

## SWIB Board Meeting of March 19, 2025

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| 13. Adjourn  |     |

**Name of Meeting:** Regular Meeting of the Board of Trustees  
**Date/Time:** Wednesday, March 19, 2025 9:00 am  
**Room:** 1<sup>st</sup> Floor Conference Room  
**Address:** 4703 Madison Yards Way, Madison, WI 53705  
**Virtual:** [Join the meeting now](#); 608-267-3179, code 607801774#

| <b>OPEN SESSION</b>   |
|---|
| 1. Committee Reports – Open Session Items<br>A. Audit and Finance<br>B. Compensation and Workforce Development<br>C. Strategic Planning and Corporate Governance  |
| 2. Consent Agenda<br>A. Open Session Minutes of December 11, 2024<br>B. Recommended Actions from Committee Agendas – Open Session Items   |
| 3. Board Contact Log  |
| 4. Election of Secretary and Assistant Secretary  |
| 5. Annual Committee Assignments by Board Chair  |
| 6. Proposed 2026 Board Meeting Dates  |
| 7. Investment Performance and Market Updates<br>A. Board Investment Performance Report, Q4 2024<br>B. 2024 Callan Report  |
| 8. Committee Open Session Business<br>A. Approved Open Session Investment Committee Meeting Minutes of November 26, 2024, December 19, 2024, and January 28, 2025<br>B. Final Open Session Investment Committee Agenda for February 25, 2025 and Draft Open Session Agendas for April 1 and April 22, 2025<br>C. Draft Open Session Minutes of November 19, 2024 Enterprise Risk and Compliance Committee Meeting |
| 9. Quarterly Investment Update, Q4 2024   |

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| <b>CLOSED SESSION*</b>   |
| <b>RECONVENE IN OPEN SESSION</b>   |
| 10. Announcement of Matters Taken Up in Closed Session   |
| 11. In the Absence of Questions, the Following Reports will be Filed Without Comment (For informational purposes): <ul style="list-style-type: none"> <li>A. Quarterly Charges to Funds Reports, Q4 2024</li> <li>B. Private Markets and Funds Alpha Commitments, Q4 2024</li> </ul>                           |
| 12. Future Items for Discussion <ul style="list-style-type: none"> <li>A. 2025 Board Meeting and Agenda Plan</li> </ul>  |
| 13. Motion to Adjourn  |
| <p><i>NOTES: Items may be taken in order other than listed.</i></p> <p><i>Estimated times are for planning purposes only. Agenda items will last until discussion is concluded.</i></p> <p><i>The meeting site is physical accessible. Upon prior request, reasonable accommodations will be provided.</i></p> |

\*For further details on virtual format of meeting, please contact Dawn Tuescher (608-261-9341 or [dawn.tuescher@swib.state.wi.us](mailto:dawn.tuescher@swib.state.wi.us)).

\* 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 consider confidential and proprietary strategies for the investment of public funds relating to specific proprietary investment strategies of internal WRS portfolios, asset allocation, and risk management, and/or for any comments or discussion on prior closed session minutes that discuss the same; (ii) Section 19.85(1)(c) of the Wisconsin Statutes to discuss the compensation and performance evaluation data of specific SWIB employees, including SWIB’s executive director/chief investment officer and SWIB’s board of trustees, and/or for any comments or discussion on prior closed session minutes that discuss the same; 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, and/or for any comments or discussion on prior closed session minutes that discuss the same. 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.

## Board Meeting

### Tab 1 – Committee Reports – Open Session Items

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

## Board Meeting

### Tab 2 – Consent Agenda

- A. Open Session Minutes of December 11, 2024
- B. Recommended Actions from Committee Agendas –  
Open Session Items

***Regular Meeting of the Board of Trustees***

**Wednesday, March 19, 2025**

**STATE OF WISCONSIN INVESTMENT BOARD**

**CONSENT AGENDA – OPEN SESSION ITEMS**

**Proposed Motions:**

1. Move to approve the Open Session Minutes of December 11, 2024, as presented.
2. *[TBD after Committee meetings]*

**STATE OF WISCONSIN INVESTMENT BOARD**  
*Board Meeting – Open Session*

**Wednesday, December 11, 2024**

Office of the Investment Board  
4703 Madison Yards Way, Madison, WI

**Board Members Present:** Clyde Tinnen, Chair  
Esther Ancel, Trustee  
Barb Bolens, Trustee  
Kathy Blumenfeld, Trustee  
Jeff DeAngelis, Trustee  
Tom Merfeld, Trustee  
Dave Schalow, Trustee  
Robert Scott, Trustee  
John Voelker, Trustee

**Staff/Others Present:** Nathan Ballard, Senior Legal Counsel  
Eric Barber, Chief Legal Counsel  
Brandon Brickner, Head of Internal Audit  
Sara Chandler, Chief of Staff & Strategy  
Hassan Chehime, Head of Risk Management  
Maggie Clanfield, Financial Accountant  
Christian Comito, Senior Portfolio Manager  
Edwin Denson, Executive Director/Chief Investment Officer  
Anne-Marie Fink, Private Markets & Funds Alpha CIO  
Greg Fletcher, Performance Director  
Shannon Gannon, Communications Director  
Jameson Greenfield, Chief Financial Officer  
Dan Gyorog, Internal Auditor  
Brian Heimsoth, Senior Portfolio Manager  
Nick Johnson, Financial Manager  
Phil Johnson, Senior Portfolio Manager  
Rochelle Klaskin, Deputy Executive Director/Chief Operating Officer  
Jon Loboda, Performance Measurement Operations Manager  
Todd Mattina, Head Economist, Asset & Risk Allocation CIO  
Frank Mazzucco, Senior Legal Counsel  
Jay Risch, Government Relations Liaison  
Mike Shearer, Head of Fixed Income Strategies  
Nick Stanton, Head of Multi-Asset Strategies  
Dawn Tuescher, Executive Administrative Assistant  
Joe Nankof, NEPC  
Sam Rebenstorf, Legislative Audit Bureau  
Mc Cyril Espanol, With Intelligence  
Judith Stadler, Public Attendee  
Steve Glass, Public Attendee  
Bob Schaefer, Public Attendee  
Eric Hanson, Public Attendee

Anne Steinberg, Public Attendee  
Peter Knotek, Public Attendee  
Mimi H, Public Attendee

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

Trustee Tinnen, Chair of the Board of Trustees, declared a quorum was present and called the Board of Trustees meeting to order at 9:45 a.m. on December 11, 2024.

## **1. Committee Reports – Open Session Items**

### **A. Audit and Finance Committee**

Trustee Merfeld, Chair of the Audit and Finance Committee, reported that in open session, the Committee: (i) approved prior meeting minutes; (ii) approved the State Investment Fund Audited Financial Statements for Fiscal Year 2024; (iii) reviewed the Open Audit Issues Report as of November 30, 2024; (iv) approved Draft Audit Reports for Exposure Management and Private Debt; (v) received a status update on the 2024 Internal Audit Plan; (vi) approved the 2025 Internal Audit Plan; and (vii) reviewed the Total Cost of Management Plan for Calendar Year 2025 and recommended that the board approve the same.

### **B. 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; (ii) reviewed the Committee’s Charter, Policies, and Benchmarking Philosophy and recommended that the Board approve amendments to all three documents; and (iii) received the Comprehensive Benchmark Review from NEPC and recommended that the Board approve the benchmark changes recommended by NEPC and the Investment Committee.

### **C. Compensation and Workforce Development Committee**

Trustee DeAngelis, Chair of the Compensation and Workforce Development Committee, reported that in open session the Committee: (i) approved prior meeting minutes; (ii) reviewed the Compensation Philosophy; (iii) recommended considered changes to the Compensation Plan and recommended that the Board approve the same; (iv) received a Compensation Consultant Report; (v) reviewed the 2024 Incentive Compensation projections; (vi) received an Employee Engagement Update; and (vi) received a presentation on the Annual RPM Review and recommended that the Board approve an new Relative Performance Maximum (“RPM”) for the TBA Strategy portfolio.

### **D. Strategic Planning and Corporate Governance Committee**

Trustee Tinnen, Chair of the Strategic Planning and Corporate Governance Committee, reported that in its open session meeting the Committee: (i) approved prior meeting minutes; (ii) reviewed the Trustees’ Framework for Board Composition and considered changes to the Committee Charter and recommended that the Board approve the same; (iii) received the Beta One Strategy Report and Market Outlook; and (iv) received a final progress report on Project Centum.

## **2. Consent Agenda**

Eric Barber, Chief Legal Counsel, distributed a proposed consent agenda. Trustee Tinnen asked whether there were any motions listed on the consent agenda that should be removed for further discussion and



individual action. Hearing none, he referred to the following items on the consent agenda:

- Move to approve the Open Session Minutes of September 11 and October 15-16, 2024, as presented.
- Move to approve the Total Cost of Management Plan for Calendar Year 2025, as recommended by the Audit and Finance Committee and as set forth in the Committee's meeting materials.
- Move to approve the changes to the Benchmark and Performance Committee Charter, the Committee Policies, and the SWIB Benchmarking Philosophy, as recommended by the Benchmark and Performance Committee and as set forth in the Committee's meeting materials.
- Move to approve, as recommended by the Benchmark and Performance Committee, the benchmark changes highlighted and described in the Committee's meeting materials, to be effective on or after January 1, 2025, and that all other benchmarks remain unchanged.
- Move to approve the amended Compensation Plan, as recommended by the Compensation and Workforce Development Committee and as set forth in the Committee's meeting materials.
- Move to approve, as recommended by the Compensation and Workforce Development Committee, (i) the RPM for the TBA Strategy effective beginning in 2025, as presented in the Committee's meeting materials; and (ii) all other RPMs remain unchanged.
- Move to approve the changes to the Strategic Planning and Corporate Governance Committee Charter, as recommended by the Strategic Planning and Corporate Governance Committee and as set forth in the Committee's meeting materials.

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

### **3. Investment Performance and Market Updates**

#### **A. Board Investment Performance Report, Q3 2024**

Greg Fletcher, Performance Director, presented the Investment Performance Report, as of September 30, 2024, included on pages 21-36 of the meeting materials. Mr. Fletcher reported that: (i) the Core Trust Fund ("CTF") returned 5.01% net of all fees and expenses in Q3 2024, resulting in excess performance of 15 basis points (bps) for the quarter; (ii) the CTF returned 17.87% net of all fees and expenses for the one-year period, resulting in an excess return of 108 bps; (iii) the CTF five-year return net of all fees and expenses was 8.61% and outperformed the CTF Benchmark by 73 bps on an annualized basis; and (iv) the CTF net of external manager fee return outperformed the 60/40 Reference Portfolio return by 37.2% (cumulative) over the past twenty years, which equates to an excess value add of \$19.1 billion over the same period.

Mr. Fletcher highlighted: (i) the CTF net of all fees and expenses return outperformed its benchmark for the year-to-date, one-, three-, and five-year time periods; (ii) the CTF net of external manager fee return outperformed its benchmark for the ten-, fifteen-, and twenty-year time periods; (iii) the CTF gross of fee return outperformed its benchmark for the thirty-year time period; (iv) the Variable Trust Fund ("VTF") net of all fees and expenses return outperformed for the year-to-date and one-year time periods and underperformed for the three- and five-year periods; (v) the VTF net of external manager fee return met its benchmark for the ten-year period and outperformed its benchmark for the fifteen- and twenty-year

time periods; and (vi) the VTF gross of fee return outperformed its benchmark for the thirty-year time period. Mr. Fletcher then noted that SWIB's investment management has added more than \$4.1 billion above benchmark returns to the WRS over the last five years.

Mr. Fletcher reviewed the overall assets under management ("AUM") of SWIB, noting that the gross market value of assets increased by \$19 billion over the past year. He then referenced that the percentage of WRS assets that are actively managed has declined, driven by a variety of factors, and the percentage of WRS assets that are internally managed remained consistent. 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 asset allocation target ranges; (ii) reviewed the asset class performance for the CTF over various time periods and discussed the performance of the alpha pool overlay; (iii) reviewed VTF performance and asset class exposures, noting that asset class exposures were within target ranges; and (iv) presented return information for the Separately Managed Funds.

Finally, Mr. Fletcher reviewed the Leverage Performance, included on page 38 of the meeting materials. He noted that policy leverage contributed 53 bps to CTF absolute performance year-to-date and remained a positive contributor over the one- and five-year periods.

## **B. Callan Quarterly Report**

Mr. Fletcher noted that the Callan Quarterly Report Summary, as of September 30, 2024, was included on pages 39-53 of the meeting materials. He highlighted that the CTF's total fund unadjusted performance exceeds policy target for all periods, is in the second percentile of the peer group for the last one-year time period, is near median of the peer group for the five- and ten-year periods, but below median of the peer group for the three-year period. On an asset allocation adjusted basis, the CTF's rankings are in the second quartile for the last quarter, one-, three-, five- and ten-year periods. When comparing the CTF ten-year cumulative performance to peers, Mr. Fletcher noted the CTF exhibits low tracking error relative to its peers and produces stable, ascending cumulative performance over 10 years.

### **4. Annual Presentation on Cost Benchmarking**

Jameson Greenfield, Chief Financial Officer, presented the annual SWIB's Cost Effectiveness Annual Evaluation, included on pages 56-66 in the meeting materials. Mr. Greenfield reported that, based on data collected and analyzed by CEM, the Board's independent cost consultant, SWIB's 2023 total costs (excluding performance fees) were equal to the U.S. peer median, 0.6 bps higher than the hypothetical CEM benchmark cost, but nearly 6 bps lower than the U.S Public Universe. SWIB's costs exceeded peer median by 17 bps when including performance fees, but this is predominantly due to hedge fund performance fees, which must be considered in the context of the total return generated from the asset class (*i.e.*, higher hedge fund performance fees are largely a function of superior hedge fund returns). Mr. Greenfield also noted that SWIB's 5-year cost comparison was in the Appendix.

### **5. Asset Allocation Recommendations for 2025**

Joe Nankof, NEPC, and Todd Mattina, Head Economist & Asset and Risk Allocation Chief Investment Officer, presented the Asset Allocation Review, included on pages 53-108 of the meeting materials. Mr. Nankof noted that there were no meaningful changes from the asset allocation preview that was presented and discussed during the October Board Workshop. Mr. Nankof reviewed the recommendation for the CTF to increase the private equity/debt target by 2% from 18% to 20%, with a corresponding 2% decrease in the public equity target from 40% to 38%. He noted that the recommended increase in private equity/debt is consistent with the overall long-term private markets pacing plan and, according to NEPC's

capital market assumptions, would have only a limited impact on the CTF’s target return and volatility. Mr. Nankof stated that no changes were recommended for the CTF active risk target, sub-asset class target allocations, policy leverage or the VTF. Mr. Nankof and Mr. Mattina concluded by answering questions from the Board related to U.S. and global equity analysis and the liquidity impact of private markets pacing plan.

**Motion:** A motion was made by Trustee Schalow and seconded by Trustee Merfeld, to adopt and approve the asset allocation and active risk targets for the Core Trust Fund and the Variable Trust Fund as set forth and further described in the Asset Allocation Overview and Recommendations for 2025 included in the Board materials, as recommended by the Investment Committee and the Board’s asset allocation consultant, NEPC.

## **6. Committee Open Session Business**

### **A. Amendments to Enterprise Risk and Compliance Committee Charter**

Mr. Barber reviewed amendments to the Enterprise Risk and Compliance Committee Charter, approved by the Enterprise Risk and Compliance Committee (“ERCC”), and included on pages 115-117. Staff is recommending minor changes to the charter to reflect current staff titles.

**Motion:** A motion was made by Trustee Scott and seconded by Trustee Voelker, to approve the revised Enterprise Risk and Compliance Committee Charter, as recommended by the ERCC and presented in the meeting materials. The motion passed unanimously.

### **B. Amendments to WRS Investment Committee Investment Guidelines**

Mr. Barber discussed amendments to the SWIB Investment Committee Wisconsin Retirement System Investment Guidelines, approved by the Investment Committee on November 26, 2024, and included on pages 118-159 of the meeting materials. He noted that the proposed changes: (i) update the leverage use policy to add unsecured borrowing in general and the issuance of commercial paper in particular; (ii) update the rebalancing procedures to remove those applicable to the multi-asset strategy class, since it no longer is a separate asset class in the asset allocation; (iii) remove the guidelines for the closed global equity strategy; (iv) add guidelines for the TBA Strategy portfolio, previously managed within the multi-asset portfolio; and (v) revise soft risk parameters to reflect the closure of the global equity strategy and the addition of the TBA strategy portfolio.

### **C. Approved Open Session Investment Committee Minutes**

Mr. Barber stated that the approved open session minutes of the August 27, September 24, and October 22, 2024 Investment Committee meetings were included on pages 167-184 of the meeting materials for the Board’s review and noted that staff had previously reviewed the agendas for these meetings with the Board.

### **D. Agendas for Upcoming Meetings**

Mr. Barber also stated that the final open session agenda for the November 26, 2024 Investment Committee meeting and the draft open session agendas for the December 19, 2024 and January 28, 2025 meetings were included on pages 185-190 of the meeting materials for the Board’s review.

## **7. Quarterly Investment Update, Q3 2024**

Mr. Mattina, presented the Performance Trends & Outlook, included on pages 193-198 of the meeting materials. Mr. Mattina began with a review of the CTF five-year rolling annualized net of external manager fee return compared to the CTF twenty-year net of fee return and the actuarial target rate of return. He noted that despite volatility over the last few years, the five-year rolling return continues to outperform the actuarial target as well as the policy benchmark.

Mr. Mattina then provided a brief commentary on the CTF five-year return estimate, which projected a five-year annualized return of 6.8% using NEPC's assumptions for 2024. He also discussed the five-year forward estimate and highlighted the potential negative impact to the five-year annualized return as the 2019, 2020, and 2021 performance years, which had meaningfully positive performance of 19.4%, 15.2%, and 16.9%, respectively, fall out of the five-year performance time period and are replaced with the NEPC 10-year expected return assumption of 6.5%. Mr. Mattina noted that the average return required to avoid any negative dividend adjustment was a 9.5% average return for 2024-2026.

Nick Stanton, Head of Multi-Asset Strategies, and Mike Shearer, Head of Fixed Income, presented the Global Public Market Strategies Division Update, included on pages 207-217 of the meeting materials, which began with a review of the division's role and structure. Mr. Shearer reviewed the fixed income portfolios included in the Global Public Market Strategies ("GPMS") division, noting that the portfolios invest in different securities and sectors but follow a common disciplined, repeatable investment process with foundational risk management. He reviewed the portfolios' performance, commenting that while certain portfolios have experienced losses over the three-year period, there has been particularly strong performance over the past two years. He concluded with a discussion on the investment process and team dynamics, pointing to the importance of strong communication and information sharing between portfolio teams. Mr. Stanton then reviewed the U.S. Small-Cap and Multi-Strat portfolios included in the GPMS division. With respect to U.S. Small-Cap, Mr. Stanton pointed to (i) deep, fundamental, bottom-up research; (ii) long-term investment discipline; and (iii) diversification as key characteristics of the portfolio. He reviewed the performance of the U.S. Small-Cap portfolio, which has produced excess returns year-to-date as well as over the one-, three-, and five-year periods. Mr. Stanton concluded by discussing the Multi-Strat portfolio's three focus areas for alpha creation: (i) building portfolios based on fundamental signals; (ii) fundamental arbitrage that identifies security pairs that are mispriced relative to each other; and (iii) a systematic rules-based approach. Mr. Shearer and Mr. Stanton then answered questions from Board related to portfolio construction and security coverage of the investment teams.

## **8. 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 consider confidential and proprietary strategies for the investment of public funds relating to specific proprietary investment strategies of internal WRS portfolios, asset allocation, and risk management and/or for any comments or discussion on prior closed session minutes that discuss the same; (ii) Section 19.85(1)(c) of the Wisconsin Statutes to discuss the compensation and performance evaluation data of specific SWIB employees, including SWIB's executive director/chief investment officer and SWIB's board of trustees, and/or for any comments or discussion on prior closed session minutes that discuss the same; 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 and/or for any comments or discussion on prior closed session minutes that discuss the same, was made by Trustee Tinnen and seconded by Trustee Merfeld.

The Chair called for a roll call vote.

Ancel–Aye      Bolens–Aye      DeAngelis–Aye      Merfeld–Aye  
Schalow–Aye      Scott–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 11:30 a.m. and reconvened in open session at 1:54 p.m.

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

Trustee Tinnen announced that while in closed session the Board: (i) approved prior meeting minutes and items from the committee meetings’ closed session meetings; (ii) received a closed session quarterly investment update; (iii) discussed implementation of the 2025 asset allocation; (iv) heard a review of the expected tail loss analysis; (v) received a risk management update; and (vi) discussed Investment Committee closed session business.

**10. Reports Filed Without Comment**

In the absence of questions, the following reports, included on pages 318-332 of the meeting materials, were filed without comment: (i) Quarterly Charges to Funds Report, Q3 2024; (ii) Private Markets and Funds Alpha Commitments, Q3 2024, and (iii) Board Contact Log.

**11. Future Items for Discussion**

Mr. Barber noted that the Annual Agenda Plan was included on pages 334-337 in the meeting materials for the Board’s information.

**12. Adjournment**

**Motion:** A motion to adjourn was made by Trustee Ancel and seconded by Trustee Scott. The motion passed unanimously, and the meeting was adjourned at 1:56 p.m.

Date of Board Approval:

Signed:

\_\_\_\_\_  
Thomas J. Merfeld, Board Secretary

Board Meeting

Tab 3 – Board Contact Log

Board Contact Log – March 2025 Board Meeting

| DATE OF INBOUND COMMUNICATION | DATE COMMUNICATED TO THE BOARD | COMMUNICATION SOURCE | TOPIC   |
|-------------------------------|--------------------------------|----------------------|---|
| December 2, 2024              | March 10, 2025                 | Peter Knotek         | Follow-up on conversation during October 15 SWIB Meeting  |
| December 4, 2024              | March 10, 2025                 | Anne Steinberg       | Fossil fuel divestment and systematic climate risks   |
| January 22, 2025              | March 10, 2025                 | Anne Steinberg       | SWIB Statement concerns on divestments of fossil fuels  |
| January 23, 2025              | March 10, 2025                 | Stephen Kennedy      | Compliments on performance and care   |
| February 5, 2025              | March 10, 2025                 | Nichole Fromm        | Fossil fuel divestment, systematic climate risks, LAB recommendations                               |
| February 5, 2025              | March 10, 2025                 | Briant               | Forms of communication, LAB recommendations, and fossil fuel divestment and systemic climate risks  |
| February 5, 2025              | March 10, 2025                 | James Danky          | Fossil fuel divestment and systematic climate risks   |
| February 5, 2025              | March 10, 2025                 | Bruce Denny          | Fossil fuel divestment and systematic climate risks   |
| February 5, 2025              | March 10, 2025                 | Jerry Anderson       | Fossil fuel divestment and systematic climate risks   |
| February 5, 2025              | March 10, 2025                 | Karen Oberhauser     | Fossil fuel divestment and systemic climate risks, forms of communications, and LAB recommendations |
| February 5, 2025              | March 10, 2025                 | Russell Novkov       | No message provided   |
| February 5, 2025              | March 10, 2025                 | John Zillmer         | LAB recommendations   |
| February 5, 2025              | March 10, 2025                 | Keith Kohlmann       | Forms of communication, fossil fuel divestment and systemic climate risks                           |

Board Contact Log – March 2025 Board Meeting

| <b>DATE OF INBOUND COMMUNICATION</b> | <b>DATE COMMUNICATED TO THE BOARD</b> | <b>COMMUNICATION SOURCE</b> | <b>TOPIC</b>  |
|--------------------------------------|---------------------------------------|-----------------------------|---|
| February 6, 2025                     | March 10, 2025                        | Philip Gasper               | Fossil fuel divestment and systematic climate risks   |
| February 6, 2025                     | March 10, 2025                        | Terri Wiggins               | Fossil fuel divestment and systemic climate risks, forms of communications, and LAB recommendations |
| February 7, 2025                     | March 10, 2025                        | Warren Enstrom              | Fossil fuel divestment and systemic climate risks, forms of communications, and LAB recommendations |
| February 8, 2025                     | March 10, 2025                        | Richard Spindler            | Fossil fuel divestment and systematic climate risks   |
| February 8, 2025                     | March 10, 2025                        | Richard Spindler            | Forms of communications and LAB recommendations   |
| February 10, 2025                    | March 10, 2025                        | Stefania Sani               | Fossil fuel divestment and systemic climate risks, forms of communications, and LAB recommendations |
| February 10, 2025                    | March 10, 2025                        | Mary K. Canales             | Fossil fuel divestment and systematic climate risks   |
| February 10, 2025                    | March 10, 2025                        | Mary K. Canales             | Forms of communications and LAB recommendations   |
| February 10, 2025                    | March 10, 2025                        | Janean Marti                | Divestment of Tesla Shares  |
| February 11, 2025                    | March 10, 2025                        | Peter Duerkop               | Divestment from poor ESG ratings companies and LAB recommendations                                  |
| February 12, 2025                    | March 10, 2025                        | Gary Marine                 | Gratitude and compliments to SWIB   |
| February 17, 2025                    | March 10, 2025                        | Ann Brummitt                | Fossil fuel divestment and systematic climate risks   |
| February 18, 2025                    | March 10, 2025                        | Pat Stellflue               | Gratitude and compliments to SWIB   |



Board Contact Log – March 2025 Board Meeting

| <b>DATE OF INBOUND COMMUNICATION</b> | <b>DATE COMMUNICATED TO THE BOARD</b> | <b>COMMUNICATION SOURCE</b> | <b>TOPIC</b>  |
|--------------------------------------|---------------------------------------|-----------------------------|---|
| February 19, 2025                    | March 10, 2025                        | Judith Stadler              | Fossil fuel divestment and systematic climate risks |
| February 20, 2025                    | March 10, 2025                        | Charles Schobert            | Fossil fuel divestment and systematic climate risks |
| February 20, 2025                    | March 10, 2025                        | Charles Schobert            | Fossil fuel divestment and systematic climate risks |
| February 20, 2025                    | March 10, 2025                        | Eric Hansen                 | Fossil fuel divestment and systematic climate risks |
| February 20, 2025                    | March 10, 2025                        | Anne Steinberg              | Fossil fuel divestment and systematic climate risks |
| February 20, 2025                    | March 10, 2025                        | Healthy Climate Wisconsin   | Fossil fuel divestment and systematic climate risks |
| February 20, 2025                    | March 10, 2025                        | Abby Novinska-Lois          | Fossil fuel divestment and systematic climate risks |
| March 3, 2025                        | March 10, 2025                        | Judith Stadler              | Fossil fuel divestment and systematic climate risks |

Board Meeting

Tab 4 – Election of Secretary and Assistant Secretary

Board Meeting

Tab 5 – Annual Committee Assignments by Board Chair

March 19, 2025

Pursuant to the Board Procedures, a Secretary and an Assistant Secretary are elected each year. The Governor appoints the Board Chair and Vice Chair.

**Tom Merfeld, Vice Chair and Secretary**  
**Eric Barber, Assistant Secretary**

Pursuant to each Committee Charter, the Board Chair shall appoint members of each Committee and appoint members to serve as Committee chair, vice chair and secretary for terms not to exceed one year.

**Audit and Finance Committee**

Tom Merfeld, Chair  
John Voelker, Vice Chair & Secretary  
Barb Bolens  
Robert Scott

State Controller, ex-officio  
State Auditor, ex-officio

**Benchmark and Performance Committee**

Dave Schalow, Chair  
Esther Ancel, Vice Chair & Secretary  
Jeff DeAngelis  
Robert Scott

**Compensation Committee**

Jeff DeAngelis, Chair  
Clyde Tinnen, Vice Chair & Secretary  
Tom Merfeld  
Dave Schalow

**Strategic Planning and Corporate Governance Committee**

Clyde Tinnen, Chair  
Esther Ancel, Vice Chair & Secretary  
Kathy Blumenfeld  
Barb Bolens  
John Voelker

\*If a member has not been appointed, the Board Chair reserves the right to appoint additional Committee members on a temporary or permanent basis.

## Board Meeting

### Tab 6 – Proposed 2026 Board Meeting Dates

## STATE OF WISCONSIN INVESTMENT BOARD 2026 Potential Board Meeting Dates

|  |           |       |
|--|-----------|-------|
| Tuesday/Wednesday                        | March     | 17/18 |
| Tuesday/Wednesday                        | June      | 9/10  |
| Tuesday/Wednesday                        | September | 8/9   |
| Tuesday/Wednesday (off-site)             | October   | 20/21 |
| Tuesday/Wednesday                        | December  | 8/9   |
| <u>Alternate Date:</u> Tuesday/Wednesday | December  | 15/16 |

### MEETING SITE:

Offices of the State of Wisconsin Investment Board  
4703 Madison Yards Way, Madison, WI 53705  
Conference Room – 1st Floor

\*Board meetings are held the second Tuesday/Wednesday of the month in June, September & December and the third Tuesday/Wednesday in March & October.

## Board Meeting

### Tab 7 – Investment Performance and Market Updates

- A. Board Investment Performance Report, Q4 2024
- B. 2024 Callan Report



# Investment Performance Report

*as of December 31, 2024*



# Executive Summary

*December 31, 2024*

- The Core Trust Fund returned -1.43% net of all fees and expenses in Q4, resulting in excess performance of +3 bps. For one year, the Core Trust Fund has returned 8.55% net of all fees and expenses, resulting in an excess return of +111 bps.
- The Core Trust Fund five-year net of all fees and expenses return of 7.24% outperforms the Policy Benchmark by +70 bps on an annualized basis.
- The Core Trust Fund net of external manager fee return outperformed the 60/40 Reference Portfolio return by 28.5% (cumulative) over a 20-year period, which equates to an excess value add of \$15.7 billion over the same period.

# WRS Performance

as of December 31, 2024

| Fund                          | Net of All Fees and Expenses Return % |            |            |            |
|-------------------------------|---------------------------------------|------------|------------|------------|
|                               | Calendar – YTD                        | 1 Year     | 3 Year     | 5 Year     |
| Core Trust Fund               | 8.55                                  | 8.55       | 1.73       | 7.24       |
| Core Trust Fund Benchmark     | 7.44                                  | 7.44       | 1.12       | 6.53       |
| Excess                        | +1.11                                 | +1.11      | +0.61      | +0.70      |
| Net Excess Value Add (\$M)    | +\$1,301.7                            | +\$1,301.7 | +\$2,245.1 | +\$4,108.7 |
| Variable Trust Fund           | 18.70                                 | 18.70      | 6.04       | 10.94      |
| Variable Trust Fund Benchmark | 18.27                                 | 18.27      | 6.07       | 11.08      |
| Excess                        | +0.43                                 | +0.43      | (0.03)     | (0.14)     |
| Net Excess Value Add (\$M)    | +\$35.9                               | +\$35.9    | (\$5.6)    | (\$53.6)   |

**SWIB's investment management has added more than \$4.1 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 External Manager Fee Return % |         |         | Gross of Fee Return % |
|-------------------------------|--------------------------------------|---------|---------|-----------------------|
|                               | 10 Year                              | 15 Year | 20 Year | 30 Year               |
| Core Trust Fund               | 7.42                                 | 7.91    | 6.93    | 8.28                  |
| Core Trust Fund Benchmark     | 6.91                                 | 7.44    | 6.57    | 7.82                  |
| Excess                        | +0.51                                | +0.48   | +0.37   | +0.46                 |
| Variable Trust Fund           | 10.38                                | 11.10   | 8.68    | 9.36                  |
| Variable Trust Fund Benchmark | 10.37                                | 11.01   | 8.65    | 9.10                  |
| Excess                        | +0.00                                | +0.09   | +0.03   | +0.26                 |

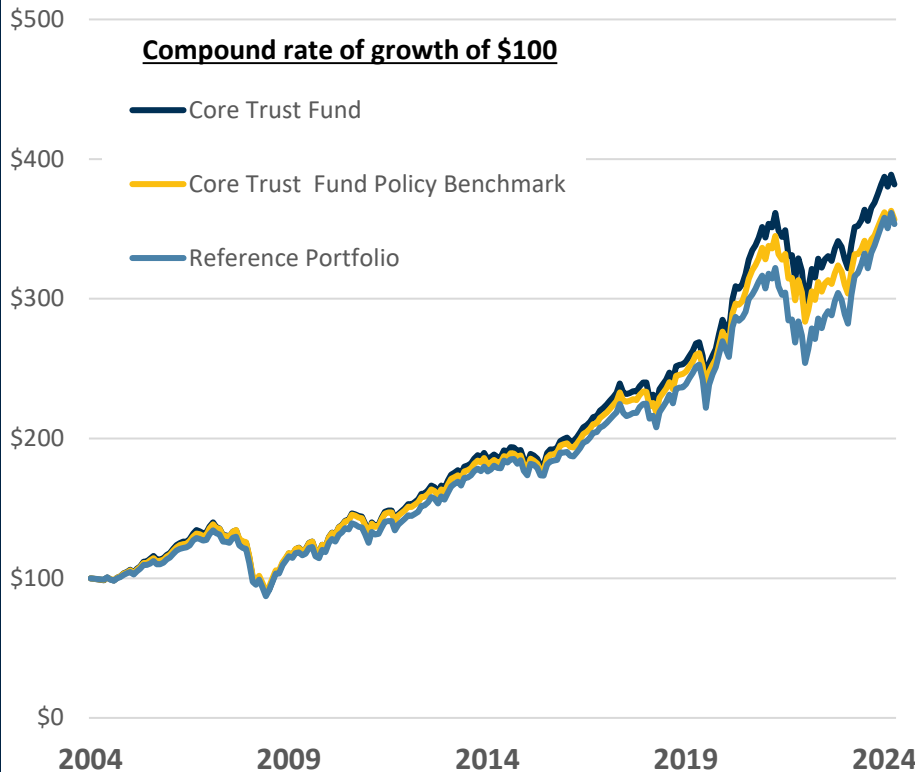
(Annualized Return shown for all periods greater than 1 yr)

Excess returns may contain rounding differences

# CTF NoF Performance vs. 60/40 Reference Portfolio

20-year cumulative return<sup>1</sup>: January 1, 2004, to December 31, 2024

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



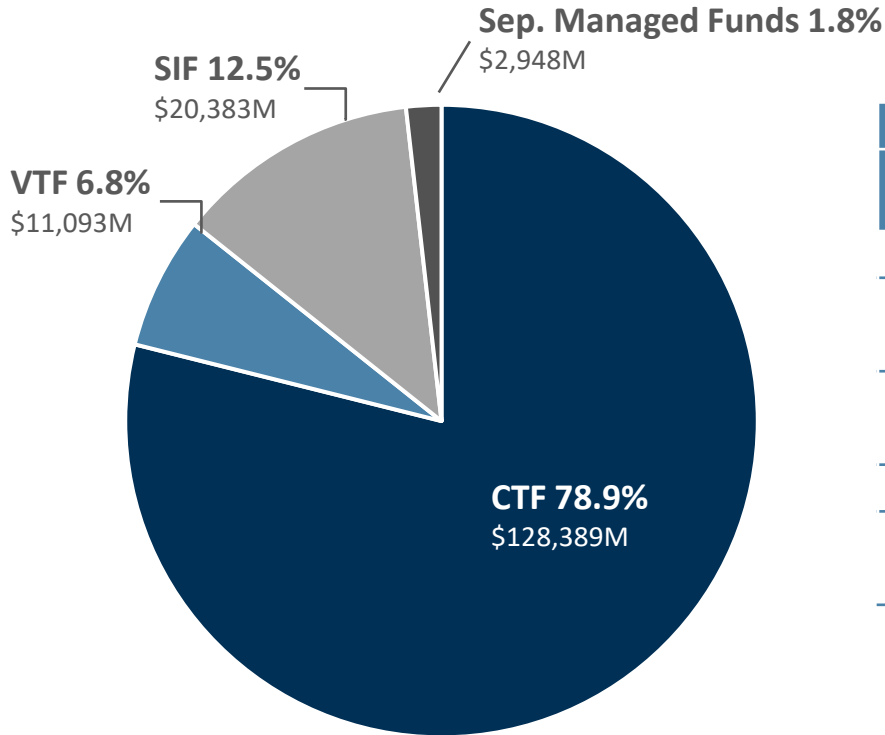
| Net of External Manager Fee Return & EVA                   |                   |                   |                                  |
|--|-------------------|-------------------|----------------------------------|
| Portfolio / Benchmark                                      | Annualized Return | Cumulative Return | Cumulative \$ Excess Value Added |
| Reference Portfolio <sup>2</sup><br>(60% equity/40% bonds) | 6.5%              | 253.5%            | = Passive Market Return          |
| <b>Benefit of CTF Asset Allocation</b>                     |                   |                   |                                  |
| CTF Policy Benchmark                                       | 6.6%              | 256.7%            | +\$5.1B                          |
| <b>Benefit of CTF Active Management</b>                    |                   |                   |                                  |
| CTF Fund   | 6.9%              | 282.0%            | +\$10.6B                         |
| <b>CTF Excess Return vs. Reference Portfolio</b>           | <b>+0.4% pts</b>  | <b>+28.5% pts</b> | <b>+\$15.7B</b>                  |

