

SWIB Board Meeting Materials for June 14, 2023

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Name of Meeting: Regular Meeting of the Board of Trustees

*Joint Educational Session of State of Wisconsin Investment Board
Of State of Wisconsin Investment Board
Board of Trustees and CFA Society Madison**

Date/Time: Tuesday, June 13, 2023 1:30 pm

Room: Via Teleconference

<u>Session 1</u>		
	Topic	Speaker
1:30 pm	Introductions	Barb Nick, Chair Edwin Denson, ED/CIO
1:30 pm	U.S. Housing Market Update	Alan Ratner, Managing Director of Homebuilding, Zelman & Associates
2:30 pm	Navigating Geopolitics in 2023 & Beyond	Major General (Ret.) James “Spider” Marks, Senior Advisory Board Member, Academic Securities
3:30 pm	Macroeconomic Outlook & the Fed’s Playbook for Inflationary Times	David Zervos, Chief Market Strategist, Jefferies LLC
4:30 pm	Closing Remarks	Barb Nick

Motion to Recess

**The Joint Educational Session is open to the public. Members of the public planning to attend this meeting should contact SWIB at (608) 261-9341 or email Dawn.Tuescher@swib.state.wi.us for information on how to register.*

Name of Meeting: Regular Meeting of the Board of Trustees
Date/Time: Wednesday, June 14, 2023 Approx. 9:15 am (Following Compensation)
Room: 1st Floor Conference Room
Address: 4703 Madison Yards Way, Madison, WI 53705

OPEN SESSION
<ol style="list-style-type: none"> 1. Committee Reports – Open Session Items <ol style="list-style-type: none"> A. Strategic Planning and Corporate Governance Committee B. Audit and Finance Committee C. Compensation and Workforce Development Committee
<ol style="list-style-type: none"> 2. Consent Agenda <ol style="list-style-type: none"> A. Open Session Minutes of March 29, 2023 B. Recommended Actions from Committee Agendas – Open Session Items
<ol style="list-style-type: none"> 3. Board Self-Evaluation Timeline
<ol style="list-style-type: none"> 4. Investment Performance and Market Updates <ol style="list-style-type: none"> A. Board Investment Performance Report, Q1 2023 B. Callan Quarterly Report
<ol style="list-style-type: none"> 5. Investment Committee Open Session Business <ol style="list-style-type: none"> A. Amendments to WRS Investment Committee Investment Guidelines B. Approved Open Session Investment Committee Meeting Minutes for February 23, March 30 and April 25, 2023 C. Final Open Session Agenda for May 23, 2023 and Draft Open Session Agendas for June 27 and July 25, 2023
<ol style="list-style-type: none"> 6. Quarterly Investment Update, Q1 2023
CLOSED SESSION*
RECONVENE IN OPEN SESSION
<ol style="list-style-type: none"> 7. Announcement of Matters Taken Up in Closed Session

* The motion to go into closed session at this meeting is made pursuant to: (i) Sections 19.36(5) and 19.85(1)(e) of the Wisconsin Statutes to (a) consider confidential and proprietary strategies for the investment of public funds relating to specific proprietary investment strategies of internal WRS portfolios and risk management, and (b) approve prior closed session minutes that discuss the same; and (ii) Section 19.85(1)(c) of the Wisconsin Statutes to discuss the performance evaluation and compensation data of specific SWIB employees. The Board may convene in additional closed sessions or announce additional closed session items at the meeting in accordance with the procedure outlined in the Attorney General’s Opinion reported at 66 OAG 106 (1977). Whenever a closed session is held, the Board will subsequently reconvene in open session to cover remaining agenda items.

8. In the Absence of Questions, the Following Reports will be Filed Without Comment (For informational purposes):

- A. Quarterly Charges to Funds Reports, Q1 2023
- B. Private Markets and Funds Alpha Commitments, Q1 2023

9. Future Items for Discussion

Motion to Recess // Lunch Break

NOTES: Items may be taken in order other than listed.

Estimated times are for planning purposes only. Agenda items will last until discussion is concluded.

The meeting site is physical accessible. Upon prior request, reasonable accommodations will be provided.

Name of Meeting: Regular Meeting of the Board of Trustees

***Joint Educational Session of State of Wisconsin Investment Board
Of State of Wisconsin Investment Board
Board of Trustees and CFA Society Madison****

Date/Time: Wednesday, June 14, 2023 1:30 pm

Room: Via Teleconference

<u>Session 2</u>		
	Topic	Speaker
1:30 pm	Introductions	Barb Nick, Chair
1:30 pm	Demographic & Labor Market Trends: The Expected & the Neglected	Nicholas Eberstadt, American Enterprise Institute
2:30 pm	Consumer Debt on the Rise: Trends & Market Implications	Scott Bronner, Managing Director and Head of Credit, StonePoint Capital
3:30 pm	What We Don't See: Implicit Bias	Jerry Kang, Distinguished Professor, UCLA Law

Adjourn — Trustee Nick

****The Joint Educational Session is open to the public. Members of the public planning to attend this meeting should contact SWIB at (608) 261-9341 or email Dawn.Tuescher@swib.state.wi.us for information on how to register.***

Board Meeting

Tab 1 – Committee Reports – Open Session Items

- A. Strategic Planning and Corporate Governance Committee
- B. Audit and Finance Committee
- C. Compensation and Workforce Development Committee

Board Meeting

Tab 2 – Consent Agenda

- A. Open Session Minutes of March 29, 2023
- B. Recommended Actions from Committee Agendas –
Open Session Items

Summary: Any Trustee may request to move a consent agenda item to the regular agenda for further discussion.

Review and Action

Proposed Motion: Move to approve the consent agenda, as presented.

Regular Meeting of the Board of Trustees

Wednesday, June 14, 2023

STATE OF WISCONSIN INVESTMENT BOARD

CONSENT AGENDA – OPEN SESSION ITEMS

Proposed Motions:

1. Move to approve the Open Session Minutes of March 29, 2023, as presented.
2. Move to approve the preliminary FY 2024 State Operating Budget of \$115.1 million, as recommended by the Audit and Finance Committee.
3. Move to approve the following changes, with full authority to the Chief Legal Counsel to document such changes, as recommended by the Compensation and Workforce Development Committee:
 - a. remove all references to the Agency Business Director from the Executive Staff Incentive Compensation Plan;
 - b. authorize the ED/CIO to add the Chief Technology Officer to either the Executive Staff Incentive Compensation Plan or the Investment Services Staff Incentive Compensation Plan, in each case, on terms comparable to other plan participants, and remove the Chief Technology Officer from any previously applicable plan;
 - c. authorize the ED/CIO to add the Chief Technology Officer to the Long Term Incentive Plan with an LTIP Factor from 120% to 180% based on the recommendation of the compensation consultant.

STATE OF WISCONSIN INVESTMENT BOARD
Board of Trustees Meeting – Open Session

Wednesday, March 29, 2023

Offices of the Investment Board
121 East Wilson Street, Madison, Wisconsin

Board Members Present:

Barb Nick, Chair
Clyde Tinnen, Vice Chair
Esther Ancel, Trustee
Kathy Blumenfeld, Trustee
Jeff DeAngelis, Trustee
Kristi Palmer, Trustee
Dave Schalow, Trustee
Dave Stein, Trustee
John Voelker, Trustee

Staff/Others Present:

Nathan Ballard, Senior Legal Counsel
Brandon Brickner, Internal Audit Director
Sara Chandler, Chief Legal Counsel
Hassan Chehime, Head of Risk Management
Edwin Denson, Executive Director/Chief Investment Officer
Anne-Marie Fink, Private Markets & Funds Alpha CIO
Greg Fletcher, Performance Director
Shannon Gannon, Communications Director
Harrison Freuck, Communications Specialist
Jameson Greenfield, Chief Financial Officer
Brian Heimsoth, Senior Portfolio Manager
Rochelle Klaskin, Deputy Executive Director/Chief Administrative Officer
Leo Kropywiansky, Senior Portfolio Manager
Jon Loboda, Performance Measurement Operations Manager
Todd Mattina, Head Economist, Asset & Risk Allocation CIO
Dawn Tuescher, Executive Administrative Assistant
Ivan “Butch” Cliff, Callan Associates
Chris Levell, NEPC
Bob Schaefer, State Engineers Association & Wisconsin Coalition of Annuitants
Keri Ware, LAB

(Some individuals may have attended only portions of the meeting.)

Trustee Nick, Chair of the Board of Trustees, declared a quorum was present and called the Board of Trustees meeting to order at 10:50 a.m. on March 29, 2023.

1. Opening Remarks

Trustee Nick began the meeting with some opening remarks thanking Trustee, and former Board Chair, Dave Stein for his service to SWIB as trustee and chair, noting this was his last board meeting before his term ended in May.

2. Committee Reports – Open Session Items

A. Strategic Planning and Corporate Governance Committee

Trustee Tinnen, Chair of the Strategic Planning and Corporate Governance Committee, reported that in open session, the Committee: (i) approved prior meeting minutes; (ii) recommended that the Board approve amendments to the Corporate Governance proxy voting guidelines; (iii) heard a strategy report and market outlook from SWIB's real estate consultant; (iv) received a preview of the June Investment Form; and (v) received an update on Project Centum. Trustee Tinnen reported that during its closed sessions the Committee: (i) approved prior meeting minutes; (ii) received an update on cybersecurity; (iii) reviewed sources and uses of leverage; and (iv) met with the ED/CIO to review his performance goals.

B. Compensation and Workforce Development Committee

Trustee Stein, Chair of the Compensation and Workforce Development Committee, reported that in open session, the Committee: (i) approved prior meeting minutes; (ii) recommended that the Board approve the 2023 Investment Services Staff Strategic Results Scorecard and amendments to the Compensation and Workforce Development charter and SWIB Compensation Philosophy; and (iii) received an overview of the incentive compensation program and outputs for 2022. The Committee also made a number of recommendations to the Board related to the awards of incentive compensation.

C. Benchmark and Performance Committee

Trustee Schalow, Chair of the Benchmark and Performance Committee, reported that in open session the Committee: (i) approved prior meeting minutes; and (ii) recommended that the Board approve benchmark changes proposed by its benchmark consultant to the public equity benchmark.

D. Audit and Finance Committee

Trustee Palmer, Chair of the Audit and Finance Committee, reported that in open session the Committee: (i) approved prior meeting minutes; (ii) recommended that the Board approve revisions to the Audit and Finance Committee charter; (iii) received an open audit issues report; (iv) approved revisions to the Internal Audit Division charter; (v) approved the draft Follow-up audit report; (vi) approved revision to the 2023 Internal Audit Plan; (vii) reviewed the 2023 Internal Audit goals; and (viii) received a Quarterly Cost of Management Update for Q4 2022 along with an overview of vendor management.

3. Consent Agenda

Sara Chandler, Chief Legal Counsel, distributed a proposed consent agenda. Trustee Nick asked whether there were any motions listed on the consent agenda that should be removed for further discussion and individual action. Hearing none, she referred to the following items on the consent agenda:

- Move to approve the Open Session Minutes of December 14, 2022, as presented.
- Move to approve the amendments to the SWIB Corporate Governance Proxy Voting Guidelines, as recommended by the Strategic Planning and Corporate Governance Committee.

- Move to approve the amendments to the Compensation and Workforce Development Committee Charter, as recommended by the Compensation and Workforce Development Committee.
- Move to approve the amendments to the Compensation Philosophy, as recommended by the Compensation and Workforce Development Committee.
- Move to approve the 2023 Strategic Results Scorecard, as recommended by the Compensation and Workforce Development Committee.
- Move to approve changes to the Core Trust Fund public equity benchmark to adjust the public equity sub-asset class benchmark weights on a monthly basis to align with the actual weights of the MSCI ACWI Investable Market Index (IMI) beginning March 31, 2023, with the half-weight to China Large Cap equities, as recommended by the Benchmark and Performance Committee.
- Move to approve the changes to the Audit and Finance Committee Charter, as recommended by the Audit and Finance Committee.

Motion: A motion was made by Trustee Nick and seconded by Trustee Tinnen to approve the consent agenda, as presented. The motion passed unanimously.

4. Election of Secretary and Assistant Secretary

Trustee Nick stated that, in accordance with Board procedures, the Board elects a Secretary and Assistant Secretary annually. Duties of the Secretary include signing the minutes of the Board meetings. Duties of the Assistant Secretary include certifying to the validity of copies of statutes and SWIB documents when requested by counterparties. Typically, the Board selects a Trustee as Secretary and the Chief Legal Counsel as Assistant Secretary.

Motion: A motion to elect Trustee Tinnen as Secretary and Sara Chandler as Assistant Secretary for 2023 was made by Trustee Nick and seconded by Trustee Voelker. The motion passed unanimously.

5. Annual Committee Assignments by Board Chair

Trustee Nick stated that, pursuant to each Committee Charter, the Board Chair appoints members of each Committee and appoints members to serve as Committee chair, vice chair, and secretary for terms not to exceed one year. She reviewed the appointments in effect until April 30, 2023, the end of Trustee Stein's term, and then appointments in effect from May 1, 2023 until February 28, 2024.

6. Proposed 2024 Board Meeting Dates

Ms. Chandler shared tentative dates for the 2024 Board and Committee meetings and asked that the Trustees advise whether they are aware of any conflicts as soon as possible.

7. Investment Performance and Market Updates

A. Board Investment Performance Report, Q4 2022

Greg Fletcher, Performance Director, presented the *Investment Performance Report*, as of December 31, 2022, included on pages 25-40 of the meeting materials. Mr. Fletcher reported that: (i) the Core Trust Fund (CTF) returned 5.75% net of fees in Q4 2022, resulting in excess performance of 30 basis points

(bps) for the quarter; (ii) the CTF returned -12.83% net of fees for the one-year period, resulting in an excess return of 46 bps; (iii) the CTF five-year net-of-fee return of 6.25% outperformed the Policy Benchmark by 57 bps on an annualized basis; and (iv) the CTF gross return outperformed the 60/40 Reference Portfolio return by 100.4% (cumulative) over the past 20 years, which equates to \$34.3 billion over the same period.

Mr. Fletcher highlighted that: (i) the CTF net of all fee and expense return outperformed its benchmark for the year-to-date, one-, three-, and five-year time periods; (ii) the CTF net of fee and expense return outperformed its benchmark for the five-, ten-, and twenty-year time periods; and (iii) the CTF gross-of-fee return outperformed its benchmark for the thirty-year time period. The Variable Trust Fund (VTF) had excess returns over its benchmark: (i) for the year-to-date, and one-year periods, net of all fee and expense; (ii) for the ten- and twenty-year periods, net of fee and expense; and (iii) for the thirty-year period, gross of fee. Mr. Fletcher then noted that SWIB's investment management has added more than \$2.7 billion above benchmark returns to the WRS over the last five years.

Mr. Fletcher then referenced that the percentage of WRS assets that are actively managed continues to increase, but that internally managed assets have declined to 37.9% due in a large part to the decline in public market valuations (the denominator effect). Next, Mr. Fletcher: (i) provided a breakdown of CTF asset class exposures, noting that the portfolio remains well diversified and all asset classes are within target range, subject to the board-approved corridor treatment with respect to the Private Equity/Debt and Real Estate asset classes; (ii) reviewed the asset class performance for the CTF over various time periods; (iii) reviewed VTF performance and asset class exposures, noting asset class exposures were within target range; and (iv) presented net of external manager fee returns for the Separately Managed Funds.

Mr. Fletcher concluded by reviewing the *Leverage Performance*, included on page 42 of the meeting materials. He noted that policy leverage contributed 202 bps of loss to CTF absolute performance year-to-date, as expected in a negative return environment, but remained a positive contributor over the 3- and 5-year periods.

B. 2022 Callan Report

Ivan "Butch" Cliff, Executive Vice President and Director of Research, Callan Associates, presented on SWIB's performance relative to its peer group, included on pages 43-59 in the meeting materials.

Mr. Cliff reviewed SWIB's cumulative returns relative to the policy target. He noted that SWIB has added value above its target policy return with excess returns of 68 bps annualized, resulting in a cumulative excess return of 4.32%. Mr. Cliff pointed to SWIB's highly controlled tracking error relative to target as evidence of strong risk controls and noted the consistency with which SWIB's quarterly returns exceeded target policy returns. When looking at a ten-year period, Mr. Cliff again identified consistency and risk control, pointing to an annualized 10-year excess return of 52 basis points, resulting in a cumulative excess return of 9.80%.

Mr. Cliff concluded by reviewing a comparison of SWIB's risk and asset allocation versus the policy target and peers. Mr. Cliff noted that SWIB's use of financial leverage enables the use of more risk reducing/diversifying assets without sacrificing growth assets, allowing for a more diversified and risk-balanced portfolio than most peers. Noting that the Sharpe ratios of peers benefited from slightly higher private markets exposure, Mr. Cliff identified that SWIB was still slightly above median in risk-reward trade off. SWIB's consistently low tracking error and its above-median excess return places it very close to the top decile of peers in excess return ratio (excess return *divided by* tracking error).

8. Asset Allocation Update

Chris Levell, Partner, NEPC, presented the *Asset Allocation Update*, included on pages 69 of the meeting materials. Mr. Levell reported that the Board of Trustees' approval of the asset allocation for the Core Trust Fund (CTF) for 2023 included a recommendation that the public equity sub-asset class target allocations reflect the actual weights of the components of the MSCI ACWI Investable Market Index (IMI) (with the half-weight to China large cap equities) as of March 31, 2023. As part of that approval discussion at the December Board meeting, staff proposed coming back to the Board with a recommendation for how to implement the sub-asset class modifications for the remainder of 2023 and beyond. He reported that NEPC has since been working with staff to create a methodology to periodically update the asset allocation targets and corresponding benchmark to maintain the intended alignment with global market capitalization weights.

Mr. Levell stated that each December the Board historically approved sub-asset class target allocations as static weights, which were then used as rebalancing targets each month; however, given the volatility of market capitalization splits across equity markets, substantial rebalancing was often required to maintain alignment. Mr. Levell then reviewed NEPC's recommendation to implement a revised methodology under which public equity sub-asset class target allocations would be rebalanced on a monthly basis to align with actual market capitalization weights in the MSCI ACWI IMI (with a half-weight to China large cap equities), beginning on March 31, 2023. He noted that the monthly rebalancing is intended to improve efficiency and reduce transaction costs.

Motion: A motion was made by Trustee Nick and seconded by Trustee Stein to approve the change to the Asset Allocation Recommendations for 2023 to update the public equity sub-asset class target allocations on a monthly basis to align with the actual weights of the MSCI ACWI Investable Market Index (IMI) beginning March 31, 2023, with the half-weight to China Large Cap equities, as recommended by the Board's Asset allocation consultant, NEPC.

9. Committee Open Session Business

A. Amendments to WRS Investment Committee Investment Guidelines

Ms. Chandler discussed amendments to the *SWIB Investment Committee Wisconsin Retirement System Investment Guidelines*, approved by the Investment Committee on February 23, 2023 and included on pages 71-118 of the meeting materials. She highlighted that the proposed changes: (i) updated the leverage use policy to reflect the various strategies that have been approved by the Investment Committee; (ii) permitted all internally managed portfolios to invest in unrated securities, provided that such securities are assigned an internal rating by staff using rating models reviewed by Risk and Compliance; (iii) replaced the guidelines and soft risk parameters for the former global sector aggregate portfolio with new guidelines and soft risk parameters for the restructured global equity portfolio; (iv) made various changes to the fixed income portfolio guidelines to harmonize across portfolios; and (v) removed guidelines and soft risk parameters for the discontinued stand-alone global macro portfolio.

B. Approved Open Session Investment Committee Minutes

Ms. Chandler stated that the approved open session minutes of the November 22, 2022, December 15, 2022, and January 24, 2023 Investment Committee meetings were included on pages 119-135 of the meeting materials for the Board's review and noted that staff had previously reviewed the agendas for these meetings with the Board.

C. Agendas for Upcoming Meetings

Ms. Chandler also stated that the final open session agenda for the February 23, 2023 Investment Committee meeting and the draft open session agendas for the March 30 and April 25, 2023 meetings were included on pages 136-141 of the meeting materials for the Board's review.

D. Draft Open Session Enterprise Risk and Compliance Committee Minutes

Ms. Chandler noted the draft open session minutes of the November 30, 2022 Enterprise Risk and Compliance Committee meeting were included on pages 142-144 of the meeting materials for the Board's review.

10. Quarterly Investment Update, Q4 2022

Todd Mattina, Head Economist, Asset & Risk Allocation CIO, presented the *Performance Trends & Outlook*, included on pages 148-150 of the meeting materials. Mr. Mattina began by noting that the CTF five-year rolling return was slightly below the actuarial target rate of return as of December 31, 2022, but also that the twenty-year net of fees return, which is less reactive to periodic volatility, remains well above the actuarial target. He then provided a brief commentary on the CTF five-year return estimate, which projected a five-year annualized return of 8.4% using NEPC assumptions for 2022, but which is reduced to 7.9% when using preliminary realized year-to-date returns through the end of January. Mr. Mattina commented that the five-year estimate is heavily impacted by two key components, the losses across the market in 2022 and also a positive 15.8% return for 2017 is no longer included in the five-year calculation.

Leo Kropywiansky, Senior Portfolio Manager – Asset & Risk Allocation, presented the *Economic Update*, included on pages 151-178 of the meeting materials. Mr. Kropywiansky argued that inflation has likely peaked but remains well above the Federal Reserve's 2.0% target. SWIB's forecast is for moderating inflation, but at a slower pace than many expect. While the consensus growth projection for 2023 seems to be edging up slightly, the view on 2024 and beyond seems to be declining, projecting a soft landing, but with a longer period of below-trend growth. Mr. Kropywiansky pointed out that supply-chain pressures and goods price inflation have eased, but other measures, including housing inflation and core personal consumption expenditures (PCE) remain high. Referencing recent events in the regional banking sector, he noted that the market had been pricing a more hawkish Fed than in December, but expectations are now back to December levels.

Mr. Kropywiansky provided a brief review of the recent stress in the regional banking sector, discussing some of the factors that seemingly contributed to the challenges of Silicon Valley Bank and Signature Bank of New York. He noted that the swift action by the FDIC, Fed, and Treasury was arguably necessary in this moment, but that there will likely be political repercussions from these events that could lead to changes in regulation in the banking sector. Mr. Kropywiansky concluded by pointing to the continued strength of the labor market, noting that the traditional wage Phillips curve does not explain the current high wage inflation and that the quit rate, which remains high, seems to be a better indicator of the labor market tightness.

11. Motion to Convene in Closed Session

Motion: A motion to convene in closed session pursuant to (i) Sections 19.36(5) and 19.85(1)(e) of the Wisconsin Statutes to: (a) consider confidential and proprietary strategies for the investment of public

funds relating to specific proprietary investment strategies of internal WRS portfolios and risk management, and (b) approve prior closed session minutes that discuss the same; (ii) Section 19.85(1)(c) of the Wisconsin Statutes to discuss the performance evaluation and compensation data of specific SWIB employees; and (iii) Section 19.85(1)(g) of the Wisconsin Statutes to confer with SWIB's chief legal counsel to receive advice concerning legal strategy for ongoing and potential litigation was made by Trustee Nick and seconded by Trustee DeAngelis.

The Chair called for a roll call vote.

Ancel-Aye	Blumenfeld-Aye	DeAngelis-Aye	Nick-Aye	Palmer-Aye
Schalow-Aye	Stein-Aye	Tinnen-Aye	Voelker-Aye	

There being nine ayes and no nays, the Chair declared the motion passed. The Board convened in closed session at 1:14 p.m. and reconvened in open session at 2:14 p.m.

12. Announcement of Board Actions Relating to Items Taken up in Closed Session

Trustee Nick announced that while in closed session the Board received a risk management update and discussed Investment Committee closed session business. While in executive closed session, the Board received an update on various litigation matters from the Chief Legal Counsel.

Trustee Nick further reported that, in executive closed session, the Board took action on a variety of incentive compensation matters based on the recommendations of the Compensation and Workforce Development Committee. First, the Board decided to defer incentive compensation awards for 2022. Based on the Core Trust Fund's negative absolute returns in 2022, the Trustees followed the Incentive Compensation Deferral Policy that triggered the deferral of awards. The policy is included as part of the plan to align the interests of the staff and WRS participants and to recognize the impacts of significant negative absolute returns. However, when considering a variety of other factors, Trustees elected to vest the awards in the second half of 2023. Those factors included: (a) strong relative performance over both the 1-year and 5-year period that generated over \$2.7 billion in value over benchmark returns over the past five years; (b) long-term performance (over 10 and 20 years) that continues to exceed the actuarial target rate of return; and (c) a 1.6% positive annuity adjustment for retirees, reflecting the strong double-digit absolute returns in three of the past four years.

Trustee Nick reported that the Board also approved incentive awards for specific individuals in senior roles, including the grant of units under the Board's long-term incentive plan. As discussed when the long-term incentive plan was approved, long-term incentives are a key component of SWIB's overall compensation program that seeks to provide competitive total compensation based on peer market data and are a common component of industry compensation programs. Further, long term incentive awards are aimed at promoting the retention of critical staff and further aligning employees with the interests of WRS beneficiaries. The units will vest in three tranches over three years, with the value of the units determined upon vesting based on the long-term performance of the Core Trust Fund.

