

SWIB Board Meeting Materials for September 13, 2023

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Name of Meeting: Regular Meeting of the Board of Trustees
Date/Time: Wednesday, September 13, 2023 9:00 am
Room: 1st Floor Conference Room
Address: 4703 Madison Yards Way, Madison, WI 53705
Virtual: [Click here to join the meeting](#) ; 608-267-3179, code 435981332

OPEN SESSION	
1.	Committee Reports – Open Session Items <ul style="list-style-type: none"> A. Strategic Planning and Corporate Governance Committee B. Audit and Finance Committee C. Benchmark and Performance Committee D. Compensation and Workforce Development Committee
2.	Consent Agenda <ul style="list-style-type: none"> A. Minutes of June 14, 2023 B. Recommended Actions from Committee Agendas – Open Session Items
3.	Investment Forum Recap
4.	Biennial Ethics Training
5.	Fiduciary & Public Records Topics
6.	Investment Performance and Market Updates <ul style="list-style-type: none"> A. Board Investment Performance Report, Q2 2023 B. Callan Quarterly Report
7.	Committee Open Session Business <ul style="list-style-type: none"> A. Approved Open Session Investment Committee Meeting Minutes of May 23, June 27 and July 25, 2023 B. Final Open Session Investment Committee Agenda for August 22, 2023 and Draft Open Session Agendas for September 26 and October 24, 2023 C. Draft Open Session Minutes of May 25, 2023 Enterprise Risk and Compliance Committee Meeting
8.	Quarterly Investment Update, Q2 2023

CLOSED SESSION*
RECONVENE IN OPEN SESSION
9. Announcement of Matters Taken Up in Closed Session
10. In the Absence of Questions, the Following Reports will be Filed Without Comment (For informational purposes): <ul style="list-style-type: none"> A. Quarterly Charges to Funds Reports, Q2 2023 B. Private Markets and Funds Alpha Commitments, Q2 2023 C. Board Contact Log
11. Future Items for Discussion
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).

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

Board Meeting

Tab 1 – Committee Reports – Open Session Items

- A. Strategic Planning and Corporate Governance Committee – Trustee Tinnen
- B. Audit and Finance Committee – Trustee Palmer
- C. Benchmark and Performance Committee – Trustee Schalow
- D. Compensation and Workforce Development Committee – Trustee DeAngelis

Reports

Board Meeting

Tab 2 – Consent Agenda

- A. Minutes of June 14, 2023
- B. Recommended Actions from Committee Agendas –
Open Session Items

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

Review and Action

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

Regular Meeting of the Board of Trustees

Wednesday, September 13, 2023

STATE OF WISCONSIN INVESTMENT BOARD

CONSENT AGENDA – OPEN SESSION ITEMS

Proposed Motions:

1. Move to approve the Open Session Minutes, Closed Session Minutes, and Executive Closed Session Minutes of June 14, 2023, as presented.

STATE OF WISCONSIN INVESTMENT BOARD

Board of Trustees Meeting – Open Session

Tuesday/Wednesday, June 13-14, 2023

Investment Forum: Virtual

Regular Board Meeting: 4703 Madison Yards Way, Madison, WI

OPEN SESSION

Barbara Nick, Chair, called the meeting of the Board of Trustees to order at 1:30 p.m. on June 13, 2023. Trustee Nick introduced the other Trustees and Edwin Denson, Executive Director/Chief Investment Officer. Mr. Denson thanked the CFA Society Madison for joining the Board of Trustees in hosting this annual event and then acknowledged and thanked the planning committee and additional contributors.

INVESTMENT FORUM (Session I, June 13, 2023) (See Attachment 1 for Attendance List)

1. U.S. Housing Market Update

Alan Ratner, Managing Director of Homebuilding at Zelman & Associates

Alan Ratner, Managing Director of Homebuilding at Zelman & Associates, gave an overview of the U.S. housing market. Mr. Ratner discussed demographics, new home and existing home sales outlooks, housing affordability, and single-family and multifamily rental outlooks. He discussed how demographics relate to housing market balances and imbalances through supply and demand, pointing to several factors that indicate continued decline in demand. In the most recent decade, the U.S. saw the lowest growth in both households and population since the 1930s, and he expects these growth rates to continue to decline over the next decade. He also pointed to the death rate in the 70+ age group, which he believes will result in outsized supply hitting the market over the long term. He also noted that even markets with large inward migration are still seeing aggregate contractions in housing demand.

Mr. Ratner transitioned to discuss specific housing market segments. Overall, he sees the U.S. single family housing market close to equilibrium, but also sees the potential for overbuilding in the multi-family market. Overall, Zelman & Associates does not yet see a bottoming in fundamentals for new home sales, but Mr. Ratner does see the potential for continued upward pressure on new home sale prices due to inventory reduction, reduced development, and reduced capital availability. He sees very different dynamics in the market for existing homes, with low resale velocity, existing low mortgage rate stickiness, and low inventory all pointing to continued low supply in the short term. In general, affordability is the biggest headwind to housing price growth. The multi-family market entered the year with a historically high level of backlog, which he expects to unwind over the year. Specific to rent and rent growth, he expects outsized rent growth to partially unwind in 2024.

2. Navigating Geopolitics in 2023 & Beyond

Major General (Ret.) James “Spider” Marks, Senior Advisory Board Member at Academy Securities

Major General (Ret.) James ‘Spider’ Marks, Head of Geopolitical Strategy and Academy Securities’ Senior Advisory Board Member, discussed the current global geopolitical landscape. He began by

providing updates on the Russia/Ukraine war. To date, Ukraine has been able to resist the Russian offensive, despite Russia having a larger number of forces. Ukraine's infrastructure and economy have been materially damaged, and it remains unclear for how long Ukraine can continue to hold off Russian forces. Expectations are that eventually there will be a negotiated settlement, but it is unclear at this time who will lead negotiations and broker a settlement. Major General (Ret.) Sparks then spoke about China's influence in the world, focusing on China's role in the Russia/Ukraine conflict as well as its relationship with Taiwan. He believes that China will continue to work with countries with whom the U.S. is less engaged in an effort to expand its global influence.

Major General (Ret.) Marks then focused on cyber security. Noting that while more traditional forms of warfare — space, air, sea, and land — are more observable and subject to international governance, the cyber space is harder to observe and not subject to such governance, making it an easy place for conflict to continue. He pointed out that continued developments in artificial intelligence create many questions and make the potential downsides to cyber warfare harder to identify. He concluded by discussing his expectations for various regions, noting that the Middle East, Africa, Central and South America each have unique challenges and stated that despite all of the current geopolitical challenges, he is incredibly optimistic about the U.S. and its role on the global stage.

3. Macroeconomic Outlook & the Fed's Playbook for Inflationary Times

David Zervos, Chief Market Strategist at Jefferies LLC

David Zervos, Chief Market Strategist at Jefferies, discussed macroeconomics and the Federal Reserve's playbook for fighting inflation and maintaining financial market stability. He stressed how different the current environment is relative to past inflationary time periods, particularly with back-to-back years of +7% inflation in 2021 and 2022. Mr. Zervos had projected a negative outlook for equities beginning in 2022 on the basis of just a single year of high inflation in 2021. By the start of 2023, he believed that inflation was beginning to head lower and that the Federal Reserve's active response and tightening of rates was successfully combating long-term inflation expectations. As a result, Mr. Zervos felt much more comfortable moving cautiously back into risk assets entering 2023.

Mr. Zervos noted that he thinks the Federal Reserve has a renewed confidence in its ability to guide inflation back toward its 2% target, highlighting that the recent change in prices represents the third most rapid disinflationary period in post-WWII history. Overall, he views the Federal Reserve's aggressive actions beginning in June 2022 positively. As markets negotiate the end of this tightening cycle, he expects rangebound trading in equity markets. As a result, Mr. Zervos sees better opportunities for investors by allocating to opportunities in high-yield credit through the remainder of 2023. In his view, this could allow investors to earn equity-like returns with less risk. However, he concluded by noting that there is still a risk that the Federal Reserve will be required to further tighten policy between now and year end, which could continue to impact market outlooks.

The Board recessed for the day at 4:30 p.m.