<sup>1</sup> Core Trust Fund beginning market value, as of January 1, 2004, was \$63.7B and ending market value, as of December 31, 2024, was \$128.4B

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

# Total Assets Under Management (AUM)

as of December 31, 2024



| Gross Market Value of Assets (\$millions)       |                  |                  |                 |
|---|------------------|------------------|-----------------|
| By Fund   | 12/31/2023       | 12/31/2024       | 1 Year Change   |
| <b>Total WRS</b>                                | 132,409          | 139,482          | +7,073          |
| <b>Core Trust Fund</b>                          | 122,578          | 128,389          | +5,810          |
| <b>Variable Trust Fund</b>                      | 9,831            | 11,093           | +1,263          |
| <b>State Investment Fund (SIF) <sup>1</sup></b> | 19,853           | 20,383           | +530            |
| <b>Separately Managed Funds</b>                 | 2,807            | 2,948            | +141            |
| <b>Total SWIB AUM</b>                           | <b>\$155,069</b> | <b>\$162,814</b> | <b>+\$7,744</b> |

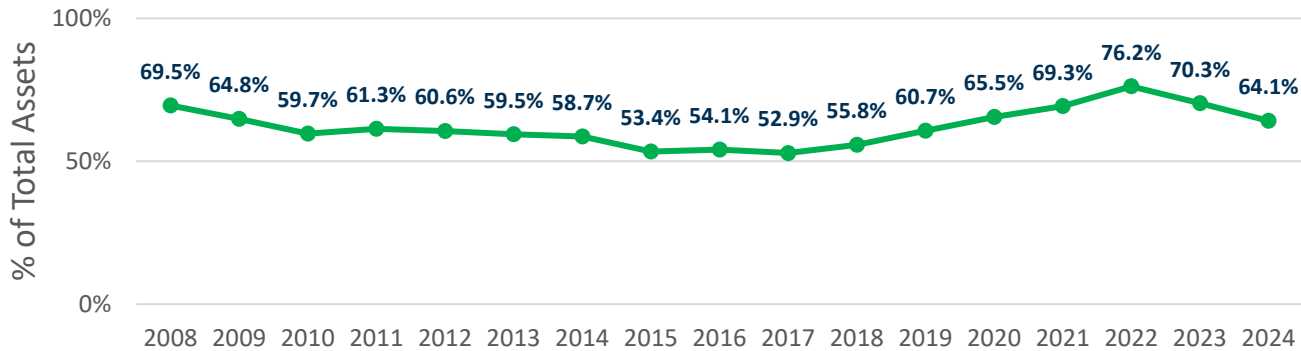
<sup>1</sup> Excludes cash invested in SIF held on behalf of CTF and VTF

Refer to the disclosure section for additional details

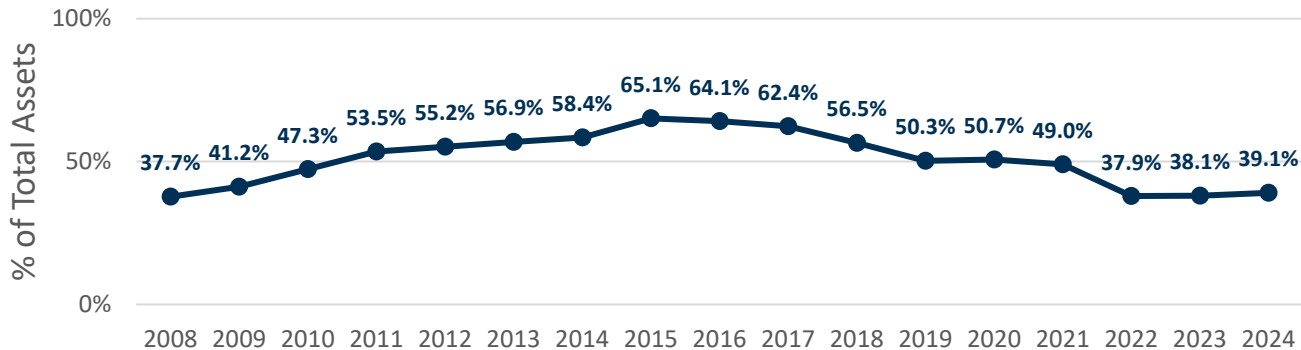
# WRS Assets as of December 31, 2024

*Breakdown of Active vs. Passive and Internal vs. External*

## Actively Managed Assets



## Internally Managed Assets



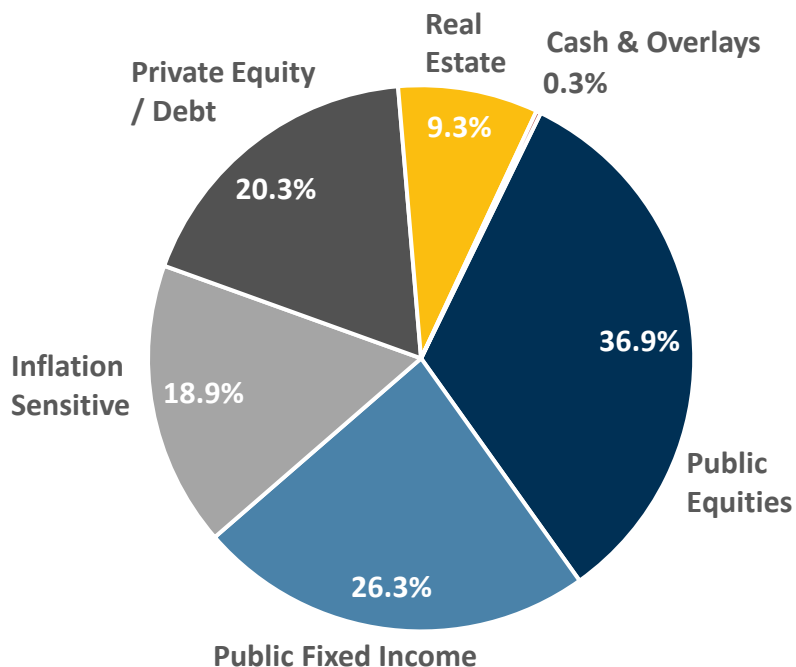
**46% of Total SWIB Assets (including SIF) are internally managed**

Refer to the disclosure section for additional details

# Core Trust Fund Assets Under Management

*Breakdown by Asset Class as of December 31, 2024*

**Total Exposure - % of Total  
12/31/2024**



| Total Exposure \$ & Adjusted AUM (\$millions) |                              |                              |                       |
|---|------------------------------|------------------------------|-----------------------|
| Total CTF by Asset Class                      | Total Exposure \$ 12/31/2023 | Total Exposure \$ 12/31/2024 | Year over Year Change |
| Public Equities                               | 50,730                       | 47,314                       | (3,416)               |
| Public Fixed Income                           | 29,495                       | 33,761                       | +4,266                |
| Inflation Sensitive                           | 23,057                       | 24,248                       | +1,191                |
| Real Estate                                   | 12,037                       | 11,925                       | (112)                 |
| Private Equity / Debt                         | 23,665                       | 26,083                       | +2,418                |
| Cash & Overlays                               | 562                          | 391                          | (171)                 |
| <b>Total Exposure</b>                         | <b>\$139,546</b>             | <b>\$143,722</b>             | <b>+4,176</b>         |
| <i>Less: Policy Leverage</i>                  | <i>17,058</i>                | <i>15,328</i>                | <i>(1,730)</i>        |
| <b>Total CTF AUM</b>                          | <b>\$122,488</b>             | <b>\$128,393</b>             | <b>+5,905</b>         |

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

The Real Estate and Private Equity / Debt asset classes (29% of the Core Trust Fund) contain Illiquid Investments, as defined in "Report Disclosures: Glossary, Definitions & Data Sources", below.

# Core Trust Fund Allocation

*All exposures shown as of December 31, 2024*

## Allocation – Exposure View

| Strategies                         | (\$ millions)    | As % of Total Fund   |                    | Target Range %       | Notes   |
|------------------------------------|------------------|----------------------|--------------------|----------------------|---|
|                                    | Total Exposure   | Portfolio Exposure % | Benchmark Target % |                      |   |
| <b>Public Equities</b>             | <b>47,314</b>    | <b>36.9</b>          | <b>37.0</b>        | <b>31.0 – 43.0</b>   | Public & Private exposures include cash<br>Strategies include exposure management investments<br>Cash / Overlays:<br>Includes liquidity, overlay cash, cash used to fund synthetic beta related to Alpha Pool.<br>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.<br>Additional CTF leverage details available in disclosure section |
| Global Developed                   | 38,589           | 30.1                 | 30.2               |                      |   |
| US Small Cap                       | 2,796            | 2.2                  | 2.2                |                      |   |
| International Small Cap            | 2,305            | 1.8                  | 1.8                |                      |   |
| Emerging Markets                   | 3,624            | 2.8                  | 2.9                |                      |   |
| <b>Public Fixed Income</b>         | <b>33,761</b>    | <b>26.3</b>          | <b>26.4</b>        | <b>20.4 – 32.4</b>   |   |
| Investment Grade                   | 20,302           | 15.8                 | 15.8               |                      |   |
| Non-Investment Grade               | 10,096           | 7.9                  | 7.9                |                      |   |
| Emerging Market Debt               | 3,363            | 2.6                  | 2.6                |                      |   |
| Inflation Sensitive                | 24,248           | 18.9                 | 19.0               | 14.0 – 24.0          |   |
| Real Estate                        | 11,925           | 9.3                  | 9.3                | 4.0 – 12.0           |   |
| Private Equity / Debt              | 26,083           | 20.3                 | 20.3               | 12.0 – 28.0          |   |
| Cash / Overlays                    | 391              | 0.3                  | 0.0                |                      |   |
| Leverage                           | (15,328)         | (11.9)               | (12.0)             | (20.0) to (4.0)      |   |
| <b>Total Fund – Total Exposure</b> | <b>\$143,722</b> | <b>111.9</b>         | <b>112.0</b>       | <b>104.0 – 120.0</b> |   |
| <b>Total Fund – Market Value</b>   | <b>\$128,393</b> | <b>100.0</b>         | <b>100.0</b>       |                      |   |

Asset \$ exposures and % weights may contain rounding differences

# Core Trust Fund: Asset Class Returns

*as of December 31, 2024*

| Asset Class Group:<br>Public Equities | Performance<br>Start Date | Total Exposure<br>Value<br>(\$millions) | Net of External Manager Fee Return % |               |               |               |                   |
|---------------------------------------|---------------------------|---|--------------------------------------|---------------|---------------|---------------|-------------------|
|                                       |                           |   | Calendar<br>YTD                      | 1 Year        | 3 Year        | 5 Year        | 10 Year<br>or ITD |
| <b>Public Equities</b>                | <b>12/31/2002</b>         | \$47,030                                | 17.43                                | 17.43         | 5.51          | 10.22         | 9.55              |
| <b>Benchmark</b>                      |                           |   | 16.78                                | 16.78         | 5.48          | 10.47         | 9.70              |
| <b>Excess</b>                         |                           |   | <b>+0.65</b>                         | <b>+0.65</b>  | <b>(0.02)</b> | <b>(0.26)</b> | <b>(0.14)</b>     |
| <b>Global Developed</b>               | <b>2/28/2017</b>          | \$36,403                                | 19.32                                | 19.32         | 6.73          | 11.22         | 11.43             |
| <b>Benchmark</b>                      |                           |   | 19.17                                | 19.17         | 6.83          | 11.68         | 11.75             |
| <b>Excess</b>                         |                           |   | <b>+0.15</b>                         | <b>+0.15</b>  | <b>(0.10)</b> | <b>(0.46)</b> | <b>(0.32)</b>     |
| <b>Global Equities w/EM</b>           | <b>5/31/2021</b>          | \$2,123                                 | 21.44                                | 21.44         | 6.65          |               | 8.29              |
| <b>Benchmark</b>                      |                           |   | 17.93                                | 17.93         | 5.87          |               | 6.93              |
| <b>Excess</b>                         |                           |   | <b>+3.51</b>                         | <b>+3.51</b>  | <b>+0.78</b>  |               | <b>+1.36</b>      |
| <b>US Small Cap</b>                   | <b>2/28/2017</b>          | \$2,796                                 | 16.24                                | 16.24         | 3.23          | 9.08          | 9.22              |
| <b>Benchmark</b>                      |                           |   | 12.04                                | 12.04         | 2.61          | 8.27          | 8.26              |
| <b>Excess</b>                         |                           |   | <b>+4.20</b>                         | <b>+4.20</b>  | <b>+0.62</b>  | <b>+0.81</b>  | <b>+0.96</b>      |
| <b>International Small Cap</b>        | <b>1/31/2020</b>          | \$2,295                                 | 5.85                                 | 5.85          | (2.03)        |               | 3.97              |
| <b>Benchmark</b>                      |                           |   | 3.66                                 | 3.66          | (1.97)        |               | 3.90              |
| <b>Excess</b>                         |                           |   | <b>+2.20</b>                         | <b>+2.20</b>  | <b>(0.06)</b> |               | <b>+0.07</b>      |
| <b>Emerging Market ex China</b>       | <b>3/31/2022</b>          | \$2,848                                 | 3.99                                 | 3.99          |               |               | 1.28              |
| <b>Benchmark</b>                      |                           |   | 3.64                                 | 3.64          |               |               | 1.54              |
| <b>Excess</b>                         |                           |   | <b>+0.35</b>                         | <b>+0.35</b>  |               |               | <b>(0.25)</b>     |
| <b>Emerging Market China</b>          | <b>3/31/2022</b>          | \$513                                   | 19.04                                | 19.04         |               |               | (2.44)            |
| <b>Benchmark</b>                      |                           |   | 19.32                                | 19.32         |               |               | (1.37)            |
| <b>Excess</b>                         |                           |   | <b>(0.28)</b>                        | <b>(0.28)</b> |               |               | <b>(1.06)</b>     |



# Core Trust Fund: Asset Class Returns

*as of December 31, 2024*

| Asset Class Group:<br>Public Fixed Income &<br>Inflation Sensitive | Performance<br>Start Date | Total Exposure<br>Value<br>(\$millions) | Net of External Manager Fee Return % |               |              |              |                   |
|--|---------------------------|---|--------------------------------------|---------------|--------------|--------------|-------------------|
|  |                           |   | Calendar<br>YTD                      | 1 Year        | 3 Year       | 5 Year       | 10 Year<br>or ITD |
| <b>Public Fixed Income</b>   | <b>12/31/2003</b>         | \$33,575                                | 3.94                                 | 3.94          | (0.83)       | 1.09         | 2.32              |
| <b>Benchmark</b>   |                           |   | 2.90                                 | 2.90          | (0.84)       | 0.85         | 2.11              |
| <b>Excess</b>  |                           |   | <b>+1.03</b>                         | <b>+1.03</b>  | <b>+0.01</b> | <b>+0.24</b> | <b>+0.21</b>      |
| <b>Investment Grade US Credit</b>                                  | <b>2/28/2022</b>          | \$8,047                                 | 2.76                                 | 2.76          |              |              | (0.28)            |
| <b>Benchmark</b>   |                           |   | 2.03                                 | 2.03          |              |              | (0.53)            |
| <b>Excess</b>  |                           |   | <b>+0.73</b>                         | <b>+0.73</b>  |              |              | <b>+0.25</b>      |
| <b>US Treasuries</b>   | <b>2/28/2022</b>          | \$8,228                                 | 0.41                                 | 0.41          |              |              | (2.40)            |
| <b>Benchmark</b>   |                           |   | 0.58                                 | 0.58          |              |              | (2.15)            |
| <b>Excess</b>  |                           |   | <b>(0.17)</b>                        | <b>(0.17)</b> |              |              | <b>(0.25)</b>     |
| <b>US Long Treasuries</b>  | <b>9/30/2022</b>          | \$1,157                                 | (6.05)                               | (6.05)        |              |              | (1.67)            |
| <b>Benchmark</b>   |                           |   | (6.41)                               | (6.41)        |              |              | (1.85)            |
| <b>Excess</b>  |                           |   | <b>+0.36</b>                         | <b>+0.36</b>  |              |              | <b>+0.18</b>      |
| <b>MBS</b>   | <b>4/30/2020</b>          | \$2,688                                 | 3.94                                 | 3.94          | (1.21)       |              | (0.72)            |
| <b>Benchmark</b>   |                           |   | 1.20                                 | 1.20          | (2.13)       |              | (1.51)            |
| <b>Excess</b>  |                           |   | <b>+2.74</b>                         | <b>+2.74</b>  | <b>+0.91</b> |              | <b>+0.79</b>      |

(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 December 31, 2024*

| Asset Class Group:<br>Public Fixed Income &<br>Inflation Sensitive | Performance<br>Start Date | Total Exposure<br>Value<br>(\$millions) | Net of External Manager Fee Return % |              |               |               |                   |
|--|---------------------------|---|--------------------------------------|--------------|---------------|---------------|-------------------|
|  |                           |   | Calendar<br>YTD                      | 1 Year       | 3 Year        | 5 Year        | 10 Year<br>or ITD |
| <b>High Yield</b>  | <b>7/31/2019</b>          | \$6,718                                 | 8.05                                 | 8.05         | 0.58          | 3.51          | 3.83              |
| <b>Benchmark</b>   |                           |   | 6.91                                 | 6.91         | 2.51          | 3.72          | 4.12              |
| <b>Excess</b>  |                           |   | <b>+1.13</b>                         | <b>+1.13</b> | <b>(1.93)</b> | <b>(0.20)</b> | <b>(0.30)</b>     |
| <b>Leveraged Loans</b>   | <b>3/31/2023</b>          | \$3,378                                 | 9.48                                 | 9.48         |               |               | 11.23             |
| <b>Benchmark</b>   |                           |   | 8.70                                 | 8.70         |               |               | 10.74             |
| <b>Excess</b>  |                           |   | <b>+0.78</b>                         | <b>+0.78</b> |               |               | <b>+0.49</b>      |
| <b>Emerging Market Debt - USD</b>                                  | <b>6/30/2005</b>          | \$1,699                                 | 7.47                                 | 7.47         | (0.29)        | 0.56          | 3.39              |
| <b>Benchmark</b>   |                           |   | 6.54                                 | 6.54         | (0.91)        | 0.12          | 3.13              |
| <b>Excess</b>  |                           |   | <b>+0.93</b>                         | <b>+0.93</b> | <b>+0.62</b>  | <b>+0.44</b>  | <b>+0.26</b>      |
| <b>Emerging Market Debt - Local</b>                                | <b>7/31/2017</b>          | \$1,661                                 | (1.95)                               | (1.95)       | (0.42)        | (1.65)        | (0.28)            |
| <b>Benchmark</b>   |                           |   | (2.38)                               | (2.38)       | (0.96)        | (1.86)        | (0.12)            |
| <b>Excess</b>  |                           |   | <b>+0.43</b>                         | <b>+0.43</b> | <b>+0.53</b>  | <b>+0.21</b>  | <b>(0.16)</b>     |
| <b>Inflation Sensitive</b>   | <b>12/31/2003</b>         | \$24,244                                | 1.85                                 | 1.85         | (2.26)        | 1.97          | 1.98              |
| <b>Benchmark</b>   |                           |   | 1.84                                 | 1.84         | (2.30)        | 1.87          | 1.90              |
| <b>Excess</b>  |                           |   | <b>+0.01</b>                         | <b>+0.01</b> | <b>+0.04</b>  | <b>+0.10</b>  | <b>+0.08</b>      |

(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 December 31, 2024*

| Asset Class Group:<br>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 |
| <b>Real Estate</b>                                       | <b>12/31/2003</b>      | \$11,925                          | (3.16)                               | (3.16)        | 1.65         | 4.28         | 6.87           |
| <b>Benchmark</b>   |                        |                                   | (8.04)                               | (8.04)        | (1.04)       | 2.05         | 5.13           |
| <b>Excess</b>  |                        |                                   | <b>+4.87</b>                         | <b>+4.87</b>  | <b>+2.70</b> | <b>+2.22</b> | <b>+1.75</b>   |
| <b>Private Equity / Debt</b>                             | <b>11/30/2006</b>      | \$26,083                          | 7.35                                 | 7.35          | 5.85         | 14.85        | 13.48          |
| <b>Benchmark</b>   |                        |                                   | 7.52                                 | 7.52          | 4.73         | 12.71        | 11.32          |
| <b>Excess</b>  |                        |                                   | <b>(0.17)</b>                        | <b>(0.17)</b> | <b>+1.12</b> | <b>+2.14</b> | <b>+2.16</b>   |
| <i>Other strategies:</i>                                 |                        |                                   |                                      |               |              |              |                |
| <b>Alpha Pool Overlay</b>                                | <b>1/31/2011</b>       | \$12,336                          | 3.09                                 | 3.09          | 2.29         | 4.34         | 2.45           |
| <b>Benchmark (set to zero as of 1/1/2019)</b>            |                        | (at 1/1/22 = \$6,336)             | 0.00                                 | 0.00          | 0.00         | 0.00         | 0.74           |
| <b>Excess</b>  |                        |                                   | <b>+3.09</b>                         | <b>+3.09</b>  | <b>+2.29</b> | <b>+4.34</b> | <b>+1.72</b>   |

(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 December 31, 2024*



Excess Return - % points

<sup>1</sup> 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 December 31, 2024*

| 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     |
| <b>Total Alpha Pool Composite</b> | <b>1/31/2011</b>       | <b>\$12,336</b>            | <b>3.09</b>                          | <b>3.09</b> | <b>2.29</b> | <b>4.34</b> | <b>2.45</b> |

- 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 NoF Return % | 1 Year NoF Return % |
|--------------------------------|----------------|----------------------------|---------------------------|---------------------|
| <b>Hedge Funds</b>             | 1/31/2011      | \$8,987 (73%)              | 6.20                      | 6.20                |
| <b>Multi Strat</b>             | 2/1/2022       | \$2,515 (20%)              | 3.28                      | 3.28                |

| Alpha Pool Overlay Return (Alpha Pool + Beta Return) | Calendar YTD | 1 Year       | 3 Year      | 5 Year       | 10 Year     |
|--|--------------|--------------|-------------|--------------|-------------|
| <b>CTF Policy Benchmark (Beta)</b>                   | <b>7.44</b>  | <b>7.44</b>  | <b>1.12</b> | <b>6.53</b>  | <b>6.91</b> |
| <b>Alpha Pool Overlay Return (Alpha Pool + Beta)</b> | <b>10.53</b> | <b>10.53</b> | <b>3.41</b> | <b>10.87</b> | <b>9.36</b> |

(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 December 31, 2024*

## 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                | \$11,093                   | 18.77                                | 18.77  | 6.10   | 11.00  | 10.38   |
| Variable Trust Fund Benchmark |                        |                            | 18.27                                | 18.27  | 6.07   | 11.08  | 10.37   |
| Excess                        |                        |                            | +0.50                                | +0.50  | +0.03  | (0.08) | +0.00   |

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

## Portfolio Allocation

| By Portfolio           | (\$ millions)  |                    | As % of Total Fund |              | Target Range |
|------------------------|----------------|--------------------|--------------------|--------------|--------------|
|                        | Total Exposure | Portfolio Exposure | Exposure Target    |              |              |
| Public Equities        | 11,065         | 99.7               | 100.0              |              |              |
| US Equities            | 7,751          | 69.9               | 70.0               | 65.0 – 75.0% |              |
| International Equities | 3,314          | 29.9               | 30.0               | 25.0 – 35.0% |              |
| Cash & Overlays        | 28             | 0.3                | 0.0                |              |              |
| Total Fund             | \$11,094       | 100.0              | 100.0              |              |              |

- *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 December 31, 2024*

| 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 |
| <b>State Investment Fund (SIF)</b>                | <b>6/30/1975</b>       | \$22,617                   | 5.35                                 | 5.35         | 4.02         | 2.51         | 1.81           |
| SIF Benchmark                                     |                        |                            | 5.17                                 | 5.17         | 3.95         | 2.43         | 1.75           |
| Excess  |                        |                            | <b>+0.19</b>                         | <b>+0.19</b> | <b>+0.07</b> | <b>+0.07</b> | <b>+0.05</b>   |
| <b>State Life Insurance Fund</b>                  | <b>10/31/1994</b>      | \$94                       | (2.03)                               | (2.03)       | (5.56)       | (1.39)       | 1.59           |
| No Benchmark                                      |                        |                            |                                      |              |              |              |                |
| <b>Historical Society Endowment Fund</b>          | <b>12/31/1993</b>      | \$29                       | 18.76                                | 18.76        | 5.72         | 10.95        | 10.19          |
| Historical Society Endowment Benchmark            |                        |                            | 17.93                                | 17.93        | 5.58         | 10.51        | 9.91           |
| Excess  |                        |                            | <b>+0.84</b>                         | <b>+0.84</b> | <b>+0.14</b> | <b>+0.44</b> | <b>+0.27</b>   |
| <b>Injured Patients &amp; Families Comp. Fund</b> | <b>10/31/1993</b>      | \$1,510                    | 4.40                                 | 4.40         | (0.85)       | 2.23         | 3.54           |
| IP&FC Benchmark                                   |                        |                            | 4.04                                 | 4.04         | (0.95)       | 1.83         | 3.08           |
| Excess  |                        |                            | <b>+0.36</b>                         | <b>+0.36</b> | <b>+0.10</b> | <b>+0.40</b> | <b>+0.46</b>   |
| <b>UW System Long Term Fund</b>                   | <b>3/31/2018</b>       | \$588                      | 9.15                                 | 9.15         | 1.61         | 6.86         | 7.09           |
| UW System Benchmark                               |                        |                            | 9.08                                 | 9.08         | 1.52         | 6.71         | 6.91           |
| Excess  |                        |                            | <b>+0.07</b>                         | <b>+0.07</b> | <b>+0.09</b> | <b>+0.15</b> | <b>+0.18</b>   |
| <b>UW Cash Management Fund</b>                    | <b>4/30/2022</b>       | \$727                      | 6.33                                 | 6.33         |              |              | 4.68           |
| UW Cash Management Benchmark                      |                        |                            | 6.27                                 | 6.27         |              |              | 4.71           |
| Excess  |                        |                            | <b>+0.06</b>                         | <b>+0.06</b> |              |              | <b>(0.03)</b>  |

(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 December 31, 2024*



# CTF Policy Leverage Performance

as of December 31, 2024

| Core Trust Fund                              | Net of All Fees and Expenses Return % |        |        |        |
|--|---------------------------------------|--------|--------|--------|
|  | Calendar YTD                          | 1 Year | 3 Year | 5 Year |
| <b>Unlevered Returns (as estimated):</b>     |                                       |        |        |        |
| Portfolio <sup>1</sup>                       | 8.34                                  | 8.34   | 2.25   | 6.93   |
| CTF Benchmark Return <sup>1</sup>            | 7.23                                  | 7.23   | 1.63   | 6.23   |
| Excess Return                                | +1.11                                 | +1.11  | +0.62  | +0.70  |
| <hr/>  |                                       |        |        |        |
| Portfolio Return (Unlevered)                 | 8.34                                  | 8.34   | 2.25   | 6.93   |
| Absolute Return from Leverage <sup>1,2</sup> | 0.21                                  | 0.21   | (0.51) | 0.30   |
| Implementation (+) or (-)                    | 0.00                                  | 0.00   | 0.00   | 0.01   |
| <hr/>  |                                       |        |        |        |
| <b>Levered Returns (as reported):</b>        |                                       |        |        |        |
| Portfolio                                    | 8.55                                  | 8.55   | 1.73   | 7.24   |
| CTF Benchmark                                | 7.44                                  | 7.44   | 1.12   | 6.53   |
| Excess                                       | +1.11                                 | +1.11  | +0.61  | +0.70  |

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

**Leverage notes:**

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

<sup>2</sup> 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 returns<sup>1</sup>
- 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

*4<sup>th</sup> Quarter 2024*



March 19, 2025

**State Of Wisconsin Investment Board**

**Callan Associates Performance Reporting**

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**Ivan “Butch” Cliff, CFA**  
Executive Vice President  
Director of Research

# What Callan is doing for SWIB

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## Purpose of the project and the resulting service relationship

- SWIB contacted Callan 2011 and expressed the desire for performance and risk analysis relative to “true” peers
- Purpose was to better understand and evaluate results compared to relevant peer funds
  - Public funds only
  - Very large in asset size to reflect both the advantages of scale as well as burdens of huge assets
  - Reasonably large sample size for robust and meaningful analysis
- Callan constructed and is maintaining a custom peer group for SWIB using our proprietary fund sponsor database that aggregates data from Callan clients and outside data vendors
- SWIB custom peer group results:
  - ~60 public funds with assets in excess of \$10 BB
  - Callan continues to maintain peer group by adding new members where appropriate
- Callan supplies SWIB with a detailed quarterly report using this custom peer group
  - Asset allocation analysis (actual and policy) versus peers
  - Total fund performance and risk analysis versus target and peers
  - Asset class performance versus targets and peers
  - Present summary results to the Board annually

# Relevant Background Information on SWIB Investment Program

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## Important differentiating factors when evaluating strategy/performance vs. peers

- SWIB is one of the few ~100% fully-funded public funds in the US (assets  $\geq$  liabilities).
- Results from strong governance, prudent and disciplined benefit/contribution policies, appropriate investment policies, and effective investment practices.
- ~100% funded status along with some benefit flexibility gives SWIB more strategic investment policy options
- Many public funds are ~70% funded (many less) and feel forced to take on increasing levels of equity-like risks in an attempt to close the gap.
  - Underfunded peers need to exceed actuarial returns to close their gaps (absent large contribution increases).
  - To “tread water” a 70% funded plan with a 7% return hurdle needs to generate a 10% return ( $7\% / .70$ ).
- SWIB only has to meet its actuarial return hurdle (6.8%) on assets to maintain fully-funded status.

# Relevant Background Information on SWIB Investment Program

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## Important differentiating factors when evaluating strategy/performance vs. peers

- SWIB can afford to utilize a more diversified strategic investment policy than most public funds.
- SWIB's policy is less reliant on, and concentrated in, equity-like risks and can still meet goals.
  - Uses moderate financial leverage to diversify fund's risk exposures to better counterbalance equity-like risks.
  - SWIB uses tenets of a well-known investment strategy, Risk Parity, to construct a more risk-balanced portfolio that is more robust against equity drawdowns than traditional peer portfolios.
  - SWIB's strategy uses moderate financial leverage (~10-15%) to raise exposure to a conservative fixed income portfolio as a "flight to quality" hedge against volatile equity/credit market scenarios. SWIB's leverage allows for this extra fixed income and diversification without having to fund from growth assets. Most peers have less fixed income and/or more aggressive, higher risk fixed income programs to pursue higher return.
- SWIB maintains a cost-effective mix of internal and external investment management that provides a material total fund cost advantage vs. peers.



**SWIB Performance Reporting**

**Gross of Fees as of 12/31/24**

# 5 Year Cumulative Returns vs. Target (Gross, 12/31/24)

Cumulative Returns Actual vs Target



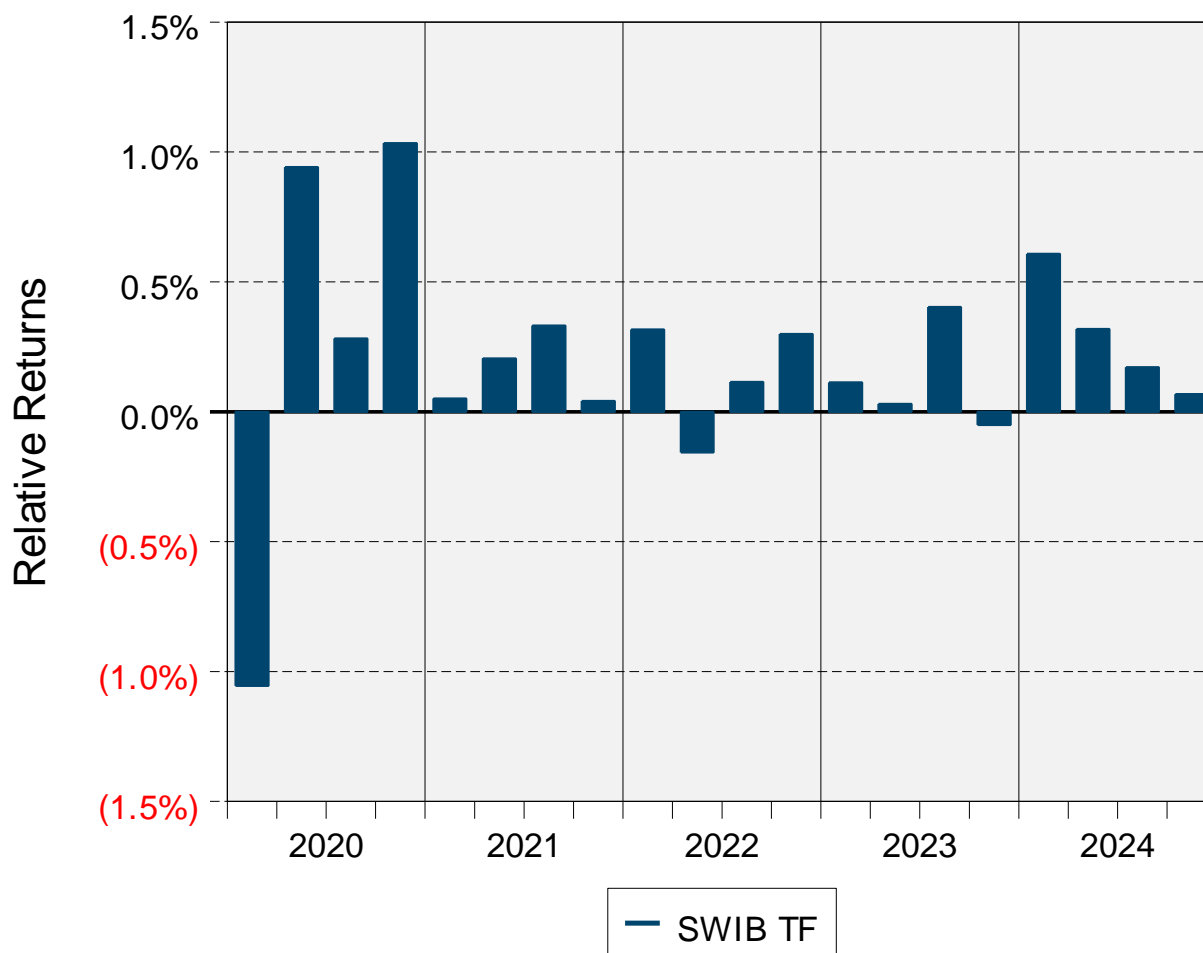
- Over last five years SWIB generated absolute returns of 7.46% annualized, beating its actuarially required return of 6.80% by 0.66%. The target policy return of 6.59% lagged the actuarial return by 0.21%.
- SWIB has added value above it's target policy return with excess returns of +87 bps annualized, resulting in a cumulative excess return of +5.71% over the last 5 years.
- Results generated with high diversification and very low tracking error due to robust risk management.