Finally, Trustee Nick addressed the omnibus motion for incentive compensation awards not covered during the executive closed session.

Motion: A motion was made by Trustee Nick and seconded by Trustee Stein to approve the incentive compensation awards for performance year 2022 for all SWIB employees in the aggregate of \$9,898,173, excluding the specific awards to the Executive Director/Chief Investment Officer, the Deputy Executive

Director/Chief Administrative Officer, Agency Business Director, Asset Class CIOs, Strategy Heads, Senior Portfolio Managers of Investment Management Staff, Chief Legal Counsel, Chief Financial Officer, Head of Risk Management, Head of Human Resources, and Internal Audit Director, as recommended by the Compensation and Workforce Development Committee, subject to the Incentive Compensation Deferral Policy as adjusted by the Trustees.

13. Reports Filed Without Comment

In the absence of questions, the following reports, included on pages 245-258 of the meeting materials, were filed without comment: Quarterly Charges to Funds Report, Q4 2022; Private Markets and Funds Alpha Commitments, Q4 2022; and Board Contact Log.

14. Future Items for Discussion

Ms. Chandler noted that the Annual Agenda Plan was included on pages 260-263 in the meeting materials for the Board's information

15. Adjournment

Hearing no additional items for discussion, Trustee Nick adjourned the meeting at 2:20 p.m.

Date of Board Approval: _____

Signed: _____
Clyde Tinnen, Board Secretary

Board Meeting

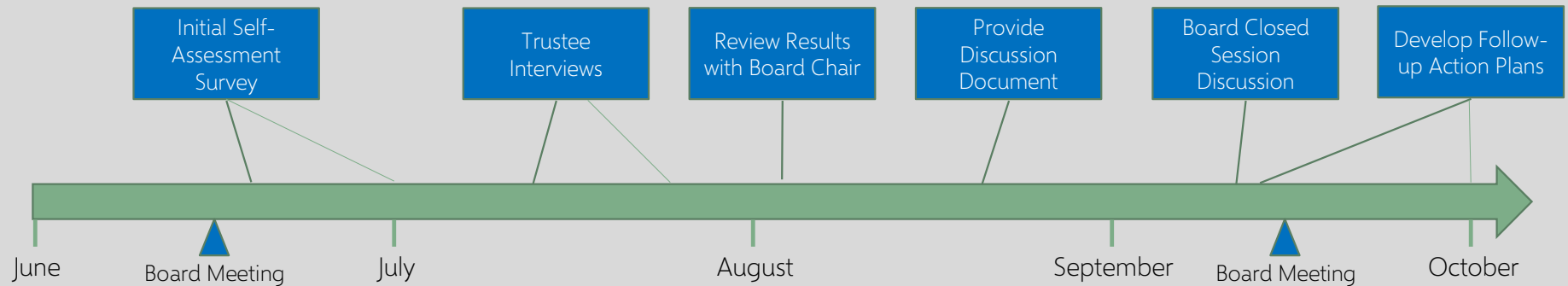
Tab 3 – Board Self-Evaluation Timeline

2023 SWIB BOARD SELF-ASSESSMENT

Board Self-Assessment Process and Schedule
June 2023



2023 SWIB Board Self-Assessment Process



1. Provide Board self-assessment process for 2023 at June 13-14 Board meeting
2. Collect responses to online questionnaire during June 19-30
 - From each trustee
 - From each member of the Executive Leadership Team
3. Provide Board survey feedback summary and conduct individual interviews during July 10-21
4. Prepare draft Board self-assessment discussion document and review with Board Chair week of July 31
5. Submit final Board self-assessment discussion document for Board book by August 18
6. Discuss self-assessment in Board closed session during September 12-13 meeting
7. Develop follow-up action plans

Board Meeting

Tab 4 – Investment Performance and Market Updates

- A. Board Investment Performance Report, Q1 2023
- B. Callan Quarterly Report



Investment Performance Report

as of March 31, 2023

Executive Summary

March 31, 2023

- The Core Trust Fund returned 4.15% net of fees in Q1, resulting in excess performance of +11 bps. For one year, the Core Trust Fund has returned -6.00% net of fees, resulting in an excess return of +31 bps.
- The Core Trust Fund five-year net of fee return of 7.20% outperforms the Policy Benchmark by +62 bps on an annualized basis.
- The Core Trust Fund gross return outperformed the 60/40 Reference Portfolio return by 97.4% (cumulative) over a 20-year period, which equates to \$33.2 billion over the same period.

WRS Performance

as of March 31, 2023

Fund	Net of All Fee and Expense Return %			
	Calendar – YTD	1 Year	3 Year	5 Year
Core Trust Fund	4.12	(6.10)	11.33	7.10
Core Trust Fund Benchmark	4.04	(6.31)	10.18	6.58
Excess	+0.08	+0.21	+1.15	+0.52
Net Excess Value Add (\$M)	+\$89.8	+\$259.8	+\$3,598.9	+\$2,949.8
Variable Trust Fund	7.09	(7.15)	16.61	8.10
Variable Trust Fund Benchmark	7.24	(7.22)	16.69	8.22
Excess	(0.15)	+0.07	(0.08)	(0.12)
Net Excess Value Add (\$M)	(\$12.6)	+\$6.8	(\$17.4)	(40.8)

SWIB's investment management has added more than \$2.9 billion above benchmark returns over the last five years to the WRS.

(Annualized Return shown for all periods greater than 1 yr)

Fund	Net of Fee and Expense Return %			Gross of Fee Return %
	5 Year	10 Year	20 Year	30 Year
Core Trust Fund	7.20	7.24	8.00	8.07
Core Trust Fund Benchmark	6.58	6.85	7.70	7.60
Excess	+0.62	+0.39	+0.30	+0.47
Variable Trust Fund	8.15	9.65	9.43	8.69
Variable Trust Fund Benchmark	8.22	9.60	9.40	8.39
Excess	(0.06)	+0.05	+0.02	+0.30

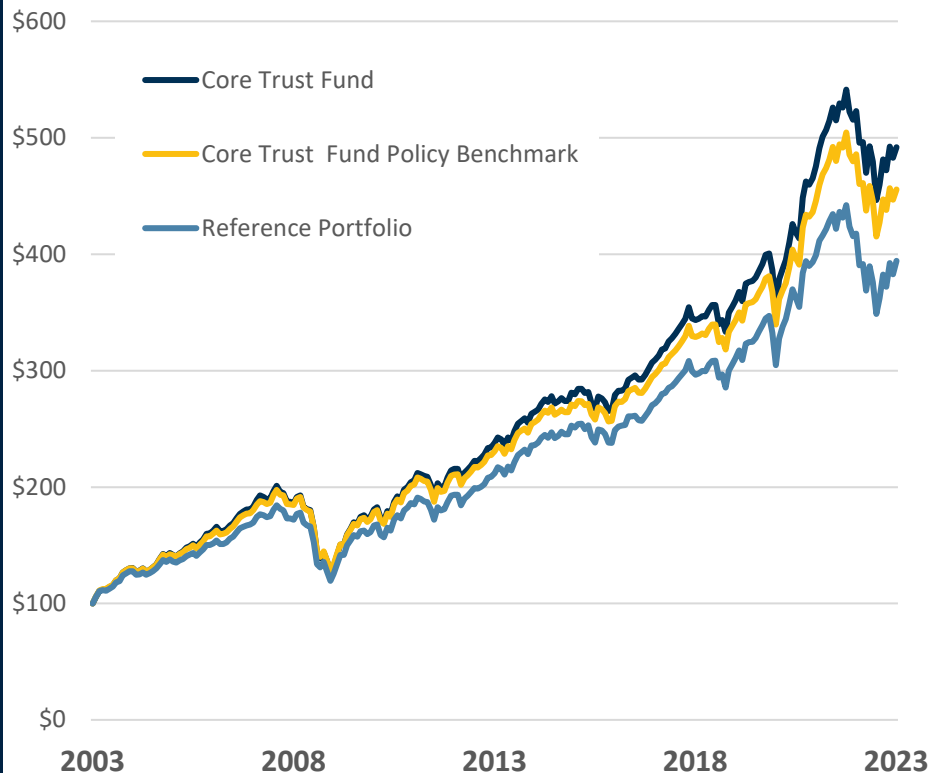
(Annualized Return shown for all periods greater than 1 yr)

Excess returns may contain rounding differences

CTF Performance vs. 60/40 Reference Portfolio

20-year cumulative return¹: April 1, 2003, to March 31, 2023

Indexed Benefit of CTF's Asset Allocation & Active Management Over Time



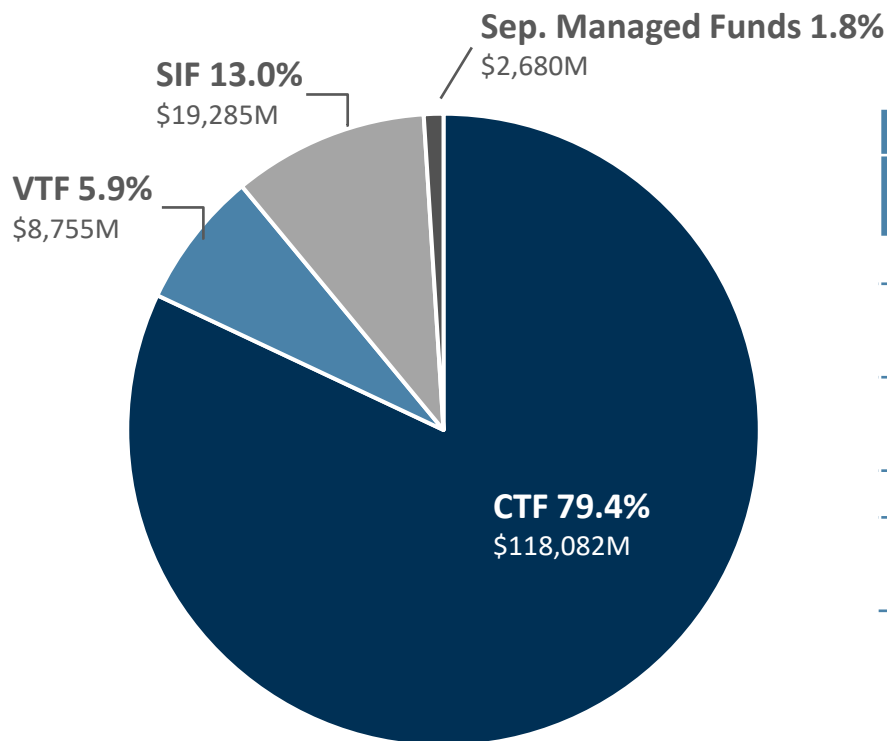
Portfolio / Benchmark	Annualized Gross Return	Cumulative Gross Return	Cumulative \$ Value Added
Reference Portfolio ² (60% equity/40% bonds)	7.1%	294.5%	= Passive Market Return
Benefit of CTF Asset Allocation			
CTF Policy Benchmark	7.9%	355.7%	+\$21.7B
Benefit of CTF Active Management			
CTF Actual Results	8.3%	391.8%	+\$11.5B
CTF Excess Return vs. Reference Portfolio	+1.2% pts	+97.4% pts	+\$33.2B

¹ Core Trust Fund beginning market value, as of April 1, 2003, was \$45.4B and ending market value, as of March 31, 2023, was \$118.1B

² Reference Portfolio is composed of 60% MSCI World and 40% Bloomberg US Gov't / Credit (rebalanced monthly)

Total Assets Under Management (AUM)

as of March 31, 2023



Gross Market Value of Assets (\$millions)			
By Fund	3/31/2022	3/31/2023	1 Year Change
Total WRS	140,903	126,837	(14,066)
Core Trust Fund	130,831	118,082	(12,749)
Variable Trust Fund	10,072	8,755	(1,317)
State Investment Fund (SIF) ¹	16,930	19,285	+2,355
Separately Managed Funds	2,206	2,680	+474
Total SWIB AUM	\$160,039	\$148,802	(\$11,237)

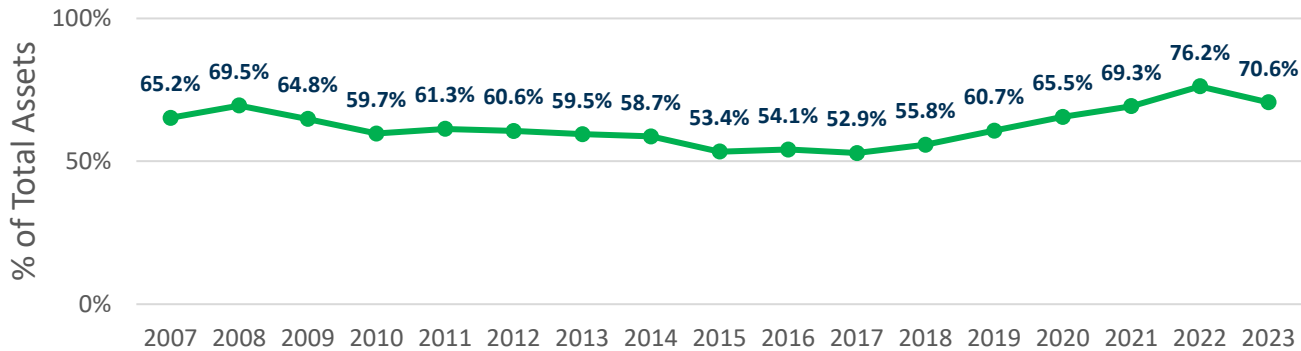
¹ Excludes cash invested in SIF held on behalf of CTF and VTF

Refer to the disclosure section for additional details

WRS Assets as of March 31, 2023

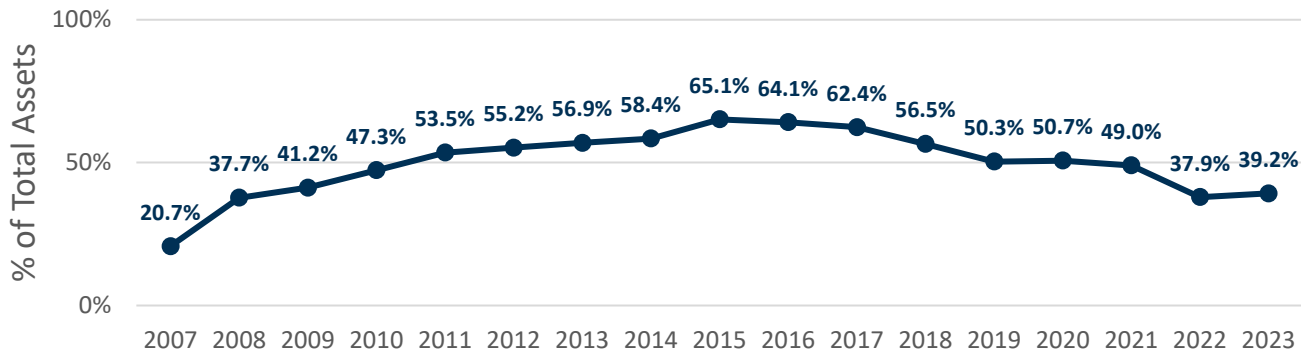
Breakdown of Active vs. Passive and Internal vs. External

Actively Managed Assets



Actively managed assets are a larger share of WRS AUM

Internally Managed Assets



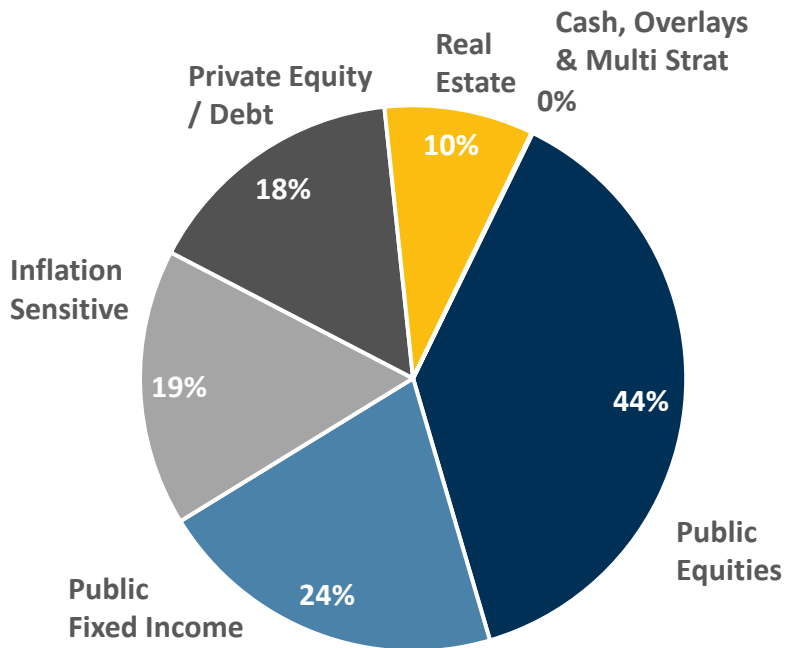
46% of Total SWIB Assets (including SIF) are internally managed

Refer to the disclosure section for additional details

Core Trust Fund Assets Under Management

Breakdown by Asset Class as of March 31, 2023

**Total Exposure - % of Total
3/31/2023**



**Total Exposure \$
& Adjusted AUM (\$millions)**

Total CTF by Asset Class	Total Exposure \$ 3/31/2022	Total Exposure \$ 3/31/2023	Year over Year Change
Public Equities	63,988	51,835	(12,153)
Public Fixed Income	32,431	28,175	(4,256)
Inflation Sensitive	23,325	22,226	(1,099)
Real Estate	10,311	11,975	+1,664
Private Equity / Debt	19,733	21,283	+1,550
Multi Asset	26	0	(26)
Cash & Overlays	(514)	89	+603
Total Exposure	\$149,299	\$135,583	(13,716)
<i>Less: Policy Leverage</i>	<i>18,467</i>	<i>17,501</i>	<i>+966</i>
Total CTF AUM	\$130,832	\$118,082	(12,750)

Total Exposure is composed of the gross market value of investments, plus beta exposure added or offset through derivative instruments

Core Trust Fund Allocation

All exposures shown as of March 31, 2023

Allocation – Exposure View

Strategies	(\$ millions)	As % of Total Fund		Target Range %	Notes
	Total Exposure	Portfolio Exposure %	Benchmark Target %		
Public Equities	51,835	43.90	43.91	37.91 – 49.91	Public & Private exposures include cash Strategies include exposure management investments Cash / Overlays: Includes liquidity, overlay cash, cash used to fund synthetic beta related to Alpha Pool. Benchmark Target weights are adjusted monthly to reflect the actual exposure to Private Equity/Debt and Real Estate. Offsetting adjustments are made to Public Equities and Public Fixed Income. Additional CTF leverage details available in disclosure section
Global Developed	41,601	35.23	35.21		
US Small Cap	3,053	2.59	2.59		
International Small Cap	2,942	2.49	2.49		
Emerging Markets	4,239	3.59	3.62		
Public Fixed Income	28,175	23.86	23.93	17.93 – 29.93	
Investment Grade	16,931	14.34	14.36		
Non-Investment Grade	8,392	7.11	7.18		
Emerging Market Debt	2,852	2.42	2.39		
Inflation Sensitive	22,226	18.82	19.00	14.0 – 24.0	
Real Estate	11,975	10.14	10.14	4.0 – 12.0	
Private Equity / Debt	21,283	18.02	18.02	8.0 – 22.0	
Cash / Overlays	89	0.08	0.00		
Leverage	(17,501)	(14.82)	(15.00)	(20.0) to (10.0)	
Total Fund – Total Exposure	\$135,583	114.82	115.00	110.0 – 120.0	
Total Fund – Market Value	\$118,082	100.00	100.00		

Asset \$ exposures and % weights may contain rounding differences

Core Trust Fund: Asset Class Returns

as of March 31, 2023

Asset Class Group: Public Equities	Performance Start Date	Total Exposure Value (\$millions)	Net of External Manager Fee Return %				
			Calendar YTD	1 Year	3 Year	5 Year	10 Year or ITD
Public Equities	12/31/2002	\$51,816	7.01	(7.05)	16.10	7.34	8.46
Benchmark			7.08	(7.18)	16.28	7.59	8.61
Excess			(0.07)	+0.13	(0.18)	(0.25)	(0.14)
Global Developed	2/28/2017	\$40,602	7.52	(6.43)	16.51	8.15	9.19
Benchmark			7.87	(6.56)	16.93	8.54	9.53
Excess			(0.36)	+0.13	(0.42)	(0.39)	(0.34)
Global Equities w/EM	5/31/2021	\$1,111	8.34	(8.62)			(1.79)
Benchmark			7.43	(7.02)			(2.26)
Excess			+0.90	(1.60)			+0.47
US Small Cap	2/28/2017	\$3,053	4.09	(8.73)	19.12	6.06	7.16
Benchmark			3.90	(8.53)	18.86	5.43	6.40
Excess			0.19	(0.20)	+0.26	+0.63	+0.76
International Small Cap	1/31/2020	\$2,933	6.73	(9.82)	13.69		2.10
Benchmark			4.54	(10.45)	12.03		1.57
Excess			+2.18	+0.63	+1.66		+0.53
Emerging Market ex China	3/31/2022	\$3,330	4.67	(13.30)			(13.30)
Benchmark			3.62	(13.23)			(13.23)
Excess			1.06	(0.07)			(0.07)
Emerging Market China	3/31/2022	\$761	3.23	(8.07)			(8.07)
Benchmark			4.71	(4.80)			(4.80)
Excess			(1.48)	(3.27)			(3.27)

(periods greater than 1 yr show annualized return, since inception returns shown for strategies with less than 10-year history)

Excess returns may contain rounding differences
Refer to the disclosure section for additional details

Core Trust Fund: Asset Class Returns

as of March 31, 2023

Asset Class Group: Public Fixed Income & Inflation Sensitive	Performance Start Date	Total Exposure Value (\$millions)	Net of External Manager Fee Return %				
			Calendar YTD	1 Year	3 Year	5 Year	10 Year or ITD
Public Fixed Income	12/31/2003	\$28,174	3.46	(5.43)	(0.95)	1.32	1.68
Benchmark			3.37	(3.81)	(1.77)	1.29	1.60
Excess			+0.09	(1.62)	+0.82	+0.03	+0.08
Investment Grade US Credit	2/28/2022	\$6,519	3.62	(6.20)			(7.65)
Benchmark			3.45	(5.31)			(7.12)
Excess			+0.17	(0.89)			(0.54)
US Treasuries	2/28/2022	\$6,868	2.87	(4.91)			(7.27)
Benchmark			3.01	(4.51)			(6.93)
Excess			(0.13)	(0.40)			(0.34)
US Long Treasuries	9/30/2022	\$1,127	6.15				5.62
Benchmark			6.17				5.54
Excess			(0.02)				+0.08
MBS	4/30/2020	\$2,225	3.08	(5.23)			(3.78)
Benchmark			2.53	(4.85)			(3.61)
Excess			+0.56	(0.38)			(0.17)
High Yield	7/31/2019	\$5,610	3.77	(9.38)	4.42		1.11
Benchmark			3.58	(2.88)	5.41		1.87
Excess			+0.20	(6.50)	(0.99)		(0.76)

(periods greater than 1 yr show annualized return, since inception returns shown for strategies with less than 10-year history)

Excess returns may contain rounding differences
Refer to the disclosure section for additional details

Core Trust Fund: Asset Class Returns

as of March 31, 2023

Asset Class Group: Public Fixed Income & Inflation Sensitive	Performance Start Date	Total Exposure Value (\$millions)	Net of External Manager Fee Return %				
			Calendar YTD	1 Year	3 Year	5 Year	10 Year or ITD
Emerging Market Debt - USD	6/30/2005	\$1,404	1.57	(6.08)	2.86	(0.36)	1.99
Benchmark			1.86	(6.92)	(0.02)	(0.60)	2.01
Excess			(0.30)	+0.85	+2.88	+0.24	(0.02)
Emerging Market Debt - Local	7/31/2017	\$1,448	5.26	(0.04)	1.73	(2.90)	(1.28)
Benchmark			5.16	(0.72)	0.87	(2.37)	(0.95)
Excess			+0.11	+0.68	+0.85	(0.52)	(0.33)
Inflation Sensitive	12/31/2003	\$22,224	3.36	(5.97)	1.83	3.07	1.08
Benchmark			3.34	(6.06)	1.75	2.94	1.01
Excess			+0.02	+0.09	+0.08	+0.12	+0.08

(periods greater than 1 yr show annualized return, since inception returns shown for strategies with less than 10-year history)

Excess returns may contain rounding differences
Refer to the disclosure section for additional details

Core Trust Fund: Asset Class Returns

as of March 31, 2023

Asset Class Group: Private Markets & Other Strategies	Performance Start Date	Total Exposure Value (\$millions)	Net of External Manager Fee Return %				
			Calendar YTD	1 Year	3 Year	5 Year	10 Year or ITD
Real Estate	12/31/2003	\$11,975	(2.48)	6.78	9.80	8.52	10.28
Benchmark			(5.17)	6.55	8.97	7.72	9.00
Excess			+2.69	+0.23	+0.84	+0.81	+1.28
Private Equity / Debt	11/30/2006	\$21,283	0.76	(0.95)	19.57	16.73	14.86
Benchmark			1.46	(3.02)	16.41	13.26	12.42
Excess			(0.70)	+2.07	+3.16	+3.47	+2.44
<i>Other strategies:</i>							
Alpha Pool Overlay	1/31/2011	\$10,912	(0.50)	1.03	7.66	3.73	2.80
Benchmark (set to zero as of 1/1/2019)		(at 1/1/22 = \$6,336)	0.00	0.00	0.00	0.41	1.01
Excess			(0.50)	+1.03	+7.66	+3.32	+1.79

(periods greater than 1 yr show annualized return, since inception returns shown for strategies with less than 10-year history)

Excess returns may contain rounding differences
Refer to the disclosure section for additional details

Core Trust Fund: Asset Class Returns

Net of External Mgr Fee - Excess Returns as of March 31, 2023



Excess Return - % points

¹ Either 10-year annualized return or Since Inception (ITD) annualized return is used if there is insufficient return history

Excess returns may contain rounding differences
Refer to the disclosure section for additional details

Core Trust Fund: Alpha Pool Overlay

as of March 31, 2023

Alpha Pool Return	Performance Start Date	Market Value (\$ millions)	Net of External Manager Fee Return %				
			Calendar YTD	1 Year	3 Year	5 Year	10 Year
Total Alpha Pool Composite	1/31/2011	\$10,912	-0.50	1.03	7.66	3.73	2.80

- Prior to 2022, Hedge Fund sub strategy assets composed > 90% of the Alpha Pool Composite
- Each sub strategy in the composite incurs the cost of implementation expense (assessed on a pro rata basis using AUM). Hence, each sub strategy is assigned a Zero Benchmark.