REGULAR BOARD MEETING (June 14, 2023)

Board Members Present: Barb Nick, Chair
Clyde Tinnen, Vice Chair & Secretary
Esther Ancel, Trustee
Kathy Blumenfeld, Trustee
Jeff DeAngelis, Trustee
Tom Merfeld, Trustee
Kristi Palmer, Trustee
Dave Schalow, Trustee
John Voelker, Trustee

Staff/Others Present: Nathan Ballard, Senior Legal Counsel
Zach Berghouse, Internal Auditor
Brandon Brickner, Internal Audit Director
Sara Chandler, Chief Legal Counsel
Hassan Chehime, Head of Risk Management
Edwin Denson, Executive Director/Chief Investment Officer
Anne-Marie Fink, Private Markets & Funds Alpha CIO
Greg Fletcher, Performance Director
Shannon Gannon, Communications Director
Jameson Greenfield, Chief Financial Officer
Rochelle Klaskin, Deputy Executive Director/Chief Administrative Officer
Jon Loboda, Performance Measurement Operations Manager
Todd Mattina, Head Economist, Asset & Risk Allocation CIO
Matt Terpstra, Internal Auditor
Dawn Tuescher, Executive Administrative Assistant
Kasey Bernard, LAB
(Some individuals may have attended only portions of the meeting.)

Trustee Nick, Chair of the Board of Trustees, declared a quorum was present and called the Board of Trustees meeting back to order at 9:10 a.m. on June 14, 2023.

1. Committee Reports – Open Session Items

A. Strategic Planning and Corporate Governance Committee

Trustee Tinnen, Chair of the Strategic Planning and Corporate Governance Committee, reported that in open session, the Committee: (i) approved prior meeting minutes; (ii) heard a strategy report and market outlook from Aksia, SWIB's hedge fund consultant; and (iii) received an update on Project Centum. Trustee Tinnen reported that during its closed sessions the Committee: (i) approved prior meeting minutes; (ii) received an additional closed-session update regarding Project Centum covering proprietary matters with competitive bargaining considerations; and (iii) met with the ED/CIO to review his performance goals.

B. Audit and Finance Committee

Trustee Palmer, Chair of the Audit and Finance Committee, reported that in open session the Committee: (i) approved prior meeting minutes; (ii) received an open audit issues report; (iii) approved the draft Real Estate audit report; (iv) reviewed the annual affirmations and disclosures; (v) reviewed the 2023 Internal Audit Plan; (vi) reviewed the five-year audit summary; (vii) received a Quarterly Cost of Management Update for Q1 2023; and (viii) recommended that the Board approve the FY 2024 State Operating Budget.

C. Compensation

Trustee DeAngelis, Chair of the Compensation and Workforce Development Committee, reported that in open session, the Committee: (i) approved prior meeting minutes; and (ii) reviewed and recommended amendments to the Incentive Compensation Plans.

2. Consent Agenda

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

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

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

3. Board Self-Evaluation Timeline

Trustee Nick reviewed the Board self-evaluation timeline, included on pages 20-21 of the meeting materials.

4. Investment Performance and Market Updates

A. Board Investment Performance Report, Q1 2023

Greg Fletcher, Performance Director, presented the *Investment Performance Report*, as of March 31, 2023, included on pages 23-39 of the meeting materials. Mr. Fletcher reported that: (i) the Core Trust Fund (CTF) returned 4.15% net of fees in Q1 2023, resulting in excess performance of 11 basis points (bps) for the quarter; (ii) the CTF returned -6.00% net of fees for the one-year period, resulting in an excess return of 31 bps; (iii) the CTF five-year net-of-fee return of 7.20% outperformed the Policy Benchmark by 62 bps on an annualized basis; and (iv) the CTF gross return outperformed the 60/40 Reference Portfolio return by 97.4% (cumulative) over the past 20 years, which equates to \$33.2 billion over the same period.

Mr. Fletcher highlighted: (i) the CTF net of all fee and expense return outperformed its benchmark for the year-to-date, one-, three-, and five-year time periods; (ii) the CTF net of fee and expense return outperformed its benchmark for the five-, ten-, and twenty-year time periods; (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 fee and expense return outperformed its benchmark for the one-year period, but underperformed for the year-to-date, three-year, and five-year periods; (v) the VTF net of fee and expense return outperformed its benchmark for the ten- and twenty-year periods, but underperformed for the five-year period; 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 \$2.9 billion above benchmark returns to the WRS over the last five years.

Mr. Fletcher referenced that the percentage of WRS assets that are actively managed declined slightly, but that internally managed assets have increased slightly to 39.2%. Next, Mr. Fletcher: (i) provided a breakdown of CTF asset class exposures, noting that the portfolio remains well diversified and all asset classes are within target range; (ii) reviewed the asset class performance for the CTF over various time periods; (iii) reviewed VTF performance and asset class exposures, noting asset class exposures were within target range; and (iv) presented return information for the Separately Managed Funds.

Mr. Fletcher concluded by reviewing the *Leverage Performance*, included on page 40 of the meeting materials. He noted that policy leverage contributed 35 bps to CTF absolute performance year-to-date and remained a positive contributor over the three- and five-year periods, but did detract for the one-year time period.

B. Callen Quarterly Report

Mr. Fletcher noted that the *Callan Quarterly Report Summary* as of March 31, 2023 was included on pages 41-45 of the meeting materials. He highlighted that the CTF's total fund unadjusted rankings are near or above median over the first quarter 2023 as well as the three-, five-, and ten-year periods, but are in the fourth quartile for the most recent one-year period. On an asset allocation adjusted basis, the CTF's rankings are above median for almost all time periods, with only the first quarter 2023 period falling slightly below median. When comparing the CTF ten-year cumulative performance to peers, Mr. Fletcher noted that following two years of meaningful outperformance from 2020-2021, the CTF then underperformed peers during 2022. He then pointed to more recent performance from the end of 2022 and the beginning of 2023, which shows the CTF's relative performance converging with peers.

5. Investment Committee Open Session Business

A. Amendments to WRS Investment Committee Investment Guidelines

Ms. Chandler discussed amendments to the *SWIB Investment Committee Wisconsin Retirement System Investment Guidelines*, approved by the Investment Committee on May 23, 2023 and included on pages 56-61 of the meeting materials. She noted the minor addition of a gross notional exposure threshold for the new global equity portfolio and the addition of additional soft risk parameters associated with the fixed income portfolios.

B. Approved Open Session Investment Committee Minutes

Ms. Chandler stated that the approved open session minutes of the February 23, March 30, and April 25, 2023 Investment Committee meetings were included on pages 62-78 of the meeting materials for the Board's review and noted that staff had previously reviewed the agendas for these meetings with the Board.

C. Agendas for Upcoming Meetings

Ms. Chandler also stated that the final open session agenda for the May 23, 2023 Investment Committee meeting and the draft open session agendas for the June 27 and July 25, 2023 meetings were included on pages 79-84 of the meeting materials for the Board's review.

6. Quarterly Investment Update, Q1 2023

Todd Mattina, Head Economist, Asset & Risk Allocation CIO, presented the *Performance Trends & Outlook*, included on pages 87-90 of the meeting materials. Mr. Mattina began with a review of the CTF five-year rolling return and five-year return estimates. He noted that despite volatility over the last few years, the five-year rolling return was above both the policy benchmark and the actuarial target rate of return for the period. He also noted that the CTF twenty-year net of fees time-weighted return also exceeds the actuarial target. Mr. Mattina then provided a brief commentary on the CTF five-year return estimate, which projected a five-year annualized return of 8.4% using NEPC's assumptions for 2023, but which is reduced to 7.9% when using preliminary realized year-to-date returns through the end of March.

Mr. Mattina also discussed the impact to the five-year return estimate of negative performance in 2022 as well as the fact that negative performance in 2018 is no longer included in the five-year period. With respect to the latter point, the Board discussed that in upcoming years, the five-year return estimate will be even more heavily impacted by 2019 and 2020 performance years, which had positive performance of 19.5% and 15.3%, respectively, falling out of the five-year time period. Unless actual performance is sufficient to replace those positive performance years, it is likely that a negative dividend would be necessary in the future. Mr. Mattina concluded with a discussion of benchmark performance year-to-date and an asset class review.

7. Motion to Convene in Closed Session

Motion: A motion to convene in closed session pursuant to: (i) Sections 19.36(5) and 19.85(1)(e) of the Wisconsin Statutes to: (a) consider confidential and proprietary strategies for the investment of public funds relating to specific proprietary investment strategies of internal WRS portfolios and risk management, and (b) approve prior closed session minutes that discuss the same; and (ii) Section 19.85(1)(c) of the Wisconsin Statutes to discuss the performance evaluation and compensation data of specific SWIB employees was made by Trustee Nick and seconded by Trustee Palmer.

The Chair called for a roll call vote.

Ancel–Aye Blumenfeld–Aye DeAngelis–Aye Merfeld - Aye Nick-Aye
Palmer-Aye Schalow-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 10:00 a.m. and reconvened in open session at 12:05 p.m.