# 5 Year Return Consistency vs. Target (Gross, 12/31/24)

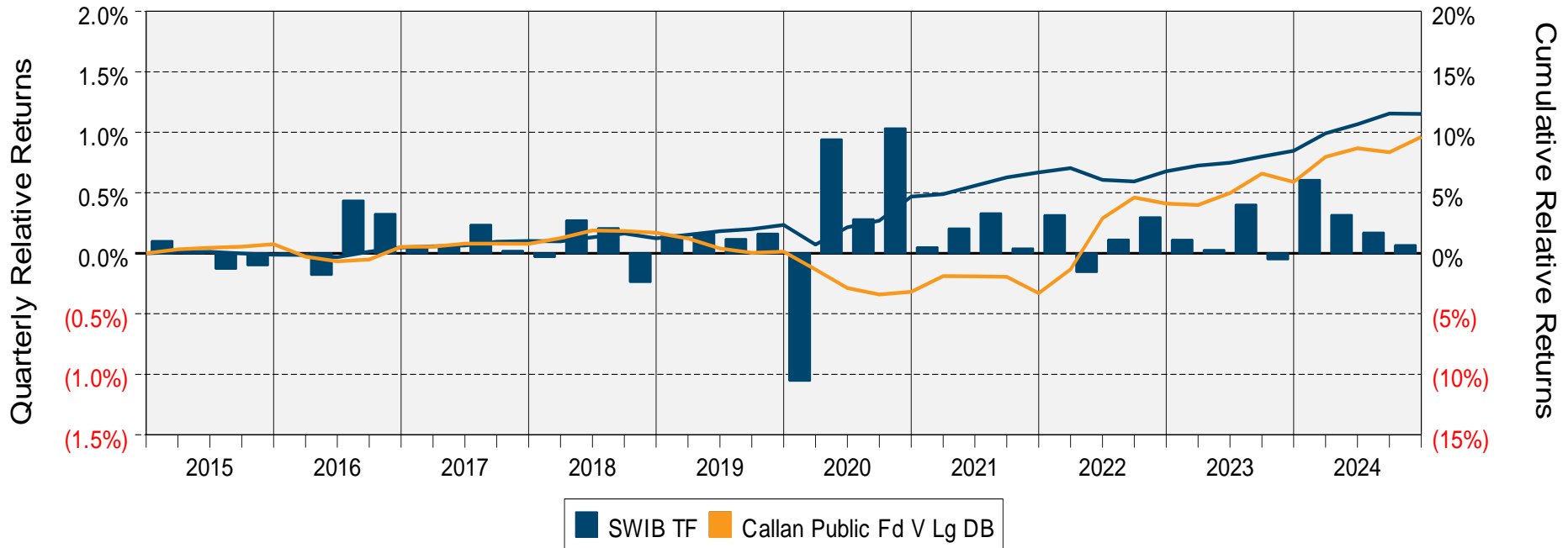
- Highly controlled tracking error relative to target (note small scale even including 2020 volatility).
- Consistent positive excess returns over last 5 years with an 85% batting average (17/20 qtrs).
- Consistency and risk control resulted in a relatively smooth ride to excess return of +87 bps annualized over last 5 years.
- Strong 3 year results with excess return of +76 bps annualized and 83% batting average (10/12 qtrs).
- The trailing 1 year outperformance was +125 bps with a 100% batting average (4/4 qtrs.)
- Continuation of the normally low tracking error relative to the more extreme markets of 2020.

Relative Return vs Target



# 10 Year Return Consistency vs. Target (Gross, 12/31/24)

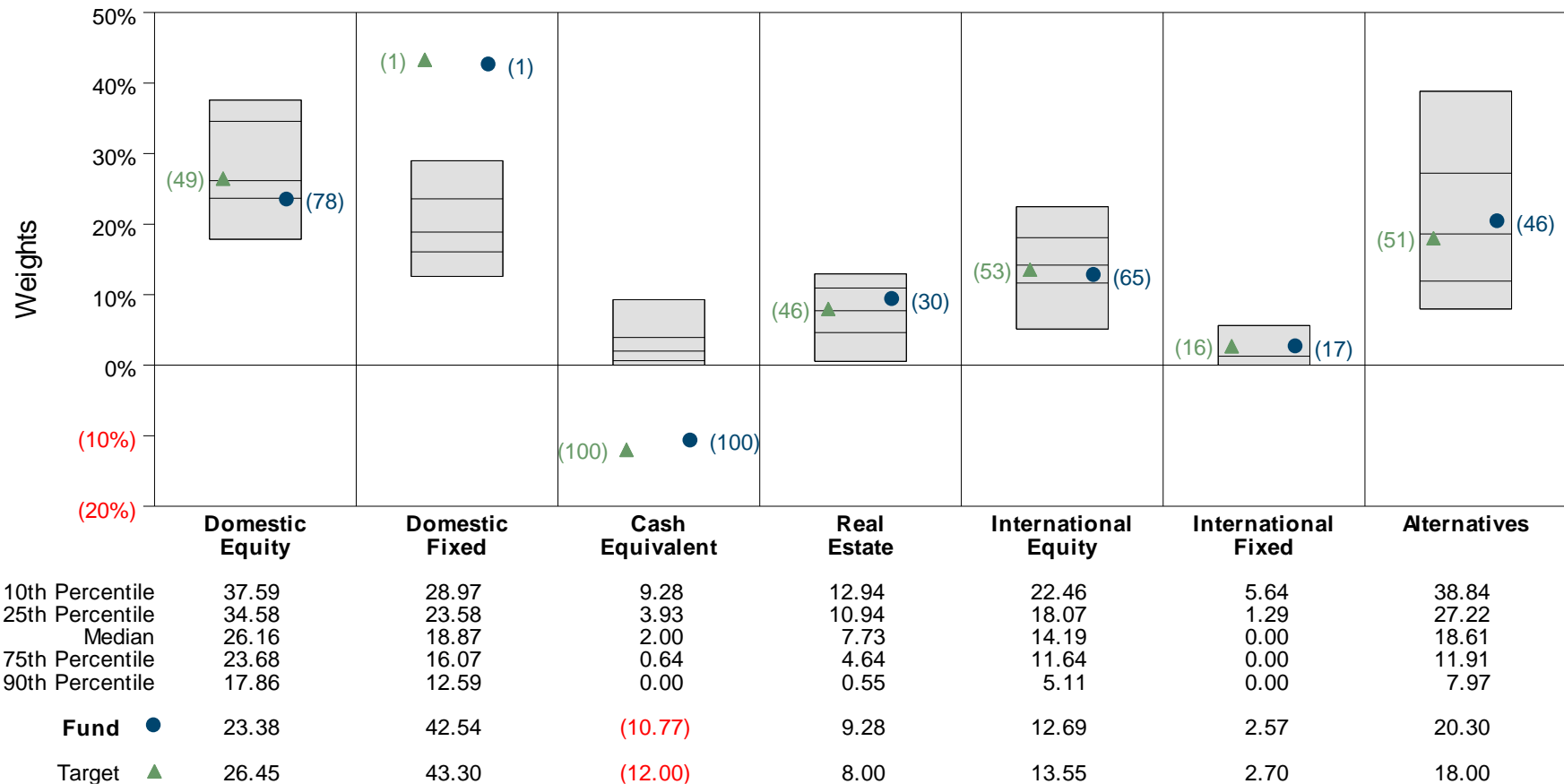
Cumulative and Quarterly Relative Returns vs Target



- Longer 10year time frame shows similar consistency and risk control.
- Smooth accumulation of excess return over very long time periods (80% batting average).
- Annualized 10 year excess return of +61 bps resulting in a cumulative excess return of +11.55%.
- Both actual return of 7.65% and target return of 7.04% exceed actuarially required return of 6.80%.

# Asset Allocation Comparison to Custom Peer Group (12/31/24)

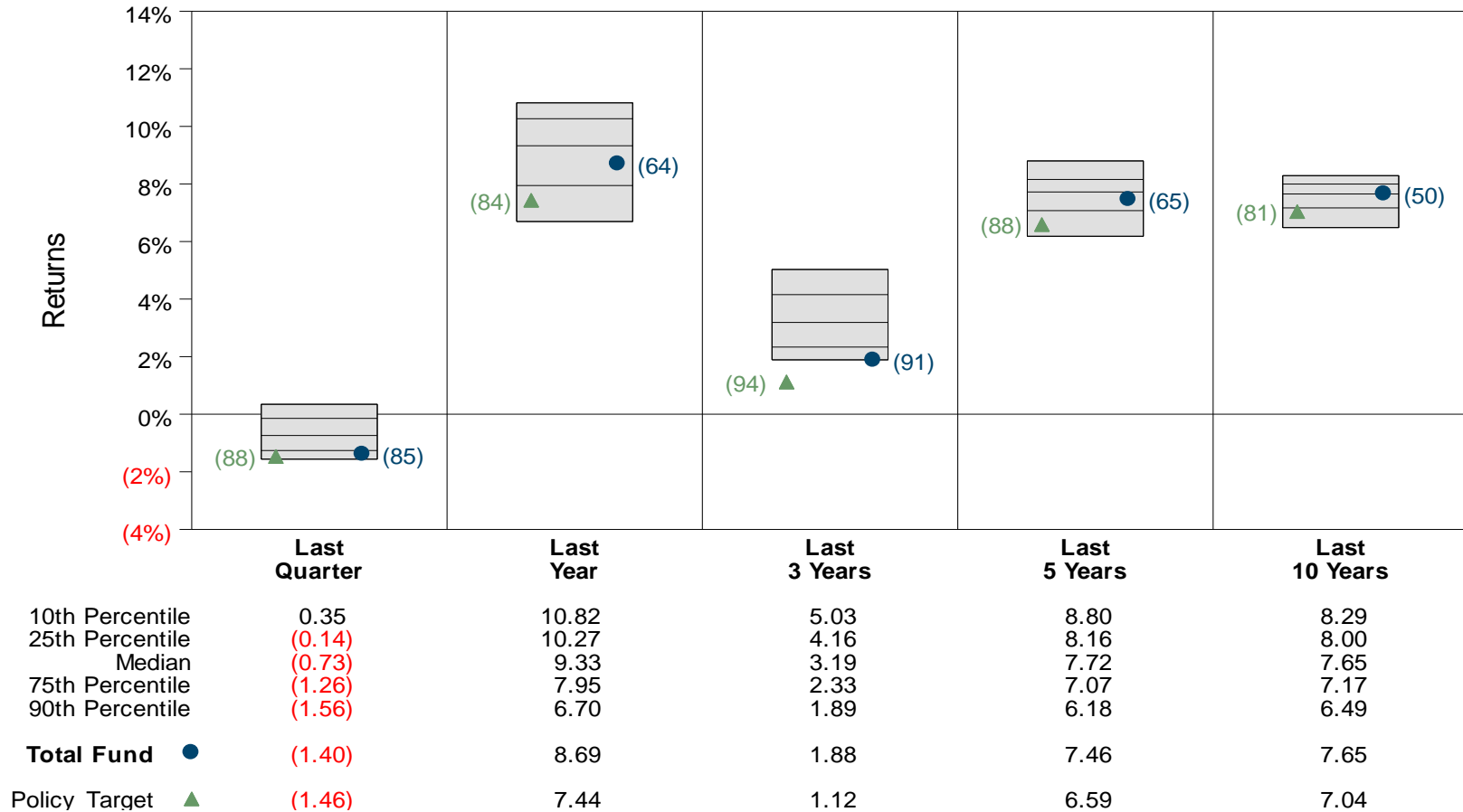
Asset Class Weights vs Callan Public Fund Spons- V Lg DB (>10B)



- SWIB's use of financial leverage (10-15%) enables more risk reducing/diversifying assets w/o sacrificing growth assets.
- This somewhat unique strategy is a more diversified and risk-balanced portfolio than most peers.
- Much more fixed income in US especially, and Int'l as a hedge against equity-like risks.
- Leverage enables much higher risk-reducing fixed income than peers, while still having similar amounts of growth assets.

# Cumulative Performance Rankings vs. Peers (Gross, 12/31/24)

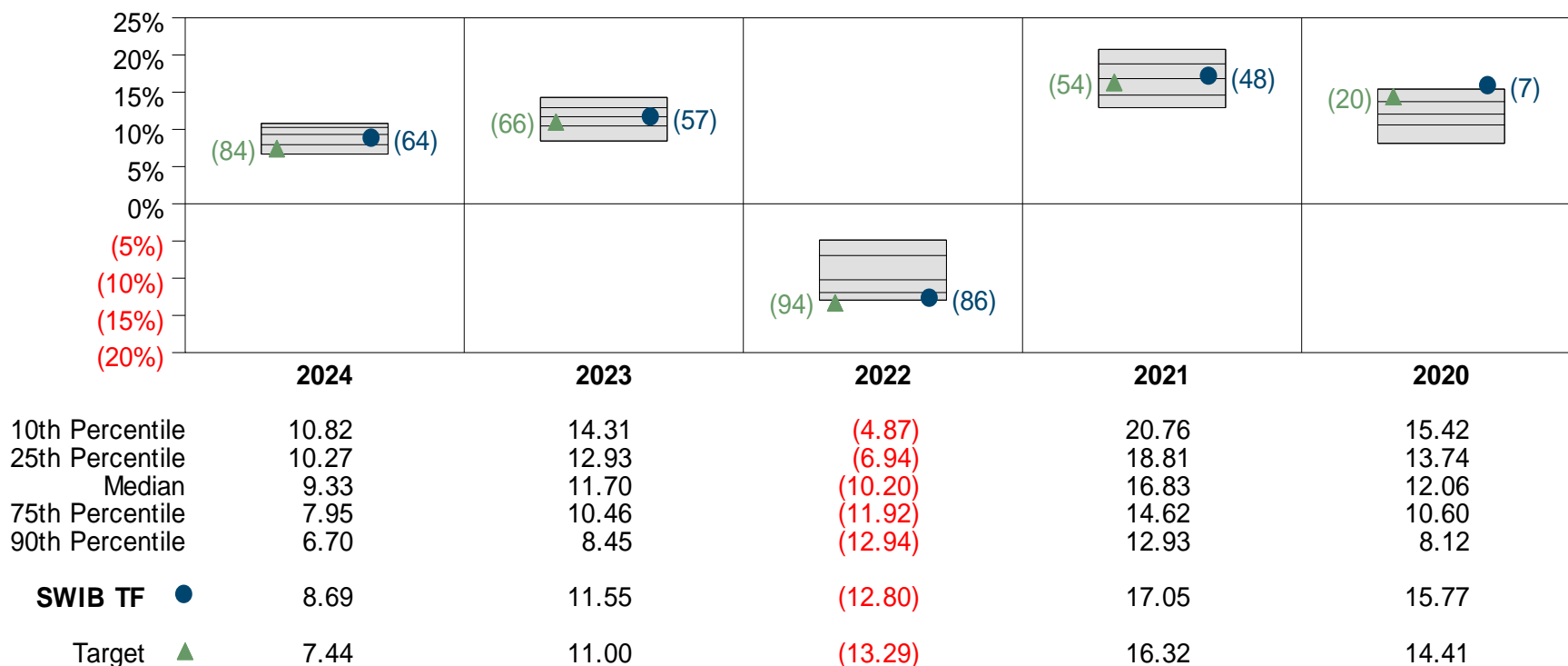
## Callan Public Fund Spons- V Lg DB (>10B)



- Actual total returns above policy target returns for all periods shown.
- Competitive 1, 5, 10 year rankings entirely due to value-add above target, as policy target return trailed peers.
- SWIB's policy target trailed peers badly in 2022, having a negative effect on the 3 year ranking (and for longer periods).

# Annual Performance Rankings vs. Peers (Gross, 12/31/24)

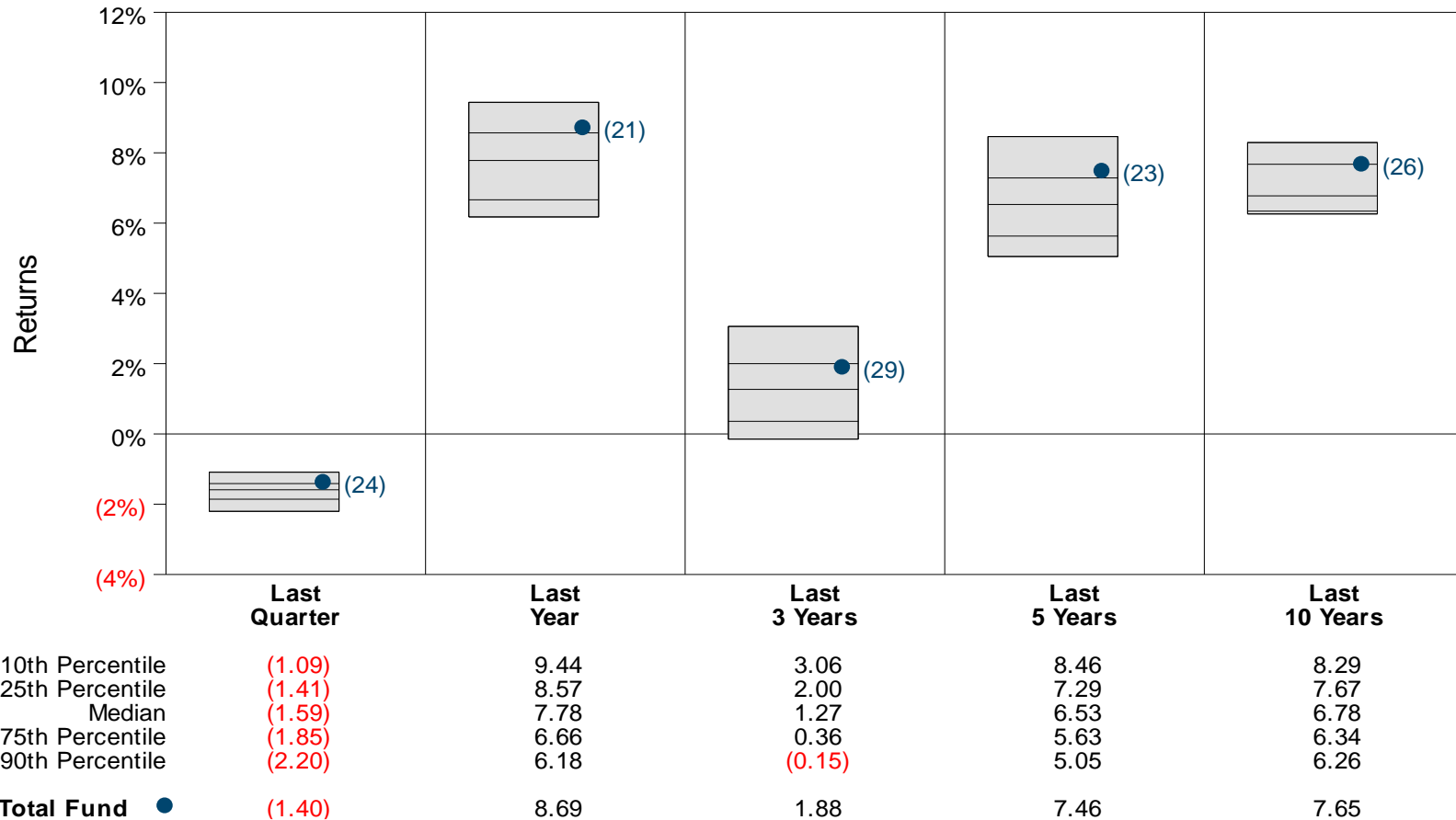
## Performance vs Callan Public Fund Spons- V Lg DB (>10B) (Gross)



- Actual total returns materially above policy target returns for all of the last five calendar years
- 2022 was very tough for SWIB's leveraged policy as both equities and bonds fell dramatically (historic drop for bonds) due to high inflation and rapidly rising rates. Nowhere to hide with ~115% exposure to markets. Diversification didn't work well.
- SWIB's strategy worked extremely well in 2020 amid a classic rate drop / bond rally to combat the Covid recession.

# Callan Proprietary Allocation Adjusted Ranking vs. Peers (Gross, 12/31/24)

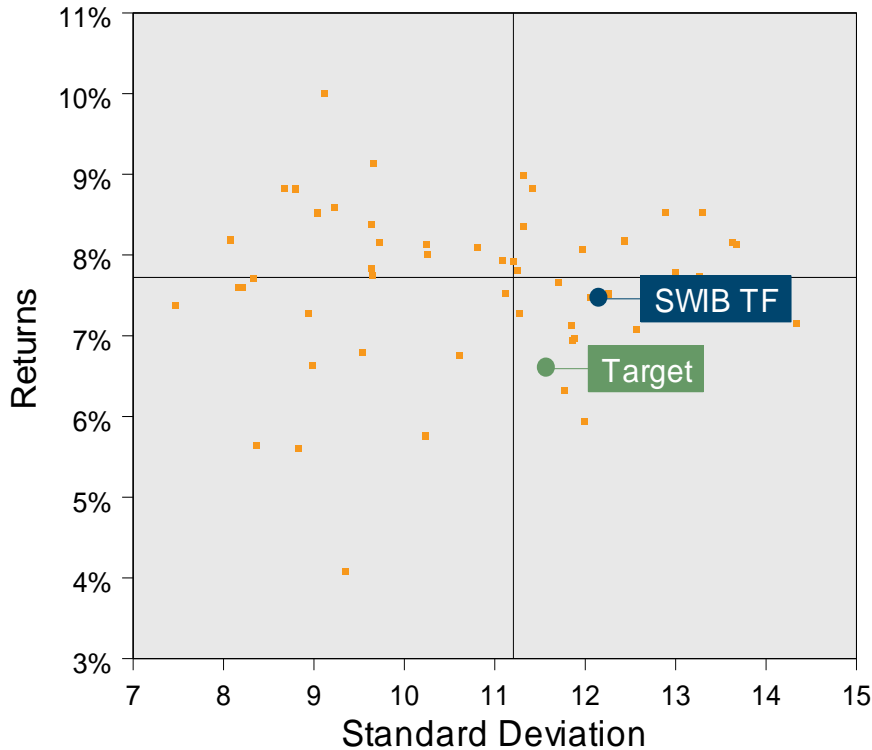
## Asset Allocation Adjusted Ranking



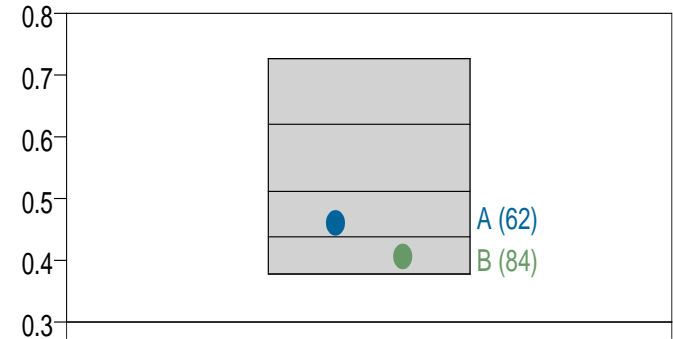
- Asset allocation adjusted ranking adjusts peers to match SWIB's more risk-balanced asset allocation (inc. leverage). Result is a risk-adjusted peer ranking not dominated by asset allocation, reflecting the quality of program implementation.
- Adjusting for SWIB's unique asset allocation policy moves even the poor 3 year ranking to top 1/3 of peers.
- Asset allocation adjusted peer rankings are in or near top quartile for all periods. Program very well implemented.

# Absolute Risk / Reward Tradeoff vs. Peers (Gross, 12/31/24)

Callan Public Fund Spons- V Lg DB (>10B) (Gross)  
Annualized Five Year Risk vs Return



Sharpe Ratio vs. Callan Public Fund Spons- V Lg DB (>10B)



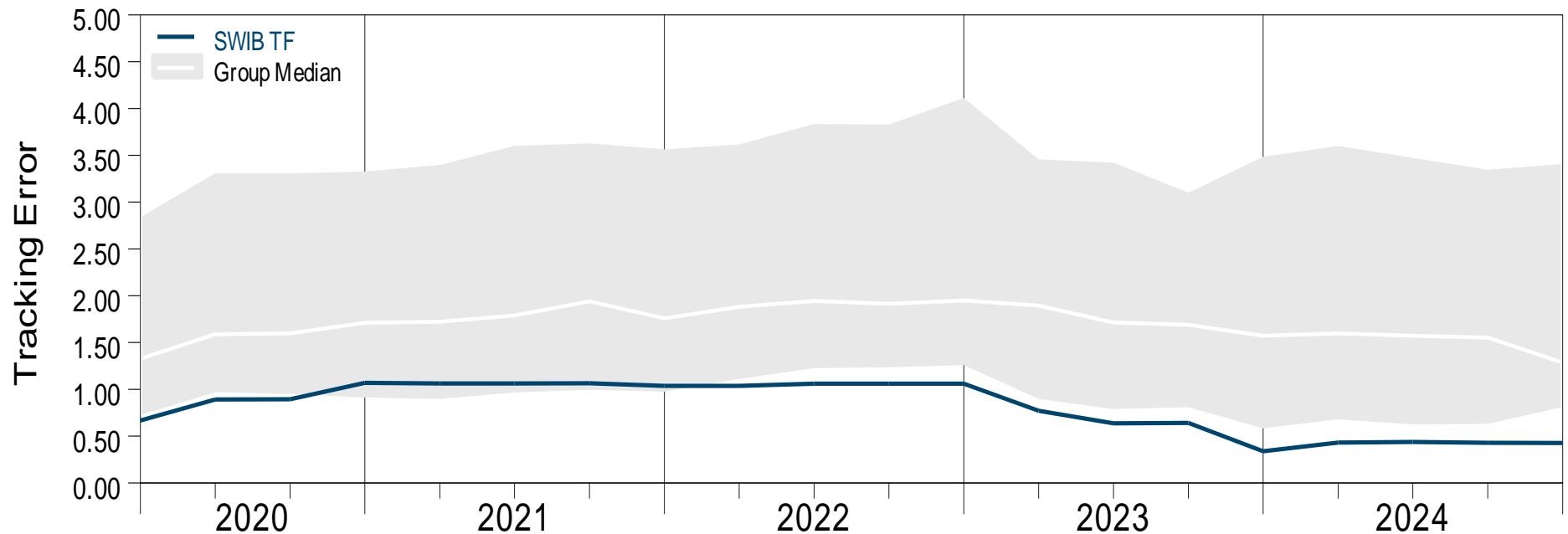
Last 5 Years

|   |      |
|---|------|
| 10th Percentile   | 0.68 |
| 25th Percentile   | 0.57 |
| Median  | 0.46 |
| 75th Percentile   | 0.39 |
| 90th Percentile   | 0.33 |
| SWIB-Total Fund <span style="color: blue;">●</span> A         | 0.41 |
| SWIB-Total Fund Target <span style="color: green;">●</span> B | 0.36 |

- Policy Target had slightly more risk (+24 bps) and a lower return (-113 bps) than peer median (crosshairs).
- Actual implementation added more risk (+58 bps) and return above target (+87 bps), trails peer median return (-26 bps).
- Risk/reward tradeoff (Sharpe Ratio) reasonably competitive even with more risk. Risk/return tradeoff is very reasonable.
- Actual Sharpe Ratio better than policy target meaning implementation added more return than risk.

# Tracking Error (active risk) vs. Target and Peers (Gross, 12/31/24)

## Rolling 12 Quarter Tracking Error vs Targets Compared to Callan Public Fund Spons - Large

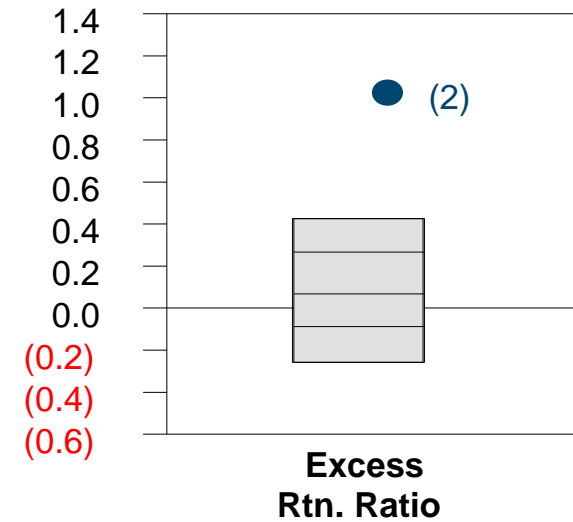
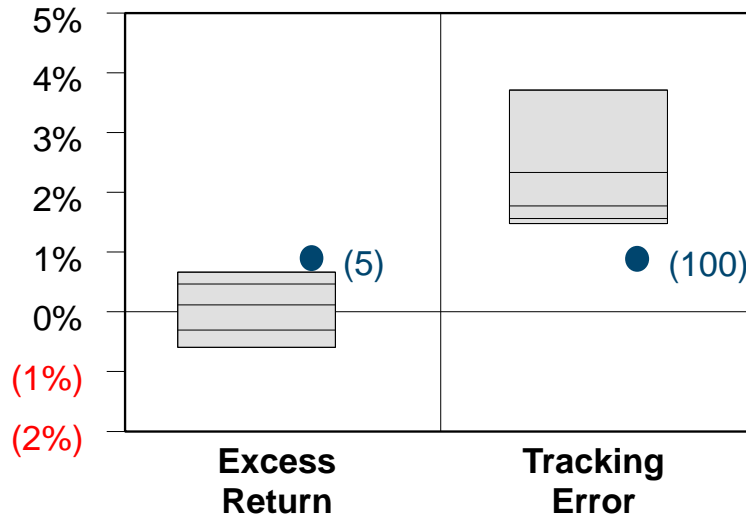


- Strong risk control practices result in consistently much lower tracking error than peers have versus their policy targets.
- SWIB’s tracking error is consistently in the bottom decile vs. peers and less than half of median peer tracking error.
- Less chance of materially underperforming policy target. Focused on consistency of results (singles/batting average vs. home runs/strikeouts).



# Relative Risk/Reward Tradeoff vs. Target and Peers (Gross, 12/31/24)

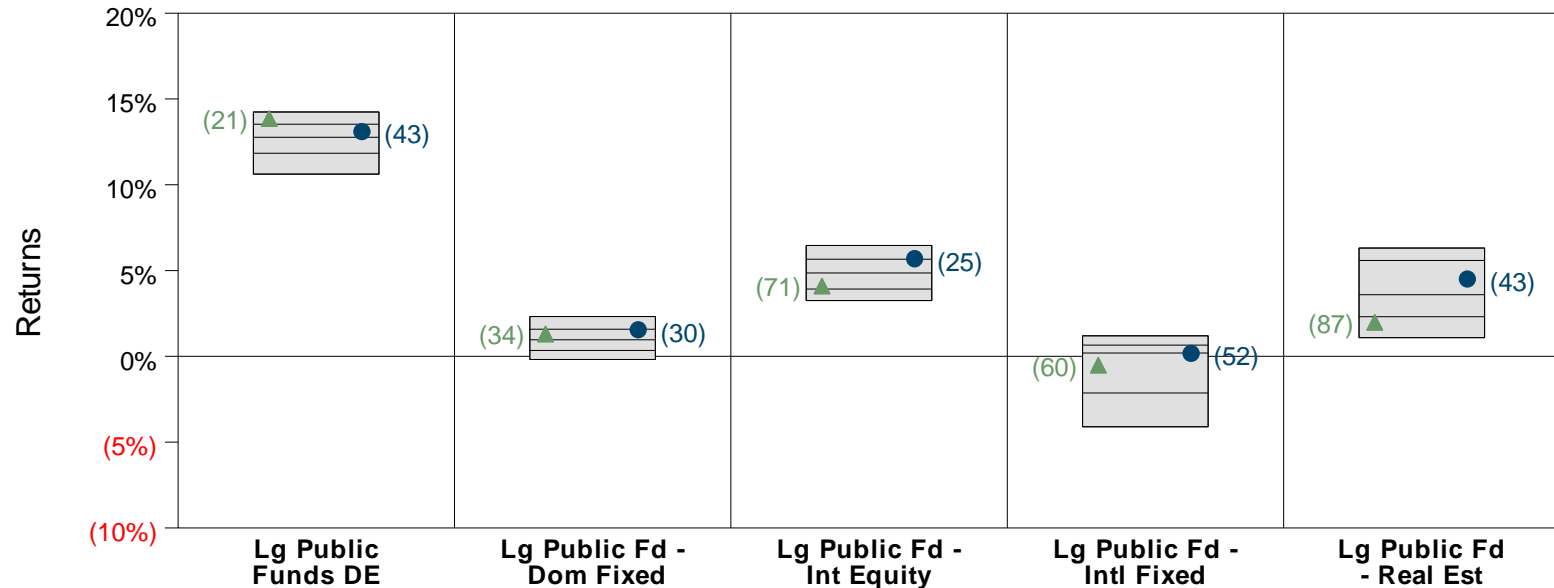
## Risk Statistics Rankings (Gross) vs Large Public Funds Five Years Ended December 31, 2024



- Positive Excess Returns, top decile vs. peers, without taking near as much active risk from policy target as peers.
- Consistently very low Tracking Error versus policy target in absolute terms and relative to peers (bottom decile).
- Combination gives top decile Excess Return Ratio (aka Information Ratio) rankings. Active Risk/return tradeoff is great.

# Asset Class Comparisons vs. Targets and Peers (Gross, 12/31/24)

## Total Asset Class Performance Five Years Ended December 31, 2024



|                                | Lg Public Funds DE | Lg Public Fd - Dom Fixed | Lg Public Fd - Int Equity | Lg Public Fd - Intl Fixed | Lg Public Fd - Real Est |
|--------------------------------|--------------------|--------------------------|---------------------------|---------------------------|-------------------------|
| 10th Percentile                | 14.25              | 2.32                     | 6.47                      | 1.20                      | 6.32                    |
| 25th Percentile                | 13.53              | 1.58                     | 5.67                      | 0.65                      | 5.59                    |
| Median                         | 12.78              | 0.97                     | 4.86                      | 0.20                      | 3.59                    |
| 75th Percentile                | 11.84              | 0.35                     | 3.93                      | (2.13)                    | 2.31                    |
| 90th Percentile                | 10.62              | (0.18)                   | 3.25                      | (4.10)                    | 1.10                    |
| <b>Asset Class Composite</b> ● | 13.02              | 1.47                     | 5.60                      | 0.09                      | 4.42                    |
| Composite Benchmark ▲          | 13.86              | 1.32                     | 4.10                      | (0.51)                    | 1.99                    |

- 4/5 asset classes outperformed their targets over 5 years. US Equity trailed its target but did well vs. peers.
- 4/5 asset classes rank above median vs. peers. Int'l Fixed Income ranked slightly below median but beat its benchmark.
- Value has been added relative to target and peers through skillful implementation across multiple asset classes.

# Biographical Information

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**Ivan “Butch” Cliff**, CFA, is an Executive Vice President and Director of Research. He is responsible for the following groups: Global Manager Research, Capital Markets & Alternatives Research and Published Research. Butch is a member of Callan's Management, Client Policy Review, Institute Advisory and Alternatives Review Committees. He is also a Portfolio Manager and member of the Investment Committee that oversees all of Callan’s discretionary multi-manager solutions. Butch is a shareholder of the firm.

Butch joined the Programming Group of Callan in 1989 and was instrumental in developing sophisticated performance analytics as well as solutions to data processing and management problems. In 1993 he became the Manager of the Database Group with responsibility for coordinating the design and implementation of performance measurement operations as well as overseeing the development and maintenance of Callan’s databases. Butch was made Director of Operations in 2000 and has responsibility for the management and development of all Callan's performance monitoring systems and personnel. In 2007, Butch became the Director of Investment Research & Operations with responsibilities expanded to include oversight of Callan’s Global Manager Research activities.