Alpha Pool: Key Sub Strategies	Inclusion Date	Market Value (\$ millions)	Calendar YTD or Since Inclusion Net Return %
Hedge Funds	1/31/2011	\$7,336 (67%)	-0.53
Multi Strat	2/1/2022	\$2,385 (22%)	0.78
Global Equity	4/1/2023	Start 2Q '23	

* The Global Macro sub strategy was discontinued 11/7/2022

Alpha Pool Overlay Return (Alpha Pool + Beta Return)	Calendar YTD	1 Year	3 Year	5 Year	10 Year
CTF Policy Benchmark (Beta)	4.04	(6.31)	10.18	6.58	6.85
Alpha Pool Overlay Return (Alpha Pool + Beta)	3.54	(5.28)	17.84	10.31	9.65

(Annualized Return shown for all periods greater than 1 yr)

Excess returns may contain rounding differences
Refer to the disclosure section for additional details

Variable Trust Fund

as of March 31, 2023

Performance

Fund	Performance Start Date	Market Value (\$ millions)	Net of External Manager Fee Return %				
			Calendar YTD	1 Year	3 Year	5 Year	10 Year
Variable Trust Fund	6/30/77	\$8,754	7.10	(7.09)	16.67	8.15	9.65
Variable Trust Fund Benchmark			7.24	(7.22)	16.69	8.22	9.60
Excess			(0.14)	+0.12	(0.02)	(0.06)	+0.05

(Annualized Return shown for all periods greater than 1 yr)

Portfolio Allocation

By Portfolio	(\$ millions)	As % of Total Fund		
	Total Exposure	Portfolio Exposure	Exposure Target	Target Range
Public Equities	8,721	99.61	100.00	
US Equities	6,128	70.00	70.00	65.0 – 75.0%
International Equities	2,593	29.62	30.00	25.0 – 35.0%
Cash & Overlays	34	0.39	0.00	
Total Fund	\$8,755	100.00	100.00	

- *Asset class exposures are within the Target Range*

Excess returns may contain rounding differences
Refer to the disclosure section for additional details

Separately Managed Funds

as of March 31, 2023

Fund	Performance Start Date	Market Value (\$ millions)	Net of External Manager Fee Return %				
			Calendar YTD	1 Year	3 Year	5 Year	10 Year or ITD
State Investment Fund (SIF)	6/30/1975	\$21,859	1.11	2.71	0.97	1.41	0.90
SIF Benchmark			1.06	2.82	0.99	1.38	0.88
Excess			+0.05	(0.12)	(0.02)	+0.03	+0.02
State Life Insurance Fund	10/31/1994	\$100	4.70	(8.01)	(3.45)	1.37	2.33
No Benchmark							
Historical Society Endowment Fund	12/31/1993	\$22	6.28	(7.77)	13.73	8.62	9.48
Historical Society Endowment Benchmark			6.14	(7.24)	13.19	8.38	9.29
Excess			+0.15	(0.53)	+0.54	+0.24	+0.19
Injured Patients & Families Comp. Fund	10/31/1993	\$1,379	3.75	(4.98)	1.27	2.91	3.46
IP&FC Benchmark			3.75	(4.93)	0.43	2.57	2.96
Excess			+0.01	(0.05)	+0.83	+0.34	+0.50
UW System Long Term Fund	3/31/2018	\$530	4.65	(6.28)	10.21	6.33	6.33
UW System Benchmark			4.55	(6.38)	10.02	6.12	6.12
Excess			+0.11	+0.09	+0.19	+0.21	+0.21
UW Cash Management Fund	4/30/2022	\$649	3.24				0.34
UW Cash Management Benchmark			3.20				0.43
Excess			+0.04				(0.09)

(periods greater than 1 yr show annualized return, since inception returns shown for strategies with less than 10-year history)

Excess returns may contain rounding differences
Refer to the disclosure section for additional details

Leverage Performance

As of March 31, 2023

CTF Policy Leverage Performance

as of March 31, 2023

Core Trust Fund	Net of External Manager Fee Return %			
	Calendar YTD	1 Year	3 Year	5 Year
Unlevered Returns (as estimated):				
Portfolio ¹	3.80	(4.65)	10.69	6.82
CTF Benchmark Return ¹	3.69	(4.96)	9.44	6.21
Excess Return	+0.11	+0.30	+1.26	+0.61
<hr/>				
Portfolio Return (Unlevered)	3.80	(4.65)	10.69	6.82
Absolute Return from Leverage ^{1,2}	0.35	(1.35)	0.74	0.37
Implementation (+) or (-)	0.00	0.01	0.00	0.01
<hr/>				
Levered Returns (as reported):				
Portfolio	4.15	(6.00)	11.44	7.20
CTF Benchmark	4.04	(6.31)	10.18	6.58
Excess	+0.11	+0.31	+1.26	+0.62

(Annualized Return shown for all periods greater than 1 yr)

Leverage notes:

¹ The Unlevered Portfolio Return, Unlevered CTF Benchmark Return, Absolute Return from Leverage and Implementation (+) or (-) are estimated

² Policy leverage was first introduced into the CTF and the benchmark at the end of April 2012

- Policy leverage at SWIB is implemented passively. Therefore, it generally does not contribute to active risk or excess returns¹
- Policy leverage amplifies absolute returns (whether positive or negative), which is an important component in SWIB's strategy to meet the 6.8% actuarial target over the long-term
- The CTF benchmark return is levered to create an apples-to-apples comparison for evaluating relative performance of the CTF (i.e., excess return)

Excess returns may contain rounding differences
Refer to the disclosure section for additional details

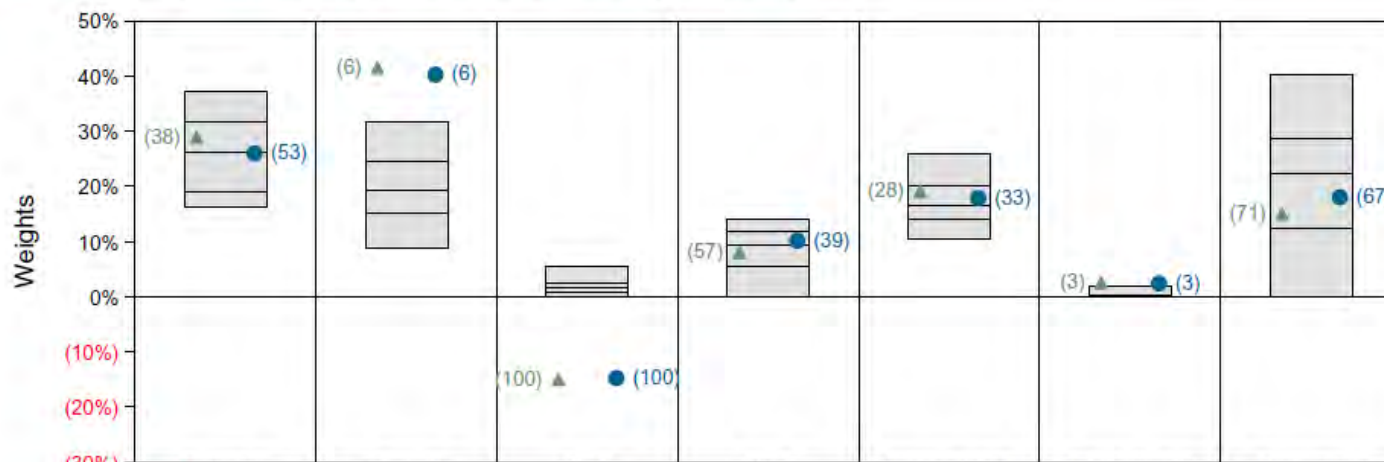
Callan Quarterly Report Summary

1st Quarter 2023

Callan Peer Rank Update

CTF Asset Allocation Comparison to Peer Group (3.31.2023)

Asset Class Weights vs Callan Public Fund Spons- V Lg DB (>10B)



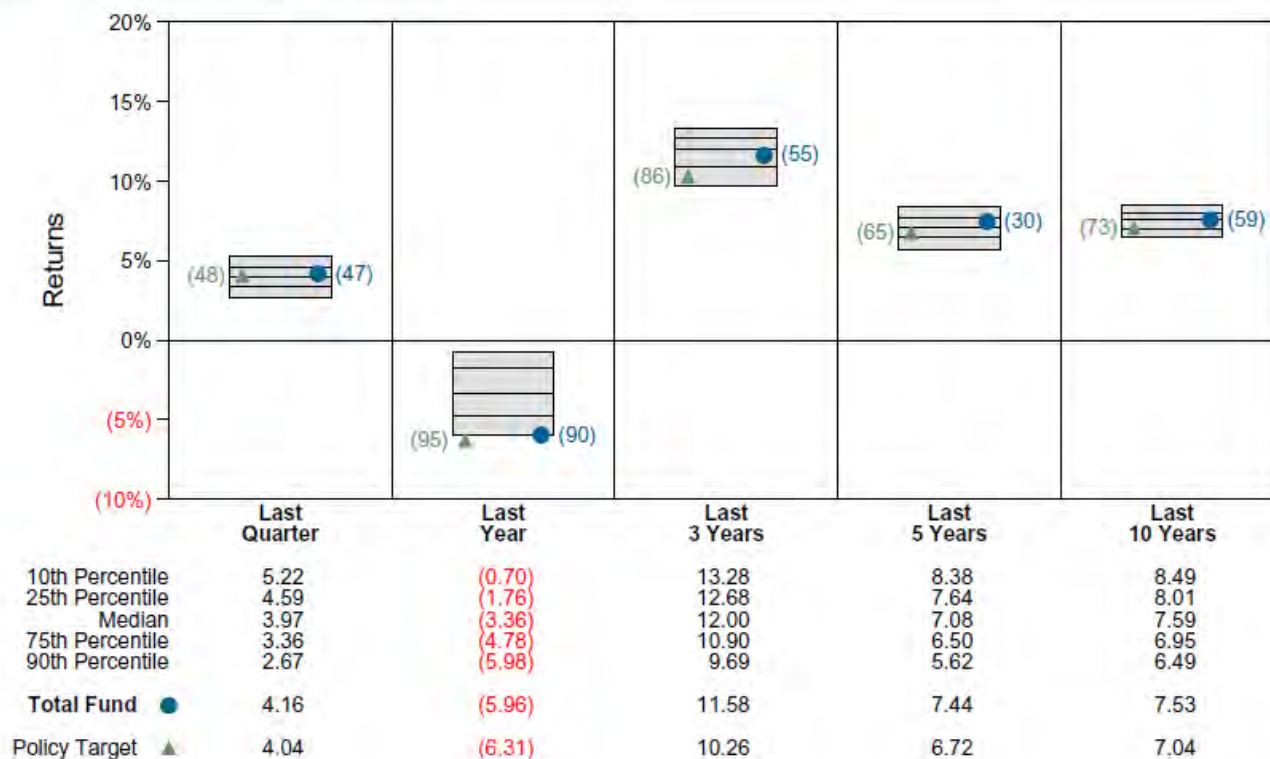
	Domestic Equity	Domestic Fixed	Cash Equivalent	Real Estate	International Equity	International Fixed	Alternatives
10th Percentile	37.25	31.67	5.56	14.14	25.91	2.01	40.16
25th Percentile	31.66	24.51	2.59	11.71	20.01	0.17	28.69
Median	26.29	19.19	1.55	9.25	16.47	0.00	22.37
75th Percentile	19.01	15.25	0.68	5.63	14.18	0.00	12.46
90th Percentile	16.28	8.69	0.00	0.00	10.47	0.00	0.00
Fund ●	26.00	40.26	(14.74)	10.14	17.89	2.42	18.02
Target ▲	28.89	41.50	(15.00)	8.00	19.11	2.50	15.00
% Group Invested	93.33%	100.00%	83.33%	86.67%	93.33%	43.33%	86.67%

- SWIB's use of policy leverage (approximately 15%) enables more risk reducing/diversifying assets without sacrificing growth assets

Callan Peer Rank Update

CTF Performance vs. Peer Group (Gross Return, 3.31.2023)

Callan Public Fund Spons- V Lg DB (>10B)

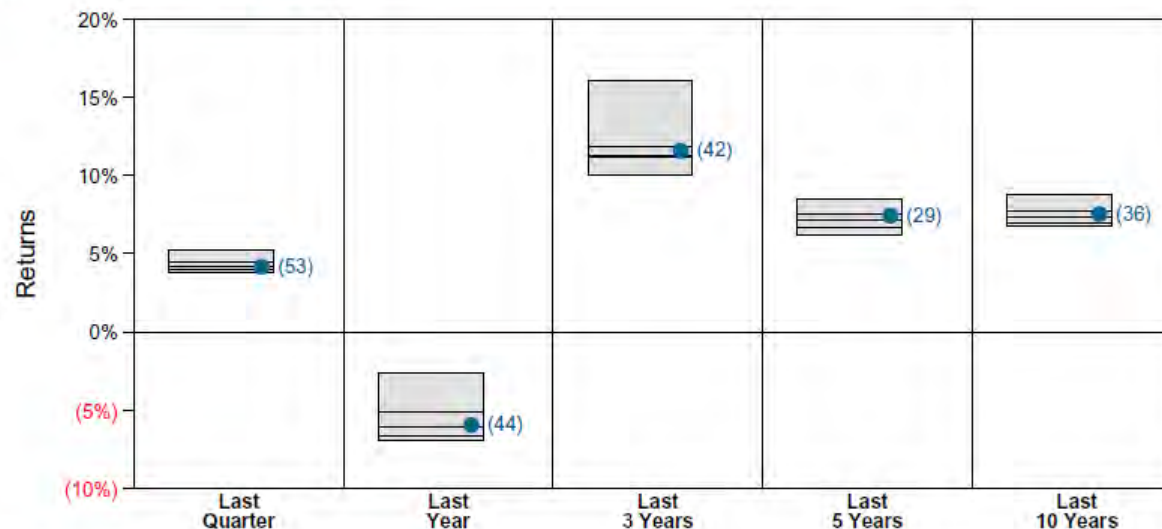


- Longer term 3-, 5- and 10-year periods near or above median
- 4th quartile for most recent 1-year period, 1Q'23 above median

Callan Peer Rank Update

*CTF Performance on Asset Allocation Adjusted Basis vs. Peer Group
(Gross Return, 3.31.2023)*

Asset Allocation Adjusted Ranking



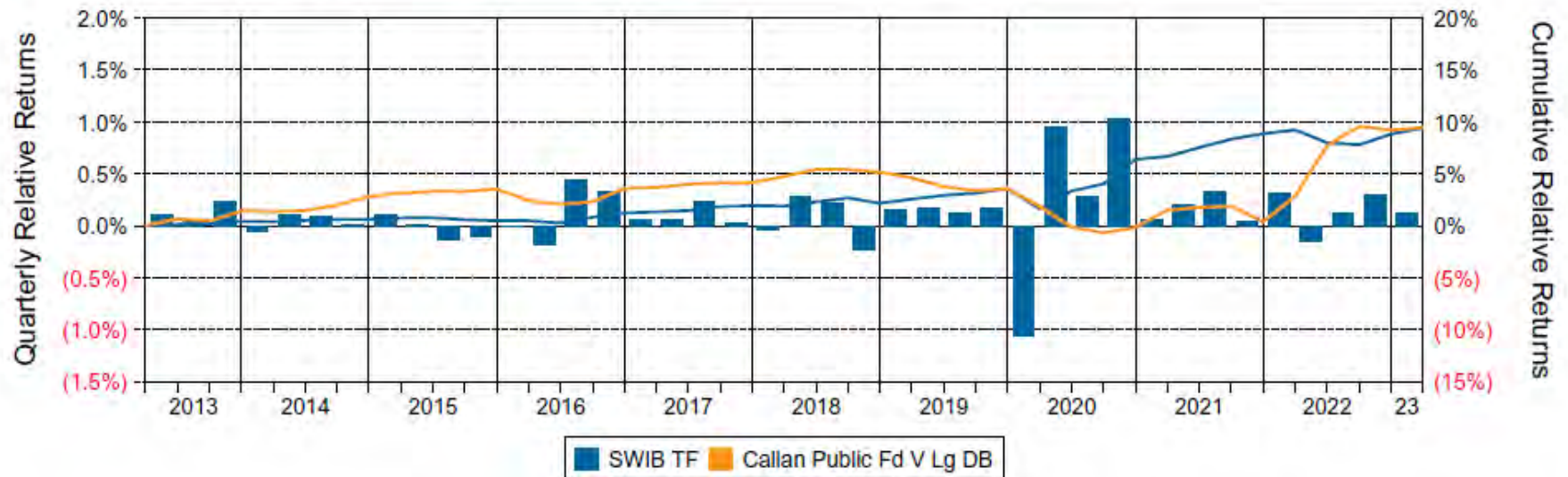
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	5.24	(2.61)	16.11	8.49	8.78
25th Percentile	4.51	(5.13)	11.86	7.53	7.74
Median	4.21	(6.09)	11.32	7.16	7.37
75th Percentile	4.03	(6.64)	11.20	6.71	6.96
90th Percentile	3.81	(6.90)	10.07	6.19	6.81
Total Fund ●	4.16	(5.96)	11.58	7.44	7.53

- Uses adjustment to peer universe to match the CTF risk-balanced allocation
- 2nd quartile ranking over 1-, 3-, 5-, and 10-year periods

Callan Peer Rank Update

10 Year Return Consistency vs. > \$10B Peer Group (3.31.2023)

Cumulative and Quarterly Relative Returns vs Target



- CTF cumulative performance vs. peers has improved in recent quarters
- CTF Qtrly relative returns vs. Policy Benchmark generally positive over 10-year period

Report Disclosures

Glossary, Definitions & Data Sources

Report Disclosures

Key Terms and Portfolio Return Information

Term	Description / Definitions
Gross of Fee Return (“GoF Return”)	The returns generated in investment portfolios (or accounts) that reflect the deduction of transaction expenses incurred as a result of executing a trade or acquiring or disposing of the investment. In some instances, these expenses are not readily separable from the cost of the investment and are not distinctly recorded within accounting records invoiced by third parties. Security lending income is included in GoF return (however, Security Lending expense is not). Starting on 1/1/2021, the SWIB practice of “grossing up” external management fees, performance fees and any identifiable carried interest by crediting the investment accounts was discontinued. The use of GoF Return is limited to performance comparison to gross benchmark returns, long term CTF / VTF return periods where GoF is the sole return type available and for the purpose of fulfilling data submissions to consultants for peer performance comparison purposes.
Net of Fee Return (“NoF Return”)	The GoF return that reflects additional deductions for external management fees, performance fees and any identifiable carried interest incurred in investment portfolios. SWIB has account records to support NoF return history over approximately 20 years.
Net of All Return (“NoA Return”)	The NoF return that reflects additional deductions for administrative expenses, categorized by SWIB as either Direct or Indirect expenses, that are permitted to be charged directly to the Trust Funds under statutory authority. The Cost Allocation Protocol governs the allocation methods and booking processes to allocate expenses at the investment account level. Examples of the type of expenses that fall under this category, include custody and banking fees, general operating expenses and investment consulting services. Security Lending expense is included in NoA Return. The recording of official, NoA return at the portfolio or account level began in 1/1/2017.
Annualized Return Calculation	SWIB reports containing portfolio and benchmark return calculations for time periods greater than 1 year generally utilize a geometric averaging calculation. Returns shown for periods of less than 1 year are not presented utilizing the annualization calculation method. In this instance, compound returns are reported for the specified calendar period (e.g., month to date, quarter to date or year to date). Annualized Return = $((1 + r^1) \times (1 + r^2) \times (1 + r^3) \dots)^{\text{calendar units} / \text{time interval measured}} - 1$; $r^{(n)}$ = series of holding period returns and calendar units are often expressed as days, months or years
Cumulative Return Calculation	SWIB uses the cumulative return calculation (“cumulative basis”) to reflect the aggregate amount an investment has gained or lost over time for portfolios and benchmarks. This measurement shares aspects of the annualized return calculation, however, it excludes the geometric averaging. Cumulative Return = $((1 + r^1) \times (1 + r^2) \times (1 + r^3) \dots) - 1$; $r^{(n)}$ = series of holding period returns

Report Disclosures

Key Terms and Portfolio Return Information

Term	Description / Definitions
Excess Return % ("Excess")	Portfolio return or security level return minus the benchmark return. Portfolio or Composite Returns are generally compared against benchmarks with a similar level of risk. It is widely used as a measure of the value added by the portfolio or investment manager or the manager's ability to outperform the market.
Net Excess Value Add \$ ("NEVA")	Net Excess Value Add \$ ("NEVA") calculates the portfolio's performance return in total dollars relative to a benchmark. NEVA is a measure used to assess the value-add dollars that a particular investment strategy or team generated over specified time periods. NEVA is also used to monitor the return objectives set forth in the annual Active Risk Budget which is prepared for the CTF and VTF funds managed by SWIB.
SWIB Inception To Date Reporting	The Quarterly Performance Summary discloses a reporting period described as 10 years or ITD . The return disclosed in this reporting field yields either 10-year annualized returns for funds or portfolios with at least 10 years of return history or the data field may revert to the return since inception for portfolios with less than 10 years of history. The quarterly report provides a performance start date for those portfolios with the abbreviated return history.
Performance Start Date	The date denotes the initial period of a portfolio or composites' return data series that is stored and calculated by the SWIB Performance Measurement Service Agent.
Time-weighted Rate of Return	A method of calculating period-by-period returns that reflects the change in value and negates the effects of external cash flows. This methodology is applied to portfolios that are processed with daily frequency and where daily valuation updates of the underlying instruments are available.
Modified Dietz Total Rate of Return	A measurement that evaluates a portfolio's return based on a weighted calculation of its cash flow. The method considers the timing of cash flows and assumes a constant rate of return over the specified time period. This methodology is applied to portfolios and composites that are processed with monthly frequency (and where only monthly valuation updates are available).