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

Trustee Nick announced that while in closed session the Board: (i) received a closed session quarterly investment update; (ii) received a risk management update; (iii) discussed Investment Committee closed session business; and (iv) approved the closed session consent agenda.

9. Reports Filed Without Comment

In the absence of questions, the following reports, included on pages 171-182 of the meeting materials, were filed without comment: (i) Quarterly Charges to Funds Report, Q1 2023; and (ii) Private Markets and Funds Alpha Commitments, Q1 2023.

10. Future Items for Discussion

Ms. Chandler noted that the Annual Agenda Plan was included on pages 184-187 in the meeting materials for the Board’s information.

The Board recessed at 12:07 p.m.

INVESTMENT FORUM (Session II, June 14, 2023) (See Attachment 1 for Attendance List)

The Chair called Session II of the Investment Forum to order at 1:30 p.m.

1. Demographic & Labor Market Trends: The Expected & The Neglected

Nicholas Eberstadt, American Enterprise Institute

Nicholas Eberstadt, American Enterprise Institute, shared insights into current global and domestic demographic and societal trends. He pointed to the current trend of depopulation on all continents except Africa as well as societal trends in areas like healthcare, fertility rates, and social structures as having the potential to upend the current global distribution of working age populations. Focusing on the U.S., he spoke about socioeconomic issues that directly or indirectly impact U.S. labor and productivity, including government benefit utilization, median net worth trends, and slowing higher education trends. Mr. Eberstadt expressed concerns that these trends may potentially negatively impact U.S. economic growth in the future.

Mr. Eberstadt pivoted to focus on labor market issues, noting that the Covid-19 pandemic disrupted the labor market trajectory by increasing job openings, decreasing labor participation, and increasing individual average net worth. He discussed the impact of drivers of U.S. population growth, including birth rates and long-term immigration cycles, which are in part based on societal perceptions and acceptance of immigration. He expects that, going forward, the NAFTA economic zone is likely to be in a stronger position compared to the European economic zone, based on population and education projections. He concluded by summarizing that, while slower economic growth is now the long-term trend for the U.S., the outlook is likely favorable compared to other regions.

2. Consumer Debt on the Rise: Trends & Market Implications

Scott Bronner, Managing Director & Head of Credit at Stone Point Capital

Scott Bronner, Managing Director & Head of Credit at Stone Point Capital, discussed the current trend of rising levels of consumer debt and the potential impact on financial markets. He reviewed how aggressive government stimulus efforts immediately following the outset of the Covid-19 pandemic led to a spike in personal savings rates. As the economy improved and began to emerge from the pandemic, average consumer credit scores skewed higher. At the same time, total credit card accounts increased, but the increase was largely driven by lower credit tier borrowers. Mr. Bronner pointed to multiple indicators that there is real stress in the market and that overextended consumers are engaging in settlement programs -- revolving consumer credit has risen 26% since the start of 2021, utilization has increased, delinquencies have reverted to pre-pandemic levels, more recently originated cohorts are reaching higher levels of delinquency at quicker rates than previous groups, and bankruptcies are also increasing toward long-term historical averages.

On the credit supply side, banks have begun to increase reserves posted against their loan portfolios and have less appetite for supplying consumer loans given the challenging return profile. At the same time, capital supply has started to dry up for fintech startups, which could further limit the number of emerging lending platforms in future years. Securitization appetite has also decreased, which limits the ability for existing lenders to free up capital for ongoing originations. Looking at housing, consumers have unprecedented amounts of equity tied up in their homes given home price appreciation; however, home sales are likely to stay muted until rates decline and consumer affordability improves. Taking all of these indicators into account, Mr. Bronner sees the economy in a state of flux, and is beginning to see initial

cracks in credit quality. While he believes this still looks different from the Global Financial Crisis, he does expect a period of higher delinquencies and bankruptcy filings, as evidenced by issues already prevalent in subprime and near prime credit markets.

3. What We Don't See: Implicit Bias

Jerry Kang, Distinguished Professor at UCLA School of Law

Professor Jerry Kang, UCLA School of Law, presented on the topic of implicit bias. He explained the differences between explicit, implicit, and structural bias, defining implicit bias as something we are unaware of or as not readily available to us through introspection alone. Professor Kang provided a review of several studies confirming a correlation between implicit bias and behavior and offered suggestions for ways to counteract implicit bias. He concluded by stressing that combatting implicit bias requires intentional actions, and that one way to combat implicit bias is to challenge our expectations through social contact with others unlike ourselves.

4. Adjournment

Trustee Nick thanked the presenters and attendees for taking part in the Investment Forum and adjourned the meeting at 4:30 p.m.

Date of Board Approval:

Signed:

Clyde Tinnen, Board Secretary

Attachment 1

Investment Forum Audience Members Attending Day 1 & 2

First Name	Last Name	Organization
Barbara	A Rutkowski	Milwaukee Public Schools
Kyle	Ackeret	SWIB
Macauly	Addesso	SWIB
Esther	Ancel	SWIB
Jeff	Atwood	SWIB
Nathan	Ballard	SWIB
Harmeet	Banga	SWIB
Eric	Barber	SWIB
Chelsey	Barczak	SWIB
Robert	Beggs	US Bank
Zach	Berghouse	SWIB
Chase	Bloxdorf	SWIB
Kathy	Blumenfeld	WI Dept of Administration
Becky	Bornett	SWIB
Tom	Bowes	SWIB
Laura	Brauer	ETF
Brandon	Brickner	SWIB
Teresa	Brooks	US Bank
Adam	Brown	SWIB
Rosa	Brown	SWIB
Samuel	Brown	SWIB
Maya	Bruesewitz	SWIB
Michael	Brusberg	SWIB
Eric	Buchholtz	SWIB
Kate	Burkart-Paulson	SWIB
Lorena	Cabezas	Ninety One
Spencer	Callaway	UW-Madison
stefano	cavaglia	SWIB
Sara	Chandler	SWIB
Maggie	Clanfield	SWIB
Josh	Coburn	SWIB
Amy	Collien	SWIB
Kyle	Connor	SWIB
Mark	Corman	SWIB
Andrew	Crossman	SWIB
john	culley	SWIB
Norman	Cummings	Retired Waukesha County
Elizabeth	D Eisen	WRS retiree
Edwin	Denson	SWIB
Roger	Ding	SWIB
Tom	Drake	SWIB
Jack	Drew	SWIB
David	Duchow	US Bank

Nancy	Duren	WRS retiree
Edward	Eberle	WI State Senate
Trey	Edgerle	SWIB
Greg	Edwards	UW-Madison
Randy	Eggert	SWIB
Susan	ezalarab	WRS retiree
Diana	Felsmann	ETF
Roberta	Filicky-Peneski	Financial Advisor, Robert W. Baird & Co.
Anne-Marie	Fink	SWIB
Gregory	Fletcher	SWIB
Megan	Gall	SWIB
CHIRAG	GANDHI	SWIB
Shannon	Gannon	SWIB
Nathaniel	Goodell	Wisconsin Department of Transportation
Jameson	Greenfield	SWIB
Thomas	Gregg	SWIB
Michael	Harmelink	SWIB
Brian	Heimsoth	SWIB
TiaRae	Heminger	SWIB
james	hoelzel	WRS retiree
Hillary	Holstein	SWIB
Beth	Holzberger	SWIB
Chongyu	Hua	SWIB
Jacquelyn	Irving	ETF
Andrew	Jahnke	SWIB
Vince	Janecky	SWIB
Jason	Joanis	SlateStone Wealth
Nick	Johnson	SWIB
Rochelle	Klaskin	SWIB
Jason	Krueger	SWIB
Katie	Kuryla	SWIB
Matt	Kuznacic	SWIB
Lisa	Lange	SWIB
Teresa	Lau	SWIB
James	Laufenberg	SWIB
Sean	Lavin	SWIB
Alex	Li	SWIB
Diane	Linn	SWIB
Shan	Lo	SWIB
Anthony	Lubarsky	SWIB
Bill	Luetzow	SWIB
Eileen	Mallow	ETF
Ed	Martinez	SWIB
Todd	Mattina	SWIB
Lin	Maung	SWIB
Frank	Mazzucco	SWIB
Tom	Merfeld	SWIB