Prior to joining Callan, Butch worked for two years at Gifford Fong Associates developing analytical software for fixed income money managers.

Butch earned a BA in Economics from the University of California at Berkeley and earned the right to use the Chartered Financial Analyst designation.

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# Report Disclosures

*Glossary, Definitions & Data Sources*

# Report Disclosures

## Key Terms and Portfolio Return Information

| Term  | Description / Definitions  |
|---|--|
| <b>Gross of Fee Return (“GoF Return”)</b>                 | The total investment fund, composite or investment portfolio return that reflects a reduction for: (i) transaction expenses, (ii) cost of implementing leverage expense (if applicable) (iii) all fees and expenses attributable to externally managed, pooled funds where expenses are included in the fund Net Asset Value (“NAV”). GoF Return is used by SWIB for long-term history (> 20 years), internal analytics and to fulfill consultant data submissions where GoF returns are requested. SWIB’s primary reported return types are NoF Return and NoA Return.  |
| <b>Net of External Manager Fee Return (“NoF Return”)</b>  | The GoF return plus 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.  |
| <b>Net of All Fees and Expenses Return (“NoA Return”)</b> | The NoF return plus 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 recording of official, NoA return at the portfolio or account level began in 2017.   |
| <b>Annualized Return Calculation</b>                      | 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).<br><br><b>Annualized Return = <math>((1 + r^1) \times (1 + r^2) \times (1 + r^3) \dots)^{\text{calendar units / time interval measured}} - 1</math></b> ; $r^{(n)}$ = series of holding period returns and calendar units are often expressed as days, months or years |
| <b>Cumulative Return Calculation</b>                      | 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.<br><br><b>Cumulative Return = <math>((1 + r^1) \times (1 + r^2) \times (1 + r^3) \dots) - 1</math></b> ; $r^{(n)}$ = series of holding period returns   |
| <b>Compound rate of growth of \$100</b>                   | The cumulative and compounded rate of growth of portfolio and benchmark returns may also be presented on an indexed basis over time (measurement may be calculated using any return type).<br>Compound rate of growth of \$100 = $(\$100 \times (1 + r^1) \times (1 + r^2) \times (1 + r^3) \dots)$ ; $r^{(n)}$ = series of holding period returns   |

# Report Disclosures

## *Key Terms and Portfolio Return Information*

| Term   | Description / Definitions  |
|--|--|
| <b>Excess Return % (“Excess”)</b>                      | 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.   |
| <b>Net Excess Value Add \$ (“NEVA”)</b>                | NEVA calculates the portfolio's performance NoA 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 Core Trust Fund (“CTF”) and Variable Trust Fund (“VTF”) managed by SWIB.  |
| <b>Net of External Manager Fee Excess Value Add \$</b> | A fund's Excess Value Add \$ may be calculated using NoF returns. The CTF Fund long-term performance comparisons vs. the 60/40 Reference Portfolio and Policy Benchmark are measured over 20-year time intervals. NoF return historical records date back to 1998.   |
| <b>SWIB Inception To Date Reporting</b>                | The Quarterly Performance Summary discloses a reporting period described as <b>10 years or ITD</b> . 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. |
| <b>Performance Start Date</b>                          | 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.  |
| <b>Time-weighted Rate of Return</b>                    | 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.  |
| <b>Modified Dietz Total Rate of Return</b>             | 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  |
|--|--|
| <b>Policy Benchmark</b>  | 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).  |
| <b>Reference Portfolio</b>   | 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.  |
| <b>Zero or No Benchmark</b><br><br>(for Official Measurement purposes) | <p><b>Zero Benchmark:</b> This designation applies to the CTF 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><b>No Benchmark:</b> 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>  |
| <b>Reported Net Benchmark Returns</b>                                  | <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><b>Net Total Return Benchmarks:</b> 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><b>SWIB Custom Net Benchmark for non-U.S. Public Equity Strategies:</b> 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><b>Net of External Manager Fee-based Benchmarks:</b> 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   |
|--|---|
| <b>Custom Weighted Calculated Benchmarks</b> | <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> |
| <b>Gross Market Value</b>                    | 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.   |
| <b>Illiquid Investments</b>                  | Those investments that may be difficult to sell or be sold quickly because of a lack of market or ready or willing investors.   |
| <b>Total Exposure</b>                        | For SWIB managed funds governed by the Wisconsin Retirement System ("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.  |
| <b>Internally Managed Portfolios</b>         | 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.   |
| <b>Externally Managed Portfolios</b>         | 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.  |
| <b>Active Management</b>                     | 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.   |
| <b>Passive Management</b>                    | 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><b>Note on report data sources and processing</b></p> | <p><u>Return Calculation Processing</u><br/>Bank of New York (BNY), an independent 3rd party, provides services related to custodial records, accounting and performance return calculations for SWIB managed funds. BNY also serves as the source for certain standard, market-based benchmarks and static weight blended benchmarks.</p> <p><u>Return Calculations Prepared on a Notional or Unlevered Basis (CTF only)</u><br/>SWIB uses leverage to help achieve the CTF’s diversification objectives. A description of the Leverage Use Policy is contained in the WRS Investment Committee Investment Guidelines. For those accounts and composites deploying leverage, the calculation of notional or unlevered returns (using gross asset exposure) is required to achieve a comparable return vs. market indices. BNY performed the unlevered return calculation from 7/1/2017 – 9/30/2024. Beginning 10/1/2024, this calculation was processed using the SWIB IBOR. Consistent with Leverage Use Policy guidelines, this calculation is processed inside the 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><br/>The SIF pools the cash of the State of Wisconsin and its agencies, 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><br/>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><br/>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> <p><u>SWIB Annual Reports:</u> Additional WRS disclosures can be found in the Annual Reports, available at <a href="https://www.swib.state.wi.us/list-of-investments">https://www.swib.state.wi.us/list-of-investments</a>.</p> |

# Report Disclosures

## *Key Terms and Portfolio Return Information*

| Term   | Description / Definitions   |
|--|---|
| <p><b>(continued)</b></p> <p><b>Note on report data sources and processing</b></p> | <p>On 1/1/2024, the BNY ABOR processing platform became the primary source for CTF and VTF return calculations and market value amounts contained in this report. Beginning 10/1/2024, returns and market values for the SIF and the SWIB-managed Separately Managed Funds were processed using the SWIB IBOR.</p> <p>This report contains unlevered return calculations that are processed using Total Exposure (Notional-based) Assets for accounts with substantial derivative positions that generate leverage for the CTF. The objective of this calculation is to generate meaningful returns that compare to the account or composite's benchmark. The following composites are presented on an unlevered basis:</p> <ul style="list-style-type: none"> <li>CTF – Public Equities (pg. 9)</li> <li>CTF – Global Developed (pg. 9)</li> <li>CTF – Public Fixed Income (pg. 10)</li> <li>CTF – US Treasuries (pg. 10)</li> <li>CTF – Inflation Sensitive (pg. 11)</li> </ul> |

# Leverage Disclosures

*Calculation formulas to estimate impact*

# Report Disclosures

## Notes on CTF Leverage Analysis

| Term                                    | Description / Definitions   |
|---|---|
| <b>Portfolio Return (Unlevered)</b>     | <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"> <li>1) <u>Excess Return (Levered)</u> is first subtracted from the <u>Portfolio Return (Levered)</u><sup>1</sup>;</li> <li>2) The result of Step 1 is then divided by the <u>Policy Leverage Factor</u>; then</li> <li>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).</li> </ol> $\text{Portfolio Return (Unlevered)} = \left( \frac{\text{Portfolio Return (Levered)} - \text{Excess Return (Levered)}}{\text{Policy Leverage Factor}} \right) + \text{Excess Return (Levered)} - \text{cost of implementation}$ <p><sup>1</sup> 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> |
| <b>CTF Benchmark Return (Unlevered)</b> | <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   |
|---------------------------------------|---|
| <b>Excess Return (Unlevered)</b>      | <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>  |
| <b>Absolute Return from Leverage</b>  | <p>Estimated by the <u>Portfolio Return (Levered)</u> minus <u>Portfolio Return (Unlevered)</u> minus <u>Implementation (+) or (-)</u>.</p>   |
| <b>Implementation (+) or (-)</b>      | <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> |
| <b>Portfolio Return (Levered)</b>     | <p>Actual performance of the CTF Portfolio for the period presented, from all strategies including Policy Leverage.</p>   |
| <b>CTF Benchmark Return (Levered)</b> | <p>Actual performance of the CTF Benchmark for the period, taking into account the use of Policy Leverage.</p>  |
| <b>Excess Return (Levered)</b>        | <p>Actual excess return of the CTF. Portfolio Return (Levered) minus Benchmark Return (Levered).</p>  |

## Board Meeting

### Tab 8 – Committee Open Session Business

- A. Approved Open Session Investment Committee Meeting Minutes of November 26, 2024, December 19, 2024, and January 28, 2025
- B. Final Open Session Investment Committee Agenda for February 25, 2025, and Draft Open Session Agendas for April 1 and April 22, 2025
- C. Draft Open Session Minutes of November 19, 2024 Enterprise Risk and Compliance Committee Meeting

**STATE OF WISCONSIN INVESTMENT BOARD**  
*Investment Committee Meeting–Open Session*

**Tuesday, November 26, 2024**

Offices of the Investment Board  
4703 Madison Yards Way, 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  
Chase Nicholson, 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  
  
Eric Barber, Chief Legal Counsel (non-voting)  
Hassan Chehime, Head of Risk Management (non-voting)  
Rochelle Klaskin, Deputy Executive Director/Chief Operating Officer (non-voting)

**Also in Attendance:** Clyde Tinnen, Trustee  
Joe Amoyal, Senior Trader–Non-Investment Grade Fixed Income  
Nathan Ballard, Senior Legal Counsel  
Chelsey Barczak, GPMS Business Director  
Zach Berghouse, Internal Auditor  
Kevin Blank, Analyst–Funds Alpha  
Brandon Brickner, Head of Internal Audit  
Kate Burkart-Paulson, Senior Legal Counsel  
Sara Chandler, Chief of Staff & Strategy  
Bridget Chen, Senior Analyst–Investment Grade Fixed Income  
Christian Comito, Senior Portfolio Manager–Investment Grade Fixed Income  
Roger Ding, Senior Portfolio Manager–Multi-Asset Strategies  
Klinton Duri, Senior Portfolio Manager–Non-Investment Grade Fixed Income  
Greg Fletcher, Performance Director  
Tom Freeman, Director of Quantamental Research  
Scott Freundlich, Portfolio Manager–Non-Investment Grade Fixed Income  
Max Garcia, Analyst–Funds Alpha  
Chase Gendron, Investment Operations Analyst  
Jameson Greenfield, Chief Financial Officer  
Thomas Gregg, Investment Operations Analyst



Dan Gyorog, Internal Auditor  
Alex Hansen, Investment Operations Analyst  
Brian Heimsoth, Senior Portfolio Manager–Asset & Risk Allocation  
Phil Johnson, Senior Portfolio Manager–Non-Investment Grade Fixed  
Income  
Jason Kowalke, Investment Operations Analyst  
Jason Krueger, Compliance Analyst  
Alex Kubiak, Investment Operations Analyst  
Katie Kuryla, Senior Paralegal/Records Specialist  
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  
Michael Mandarino, Senior Analyst–Non-Investment Grade Fixed Income  
Matt Marek, Senior Analyst–Asset & Risk Allocation  
Frank Mazzucco, Senior Legal Counsel  
Martin McCluskey, PMO Director  
Jason Mirr, Senior Portfolio Manager–U.S. Small Cap Strategy  
Nick Mokha, Portfolio Manager–Non-Investment Grade Fixed Income  
Joy Mukherjee, Senior Portfolio Manager–U.S. Small Cap Strategy  
Sunil Nair, Operational, Financing & Counterparty Risk Director  
Scott Nichols, Head of Trading  
Sarah Noronha, Senior Portfolio Manager–U.S. Small Cap Strategy  
Hunter Olson, Analyst–Non-Investment Grade Fixed Income  
Scott Parrish, Head of Private Equity  
Cefe Quesada, Chief Technology Officer  
Anand Rakesh, Director of Risk Analytics & Financial Engineering  
Systems  
Robby Richlen, Analyst–Funds Alpha  
Tom Robinson, Head of Corporate Governance  
Andrea Ruiz, Senior Portfolio Manager–Liquidity, Inflation & Rates  
Mgmt.  
Gabriel Souza, Investment Operations Analyst  
Mark Taylor, Senior Portfolio Manager–Fixed Income Strategies  
Matt Terpstra, Internal Auditor  
Rob Thornton, ARA Business Director  
Leif Thybony, Senior Portfolio Manager–Non-Investment Grade Fixed  
Income  
Dawn Tuescher, Executive Administrative Assistant  
Sarah Zhao, Investment Operations Analyst  
Joe Nankof, NEPC  
Carolyn Stittleburg, Legislative Audit Bureau  
(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 1:00 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 October 22, 2024 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. Mattina and seconded by Mr. Nicholson to approve both the open session and the closed session minutes of October 22, 2024, as presented. The motion passed unanimously.

## **2. 2025 Asset Allocation Recommendations**

Joe Nankof, NEPC, presented the *Asset Allocation Review*, included on pages 13-54 in the meeting materials. Mr. Nankof summarized NEPC's asset allocation recommendations for the Core Trust Fund (CTF) to increase the target allocation to private equity/debt from 18% to 20%, with a corresponding 2% decrease in the public equity target allocation from 40% to 38%. He highlighted that the recommended increase in private equity/debt is consistent with the overall long-term private markets pacing plan and, according to NEPC's capital market assumptions, would have only a limited impact on the CTF's target return and volatility. Mr. Nankof stated that no changes were recommended for the CTF active risk target, sub-asset class target allocations, policy leverage, or the Variable Trust Fund (VTF).

Mr. Nankof then reviewed the recommended allocations in light of NEPC's capital market assumptions for specific asset class returns and risk, commenting that **(a)** the expected return for private equity/debt is anticipated to materially exceed public equity over the 10- and 30-year periods, with only a modestly higher contribution to the expected risk of the total fund, and **(b)** NEPC's 10- and 30-year return expectations for public equity have declined further than private equity/debt owing to less attractive starting valuations in the public markets. Lastly, Mr. Nankof and Todd Mattina, Head Economist & Asset and Risk Allocation Chief Investment Officer, led the Committee's discussion regarding NEPC's asset allocation recommendations in the context of the overall long-term private markets pacing plan.

**Motion:** A motion was made by Mr. Mattina and seconded by Ms. Fink to approve and to recommend to the Board of Trustees the Asset Allocation Recommendations for 2025, in substantially the form included in the Committee materials. The motion passed unanimously.

## **3. Annual Benchmark Presentation**

Mr. Nankof, also representing NEPC in its capacity as the Board of Trustees' benchmark consultant, presented the second of two parts of the 2024 annual benchmark review, included on pages 55-72 in the meeting materials. He noted that NEPC's benchmark recommendations for the State Investment Fund (SIF), the Separately Managed Funds (SMFs), and the alpha pool were being presented for the Committee's consideration prior to the December Board meeting.

Mr. Nankof summarized NEPC's recommendation to change the cash sub-component benchmarks of each of the State Historical Society Trust Fund and the Injured Patients and Families Compensation Fund from the SIF benchmark to the ICE BofA U.S. 3-Month Treasury Bill Index. He highlighted the advantages of adopting independent, self-contained

benchmarks that do not cross-reference other portfolios as well as the increased alignment between the new benchmark and the cash/liquidity used in these SMFs. Mr. Nankof stated that NEPC was not recommending any benchmark changes for the SIF or the other SMFs or to the cost of implementing leverage philosophy or process for the alpha pool portfolios.

**Motion:** A motion was made by Mr. Stanton and seconded by Mr. Mattina to approve, and to recommend to the Board of Trustees' Benchmark and Performance Committee, **(i)** the change to the cash sub-component benchmarks of each of the State Historical Society Trust Fund and the Injured Patients and Families Compensation Fund to the ICE BofA U.S. 3-Month Treasury Bill Index, **(ii)** no changes to the current benchmarks for the other Separately Managed Funds, and **(iii)** no changes to the cost of implementing leverage philosophy or process for the portfolios within the alpha pool, in each case as presented and recommended by SWIB's benchmark consultant, NEPC, in part two of its Annual Benchmark Review, included in the Committee's materials. The motion passed unanimously.

#### **4. Amendments to Investment Committee WRS Investment Guidelines**

Eric Barber, Chief Legal Counsel, discussed the proposed amendments to the *SWIB Investment Committee Wisconsin Retirement System Investment Guidelines*, included on pages 73-90 in the meeting materials. He reported that the proposed changes **(a)** update the leverage use policy to add unsecured borrowing in general and the issuance of commercial paper in particular, **(b)** clean up the rebalancing procedures to remove those applicable to the multi-asset strategy class, since it is no longer a distinct asset class in the asset allocation, **(c)** remove the guidelines pertaining to the active internal global equity strategy following its closure in the third quarter, **(d)** add separate guidelines for the TBA strategy portfolio, which had been previously managed within the multi-strat portfolio, and **(e)** revise soft risk parameters to reflect the closure of the global equity strategy and the addition of the TBA strategy portfolio.

Mr. Barber and Mike Shearer, Head of Fixed Income Strategies, then answered questions regarding the TBA strategy portfolio's ex ante tracking error and anticipated steady state size. Following discussion, the Committee recommended revising the proposed soft risk parameters to reference the TBA strategy portfolio's ex-ante beta to mortgage-backed securities (MBS) benchmark.

**Motion:** A motion was made by Mr. Shearer and seconded by Mr. Stanton to approve the proposed amendments to the *SWIB Investment Committee WRS Investment Guidelines*, as presented in the Committee materials and revised to reference the TBA strategy portfolio's soft risk parameter as ex-ante beta to mortgage-backed securities (MBS) benchmark. The motion passed unanimously.

#### **5. Global Public Markets Strategies Division Update**

Nick Stanton, Head of Multi-Asset Strategies, reported on performance from the Global Public Markets Strategies division in the *Global Public Markets Strategies Quarterly Update, Q3 2024*, included on pages 91-93 in the meeting materials. He highlighted that all eight division strategies generated positive relative returns for the year through September 30, 2024, with most continuing to perform well through the beginning of the fourth quarter.

## 6. Q3 2024 Quarterly Updates

### A. LIRM

Andrea Ruiz, Senior Portfolio Manager–Liquidity, Inflation & Rates Mgmt., presented the *Investment Strategies: Liquidity, Inflation and Rates Management (LIRM)* quarterly update, included on pages 94-100 in the meeting materials. With respect to the market, she noted that **(a)** both money market fund net assets and U.S. Treasury bill supply increased during the third quarter, **(b)** SOFR spreads spiked at the end of September, and **(c)** market participants adjusted expectations regarding the number and extent of interest rate cuts by the Federal Reserve. Ms. Ruiz then reviewed performance for the SIF, noting that the SIF returned positive absolute and relative performance year-to-date, and confirmed that the portfolio remained in compliance with its guidelines.

### B. Multi-Asset Strategies

Chase Nicholson, Senior Portfolio Manager–Multi-Asset Strategies, presented the *Multi-Strat Portfolio Review*, included on pages 101-105 in the meeting materials. He reported that the multi-strat portfolio underperformed its benchmark by 149 basis points (bps) in Q3 2024, with systematic strategies and fundamental security selection representing the primary detractors. Mr. Nicholson then **(a)** reviewed quantitative investment strategy year-to-date performance by asset class and associated premium, noting that time-series trend/momentum was generally ineffective across asset classes, and **(b)** confirmed that the portfolio remained in compliance with its guidelines.

### C. Fixed Income Strategies

Mike Shearer, Head of Fixed Income Strategies, presented the *Fixed Income Strategies Review*, included on pages 106-121 in the meeting materials. He highlighted that all five fixed income portfolios exceeded their benchmarks year-to-date and reviewed the overall positioning of the strategies with respect to active duration, beta risk and tracking error. Mr. Shearer then provided a fixed income market review, commenting that **(a)** market pricing of cumulative interest rate cuts through the end of 2025 has been volatile, **(b)** U.S. Treasury yields fell during the quarter, **(c)** spreads across investment grade credit, high yield, and U.S. MBS tightened during the quarter, **(d)** the energy sector has generally performed well in the current environment, while the communications, healthcare, and real estate sectors have struggled, and **(e)** lower-tier consumer credit appears average despite seasonal weakness. Lastly, he confirmed that the portfolios were in compliance with their guidelines in Q3 2024.

### D. Global Equities

Mr. Stanton presented the *Global Equity Strategy Review*, included on pages 122-128 in the meeting materials. He commented that, following the conclusion of active management in late September, the strategy's active positions were closed over subsequent weeks with the objective of minimizing impact costs. Mr. Stanton noted that the strategy had been closed for the reasons previously outlined by Mr. Denson. Mr. Stanton then provided an equity market review, noting that global developed equities indices exhibited strong performance in Q3 2024, and U.S. and European earnings generally exceeded expectations during the

quarter. Lastly, he confirmed that the portfolio, prior to its closing, had been in compliance with its guidelines.

### **E. Small Cap Strategy**

Joy Mukherjee, Senior Portfolio Manager–U.S. Small Cap Strategy, referred to the *U.S. Small Cap Strategy Review*, included on pages 129-135 in the meeting materials. He noted that the portfolio outperformed its benchmark by 382 bps year-to-date and that absolute and relative performance over the three- and five-year periods were positive. Mr. Mukherjee then (a) discussed trends related to small cap market performance, noting that small cap names experienced a resurgence relative to large cap names during the third quarter, but still underperformed large cap names year-to-date, (b) provided sector commentary, stating that financials and materials were the top-performing sectors in the quarter, while the communication services and healthcare sectors detracted, and (c) confirmed that the portfolio remained in compliance with its guidelines.

### **7. Convene in Closed Session**

**Motion:** A motion to go into closed session 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 (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 global equities, small cap equities, fixed income strategies, multi-asset, LIRM, and exposure management, was made by Mr. Drummond and seconded by Ms. Fink.

Mr. Denson called for a roll call vote.

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

There being eleven ayes and no nays, Mr. Denson declared the motion passed. The Committee convened in closed session at 1:41 p.m. and reconvened in open session at 2:46 p.m.

### **8. Announcement of Committee Actions Relating to Items Taken Up in Closed Session**

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

### **9. Soft Risk Parameters**

Hassan Chehime, Head of Risk Management, noted that the report *Soft Risk Parameters–Asset Class and Portfolio*, as of October 31, 2024, was included on pages 260-261 in the meeting materials for the Committee’s review. Mr. Chehime indicated that there were two new discussion triggers this month relating to the ex ante tracking error for each of the public

fixed income asset class and the VTF. He also noted that one discussion trigger had been dropped relating to the ex ante tracking error for the long Treasury portfolio.

**10. Future Meeting Topics**

Mr. Denson noted that draft agendas for the December 19, 2024 and January 28, 2025 Committee meetings were included on pages 262-265 in the meeting materials for the Committee's review.

**11. Adjournment**

**Motion:** A motion to adjourn the meeting was made by Mr. Rector and seconded by Mr. Maung. The motion passed unanimously, and the meeting adjourned at 2:47 p.m.

Date of Committee Approval: 12/19/24

Signed: /s/ Eric Barber  
Eric Barber, Secretary  
Investment Committee

**STATE OF WISCONSIN INVESTMENT BOARD**  
***Investment Committee Meeting–Open Session***

**Thursday, December 19, 2024**

Offices of the Investment Board  
4703 Madison Yards Way, 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  
Lin Maung, Senior Portfolio Manager–Private Equity  
Chase Nicholson, 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  
  
Eric Barber, Chief Legal Counsel (non-voting)  
Hassan Chehime, Head of Risk Management (non-voting)  
Rochelle Klaskin, Deputy Executive Director/Chief Operating Officer (non-voting)

**Also in Attendance:** John Voelker, Trustee  
Joe Amoyal, Senior Trader–Non-Investment Grade Fixed Income  
Nathan Ballard, Senior Legal Counsel  
Zach Berghouse, Internal Auditor  
Kevin Blank, Analyst–Funds Alpha  
Brandon Brickner, Head of Internal Audit  
Kate Burkart-Paulson, Senior Legal Counsel  
Sara Chandler, Chief of Staff & Strategy  
Christian Comito, Senior Portfolio Manager–Investment Grade Fixed Income  
Tunc Dayioglu, Senior Portfolio Manager–Funds Alpha  
Kliton Duri, Senior Portfolio Manager–Non-Investment Grade Fixed Income  
Trey Edgerle, Compliance Analyst  
Greg Fletcher, Performance Director  
Tom Freeman, Director of Quantamental Research  
Scott Freundlich, Portfolio Manager–Non-Investment Grade Fixed Income  
Shannon Gannon, Communications Director  
Max Garcia, Analyst–Funds Alpha  
Chase Gendron, Investment Operations Analyst  
Jameson Greenfield, Chief Financial Officer

Dan Gyorog, Internal Auditor  
Alex Hansen, Investment Operations Analyst  
Brian Heimsoth, Senior Portfolio Manager–Asset & Risk Allocation  
Phil Johnson, Senior Portfolio Manager–Non-Investment Grade Fixed  
Income  
Ryan Johnston, Senior Analyst–Funds Alpha  
Salah Khalaf, Portfolio Manager–Private Markets & Funds Alpha  
Jason Kowalke, Investment Operations Analyst  
Dylan Krivoshein, Investment Operations Analyst  
Jason Krueger, Compliance Analyst  
Katie Kuryla, Senior Paralegal/Records Specialist  
Lisa Lange, Director of Compliance & Senior Legal Counsel  
Shan Lo, Senior Portfolio Manager–Multi-Asset Strategies  
Jon Loboda, Performance Measurement Operations Manager  
Jeff Lucas, Senior Portfolio Manager–Investment Grade Fixed Income  
Michael Mandarino, Senior Analyst–Non-Investment Grade Fixed Income  
Matt Marek, Senior Analyst–Asset & Risk Allocation  
Damian Maroun, Head of Trading and Execution  
Frank Mazzucco, Senior Legal Counsel  
Nick Mokha, Portfolio Manager–Non-Investment Grade Fixed Income  
Sunil Nair, Operational, Financing & Counterparty Risk Director  
Scott Nichols, Head of Trading  
Hunter Olson, Analyst–Non-Investment Grade Fixed Income  
Anand Rakesh, Director of Risk Analytics & Financial Engineering  
Systems  
Joe Roth, Transition Management and Portfolio Support Manager  
Edouard Senechal, Senior Portfolio Manager–Asset & Risk Allocation  
Sam Shibilski, Investment Operations Analyst  
Gabriel Souza, Investment Operations Analyst  
Mark Taylor, Senior Portfolio Manager–Fixed Income Strategies  
Rob Thornton, ARA Business Director  
Dawn Tuescher, Executive Administrative Assistant  
(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 1:01 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 November 26, 2024 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. Mattina and seconded by Mr. Nicholson to approve both the open session and the closed session minutes of November 26, 2024, as presented. The motion passed unanimously.



## **2. Transition Update (Q3 2024)**

Joe Roth, Transition Management and Portfolio Support Manager, presented the *Transition Management Summary, Q3 2024*, included on page 11 in the meeting materials. Mr. Roth noted that the two transitions during the quarter, which were both managed internally, liquidated approximately \$2.4 billion from externally managed beta one equity portfolio assets in two tranches to decouple international and domestic equities. He commented that the first transition cost more than expected due to limited liquidity in the market, while the second transition cost less than expected with improved market liquidity. Lastly, Mr. Roth answered questions regarding both the advantages and limitations of managing transitions internally.

## **3. Convene in Closed Session**

**Motion:** A motion to go into closed session 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 **(a)** the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, **(b)** the review of specific proprietary investment strategies and investment instruments related to asset and risk allocation and exposure management, and **(c)** the review of broker information, was made by Mr. Mattina and seconded by Mr. Stanton.

Mr. Denson called for a roll call vote.

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

There being twelve ayes and no nays, Mr. Denson declared the motion passed. The Committee convened in closed session at 1:07 p.m. and reconvened in open session at 2:52 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 **(i)** reviewed active risk profiles of portfolio investments and the Core and Variable Trust Funds, **(ii)** reviewed specific proprietary investment strategies and investment instruments related to asset and risk allocation and exposure management, and **(iii)** reviewed broker information.

## **5. Research Task Force Report**

Stefano Cavaglia, Senior Portfolio Manager–Asset & Risk Allocation, presented the *Research Task Force Update*, included on pages 107-116 in the meeting materials. He discussed recent Research Task Force initiatives, including **(a)** sponsoring seminars relating to the Federal Reserve’s policy objectives, balance sheet, and funding conditions, as well as distressed debt and the post-election economic outlook, **(b)** exploring hosting speakers on broad trends such as balance sheet and debt management, hedge fund capital and risk allocation strategies, and artificial intelligence, **(c)** promoting knowledge-sharing and educational programs, including participation in sessions related to SWIB’s membership in

the International Centre for Pension Management and a forum for quantitative research in finance, and (d) planning next year's June investment forum, including identifying topics and speakers.

**6. Quarterly Performance Review (Q3 2024)**

Mr. Denson noted that the *Investment Performance Report*, as of September 30, 2024, was included on pages 117-149 in the meeting materials for the Committee's information.

**7. Soft Risk Parameters**

Hassan Chehime, Head of Risk Management, noted that the report *Soft Risk Parameters–Asset Class and Portfolio*, as of November 29, 2024, was included on pages 150-151 in the meeting materials for the Committee's review. Mr. Chehime noted that there were no new discussion triggers this month and that no discussion triggers had been dropped.

**8. Future Meeting Topics**

Mr. Denson noted that draft agendas for the January 28, 2025 and February 25, 2025 Committee meetings were included on pages 152-155 in the meeting materials for the Committee's review.

**9. Adjournment**

**Motion:** A motion to adjourn the meeting was made by Mr. Mattina and seconded by Mr. Rector. The motion passed unanimously, and the meeting adjourned at 2:57 p.m.

Date of Committee Approval: 01/28/25

Signed: /s/ Eric Barber  
Eric Barber, Secretary  
Investment Committee

**STATE OF WISCONSIN INVESTMENT BOARD**  
*Investment Committee Meeting–Open Session*

**Tuesday, January 28, 2025**

Offices of the Investment Board  
4703 Madison Yards Way, 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  
Lin Maung, Senior Portfolio Manager–Private Equity  
Chase Nicholson, Senior Portfolio Manager–Multi-Asset Strategies  
Mike Shearer, Head of Fixed Income Strategies  
Nick Stanton, Head of Multi-Asset Strategies  
Ivy Zhang, Senior Portfolio Manager–Asset & Risk Allocation  
  
Eric Barber, Chief Legal Counsel (non-voting)  
Hassan Chehime, Head of Risk Management (non-voting)  
Rochelle Klaskin, Deputy Executive Director/Chief Operating Officer (non-voting)

**Also in Attendance:** John Voelker, Trustee  
Nathan Ballard, Senior Legal Counsel  
Chelsey Barczak, GPMS Business Director  
Zach Berghouse, Internal Auditor  
Brandon Brickner, Head of Internal Audit  
Kate Burkart-Paulson, Senior Legal Counsel  
John Burkhartzmeyer, Senior Trader  
Sara Chandler, Chief of Staff & Strategy  
Christian Comito, Senior Portfolio Manager–Investment Grade Fixed Income  
Kliton Duri, Senior Portfolio Manager–Non-Investment Grade Fixed Income  
Chris Eckerman, Senior Portfolio Manager–Private Equity  
Trey Edgerle, Compliance Analyst  
Greg Fletcher, Performance Director  
Scott Freundlich, Portfolio Manager–Non-Investment Grade Fixed Income  
Max Garcia, Analyst–Funds Alpha  
Chase Gendron, Investment Operations Analyst  
Jameson Greenfield, Chief Financial Officer  
Thomas Gregg, Investment Operations Analyst  
Dan Gyorog, Internal Auditor  
Zonglin Han, Quantitative Analyst–Asset & Risk Allocation

Alex Hansen, Investment Operations Analyst  
Vince Janecky, Internal Auditor Data Analyst  
Salah Khalaf, Portfolio Manager–Private Markets & Funds Alpha  
Jason Kowalke, Investment Operations Analyst  
Dylan Krivoshein, Investment Operations Analyst  
Jason Krueger, Compliance Analyst  
Alex Kubiak, Investment Operations Analyst  
Katie Kuryla, Senior Paralegal/Records Specialist  
Lisa Lange, Director of Compliance & Senior Legal Counsel  
Shan Lo, Senior Portfolio Manager–Multi-Asset Strategies  
Jon Loboda, Performance Measurement Operations Manager  
Bill Luetzow, Legal Counsel  
Matt Marek, Senior Analyst–Asset & Risk Allocation  
Ed Martinez, PMFA Business Director  
Frank Mazzucco, Senior Legal Counsel  
Nick Mokha, Portfolio Manager–Non-Investment Grade Fixed Income  
Sunil Nair, Operational, Financing & Counterparty Risk Director  
Scott Nichols, Head of Trading  
Sarah Noronha, Senior Portfolio Manager–U.S. Small Cap Strategy  
Matt Notzon, Performance Analyst  
Scott Parrish, Head of Private Equity  
Chris Prestigiacommo, Head of Private Debt & Venture Capital  
Anand Rakesh, Director of Risk Analytics & Financial Engineering  
Systems  
Robby Richlen, Analyst–Funds Alpha  
Tom Robinson, Head of Corporate Governance  
Jason Rothenberg, Head of Real Estate  
Dan Schally, Analyst–Real Estate  
Sam Shibilski, Investment Operations Analyst  
Gabriel Souza, Investment Operations Analyst  
Mark Taylor, Senior Portfolio Manager–Fixed Income Strategies  
Matt Terpstra, Internal Auditor  
Rob Thornton, ARA Business Director  
Leif Thybony, Senior Portfolio Manager–Non-Investment Grade Fixed  
Income  
Dawn Tuescher, Executive Administrative Assistant  
Joe Nankof, NEPC  
Eileen Neill, Verus Advisory  
Audrey Woller, Legislative Audit Bureau  
(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 1:00 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 December 19, 2024 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. Mattina and seconded by Mr. Shearer to approve both the open session and the closed session minutes of December 19, 2024, as presented. The motion passed unanimously.

## **2. Amendments to SWIB Investment Committee Charter**

Eric Barber, Chief Legal Counsel, noted that the *SWIB Investment Committee Charter*, included on pages 8-11 in the meeting materials for the Committee's reference, is reviewed on an annual basis. Mr. Barber reported that legal staff is not recommending any amendments to the existing Charter for the coming year and offered to answer any questions.

## **3. Q4 2024 Quarterly Updates**

### **A. Private Equity**

Scott Parrish, Head of Private Equity, presented the *Quarterly Activity Report – Private Equity*, included on pages 12-34 in the meeting materials. He provided a private equity market update for Q4 2024, noting that **(a)** U.S. private equity fundraising dollars and the number of funds both decreased year-over-year in a challenging fundraising environment, with an increase in average time to close funds, **(b)** sponsors have accumulated more than \$1 trillion in dry powder, with approximately half from 2023 and 2024 vintage year funds, **(c)** U.S. enterprise value-to-EBITDA entry multiples and leverage multiples increased slightly year-over-year for transactions funded by broadly syndicated loans, **(d)** U.S. private equity deal volume and value, as well as exit volume and value, both increased year-over-year relative to depressed 2023 levels with expectations for a more active 2025, and **(e)** the number of portfolio company exits was split evenly between corporate acquisitions and sponsor-to-sponsor transactions, with limited IPO activity.