Report Disclosures

Key Terms and Portfolio Return Information

Term	Description / Definitions
Policy Benchmark	The Fund level Benchmark as approved by the Benchmark Committee. The Benchmark is composed of multiple indices that reflect the Fund's exposure to a diverse set of investment strategies. (can also referred to as "Policy Target" as implemented through SWIB's Asset Allocation plan).
Reference Portfolio	Hypothetical global portfolio comprised of 60% MSCI World Net (using a SWIB custom net variant as of 2010) and 40% Bloomberg Barclays Government Credit Index. The return is presented on a gross of fee basis and assumes no contributions or withdrawals.
Zero or No Benchmark (for Official Measurement purposes)	<p>Zero Benchmark: This designation applies to the Core Trust Fund Alpha Pool Overlay. Since 1/1/2019, the benchmark associated with the Alpha Pool Overlay has been set to zero. The Cost of Implementation (which includes an estimate of financing costs) is directly allocated to the underlying strategies that make up the Alpha Pool Overlay and the effect of the cost allocation will usually result in a deduction from the strategy's return.</p> <p>No Benchmark: In certain instances, a benchmark is not assigned for the purpose of measuring excess performance. For example, SWIB's client, the State Life Insurance Fund (SLIF), has no assigned benchmark for its investment mandate due to the limitations placed on SWIB's investment activities by the SLIF. The SLIF portfolio invests in fixed income securities that approximate the expected life of the Fund's insurance contracts, and SWIB is directed to hold all securities to maturity other than in extraordinary circumstances.</p>
Reported Net Benchmark Returns	<p>The SWIB Benchmark and Performance Committee and its designated benchmark consultant follow the parameters set forth in the SWIB Benchmarking Philosophy. Under the Philosophy, selected benchmarks should exhibit the characteristics described in the <i>Benchmark Qualities</i> criteria to ensure portfolio and benchmark attributes are closely aligned.</p> <p>Net Total Return Benchmarks: benchmark type commonly used for most publicly-traded portfolio strategies. The benchmark returns reflect the price performance, plus the net amount of all special and regular dividends after applying an assumed foreign tax withholding rate (as determined by the benchmark data provider.)</p> <p>SWIB Custom Net Benchmark for non-U.S. Public Equity Strategies: SWIB's custodian bank customizes SWIB's non-U.S. equity benchmarks to reflect the actual, historical reinvestment of withholding tax rates rather than index provider's assumption for varying countries.</p> <p>Net of External Manager Fee-based Benchmarks: benchmark type most frequently used to gain better alignment when the measured SWIB portfolio return is inclusive of external management fees, performance fees and carried interest charges (e.g., private market investments).</p>

Report Disclosures

Key Terms and Portfolio Return Information

Term	Description / Definitions
Custom weighted or calculated benchmarks	<p>SWIB managed funds and / or portfolios may require the construction of custom benchmarks that are created through applying static or asset weighted calculations to achieve a blended benchmark that is representative of the investment strategy. When available or feasible, SWIB will request its third-party benchmark data provider(s) to blend benchmarks as a part of the market data service. If this option is not available, SWIB will calculate the benchmark using market data inputs.</p> <p>In certain cases, SWIB may customize a benchmark to more accurately reflect the SWIB managed Fund's tax status and actual tax rate experience in non-U.S jurisdictions with investment portfolio with-holding taxes applicable to dividends and capital gains. This type of custom benchmark is designated as "SWIB Custom Net".</p>
Gross Market Value	The price at which the fund investor can buy or sell the underlying investment instruments held in the portfolio at a given time multiplied by the quantity held, plus any accrued income. The Gross Market Value of a portfolio is the market value of the portfolio or composite without any deduction for SWIB expenses.
Total Exposure	For SWIB managed funds governed by the WRS Investment Policy, this measure reflects the total value of the fund's exposure to investable markets by asset class and sub asset class. Total Exposure is inclusive of those instruments utilized under the WRS Leverage Use Policy to achieve the asset exposures approved under the asset allocation strategy and active risk target.
Internally Managed Portfolios	Portfolios managed by SWIB investment professionals. Each internal portfolio is assigned compulsory investment guidelines and is also assigned "soft risk parameters." Soft risk parameters refer to desired characteristics and/or risk exposures.
Externally Managed Portfolios	Portfolios managed by third-party investment managers hired by SWIB. External active and passive managers operate under contractual investment guidelines approved by SWIB's Investment Committee or by SWIB's investment management staff, as designated in the Investment Committee Charter.
Active Management	Actively managed portfolios have the objective of out-performing their respective benchmarks (or generating alpha) by using investment insights or quantitative tools to deploy buy, hold, and sell decisions. This style of management will result in portfolio positioning decisions that will add active risk and generate higher tracking error. Actively managed portfolios are governed through investment guidelines and soft risk parameters.
Passive Management	Passively managed portfolios have the objective of closely tracking the returns and risk of their respective benchmarks. This style of management usually involves mirroring the benchmark security holdings (or constituents) to closely replicate the benchmark risk and return.

Report Disclosures

Key Terms and Portfolio Return Information

Term	Description / Definitions
<p>Note on report data sources and processing</p>	<p><u>Return Calculation Processing</u> Bank of New York Mellon, Global Risk Services (BNYM GRS), an independent 3rd party, provides services related to custodial records, accounting and performance return calculations for SWIB managed funds. BNYM also serves as the source for certain standard, market-based benchmarks and static weight blended benchmarks.</p>
	<p><u>Return Calculations Prepared on a Notational or Unlevered Basis (Core Trust Fund only)</u> SWIB uses leverage to help achieve the Core Trust Fund’s diversification objectives. A description of the Leverage Use Policy is contained in the Wisconsin Retirement System Investment Committee Guidelines. For those accounts and composites deploying leverage, the calculation of notational or unlevered returns (using gross asset exposure) is required to achieve a comparable return vs. market indices. SWIB has directed its performance agent, BNYM GRS, to configure the performance measurement platform to process this type of calculation. Consistent with Leverage Use Policy guidelines, this calculation may be processed inside reported composites that contain US Large Cap Equity, US Small Cap Equity, MSCI World x US Equity, US TIPS and US Treasury exposures.</p>
	<p><u>State Investment Fund (SIF) Commingled Fund Processing</u> The State Investment Fund (SIF) pools the cash of the State of Wisconsin and its agencies, the Wisconsin Retirement System (WRS), and various local government units (Local Government Investment Pool) into a commingled fund with the investment objectives of safety of principal and liquidity while earning a competitive money market rate of return. For purposes of calculating earnings to each participant , all investments are valued at amortized cost. SIF returns are calculated using the monthly net earnings distributed to all commingled fund participants. SIF returns are presented net of all allocated SWIB administrative costs and State Controller’s Office costs that are allocated to the participants of the Local Government Investment Pool.</p>
	<p><u>Benchmark Market Data and Selection Process</u> The data source for this information is provided by multiple investment industry market data vendors and analytics firms depending on the investment strategy. The SWIB Benchmark and Performance Committee governs the benchmark selection process. An independent consultant (selected by the Board of Trustees or “Board”) makes recommendations to initially select or change benchmarks.</p>
	<p><u>Peer Rank Return Comparison Data</u> This information is provided and processed by industry consultants that consume return information for SWIB managed funds and then provide investor universe return comparisons and analytics using proprietary databases. When consultant info is included in the Quarterly Performance Summary the preparer of the work is identified.</p>

Leverage Disclosures

Calculation formulas to estimate impact

Report Disclosures

Notes on CTF Leverage Analysis

Term	Description / Definitions
Portfolio Return (Unlevered)	<p>This is an estimated-only CTF return because SWIB does not implement a CTF unlevered portfolio to calculate actual performance against. Leverage is used to expand the CTF's entire asset base. All definitions that include (unlevered) are ESTIMATES only for this reason.</p> <p>It is estimated by:</p> <ol style="list-style-type: none"> 1) <u>Excess Return (Levered)</u> is first subtracted from the <u>Portfolio Return (Levered)</u>¹; 2) The result of Step 1 is then divided by the <u>Policy Leverage Factor</u>; then 3) <u>Excess Return (Levered)</u> is added back to the result of Step 2 and that number is then adjusted to account for the cost of financing (i.e., the expense of acquiring leverage, which would not be applicable to an unlevered portfolio). $\text{Portfolio Return (Unlevered)} = \left(\frac{\text{Portfolio Return (Levered)} - \text{Excess Return (Levered)}}{\text{Policy Leverage Factor}} \right) + \text{Excess Return (Levered)} - \text{cost of implementation}$ <p>¹ Note, because <u>Excess Return (Levered)</u> is the difference between two similarly “levered” portfolios (Portfolio Return (Levered) and Benchmark Return (Levered)), it represents outperformance that is not attributable to leverage. Accordingly, it is subtracted first as it would be inaccurate to reduce such amount by the Policy Leverage Factor for purposes of this calculation.</p> <p><u>Policy Leverage Factor</u> is the amount of the approved Policy Leverage during any given period, time weighted for multi-year periods. Policy Leverage was first introduced into the CTF Portfolio and Benchmark at the end of April 2012 and was raised from 10% to 15%, effective Calendar Year 2021.</p>
CTF Benchmark Return (Unlevered)	<p>Estimated by the <u>Benchmark Return (Levered)</u> divided by the <u>Policy Leverage Factor</u> for the period.</p>

Report Disclosures

Notes on CTF Leverage Analysis

Term	Description / Definitions
Excess Return (Unlevered)	<p>The Excess Return (Unlevered) is the excess return that it is estimated SWIB would have achieved if it did not implement leverage for the CTF.</p> <p>Estimated as <u>Portfolio Return (Unlevered)</u> minus <u>Benchmark Return (Unlevered)</u>.</p> <p>Can also be estimated by taking the actual <u>Excess Return (Levered)</u> minus <u>Implementation (+) or (-)</u> (see below for definition).</p>
Absolute Return from Leverage	<p>Estimated by the <u>Portfolio Return (Levered)</u> minus <u>Portfolio Return (Unlevered)</u> minus <u>Implementation (+) or (-)</u>.</p>
Implementation (+) or (-)	<p>The relative cost of financing (i.e., the actual cost of financing minus the CTF benchmark cost of financing). The CTF benchmark cost of financing is the CTF cash benchmark, previously LIBOR plus 30 bps and now BSBY plus 30 bps. Implementation (+) or (-) can also result from outperformance or underperformance relative to how efficiently SWIB replicates the index in connection with policy leverage (this is called basis risk).</p> <p>Can either be positive or negative. When the leverage implementation is achieved at a cost saving compared to the CTF cash benchmark (i.e., less than the CTF cash benchmark), it is positive (+); but when it is achieved with additional cost compared to the CTF cash benchmark (i.e., more than the CTF cash benchmark), it is negative (-). Cost savings can generate minor excess returns for the CTF. Basis risk can also generate minor contributions to or detractions from relative performance with respect to policy leverage.</p>
Portfolio Return (Levered)	<p>Actual performance of the CTF Portfolio for the period presented, from all strategies including Policy Leverage.</p>
CTF Benchmark Return (Levered)	<p>Actual performance of the CTF Benchmark for the period, taking into account the use of Policy Leverage.</p>
Excess Return (Levered)	<p>Actual excess return of the CTF. Portfolio Return (Levered) minus Benchmark Return (Levered).</p>

Board Meeting

Tab 5 – Investment Committee Open Session Business

- A. Amendments to WRS Investment Committee Investment Guidelines
- B. Approved Open Session Investment Committee Meeting Minutes of February 23, March 30 and April 25, 2023
- C. Final Open Session Agenda for May 23, 2023 and Draft Open Session Agendas for June 27 and July 25, 2023

SWIB Investment Committee
**WISCONSIN RETIREMENT SYSTEM
INVESTMENT GUIDELINES**

Revised as of

~~February~~May 23, 2023

1. When aggregated with other SWIB portfolios, no more than 20% of outstanding shares of any single issuer, excluding shares held in commingled funds and ETFs, may be owned.
2. When aggregated with other SWIB portfolios, no single issuer's equity securities may represent more than 3%, excluding shares held in commingled funds and ETFs, of the total market value of all SWIB equity portfolios.
3. When aggregated with other SWIB portfolios, securities subject to restrictions on trading pursuant to Rule 144 under the Securities Act of 1933 shall not constitute more than 1% of the market value of all SWIB equity portfolios.
4. Up to 10% of each portfolio's market value may be invested in international and emerging markets companies through common stocks, ADRs, ADSs, or country-specific ETFs. All international and emerging markets stock transactions must be in equity securities that are publicly traded on a stock exchange in a developed country.
5. Portfolios may use exchange-traded futures contracts or ETFs to equitize cash and receivables.
6. Portfolios may sell short any securities that may be purchased under applicable guidelines and may then use the proceeds from the short sale to purchase additional approved securities. The total value of the short sales in a portfolio may not exceed 50% of a portfolio's market value.
7. Except as provided in 4 above, securities must be issued by an entity that is incorporated in the United States; provided that investment is also permitted if the issuer is incorporated in a tax haven outside the United States if 1) the company's headquarters are located in the U.S. or 2) the headquarters are located in Belize, Bahamas, Bermuda, British Virgin Islands, Cayman Islands, Channel Islands, Cook Islands, Isle of Man, Marshall Islands, Panama, Liberia or Netherland Antilles and the primary exchange for the issuer's securities is located in the U.S.
8. The aggregate notional value of put options sold and not covered by portfolio cash is limited to 10% of the market value of the portfolio. The aggregate notional value of call options sold and not covered by the underlying security positions is limited to 10% of the market value of the portfolio.

B. Global Equity Portfolio

The Global Equity Portfolio is authorized to invest long or short in any publicly traded equity securities, including common stocks, preferred stocks, convertible bonds, ADRs, ADSs, ETFs, securities issued in initial public offerings, and when-issued securities, in each case that are issued and traded in U.S. and non-U.S. developed or emerging markets. For ETFs, the underlying securities shall be equity securities or indices that are permitted herein. The portfolio is also authorized to trade derivatives as outlined below.

1. Derivatives on which the pricing reference is equity-based may be used for hedging or speculative purposes. Derivatives on which the pricing reference is non-equity based may be used for hedging purposes but not speculative positioning.
2. The portfolio may hold no more than 10% (long or short) of outstanding shares of a single issuer, excluding shares held in commingled funds and ETFs.
3. The portfolio's aggregate ex-ante tracking error will not exceed 20% as measured by SWIB's standard model used at any given time by SWIB's Risk Management Division. If market conditions (compared to active management actions) cause the portfolio's ex-ante tracking error to exceed this limit, then the portfolio will not be deemed to be out of compliance with these guidelines and this guideline will not be deemed to be violated; except that, if the portfolio's ex-ante tracking error exceeds 20% then the portfolio may not trade or take any other action which is predicted to increase the ex-ante tracking error of the portfolio.
4. For the purpose of managing cash in the portfolio's cash account, the portfolio is authorized to invest long or short in any Investment Committee approved instrument or derivative to create a low-risk return on the cash within the portfolio, subject to the General Guidelines and Derivatives Guidelines contained herein.
5. [Gross notional exposure for the portfolio shall not exceed \\$20 billion unless approved by the ED/CIO.](#)

C. Passive Portfolios

The objective of the passive portfolios is to closely track the returns and risk of their respective benchmarks.

1. The universe for inclusion in the portfolio shall be the full respective benchmark for each portfolio. Non-benchmark securities may be held from time-to time as a result of corporate actions, purchases or sales in advance of expected changes to the benchmark. Activity or retention of non-benchmark securities will only occur after the portfolio is entitled to receive the security and if the portfolio manager deems it beneficial to performance and not significantly detrimental to tracking error.
2. Securities offered or sold to U.S. investors pursuant to Regulation D or Rule 144A under the Securities Act of 1933 may be purchased if they are publicly traded on a stock exchange in a developed country.
3. Portfolios may use physical securities or synthetic instruments, including exchange-traded futures contracts, ETFs, swaps, or other Investment Committee-reviewed derivative instruments to equitize cash and receivables, to achieve policy fund level leverage within Trustee-approved limits; for liquidity purposes; to replicate beta for the alpha-beta overlay; or for other passive investment strategies. Passive portfolios used to achieve policy fund level leverage shall be monitored by the ARA Division so that the Policy Leverage does not exceed Board-approved limits.

APPENDIX 2 - SOFT RISK PARAMETERS

SOFT RISK PARAMETERS – ASSET CLASS AND PORTFOLIO

PORTFOLIO ASSET CLASS CHARACTERISTIC	ASSET CLASS	DISCUSSION TRIGGER
Asset Class Exposure*	Core Fund	
	Global Equities	Target ± 4.6%
	EM Equities	Target ± 2.8%
	Small Cap	Target ± 4.9%
	EAFE Small Cap	Target ± 4.3%
	U.S. Inv Grade	Target ± 4.8%
	High Yield and Levered Loans	Target ± 5.1%
	EM Debt	Target ± 5.6%
	Variable Fund	
	U.S. Equity	Target ± 5.0%
	Int'l Equity	Target ± 5.0%
*Post-Corridor Treatment		
Maximum Small Cap Exposure	CTF Domestic Public Equities	2.75x Benchmark
	VTF Domestic Public Equities	2.75x Benchmark
Ex Ante Tracking Error	Public Equities	0.75% - 2.25%
	Public Fixed	0.4% - 1.2%
	Core Fund	0.6% - 1.8%
	Variable Fund	0.3% - 0.9%
Counterparty Exposure (internal and external separate account portfolios)	WRS (Core and Variable Funds)	5 bp exposure (net of collateral, if any) to a single counterparty
Duration	Public Fixed	+/- 1 year of Benchmark

ACTIVE/INDEXED EQUITIES

Minimum Number of Holdings

PORTFOLIO ASSET CLASS CHARACTERISTIC	ASSET CLASS	DISCUSSION TRIGGER
	Small Cap	100
	Global Equity Portfolio	15 Long/short equity ideas
Ex Ante Tracking Error	Passives (Core Fund and Variable Fund Consolidation):	
	MSCI US	10 bp annualized
	MSCI ex US	20 bp annualized
	MSCI US Small Cap	30 bp annualized
	Small Cap	2% - 6%
	Global Equity Portfolio	4%-12%
Maximum Position Size (Excluding ETFs)	Passives	5% notional value of futures
Maximum EM Active Risk Exposure	Global Equity Portfolio	Emerging Markets Tracking Error Contribution of 20%
Maximum Convertible Bond Issues	Global Equity Portfolio	0
Ex-Ante Equity Beta	Global Equity Portfolio	Range of -0.3 to +0.3 with a target of zero over a market cycle. This is measured ex ante with a trailing two-year risk sampling period
Single Name Concentration	Small Cap	Benchmark weight \pm 2%
Maximum ETF Exposure	Passives	5% of portfolio value
	Small Cap	+/- 15% of portfolio value
Maximum Company Ownership (Excluding ETFs)	Small Cap	10% of outstanding
Top Ten Holdings	Small Cap	25% of portfolio
P/E Ratio	Small Cap	50%-150% of Benchmark
Maximum Sector Exposure	Small Cap	Benchmark weight \pm 10%
Maximum Notional Uncovered Sold Calls	Passives	5% of portfolio value
	Small Cap	5% of portfolio value
Maximum Notional Uncovered Sold Puts	Passives	5% of portfolio value

PORTFOLIO ASSET CLASS CHARACTERISTIC	ASSET CLASS	DISCUSSION TRIGGER
	Small Cap	5% of portfolio value
Maximum Cash	Passives	1% in unequitized cash
	Small Cap	5%
FIXED INCOME		
Duration	IG Credit	+/- 1 year of assigned Benchmark
	MBS	+/- 1 year of assigned Benchmark
	Long Treasury	+/- 2 years of assigned Benchmark
	High Yield	+/- 2 years of assigned Benchmark
Maximum Corporate Industry Sector Exposure	IG Credit	Greater of 10% or 3 x Benchmark
	IG Credit	3.0%
Ex Ante Tracking Error	MBS	3.0%
	High Yield	3.0%
	Lev Loans	3.0%
	Long Treasury	1.5%
Maximum Equity Exposure	High Yield	5% of portfolio value
	Lev Loans	5% of portfolio value
Maximum investments in a single issuer, in the aggregate (excluding instruments listed in SIF guideline #2)	State Investment Fund	5% of portfolio value
MULTI-ASSET		
Ex ante volatility (tracking error) range	Multi-Strat	3% to 8%, measured with a trailing two-year risk sampling period
Ex-Ante Equity Beta		
Ex-Ante Spread Beta	Multi-Strat	Range of -0.3 to +0.3 with a target of zero over a market cycle. This is measured ex ante with a trailing two-year risk sampling period
Ex-Ante Rates Beta		
Ex-Ante FX Carry Beta		

STATE OF WISCONSIN INVESTMENT BOARD
Investment Committee Meeting–Open Session

Thursday, February 23, 2023

Offices of the Investment Board
121 East Wilson Street, Madison, Wisconsin

Committee Members Present: Edwin Denson, Executive Director/Chief Investment Officer (Chair)
Anne-Marie Fink, Private Markets & Funds Alpha–Chief Investment Officer
Todd Mattina, Head Economist & Asset and Risk Allocation Chief Investment Officer
Stefano Cavaglia, Senior Portfolio Manager–Asset & Risk Allocation
Derek Drummond, Head of Funds Alpha
Diane Linn, Senior Portfolio Manager–Multi-Asset Strategies
Jason Rector, Portfolio Manager–Funds Alpha
Mike Shearer, Head of Fixed Income Strategies
Nick Stanton, Head of Multi-Asset Strategies
Ivy Zhang, Senior Portfolio Manager–Asset & Risk Allocation

Sara Chandler, Chief Legal Counsel (non-voting)
Hassan Chehime, Head of Risk Management (non-voting)
Rochelle Klaskin, Deputy Executive Director/Chief Administrative Officer (non-voting)

Also in Attendance: Kathy Blumenfeld, Trustee
Joe Amoyal, Senior Portfolio Manager–Non-Investment Grade Fixed Income
Nathan Ballard, Senior Legal Counsel
Chelsey Barczak, GPMS Business Director
Kevin Blank, Analyst–Funds Alpha
Kate Burkart-Paulson, Senior Legal Counsel
Bill Campbell, Data Management Director
Bridget Chen, Senior Analyst–Investment Grade Fixed Income
Christian Comito, Portfolio Manager–Investment Grade Fixed Income
Kliton Duri, Senior Portfolio Manager–Non-Investment Grade Fixed Income
Trey Edgerle, Compliance Analyst
Greg Fletcher, Performance Director
Chirag Gandhi, Senior Portfolio Manager–Multi-Asset Strategies
Max Garcia, Analyst–Funds Alpha
Jameson Greenfield, Chief Financial Officer
Brian Heimsoth, Senior Portfolio Manager–Asset & Risk Allocation
Beth Holzberger, Portfolio Manager–Private Equity
Mike Jacobs, Agency Business Director
Vince Janecky, Internal Auditor Data Analyst

Phil Johnson, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Ryan Johnston, Analyst–Funds Alpha
Salah Khalaf, Portfolio Manager–Private Markets & Funds Alpha
Leo Kropywiansky, Senior Portfolio Manager–Asset & Risk
Allocation
Jason Krueger, Compliance Analyst
Katie Kuryla, Senior Paralegal & Records Specialist
Lisa Lange, Director of Compliance & Senior Legal Counsel
Alex Li, Analyst–Asset & Risk Allocation
Shan Lo, Senior Portfolio Manager–Multi-Asset Strategies
Jeff Lucas, Senior Portfolio Manager–Investment Grade Fixed Income
Matt Marek, Senior Analyst–Asset & Risk Allocation
Damian Maroun, Head of Trading and Execution
Edward Martinez, PMFA Business Director
Frank Mazzucco, Legal Counsel
Joy Mukherjee, Senior Portfolio Manager–U.S. Small Cap Strategy
Chad Neumann, Senior Portfolio Manager–Global Equity Strategy
Anand Rakesh, Director of Risk Analytics & Financial Engineering
Systems
Robby Richlen, Analyst–Funds Alpha
Tom Robinson, Head of Corporate Governance
Joe Roth, Business Analyst
Andrea Ruiz, Senior Portfolio Manager–Liquidity, Inflation &
Rates Mgmt.
Susan Schmidt, Head of Equities
Edouard Senechal, Senior Portfolio Manager–Asset & Risk
Allocation
Chris Spiering, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Mike Stamm, Director of Financing & Collateral Management
Rob Thornton, ARA Business Director
Leif Thybony, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Dawn Tuescher, Executive Administrative Assistant
Rob Vanderpool, Fund Administration Director
Zhenping Wang, Analyst–Asset & Risk Allocation
Chris Levell, NEPC
Joe Nankof, NEPC
(Some individuals may have attended only portions of the meeting.)

OPEN SESSION

With a quorum present, Edwin Denson, Chair of the Investment Committee, called the meeting to order at 1:03 p.m.

1. Approval of the Minutes

Mr. Denson asked if there were any comments on either the open or closed session minutes of the January 24, 2023 Investment Committee (IC) meeting. Hearing no comments,

Mr. Denson stated that the Committee could approve both the open and closed session minutes in open session.

Motion: A motion was made by Mr. Stanton and seconded by Mr. Rector to approve both the open session and the closed session minutes of January 24, 2023, as presented. The motion passed unanimously.

2. Q4 2022 Quarterly Updates

A. Small Cap Strategy

Nick Stanton, Head of Multi-Asset Strategies, referred the Committee to the *Global Public Market Strategies Quarterly Update*, included on pages 9-11 in the meeting materials, for the division's performance summary as of December 31, 2022.

Mr. Stanton then introduced Joy Mukherjee, Senior Portfolio Manager–U.S. Small Cap Strategy, to provide the *U.S. Small Cap Strategy Review*, included on pages 12-16 in the meeting materials. Mr. Mukherjee reported that the small cap diversified portfolio, which transitioned from the Russell 2000 to the MSCI USA Small Cap Index benchmark as of April 1, 2022, underperformed its benchmark by 97 basis points (bps) in 2022. He noted that the portfolio outperformed its benchmark during the second half of 2022 and that the relative returns for the three- and five-year periods remained positive. Mr. Mukherjee commented that security selection in the health care and consumer sectors and the portfolio's unequitized cash positively impacted performance, while the financials, information technology, energy, and materials sectors detracted. He confirmed that the portfolio was in compliance with its guidelines and soft risk parameters as of December 31, 2022, with the exception of the soft risk parameter related to ex ante tracking error, which the team decreased temporarily in connection with the benchmark transition and the uncertain market environment.

