	1.1%
Board Flag (%)	3.3%	0.0%	3.3%
Lack of Independent Board (%)	0.0%	0.0%	0.0%
No Female Directors (%)	0.0%	0.0%	0.0%
Female Rep. 30% of Directors (%)	38.4%	13.4%	25.1%
Accounting Flag (%)	33.9%	7.7%	26.2%
Pay Flag (%)	0.0%	0.0%	0.0%
Ownership & Control Flag (%)	28.2%	1.4%	26.8%

July 29 2022 4 of 11

#### 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)