Jason	Mirr	SWIB
Jim	Moore	WRS retiree
Jerrilyn	Morales	SWIB
Joy	Mukherjee	SWIB
Joseph	Nankof	NEPC
Barbara	Nick	SWIB
Christiana	Nowlin	American Family Insurance
Sadi	Ozelge	SWIB
Kristi	Palmer	SWIB
Mark	Paloian	SWIB
Scott	Parrish	SWIB
Dan	Perik	SWIB
tin	phan	SWIB
Dan	Pixler	WRS retiree
Chris	Preisler	SWIB
Josh	Proefrock	SWIB
Fahad	Rehman	SWIB
Jay	Risch	SWIB
Tom	Robinson	SWIB
Jason	Rothenberg	SWIB
Andrea	Ruiz	SWIB
Brian	Russell	SWIB
Diego	Sarabia	SWIB
Mani	Sawhney	SWIB
Dan	Schally	SWIB
Scott	Schrier	SWIB
Shelly	Schueller	ETF
Paige	Schultz	SWIB
Tim	Sharko	SWIB
Thomas	Sheridan	SWIB
Aaron	Shew	SWIB
Kurt	Siegel	NA
Beth	Stevens	SWIB
Paul	Stewart	PS Capital Partners
Mason	Strain	UW-Madison
Steve	Szymanowski	SWIB
Muhammad	Tayyab Kamal	SWIB
Matthew	Terpstra	SWIB
Joe	Testerman	SWIB
Leif	Thybony	SWIB
Clyde	Tinnen	SWIB
Dawn	Tuescher	SWIB
Jim	Vander Meer	SWIB
Krishna	Vardhan Diggavi	SWIB
John	Voelker	ETF
Janet	W. Reinke	CUNA Mutual Group
Mian	Wang	SWIB

Zhenping	Wang	SWIB
Madeline	Warkins	SWIB
Gretchen	Wegner	SWIB
Amy	Widiger	SWIB
Tim	Wirkus	SWIB
Jessica	Wisniewski	SWIB
Ivy	Zhang	SWIB
Feng	Zhao	SWIB
Lance	Zhao	SWIB

Investment Forum Audience Members Attending Day 1 Only

First Name	Last Name	Organization
Tauseef	Ahmad	SWIB
Lexi	Amundson	American Family Insurance
Navid	Bahadoran	SWIB
Margie	Banik	ETF
Brad	Behrend	SWIB
Jack	Browne	American University
John	Burkhartzmeyer	SWIB
hassan	chehime	SWIB
Bridget	Chen	SWIB
Kevin	Cronin	Lawyer
Tunc	Dayioglu	SWIB
Edwin	Denson	SWIB
Mike	DiMeglio	Academy Securities
Kliton	Duri	SWIB
Chris	Eckerman	SWIB
Harrison	Freuck	SWIB
James	Genske	SWIB
Annette	Hellmer	Johnson Financial Group
Sho	Hibino	State of Wisconsin
Andrew	Jahnke	SWIB
Leo	Janus	Retirement Investments
Phil	Johnson	SWIB
Ralph	Kauten	Self Employed
Salah	Khalaf	SWIB
Richard	Klemme	ESP retirees
christine	koenaman	NA
Caroline	Kroner	American Family Insurance
Michael	L. McCowin	WRS retiree
Jonathan	Levine	SWIB
Matthew	Marek	SWIB
Ava	McNarney	SWIB
David	Meyer	SWIB
Anand	Mohan Rakesh	SWIB
chad	neumann	SWIB
Sarah	Noronha	SWIB

Matt	Notzon	SWIB
Tony	Pitrof	UW-Madison
Arjan	Premti	UW-Whitewater
Rich	Renner	Individual
Charles	Saunders	University of Wisconsin
Rachel	So	MandateWire
Chris	Spiering	SWIB
Evan	Stark	SWIB
Adam	Sweet	JSA
Joseph	Tarditi	Academy Securities
Gaurang	Thakkar	SWIB
Rob	Thornton	SWIB
Robert	Vanderpool	SWIB
Lisa	Winer	SWIB

Investment Forum Audience Members Attending Day 2 Only

First Name	Last Name	Organization
Max	Brunner	UW-Madison
Jefferson	DeAngelis	SWIB
Collin	Dott	SWIB
John	Drake	SWIB
Kara	Gamlin	SWIB
Chase	Gendron	SWIB
Jason	Kowalke	SWIB
Dylan	Krivoshein	SWIB
Alex	Kubiak	SWIB
Dean	Martin	SWIB
Heather	McKittrick	SWIB
Alyssa	Moore	SWIB
Scott	Neitzel	Wilson Wells Advisory Services
Jeanne	Peltier	SWIB
Joel	Pittelman	TOP Jewish Foundation. (Also a former Trustee of SWIB)
Robin	Rettschlag	SWIB
Michael	Shearer	SWIB
Lindsey	Skye	SWIB
Ken	Smedema	SWIB
ping	wong	SWIB
Jeff	Yoder	SWIB

Board Meeting

Tab 3 – Investment Forum Recap – Sara Chandler, Chief Legal Counsel

Summary: Ms. Chandler will review the topics and format of the Investment Forum and ask for Trustee feedback.

Review and Discussion

Board Meeting

Tab 4 – Biennial Ethics Training – David Buerger, Wisconsin
Ethics Commission

Presentation



State of Wisconsin
Ethics Commission

LOBBYING AND THE CODE OF ETHICS FOR INVESTMENT BOARD MEMBERS AND EMPLOYEES

David Buerger, *Staff Counsel*

ABOUT THE ETHICS COMMISSION

- Partisan Commissioners
 - Two former judges, four other appointees
 - 5-year terms
- Bipartisan Cooperation Required
 - All actions require four votes
- Nonpartisan Staff
- Strict Confidentiality – Advice & Complaints



State of Wisconsin
Ethics Commission

RESPONSIBILITIES

- Administer Wisconsin Statutes
 - Chapter 11: Campaign Finance
 - Subchapter III, Chapter 13: Lobbying
 - Subchapter III, Chapter 19: Code of Ethics
- Conduct programs to explain and interpret these laws.
- Compile and make the information provided to us available to the public!



JURISDICTION

- Co-Equal Jurisdiction with District Attorneys, but historically...

Ethics Commission	District Attorneys
<ul style="list-style-type: none">• Legislators, aides, service agencies• Governor, Lt. Governor, appointees, secretaries, deputies, executive assistants, administrators• Justices and judges• Lobbyists and Lobbying Principals (organizations)• Most campaign committees• Any individual holding a state public office	<ul style="list-style-type: none">• Code of Ethics for Local Officials• Local candidate and local referendum committees



IMPORTANT LAWS TO KNOW

- Lobbying
 - WIS. STAT. § 13.625 (Restrictions on Lobbyists/Principals)
 - WIS. STAT. § 13.695 (Legislative Liaison Reporting)
- Code of Ethics
 - WIS. STAT. § 19.45 (Code of Ethics for State Public Officials)
 - WIS. STAT. § 19.46 (Conflict of Interest)
 - WIS. STAT. § 19.43-19.44 (Statement of Economic Interests)





LOBBYING LAWS



BEWARE OF ANGELS



State of Wisconsin
Ethics Commission

WHO IS A LOBBYIST/PRINCIPAL?

WI Lobbying

- Lobbying.wi.gov
- Search by name, type, or interest keywords.
- Download directories in PDF or Excel
- Tracks lobbying on rules, budget bills subjects, legislative proposals, etc.



WHO IS AN AGENCY OFFICIAL?

- “Agency Official”
 - A member, officer, employee or consultant of any agency who **as part of such person's official responsibilities** participates in any administrative action in other than a solely clerical, secretarial or ministerial capacity.
- “Administrative Action”
 - The proposal, drafting, development, consideration, promulgation, amendment, repeal or rejection by any agency of any rule promulgated under ch. 227.



LOBBYING: PROHIBITED PRACTICES

- WIS. STAT. § 13.625
- No lobbyist or lobbying principal may give to an agency official, legislative employee, any elective state official, or candidate for state elective office, or to the candidate committee of the official, employee or candidate:
 - Lodging
 - Transportation
 - Food, meals, beverages
 - Money or any other thing of pecuniary value
- Except...



EXCEPTIONS

- Actual and reasonable expenses for presenting a talk or participating in a meeting. WIS. STAT. §§ 13.621(7)(a), 19.56(3)(a).
- Admission to events to discuss official business of agency. WIS. STAT. § 13.621(7)(b).
 - May not accept food, beverage, etc. included with admission without payment of actual cost.
- Items and services made available to the general public. WIS. STAT. § 13.625(4m)(a).
- Educational/informational materials. WIS. STAT. § 13.625(4m)(i).
- Compensation to employees of lobbying principals who are agency officials solely because of membership on a state commission, board, council, or committee, who receive no compensation other than a per diem or reimbursement of expenses for state service. WIS. STAT. § 13.625(4m)(g).
 - Compensation may not exceed that paid to those similarly-situated.