B. Global Equities

Susan Schmidt, Head of Equities, referred the Committee to the *Global Sector Aggregate Strategy Review*, included on pages 17-21 in the meeting materials. Ms. Schmidt then introduced Chad Neumann, Senior Portfolio Manager–Global Equity Strategy, who reported that the global sector aggregate portfolio underperformed its benchmark by 85 bps in 2022. Mr. Neumann noted that the portfolio as previously structured had been discontinued as of January 3, 2022 and that Ms. Schmidt and the team continue to develop a successor global equity strategy.

He commented that sector performance remained volatile in Q4, which offset the portfolio's positive relative performance during Q3, and that stock selection was responsible for the majority of the year's underperformance. Lastly, Mr. Neumann stated that the portfolio was in compliance with its guidelines and soft risk parameters as of December 31, 2022, with the exception of the soft risk parameter related to ex ante tracking error, which remains low while many sectors are indexed during the portfolio's restructuring.

C. Funds Alpha

Derek Drummond, Head of Funds Alpha, presented the *Funds Alpha Q4 2022 Update*, included on pages 22-32 in the meeting materials. He highlighted that Funds Alpha

generated approximately \$140 million in Excess Value Added (EVA) in the fourth quarter and approximately \$664 million in EVA for the year across all three business lines. Performance was driven by quantitative managers in the beta one equities portfolio, security selection in the beta one fixed income portfolio, and a broad range of sub-strategies in the hedge fund portfolio. He noted that, with over \$12.3 billion allocated in 2022, the team had completed its asset allocation and active risk budget implementation for the year. Mr. Drummond reviewed manager positioning in the beta one equity and fixed income portfolios and commented that managers across all Funds Alpha portfolios remained defensively positioned. With respect to tracking error, he reported that the beta one equity portfolio's tracking error remains modestly above its long-term target in the current volatile market environment, while both the beta one fixed income and the hedge fund portfolios are below their long-term tracking error targets.

Mr. Drummond then commented on the market environment, noting that **(a)** liquidity is scarce and volatility remains elevated across hedge fund strategies, **(b)** the team anticipates a more fundamentally driven market in 2023, which may provide opportunities for security selection and event-driven strategies, **(c)** volatility is expected to decline but remain elevated relative to historical levels, presenting additional opportunities for alpha generation, and **(d)** in the credit market, the consumer remains relatively stable but defaults are expected to increase. Finally, he confirmed that the portfolios were in compliance with their guidelines and soft risk parameters, and answered questions regarding effective breadth in developed equity markets relative to emerging markets.

3. Convene in Closed Session

Motion: A motion to go into closed session at this meeting as authorized pursuant to sections 19.85(1)(e) and 19.36(5) of the Wisconsin Statutes to consider confidential strategies for the investment of public funds, including **(i)** the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, **(ii)** the review of specific proprietary investment strategies and investment instruments related to global public markets, small cap equities, global equities, funds alpha and exposure management, and **(iii)** the review of broker information, was made by Mr. Drummond and seconded by Ms. Fink.

Mr. Denson called for a roll call vote.

Denson-Aye	Fink-Aye	Cavaglia-Aye	Drummond-Aye
Linn-Aye	Mattina-Aye	Rector-Aye	
Shearer-Aye	Stanton-Aye	Zhang-Aye	

There being ten ayes and no nays, Mr. Denson declared the motion passed. The Committee convened in closed session at 1:20 p.m. and reconvened in open session at 4:24 p.m.

4. Announcement of Committee Actions Relating to Items Taken up in Closed Session

Mr. Denson announced that, while in closed session, the Committee **(a)** reviewed active risk profiles of portfolio investments and the Core and Variable Trust Funds, **(b)** reviewed specific proprietary investment strategies and investment instruments related to global public

markets, small cap equities, global equities, funds alpha and exposure management, and (c) reviewed broker information.

5. Asset Allocation Recommendation

Brian Heimsoth, Senior Portfolio Manager–Asset & Risk Allocation, reported that the Board of Trustees’ approval of the asset allocation for the Core Trust Fund (CTF) for 2023 included a recommendation that the public equity sub-asset class target allocations reflect the actual weights of the components of the MSCI ACWI Investable Market Index (IMI) (with the half-weight to China large cap equities) as of March 31, 2023. As part of that approval discussion at the December Board of Trustees meeting, staff proposed coming back to the Board with a recommendation for how to implement the sub-asset class modifications for the remainder of 2023 and beyond. He reported that staff has since been working with NEPC to create a methodology to periodically update the asset allocation targets and corresponding benchmark to maintain the intended alignment with global market capitalization weights.

Mr. Heimsoth then introduced Chris Levell, Partner, NEPC, and Joe Nankof, Principal, NEPC, who referred the Committee to the *Asset Allocation Recommendation and Public Equity Benchmark*, included on page 214 in the meeting materials. Mr. Nankof stated that each December the Board historically approved sub-asset class target allocations as static weights, which were then used as rebalancing targets each month; however, given the volatility of market capitalization splits across equity markets, substantial rebalancing was often required to maintain alignment. Mr. Nankof then reviewed NEPC’s recommendation to implement a revised methodology under which public equity sub-asset class target allocations would be rebalanced on a monthly basis to align with actual market capitalization weights in the MSCI ACWI IMI (with a half-weight to China large cap equities), beginning on March 31, 2023. He noted that the monthly rebalancing is intended to improve efficiency and reduce transaction costs. Lastly, Mr. Nankof answered questions regarding timing considerations related to the implementation of NEPC’s recommended approach.

Motion: A motion was made by Mr. Mattina and seconded by Ms. Fink to approve and to recommend to the Board of Trustees the change to the Asset Allocation Recommendations for 2023 to update the public equity sub-asset class target allocations on a monthly basis to align with the actual weights of the MSCI ACWI Investable Market Index (IMI) beginning March 31, 2023, with the half-weight to China large cap equities, as recommended by the Board’s asset allocation consultant, NEPC. The motion passed unanimously.

6. Public Equity Benchmark Recommendation

In connection with the preceding discussion regarding NEPC’s asset allocation recommendation, Mr. Nankof then presented NEPC’s recommendation regarding corresponding changes to the CTF public equity benchmark to adjust the public equity sub-asset class benchmark weights on a monthly basis to align with the actual weights of the MSCI ACWI IMI (with the half-weight to China large cap equities), beginning on March 31, 2023.

Motion: A motion was made by Mr. Drummond and seconded by Mr. Stanton to approve, and to recommend to the Board of Trustees’ Benchmark and Performance Committee, the changes to the Core Trust Fund (CTF) public equity benchmark to adjust the public equity sub-asset class benchmark weights on a monthly basis to align with the actual weights of the

MSCI ACWI Investable Market Index (IMI) beginning March 31, 2023, with the half-weight to China large cap equities, as recommended by SWIB's benchmark consultant, NEPC. The motion passed unanimously.

7. Amendments to Investment Committee WRS Investment Guidelines

Sara Chandler, Chief Legal Counsel, discussed the proposed amendments to the *SWIB Investment Committee Wisconsin Retirement System Investment Guidelines*, included on pages 215-262 in the meeting materials. She noted that the proposed changes **(a)** updated the leverage use policy to reflect the various strategies that have been approved by the IC, **(b)** permitted all internally managed portfolios to invest in unrated securities, provided that such securities are assigned an internal rating by staff using rating models reviewed by Risk and Compliance, **(c)** incorporated regulatory updates to FINRA Rule 4210, **(d)** replaced the guidelines and soft risk parameters for the former global sector aggregate portfolio with new guidelines and soft risk parameters for the restructured global equity portfolio, which are modeled after the other alpha strategies reflecting the portfolio's move to the alpha pool, **(e)** revised the investment grade credit portfolio's guidelines to require that emerging market corporate debt be denominated in U.S. dollars and increase the bank loan exposure limit from 10% to 15% while including collateralized loan obligations (CLOs) in the limit, **(f)** increased each fixed income portfolio's gross exposure limit to 300% of the portfolio's market value and net exposure limit to 200% of the portfolio's market value, **(g)** removed guidelines and soft risk parameters for the discontinued stand-alone global macro portfolio, **(h)** added exchange-traded interest rate futures to the carve-outs from the single issue concentration limit for the long treasury portfolio, **(i)** with respect to the mortgage-backed securities portfolio, removed the short-duration fixed income securities limit, added total return swaps as a permitted derivative instrument, and increased the limit on CLOs collateralized by corporate bank loans to 15% of the portfolio's market value, and **(j)** clarified certain defined terms. Following the Committee's discussion of the proposed changes, the IC recommended adding language requiring that the models used for the internal SWIB rating of unrated securities be reviewed by risk and compliance staff.

Motion: A motion was made by Mr. Stanton and seconded by Mr. Cavaglia to approve the proposed amendments to the *SWIB Investment Committee WRS Investment Guidelines*, as presented in the Committee materials and revised to reflect that the models used for the internal SWIB rating of unrated securities be reviewed by risk and compliance staff. The motion passed unanimously.

8. Currency Task Force Report

Chirag Gandhi, Senior Portfolio Manager–Multi-Asset Strategies, noted that a copy of the agenda for the February 20, 2023 Currency Task Force meeting, with additional materials for reference, was included on pages 263-266 in the meeting materials for the Committee's information. In addition to the agenda items, the meeting included discussions of currency exposures in the private equity portfolio, including at the factor level, and the CTF's exposure to the Canadian dollar.

9. Research Task Force Report

Stefano Cavaglia, Senior Portfolio Manager–Asset & Risk Allocation, presented the *Research Task Force Report*, included on pages 267-268 in the meeting materials.

Mr. Cavaglia noted that five new members had joined the Research Task Force and that each investment division now has three representatives. He also highlighted recent initiatives, including (a) sponsoring seminars on how financial engineering can accelerate biomedical innovation and on risk management and implementation considerations, and (b) co-funding the acquisition of historical data related to directors' trading activities and the membership to a forum for quantitative research in finance.

Beth Holzberger, Portfolio Manager–Private Equity, then provided an update on the June Investment Forum, which will be held virtually with sessions during the afternoons of June 13-14, 2023. She noted that the confirmed session topics and speakers were included on page 268 in the meeting materials for the Committee's information.

10. Quarterly Performance Review (Q4 2022)

Mr. Denson noted that the *Investment Performance Report*, as of December 31, 2022, was included on pages 269-279 in the meeting materials for the Committee's information.

11. QIR Annual Certification Report

Mr. Denson noted that the QIR Annual Certification Report for 2022 was included on page 280 in the meeting materials for the Committee's information.

12. Soft Risk Parameters

Hassan Chehime, Head of Risk Management, noted that the report *Soft Risk Parameters–Asset Class and Portfolio*, as of January 31, 2023, was included on pages 281-282 in the meeting materials for the Committee's review. He noted that there were no new discussion triggers, and none had been dropped this month.

13. Future Meeting Topics

Mr. Denson noted that draft agendas for the March 30, 2023 and April 25, 2023 Committee meetings were included on pages 283-286 in the meeting materials for the Committee's review.

14. Adjournment

Motion: A motion to adjourn the meeting was made by Mr. Drummond and seconded by Mr. Rector. The motion passed unanimously, and the meeting adjourned at 5:11 p.m.

Date of Committee Approval: 03/30/2023

Signed: /s/ Sara Chandler
Sara Chandler, Secretary
Investment Committee

STATE OF WISCONSIN INVESTMENT BOARD
Investment Committee Meeting–Open Session

Thursday, March 30, 2023

Offices of the Investment Board
121 East Wilson Street, Madison, Wisconsin

Committee Members Present: Edwin Denson, Executive Director/Chief Investment Officer (Chair)
Anne-Marie Fink, Private Markets & Funds Alpha–Chief Investment Officer
Todd Mattina, Head Economist & Asset and Risk Allocation Chief Investment Officer
Derek Drummond, Head of Funds Alpha
Diane Linn, Senior Portfolio Manager–Multi-Asset Strategies
Lin Maung, Senior Portfolio Manager–Private Equity
Jason Rector, Portfolio Manager–Funds Alpha
Mike Shearer, Head of Fixed Income Strategies
Nick Stanton, Head of Multi-Asset Strategies
Ivy Zhang, Senior Portfolio Manager–Asset & Risk Allocation

Sara Chandler, Chief Legal Counsel (non-voting)
Hassan Chehime, Head of Risk Management (non-voting)
Rochelle Klaskin, Deputy Executive Director/Chief Administrative Officer (non-voting)

Also in Attendance: Joe Amoyal, Senior Portfolio Manager–Non-Investment Grade Fixed Income
Bill Campbell, Data Management Director
Bridget Chen, Senior Analyst–Investment Grade Fixed Income
Christian Comito, Portfolio Manager–Investment Grade Fixed Income
Andrew Crossman, Analyst–Private Equity
Chris Eckerman, Senior Portfolio Manager–Private Equity
Trey Edgerle, Compliance Analyst
Greg Fletcher, Performance Director
Shannon Gannon, Communications Director
Jameson Greenfield, Chief Financial Officer
Brian Heimsoth, Senior Portfolio Manager–Asset & Risk Allocation
Becca Hewison, Administrative Services Manager and Executive Assistant to the ED/CIO
Phil Johnson, Senior Portfolio Manager–Non-Investment Grade Fixed Income
Jason Krueger, Compliance Analyst
Matt Kuznacic, Business Integration Director
Shan Lo, Senior Portfolio Manager–Multi-Asset Strategies
Jon Loboda, Performance Measurement Operations Manager
Matt Marek, Senior Analyst–Asset & Risk Allocation
Damian Maroun, Head of Trading and Execution
Edward Martinez, PMFA Business Director

Frank Mazzucco, Legal Counsel
Chase Nicholson, Senior Portfolio Manager–Multi-Asset Strategies
Scott Parrish, Head of Private Equity
Chris Prestigiacomio, Head of Private Debt & Venture Capital
Anand Rakesh, Director of Risk Analytics & Financial Engineering
Systems
Joe Roth, Transition Management and Portfolio Support Manager
Jason Rothenberg, Head of Real Estate
Edouard Senechal, Senior Portfolio Manager–Asset & Risk Allocation
Sam Shibilski, Fund Administration Analyst
Matt Terpstra, Internal Auditor
Rob Thornton, ARA Business Director
Leif Thybony, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Rob Vanderpool, Fund Administration Director
Zhenping Wang, Senior Analyst–Asset & Risk Allocation
Chris Levell, NEPC
(Some individuals may have attended only portions of the meeting.)

OPEN SESSION

With a quorum present, Edwin Denson, Chair of the Investment Committee, called the meeting to order at 1:02 p.m.

1. Approval of the Minutes

Mr. Denson asked if there were any comments on either the open or closed session minutes of the February 23, 2023 Investment Committee (IC) meeting. Hearing no comments, Mr. Denson stated that the Committee could approve both the open and closed session minutes in open session.

Motion: A motion was made by Mr. Rector and seconded by Ms. Fink to approve both the open session and the closed session minutes of February 23, 2023, as presented. The motion passed unanimously.

2. Private Markets & Funds Alpha Division Update

Anne-Marie Fink, Private Markets & Funds Alpha–Chief Investment Officer, presented the *Private Markets & Funds Alpha Overview*. Ms. Fink highlighted the Private Markets & Funds Alpha (PMFA) division’s strong performance in 2022, and discussed performance expectations for 2023. She then commented on the current market environment, observing that the exit environment for portfolio companies remains challenging and therefore capital calls are anticipated to outpace distributions in 2023. Ms. Fink stated that the PMFA division’s external managers are expected to report year-end valuations within the next several weeks, reminding the Committee that valuations are reported on a quarter lag. Finally, she commented on the division’s timely and effective operational response to recent upheaval in the regional banking sector and the upcoming enhancement of private equity reporting in SWIB Central.

3. Q4 2022 Quarterly Updates

A. Private Equity

Scott Parrish, Head of Private Equity, presented the *Quarterly Activity Report – Private Equity*, included on pages 11-38 in the meeting materials. He provided a private equity market update for 2022, noting that **(a)** both global private equity fundraising dollars and the number of funds decreased relative to 2021, **(b)** although dry powder has decreased since its peak in 2021, there is still a significant amount of capital available to be deployed, with more than half of the available capital attributable to vintage years 2021 and 2022, **(c)** U.S. private equity deal activity in dollars and number of deals declined modestly from 2021, while the number of exits and exit value both decreased significantly, although they remained generally consistent with historical levels prior to 2021, **(d)** median purchase multiples increased slightly from 2021, with a greater amount of sponsor equity relative to debt as a percentage of total enterprise value, **(e)** portfolio company exit activity was split evenly between strategic acquirers and sponsor-to-sponsor transactions, with virtually no market for IPOs for private equity-backed companies, and **(f)** the European private equity market experienced broadly similar trends in terms of fundraising and exit activity.

Mr. Parrish reported that, as of December 31, 2022, the market value of the aggregate private equity asset class, including the venture capital, private debt, and overage portfolios, made up approximately 18% of the Core Trust Fund (CTF). He commented that capital calls exceeded distributions in 2022 for the first year in over a decade, due primarily to the headwinds facing portfolio companies seeking exits, and he discussed the year-over-year appreciation of the private equity and current return portfolios.

With respect to performance, Mr. Parrish highlighted that the private equity portfolios all outperformed their benchmarks for the one-, three-, and five-year time periods and that, as of September 30, 2022, the combined private equity and co-investment portfolios achieved second quartile performance for vintage years 2014-2021. He also discussed the five-year internal rates of return (IRRs) for the portfolios' sub-strategies, noting continued strong performance from small and mid-buyout managers while the lower performance from credit/distressed is expected to improve as distressed managers evaluate opportunities in the current market environment.

Mr. Parrish then discussed the private equity portfolios' **(a)** sub-asset class diversification, highlighting the increased percentage of co-investments as the team sources and executes on attractive opportunities alongside high-conviction managers, **(b)** public versus private portfolio company exposure, noting that public exposure had decreased year-over-year as a result of lower market valuations and fewer portfolio companies exiting via public offerings, and **(c)** industry diversification, noting that internal technological and operational enhancements have improved visibility into underlying portfolio company exposure by industry. He highlighted the commitments made in Q4 2022, reviewed the portfolio pipeline for Q1 2023, and confirmed that the portfolio remained in compliance with all investment guidelines.

B. Real Estate

Jason Rothenberg, Head of Real Estate, presented the *Quarterly Activity Report – Real Estate*, included on pages 39-50 in the meeting materials. He discussed the current market

environment, noting that **(a)** there is a divergence in public and private capitalization rates for major property types, with public REITs and bond yields signaling upward pressure on private capitalization rates, **(b)** a large bid-ask spread remains, resulting in significantly muted transaction volumes and fewer market comparisons for appraisers to incorporate into valuations, **(c)** solid net operating income (NOI) growth is being offset by capitalization rate expansion and slowing rent growth to push benchmark returns negative in the fourth quarter, and **(d)** whereas property type dispersion was the dominant trend over the past few years, geographic dispersion and market selection by metropolitan statistical area (MSA) may become more prominent trends in the future.

Mr. Rothenberg then reviewed the real estate portfolio, noting that the portfolio's market value of approximately \$11.6 billion as of December 31, 2022 represented approximately 10.6% of the CTF, which increased due to portfolio appreciation and the denominator effect. He noted that the portfolio size may increase modestly in 2023 as capital calls are expected to outpace distributions. He reviewed the portfolio's risk profile, noting that the portfolio's leverage remains above benchmark levels and may increase further in the event certain assets are marked down. Mr. Rothenberg then discussed the portfolio's **(a)** diversification by property type, highlighting that the team is prudently increasing exposure to the industrial sector, and that the underweight to the traditional office sector is expected to continue to contribute positively to relative performance, and **(b)** exposure by geographic market, noting that the portfolio has tilted away from the primary gateway markets, in line with the benchmark, and towards secondary and tertiary domestic markets.

Mr. Rothenberg reviewed the portfolio's performance, reporting outperformance relative to the benchmark over the five- and ten-year time periods, with strong absolute returns for the one- and three-year time periods despite trailing the benchmark, and answered questions regarding the performance of the portfolio's industrial assets. Lastly, he **(a)** noted that no new commitments were made in the fourth quarter, as the team continues to deploy capital patiently and judiciously as assets reprice, **(b)** discussed the pipeline under review, and **(c)** confirmed that the portfolio remained in compliance with its investment guidelines.

C. Private Debt

Chris Prestigiaco, Head of Private Debt & Venture Capital, presented the *Private Debt Portfolio Investment Committee Quarterly Report*, included on pages 51-62 in the meeting materials. He provided a private debt market update for 2022, noting that **(a)** fundraising has slowed and is down year-over-year, although experienced managers are still having success fundraising, **(b)** direct lending has grown and now makes up almost half of the dollars in the private debt market, **(c)** dry powder available to invest has decreased to its lowest level in four years, and **(d)** overall market default rates increased in the fourth quarter, with the manufacturing, consumer goods, and services and retail sectors experiencing material default rate increases.

Mr. Prestigiaco then reviewed the portfolio's **(a)** characteristics, noting that average coupon and average life increased slightly from the prior quarter as one loan was paid off as planned, **(b)** barbell credit strategy, with staff targeting loans of both higher and lower credit quality than the benchmark to maintain an overall portfolio weighting of BBB, **(c)** current below investment grade (BIG) holdings of 11%, down 1% from the prior quarter and below the portfolio limit of 25%, and **(d)** sector mix, noting that the historical overweight to industrial and underweight to financials arises from the opportunity set of the portfolio.

Comparing the Wisconsin and non-Wisconsin loans in the portfolio, he commented that the average coupon is higher for Wisconsin loans due to higher BIG loans outstanding in Wisconsin. Mr. Prestigiaco then answered questions regarding the upcoming maturities of loans in the portfolio.

Lastly, Mr. Prestigiaco reviewed the portfolio's performance, highlighting that the portfolio outperformed its benchmark over all time periods, despite negative absolute performance for the one-year period, and reported that there were no problem credits or workouts in the portfolio, which remained in compliance with its guidelines.

4. Convene in Closed Session

Motion: A motion to go into closed session pursuant to sections 19.85(1)(e) and 19.36(5) of the Wisconsin Statutes to consider confidential strategies for the investment of public funds, including (a) the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, and (b) the review of specific proprietary investment strategies and investment instruments related to private equity, real estate, private debt, venture capital and exposure management, was made by Mr. Mattina and seconded by Mr. Maung.

Mr. Denson called for a roll call vote.

Denson-Aye	Fink-Aye	Mattina-Aye	Drummond-Aye
Linn-Aye	Maung-Aye	Rector-Aye	
Shearer-Aye	Stanton-Aye	Zhang-Aye	

There being ten ayes and no nays, Mr. Denson declared the motion passed. The Committee convened in closed session at 1:44 p.m. and reconvened in open session at 3:00 p.m.

5. Announcement of Committee Actions Relating to Items Taken up in Closed Session

Mr. Denson announced that, while in closed session, the Committee (a) reviewed active risk profiles of portfolio investments and the Core and Variable Trust Funds, and (b) reviewed specific proprietary investment strategies and investment instruments related to private equity, real estate, private debt, venture capital and exposure management.

6. Transition Update (Q4 2022)

Joe Roth, Transition Management and Portfolio Support Manager, presented the *Transition Management Summary, Q4 2022*, included on page 152 in the meeting materials, and reviewed the two transition events during the quarter. He highlighted that the first transition, managed by the BlackRock Transition Management team, implemented the approved asset allocation policy change to increase exposure to the emerging market small cap sub-asset class through the beta one equity portfolio, with a corresponding decrease in passive global equities, and fell within the established shortfall tolerance range. Mr. Roth stated that the second transition was managed internally and implemented in connection with the launch of the new global equities portfolio.

7. Soft Risk Parameters

Hassan Chehime, Head of Risk Management, noted that the report *Soft Risk Parameters–Asset Class and Portfolio*, as of February 28, 2023, was included on pages 153-154 in the meeting materials for the Committee’s review. Mr. Chehime noted that there were no new discussion triggers, and none had been dropped this month.

8. Future Meeting Topics

Mr. Denson noted that draft agendas for the April 25, 2023 and May 23, 2023 Committee meetings were included on pages 155-158 in the meeting materials for the Committee’s review.

9. Adjournment

Motion: A motion to adjourn the meeting was made by Mr. Shearer and seconded by Ms. Fink. The motion passed unanimously, and the meeting adjourned at 3:05 p.m.