Mr. Parrish then reported that, as of December 31, 2024, the market value of the aggregate private equity asset class, excluding the venture capital and private debt portfolios, was approximately \$22.6 billion and made up 17.6% of the Core Trust Fund (CTF). Although capital calls exceeded distributions in 2024, he commented that the portfolios' net cash outflow position improved materially year-over-year and distributions received in 2024 were \$1 billion more than in 2023.

With respect to performance, Mr. Parrish highlighted that **(a)** as of September 30, 2024, the combined private equity and current return portfolios, inclusive of co-investments, achieved second quartile performance for vintage years 2014-2022, with the exception of third quartile performance for 2016, and first quartile performance for 2023 and 2024, and **(b)** the private equity and current return portfolios outperformed their benchmarks for the one-, three-, and five-year time periods. He also commented on the equity multiples and internal rates of

return (IRRs) for the portfolios' sub-strategies, highlighting strong performance across nearly all sub-strategies.

Mr. Parrish then noted that public company exposure declined to an all-time low due to minimal IPO activity and recent sales of public companies from the portfolio. Lastly, Mr. Parrish reviewed the commitments made in Q4 2024, discussed the portfolio pipeline for Q1 2025, 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 35-47 in the meeting materials. He provided a real estate market overview, noting that **(a)** while gross appreciation returns declined in 2023-2024 as interest rates increased, gross income returns have remained relatively stable over the past five years, **(b)** five-year consensus performance forecast data across property types has improved year-over-year, but the office sector still faces headwinds, and **(c)** transaction volume remained muted in 2024, but there is cautious optimism that activity will accelerate in 2025, driven in part by the significant amount of dry powder in recent fund vintages.

Mr. Rothenberg then reviewed the real estate portfolio, noting that the portfolio's market value of approximately \$11.8 billion, representing 9% of the CTF, was relatively flat quarter-over-quarter with a slight decrease year-over-year due to asset level depreciation. He discussed the portfolio's **(i)** risk profile, which has not materially changed relative to the prior quarter but reflects a gradual increase in non-core exposure since 2019, and **(ii)** diversification by property type, highlighting the year-over-year increase in the portfolio's industrial exposure and consistent exposure to credit.

Mr. Rothenberg also reviewed the portfolio's performance, highlighting outperformance relative to the benchmark over all time periods despite negative absolute returns for the one-year period. He then **(a)** discussed performance by sub-strategy, noting that contributors for the one-year period include the portfolio's underweight to office and exposure to credit strategies and alternative sectors, **(b)** reviewed the four commitments made in the fourth quarter, including a targeted data center investment, and 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 48-59 in the meeting materials. He provided a private debt market update, noting that **(a)** fundraising remained strong in 2024, driven by strong investor interest in diverse private debt strategies, **(b)** investors continue to prefer more established managers, which received the significant majority of fund commitments, **(c)** direct lending remains the preferred sub-strategy within private debt, **(d)** the ability of non-bank lenders to provide tailored financing arrangements, coupled with high levels of private equity dry powder, is expected to continue to bolster demand for private credit, and **(e)** overall leverage increased slightly year-over-year but

remains below long-term historical averages, while default rates remain low due in part to loan modifications.

Mr. Prestigiacomio then reviewed the portfolio's **(i)** characteristics, noting that the overall market value increased from the prior quarter while average life and duration decreased modestly and average coupon was unchanged, **(ii)** current below investment grade (BIG) holdings, which held steady at 6% but is expected to increase with opportunities in the pipeline, **(iii)** sector mix, which remained slightly underweight industrial relative to the benchmark, and **(iv)** originations within and outside Wisconsin, noting that there were several Wisconsin opportunities in the early stages of evaluation.

With respect to performance, Mr. Prestigiacomio highlighted that the portfolio outperformed its benchmark over the one-, three- and five-year time periods, with strong performance during the second half of 2024. He then reported that there were no problem credits or workouts in the portfolio, confirmed that the portfolio remained in compliance with its guidelines. Lastly, he led the Committee's discussion regarding the impact of loan modifications on overall default rates.

#### **D. Funds Alpha**

Derek Drummond, Head of Funds Alpha, presented the *Funds Alpha Q4 2024 Update*, included on pages 60-66 in the meeting materials. He highlighted that the hedge funds and beta one portfolios all generated positive excess value added (EVA) for the year. With respect to Q4 performance, he commented that **(a)** beta one equity portfolio alpha was initially driven by a positive earnings period and positioning heading into the U.S. election, but then partially undercut by a momentum sell-off in December, **(b)** the beta one fixed income portfolio's strong returns for the quarter were driven by risk-on spread compression in U.S. and emerging markets, and **(c)** the hedge funds portfolio generated strong performance across all sub-strategies, with six of seven strategies exceeding the cost of capital in 2024.

Mr. Drummond then provided an update on the market environment, noting that **(i)** hedge fund managers are positioned for more dispersion across macro and single-name securities, **(ii)** U.S. fixed income managers have maintained their risk-off positioning, **(iii)** valuations remain elevated at the beginning of 2025, following a strong year for single-stock momentum, **(iv)** consumer data continues to vary across credit quality cohorts, and **(v)** the team is evaluating synthetic risk transfer transactions with regional banks. Lastly, he reviewed manager positioning and factor exposures in the beta one portfolios, commenting that the beta one equity portfolio is recently overweight beta, and confirmed that all portfolios were in compliance with their guidelines for Q4 2024.

#### **4. Convene in Closed Session**

**Motion:** A motion to go into closed session 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 **(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, funds alpha, and exposure management, was made by Ms. Linn and seconded by Mr. Nicholson.

Mr. Denson called for a roll call vote.

|              |             |             |               |
|--------------|-------------|-------------|---------------|
| Denson-Aye   | Fink-Aye    | Mattina-Aye | Cavaglia-Aye  |
| Drummond-Aye | Linn-Aye    | Maung-Aye   | Nicholson-Aye |
| Shearer-Aye  | Stanton-Aye | Zhang-Aye   |               |

There being eleven ayes and no nays, Mr. Denson declared the motion passed. The Committee convened in closed session at 1:33 p.m. and reconvened in open session at 2:30 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 (i) reviewed active risk profiles and positioning of portfolio investments and the Core and Variable Trust Funds, and (ii) reviewed specific proprietary investment strategies and investment instruments related to private equity, real estate, private debt, venture capital, funds alpha, and exposure management.

#### **6. Soft Risk Parameters**

Hassan Chehime, Head of Risk Management, noted that the report *Soft Risk Parameters—Asset Class and Portfolio*, as of December 31, 2024, was included on pages 166-167 in the meeting materials for the Committee’s review. Mr. Chehime noted that there were no new discussion triggers this month and that one discussion trigger had been dropped relating to the small cap portfolio’s ex ante tracking error.

#### **7. Future Meeting Topics**

Mr. Denson noted that draft agendas for the February 25, 2025 and April 1, 2025 Committee meetings were included on pages 168-171 in the meeting materials for the Committee’s review.

#### **8. Adjournment**

**Motion:** A motion to adjourn the meeting was made by Mr. Stanton and seconded by Mr. Maung. The motion passed unanimously, and the meeting adjourned at 2:34 p.m.

Date of Committee Approval: 02/25/25

Signed: /s/ Eric Barber  
Eric Barber, Secretary  
Investment Committee



**Name of Meeting:** Staff Investment Committee Meeting  
**Date/Time:** Tuesday, February 25, 2025 1:00 pm  
**Room:** 7<sup>th</sup> Floor Conference Room - 7022  
**Address:** 4703 Madison Yards Way, Madison, WI 53705

| Est. Time Minutes | Action Item | Topic  | Presenter   |
|-------------------|-------------|--|---|
|                   |             | <b>OPEN SESSION</b>  |   |
|                   | Motion      | 1. Approval of the Minutes – Open Session<br>A. January 28, 2025                             |   |
| 5                 |             | 2. Global Public Market Strategies Division Update   | Mike Shearer<br>Nick Stanton                                    |
| 20                |             | 3. Q4 2024 Quarterly Updates<br>A. Small Cap<br>B. LIRM<br>C. Multi-Strat<br>D. Fixed Income | Joy Mukherjee<br>Andrea Ruiz<br>Chase Nicholson<br>Mike Shearer |
|                   | Motion      | <b>CLOSED SESSION*</b>   |   |
|                   | Motion      | <b>RECONVENE IN OPEN SESSION</b>   |   |
|                   |             | 4. Announcement of Committee Actions Relating to Items Taken Up in Closed Session            |   |
| 5                 | Motion      | 5. QIR Certification   | Lisa Lange  |
|                   |             | 6. Soft Risk Parameters (No presentation unless requested)                                   |   |
|                   |             | 7. Future Meeting Topics   |   |
|                   | Motion      | 8. 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 and positioning of portfolio investments and the Core and Variable Trust Funds, and (ii) the review of specific proprietary investment strategies and investment instruments related to LIRM, multi-strat, fixed income strategies, small cap equities, 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**

- 4/1/25 – March Committee Mtg.
- 4/22/25 – April Committee Mtg.
- 5/27/25 – May Committee Mtg.
- 6/24/25 – June Committee Mtg.
- 7/29/25 – July Committee Mtg.
- 8/26/25 – August Committee Mtg.
- 9/23/25 – September Committee Mtg.
- 10/28/25 – October Committee Mtg.
- 11/25/25 – November Committee Mtg.
- 12/18/25 – 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
- Chase Nicholson**, 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

**Non-voting Committee Members**

- Rochelle Klaskin**, Deputy Executive Director/Chief Operating Officer
- Eric Barber (Secretary)**, Chief Legal Counsel
- Hassan Chehime**, Head of Risk Management

**Name of Meeting:** Staff Investment Committee Meeting  
**Date/Time:** Tuesday, April 1, 2025 1:00 pm  
**Room:** 7<sup>th</sup> Floor Conference Room - 7022  
**Address:** 4703 Madison Yards Way, Madison, WI 53705

| Est. Time Minutes | Action Item | Topic   | Presenter        |
|-------------------|-------------|---|------------------|
|                   |             | <b>OPEN SESSION</b>   |                  |
|                   | Motion      | 1. Approval of the Minutes – Open Session<br>A. February 25, 2025                 |                  |
| 5                 |             | 2. June Investment Forum Preview  | Kevin Blank      |
| 5                 |             | 3. Transition Update (Q4 2024)  | Joe Roth         |
|                   | Motion      | <b>CLOSED SESSION*</b>  |                  |
|                   | Motion      | <b>RECONVENE IN OPEN SESSION</b>  |                  |
|                   |             | 4. Announcement of Committee Actions Relating to Items Taken Up in Closed Session |                  |
| 5                 |             | 5. Research Task Force Report   | Stefano Cavaglia |
|                   |             | 6. Quarterly Performance Review (Q4 2024)<br>(No presentation unless requested)   |                  |
|                   |             | 7. QIR Annual Certification Report<br>(No presentation unless requested)          |                  |
|                   |             | 8. Soft Risk Parameters (No presentation unless requested)                        |                  |
|                   |             | 9. Future Meeting Topics  |                  |
|                   | Motion      | 10. 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 and positioning 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 market strategies, private markets and funds alpha, 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.

*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**

- 4/22/25 – April Committee Mtg.
- 5/27/25 – May Committee Mtg.
- 6/24/25 – June Committee Mtg.
- 7/29/25 – July Committee Mtg.
- 8/26/25 – August Committee Mtg.
- 9/23/25 – September Committee Mtg.
- 10/28/25 – October Committee Mtg.
- 11/25/25 – November Committee Mtg.
- 12/18/25 – 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
- Chase Nicholson**, 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

**Non-voting Committee Members**

- Rochelle Klaskin**, Deputy Executive Director/Chief Operating Officer
- Eric Barber (Secretary)**, Chief Legal Counsel
- Hassan Chehime**, Head of Risk Management

# AGENDA / NOTICE

**Name of Meeting:** Staff Investment Committee Meeting  
**Date/Time:** Tuesday, April 22, 2025 1:00 pm  
**Room:** 7<sup>th</sup> Floor Conference Room - 7022  
**Address:** 4703 Madison Yards Way, Madison, WI 53705

| Est. Time Minutes | Action Item | Topic   | Presenter   |
|-------------------|-------------|---|---|
|                   |             | <b>OPEN SESSION</b>   |   |
|                   | Motion      | 1. Approval of the Minutes – Open Session<br>A. April 1, 2025   |   |
| 10                | Motion      | 2. Amendments to Investment Committee WRS Investment Guidelines   | Lisa Lange  |
| 5                 |             | 3. Private Markets & Funds Alpha Division Update  | Anne-Marie Fink   |
| 45                |             | 4. Q1 2025 Quarterly Updates<br>A. Private Equity<br>B. Real Estate<br>C. Private Debt<br>D. Funds Alpha  | Scott Parrish<br>Jason Rothenberg<br>Chris Prestigiacommo<br>Derek Drummond |
|                   | Motion      | <b>CLOSED SESSION*</b>  |   |
|                   | Motion      | <b>RECONVENE IN OPEN SESSION</b>  |   |
|                   |             | 5. Announcement of Committee Actions Relating to Items Taken Up in Closed Session   |   |
|                   |             | 6. Soft Risk Parameters (No presentation unless requested)  |   |
|                   |             | 7. Future Meeting Topics  |   |
|                   | Motion      | 8. Motion to Adjourn  |   |
|                   |             | <i>NOTES: Items may be taken in order other than listed.</i><br><br><i>The meeting site is physically accessible. Upon prior request, reasonable accommodations will be provided.</i> |   |

\* 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 and positioning 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, funds alpha, 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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**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  
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**Chase Nicholson**, 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

**Non-voting Committee Members**

**Rochelle Klaskin**, Deputy Executive Director/Chief Operating Officer  
**Eric Barber (Secretary)**, Chief Legal Counsel  
**Hassan Chehime**, Head of Risk Management

**STATE OF WISCONSIN INVESTMENT BOARD**  
***Enterprise Risk and Compliance Committee-Open Session***

**Tuesday, November 19, 2024**

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

**Committee Members Present:** Hassan Chehime, Head of Risk Management (Co-Chair)  
Lisa Lange, Director of Compliance & Senior Legal Counsel (Co-Chair)  
Jameson Greenfield, Chief Financial Officer (Vice Chair)  
Eric Barber, Chief Legal Counsel (Secretary)  
Edwin Denson, Executive Director/Chief Investment Officer  
Rochelle Klaskin, Deputy Executive Director/Chief Operating Officer  
Todd Mattina, Head Economist, Asset & Risk Allocation CIO  
Cefe Quesada, Chief Technology Officer  
Brandon Brickner, Head of Internal Audit (*non-voting*)

**Others Present:** Sara Chandler, Chief of Staff & Strategy  
Kim DeMane, Infrastructure Director  
Jason Krueger, Compliance Analyst  
Alyssa Moore, Compliance Analyst  
Sunil Nair, Operational, Financing & Counterparty Risk Dir.  
Olu Olubiyi, Information Security & Governance Manager  
Dawn Tuescher, Executive Administrative Assistant  
Madeline Warkins, Legal Counsel  
Hannibal Smith, Operational Risk Analyst, Senior

**Open Session**

Lisa Lange, Co-Chair of the Enterprise Risk and Compliance Committee (“ERCC”), declared that a quorum was present and called the meeting to order at 1:01 p.m.

**1. Approval of Minutes**

Ms. Lange confirmed that there were no questions or comments on either the open session or closed session minutes of May 14, 2024, which were included on pages 4-6 in the meeting materials.

**Motion:** A motion was made by Hassan Chehime, Head of Risk Management, and seconded by Jameson Greenfield, Chief Financial Officer, to approve the open session and closed session minutes of May 14, 2024, as presented. The motion passed unanimously.

## **2. Risk Management Division Update**

Hassan Chehime, Head of Risk Management, presented the Risk Management Division Update, included on pages 7-9 in the meeting materials. Mr. Chehime updated the Committee on work done to establish FactSet as the Enterprise Investment Risk System (“ERS”), the related support for the ERS and the transition of the downstream data to FactSet from the BNY IBOR to SWIB’s internal SimCorp IBOR. Mr. Chehime gave brief updates on other initiatives and improvements to investment risk management, including periodic portfolio risk review new tracking of such meetings, new Snowflake dashboards for Private Equity, Real Estate and Hedge Funds and expanded risk coverage for the Separately Managed Funds. Mr. Chehime also presented the Risk Division Plan for 2025-2027. This included updates and enhancements to the ERS data management, quality and process, moving the central risk analytics monitor from Snowflake to SWIB Central, expansion of the ERS’s risk analytics, process enhancements and multi-asset class risk modeling and other future analytics.

## **3. Compliance Update**

Lisa Lange, Director of Compliance and Senior Legal Counsel, presented the *Compliance Reporting & Updates* for Q2 2024 and Q3 2024, which were included on pages 10-24 in the meeting materials.

### **A. Q2 2024**

Ms. Lange reported that the second quarter of 2024 had a lower number of personal trading requests compared to the prior corresponding quarter, with a slightly lower approval rate. There was one personal trading violation in the quarter, no guideline violations, and one waiver granted. There was one employee with a late affirmation.

### **B. Q3 2024**

Ms. Lange noted that the third quarter of 2024 had a higher number of personal trading requests than the prior quarter, with a higher approval rate. There were four personal trading violations in the third quarter. Ms. Lange noted no guideline violations or waivers granted. There were no employees with late affirmations.

Ms. Lange discussed SWIB’s annual ethics training, and changes to forms and filings in 2024. She concluded with a discussion of compliance and reporting changes coming up in 2025.

## **4. Approval of Revised ERCC Charter**

Eric Barber, Chief Legal Counsel, reminded the Committee that they annually review the Committee’s charter, which was included on pages 25-27 of the materials, and that there were recommended changes this year, although minor. The amendments included updating the “Internal Audit Director” title to “Head of Internal Audit,” and to change which Committee members may request the review of SWIB’s Internal Control Plan, from solely the Head of Risk Management to the Chief Financial Officer, in consultation with Operational, Financing and Counterparty Risk Director and the Head of Internal Audit. Following Mr. Barber’s



discussion, Ms. Lange moved to recommend to the Board of Trustees that it approve the revised ERCC charter.

**Motion:** A motion was made by Mr. Greenfield, and seconded by Rochelle Klaskin, Deputy Executive Director/Chief Operating Officer, to approve the recommendation.

**5. Convene in Closed Session**

**Motion:** A motion to go into closed session pursuant to section 19.85(1)(d) of the Wisconsin Statutes to consider confidential strategies for crime detection and prevention relating to SWIB’s information technology systems and 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 the review of proprietary credit counterparty and broker information, was made by, Eric Barber, Chief Legal Counsel and seconded by Ms. Klaskin.

Mr. Barber called for a roll call vote.

|             |            |             |                |
|-------------|------------|-------------|----------------|
| Barber-Aye  | Cehime-Aye | Denson-Aye  | Greenfield-Aye |
| Klaskin-Aye | Lange-Aye  | Mattina-Aye | Quesada-Aye    |

There being eight ayes and no nays, Ms. Lange declared the motion passed. The Committee convened in closed session at 1:37 p.m. and reconvened in open session at 2:20 p.m.

**6. Announcement of Matters Taken Up in Closed Session**

Ms. Lange announced that, while in closed session, the Committee (i) reviewed strategies for crime detection and prevention with respect to SWIB’s information technology systems, (ii) confidential strategies for the investment of public fund, including the review of proprietary credit counterparty and broker information.

**7. Future Meeting Topics**

No future meeting topics were discussed.

**8. Adjournment**

**Motion:** A motion to adjourn was made by Mr. Greenfield and seconded by Mr. Cehime. The motion passed unanimously, and the ERCC meeting was adjourned at 2:21 p.m.

Date of Committee Approval: \_\_\_\_\_

Signed: \_\_\_\_\_

Eric Barber, Secretary  
Enterprise Risk and Compliance Committee

Board Meeting

Tab 9 – Quarterly Investment Update, Q4 2024



# Quarterly Investment Update

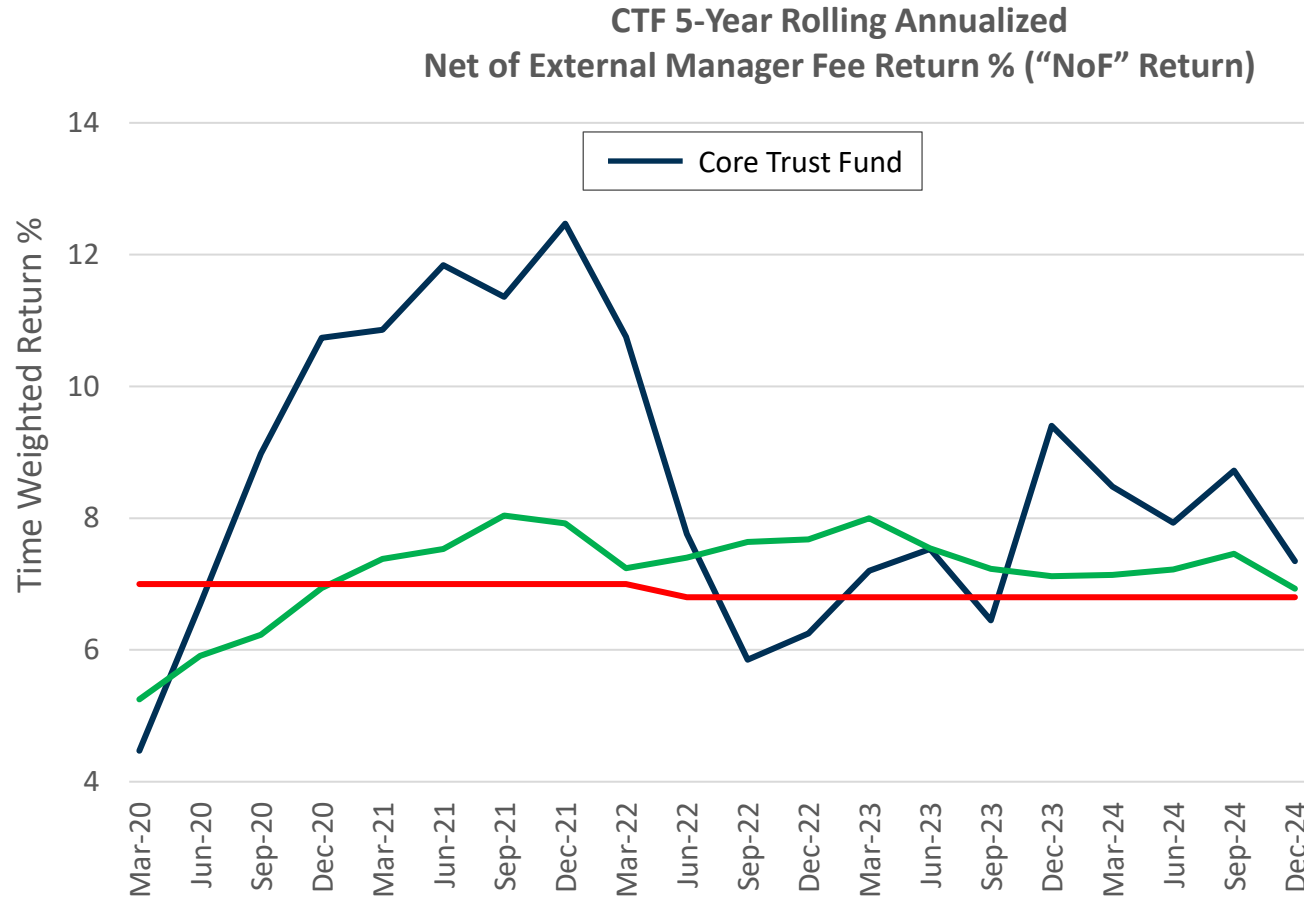
*Board Meeting*

*March 19, 2025*

# Performance Trends & Outlook

# CTF 5-Year Rolling NoF Return Trend

*Quarter-end Results Through December 31, 2024*

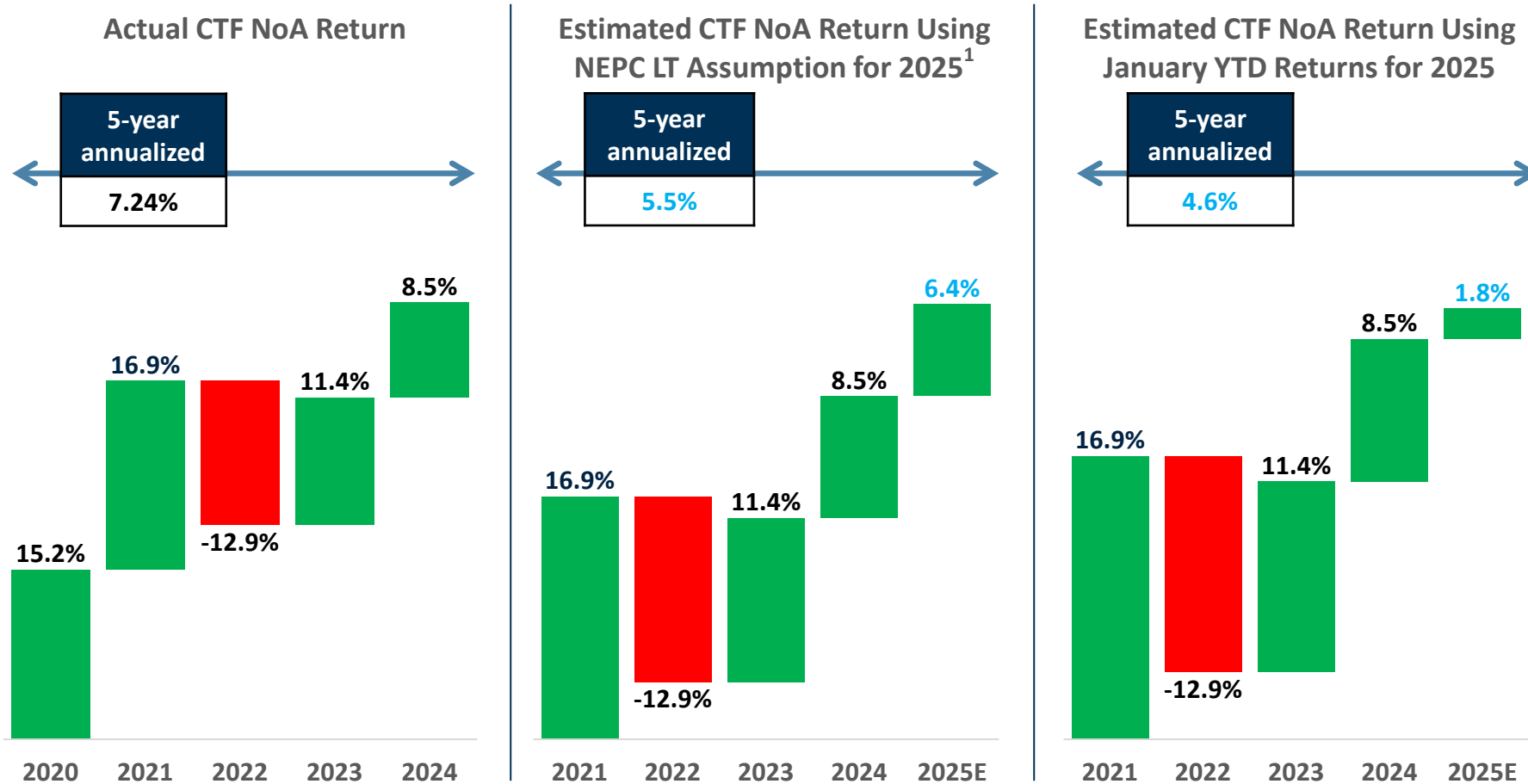


| 5-Year Annualized NoF Return (as of December 31, 2024) |                      |
|--|----------------------|
| 7.35%  | Core Trust Fund      |
| 6.53%  | CTF Policy Benchmark |

6.93% CTF 20-Year NoF Return  
6.8% Actuarial Target Rate of Return

# CTF 5-Year Net of All ("NoA") Return Estimate

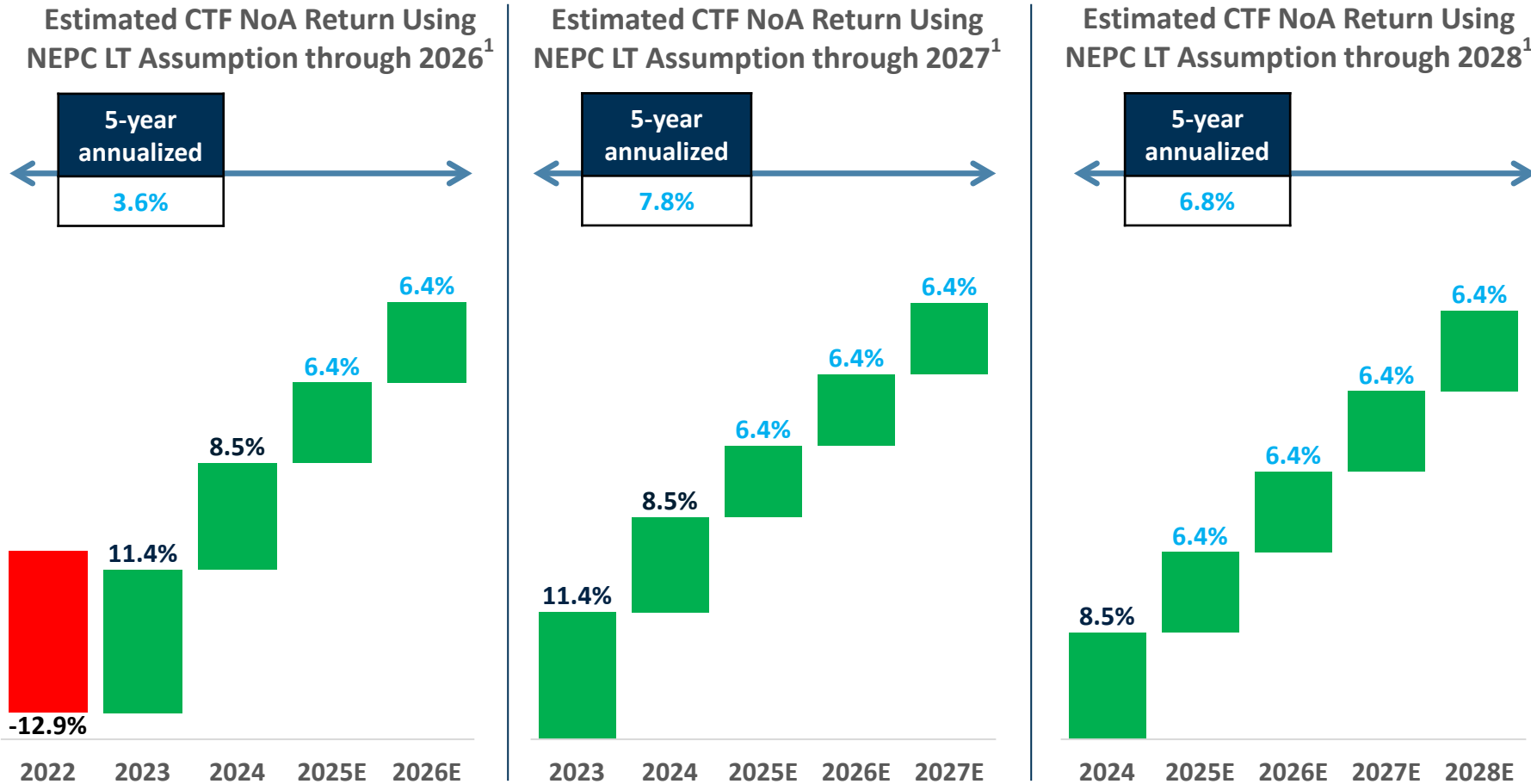
*Calendar year and 5-year annualized returns*



<sup>1</sup> 6.4% is NEPC's 10-year expected return for SWIB's 2025 policy portfolio and is used to estimate future year performance through 2028. SWIB's asset allocation process balances risk and expected return to set its asset allocation. The 10-year expected return does not always equal or exceed the WRS assumed rate of return, currently 6.8%. SWIB's actual results may be more or less than the NEPC 10-year expected return.

# CTF 5-Year NoA Return Forward Estimate

*Calendar year and 5-year annualized returns*

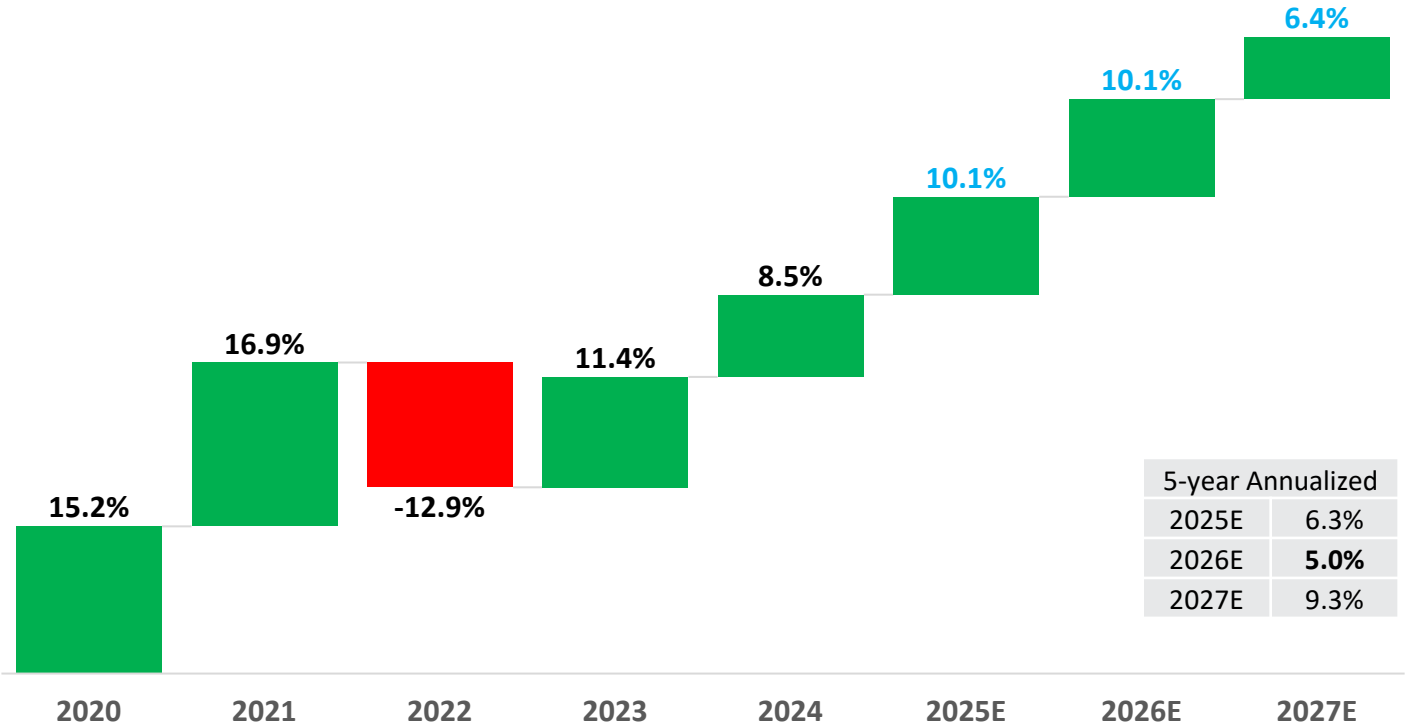


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# Average Return Required for No Dividend Cut

*Calendar year and 5-year annualized returns*

A 10.1% average return for 2025-2026 avoids a negative CTF dividend adjustment<sup>1</sup>



<sup>1</sup> Based on SWIB calculations, calendar year returns of 10.1% in 2025E to 2026E would maintain the 5-year annualized return at 5% or higher to avoid a negative dividend adjustment. The ETF Effective Rate is assumed to be the same as the 5-year annualized CTF NOA Return. NEPC 10-year expected return assumption is used to estimate 2027.