Other exceptions may apply!



State of Wisconsin
Ethics Commission

LEGISLATIVE LIAISON REPORTING

- WIS. STAT. § 13.695
- State agencies are required to file legislative liaison reports semi-annually, on January 31, for the preceding July – December and on July 31, for the preceding January – June.
- A legislative liaison is a paid officer or employee of a state agency whose regular duties include attempting to influence legislative action.
 - Not subject to licensing, registration, or most reporting requirements.
 - May not use state funds to engage in prohibited practices.



LEGISLATIVE LIAISON REPORTING

- Reports must contain the following:
 - Name of agency
 - Name, title, and salary of each officer or employee engaged in legislative activity
 - The proportionate amount of time spent on legislative activity and attempting to influence legislation
 - The general area of legislative action which the officer or employee has attempted to influence.
- Reports are filed using the Eye on Lobbying website (lobbying.wi.gov)
 - [User Manual for Legislative Liaisons](#)





CODE OF ETHICS



DEFINITIONS

- “State public office” includes the following positions at SWIB:
 - All positions regularly appointed by the Governor (most board members)
 - Executive Director
 - Executive Assistant to the Executive Director
 - Internal Auditor
 - Chief Investment Officer
 - Chief Financial Officer
 - Chief Legal Counsel
 - Chief Risk Officer
 - Investment Directors



DEFINITIONS, CONT.

- Immediate family
 - An individual's spouse
 - An individual's relative by marriage, lineal descent, or adoption who receives, directly or indirectly, more than 50% of his or her support from the official, or from whom the official receives more than 50% of his or her support
- Associated
 - Director, officer, or trustee
 - Owns or controls, directly or indirectly, and severally or in the aggregate, at least 10% of the outstanding equity
 - Authorized representative or agent



DEFINITIONS, CONT.

- Organization
 - Does not include bodies politic.
- Anything of value
 - Any money or property, favor, service, payment, advance, forbearance, loan, or promise of future employment.
 - Does not include:
 - Compensation and expenses paid by the state
 - Political contributions reported under ch. 11.
 - Hospitality extended for a purpose unrelated to state business by a person other than an organization.



USE OF OFFICE FOR PRIVATE GAIN

- WIS. STAT. § 19.45(2)
 - No state public official may use his or her public position or office to obtain financial gain or anything of substantial value for the private benefit of himself or herself or his or her immediate family, or for an organization with which he or she is associated.
- Exceptions:
 - Campaign contributions
 - Candidates/officeholders may solicit for donations to nonprofits
- Do NOT use governmental resources for a nongovernmental purpose (e.g., personal, commercial).
- Do NOT ask staff to engage in nongovernmental activity on state time.



EXAMPLE – PERSONAL BENEFIT

Thursday February 25, 1993

THE MILWAUKEE JOURNAL

Ethics in government

Official settles ethics flap by paying \$150

Agriculture chief bought airline tickets through wife's travel agency

By JAMES ROWEN
of The Journal staff

State agriculture secretary Alan T. Tracy has paid a \$150 forfeiture to the Wisconsin Ethics Board after disclosing that his department paid \$1,493 to a travel agency owned by his wife for airline tickets that Tracy used.

Tracy, secretary of the Wisconsin Department of Agriculture, Trade and Consumer Protection, paid the forfeiture Tuesday in a settlement reached Monday with the ethics board.

The settlement came after The Milwaukee Journal earlier this month requested under the Wisconsin Open Records law information about department travel arranged through Uniglobe Profes-

sional Travel, according to Jonathan Becker, ethics board attorney.

Uniglobe, in the Madison suburb of Middleton, is operated and owned by Kris Tracy, Alan Tracy's wife, ethics board records show.

The forfeiture "was equal to the amount of the commission his wife had made" for writing the plane tickets, Becker said.

The ethics board settlement says that while the travel arrangements with Uniglobe did not impose any improper costs on the state, "Mr. Tracy, to avoid any claim of personal gain, has agreed to forfeit \$150."

State law forbids state officials from using their public positions "to obtain financial gain or any-



TRACY

thing of substantial value for the private benefit of himself or herself or his or her immediate family."

TRACY 'VIOLATED THE LAW'

"I think it's fair to say that he violated the law," said R. Roth Judd, executive director of the ethics board, in an interview Wednesday night.

Judd said that he and Tracy had agreed that the ethics board would make the settlement public Thursday, allowing Tracy enough time to notify the department board in writing.

But Gov. Tommy G. Thompson defended Tracy when a reporter asked him about the forfeiture.

"He volunteered that," Thompson said. "He went to the ethics board because he recognized that there was some question. I think he should be complimented for coming forward and paying a forfeiture."

In paying the forfeiture, Alan Tracy is among several top state

agency officials whose recent actions have posed potential conflicts of interest or who have had ethical or personnel difficulties.

Alan Tracy booked the travel through Uniglobe "as a matter of convenience or economy ... with no thought of personal gain," according to the settlement agreement.

The trips booked through Uniglobe were for Alan Tracy to attend a conference in April 1992 in Louisiana and meetings in Washington, D.C., and Chicago in December 1991.

Tracy said The Journal's open records request triggered his concern about the potentially inappropriate appearance of the booking.

"I felt I should report them to the ethics board," he said in an interview Wednesday.

Tracy explained that he had instructed his secretary not to book travel through Uniglobe because he "did not want there to be a perception that I was traveling ... throw-

ing business to a family member."

But for reasons of personal convenience, he said, he twice directed his secretary to use Uniglobe and on one occasion booked a trip himself.

TRACY SAYS HE WAS CARELESS

"In retrospect, that was careless, and I'm embarrassed by it," he said.

Travel agencies earn income through commissions on airplane tickets and other travel arrangements provided to customers.

Tracy booked about 30 trips between 1990 and 1992, only three of which he booked through Uniglobe, according to a Feb. 23 letter from the department to The Journal.

State agencies are encouraged to use, but are not required to patronize, four travel agencies that have been placed on an approved list through a competitive bidding procedure, according to the Wisconsin Department of Administration.



State of Wisconsin
Ethics Commission

DISPOSAL OF IMPERMISSIBLE GIFTS

- Give the item to the official's agency to use or sell.
 - Agency may not sell the item to any government employee or official.
- Give the item to another state agency or to a public institution, such as a local school, library, or museum, that can use the item.
- Give the item to a charitable organization
 - Not including one with which the official or their immediate family is associated.
- Return the item to the donor.
- If the donor is neither a lobbyist nor an organization that employs a lobbyist, purchase the item (by paying the donor the full retail value) and retain it.

WIS. STAT. § 19.45(14)



State of Wisconsin
Ethics Commission

INFLUENCE AND REWARD

- WIS. STAT. § 19.45(3)
 - No person may offer or give to a state public official, directly or indirectly, and no state public official may accept from any person, directly or indirectly, anything of value if it could reasonably be expected to influence the state public official's vote, official actions, or judgment, or could reasonably be considered as a reward for any official action or inaction on the part of the state public official.
 - As a general rule officials should not accept anything of more than nominal value from organizations that have a special or specific interest in an item or matter likely to be before the official.



FOOD, BEVERAGE, TRAVEL, AND LODGING

- WIS. STAT. § 19.45(3m)
 - No state public official may accept or retain any transportation, lodging, meals, food or beverage, or reimbursement therefor, except in accordance with § 19.56(3).
- Exceptions (see Guideline [ETH-1211](#)):
 - Official talk or meeting
 - Unrelated to holding public office
 - State benefit
 - Reported as an expense by a political committee
 - WEDC/Department of Tourism
- Remember that items from lobbying principals must also meet an exception of the lobbying law to be accepted.



USE OF CONFIDENTIAL INFORMATION

- WIS. STAT. § 19.45(4)
 - No state public official may intentionally use or disclose information gained in the course of or by reason of his or her official position or activities in any way that could result in the receipt of anything of value for himself or herself, for his or her immediate family, or for any other person, if the information has not been communicated to the public or is not public information.

CONFIDENTIAL



UNLAWFUL BENEFITS

- WIS. STAT. § 19.45(5)
 - No state public official may use or attempt to use the public position held by the public official to influence or gain unlawful benefits, advantages or privileges personally or for others.



CONFLICT OF INTEREST

- WIS. STAT. § 19.46(1): No state public official may:
 - Take any official action substantially affecting a matter in which the official, a member of his or her immediate family, or an organization with which the official is associated has a substantial financial interest.
 - Use his or her office or position in a way that produces or assists in the production of a substantial benefit, direct or indirect, for the official, one or more members of the official's immediate family either separately or together, or an organization with which the official is associated.
 - Except...