Date of Committee Approval: 04/25/2023

Signed: /s/ Sara Chandler
Sara Chandler, Secretary
Investment Committee

STATE OF WISCONSIN INVESTMENT BOARD
Investment Committee Meeting–Open Session

Tuesday, April 25, 2023

Offices of the Investment Board
4703 Madison Yards Way, Madison, Wisconsin

Committee Members Present: Todd Mattina, Head Economist & Asset and Risk Allocation Chief
Investment Officer
Stefano Cavaglia, Senior Portfolio Manager–Asset & Risk
Allocation
Derek Drummond, Head of Funds Alpha
Diane Linn, Senior Portfolio Manager–Multi-Asset Strategies
Lin Maung, Senior Portfolio Manager–Private Equity
Jason Rector, Portfolio Manager–Funds Alpha
Mike Shearer, Head of Fixed Income Strategies
Nick Stanton, Head of Multi-Asset Strategies
Ivy Zhang, Senior Portfolio Manager–Asset & Risk Allocation

Sara Chandler, Chief Legal Counsel (non-voting)
Hassan Chehime, Head of Risk Management (non-voting)
Rochelle Klaskin, Deputy Executive Director/Chief Administrative
Officer (non-voting)

Also in Attendance: John Voelker, Trustee
Nathan Ballard, Senior Legal Counsel
Zach Berghouse, Internal Auditor
Brandon Brickner, Internal Audit Director
Kate Burkart-Paulson, Senior Legal Counsel
Christian Comito, Portfolio Manager–Investment Grade Fixed Income
Tom Dobesh, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Kliton Duri, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Trey Edgerle, Compliance Analyst
Tom Freeman, Director of Quantamental Research
Scott Freundlich, Portfolio Manager–Non-Investment Grade
Fixed Income
Chirag Gandhi, Senior Portfolio Manager–Multi-Asset Strategies
Brian Heimsoth, Senior Portfolio Manager–Asset & Risk Allocation
Vince Janecky, Internal Auditor Data Analyst
Phil Johnson, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Jason Krueger, Compliance Analyst
Lisa Lange, Director of Compliance & Senior Legal Counsel
Jonathan Levine, Senior Portfolio Manager–Investment Grade
Fixed Income
Shan Lo, Senior Portfolio Manager–Multi-Asset Strategies
Jon Loboda, Performance Measurement Operations Manager

Jeff Lucas, Senior Portfolio Manager–Investment Grade Fixed Income
Bill Luetzow, Legal Counsel
Matt Marek, Senior Analyst–Asset & Risk Allocation
Damian Maroun, Head of Trading and Execution
Frank Mazzucco, Legal Counsel
Joy Mukherjee, Senior Portfolio Manager–U.S. Small Cap Strategy
Chad Neumann, Senior Portfolio Manager–Global Equity Strategy
Chase Nicholson, Senior Portfolio Manager–Multi-Asset Strategies
Anand Rakesh, Director of Risk Analytics & Financial Engineering
Systems
Tom Robinson, Head of Corporate Governance
Nick Romero, Analyst–Investment Grade Fixed Income
Andrea Ruiz, Senior Portfolio Manager–Liquidity, Inflation &
Rates Mgmt.
Susan Schmidt, Head of Equities
Sam Shibilski, Fund Administration Analyst
Jon Simon, Senior Portfolio Manager–Investment Grade Fixed
Income
Chris Spiering, Senior Portfolio Manager–Non-Investment
Grade Fixed Income
Matt Terpstra, Internal Auditor
Rob Thornton, ARA Business Director
Leif Thybony, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Dawn Tuescher, Executive Administrative Assistant
Zhenping Wang, Senior Analyst–Asset & Risk Allocation
Marc Gesell, Verus Advisory
Chris Levell, NEPC
Joe Nankof, NEPC
(Some individuals may have attended only portions of the meeting.)

OPEN SESSION

With a quorum present, Todd Mattina, Head Economist & Asset and Risk Allocation Chief Investment Officer, called the meeting to order at 1:02 p.m.

1. Approval of the Minutes

Mr. Mattina asked if there were any comments on either the open or closed session minutes of the March 30, 2023 Investment Committee (IC) meeting. Hearing no comments, Mr. Mattina stated that the Committee could approve both the open and closed session minutes in open session.

Motion: A motion was made by Mr. Stanton and seconded by Ms. Linn to approve both the open session and the closed session minutes of March 30, 2023, as presented. The motion passed unanimously.

2. Q1 2023 Quarterly Updates

Nick Stanton, Head of Multi-Asset Strategies, presented the *Global Public Markets Strategies Quarterly Update, Q1 2023*, included on pages 10-20 in the meeting materials. Mr. Stanton reported on performance from the Global Public Market Strategies division for Q1 2023, highlighting a strong start to the year with all division strategies exhibiting positive absolute returns and five of six generating positive excess returns. He confirmed that each portfolio was in compliance with its guidelines, but noted that the small cap portfolio's ex ante tracking error remained below its soft risk parameter's target range largely due to the current uncertain macroeconomic environment.

Mike Shearer, Head of Fixed Income Strategies, then provided a market review, included on pages 21-24 in the meeting materials. He noted that (a) volatility was elevated in the first quarter, as regional bank failures and contagion fears in the global banking system, higher interest rates, and an inverted yield curve offset strong economic growth data earlier in the quarter, (b) the Federal Reserve enacted two rate increases amid uncertainty in the banking sector, and (c) equity markets and high yield bonds performed well, while investment grade fixed income products were more sensitive to rates volatility.

3. Convene in Closed Session

Motion: A motion to go into closed session at this meeting as authorized pursuant to sections 19.85(1)(e) and 19.36(5) of the Wisconsin Statutes to consider confidential strategies for the investment of public funds, including (i) the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, and (ii) the review of specific proprietary investment strategies and investment instruments related to global equities, small cap equities, short-term credit, fixed income strategies, multi-asset strategies and exposure management, was made by Ms. Linn and seconded by Mr. Shearer.

Mr. Mattina called for a roll call vote.

Mattina-Aye	Cavaglia-Aye	Drummond-Aye
Linn-Aye	Maung-Aye	Rector-Aye
Shearer-Aye	Stanton-Aye	Zhang-Aye

There being nine ayes and no nays, Mr. Mattina declared the motion passed. The Committee convened in closed session at 1:07 p.m. and reconvened in open session at 3:54 p.m.

4. Announcement of Committee Actions Relating to Items Taken Up in Closed Session

Mr. Mattina announced that, while in closed session, the Committee (a) reviewed active risk profiles of portfolio investments and the Core and Variable Trust Funds, and (b) reviewed specific proprietary investment strategies and investment instruments related to global equities, small cap equities, short-term credit, fixed income strategies, multi-asset strategies and exposure management.

5. Soft Risk Parameters

Hassan Chehime, Head of Risk Management, noted that the report *Soft Risk Parameters*–

Asset Class and Portfolio, as of March 31, 2023, was included on pages 174-175 in the meeting materials for the Committee's review. Mr. Chehime noted that there was one new discussion trigger relating to the ex ante tracking error for the global equities portfolio. No discussion triggers had been dropped this month.

6. Future Meeting Topics

Mr. Mattina noted that draft agendas for the May 23, 2023 and June 27, 2023 Committee meetings were included on pages 176-179 in the meeting materials for the Committee's review.

7. Adjournment

Motion: A motion to adjourn the meeting was made by Mr. Shearer and seconded by Mr. Stanton. The motion passed unanimously, and the meeting adjourned at 3:56 p.m.

Date of Committee Approval: 05/23/2023

Signed: /s/ Sara Chandler
Sara Chandler, Secretary
Investment Committee

Name of Meeting: Staff Investment Committee Meeting
Date/Time: Tuesday, May 23, 2023 1:00 pm
Room: 7th Floor Conference Room - 7022
Address: 4703 Madison Yards Way, Madison, WI 53705

Est. Time Minutes	Action Item	Topic	Presenter
		OPEN SESSION	
	Motion	1. Approval of the Minutes – Open Session A. April 25, 2023	
10	Motion	2. Amendments to Investment Committee WRS Investment Guidelines	Sara Chandler
5		3. October Workshop Preview	Todd Mattina
30		4. Q1 2023 Quarterly Updates A. Multi-Asset Strategies B. Funds Alpha	Nick Stanton Derek Drummond
	Motion	CLOSED SESSION*	
	Motion	RECONVENE IN OPEN SESSION	
		5. Announcement of Committee Actions Relating to Items Taken Up in Closed Session	
5		6. Currency Task Force Report	Nick Stanton
10		7. Research Task Force Report a. June Investment Forum Preview	Stefano Cavaglia
		8. Quarterly Performance Review (Q1 2023) (No presentation unless requested)	
		9. Soft Risk Parameters (No presentation unless requested)	

* A motion to go into closed session at this meeting is authorized pursuant to sections 19.85(1)(e) and 19.36(5) of the Wisconsin Statutes (a) to consider confidential strategies for the investment of public funds, including (i) the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, (ii) the review of specific proprietary investment strategies and investment instruments related to multi-asset, funds alpha, currency exposure and exposure management, and (iii) the review of broker information, and (b) to discuss and approve prior closed session minutes that discuss the same. The Committee may convene in additional closed sessions or announce additional closed session items at the meeting in accordance with the procedure outlined in the Attorney General’s Opinion reported at 66 OAG 106 (1977). Whenever a closed session is held, the committee will subsequently reconvene in open session to cover remaining agenda items.

		10. Future Meeting Topics	
	Motion	11. Motion to Adjourn	
		<p><i>NOTES: Items may be taken in order other than listed.</i></p> <p><i>The meeting site is physical accessible. Upon prior request, reasonable accommodations will be provided.</i></p>	

<p><u>Future Meetings</u></p> <p>6/27/23 – June Committee Mtg. 7/25/23 – July Committee Mtg. 8/22/23 – August Committee Mtg. 9/26/23 – September Committee Mtg. 10/24/23 – October Committee Mtg. 11/28/23 – November Committee Mtg. 12/21/23 – December Committee Mtg.</p>	<p><u>Voting Committee Members:</u></p> <p>Edwin Denson (Chair), Executive Director/Chief Investment Officer Anne-Marie Fink, Private Markets & Funds Alpha–CIO Todd Mattina, Head Economist, Asset & Risk Allocation–CIO Stefano Cavaglia, Senior Portfolio Manager–Asset & Risk Allocation Derek Drummond, Head of Funds Alpha Diane Linn, Senior Portfolio Manager–Multi-Asset Strategies Lin Maung, Senior Portfolio Manager–Private Equity Jason Rector, Portfolio Manager–Funds Alpha Mike Shearer, Head of Fixed Income Strategies Nick Stanton, Head of Multi-Asset Strategies Ivy Zhang, Senior Portfolio Manager–Asset & Risk Allocation</p> <p><u>Non-voting Committee Members</u></p> <p>Rochelle Klaskin, Deputy Executive Director/CAO Sara Chandler (Secretary), Chief Legal Counsel Hassan Chehime, Head of Risk Management</p>
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Name of Meeting: Staff Investment Committee Meeting
Date/Time: Tuesday, June 27, 2023 1:00 pm
Room: 7th Floor Conference Room - 7022
Address: 4703 Madison Yards Way, Madison, WI 53705

Est. Time Minutes	Action Item	Topic	Presenter
		OPEN SESSION	
	Motion	1. Approval of the Minutes – Open Session A. May 23, 2023	
5		2. October Workshop Preview	Todd Mattina
5		3. Private Markets & Funds Alpha Division Update	Anne-Marie Fink
30		4. Q1 2023 Quarterly Updates A. Private Equity B. Real Estate C. Private Debt	Scott Parrish Jason Rothenberg Chris Prestigiacomo
	Motion	CLOSED SESSION*	
	Motion	RECONVENE IN OPEN SESSION	
		5. Announcement of Committee Actions Relating to Items Taken Up in Closed Session	
5		6. Transition Update (Q1 2023)	Joe Roth
		7. Soft Risk Parameters (No presentation unless requested)	
		8. Future Meeting Topics	
	Motion	9. Motion to Adjourn	

* A motion to go into closed session at this meeting is authorized pursuant to sections 19.85(1)(e) and 19.36(5) of the Wisconsin Statutes (a) to consider confidential strategies for the investment of public funds, including (i) the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, and (ii) the review of specific proprietary investment strategies and investment instruments related to private equity, real estate, private debt, venture capital and exposure management, and (b) to discuss and approve prior closed session minutes that discuss the same. The Committee may convene in additional closed sessions or announce additional closed session items at the meeting in accordance with the procedure outlined in the Attorney General’s Opinion reported at 66 OAG 106 (1977). Whenever a closed session is held, the committee will subsequently reconvene in open session to cover remaining agenda items.

NOTES: Items may be taken in order other than listed.

The meeting site is physically accessible. Upon prior request, reasonable accommodations will be provided.

Future Meetings

- 7/25/23 – July Committee Mtg.
- 8/22/23 – August Committee Mtg.
- 9/26/23 – September Committee Mtg.
- 10/24/23 – October Committee Mtg.
- 11/28/23 – November Committee Mtg.
- 12/21/23 – December Committee Mtg.

Voting Committee Members:

- Edwin Denson (Chair)**, Executive Director/Chief Investment Officer
- Anne-Marie Fink**, Private Markets & Funds Alpha–CIO
- Todd Mattina**, Head Economist, Asset & Risk Allocation–CIO
- Stefano Cavaglia**, Senior Portfolio Manager–Asset & Risk Allocation
- Derek Drummond**, Head of Funds Alpha
- Diane Linn**, Senior Portfolio Manager–Multi-Asset Strategies
- Lin Maung**, Senior Portfolio Manager–Private Equity
- Jason Rector**, Portfolio Manager–Funds Alpha
- Mike Shearer**, Head of Fixed Income Strategies
- Nick Stanton**, Head of Multi-Asset Strategies
- Ivy Zhang**, Senior Portfolio Manager–Asset & Risk Allocation

Non-voting Committee Members

- Rochelle Klaskin**, Deputy Executive Director/CAO
- Sara Chandler (Secretary)**, Chief Legal Counsel
- Hassan Chehime**, Head of Risk Management

Name of Meeting: Staff Investment Committee Meeting
Date/Time: Tuesday, July 25, 2023 1:00 pm
Room: 7th Floor Conference Room - 7022
Address: 4703 Madison Yards Way, Madison, WI 53705

Est. Time Minutes	Action Item	Topic	Presenter
		OPEN SESSION	
	Motion	1. Approval of the Minutes – Open Session A. June 27, 2023	
5		2. June Investment Forum Debrief	Beth Holzberger
5		3. October Workshop Preview	Todd Mattina
10		4. Q2 2023 Quarterly Updates	Mike Shearer Nick Stanton
	Motion	CLOSED SESSION*	
	Motion	RECONVENE IN OPEN SESSION	
		5. Announcement of Committee Actions Relating to Items Taken Up in Closed Session	
		6. Soft Risk Parameters (No presentation unless requested)	
		7. Fair Value Measurement Review of WRS Investments (No presentation unless requested)	
		8. Future Meeting Topics	
	Motion	9. Motion to Adjourn	

* A motion to go into closed session at this meeting is authorized pursuant to sections 19.85(1)(e) and 19.36(5) of the Wisconsin Statutes (a) to consider confidential strategies for the investment of public funds, including (i) the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds and (ii) the review of specific proprietary investment strategies and investment instruments related to global equities, small cap equities, short-term credit, fixed income strategies and exposure management, and (b) to discuss and approve prior closed session minutes that discuss the same. The Committee may convene in additional closed sessions or announce additional closed session items at the meeting in accordance with the procedure outlined in the Attorney General’s Opinion reported at 66 OAG 106 (1977). Whenever a closed session is held, the committee will subsequently reconvene in open session to cover remaining agenda items.

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Future Meetings

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- Todd Mattina**, Head Economist, Asset & Risk Allocation–CIO
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- Derek Drummond**, Head of Funds Alpha
- Diane Linn**, Senior Portfolio Manager–Multi-Asset Strategies
- Lin Maung**, Senior Portfolio Manager–Private Equity
- Jason Rector**, Portfolio Manager–Funds Alpha
- Mike Shearer**, Head of Fixed Income Strategies
- Nick Stanton**, Head of Multi-Asset Strategies
- Ivy Zhang**, Senior Portfolio Manager–Asset & Risk Allocation

Non-voting Committee Members

- Rochelle Klaskin**, Deputy Executive Director/CAO
- Sara Chandler (Secretary)**, Chief Legal Counsel
- Hassan Chehime**, Head of Risk Management

Board Meeting

Tab 6 – Quarterly Investment Update, Q1 2023

Summary: Mr. Denson and Mr. Mattina will provide a review of the Q1 2023 markets and performance.



Quarterly Investment Update

Board Meeting

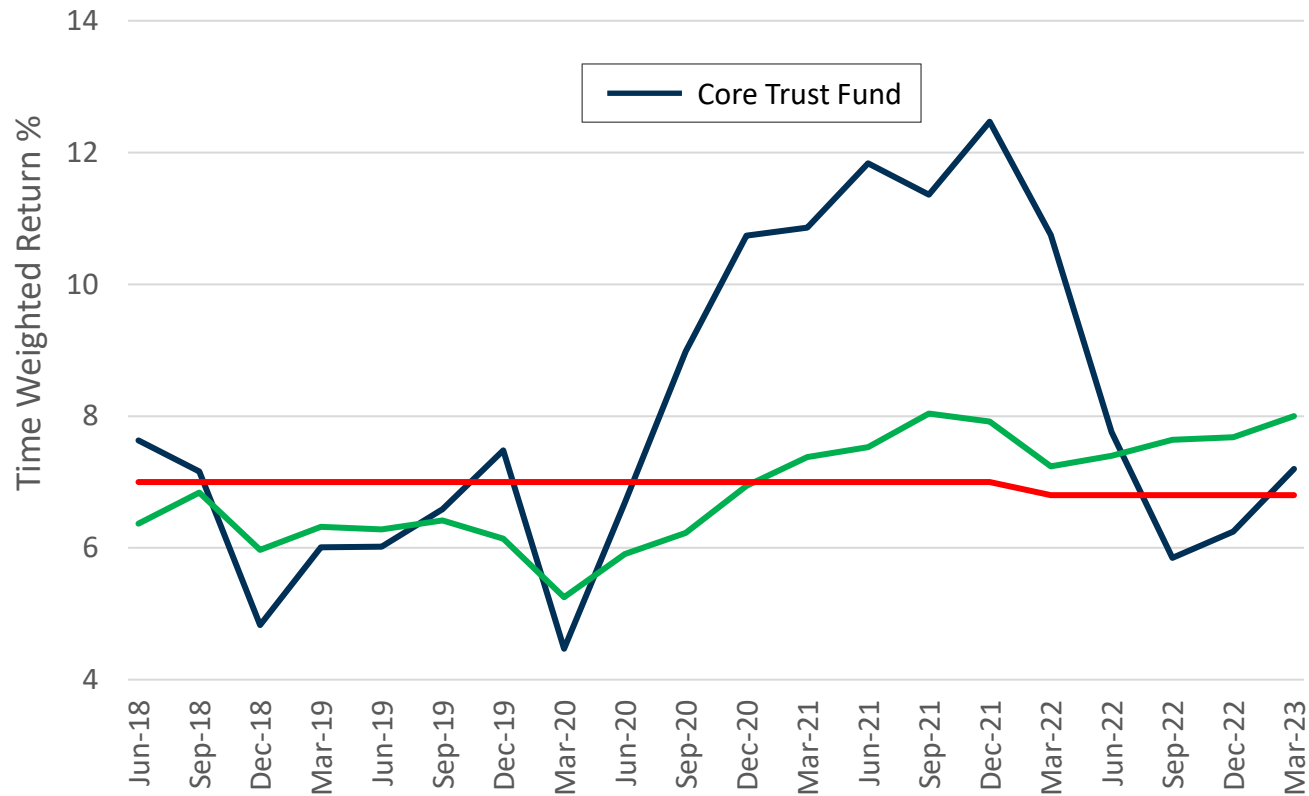
June 14, 2023

Performance Trends & Outlook

CTF 5 Year Rolling Return Trend

Quarter-end Results Through March 31, 2023

**CTF 5 Year Rolling Annualized
Net of External Manager Fee Return % ("NOF" Return)**



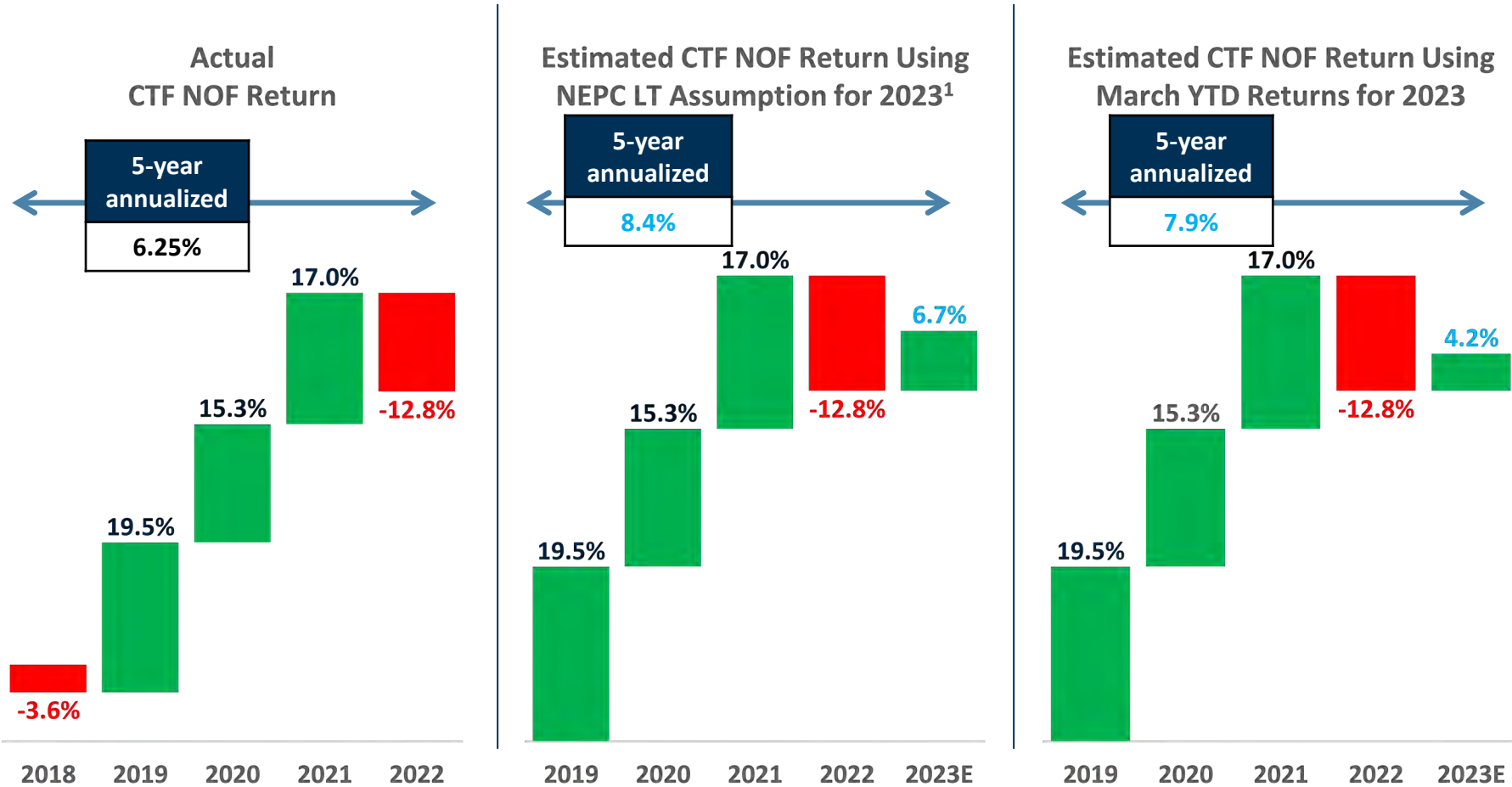
5 Year Annualized NOF Return (as of March 31, 2023)	
7.20%	Core Trust Fund
6.58%	CTF Policy Benchmark

8.00%
CTF 20-year NOF Return

6.8%
Actuarial Target Rate of Return

CTF 5-year Return Estimate

Calendar year and 5-year annualized returns



¹The NEPC 10-year expected return assumption is used to estimate 2023

CTF Policy Benchmark & Other Indices

Equity and Fixed Income asset classes declined severely last year

April 30, 2023: Total Rate of Return %, Annualized					
Index Name (Gross Return Basis, unless noted)	YTD	1yr	5yr	10yr	10yr volatility
CTF Policy Benchmark (Gross)	4.8	(0.3)	6.8	6.9	8.5
MSCI USA	9.1	1.9	11.3	12.1	15.0
MSCI USA Small Cap	2.5	(1.6)	6.7	9.4	18.7
MSCI World ex US Equities	11.1	7.1	3.9	4.7	14.9
MSCI World ex US Equities (Local)	9.7	7.1	6.0	7.2	12.3
MSCI EAFE Small Cap	7.2	(0.8)	1.4	6.1	16.2
MSCI Emerging Markets ex China	4.6	(6.3)	1.6		
MSCI China	(0.7)	(5.6)	(4.9)	2.9	23.1
MSCI ACWI	9.0	2.6	7.6	8.5	14.4
MSCI ACWI (Local)	8.7	2.9	8.5	9.7	13.2
Bloomberg US Gov't / Credit	3.8	(0.3)	1.5	1.4	4.7
ICE BOFA High Yield BB/B	4.4	1.5	3.4	4.0	7.2
Bloomberg U.S. TIPS	3.5	(4.0)	3.0	1.4	5.3