# CTF Policy Benchmark & Other Indices

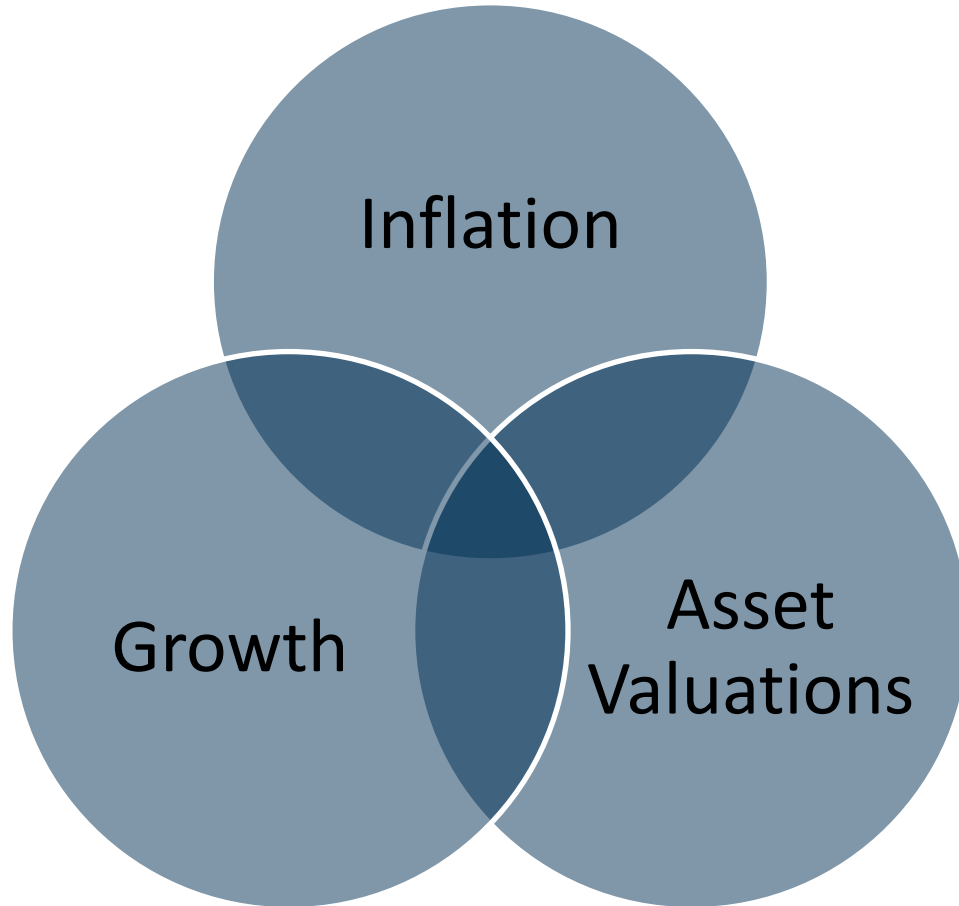
| January 31, 2024: Total Rate of Return %, Annualized |        |        |       |      |                 |
|--|--------|--------|-------|------|-----------------|
| Index Name (Gross Return Basis, unless noted)        | YTD    | 1yr    | 5yr   | 10yr | 10yr volatility |
| CTF Policy Benchmark (Net)                           | 1.7    | 9.2    | 6.8   | 7.1  | 8.8             |
| MSCI USA   | 1.6    | 21.1   | 14.3  | 12.5 | 15.3            |
| MSCI USA Small Cap                                   | (3.4)  | 3.6    | 9.0   | 8.7  | 19.5            |
| MSCI World ex US Equities (Net)                      | 0.4    | 9.5    | 7.1   | 4.8  | 15.2            |
| MSCI World ex US Equities (Net) (Local)              | 2.4    | 11.4   | 8.9   | 7.2  | 12.3            |
| MSCI EAFE Small Cap                                  | (1.6)  | 4.1    | 5.0   | 5.2  | 16.6            |
| MSCI Emerging Markets ex China                       | (2.5)  | 10.9   | 5.3   |      |                 |
| MSCI China   | (10.6) | (28.9) | (6.8) | 0.6  | 23.7            |
| MSCI ACWI  | 0.6    | 15.3   | 10.7  | 9.0  | 14.7            |
| MSCI ACWI (Local)                                    | 1.3    | 16.2   | 11.5  | 10.1 | 13.5            |
| Bloomberg US Gov't / Credit                          | (0.2)  | 2.4    | 1.1   | 1.8  | 5.0             |
| ICE BOFA High Yield BB/B                             | 0.1    | 8.7    | 4.3   | 4.5  | 7.3             |
| Bloomberg U.S. TIPs                                  | 1.3    | 3.0    | 1.7   | 2.1  | 5.0             |

Source: Factset, SWIB

# Economic and Market Update

# Economic Drivers of Long-Term WRS Stability

*Growth, inflation and starting asset valuations drive contributions, discount rates and investment returns*

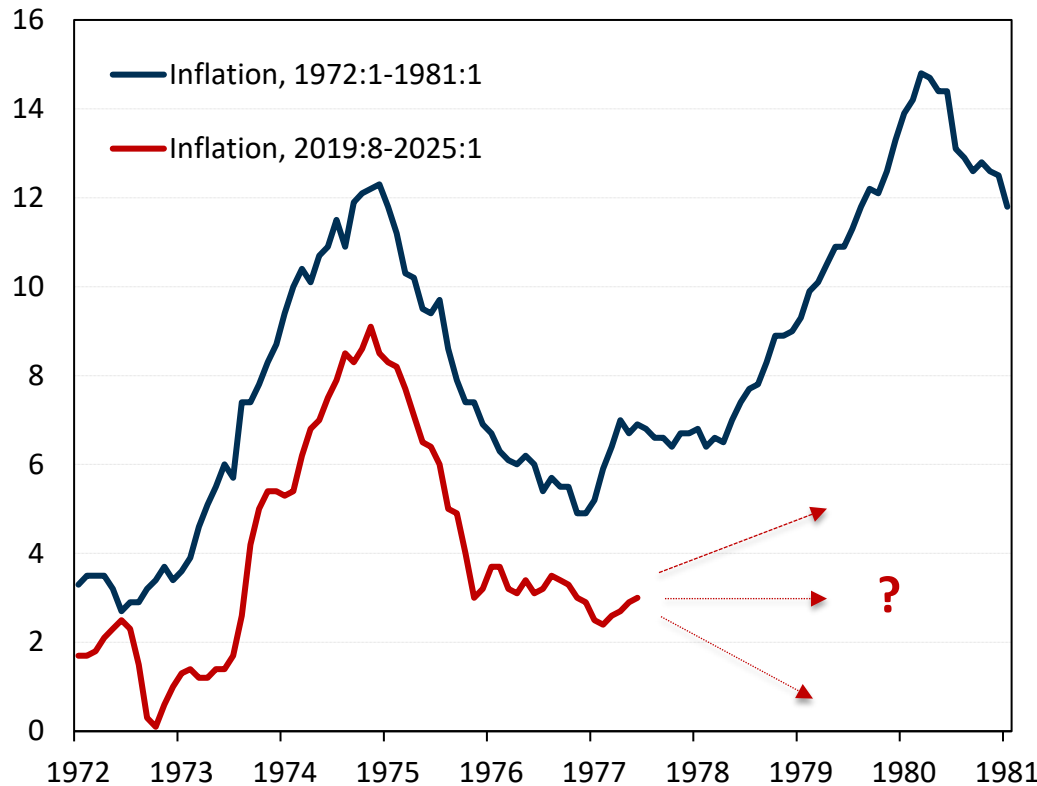


- The long-term inflation trend is an important factor influencing payroll growth, plan contributions and investment returns.
- The long-term trend in growth reflects multiple factors, including productivity and demographics.
- Starting asset class valuations have an important influence on long-term investment returns.
- Together, these economic and fundamental factors influence contributions, the present value of liability cash flows and investment returns.

# Long-term inflation expectations have stabilized

*Recent inflation trends rhyme with the 1970s. Could history repeat itself?*

## U.S. CPI Inflation Trends in the 1970s and Covid Period (monthly CPI inflation, annualized rates)



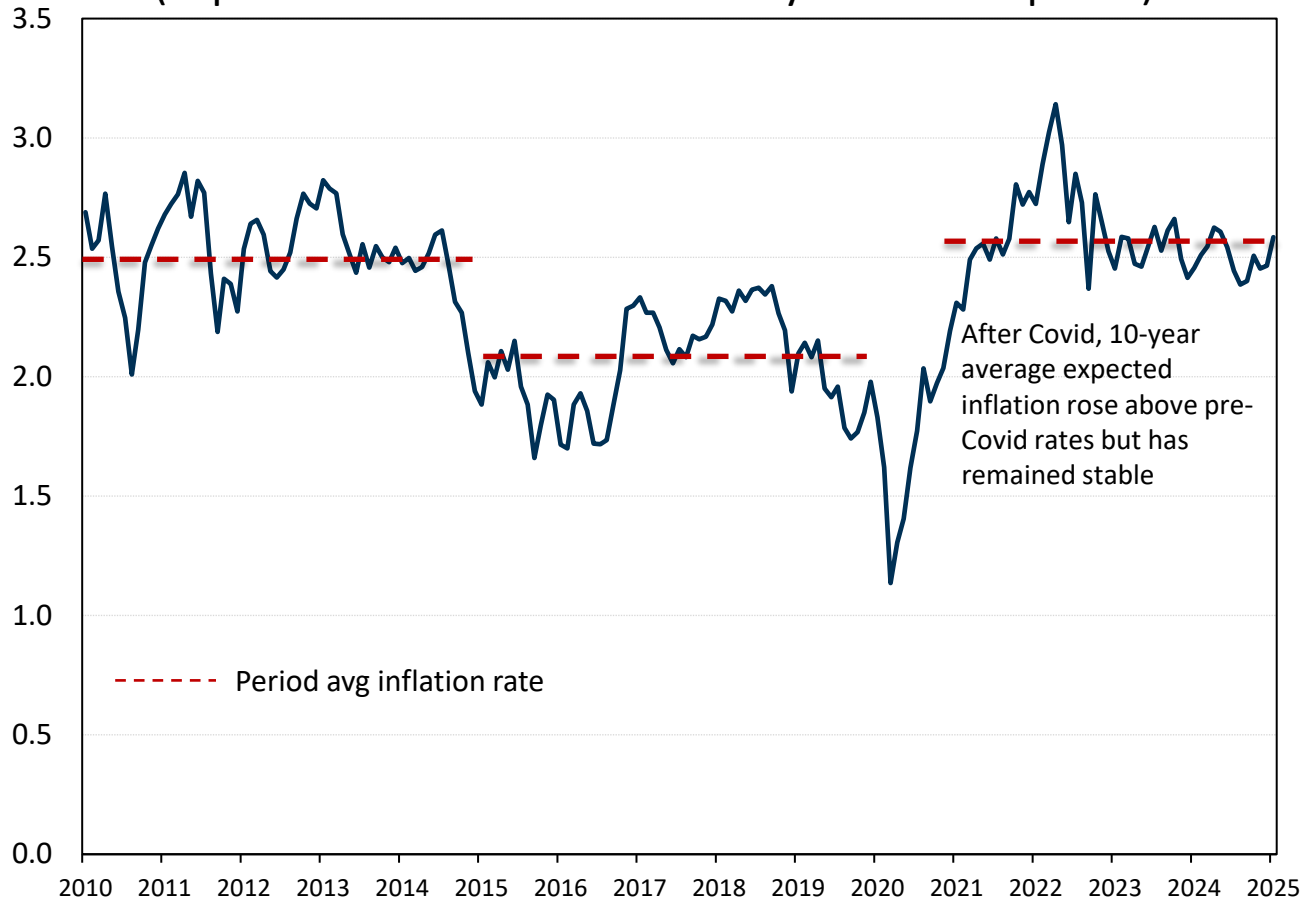
Sources: U.S. CPI, all items, seasonally adjusted, year-over-year percent change. Data provided via Bloomberg. Based on John Cochrane, "Inflation Analogy", 13 February 2025.

- Inflation has declined sharply from its recent peak, but history reminds us that inflation can abruptly rebound.
- What could cause an increase in **long-term inflation**?
  1. Fed loses credibility and expected inflation becomes "unanchored" from the 2% target
  2. Large structural budget deficits in a full employment economy cause inflationary pressures, especially if the Fed accommodates with looser financial conditions
  3. Higher import tariffs and restrictive immigration policies raise prices and wages over time

# Expected long-term inflation remains anchored

*While expected 10-year inflation has increased since the Covid crisis, it remains stable around the Fed's target*

**Expected Long-term Inflation Remains Stable**  
(expected inflation based on 10-year CPI swap rate)



- Implied 10-year expected inflation based on market pricing remains close to historical trends.
- Inflation expectations are higher than the immediate pre-Covid period but remain in line with the 2010-2014 period.
- While implied inflation based on market pricing is not always a reliable predictor, these trends suggest that investors have not lost confidence in the Fed.
- Based on Fed and CBO forecasts as well as TIPS breakeven inflation rates, 10- and 30-year expected inflation currently ranges between 2.3% and 2.5%.

Sources: Historical 10-year CPI swap rates provided via Bloomberg. Forecasts of 10- and 30-year expected inflation rates are based on data from the Federal Reserve Banks of Cleveland and Philadelphia as of February 2025. The CBO forecast of 10-year inflation is based on policies as of January 2025.

# U.S. Inflation – Recent uptick bears monitoring

*Five-year inflation expectations have risen since mid-2024*

As of: 03/07/2025

US 5 Year Breakeven Inflation



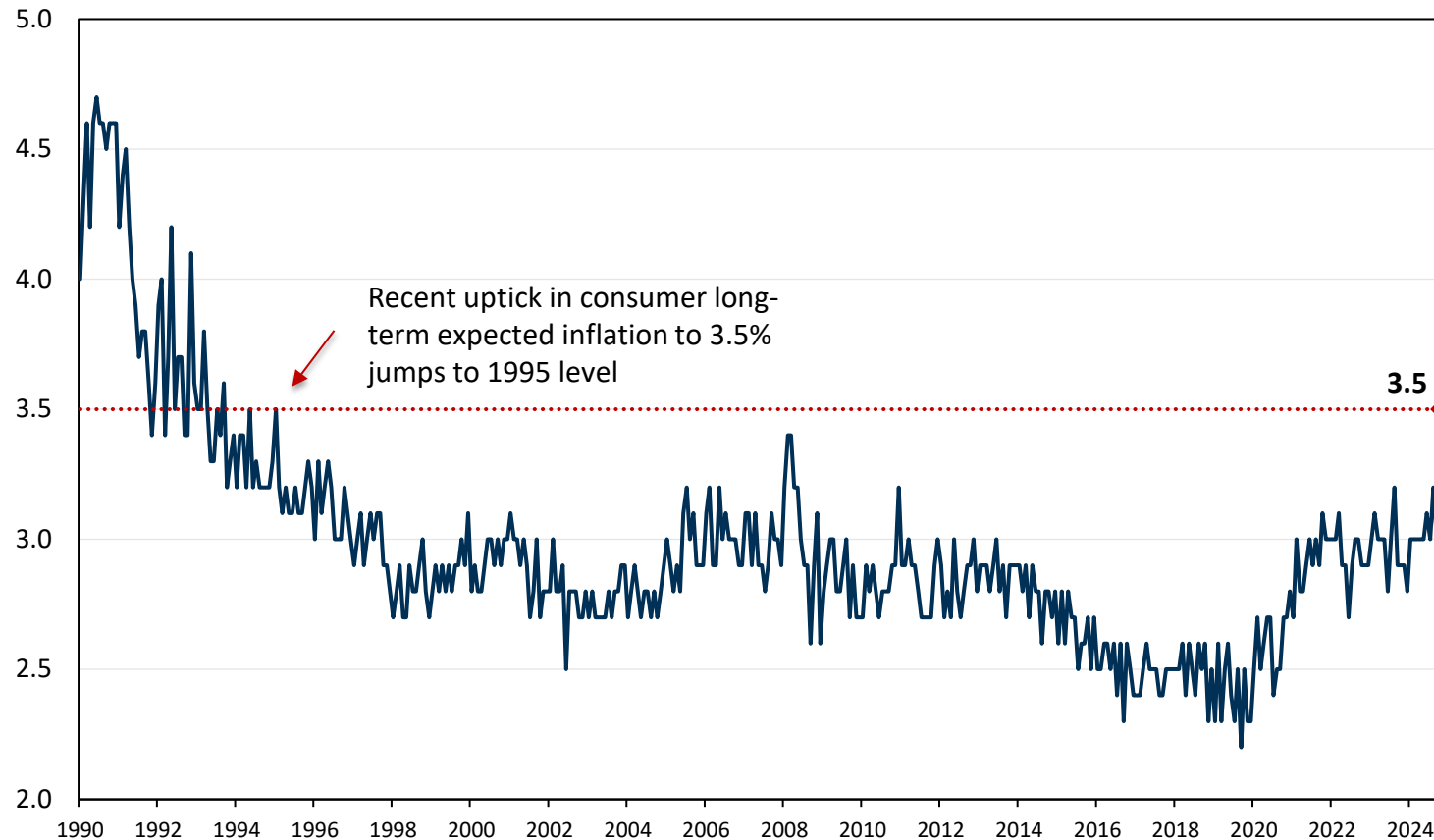
Source: Bloomberg

# Consumers expect higher long-term inflation

*University of Michigan survey jumped to highest level since 1995*

## Consumer Long-Term Inflation Expectations Jump to Almost 30-Year High

(University of Michigan 5-10 year consumer inflation expectation in %)



- Concerning jump in consumer long-term inflation expectations.
- All five components of the survey index dropped, including big-ticket items.
- Survey also indicated weaker overall consumer sentiment and a higher expected unemployment rate in the next year.
- Unclear if the recent monthly report is a post-election blip or a shift in trend.

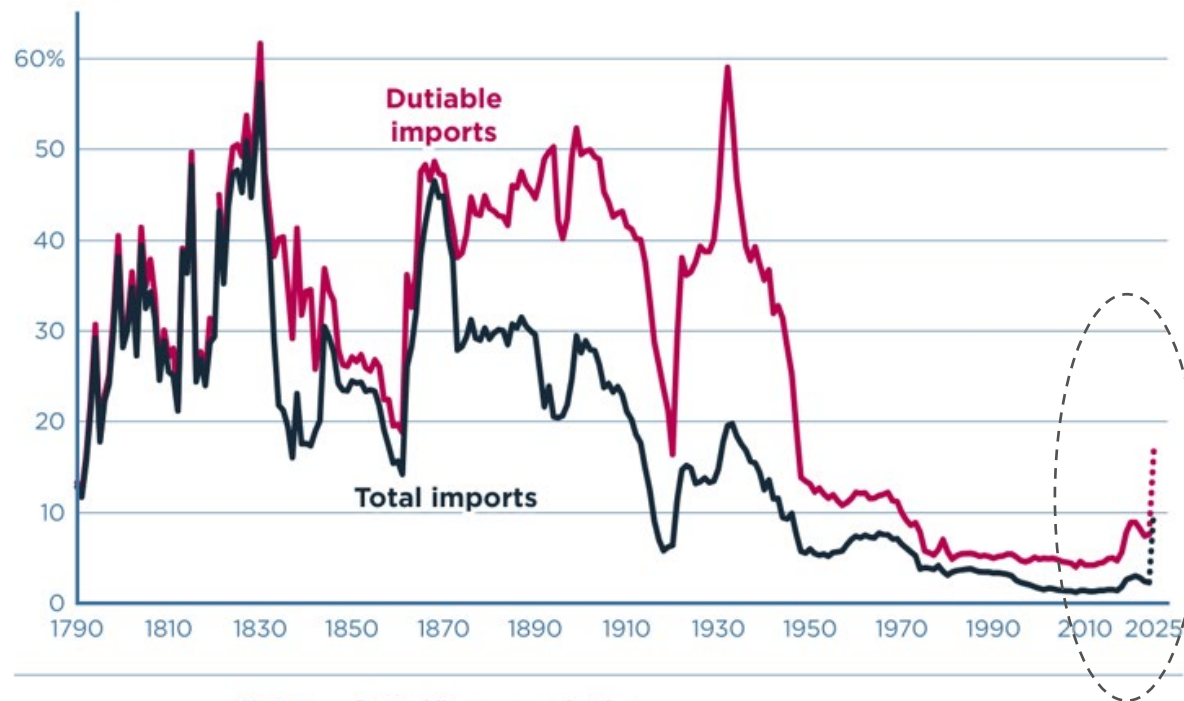
Source: University of Michigan Survey on Expected Change in Prices During the Next 5-10 Years: Median. Data provided via Bloomberg.

# Proposed trade tariffs will increase prices

*Tariffs typically result in a one-time jump in the price level rather than ongoing inflation*

## Potential Return of Average Trade Tariff to World War 2 Levels

Average tariffs on total and dutiable imports, percent 1790-2025



Notes: Dotted lines are projections.

Source: For 1790-1820: Douglas A. Irwin, "New Estimates of the Average Tariff of the United States, 1790-1820," *Journal of Economic History* 63, no. 2 (2003): 506-13. For 1821-1970: US Bureau of the Census, *Historical Statistics of the United States* (Washington, D.C., GPO, 1975), series U211-212, 1971-2023; US International Trade Commission, "US imports for consumption, duties collected, and ratio of duties to value, 1891-2023," [May 2024](#).

- Recent research finds that imports affected by the proposed higher tariffs would amount to 4.8% of GDP. This compares to 1.3% to 2.7% of GDP in historical tariff-raising episodes. The average effective tariff on dutiable imports would rise from 7.4% to 17.3%.
- Higher tariffs have several impacts:**
  - One-time price effects** including a direct rise in import prices and an indirect effect in raising the cost of imported intermediate inputs (e.g., steel and aluminum)
  - Stronger US dollar** could partially offset imported inflation from higher tariffs
  - Slower economic growth** from reduced trade could also partially offset inflationary effects.



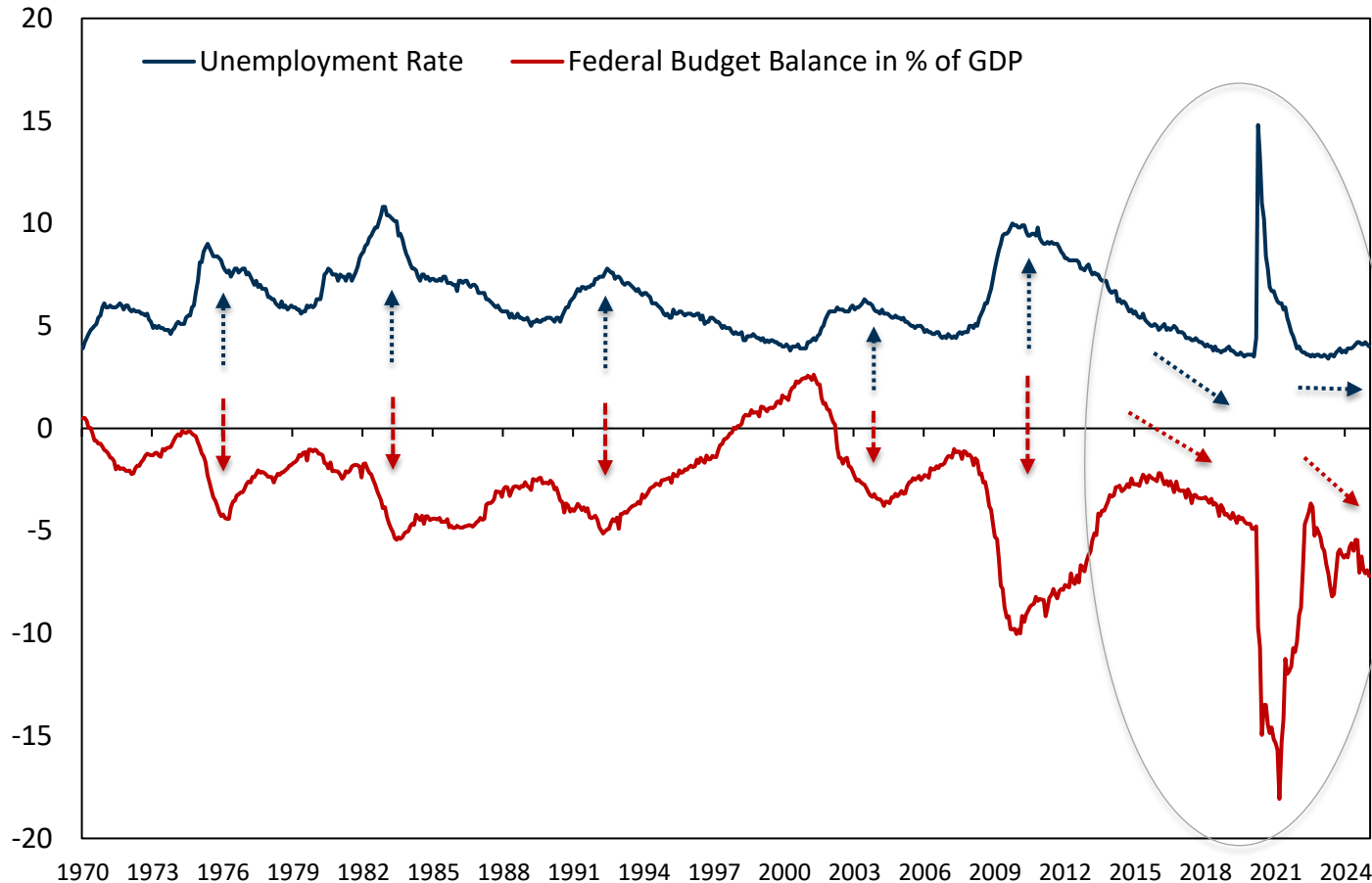


# Procyclical fiscal policy amplifies inflationary pressures

*Large government budget deficits in a full-employment economy increase inflation risk*

## Fiscal Policy Increasingly Procyclical

(monthly unemployment rate and federal budget balance in % of GDP)



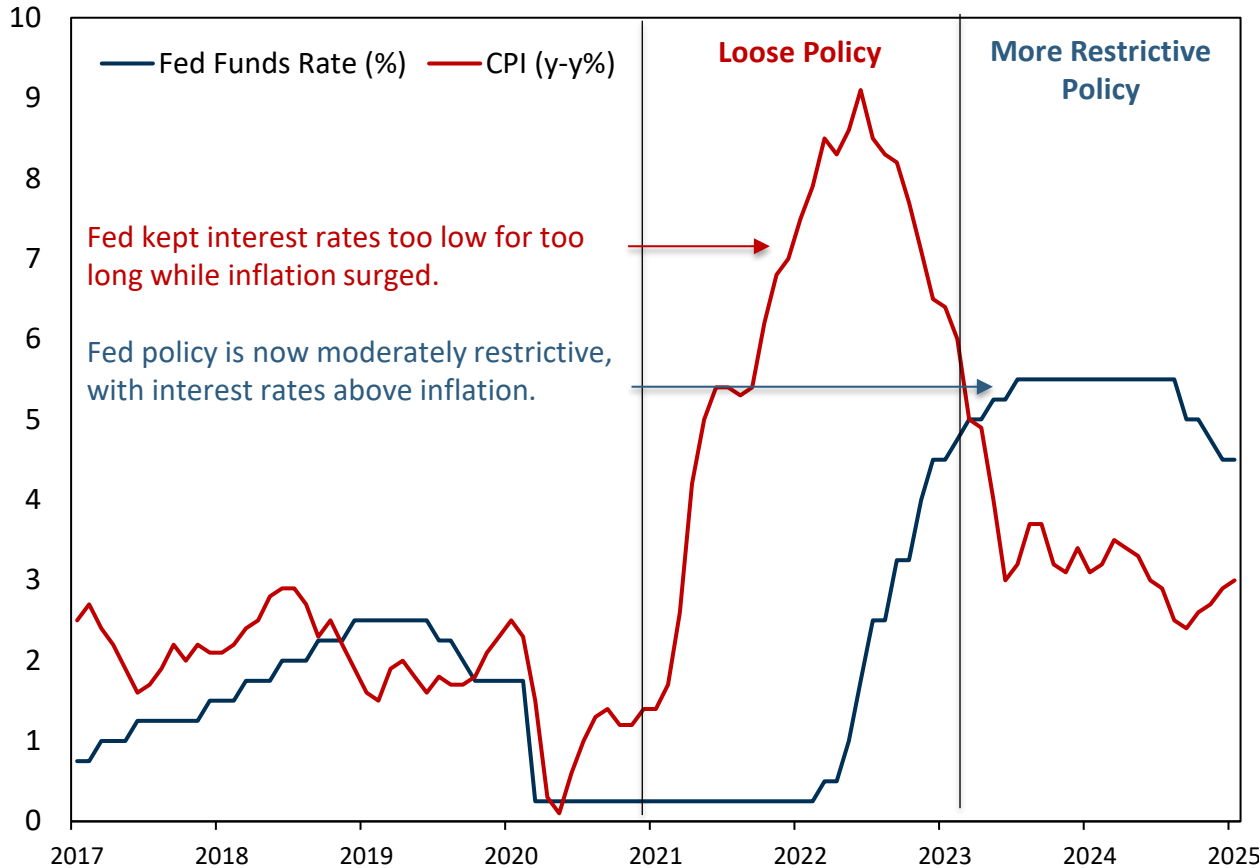
Source: U-3 U.S. unemployment rate and federal government budget balance (trailing 12 months) provided via Bloomberg.

- Federal budget deficits typically increase with unemployment during recessions (Covid was an extreme example). This “countercyclical” policy response stabilizes demand and the labor market.
- Recently, fiscal policy has been more procyclical with rising deficits even in full-employment conditions (see circled area).
- Based on current policies, budget deficits are forecast to remain over 6% of GDP in the long term, contributing and amplifying inflationary pressures.

# Monetary policy remains moderately restrictive

*Fed's restrictive policy stance will help to contain potential inflationary pressures*

**Fed Funds Rate and CPI Inflation (y-y%)**



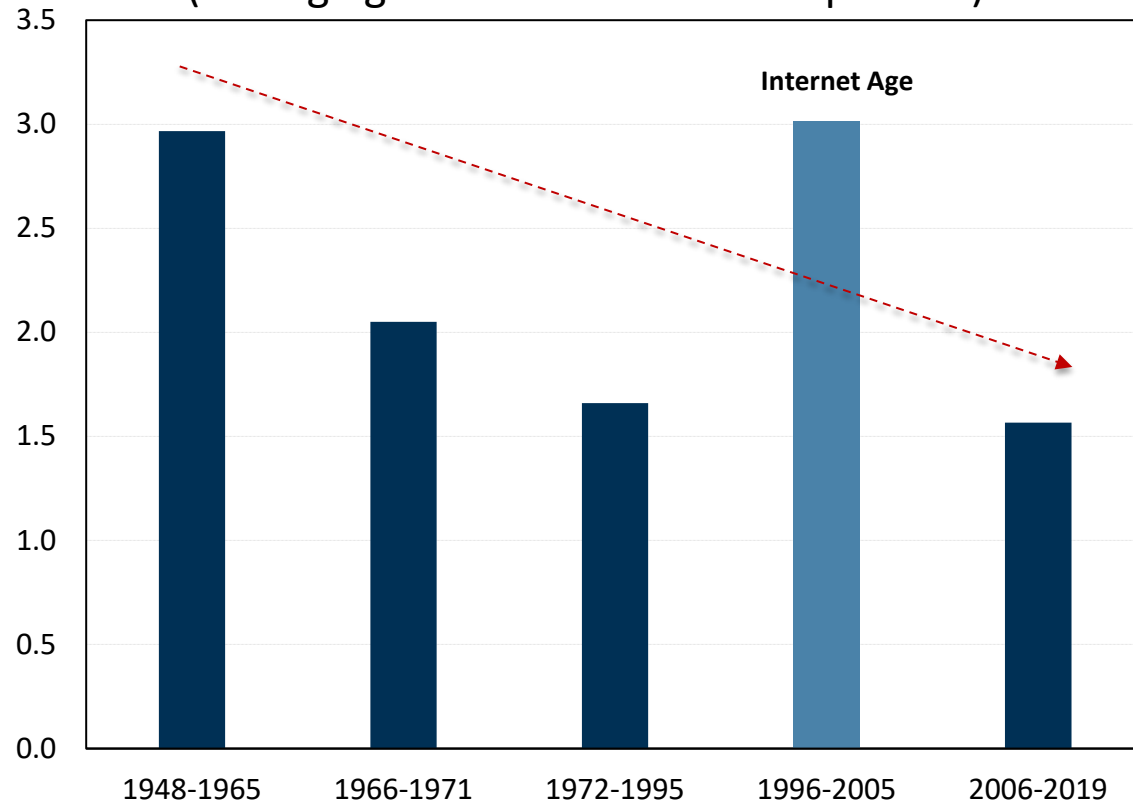
- Monetary policy was kept loose for too long following the Covid emergency with interest rates persistently below inflation.
- Fed effectively monetized large budget deficits by buying Treasuries as part of its Quantitative Easing.
- After 2022, the Fed raised interest rates into moderately restrictive territory to help contain inflationary pressures.
- Fed's restrictive policy stance contains the impact of high budget deficits. Fed will need to be cautious proceeding with planned rate cuts, especially if the budget deficit expands further.

Source: Fed Funds Rate (upper band) and CPI All Items, 12-month change, provided via Bloomberg.

# Long-term productivity growth trending lower

*Will AI reverse the trend or amount to a temporary boost versus the trend?*

## Long-term Decline in U.S. Labor Productivity Growth (average growth rate in selected periods)



- Robert Solow famously quipped in 1987 that “You can see the computer age everywhere but in the productivity statistics.”
- The “Internet Age” in 1996-2005 temporarily broke the long-term trend of falling average productivity growth.
- The 2020 pandemic makes post-2019 data hard to analyze. However, average productivity growth during 2021-2024 has declined further to about 1%.
- It’s unclear if AI will be more like the post-1970s computer revolution (no obvious impact), Internet Age (temporary bump) or even reverse the long-term trend.

Sources: Chart based on U.S. nonfarm business sector output per hour worked, seasonally adjusted annualized rates. BLS data are provided via Bloomberg. Time periods and analysis are informed from Robert Gordon, 2012, “Is U.S. Economic Growth Over? Faltering Innovation Confronts the Six Headwinds”. NBER Working Paper 18315.

# Demographic trends drive long-term growth

*Working-age population growth is important to measure productivity trends*

## While Aging Societies Exhibit Slowing Economic Growth, Productivity Growth May Not Decline (annualized growth rates, 1991-2019)

|                                       | Canada      | France      | Germany     | Italy       | Japan       | Spain       | UK          | U.S.        |
|---------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Real GDP                              | 2.47        | 1.61        | 1.38        | 0.7         | 0.83        | 2.05        | 2.08        | 2.58        |
| Real GDP per Capita                   | 1.40        | 1.10        | 1.25        | 0.52        | 0.76        | 1.35        | 1.53        | 1.63        |
| Population                            | 1.05        | 0.5         | 0.14        | 0.18        | 0.08        | 0.68        | 0.54        | 0.94        |
| <b>Real GDP per Working Age Adult</b> | <b>1.48</b> | <b>1.33</b> | <b>1.47</b> | <b>0.79</b> | <b>1.39</b> | <b>1.41</b> | <b>1.62</b> | <b>1.65</b> |
| Working-Age Population                | 0.98        | 0.27        | -0.09       | -0.08       | -0.54       | 0.63        | 0.46        | 0.91        |

- New research shows that average growth in real GDP per working age adult is comparable across advanced economies. In contrast, average growth in real GDP per capita is much lower in those countries with more advanced aging like Japan.
- While population aging will be a drag on real GDP growth, the impact on productivity growth is unclear. Slowing overall population growth and aging remain important for pension plan sustainability (e.g., number of new active contributors and average longevity of retirees).