OFFICIAL MAY ACT IF...

- The official action affects a whole class of similarly-situated interests; and,
- Neither the interests of the official, a member of the official's immediate family, nor a business or organization with which the official is associated is significant when compared to all affected interests in the class; and
- The action's effect on the interests of the official, of a member of their immediate family, or of an associated business or organization is neither significantly greater nor less than upon other members of the class

[Ethics Commission Guideline 1232](#)



State of Wisconsin
Ethics Commission

OFFICIAL MAY ACT IF...

- The official action is concerning: (1) the lawful payment of salaries or employee benefits or reimbursement of actual and necessary expenses, or (2) the modification of a county or municipal ordinance.
- The impact on the official's interests is remote or speculative.



INVESTMENT BOARD – QUALIFICATIONS FOR MEMBERSHIP

- WIS. STAT. § 15.76 (2)
 - ...but any person having a financial interest in or whose employer is primarily a dealer or broker in securities or mortgage or real estate investments is not eligible for appointment, and any member who acquires such an interest or accepts such appointment shall thereupon vacate his membership.



STATEMENT OF ECONOMIC INTEREST

- WIS. STAT. §§ 19.43, 19.44
- Annual requirement (April 30th) or within 21 days of leaving your position.
- Must identify investments, real estate, businesses, and creditors as of the last day of the prior year.
- All direct sources of family income from prior year of \$1,000 or more.
- All sources of income from prior year of \$10,000 or more received from partnerships, sub S corporations, service corporations, and LLCs (including customers, clients, and tenants) in which your family has a 10% or greater interest.
- Confidential for SWIB Members/Employees



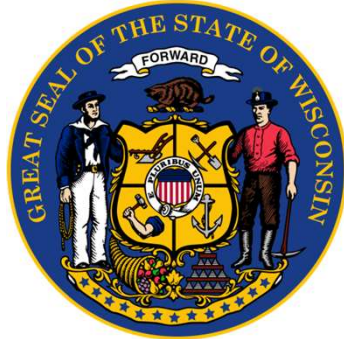
INVESTMENT BOARD QUARTERLY REPORTS

- Quarterly requirement (due January 31, April 30, July 31, October 31)
- Must identify changes to investments, business interests, real estate, offices and organizations represented, and creditors over the previous 3-month period.
- Copies are forwarded to the Legislative Audit Bureau for auditing and comparison with Investment Board activity.
- Confidential (not open to public)



WHERE TO FIND MORE INFORMATION

- **Wisconsin Statutes**
 - <https://docs.legis.wisconsin.gov>
- **Advisory Opinions**
 - Prompt, Confidential, Authoritative
- **Guidelines**
 - <https://ethics.wi.gov>



Ethics@wi.gov
<https://ethics.wi.gov>
Phone: (608) 266-8123
Fax: (608) 264-9319

State of Wisconsin
Ethics Commission

Board Meeting

Tab 5 – Fiduciary & Public Records Topics – Sara Chandler,
Chief Legal Counsel

Discussion

Board Meeting

Tab 6 - Investment Performance and Market Updates – Greg Fletcher, Performance Director

- A. Board Investment Performance Report, Q2 2023
- B. Callan Quarterly Report

Presentation and Discussion



Investment Performance Report

as of June 30, 2023

Executive Summary

June 30, 2023

- The Core Trust Fund returned 2.32% net of fees in Q2, resulting in excess performance of +2 bps. For one year, the Core Trust Fund has returned 7.02% net of fees, resulting in an excess return of +54 bps.
- The Core Trust Fund five-year net of fee return of 7.53% outperforms the Policy Benchmark by +57 bps on an annualized basis.
- The Core Trust Fund gross return outperformed the 60/40 Reference Portfolio return by 83.6% (cumulative) over a 20-year period, which equates to \$32.5 billion over the same period.

WRS Performance

as of June 30, 2023

Fund	Net of All Fee and Expense Return %			
	Calendar – YTD	1 Year	3 Year	5 Year
Core Trust Fund	6.50	6.91	8.22	7.43
Core Trust Fund Benchmark	6.44	6.48	7.41	6.96
Excess	+0.07	+0.43	+0.80	+0.47
Net Excess Value Add (\$M)	+\$78.0	+\$472.3	+\$2,703.7	+\$2,724.1
Variable Trust Fund	13.83	17.02	11.99	9.03
Variable Trust Fund Benchmark	14.36	17.53	12.09	9.19
Excess	(0.54)	(0.51)	(0.10)	(0.16)
Net Excess Value Add (\$M)	(\$41.4)	(\$39.2)	(\$26.2)	(56.9)

SWIB's investment management has added more than \$2.6 billion above benchmark returns over the last five years to the WRS.

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

Fund	Net of Fee and Expense Return %			Gross of Fee Return %
	5 Year	10 Year	20 Year	30 Year
Core Trust Fund	7.53	7.58	7.54	8.05
Core Trust Fund Benchmark	6.96	7.19	7.21	7.61
Excess	+0.57	+0.39	+0.33	+0.44
Variable Trust Fund	9.09	10.18	8.92	8.82
Variable Trust Fund Benchmark	9.19	10.20	8.92	8.56
Excess	(0.10)	(0.01)	+0.00	+0.27

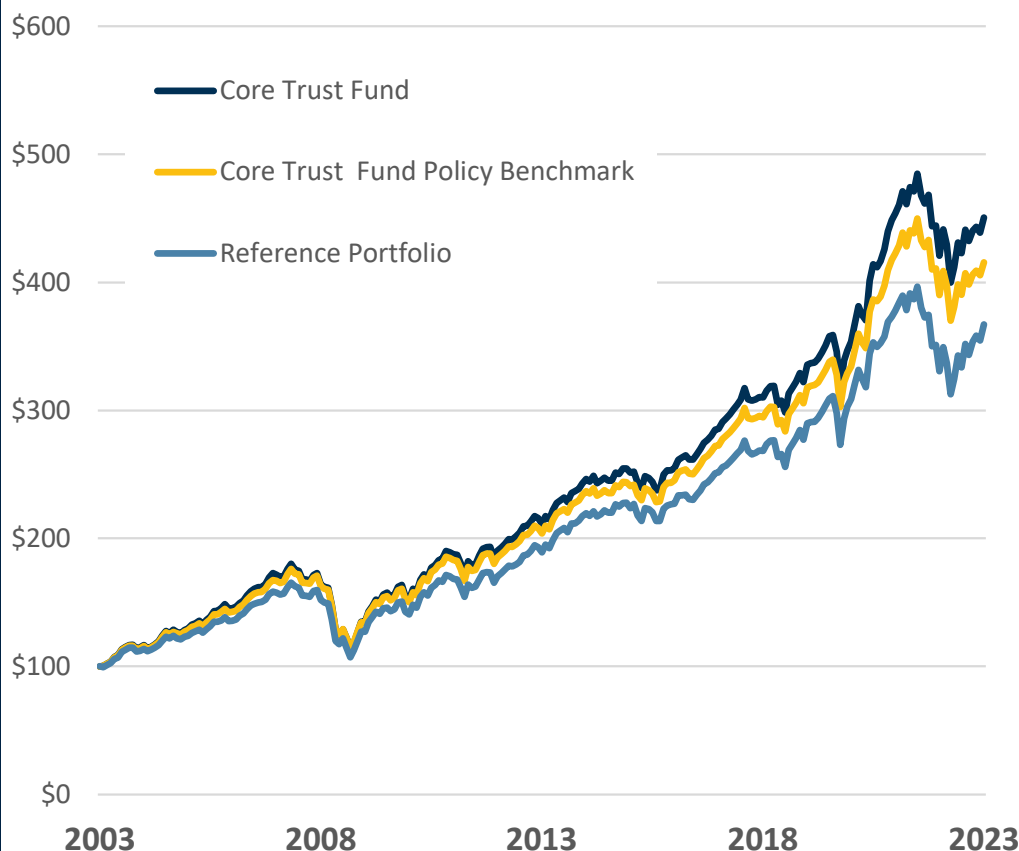
(Annualized Return shown for all periods greater than 1 yr)