Source: Factset, SWIB

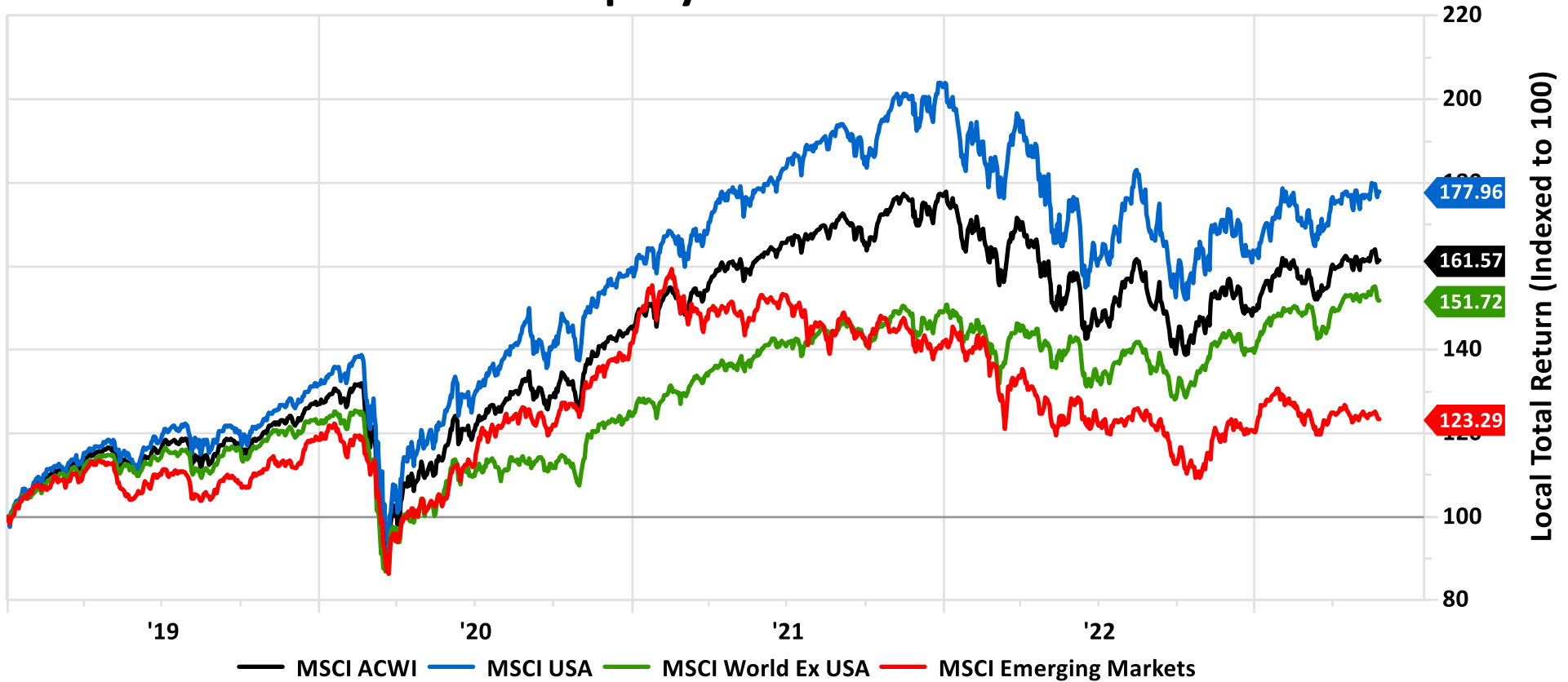
Asset Class Review

Global Equities - Performance

Developed market equities improved YTD following 2022 losses; EM remains flat

05/26/2023

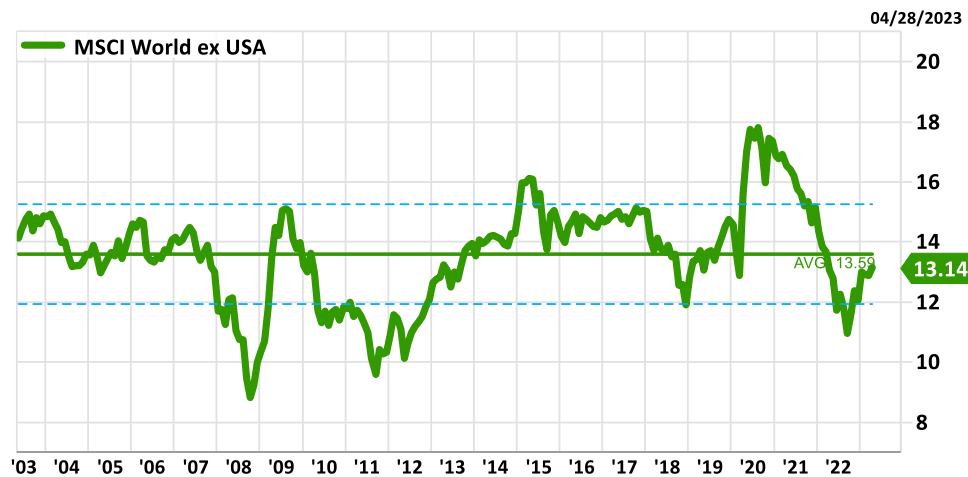
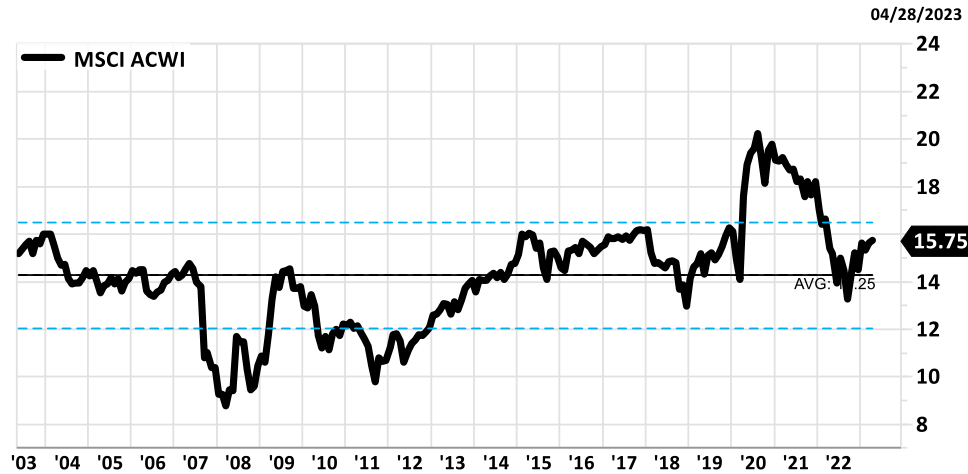
Local Equity Performance



Source: FactSet

Global Equities - Valuation

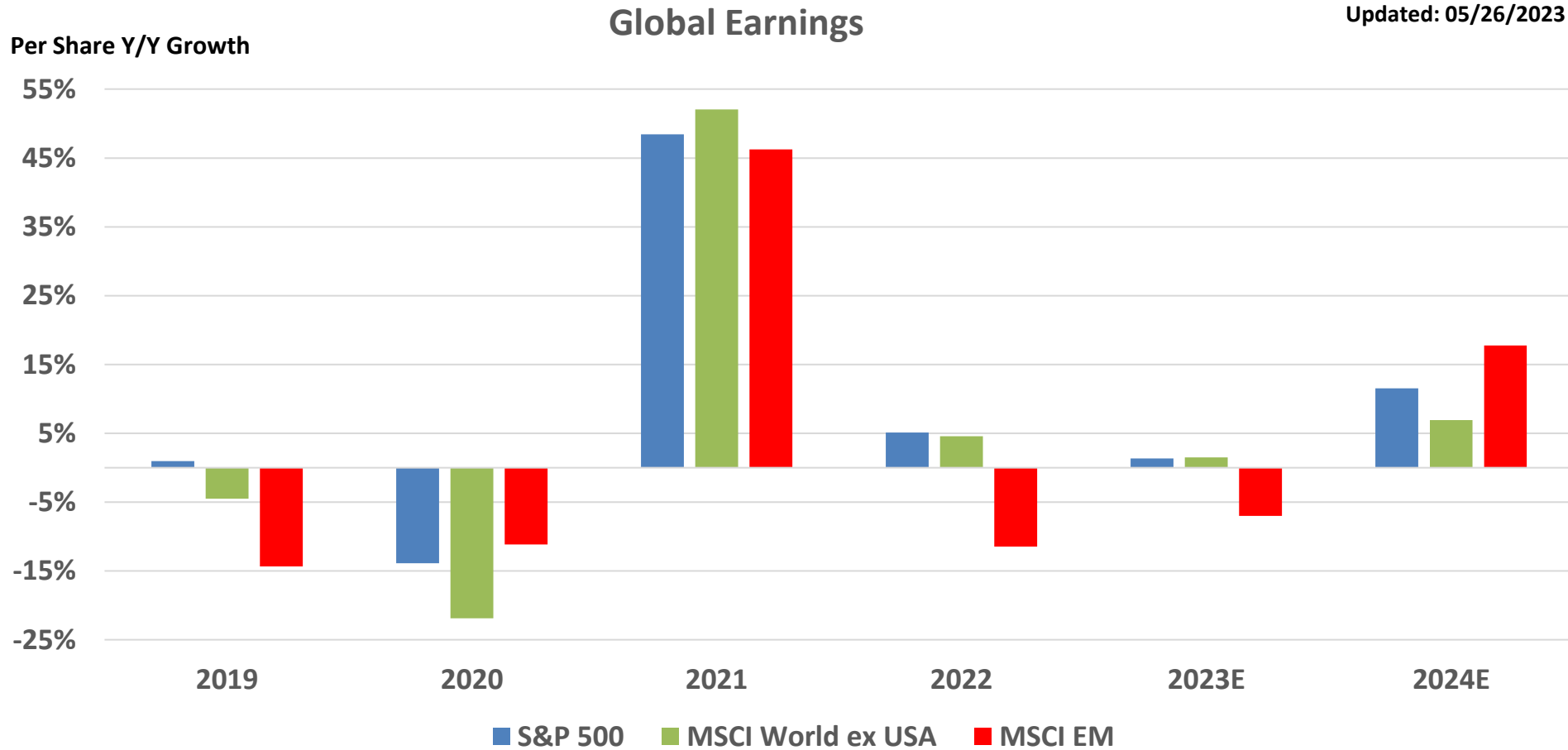
US P/E ratios are above 20-year average; EM as well, impacted by lower forward EPS



Source: FactSet Market Aggregates - Next Twelve Month P/E Ratio, monthly, 20-year Average with 1 Std. Dev. Bands

Earnings Growth

EM earnings growth forecast turns positive in 2024



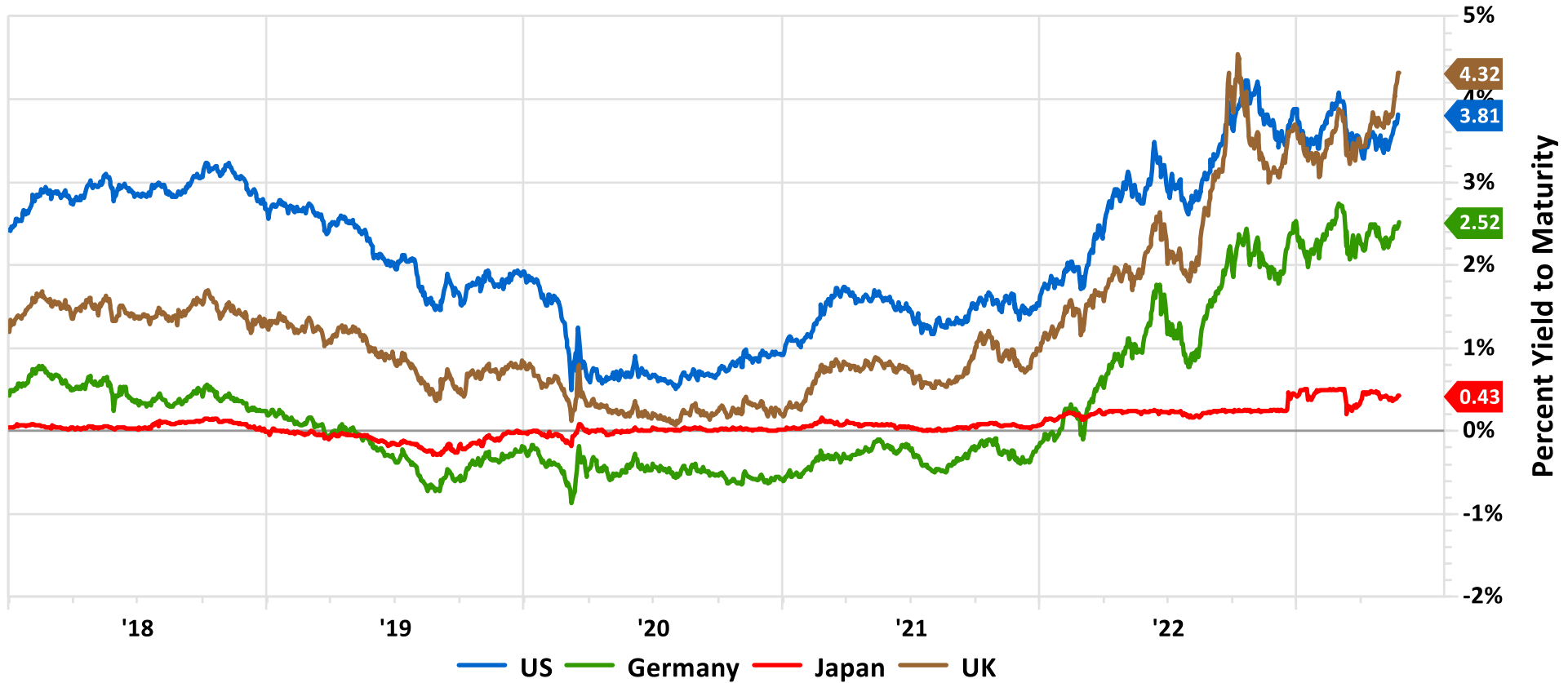
Source: Analyst Consensus; FactSet

Global Bonds

DM yields have moved higher in recent weeks, a notable surge in UK

05/26/2023

10-Year Government Bond Yields

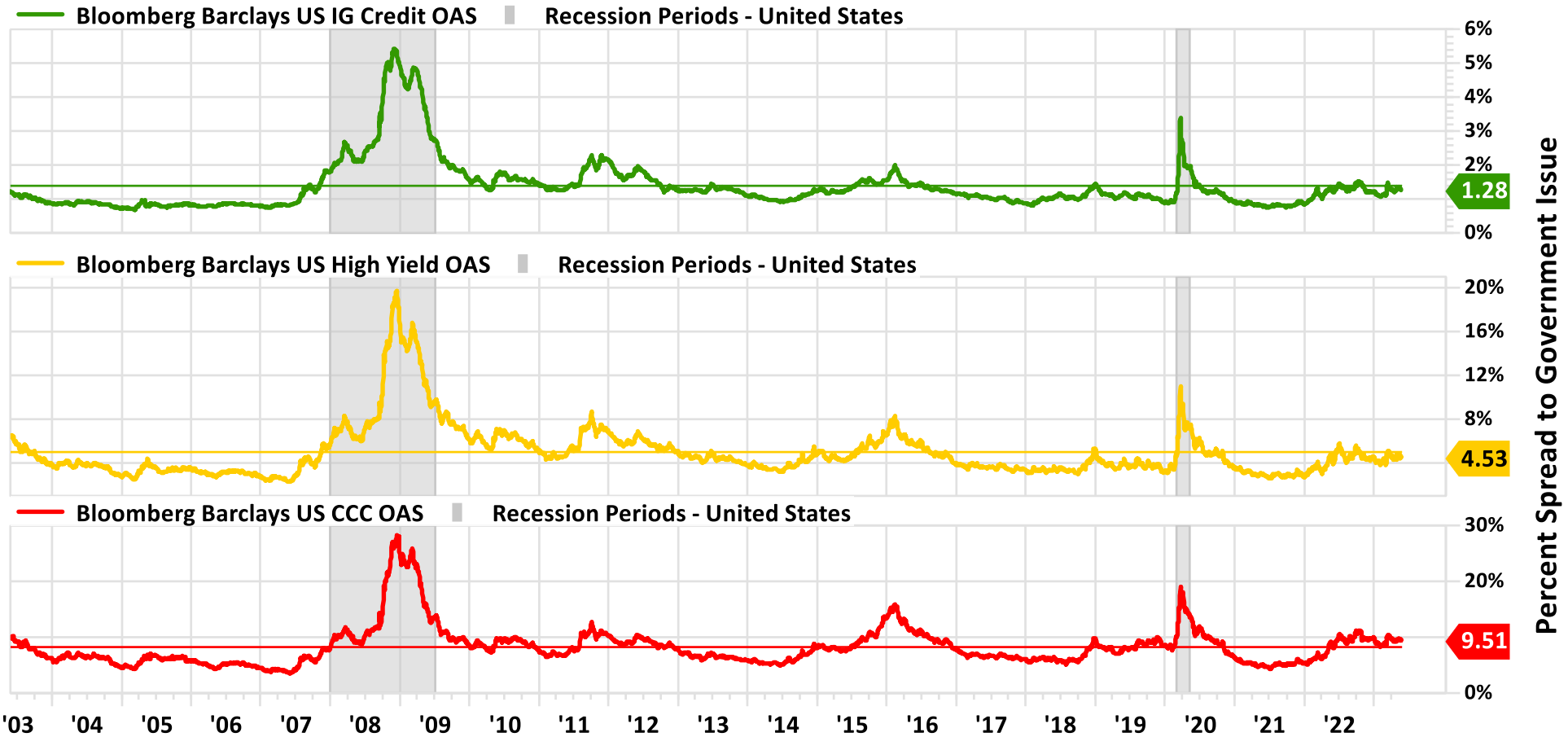


Source: FactSet

Credit Sectors

Spread levels near the long run averages

05/26/2023



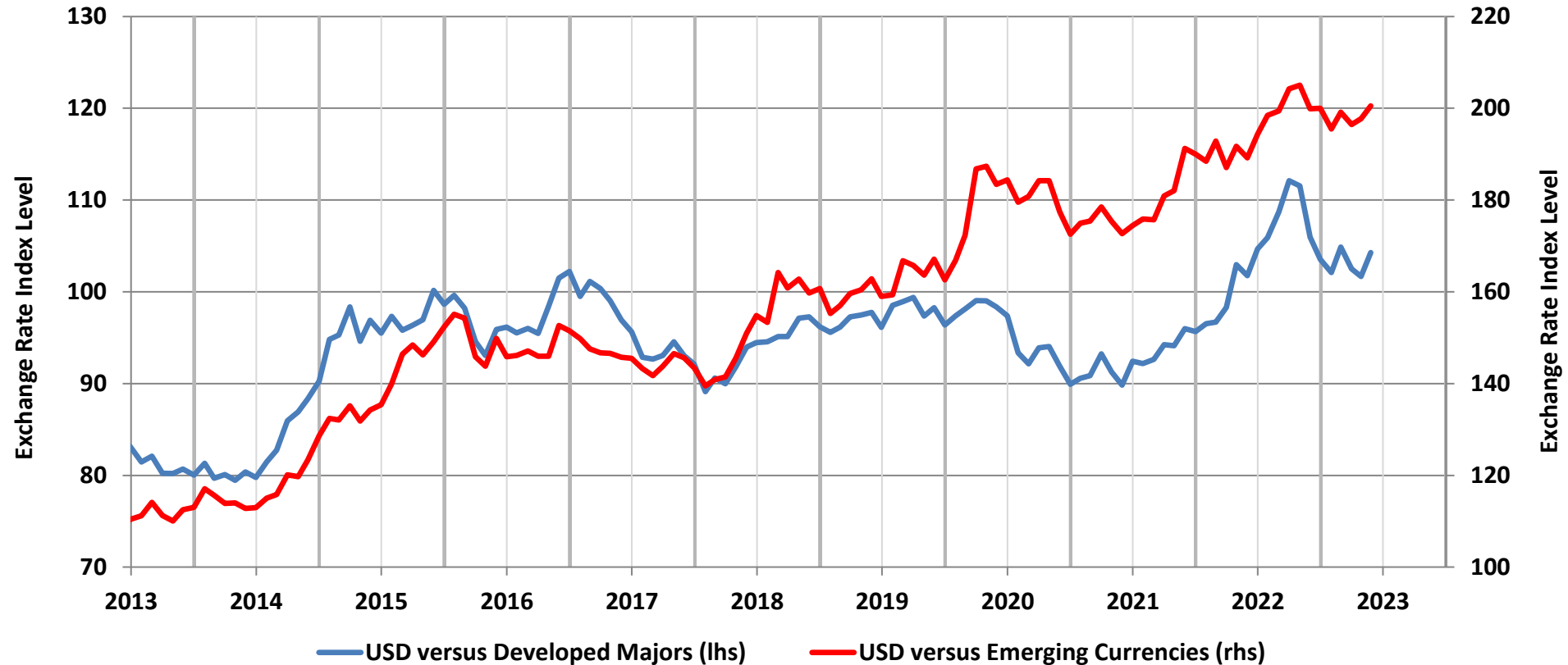
Source: FactSet

Currency Performance

U.S. Dollar rebounding in recent weeks, following dramatic decline over past 2 quarters

Foreign Exchange Rates

Updated: 05/26/2023



Source: Bloomberg, DXY Index, JPM Emerging Markets Currency Index (Inverted)

U.S. Inflation

Medium term expectations have declined in 2023, and remain volatile

As of: 05/26/2023

US 5 Year Breakeven Inflation



Source: Bloomberg

Board Meeting

Tab 7 – Announcement of Matters Taken Up in Closed Session

Board Meeting

Tab 8 – In the Absence of Questions, the Following Reports will be filed without comment (for informational purposes):

- A. Quarterly Charges to Funds Reports, Q1 2023
- B. Private Markets and Funds Alpha Commitments, Q1 2023

May 12, 2023

Senator Howard Marklein, Co-Chair
 Joint Committee on Finance
 P.O. Box 7882
 Madison, WI 53707

Representative Mark Born, Co-Chair
 Joint Committee on Finance
 P.O. Box 8952
 Madison, WI 53708

Senator Eric Wimberger, Co-Chair
 Joint Legislative Audit Committee
 P.O. Box 7882
 Madison, WI 53707

Representative Robert Wittke, Co-Chair
 Joint Legislative Audit Committee
 P.O. Box 8953
 Madison, WI 53708

Secretary Kathy Blumenfeld
 Department of Administration
 101 East Wilson Street
 P.O. Box 7864
 Madison, WI 53707

Dear Senator Marklein, Senator Wimberger, Representative Born, Representative Wittke and Secretary Blumenfeld:

State statutes require the State of Wisconsin Investment Board (SWIB) to report all expenses charged to the trust funds under management and the number of full-time equivalent positions created or abolished during the quarter¹. The information contained in this report is for the quarter ended March 31, 2023.

Total Cost of Management Summary	2Q2022	3Q2022	4Q2022	1Q2023	Trailing 4 Qtr Total	% of Total
Internal Operating Expenses						
Operating Budget Expenses	\$ 42,801,859	\$ 13,275,388	\$ 16,013,990	\$ 14,718,435	\$ 86,809,672	63.9%
Custodial, Investment Operations & Banking	1,692,456	1,647,965	1,961,451	2,057,242	7,359,114	5.4%
Legal	625,000	625,000	371,714	561,635	2,183,349	1.6%
Investment Research & Consulting	9,150,155	9,112,954	7,570,768	8,387,483	34,221,360	25.3%
Total Internal Operating Expenses	\$ 54,269,470	\$ 24,661,307	\$ 25,917,923	\$ 25,724,795	\$ 130,573,495	96.2%
Securities Lending Agent Expenses	\$ 1,412,138	\$ 1,198,959	\$ 1,125,732	\$ 1,455,665	\$ 5,192,494	3.8%
Total SWIB Operating Costs	\$ 55,681,608	\$ 25,860,266	\$ 27,043,655	\$ 27,180,460	\$ 135,765,989	100.0%
External Investment Management Fees						
Externally Managed Separate Account Fees						
Beta One & Other - Separately Managed	\$ 6,621,385	\$ 15,970,497	\$ 12,231,686	\$ 10,289,679	\$ 45,113,247	6.2%
Supplemental Information - External Fund Fees						
Real Estate	\$ 19,257,344	\$ 20,775,122	\$ 20,890,279	\$ 19,702,319	\$ 80,625,065	11.1%
Private Equity & Venture Capital	72,498,709	67,722,428	72,422,893	55,955,436	268,599,465	36.8%
Hedge Funds	60,862,749	58,023,466	61,423,994	52,940,887	233,251,096	32.0%
Beta One & Other - External Funds	26,091,654	3,044,345	15,891,147	55,999,027	101,026,172	13.9%
Total External Investment Management Fees	\$ 185,331,841	\$ 165,535,858	\$ 182,859,999	\$ 194,887,348	\$ 728,615,045	100.0%
Total Cost of Management	\$ 241,013,449	\$ 191,396,124	\$ 209,903,654	\$ 222,067,808	\$ 864,381,034	

¹Wisconsin Statutes Section 25.17 (13m): Investment-related costs and expenses charged to the WRS Trust Funds, State Investment Fund, State Life Insurance Fund, Historical Society Endowment Fund, Injured Patients and Families Compensation Fund and UW Trust Fund. Investment transaction expenses, such as trading commissions and interest expense, are included in investment returns, and therefore not included in this report.