Source: Fernandez-Villaverde, Ventura and Yao, "The Wealth of Working Nations", European Economic Review, 173 (2025)

# Global Equities - Performance

*Developed Markets excl. US and EM equities have increased in the last few weeks*

03/07/2025

## Local Equity Performance

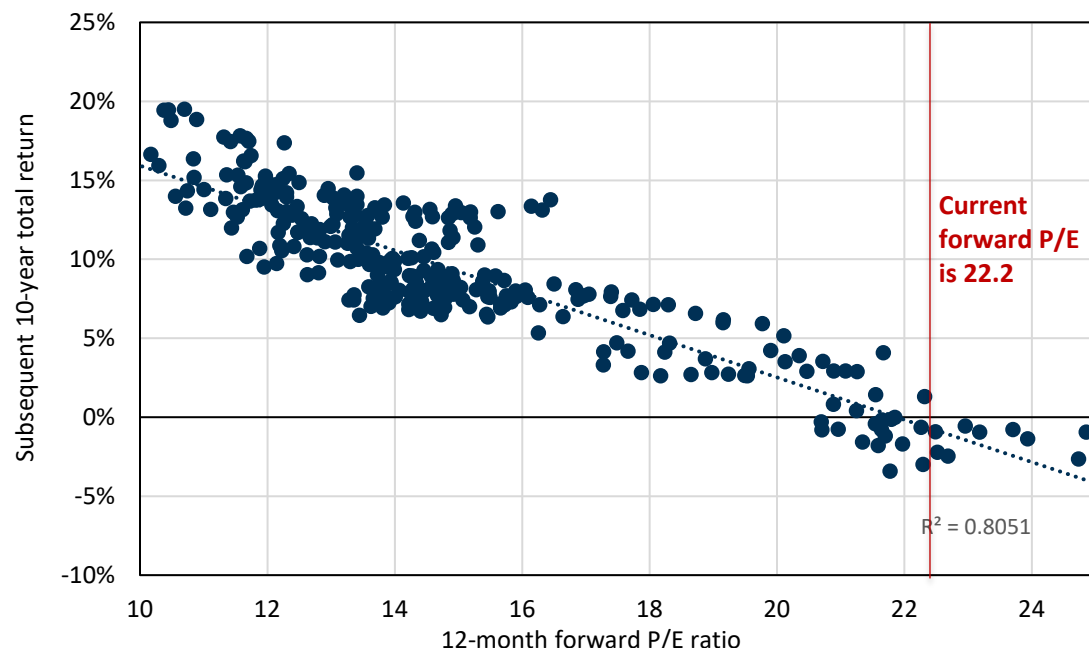


Source: FactSet

# Rich U.S. equity valuations suggest lower returns

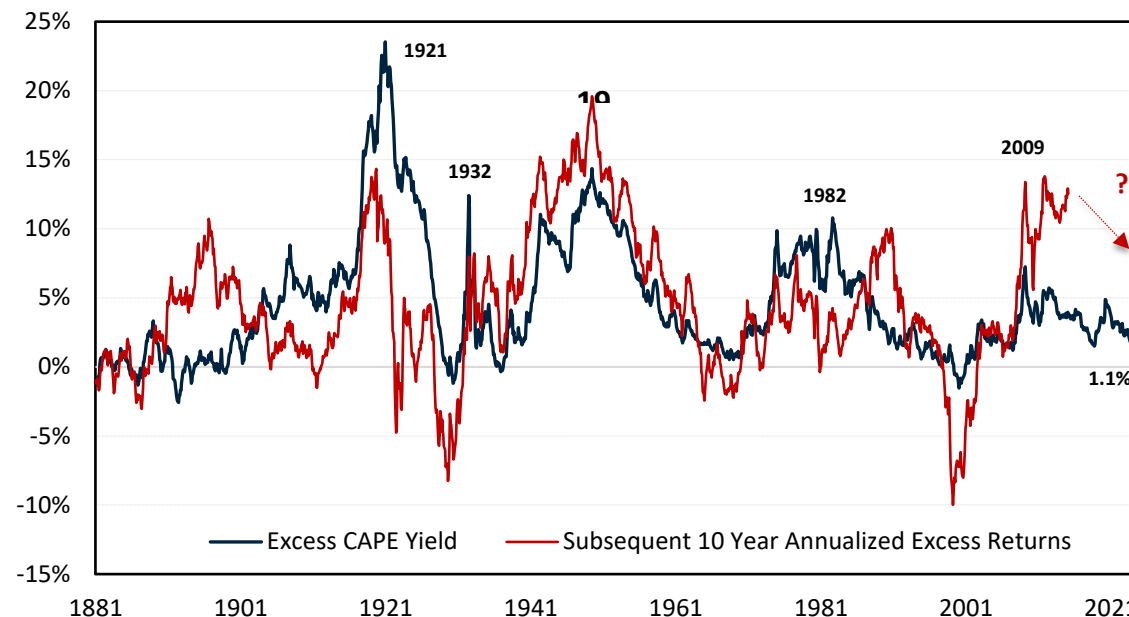
*Public equities look rich based on 12m forward P/E and Shiller's cyclically-adjusted P/E*

**Forward P/E of S&P500 and Subsequent 10-year Return**  
(based on monthly data, 1990M3-2025M1)



- Forward P/E multiple for the S&P500 is based on expected earnings in the next 12 months. At 22.2, the forward P/E suggests lower 10-year expected returns based on historical patterns.

**Excess Cyclically-Adjusted Earnings Yield of S&P500 vs. 10-Year Real Treasury Yield and Subsequent 10-year Equity Return**



- Shiller's excess cyclically-adjusted earnings yield of just 1.1% also points to a lower 10-year expected return for U.S. equities.

Sources: 12-month forward P/E multiples for S&P500 based on Bloomberg consensus survey. Excess cyclically-adjusted earnings yield vs. 10-year Treasury yield provided via Robert Shiller online data.

# Global Equities - Valuation

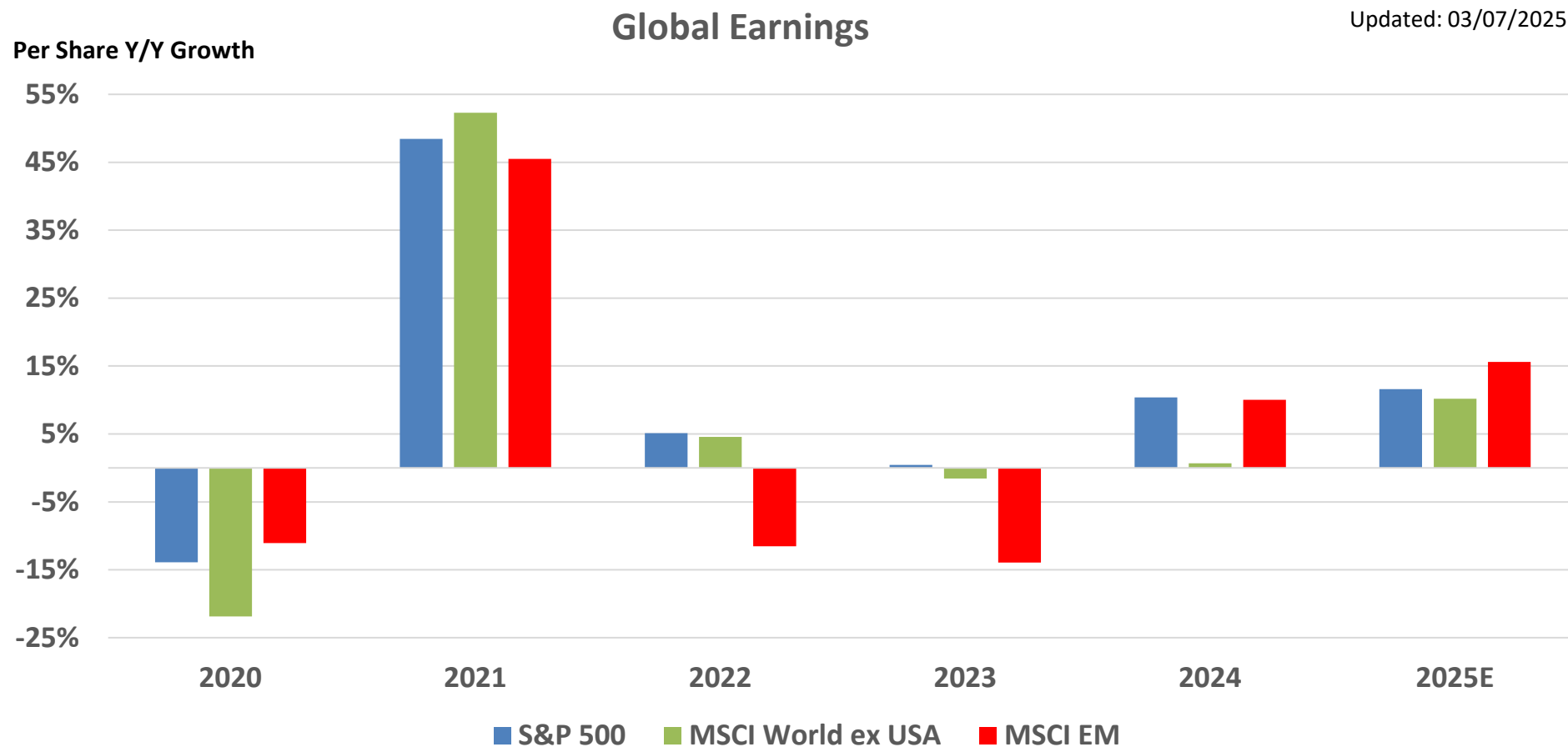
*US P/E ratio is above one standard deviation of its 20-year average*



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

# Earnings Growth

*Developed ex US earnings growth forecast expected to lag US and EM*



Source: Analyst Consensus; FactSet

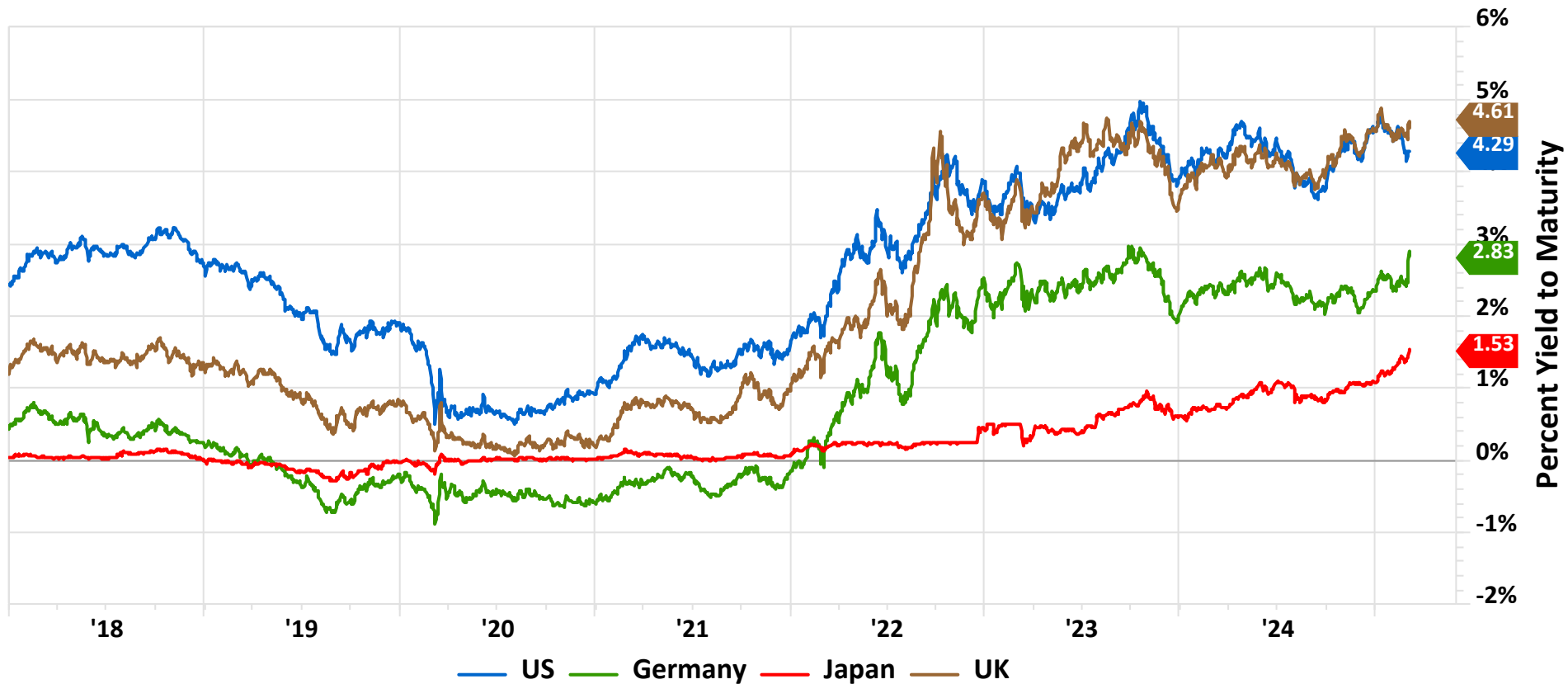


# Global Bonds

*10-Year government bond yields have moved materially higher since 2021*

03/07/2025

## 10-Year Government Bond Yields

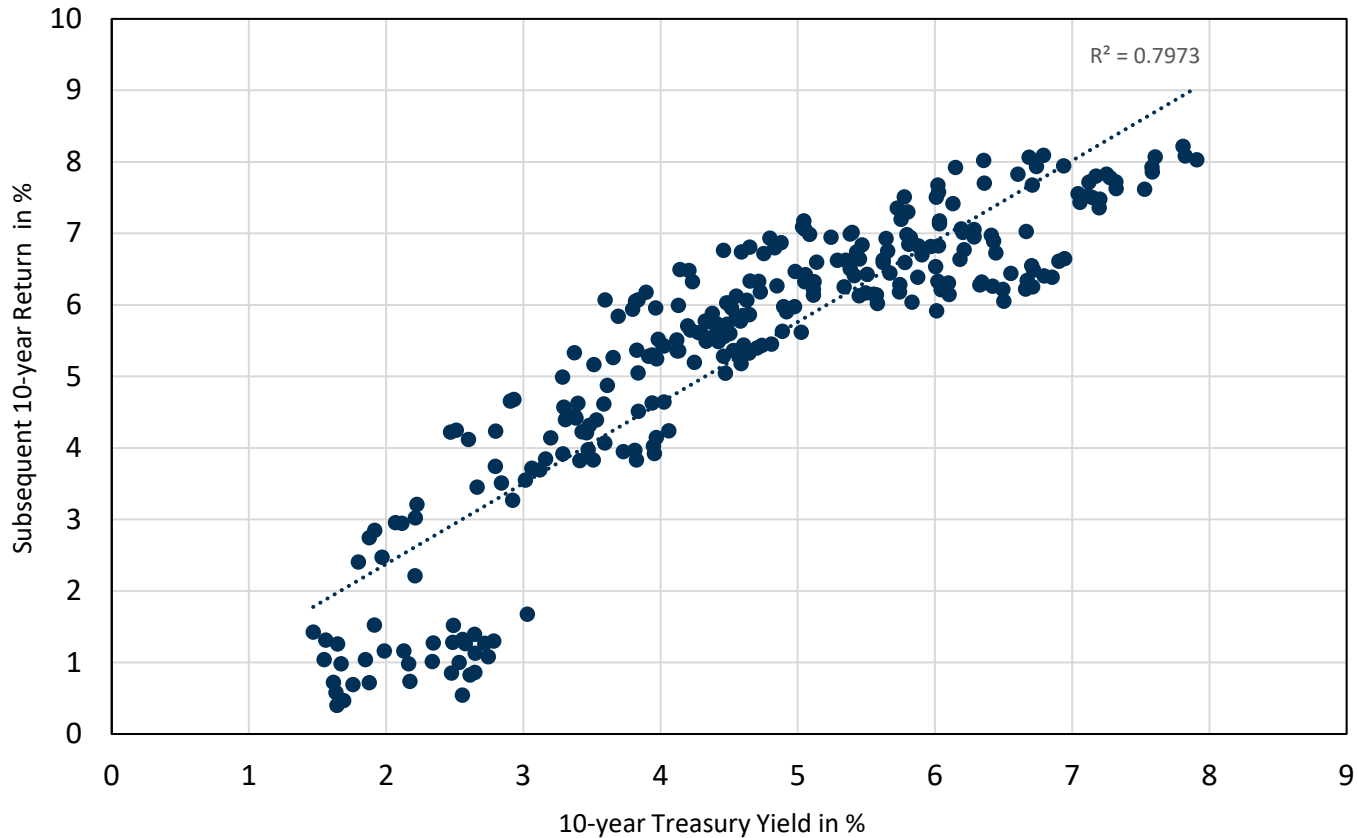


Source: FactSet

# Higher yields support higher Treasury returns

*Historically, starting yield is a large driver of subsequent 10-year realized returns*

## Higher Bond Yields Suggest Higher Expected Long-term Returns (based on monthly total returns, 1992M1-2025M1)

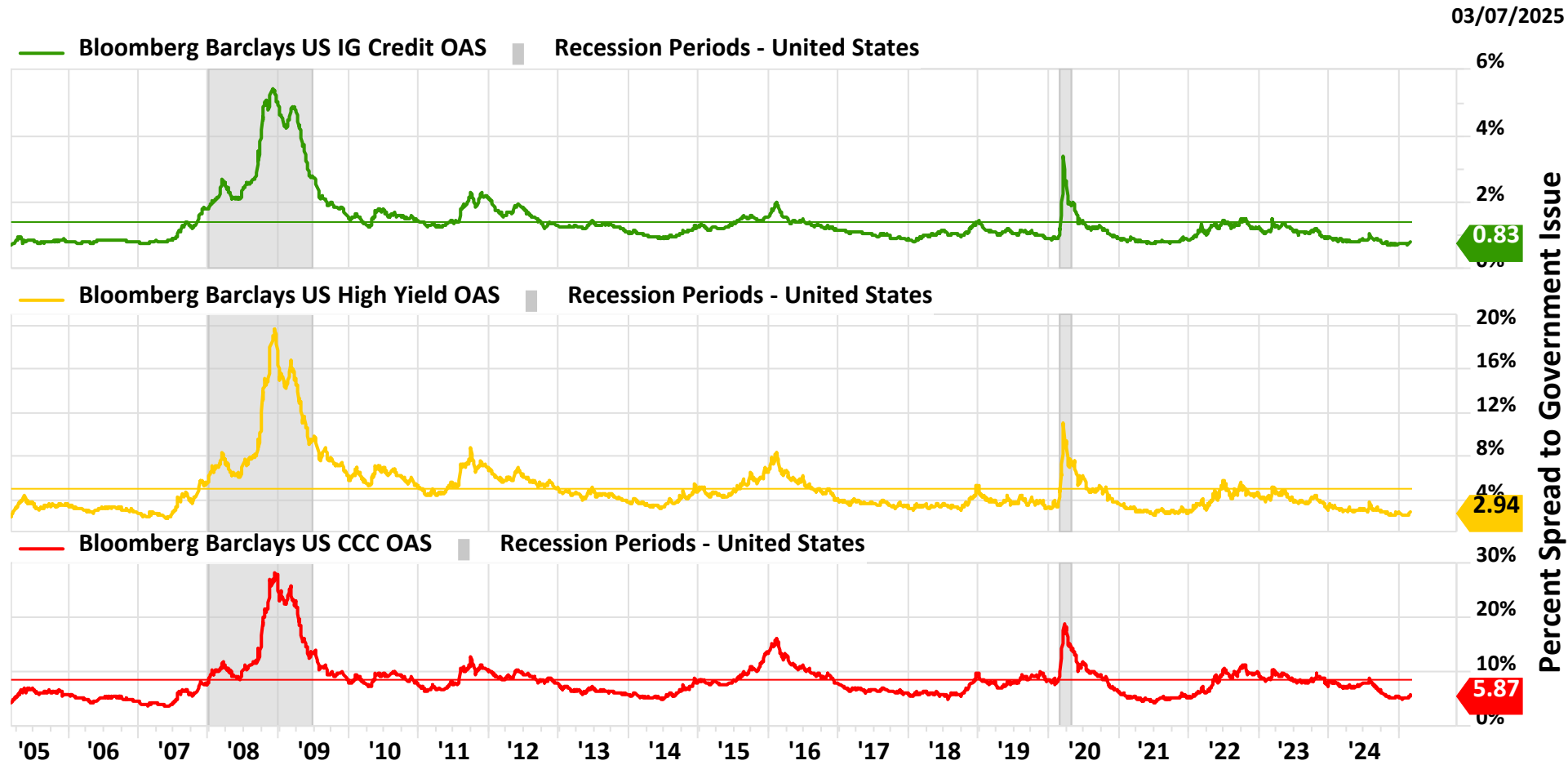


- Higher starting yields to maturity in 10-year Treasuries are a major driver of the subsequent realized total return in the next 10 years.
- As government bond yields have increased sharply since 2021, expected long-term returns have also increased.

Sources: Subsequent 10-year returns based on the Bloomberg 7 to 10-year Treasury total return index. Treasury yields also provided via Bloomberg.

# Credit Sectors

*Spreads are below the long-term averages, increasing vulnerability to a reversal*



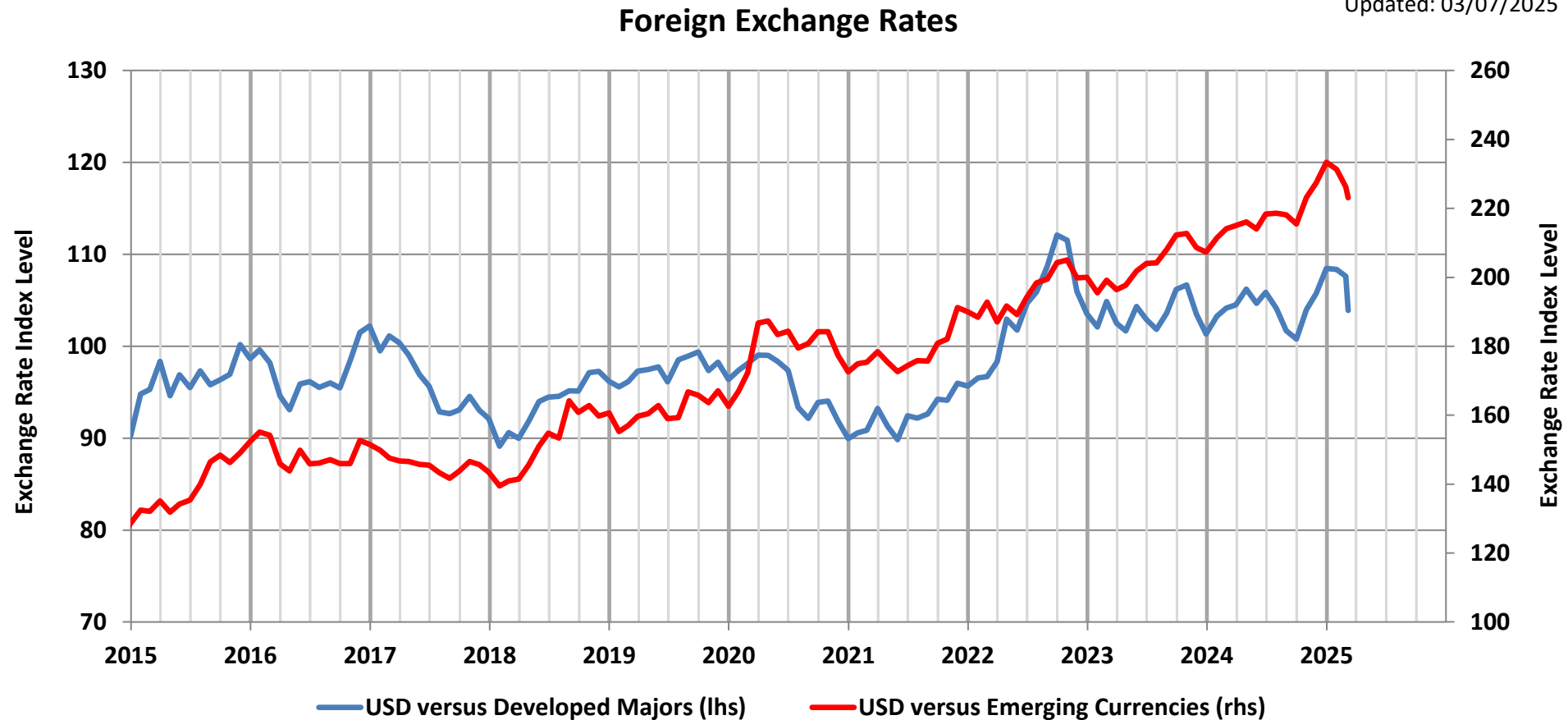
Source: FactSet



# Currency Performance

*USD vs Developed Markets remains in a range; trend strength of USD vs EM continues*

Updated: 03/07/2025



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

# Conclusion

*Inflation, economic growth and asset class valuations are key drivers of long-term WRS financial stability*

- **The long-term inflation trend is an important determinant of long-term payroll contributions, interest rates and investment returns**
  - Expected long-term inflation appears to remain anchored near the Fed’s 2% target based on market pricing. However, long-term consumer inflation expectations have recently ticked materially higher.
  - The Fed will need to proceed cautiously in lowering modestly restrictive interest rates to contain inflationary pressures.
- **Long-term economic growth is an important driver that mainly reflects the trend in labor productivity and working age population growth**
  - Productivity and demographic factors are key determinants of long-term growth in labor earnings, real interest rates and investment returns.
  - Productivity has trended lower for decades while working age population growth will continue declining.
- **Historically, starting asset class valuations have been reliable predictors of long-term investment returns**
  - Public equities are richly valued in developed markets, especially large cap U.S. equity.
  - The material upward shift in Treasury yields since 2021 has boosted long-term fixed income returns.

## Board Meeting

### Tab 10 – Announcement of Matters Taken Up in Closed Session

## Board Meeting

Tab 11 – In the Absence of Questions, the Following Reports will be filed without comment (for informational purposes):

- A. Quarterly Charges to Funds Reports, Q4 2024
- B. Private Markets and Funds Alpha Commitments, Q4 2024

February 13, 2025

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 quarter<sup>1</sup>. The information contained in this report is for the quarter ended December 31, 2024.

| Total Cost of Management Summary                               | 1Q 2024               | 2Q 2024               | 3Q 2024               | 4Q 2024               | Trailing 4 Qtr Total    | % of Total    |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------|---------------|
| <b>Internal Operating Expenses</b>                             |                       |                       |                       |                       |                         |               |
| Operating Budget Expenses                                      | \$ 16,684,634         | \$ 53,105,483         | \$ 20,205,307         | \$ 17,503,147         | \$ 107,498,571          | 68.1%         |
| Custodial, Investment Operations & Banking                     | 2,085,638             | 2,351,406             | 2,153,795             | 2,278,712             | 8,869,551               | 5.6%          |
| Legal  | 470,162               | 82,559                | 251,976               | 634,388               | 1,439,085               | 0.9%          |
| Investment Research & Consulting                               | 9,086,537             | 8,818,009             | 8,176,891             | 10,165,448            | 36,246,885              | 22.9%         |
| <b>Total Internal Operating Expenses</b>                       | <b>\$ 28,326,971</b>  | <b>\$ 64,357,457</b>  | <b>\$ 30,787,969</b>  | <b>\$ 30,581,695</b>  | <b>\$ 154,054,092</b>   | <b>97.5%</b>  |
| <b>Total Securities Lending Agent Expenses</b>                 | <b>\$ 1,104,239</b>   | <b>\$ 942,792</b>     | <b>\$ 848,703</b>     | <b>\$ 1,005,967</b>   | <b>\$ 3,901,701</b>     | <b>2.5%</b>   |
| <b>Total SWIB Operating Costs</b>                              | <b>\$ 29,431,210</b>  | <b>\$ 65,300,249</b>  | <b>\$ 31,636,672</b>  | <b>\$ 31,587,662</b>  | <b>\$ 157,955,793</b>   | <b>100.0%</b> |
| <b>Supplemental Info - External Investment Management Fees</b> |                       |                       |                       |                       |                         |               |
| Real Estate  | \$ 21,563,935         | \$ 21,501,161         | \$ 21,408,439         | \$ 24,130,057         | \$ 88,603,592           | 10.0%         |
| Private Equity <sup>1</sup>                                    | 41,850,708            | 58,799,138            | 49,781,071            | 58,061,425            | 208,492,341             | 23.6%         |
| Venture Capital <sup>1</sup>                                   | 7,253,041             | 9,827,891             | 8,997,014             | 9,291,005             | 35,368,951              | 4.0%          |
| Current Return <sup>1</sup>                                    | 6,409,082             | 7,725,862             | 7,815,311             | 9,603,396             | 31,553,651              | 3.6%          |
| Hedge Funds  | 108,182,074           | 72,599,021            | 58,200,199            | 126,855,977           | 365,837,271             | 41.5%         |
| Beta One & Other - External Funds <sup>2</sup>                 | 73,848,455            | 35,822,481            | (2,602,707)           | 45,589,576            | 152,657,805             | 17.3%         |
| <b>Total External Investment Management Fees</b>               | <b>\$ 259,107,295</b> | <b>\$ 206,275,554</b> | <b>\$ 143,599,327</b> | <b>\$ 273,531,436</b> | <b>\$ 882,513,611</b>   | <b>100.0%</b> |
| <b>Grand Total Cost of Management</b>                          | <b>\$ 288,538,505</b> | <b>\$ 271,575,803</b> | <b>\$ 175,235,999</b> | <b>\$ 305,119,098</b> | <b>\$ 1,040,469,404</b> |               |

<sup>1</sup>Beginning 3Q 2024, Private Equity & Venture Capital external fund fees are broken out in greater detail and reflected retroactively for the prior quarters presented.

<sup>2</sup>Beginning 3Q 2024, Beta One & Other separately managed fund fees and commingled fees have been combined to align with other SWIB external reporting.

<sup>1</sup>Wisconsin 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, 2024, after consideration of all expenses, costs, and fees, SWIB generated approximately \$4.0 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 December 31, 2024, SWIB's total authorized full-time equivalent positions are 298 as shown in the table below.

| <b>Assets Under Management &amp; Positions</b> |                  |                   |
|--|------------------|-------------------|
|  | <b>9/30/2024</b> | <b>12/31/2024</b> |
| Internal Management                            | 46.3%            | 46.1%             |
| External Management                            | 53.7%            | 53.9%             |
| <b>Total SWIB Positions</b>                    | <b>298</b>       | <b>298</b>        |

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

| <b>Total Assets Under Management</b>          | <b>3/31/2024</b>        |               | <b>6/30/2024</b>        |               | <b>9/30/2024</b>        |               | <b>12/31/2024</b>       |               |
|---|-------------------------|---------------|-------------------------|---------------|-------------------------|---------------|-------------------------|---------------|
|   | Amount<br>(in millions) | %             | Amount<br>(in millions) | %             | Amount<br>(in millions) | %             | Amount<br>(in millions) | %             |
| <b>Wisconsin Retirement System (WRS)</b>      |                         |               |                         |               |                         |               |                         |               |
| Internally Managed Assets                     | \$51,697                | 37.9%         | \$51,414                | 37.5%         | \$56,273                | 39.4%         | \$54,585                | 39.1%         |
| Externally Managed Dedicated Assets           | 36,294                  | 26.6%         | 35,951                  | 26.2%         | 36,150                  | 25.3%         | 35,109                  | 25.2%         |
| Externally Managed Commingled Assets          | 48,357                  | 35.5%         | 49,644                  | 36.2%         | 50,245                  | 35.2%         | 49,765                  | 35.7%         |
| 1. Passive Index                              | 741                     | 0.5%          | 761                     | 0.6%          | 699                     | 0.5%          | 517                     | 0.4%          |
| 2. Limited Partnerships                       | 34,657                  | 25.4%         | 35,214                  | 25.7%         | 36,048                  | 25.3%         | 36,387                  | 26.1%         |
| 3. Active Managed Commingled                  | 12,959                  | 9.5%          | 13,669                  | 10.0%         | 13,498                  | 9.5%          | 12,861                  | 9.2%          |
| <b>Total WRS Assets</b>                       | <b>\$136,348</b>        | <b>100.0%</b> | <b>\$137,009</b>        | <b>100.0%</b> | <b>\$142,669</b>        | <b>100.0%</b> | <b>\$139,460</b>        | <b>100.0%</b> |
| <b>Other Funds</b>                            |                         |               |                         |               |                         |               |                         |               |
| State Investment Fund - Internally Managed    | \$20,430                |               | \$20,327                |               | \$20,735                |               | \$20,383                |               |
| Separately Managed Funds - Internally Managed | \$94                    |               | \$93                    |               | \$98                    |               | \$92                    |               |
| Separately Managed Funds - Externally Managed | \$2,751                 |               | \$2,770                 |               | \$2,908                 |               | \$2,856                 |               |
| <b>Total Other Funds</b>                      | <b>\$23,276</b>         |               | <b>\$23,190</b>         |               | <b>\$23,742</b>         |               | <b>\$23,331</b>         |               |
| <b>Total Assets Under Management</b>          | <b>\$159,624</b>        |               | <b>\$160,199</b>        |               | <b>\$166,410</b>        |               | <b>\$162,791</b>        |               |
| <b>Supplemental AUM Breakout</b>              |                         |               |                         |               |                         |               |                         |               |
| <b>Total Internal Assets Under Management</b> | <b>\$72,222</b>         | <b>45.2%</b>  | <b>\$71,834</b>         | <b>44.8%</b>  | <b>\$77,107</b>         | <b>46.3%</b>  | <b>\$75,060</b>         | <b>46.1%</b>  |
| <b>Total External Asset Under Management</b>  | <b>\$87,402</b>         | <b>54.8%</b>  | <b>\$88,365</b>         | <b>55.2%</b>  | <b>\$89,304</b>         | <b>53.7%</b>  | <b>\$87,731</b>         | <b>53.9%</b>  |