Excess returns may contain rounding differences

CTF Performance vs. 60/40 Reference Portfolio

20-year cumulative return¹: July 1, 2003, to June 30, 2023

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



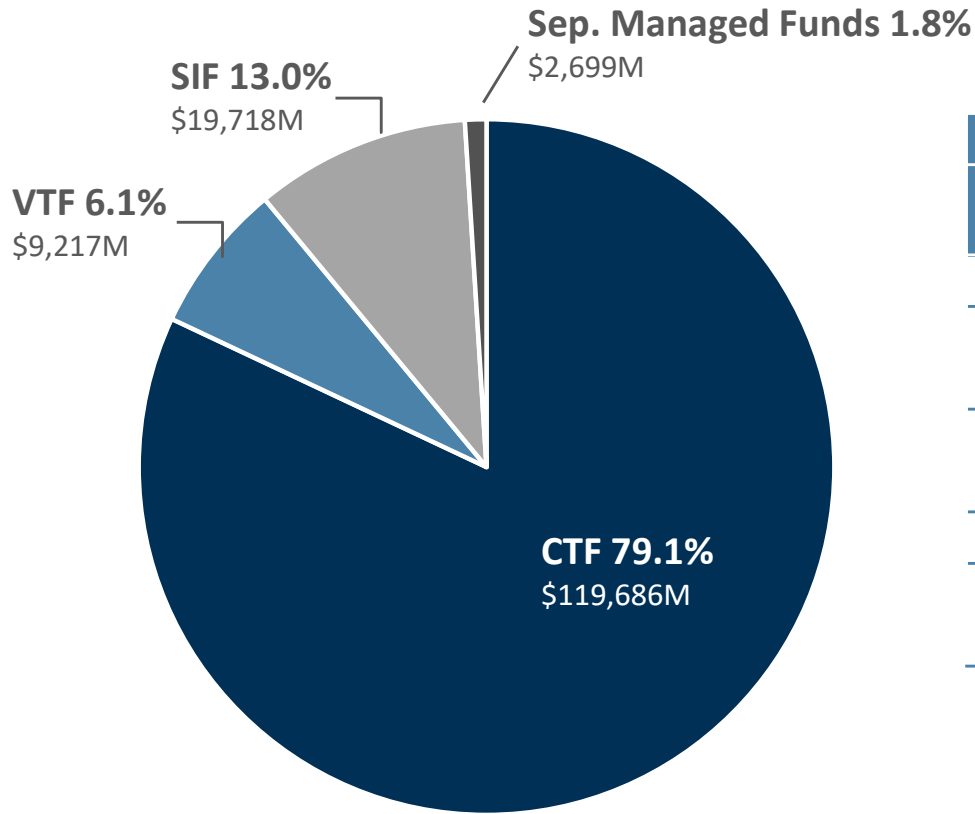
Portfolio / Benchmark	Annualized Gross Return	Cumulative Gross Return	Cumulative \$ Value Added
Reference Portfolio ² (60% equity/40% bonds)	6.7%	267.1%	= Passive Market Return
Benefit of CTF Asset Allocation			
CTF Policy Benchmark	7.4%	315.7%	+\$19.7B
Benefit of CTF Active Management			
CTF Actual Results	7.8%	350.7%	+\$12.7B
CTF Excess Return vs. Reference Portfolio	+1.1% pts	+83.6% pts	+\$32.5B

¹ Core Trust Fund beginning market value, as of July 1, 2003, was \$50.3B and ending market value, as of June 30, 2023, was \$119.7B

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

Total Assets Under Management (AUM)

as of June 30, 2023



Gross Market Value of Assets (\$millions)			
By Fund	6/30/2022	6/30/2023	1 Year Change
Total WRS	124,867	128,902	+4,035
Core Trust Fund	116,464	119,686	+3,222
Variable Trust Fund	8,403	9,217	+813
State Investment Fund (SIF) ¹	18,401	19,718	+1,317
Separately Managed Funds	2,510	2,699	+189
Total SWIB AUM	\$145,779	\$151,319	+\$5,541

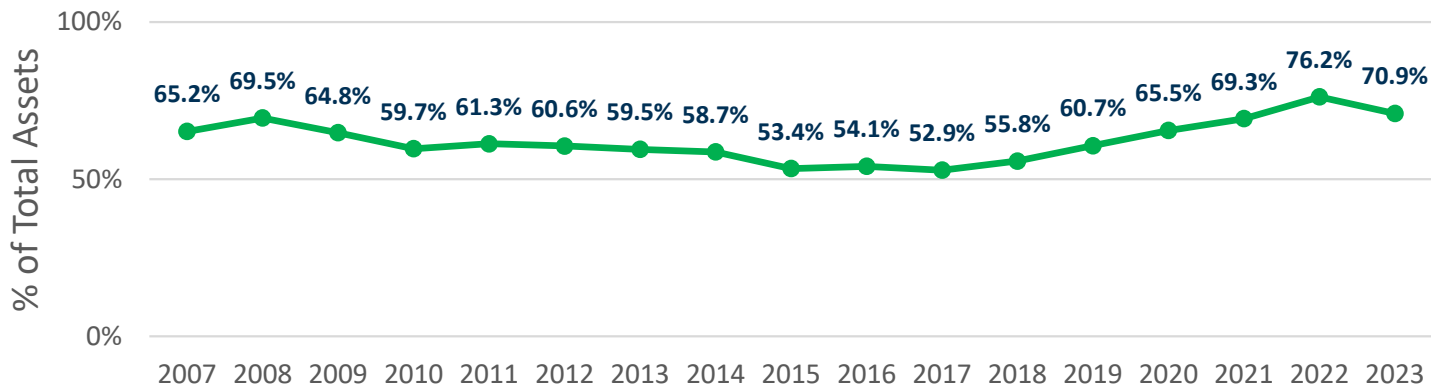
¹ Excludes cash invested in SIF held on behalf of CTF and VTF

Refer to the disclosure section for additional details

WRS Assets as of June 30, 2023

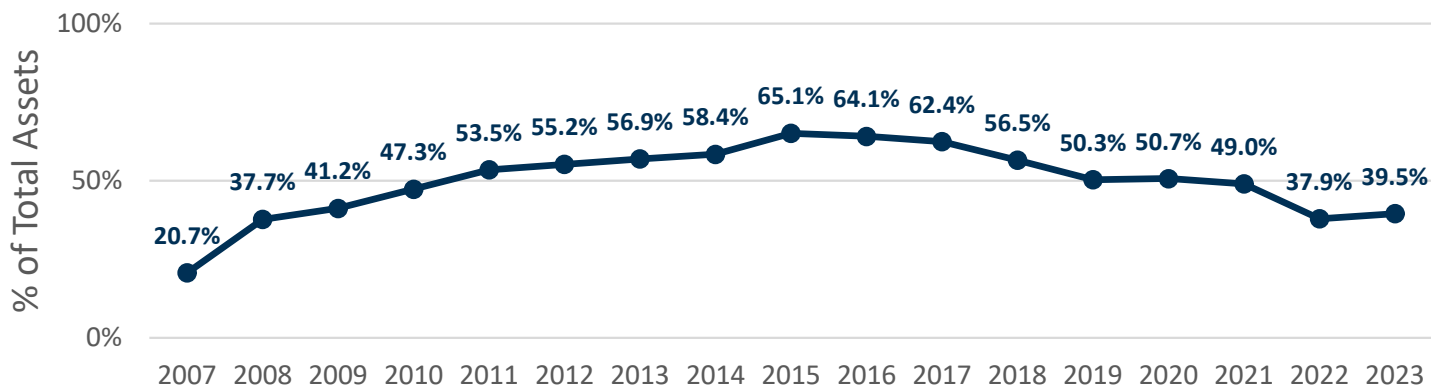
Breakdown of Active vs. Passive and Internal vs. External