SWIB operating costs are charged to the trust funds under management. Externally managed fund fees for commingled assets are netted against investment returns generated by SWIB's external fund holdings. It is important to consider costs in the context of value-added investment returns. For example, during the five years ended December 31, 2022, after consideration of all expenses, costs, and fees, SWIB generated more than \$2.7 billion in additional profits beyond what would have been generated by the benchmark portfolio SWIB is measured against. These profits all go directly into the Wisconsin Retirement System for the benefit of its beneficiaries.


Attachment A provides a breakdown of the amount and percentage of assets managed under each type of dedicated and commingled account or partnership, and the change in the amount and percentage from the prior calendar quarter. As of March 31, 2023, SWIB's total authorized positions are 290 as shown in the table below.

Assets Under Management & Positions		
	12/31/2022	03/31/2023
Internal Management	45.0%	46.5%
External Management	55.0%	53.5%
Total SWIB Positions	290	290

In addition, Attachment B provides details of the services provided to SWIB and their associated quarterly costs. For definitions of the expense categories presented in the Total Cost of Management Summary table, please refer to Attachment C.

As new investment strategies are implemented and markets continue to evolve, SWIB will continue evaluating the most efficient means to manage the trust fund assets. Please contact us if you have any questions or comments about this report.

Sincerely,



Edwin Denson
Executive Director/Chief Investment Officer

Attachments

cc: Members, Joint Committee on Finance
Members, Joint Committee on Audit
Robert Lang, Legislative Fiscal Bureau
Joe Chrisman, Legislative Audit Bureau

Total Assets Under Management

Wisconsin Retirement System (WRS)	6/30/2022		9/30/2022		12/31/2022		3/31/2023	
	Amount (in millions)	Percent	Amount (in millions)	Percent	Amount (in millions)	Percent	Amount (in millions)	Percent
Internally Managed Assets	\$52,094	41.7%	\$45,843	39.1%	\$46,587	37.9%	\$49,730	39.2%
Externally Managed Dedicated Assets	27,907	22.4%	26,743	22.8%	29,344	23.9%	29,282	23.1%
Externally Managed Commingled Assets	44,852	35.9%	44,579	38.0%	46,979	38.2%	47,809	37.7%
1. Passive Index	1,689	1.4%	1,711	1.5%	1,488	1.2%	1,168	0.9%
2. Limited Partnerships	30,212	24.2%	30,771	26.3%	31,719	25.8%	32,060	25.3%
3. Active Managed Commingled	12,950	10.4%	12,097	10.3%	13,772	11.2%	14,581	11.5%
TOTAL WRS Assets	\$124,853	100.0%	\$117,165	100.0%	\$122,910	100.0%	\$126,821	100.0%
State Investment Fund - Internally Managed	\$18,401		\$17,876		\$17,742		\$19,285	
Separately Managed Funds - Internally Managed	\$101		\$93		\$95		\$98	
Separately Managed Funds - Externally Managed	\$2,409		\$2,438		\$2,523		\$2,582	
Total SWIB Assets Under Management	\$145,764		\$137,573		\$143,269		\$148,786	
Total Internal Management	\$70,596	48.4%	\$63,813	46.4%	\$64,423	45.0%	\$69,113	46.5%
Total External Management	\$75,168	51.6%	\$73,760	53.6%	\$78,846	55.0%	\$79,673	53.5%

STATE OF WISCONSIN INVESTMENT BOARD
Expenses for All Funds Under Management
Quarter Ending March 31, 2023

EXPENSE CATEGORY	SERVICE PROVIDED	EXPENSES
<u>Internal Expenses</u>		
Staff Compensation	Staff Compensation	\$ 10,363,827
Fringe Benefits	Fringe Benefits	2,898,899
Supplies, Travel & Facilities	General Supplies & Services	1,455,709
Total Internal Expenses		\$ 14,718,435
<u>Custodial, Investment Operations and Banking Fees</u>		
BNY Mellon Asset Servicing - Custody	Master Custody Services	\$ 393,556
BNY Mellon Asset Servicing - Investment Operations	Investment Operating Services	1,328,494
Markit NA	Investment Data Management Software	335,201
US Bank	Banking Fees	(9)
Total Custodial, Investment Operations and Banking Fees		\$ 2,057,242
<u>Legal Fees</u>		
Chapman & Cutler LLP	Legal Work for Investment Strategies	\$ 60,396
DLA Piper LLP (US)	Legal Work for Investment Strategies	59,466
Godfrey & Kahn SC	Legal Work for Investment Strategies	20,223
Latham & Watkins LLP	Legal Work for Investment Strategies	1,265
Legal Services Expense Accrual	Legal Work for Investment Strategies	300,367
Neal Gerber Eisenberg	Legal Work for Investment Strategies	35,989
Quarles & Brady	Legal Work for Investment Strategies	81,285
Rutherford & Bechtold LLC	Legal Work for Investment Strategies	2,645
Total Legal Fees		\$ 561,635
<u>Investment Counsel</u>		
AE Business Solutions	Information Technology Consulting Services	\$ 18,000
Aksia LLC	Hedge Fund Investment Consulting	193,750
Alex Solutions	Research and Data Services	40,750
Algomi Corporation	Investment Consulting Services	7,058
Apex Systems	Investment Consulting Services	65,822
Arthur Selender	Investment Consulting Services	13,000
Automation Anywhere, Inc.	Process Automation Software	49,400
Backstop Solutions Group	Investment Software	(23,792)
Barrons	Investment Research	62
BCA Research Inc	Global & Domestic Fixed Income Strategy Research	34,125
Blacklight Technology Partners, LLC	Research and Data Services	31,500
Blackrock Financial Management Inc	Risk Services	85,000
Bloomberg Finance LP	Market, Company, Industry & Benchmark Information	1,073,424
BNY Mellon Asset Servicing - Eagle/Pace	Investment Consulting Services	115,000
Bonfire Interactive LTD	Strategic Sourcing Software	20,000
Bridge Consulting Partners Ltd	Investment Consulting Services	43,040
Callan Associates Inc	Investment Consulting & Performance Benchmarking	12,500
CappThesis, LLC	Research and Data Services	2,500
Carahsoft Technology Corp	Investment Consulting Services	26,767
CBJL Incorporated	Investment Consulting Services	99,220
CBOE Global Markets, Inc.	Research and Data Services	4,860
CFRA Research	Investment Research Services	21,637
Charles River System Inc	Portfolio Management Trading Software & Services	445,498
CoStar Portfolio Strategy	Real Estate Consulting & Research Services	28,738
CUSIP Global Services	Research and Data Services	16,250
Cutter Associates	Investment Organization and Systems Consulting	30,400
Dacheng Xiu	Investment Research	37,500
Datacamp Inc	Research and Data Services	114
DiatomC LLC	Investment Consulting Services	95,320
Digitimes Inc	Investment Research	440
Dow Jones News Service	Company and Industry News Services	1,822
DTCC – EPN	Trade Settlement Service	3,400
DTCC ITP LLC	Trade Settlement Service	3,257
efilemyforms.com	On-Line Filing Service	70
EFront Financial Solutions Inc	Private Markets Portfolio Management Services	196,914
enableIT LLC	Investment Research	11,935
Ernst & Young LLP	Tax Compliance Services & Investment Consulting	46,000
Euromonitor International	Research and Data Services	19,766
FactSet Research Systems Inc	Financial & Economic Database	1,015,903
FIS Data Systems Inc.	Research and Data Services	15,969
Fitch Solutions Inc	Credit Rating Services	18,333
FTSE International Inc	Real Time Index Data	14,343

EXPENSE CATEGORY	SERVICE PROVIDED	EXPENSES
Funston Advisory Services LLC	Consulting Services	14,500
Gallagher	Insurance and Risk Management Services	15,647
Green Street Advisor	Real Estate Analytics	21,046
Haver Analytics	Global Macroeconomic Research	22,740
Ice Data LP	Fixed Income Indices	25,764
Institutional Limited Partners Association ILPA	Private Equity Research	5,000
Institutional Shareholder Services Inc	Proxy Voting Analysis	41,914
Intelligent Automation Consulting	Automation Consulting Services	16,200
Investment Research Expense Accrual	Investment Research	665,025
IPC Systems Inc	Trading Telecommunication System	15,258
Joyce C Knauff & Associates	Investment Consulting	40,000
Keystone Consulting Inc	Investment Information Technology Consulting Services	66,880
Knowledge Services	Recruitment Consulting	83,576
Kreischer Miller LLP	Investment Consulting Services	50,000
London Stock Exchange	London Stock Exchange Data	44,716
Mackey LLC	Research Management System	53,366
Manalo Advisors Limited	Research and Data Services	3,750
Markit Group Limited	Investment Consulting Services	7,730
Markit NA	Investment Data Management Software	27,500
Markit-EDM Limited	Investment Consulting	191,319
Matrix IDM, LLC	Investment Consulting Services	26,600
McLagan Partners Inc	Investment Compensation Data and Analysis	43,750
Meketa Investment Group	Public Markets External Manager Consultant	66,930
MNI Market News	Research and Data Services	1,947
Moodys Analytics	Economic, Currency & Bond Analysis	84,100
MSCI Inc - Risk Metrics Solutions	Research and Data Services	320,108
MSCI, Inc	Research and Data Services	62,198
NAIOP Commercial Real Estate Development Association	Investment Consulting Services	395
National Council of Real Estate Investment Fiduciaries	Real Estate Performance Research	2,500
NEPC LLC	Investment Consulting Services	80,000
Novus Partners Inc	Profit & Loss Analytics System	18,885
Nuware Technology Corp	Investment Information Technology Consulting Services	119,888
NYSE Market Inc	New York Stock Exchange Data	6,282
OptionMetrics	Investment Data Service	38,340
Options Price Reporting Authority	Quote System for Options Market	2,459
Oxford Economics USA INC	Research and Data Service	24,463
Pac-invest	Research and Data Services	12,945
Pension Real Estate Association	Real Estate Investment Research	330
Pitchbook Data Inc	Research and Data Services	17,176
PremiaLab	Investment Research	12,451
Quantum Research Consulting LLC	Investment Consulting Services	30,600
Refinitiv	Research Pricing (Autex, Baseline, FirstCall)	207,989
RIMES Technologies Corporation	Research and Data Service	81,250
Russell Investment Group	Index Data	8,932
S&P Global Market Intelligence	Industry & Corporate Research	105,825
SailPoint Technologies, Inc.	Information Security Software	18,750
Seaport Global Securities LLC	Research and Data Services	2,510
Sharp Decisions Inc	Investment Information Technology Consulting Services	90,784
Simcorp USA, Inc.	Investment System	806,163
Snowflake Inc	Research and Data Services	25,000
Solve Advisors Inc	Investment Research	10,000
Spherion	Staffing Services	6,680
Statista	Investment Research	177
StepStone Group	Private Equity Consulting Services	154,330
StepStone Group Real Estate	Real Estate Consulting Services	57,883
SWIFT SC	Research and Data Services	5,032
SystemsAccountants	Investment Information Technology Consulting Services	70,400
Taranis, Inc.	Investment Information Technology Consulting Services	68,640
Telsey Advisory Group	Consumer Sector Research	18,750
The Financial Times Limited	Investment Research	187
The Institute for Quantitative Research in Finance	Research and Data Services	5,500
The Nasdaq Stock Market, LLC	Research and Data Services	4,650
The Spaulding Group, Inc.	Audit Services	21,250
Toronto Stock Exchange	Market Data	14,601
TradeWeb	On-Line Fixed Income Trading Services	10,188
Trepp, LLC	Investment Research	50,400
Unit4 Business Software Inc	Financial & Administration Services System	77,019
Vadim Moroz	Investment Consulting Services	(27,000)
Virtu ITG Analytics LLC	Trading Transaction Cost Analysis	20,500
Visible Alpha LLC	Research and Data Services	25,633
WallachBeth Capital LLC	Investment Consulting Services	3,000
Werner De Bondt	Investment Consulting Services	5,000
Wolters Kluwer Law & Business	GDP Forecasting Services	2,891

EXPENSE CATEGORY	SERVICE PROVIDED	EXPENSES
Wolverine Execution Services LLC	Options Trading Platform	1,395
WorldBridge Partners Inc	Recruitment Consulting	120,800
Yipit, LLC	Research and Data Services	(7,500)
Total Investment Counsel		\$ 8,387,483
<u>Separate Account Public Market Management Fees</u>		
Alliance Bernstein	Public Market Management Fees	\$ 2,994,734
Blackrock	Public Market Management Fees	1,463,822
Dodge and Cox	Public Market Management Fees	742,162
Driehaus Private Equity	Public Market Management Fees	463,731
eSecLending	Public Market Management Fees	4,089
Fidelity Investments	Public Market Management Fees	1,347,494
Parametric	Public Market Management Fees	579,563
Prudential Global Investment Management (PGIM)	Public Market Management Fees	348,665
Wellington Trust Company	Public Market Management Fees	2,345,419
Total Separate Account Public Market Management Fees		\$ 10,289,679
<u>Securities Lending Agent Fees</u>		
BNY Mellon Asset Servicing	Securities Lending Agent Fees	\$ 1,455,665
Total Securities Lending Agent Fees		\$ 1,455,665
Total Quarterly Charges to Funds		\$ 37,470,139

All costs reported are on an accrual basis except for internal operating costs which are on a cash basis of accounting. Negative expense amounts are due to accrual adjustments and/or other miscellaneous adjustments.

Explanation of Expenses

Internal Operating Expenses

Internal operating expenses consist primarily of staff compensation and fringe benefits. SWIB employs a staff of professional investment and support staff to manage trust fund assets. Other internal operating expenses consist of office equipment, supplies, business travel, information technology equipment and services, and general services.

Custodial & Banking Fees

Wisconsin Certificate of Deposit Program: Under a contract with SWIB, Bankers' Bank administers the program under which the State Investment Fund (SIF) purchases certificates of deposit from Wisconsin-based banks and thrifts. Most administrative costs are paid by the participating banks. SWIB's expenses help underwrite other administrative costs, such as insurance that SWIB requires to be purchased.

BNY Mellon: Provides master custodial and administrative services (safekeeping of assets, income collection, valuations and accounting) for public and private domestic and foreign securities in the Wisconsin Retirement System (WRS), the SIF, and the other separately managed trust funds. In addition, SWIB receives performance measurement and analytical services through its contract with BNY Mellon, which serves as the official book of record for SWIB's accounting and performance measurement functions. BNY Mellon provides data and analytical tools used by SWIB for compliance and risk management. These include global collateral management, data management, and hosting services. Fees for these services are established by contract.

US Bank: The State of Wisconsin contracted with US Bank to be the state's working bank. The fees paid to US Bank by the SIF reflect bank service charges that are not directly applicable to the fund participants.

Legal Fees, Services, and Expenses

Under authority delegated by the Attorney General, pursuant to s. 25.18 (1) (a) Statutes, SWIB may employ legal counsel for any matters arising out of the scope of its investment authority. This includes legal services relating to bankruptcies, class actions, private markets transactions, fiduciary advice, securities law, investment litigation, and other similar matters.

Investment Counsel

Current law gives SWIB the authority to employ investment counsel in any matters arising out of the scope of its investment authority. Investment research and services provided include global market, industry, economic and company information, financial and performance analytics, news information, pricing and exchange data, credit ratings, financial modeling, economic forecasting, trading services, and a variety of Board consultations. These services enable SWIB to perform due diligence on current and future holdings and assist in monitoring investments.

Securities Lending Agent Fees

Securities lending programs generally earn income through the reinvestment of cash collateral posted by borrowers and through the collection of fees for loans where non-cash collateral is posted. SWIB's securities lending income is shared with the agent to pay the costs associated with the administration of the program. Securities lending agent fees are reported as expenses.

Externally Managed Separate Account Fees

External asset managers have been delegated authority within guidelines established by SWIB to determine investment strategy and purchase securities in SWIB's name within a SWIB account. Fees are typically assessed as a percentage of the market value of assets under management and in some cases, fees are based on investment performance.

External Funds Fees

SWIB invests in separate legal entities managed by external investment managers to gain exposure to select strategies including Public Markets, Private Equity, Venture Capital, Real Estate and Hedge Funds. In exchange for their investment management services, the external managers charge a fee within the entity they manage. Fees are typically assessed as a percentage of the market value of assets under management, commitments, and in some cases are based on investment performance. While the fees charged to these external vehicles do not meet the statutory definition of a cost or expense to SWIB, they are currently included in SWIB's total cost of management. Accordingly, these fees are reported as supplemental information. Beginning in 2023, External Funds Fees for private markets are reported on a net fee basis rather than gross. Net fees reflect fee offsets, waivers, and deferrals.

Private Equity Commitments*

January 2023 – March 2023

<i>Investment</i>	<i>Commitment (millions)</i>
Ashbridge Annex Fund I	\$200.0
Cortec Group Fund VIII	\$75.0
Gemspring III	\$50.0
GTCR Fund XIV	\$150.0
Hg Mercury IV	€35.0
Hg Titan 2	\$50.0
NGP XIII	\$75.0
STG VII	\$75.0
Tritium Fund III	\$40.0
Waterland Private Equity IX	€60.0
Industrials Co-Investment	\$15.0
Industrials Co-Investment	\$24.0
Healthcare Co-Investment	\$25.0
Information Technology Co-Investment	\$2.0
Materials Co-Investment	€4.3

*Includes Current Return Portfolio and Co-Investments.

Private Debt Investments/Commitments

January 2023 to March 2023

<i>Investment</i>	<i>Investment/Commitment</i>
Logistics Company	\$3,000,000
Consumer/Entertainment	\$17,000,000
Total	\$20,000,000

Real Estate Commitments

January 2023 – March 2023

<i>Investment</i>	<i>Commitment (millions)</i>
Penwood Select Industrial Partners VII, L.P.	\$100
Partner Solutions/Wilson Joint Venture, L.P.	100
HSREF VII Venture, LLC	25
Total	\$225

Funds Alpha Commitments*

January 2023 – March 2023

Manager	Commitment (Millions)
BadgerMax Fund	\$ 200
Clocktower	\$ 35
Four World Project Affleck	\$ 25
MW TOPS CTF	\$ 300
Silver Point II	\$ 250
Two Sigma WC VTF	\$ 200
Walleye WIF	\$ 30
TOTAL	\$ 1,040

**Includes Hedge Funds and Beta One*

Board Meeting

Tab 9 - Future Items for Discussion

Proposed Motion: Move to adjourn

2023 Board Meeting and Agenda Plan

March 2023	
SPCG	<p>Open Session</p> <ul style="list-style-type: none"> • Real Estate Strategy Report and Market Outlook • Corporate Governance Program Update • June Investment Forum Preview • Project Centum Update <p>Executive Closed Session</p> <ul style="list-style-type: none"> • ED/CIO Goals Review
Audit & Finance	<p>Open Session</p> <ul style="list-style-type: none"> • Annual Charter Review • Open Audit Issues Report • Approval of Draft Audit Reports • Audit Plan Status • 2023 Internal Audit Goals • Financial Reporting • Administrative Reports <p>Executive Closed Session</p> <ul style="list-style-type: none"> • Evaluation of Internal Audit Director • Internal Audit Director Compensation
Compensation & Workforce Development	<p>Open Session</p> <ul style="list-style-type: none"> • Annual Charter Review • Talent Acquisition Update • Strategic Results Scorecard Approval • Incentive Compensation Program Review • Scoring of Strategic Results Scorecard / Review Division Scorecards • Incentive Compensation Award Recommendations <p>Executive Closed Session</p> <ul style="list-style-type: none"> • Incentive Compensation Award Recommendation for Specific Individuals • ED/CIO Evaluation and Compensation
Board Meeting	<p>Open Session</p> <ul style="list-style-type: none"> • Committee Reports • Election of Secretary and Assistant Secretary • Annual Committee Assignments • Proposed Meeting Dates for Next Year • Investment Performance and Market Updates; Callan Peer Report (onsite) • Investment Committee Open Session Business • Quarterly Investment Update • Q4 Direct Charges to Funds / PMFA Commitments <p>Closed Session</p> <ul style="list-style-type: none"> • Risk Management Update • Investment Committee Closed Session Business <p>Executive Closed Session</p> <ul style="list-style-type: none"> • Incentive Compensation Award Recommendations for Specific Individuals

2023 Board Meeting and Agenda Plan

June 2023	
SPCG	<p>Open Session</p> <ul style="list-style-type: none"> • Hedge Fund Strategy Report and Market Outlook • Project Centum Update <p>Executive Closed Session</p> <ul style="list-style-type: none"> • ED/CIO Goals Review
Audit & Finance	<p>Open Session</p> <ul style="list-style-type: none"> • Open Audit Issues Report • Approval of Draft Audit Reports • Affirmations and Disclosures • Audit Plan Status • Five-Year Audit Summary • Financial Reporting • Administrative Reports <p>Executive Closed Session</p> <ul style="list-style-type: none"> • LAB Review of Statements of Economic Interest • Internal Audit Director Compensation
Compensation & Workforce Development	<p>Open Session</p> <ul style="list-style-type: none"> • Talent Acquisition Metrics • Amendments to Compensation Plans
INVESTMENT FORUM	
Board Meeting	<p>Open Session</p> <ul style="list-style-type: none"> • Committee Reports • Investment Performance and Market Updates; Callan Peer Report • Investment Committee Open Session Business • Quarterly Investment Update • Q1 Direct Charges to Funds / PMFA Commitments <p>Closed Session</p> <ul style="list-style-type: none"> • Risk Management Update • Investment Committee Closed Session Business
INVESTMENT FORUM	

2023 Board Meeting and Agenda Plan

September 2023	
SPCG	<p>Open Session</p> <ul style="list-style-type: none"> • Private Equity Strategy Report and Market Outlook • Corporate Governance 2023 Proxy Voting Review, ISS Update, and ESG Trends • Trustee Manual Review/Policies Update • October Workshop Preview • Project Centum Update <p>Closed Session</p> <ul style="list-style-type: none"> • Annual Consultant Reporting • Security Management, IT, and Data Management Update <p>Executive Closed Session</p> <ul style="list-style-type: none"> • ED/CIO Goals Review
Audit & Finance	<p>Open Session</p> <ul style="list-style-type: none"> • WRS Audited Financial Statements • Open Audit Issues Report • Approval of Draft Audit Reports • Audit Plan Status • 2024 Audit Plan Preview • Financial Reporting • Administrative Reports
Benchmark & Performance	<p>Open Session</p> <ul style="list-style-type: none"> • Annual Benchmark Preview
Board Meeting	<p>Open Session</p> <ul style="list-style-type: none"> • Committee Reports • Investment Forum Recap • Biennial Ethics Training • Fiduciary Training • Public Records Training • Investment Performance and Market Updates; Callan Peer Report • Investment Committee Open Session Business • Quarterly Investment Update • Q2 Direct Charges to Funds / PMFA Commitments <p>Closed Session</p> <ul style="list-style-type: none"> • Risk Management Update • Investment Committee Closed Session Business <p>Executive Closed Session</p> <ul style="list-style-type: none"> • Board Self-Evaluation with Governance Consultant
OCTOBER BOARD WORKSHOP	
<ul style="list-style-type: none"> • Outside Speakers • Asset Allocation review with Actuaries 	

2023 Board Meeting and Agenda Plan

December 2023	
SPCG	<p>Open Session</p> <ul style="list-style-type: none"> • Beta One Strategy Report and Market Outlook • Annual Charter Review • Project Centum Update <p>Executive Closed Session</p> <ul style="list-style-type: none"> • ED/CIO Goals Review
Audit & Finance	<p>Open Session</p> <ul style="list-style-type: none"> • SIF Audited Financial Statements • Open Audit Issues Report • Approval of Draft Audit Reports • Audit Plan Status • Strategic Plan Review • Proposed 2024 Audit Plan • Financial Reporting, including Budget and Position Request • Administrative Reports <p>Executive Closed Session</p> <ul style="list-style-type: none"> • LAB Review of Statements of Economic Interests
Benchmark & Performance	<p>Open Session</p> <ul style="list-style-type: none"> • Annual Charter, Policies, and Philosophy Review • Benchmark Consultant Report
Compensation & Workforce Development	<p>Open Session</p> <ul style="list-style-type: none"> • Compensation Philosophy Review • Compensation Consultant • Incentive Compensation Plan Changes for Next Performance Year • Incentive Compensation Projections • Annual RPM Review • People Metrics • Talent Acquisition Metrics <p>Executive Closed Session</p> <ul style="list-style-type: none"> • Succession Planning
Board Meeting	<p>Open Session</p> <ul style="list-style-type: none"> • Committee Reports • Investment Performance and Market Updates; Callan Peer Report • Cost Benchmarking Report • Asset Allocation Recommendation • Quarterly Investment Update • Investment Committee Open Session Business • Q3 Direct Charges to Funds / PMFA Commitments <p>Closed Session</p> <ul style="list-style-type: none"> • Asset Allocation Implementation • Risk Management Update • Investment Committee Closed Session Business • Annual Review of Expected Tail Loss Analysis