**STATE OF WISCONSIN INVESTMENT BOARD**  
**Expenses for All Funds Under Management**  
**Quarter Ending December 31, 2024**

| <u>EXPENSE CATEGORY</u>                                  | <u>SERVICE PROVIDED</u>            | <u>EXPENSES</u> |
|--|------------------------------------|-----------------|
| <b><u>Internal Expenses</u></b>                          |                                    |                 |
| Staff Compensation                                       | Staff Compensation                 | \$ 12,793,731   |
| Fringe Benefits  | Fringe Benefits                    | 2,262,364       |
| Staff Travel   | Staff Travel                       | 441,692         |
| <b><u>Supplies, Services, and Facilities</u></b>         |                                    |                 |
| 1901 Inc.  | Supplies, Services, and Facilities | \$ 35,117       |
| Ad Madison   | Supplies, Services, and Facilities | 75              |
| Advanced Systems Concepts                                | Supplies, Services, and Facilities | 26,711          |
| Amazon.com   | Supplies, Services, and Facilities | 2,175           |
| APQC.org   | Supplies, Services, and Facilities | 8,800           |
| ASAP   | Supplies, Services, and Facilities | 199             |
| Association of Public Pension Fund Auditors (APPFA)      | Supplies, Services, and Facilities | 500             |
| AT&T Landline  | Supplies, Services, and Facilities | 2,339           |
| Atlassian.com  | Supplies, Services, and Facilities | 4,305           |
| AVI Systems, Inc.  | Supplies, Services, and Facilities | 58,970          |
| Bloomberg BusinessWeek                                   | Supplies, Services, and Facilities | 1,266           |
| BrightSign LLC   | Supplies, Services, and Facilities | 396             |
| Canva.com  | Supplies, Services, and Facilities | 120             |
| Capital Data Inc.  | Supplies, Services, and Facilities | 122,667         |
| Carahsoft Technology Corp                                | Supplies, Services, and Facilities | 25,841          |
| CDS MY Block 1 Office, LLC                               | Supplies, Services, and Facilities | 620,794         |
| Centurylink  | Supplies, Services, and Facilities | 56              |
| Charter Communications (Spectrum Business)               | Supplies, Services, and Facilities | 6,909           |
| Ciphereus LLC  | Supplies, Services, and Facilities | 3,000           |
| ClickStudios   | Supplies, Services, and Facilities | 2,636           |
| CoderPad, Inc.   | Supplies, Services, and Facilities | 3,900           |
| Coffee Werks Machine Service and Sales                   | Supplies, Services, and Facilities | 315             |
| Column Software PBC                                      | Supplies, Services, and Facilities | 360             |
| Compliance Science, Inc.                                 | Supplies, Services, and Facilities | 1,397           |
| DbSchema Database Designer                               | Supplies, Services, and Facilities | 75              |
| Deft   | Supplies, Services, and Facilities | 9,167           |
| Dell Marketing LP  | Supplies, Services, and Facilities | 133,598         |
| Department of Administration                             | Supplies, Services, and Facilities | (224,945)       |
| Depreciation Expense                                     | Supplies, Services, and Facilities | 513,150         |
| Diligent Corporation                                     | Supplies, Services, and Facilities | 11,870          |
| DWD  | Supplies, Services, and Facilities | 2,805           |
| EasyKeys   | Supplies, Services, and Facilities | 20              |
| Fed Ex   | Supplies, Services, and Facilities | 755             |
| Focus Consulting Group, Inc                              | Supplies, Services, and Facilities | 17,200          |
| Foreign Affairs  | Supplies, Services, and Facilities | 35              |
| FS.com   | Supplies, Services, and Facilities | 2,170           |
| Genesis Painting   | Supplies, Services, and Facilities | 6,920           |
| Gordon Flesch  | Supplies, Services, and Facilities | 14,557          |
| Grad Leaders LLC   | Supplies, Services, and Facilities | 1,075           |
| Harvard Business Review                                  | Supplies, Services, and Facilities | (11)            |
| Heymarket  | Supplies, Services, and Facilities | 1,310           |
| IKM Building Solutions, Inc.                             | Supplies, Services, and Facilities | 78,282          |
| Information Systems Audit and Control Association        | Supplies, Services, and Facilities | 175             |
| Institutional Investor                                   | Supplies, Services, and Facilities | 899             |
| Institutional Society of Risk Professionals              | Supplies, Services, and Facilities | 300             |
| JWC Building Specialties Inc.                            | Supplies, Services, and Facilities | 1,651           |
| Keystone Peer Review Organization Inc                    | Supplies, Services, and Facilities | 926             |
| KnowBe4 Inc.   | Supplies, Services, and Facilities | 39,398          |
| Lake Mills Cleaners                                      | Supplies, Services, and Facilities | 42              |
| Lee Hecht Harrison                                       | Supplies, Services, and Facilities | 6,000           |
| LinkedIn   | Supplies, Services, and Facilities | 17,205          |
| Litera Corp  | Supplies, Services, and Facilities | 324             |
| Madison Gas and Electric Company                         | Supplies, Services, and Facilities | 32,313          |
| Microsoft, Inc.  | Supplies, Services, and Facilities | 76              |
| Milwaukee Journal Sentinel                               | Supplies, Services, and Facilities | 184             |
| mxttoolbox.com   | Supplies, Services, and Facilities | 297             |
| National Association of Public Pension Attorneys         | Supplies, Services, and Facilities | 700             |
| National Council on Teacher Retirement                   | Supplies, Services, and Facilities | 1,120           |
| National Organization of Investment Professionals (NOIP) | Supplies, Services, and Facilities | 425             |
| New York Times   | Supplies, Services, and Facilities | 223             |
| Newton Software  | Supplies, Services, and Facilities | 3,870           |
| n-Tier Financial Services, LLC                           | Supplies, Services, and Facilities | 12,500          |

| <u>EXPENSE CATEGORY</u>  | <u>SERVICE PROVIDED</u>                           | <u>EXPENSES</u>      |
|--|---|----------------------|
| Packerland Rent-A-Mat, Inc.  | Supplies, Services, and Facilities                | 552                  |
| PayScale, Inc.   | Supplies, Services, and Facilities                | 6,900                |
| Practising Law Institute   | Supplies, Services, and Facilities                | 11,000               |
| Security Onion Solutions   | Supplies, Services, and Facilities                | 6,028                |
| Servpro of Madison   | Supplies, Services, and Facilities                | 5,125                |
| Shred-it   | Supplies, Services, and Facilities                | 738                  |
| Software House Intl  | Supplies, Services, and Facilities                | 332,334              |
| Staples Advantage  | Supplies, Services, and Facilities                | 2,345                |
| SurveyMonkey.com   | Supplies, Services, and Facilities                | 372                  |
| Target   | Supplies, Services, and Facilities                | 143                  |
| The Economist  | Supplies, Services, and Facilities                | 960                  |
| The Morning Pulse  | Supplies, Services, and Facilities                | 80                   |
| The National Association of Government Archives and Records Administrators | Supplies, Services, and Facilities                | 89                   |
| Thomson Reuters  | Supplies, Services, and Facilities                | 2,917                |
| UW System Administration   | Supplies, Services, and Facilities                | 850                  |
| Validity Screening Solutions   | Supplies, Services, and Facilities                | 1,666                |
| Vanguard Computers, Inc.   | Supplies, Services, and Facilities                | 10,590               |
| Verizon Wireless   | Supplies, Services, and Facilities                | 4,241                |
| Wisconsin Independent Network  | Supplies, Services, and Facilities                | 900                  |
| Wisconsin State Journal  | Supplies, Services, and Facilities                | 62                   |
| WIX.com  | Supplies, Services, and Facilities                | 1,958                |
| <b>Total Supplies, Services, and Facilities</b>                            |   | <b>\$ 2,005,359</b>  |
| <b>Total Internal Expenses</b>   |   | <b>\$ 17,503,147</b> |
| <b><u>Custodial, Investment Operations and Banking Fees</u></b>            |   |                      |
| BNY Asset Servicing - Custody  | Master Custody Services                           | \$ 564,436           |
| BNY Asset Servicing - Investment Operations                                | Investment Operating Services                     | 1,526,084            |
| Markit Group Limited   | Investment Operating Services                     | 185,776              |
| Markit NA  | Investment Data Management Software               | 2,415                |
| <b>Total Custodial, Investment Operations and Banking Fees</b>             |   | <b>\$ 2,278,712</b>  |
| <b><u>Legal Fees</u></b>   |   |                      |
| Arentfox Schiff LLP  | Legal Work for Investment Strategies              | \$ 28,828            |
| Chapman & Cutler LLP   | Legal Work for Investment Strategies              | 66,156               |
| DLA Piper LLP (US)   | Legal Work for Investment Strategies              | 204,234              |
| Godfrey & Kahn SC  | Legal Work for Investment Strategies              | 22,557               |
| Pillsbury Winthrop Shaw Pittman LLP  | Legal Work for Investment Strategies              | 13,641               |
| Purrington Moody Weill LLP   | Legal Work for Investment Strategies              | 50,264               |
| Quarles & Brady  | Legal Work for Investment Strategies              | 200,908              |
| Reinhart Boerner Van Deuren SC   | Legal Work for Investment Strategies              | 159                  |
| Sidley Austin LLP (International)  | Legal Work for Investment Strategies              | 17,135               |
| Vedder Price PC  | Legal Work for Investment Strategies              | 30,507               |
| <b>Total Legal Fees</b>  |   | <b>\$ 634,388</b>    |
| <b><u>Investment Counsel</u></b>   |   |                      |
| 12358433 Canada Inc.   | Investment Consulting                             | \$ 184,580           |
| 3x108 Fintech Consulting Limited   | Investment Consulting                             | 147,203              |
| AE Business Solutions  | Investment Consulting Services                    | 81,375               |
| Ailman Advisors  | Investment Consulting                             | 3,500                |
| Aksia LLC  | Hedge Fund Investment Consulting                  | 353,826              |
| Alembic Global Advisors  | Market Research                                   | 2,100                |
| Alex Solutions   | Research and Data Services                        | 44,000               |
| Apex Systems, LLC  | Investment Consulting Services                    | 33,040               |
| AquaFold   | Investment Research Software                      | 998                  |
| B Riley FBR Inc  | Investment Research                               | 6,000                |
| Backstop Solutions Group   | Investment Software                               | 44,753               |
| Bank of America Merrill Lynch  | Investment Research                               | 34,750               |
| Barra LLC  | Research and Data Services                        | 37,880               |
| Barrington Research Associates Inc   | Investment Research                               | 3,900                |
| Barrons  | Investment Research                               | 464                  |
| BCA Research Inc   | Global & Domestic Fixed Income Strategy Research  | 29,500               |
| Berenberg  | Investment Research                               | 7,000                |
| Blackrock Financial Management Inc   | Risk Services                                     | 81,903               |
| Bloomberg Finance LP   | Market, Company, Industry & Benchmark Information | 1,570,490            |
| BMO Capital Markets Corp   | Investment Research Services                      | 9,800                |
| BNY Asset Servicing - Eagle/Pace   | Investment Consulting Services                    | 115,000              |
| Bridge Consulting Partners Ltd   | Investment Consulting Services                    | 66,040               |

| <u>EXPENSE CATEGORY</u>                     | <u>SERVICE PROVIDED</u>                               | <u>EXPENSES</u> |
|---|---|-----------------|
| BTIG, LLC                                   | Investment Research                                   | 9,150           |
| Callan Associates Inc                       | Investment Consulting & Performance Benchmarking      | 6,250           |
| Canoe Software Inc.                         | Investment Software                                   | 16,450          |
| Cantor Fitzgerald Investment Advisors, L.P. | Investment Research                                   | 500             |
| Capital Economics LTD                       | Market Research                                       | 15,500          |
| Carahsoft Technology Corp                   | Investment Consulting Services                        | 16,042          |
| CBJL Incorporated                           | Investment Consulting Services                        | 101,680         |
| CBOE Global Markets, Inc.                   | Research and Data Services                            | 1,770           |
| CCG Data Solutions                          | Investment Consulting Services and Software           | 28,000          |
| CEM Benchmarking Inc                        | Investment Cost Analysis                              | 50,400          |
| CFRA Research                               | Investment Research Services                          | 24,507          |
| Charles River System Inc                    | Portfolio Management Trading Software & Services      | 437,792         |
| CIBC World Markets Inc                      | Investment Research                                   | 1,750           |
| CJS Securities, Inc.                        | Investment Research                                   | 4,200           |
| CL King & Associates                        | Investment Research                                   | 9,350           |
| CLO Research Group                          | Investment Research                                   | 1,875           |
| Compass Point Research & Trading, LLC       | Investment Research                                   | 10,200          |
| Copp Clark                                  | Research and Data Services                            | 3,939           |
| CoStar Portfolio Strategy                   | Real Estate Consulting & Research Services            | 23,042          |
| Council of Institutional Investors          | Corporate Governance                                  | 31,200          |
| Craig-Hallum Capital Group                  | Investment Research                                   | 6,450           |
| Cutter Associates                           | Investment Organization and Systems Consulting        | 19,250          |
| DA Davidson & Co                            | Investment Research                                   | 20,750          |
| Dacheng Xiu                                 | Investment Research                                   | 62,475          |
| Data Axle                                   | Investment Data                                       | 1,397           |
| Deloitte Consulting LLP                     | Information Technology Consulting Services            | 875,000         |
| Deutsche Bank                               | Tax registration fees                                 | 18,250          |
| DiatomC LLC                                 | Investment Consulting                                 | 98,280          |
| Dow Jones News Service                      | Company and Industry News Services                    | 37,131          |
| DTCC – EPN                                  | Trade Settlement Service                              | 4,800           |
| DTCC ITP LLC                                | Trade Settlement Service                              | 3,237           |
| EFront Financial Solutions Inc              | Private Markets Portfolio Management Services         | 242,489         |
| Elevation LLC                               | Research and Data Services                            | 12,500          |
| Eliassen Group                              | Information Technology Consulting Services            | 13,000          |
| Empirical Research Partners LLC             | Investment Research                                   | 40,500          |
| EquiLend Holdings LLC                       | Investment Data                                       | 31,750          |
| Ernst & Young LLP                           | Tax Compliance Services & Investment Consulting       | (41,625)        |
| Evercore Group LLC                          | Investment Research                                   | 36,850          |
| eVestment Alliance LLC                      | Research and Data Services                            | 17,500          |
| Exane Inc                                   | Investment Research                                   | 51,850          |
| FactSet Research Systems Inc                | Financial & Economic Database                         | 1,700,393       |
| FBN Securities, Inc.                        | Investment Research                                   | 9,000           |
| Finiato                                     | Research Management Solution                          | 5,000           |
| FIS Data Systems Inc.                       | Research and Data Services                            | 45,956          |
| Fitch Solutions Inc                         | Credit Rating Services                                | 19,688          |
| FTSE Fixed Income LLC                       | Real Time Index Data                                  | 38,610          |
| Furey Research Partners LLC                 | Small Cap Research                                    | 6,000           |
| Gallagher                                   | Insurance and Risk Management Services                | 15,875          |
| Global Peer Financing Association           | Investment Consulting                                 | 1,000           |
| Goodbody                                    | Investment Research                                   | 1,250           |
| Green Street Advisor                        | Real Estate Analytics                                 | 31,025          |
| Guggenheim Securities LLC                   | Investment Research                                   | 4,500           |
| Haver Analytics                             | Global Macroeconomic Research                         | 24,593          |
| Healthy Markets Association                 | Research & Data Service                               | 20,000          |
| Ice Data LP                                 | Fixed Income Indices                                  | 228,700         |
| iFathom Corporation                         | Investment Consulting                                 | 3,330           |
| Infopro Digital Services Limited            | Research and Data Services                            | 4,120           |
| Institutional Shareholder Services Inc      | Proxy Voting Analysis                                 | 63,433          |
| International Corporate Governance Network  | Corporate Governance Research                         | 11,664          |
| Intex Solutions, Inc.                       | Research and Data Services                            | 30,600          |
| IPC Systems Inc                             | Trading Telecommunication System                      | 10,500          |
| Jefferies Research Services LLC             | Investment Research                                   | 27,800          |
| JPSB Consulting Limited                     | Investment Consulting                                 | 70,720          |
| Keefe Bruyette & Woods (KBW)                | Investment Research                                   | 28,500          |
| Kepler Capital Markets Inc                  | Investment Research Services                          | 6,000           |
| KeyBanc Capital Markets Inc                 | Investment Research                                   | 24,450          |
| Keystone Consulting Inc                     | Investment Information Technology Consulting Services | 69,760          |
| Knowledge Services                          | Recruitment and Staffing Services                     | 21,359          |

| <u>EXPENSE CATEGORY</u>                                   | <u>SERVICE PROVIDED</u>                               | <u>EXPENSES</u> |
|---|---|-----------------|
| KPMG Limited  | Tax Representation Services                           | 4,860           |
| Kreischer Miller LLP                                      | Investment Consulting                                 | 11,500          |
| Lake Street Capital Markets, LLC                          | Investment Research                                   | 6,050           |
| Law360 Legal News and Data                                | Investment Research                                   | 872             |
| Loop Capital Markets LLC                                  | Investment Research                                   | 6,050           |
| Macquarie Capital (USA) Inc                               | Investment Research                                   | 1,500           |
| Makor Securities London LTD                               | Investment Research                                   | 13,500          |
| Manalo Advisors Limited                                   | Research and Data Services                            | 3,750           |
| Markit Group Limited                                      | Investment Consulting Services                        | 23,624          |
| Markit NA   | Investment Data Management Software                   | 15,510          |
| Markit-EDM Limited  | Investment Consulting                                 | 210,929         |
| McLagan Partners Inc                                      | Investment Compensation Data and Analysis             | 29,500          |
| Meketa Investment Group                                   | Public Markets External Manager Consultant            | (6,174)         |
| MNI Market News   | Research and Data Services                            | 5,171           |
| Moodys Analytics  | Economic, Currency & Bond Analysis                    | 91,213          |
| Morningstar Inc   | Industrial Sector Market Research & Analysis          | 4,850           |
| MSCI Inc - Risk Metrics Solutions                         | Research and Data Services                            | 336,381         |
| MSCI, Inc   | Research and Data Services                            | 123,917         |
| My Data Outlet International, LLC                         | Research and Data Services                            | 52,000          |
| National Conference on Public Employee Retirement Systems | Investment Research                                   | 6,435           |
| National Council of Real Estate Investment Fiduciaries    | Real Estate Performance Research                      | 2,700           |
| Needham & Company LLC                                     | Investment Research                                   | 7,850           |
| NEPC LLC  | Investment Consulting Services                        | 80,000          |
| Northcoast Research Partners, LLC                         | Research and Data Services                            | 5,600           |
| Northland Securities                                      | Investment Research                                   | 5,050           |
| Numerama Analytics Inc.                                   | Research and Data Services                            | 7,500           |
| Nuware Technology Corp                                    | Investment Information Technology Consulting Services | (1,040)         |
| NYSE Market Inc   | New York Stock Exchange Data                          | 6,102           |
| Options Price Reporting Authority                         | Quote System for Options Market                       | 1,827           |
| Oxford Economics USA INC                                  | Research and Data Service                             | 17,705          |
| Pac-invest  | Research and Data Services                            | 14,463          |
| PEI Media Inc   | Private Equity Real Estate News                       | 13,330          |
| Phil Erlanger Research Co Inc                             | Investment Research                                   | 2,000           |
| Piper Sandler & Co  | Investment Research                                   | 39,600          |
| Pitchbook Data Inc  | Research and Data Services                            | 20,500          |
| PremiaLab   | Investment Research                                   | 27,500          |
| Preyer  | Investment Consulting Services                        | 70,980          |
| Quantum Research Consulting LLC                           | Investment Consulting                                 | 81,180          |
| RavenPack International S.L.U.                            | Research and Data Services                            | 21,250          |
| Raymond James   | Research and Data Services                            | 10,550          |
| Redburn Europe Limited                                    | Investment Research                                   | 10,500          |
| Refinitiv   | Investment Research                                   | 271,457         |
| Renaissance Macro Research                                | Macro Economic Research                               | 12,500          |
| Reorg Research Limited                                    | Research and Data Services                            | 45,000          |
| RIMES Technologies Corporation                            | Research and Data Service                             | 91,083          |
| Robert W. Baird & Co.                                     | Investment Research                                   | 59,100          |
| Rosenblatt Securities Inc                                 | Investment Research                                   | 6,000           |
| Roth Capital Partners                                     | Investment Research                                   | 7,700           |
| Russell Investment Group                                  | Index Data  | 17,864          |
| S&P Global Market Intelligence                            | Industry & Corporate Research                         | 157,295         |
| SailPoint Technologies, Inc.                              | Information Security Software                         | 86,033          |
| Sanford C Bernstein & Co LLC                              | Investment Research                                   | 21,750          |
| Seaport Global Securities LLC                             | Research and Data Services                            | 3,070           |
| SEI Investments   | Research and Data Services                            | 22,736          |
| Sharp Decisions Inc                                       | Investment Information Technology Consulting Services | 88,400          |
| Sidoti & Company LLC                                      | Investment Research                                   | 7,350           |
| SimCorp Data & Performance Capitalized Expenses           | Investment System                                     | (133,010)       |
| SimCorp Implementation Capitalized Expenses               | Investment System                                     | (966,672)       |
| Simcorp USA, Inc.   | Investment System                                     | 1,278,843       |
| Smartkarma Innovations Pte Ltd                            | Research and Data Services                            | 2,475           |
| Snowflake Inc   | Research and Data Services                            | 40,000          |
| State Street  | Investment Consulting                                 | 25,000          |
| Stephens Inc  | Investment Research                                   | 11,350          |
| StepStone Group   | Private Equity Consulting Services                    | 1,459           |
| StepStone Group Real Estate                               | Real Estate Consulting Services                       | 59,330          |
| Strategic Economic Decisions Inc                          | Investment Research Reports                           | 6,000           |
| Susquehanna Financial Group LLP                           | Investment Research                                   | 13,500          |
| SWIFT SC  | Research and Data Services                            | 540             |

| <u>EXPENSE CATEGORY</u>                       | <u>SERVICE PROVIDED</u>                               | <u>EXPENSES</u>      |
|---|---|----------------------|
| SystemsAccountants                            | Investment Information Technology Consulting Services | 67,200               |
| TD Securities (USA) LLC                       | Investment Research                                   | (1,000)              |
| TechVest Global Solutions Inc.                | Information Technology Consulting Services            | 54,900               |
| The Benchmark Company LLC                     | Investment Research                                   | 8,000                |
| The Financial Times Limited                   | Investment Research                                   | 689                  |
| The Leuthold Group LLC                        | Broad Based Market Research                           | 1,000                |
| The Loan Syndications and Trading Association | Investment Membership                                 | 14,000               |
| The Nasdaq Stock Market, LLC                  | Research & Data Services                              | 64,785               |
| The Spaulding Group, Inc.                     | Audit Services  | 14,375               |
| The Yield Book Inc                            | Research and Data Services                            | 22,322               |
| Toronto Stock Exchange                        | Market Data   | 14,176               |
| TradeWeb                                      | On-Line Fixed Income Trading Services                 | 11,184               |
| Trahan Macro Research LLC                     | Research and Data Services                            | 11,000               |
| Trivariate Research LP                        | Investment Research                                   | 6,500                |
| Tudor Pickering Holt & Co                     | Investment Research                                   | 2,500                |
| UFP Research SA                               | Investment Research                                   | 12,500               |
| Unit4 Business Software Inc                   | Financial & Administration Services System            | 82,603               |
| Variyas Global Solutions, Inc.                | Information Technology Consulting Services            | 153,544              |
| Verity LLC                                    | Research Management System                            | 49,876               |
| Vertical Research Partners                    | Industrial Sector Market Research & Analysis          | 13,250               |
| Verus Advisory Inc                            | Benchmarking Consulting Services                      | 2,500                |
| Virtu ITG Analytics LLC                       | Trading Transaction Cost Analysis                     | 27,000               |
| Wall Street Journal                           | Investment Research & Information                     | 55                   |
| Wedbush                                       | Investment Research                                   | 14,050               |
| Wolfe Trahan                                  | Transportation and Macro Economic Research            | 28,600               |
| Wolverine Execution Services LLC              | Options Trading Platform                              | 2,210                |
| Workday Implementation Capitalized Expenses   | Financial & Administration Services System            | (984,711)            |
| Workday, Inc.                                 | Financial & Administration Services System            | 50,607               |
| WorldBridge Partners Inc                      | Recruitment Consulting                                | 63,440               |
| Worth Charting LLC                            | Investment Consulting                                 | 8,200                |
| <b>Total Investment Counsel</b>               |   | <b>\$ 10,165,448</b> |
| <b>Securities Lending Agent Fees</b>          |   |                      |
| BNY Asset Servicing & eSecLending             | Securities Lending Agent Fees                         | \$ 1,005,967         |
| <b>Total Securities Lending Agent Fees</b>    |   | <b>\$ 1,005,967</b>  |
| <b>Total Quarterly Charges to Funds</b>       |   | <b>\$ 31,587,662</b> |

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. There are currently no investments in Bankers' Bank certificates of deposit and no fees were incurred.

*BNY:* 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, which serves as the official book of record for SWIB's accounting and performance measurement functions. BNY 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.



### **External Investment Management Fees**

Some external asset managers have been granted delegated authority to determine investment strategy and purchase securities in SWIB's name in accordance with approved investment guidelines. These investment vehicles are known as separately managed accounts (SMAs). Fees for managing SMAs are typically assessed as a percentage of the market value of assets under management and in some cases, fees are based on investment performance. These costs are actual expenses to SWIB that are, in accordance with accounting guidelines generally accepted in the U.S., recognized as expenses on the WRS Statement of Changes in Net Investment Position.

SWIB also invests in separate legal entities managed by external investment managers to gain exposure to select strategies including Public Markets, Private Markets<sup>1</sup>, and Hedge Funds. These investment vehicles are known as "commingled" accounts. In exchange for their investment management services, the external managers charge a fee within the entity they manage. These fees generally do not require SWIB to remit payment. 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 included in SWIB's total cost of management reporting as a supplemental reporting item that falls outside the statutory requirements of this report.

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<sup>1</sup> Beginning in 2023, External Investment Management Fees for private markets, encompassing Private Equity, Venture Capital, Current Return and Real Estate asset classes, are reported on a net of fee basis rather than gross. Net fees reflect fee offsets, waivers, and deferrals.

# Private Equity Fund Commitments\*

*October 2024 – December 2024*

| <i>Investment</i>                           | <i>Commitment (millions)</i> |
|---|------------------------------|
| Adelis IV                                   | €45.0                        |
| Ares Special Opportunities Fund III         | \$100.0                      |
| Audax Private Equity/Strategic Capital - SW | \$50.0                       |
| Avenue Growth II                            | \$45.0                       |
| Godspeed Capital Fund III                   | \$40.0                       |
| GTCR Capital Solutions I                    | \$75.0                       |
| LFM Fund IV                                 | \$55.0                       |
| Lindsay Goldberg VI (add-on)                | \$25.0                       |
| New State Capital Partners Fund IV          | \$65.0                       |
| PSG VI (add-on)                             | \$25.0                       |
| Searchlight Capital Partners IV (add-on)    | \$25.0                       |
| Sixth Street Sports and Live Entertainment  | \$100.0                      |
| Thoma Bravo Fund XVI                        | \$100.0                      |
| Thoma Bravo Discover Fund V                 | \$100.0                      |

\*Includes Current Return Portfolio

# Private Equity Co-Investment Commitments\*

*October 2024 – December 2024*

| <i>Investment</i>           | <i>Commitment (millions)</i> |
|-----------------------------|------------------------------|
| Materials Co-Investment     | \$24.3                       |
| Healthcare Co-Investment    | \$0.5                        |
| IT Co-Investment            | \$2.6                        |
| Media/Telecom Co-Investment | \$25.0                       |
| Consumer Co-Investment      | \$6.9                        |
| IT Co-Investment            | \$50.0                       |
| Consumer Co-Investment      | \$11.4                       |
| Industrials Co-Investment   | \$30.0                       |

*\*Includes Current Return Co-Investment Portfolio*

# Private Debt Investments/Commitments

*October 1, 2024 to December 31, 2024 (Fourth Quarter)*

| <i>Investment</i>      | <i>Investment/Commitment</i> |
|------------------------|------------------------------|
| Mortgage Loan Servicer | \$50,000,000                 |
| <b>Total</b>           | <b>\$50,000,000</b>          |

# Real Estate Commitments

*October 2024 – December 2024*

| <i>Investment</i>                       | <i>Commitment (millions)</i> |
|---|------------------------------|
| Bridge Logistics Value Fund II          | \$110                        |
| Berkshire Bridge Loan Investors-MF1 III | 100                          |
| 1547 Data Center Fund III               | 50                           |
| WESCO V                                 | 28                           |
|   |                              |
|   |                              |
|   |                              |
| <b>Total</b>                            | <b>\$288</b>                 |

# Funds Alpha Commitments\*

*October 1 – December 31, 2024*

| <b>Manager</b>      | <b>Commitment (Millions)</b> |
|---------------------|------------------------------|
| Silver Point Select | \$ 50                        |
| PIMCO EMD Hard      | \$ 250                       |
| PIMCO EMD Local     | \$ 250                       |
| <b>TOTAL</b>        | <b>\$ 550</b>                |

*\*Includes Hedge Funds and Beta One*

## Board Meeting

### Tab 12 – Future Items for Discussion

# 2025 Board Meeting and Agenda Plan

March 2025

|   |  |
|---|--|
| <b>Audit &amp; Finance</b>                      | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• Annual Charters Review</li> <li>• Open Audit Issues Report(s)</li> <li>• Approval of Draft Audit Report(s)</li> <li>• 2025 Internal Audit Plan Status</li> <li>• 2025 Internal Audit Goals</li> <li>• Compliance Overview</li> <li>• Financial Reporting</li> <li>• Administrative Reports</li> </ul> <p><b>Executive Closed Session</b></p> <ul style="list-style-type: none"> <li>• Evaluation of Head of Internal Audit</li> <li>• Head of Internal Audit Compensation Recommendation</li> </ul>  |
| <b>Compensation &amp; Workforce Development</b> | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• Annual Committee Charter Review</li> <li>• Comprehensive RPM Review Timeline</li> <li>• Strategic Results Scorecard Approval</li> <li>• Incentive Compensation Program Review and Division Scorecards Results</li> <li>• Incentive Compensation Award Recommendations</li> <li>• Talent Acquisition Update</li> </ul> <p><b>Executive Closed Session</b></p> <ul style="list-style-type: none"> <li>• Incentive Compensation Award Recommendations for Specific Individuals</li> <li>• Long Term Incentive Plan Awards</li> <li>• Deputy Executive Director/Chief Operating Officer Incentive Compensation Award Recommendation</li> <li>• ED/CIO Evaluation and Compensation</li> </ul>   |
| <b>SPCG</b>                                     | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• Real Estate Strategy Report and Market Outlook</li> <li>• Corporate Governance Program Update</li> <li>• June Investment Forum Preview</li> <li>• Innovation and Projects Update</li> </ul> <p><b>Executive Closed Session</b></p> <ul style="list-style-type: none"> <li>• ED/CIO Goals Review</li> </ul>   |
| <b>Board Meeting</b>                            | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• Committee Reports</li> <li>• Election of Secretary and Assistant Secretary</li> <li>• Annual Committee Assignments</li> <li>• Proposed Meeting Dates for Next Year</li> <li>• Investment Performance and Market Updates; Callan Annual Report</li> <li>• Committee Open Session Business</li> <li>• Quarterly Investment Update</li> <li>• Q4 Direct Charges to Funds / PMFA Commitments / Board Contact Log</li> </ul> <p><b>Closed Session</b></p> <ul style="list-style-type: none"> <li>• Risk Management Update</li> <li>• Committee Closed Session Business</li> <li>• Operational, Financing &amp; Counterparty Risk Overview</li> </ul> <p><b>Executive Closed Session</b></p> <ul style="list-style-type: none"> <li>• Incentive Compensation Award Recommendations for Specific Individuals</li> </ul> |



# 2025 Board Meeting and Agenda Plan

| June 2025                  |  |
|----------------------------|--|
| <b>Audit &amp; Finance</b> | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• WRS Audited Financial Statements</li> <li>• Open Audit Issues Report(s)</li> <li>• Approval of Draft Audit Report(s)</li> <li>• Annual Affirmations and Disclosures</li> <li>• 2025 Internal Audit Plan Status</li> <li>• Five-Year Audit Summary</li> <li>• Financial Reporting</li> <li>• Administrative Reports</li> </ul> <p><b>Executive Closed Session</b></p> <ul style="list-style-type: none"> <li>• LAB Review of Statements of Economic Interest</li> </ul> |
| <b>SPCG</b>                | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• Hedge Fund Strategy Report and Market Outlook</li> <li>• Annual Corporate Governance Policy Review</li> </ul> <p><b>Executive Closed Session</b></p> <ul style="list-style-type: none"> <li>• ED/CIO Goals Review</li> </ul>   |
| <b>INVESTMENT FORUM</b>    |  |
| <b>Board Meeting</b>       | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• Committee Reports</li> <li>• Investment Performance and Market Updates; Callan Quarterly Report</li> <li>• Committee Open Session Business</li> <li>• Quarterly Investment Update</li> <li>• Q1 Direct Charges to Funds / PMFA Commitments / Board Contact Log</li> </ul> <p><b>Closed Session</b></p> <ul style="list-style-type: none"> <li>• Risk Management Update</li> <li>• Committee Closed Session Business</li> </ul>   |
| <b>INVESTMENT FORUM</b>    |  |

# 2025 Board Meeting and Agenda Plan

| September 2025                                  |   |
|---|---|
| <b>Audit &amp; Finance</b>                      | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• Open Audit Issues Report(s)</li> <li>• Approval of Draft Audit Report(s)</li> <li>• 2025 Internal Audit Plan Status</li> <li>• 2026 Internal Audit Plan Preview</li> <li>• Financial Reporting</li> <li>• Administrative Reports</li> </ul>   |
| <b>Compensation &amp; Workforce Development</b> | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• Comprehensive RPM Review Preview</li> <li>• Talent Acquisition and Employee Engagement Update</li> </ul>  |
| <b>SPCG</b>                                     | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• Private Equity Strategy Report and Market Outlook</li> <li>• Corporate Governance 2025 Proxy Voting Review</li> <li>• Trustee Manual Review/Policies Update</li> <li>• October Workshop Preview</li> <li>• Innovation and Projects Update</li> </ul> <p><b>Closed Session</b></p> <ul style="list-style-type: none"> <li>• Co-Investment and Venture Capital Strategy Report and Market Outlook</li> <li>• Board/Staff Consultant Annual Reporting</li> <li>• ED/CIO Goals Review</li> </ul>  |
| <b>Board Meeting</b>                            | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• Committee Reports</li> <li>• Investment Forum Recap</li> <li>• Fiduciary &amp; Public Records Training</li> <li>• Investment Performance and Market Updates; Callan Quarterly Report</li> <li>• Committee Open Session Business</li> <li>• Quarterly Investment Update</li> <li>• Q2 Direct Charges to Funds / PMFA Commitments / Board Contact Log</li> </ul> <p><b>Closed Session</b></p> <ul style="list-style-type: none"> <li>• Risk Management Update</li> <li>• Committee Closed Session Business</li> <li>• Board Self-Evaluation with Governance Consultant</li> </ul> |

|   |
|---|
| <b>OCTOBER BOARD WORKSHOP</b>   |
| <ul style="list-style-type: none"> <li>• Outside Speakers</li> <li>• Asset Allocation review</li> </ul> |

## 2025 Board Meeting and Agenda Plan

| December 2025                                   |   |
|---|---|
| <b>Audit &amp; Finance</b>                      | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• SIF Audited Financial Statements</li> <li>• Open Audit Issues Report(s)</li> <li>• Approval of Draft Audit Report(s)</li> <li>• 2025 Internal Audit Plan Status</li> <li>• Proposed 2026 Internal Audit Plan</li> <li>• Financial Reporting, including Budget and Position Request</li> <li>• Administrative Reports</li> </ul> <p><b>Executive Closed Session</b></p> <ul style="list-style-type: none"> <li>• LAB Review of Statements of Economic Interests</li> </ul>   |
| <b>Benchmark &amp; Performance</b>              | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• Annual Committee Charter, Policies, and Benchmarking Philosophy Review</li> </ul>   |
| <b>Compensation &amp; Workforce Development</b> | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• Compensation Philosophy Review</li> <li>• Compensation Consultant Report</li> <li>• Incentive Compensation Plan Changes for Next Performance Year (if any)</li> <li>• Incentive Compensation Projections</li> <li>• Comprehensive RPM Review</li> <li>• Talent Acquisition Update and People Metrics</li> </ul> <p><b>Executive Closed Session</b></p> <ul style="list-style-type: none"> <li>• Succession Planning</li> </ul>  |
| <b>SPCG</b>                                     | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• Annual Committee Charter Review</li> <li>• Beta One Strategy Report and Market Outlook</li> </ul> <p><b>Executive Closed Session</b></p> <ul style="list-style-type: none"> <li>• ED/CIO Goals Review</li> </ul>  |
| <b>Board Meeting</b>                            | <p><b>Open Session</b></p> <ul style="list-style-type: none"> <li>• Committee Reports</li> <li>• Investment Performance and Market Updates; Callan Quarterly Report</li> <li>• Annual Presentation on Cost Benchmarking</li> <li>• Asset Allocation Recommendation</li> <li>• Quarterly Investment Update</li> <li>• Committee Open Session Business</li> <li>• Q3 Direct Charges to Funds / PMFA Commitments / Board Contact Log</li> </ul> <p><b>Closed Session</b></p> <ul style="list-style-type: none"> <li>• Asset Allocation Implementation Discussion</li> <li>• Risk Management Update</li> <li>• Committee Closed Session Business</li> <li>• Annual Review of Expected Tail Loss Analysis</li> </ul> |