Actively Managed Assets



Actively managed assets are a larger share of WRS AUM

Internally Managed Assets

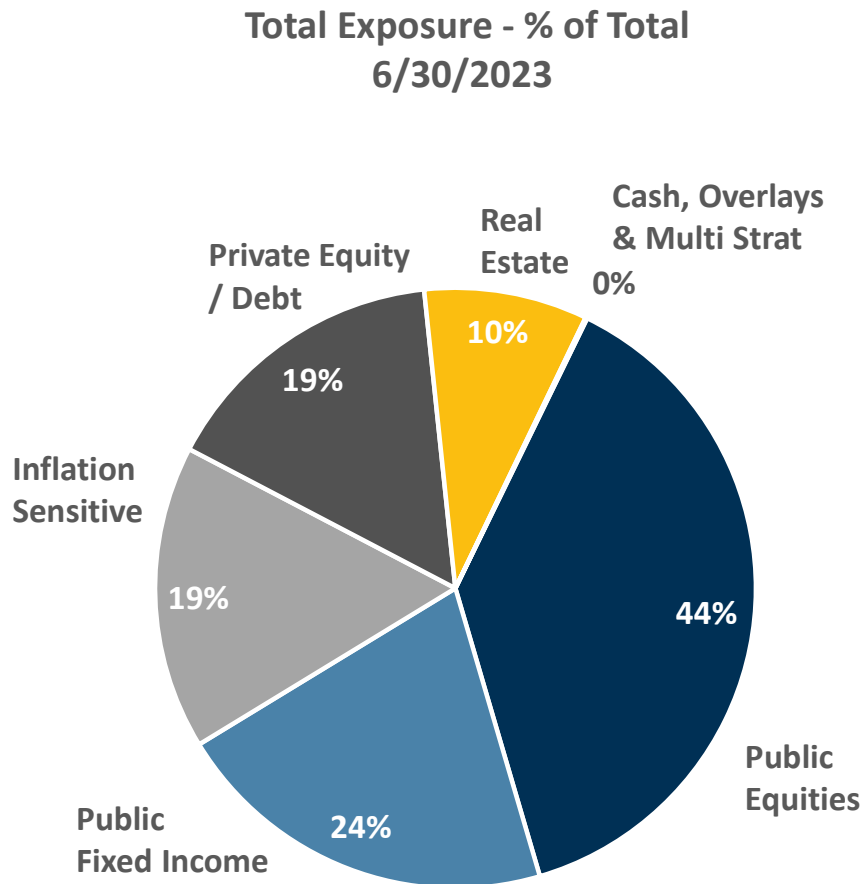


47% of Total SWIB Assets (including SIF) are internally managed

Refer to the disclosure section for additional details

Core Trust Fund Assets Under Management

Breakdown by Asset Class as of June 30, 2023



Total Exposure \$ & Adjusted AUM (\$millions)			
Total CTF by Asset Class	Total Exposure \$ 6/30/2022	Total Exposure \$ 6/30/2023	Year over Year Change
Public Equities	52,745	52,469	(276)
Public Fixed Income	27,819	28,874	+1,055
Inflation Sensitive	22,099	22,361	+262
Real Estate	11,061	12,018	+957
Private Equity / Debt	20,502	22,211	+1,709
Multi Asset	9	0	(9)
Cash & Overlays	(250)	(612)	(362)
Total Exposure	\$133,984	\$137,321	+3,337
<i>Less: Policy Leverage</i>	<i>17,522</i>	<i>17,635</i>	<i>(113)</i>
Total CTF AUM	\$116,463	\$119,686	+3,223

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

Core Trust Fund Allocation

All exposures shown as of June 30, 2023

Allocation – Exposure View

Strategies	(\$ millions)	As % of Total Fund		Target Range %	Notes
	Total Exposure	Portfolio Exposure %	Benchmark Target %		
Public Equities	52,469	43.84	43.42	37.42 – 49.42	<p>Public & Private exposures include cash</p> <p>Strategies include exposure management investments</p> <p>Cash / Overlays: Includes liquidity, overlay cash, cash used to fund synthetic beta related to Alpha Pool.</p> <p>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.</p> <p>Additional CTF leverage details available in disclosure section</p>
Global Developed	42,348	35.38	35.01		
US Small Cap	3,033	2.53	2.54		
International Small Cap	2,888	2.41	2.36		
Emerging Markets	4,200	3.51	3.51		
Public Fixed Income	28,874	24.13	23.98	17.98 – 29.98	
Investment Grade	17,501	14.62	14.39		
Non-Investment Grade	8,523	7.12	7.19		
Emerging Market Debt	2,850	2.38	2.40		
Inflation Sensitive	22,361	18.68	19.00	14.0 – 24.0	
Real Estate	12,018	10.04	10.04	6.0 – 14.0	
Private Equity / Debt	22,211	18.56	18.56	8.0 – 22.0	
Cash / Overlays	(612)	(0.51)	0.00		
Leverage	(17,635)	(14.73)	(15.00)	(20.0) to (10.0)	
Total Fund – Total Exposure	\$137,321	114.73	115.00	110.0 – 120.0	
Total Fund – Market Value	\$119,686	100.00	100.00		

Asset \$ exposures and % weights may contain rounding differences

Core Trust Fund: Asset Class Returns

as of June 30, 2023

Asset Class Group: Public Equities	Performance Start Date	Total Exposure Value (\$millions)	Net of External Manager Fee Return %				
			Calendar YTD	1 Year	3 Year	5 Year	10 Year or ITD
Public Equities	12/31/2002	\$52,417	13.39	17.11	11.51	8.39	9.07
Benchmark			13.81	17.42	11.73	8.67	9.29
Excess			(0.42)	(0.30)	(0.22)	(0.28)	(0.22)
Global Developed	2/28/2017	\$41,046	14.52	18.51	12.20	9.12	9.90
Benchmark			15.41	19.10	12.69	9.60	10.30
Excess			(0.89)	(0.60)	(0.49)	(0.48)	(0.40)
Global Equities w/EM	5/31/2021	\$1,410	15.51	14.65			1.49
Benchmark			14.22	17.05			0.16
Excess			+1.29	(2.41)			+1.33
US Small Cap	2/28/2017	\$3,033	9.96	16.81	12.33	6.00	7.80
Benchmark			9.36	15.39	12.11	4.93	7.00
Excess			0.60	1.43	+0.22	+1.07	+0.80
International Small Cap	1/31/2020	\$2,878	9.45	12.15	7.21		2.70
Benchmark			5.23	9.31	5.65		1.65
Excess			+4.22	+2.84	+1.56		+1.05
Emerging Market ex China	3/31/2022	\$3,352	11.10	13.13			(6.43)
Benchmark			9.92	12.13			(6.42)
Excess			1.19	1.10			(0.01)
Emerging Market China	3/31/2022	\$675	(7.24)	(19.44)			(14.17)
Benchmark			(5.50)	(16.88)			(11.43)
Excess			(1.74)	(2.56)			(2.75)

(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 June 30, 2023

Asset Class Group: Public Fixed Income & Inflation Sensitive	Performance Start Date	Total Exposure Value (\$millions)	Net of External Manager Fee Return %				
			Calendar YTD	1 Year	3 Year	5 Year	10 Year or ITD
Public Fixed Income	12/31/2003	\$28,873	3.78	2.58	(2.66)	1.57	2.00
Benchmark			3.65	2.82	(2.99)	1.54	1.91
Excess			+0.12	(0.25)	+0.33	+0.04	+0.09
Investment Grade US Credit	2/28/2022	\$6,622	3.38	1.96			(6.43)
Benchmark			3.13	1.39			(6.04)
Excess			+0.25	+0.57			(0.39)
US Treasuries	2/28/2022	\$3,458	1.86	(6.80)			(12.22)
Benchmark			1.59	(2.13)			(6.64)
Excess			+0.27	(4.67)			(5.58)
US Long Treasuries	9/30/2022	\$1,136	3.43				2.92
Benchmark			3.72				3.11
Excess			(0.29)				(0.19)
MBS	4/30/2020	\$2,253	3.00	(0.25)	(3.80)		(3.51)
Benchmark			1.87	(1.52)	(3.73)		(3.53)
Excess			+1.14	+1.27	(0.07)		+0.02
High Yield	7/31/2019	\$5,690	5.10	8.19	1.82		1.36
Benchmark			4.90	8.67	2.70		2.08
Excess			+0.20	(0.48)	(0.88)		(0.72)

(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 June 30, 2023

Asset Class Group: Public Fixed Income & Inflation Sensitive	Performance Start Date	Total Exposure Value (\$millions)	Net of External Manager Fee Return %				
			Calendar YTD	1 Year	3 Year	5 Year	10 Year or ITD
Emerging Market Debt - USD	6/30/2005	\$1,431	3.48	8.34	(1.70)	0.84	2.77
Benchmark			4.09	7.39	(3.10)	0.55	2.83
Excess			(0.61)	+0.96	+1.40	+0.28	(0.06)
Emerging Market Debt - Local	7/31/2017	\$1,419	8.96	12.34	(0.67)	0.22	(0.65)
Benchmark			7.79	11.38	(1.42)	0.29	(0.50)
Excess			+1.16	+0.96	+0.75	(0.07)	(0.16)
Inflation Sensitive	12/31/2003	\$22,358	1.90	(1.30)	(0.04)	2.60	1.68
Benchmark			1.87	(1.40)	(0.12)	2.49	1.60
Excess			+0.03	+0.09	+0.09	+0.11	+0.07

(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 June 30, 2023

Asset Class Group: Private Markets & Other Strategies	Performance Start Date	Total Exposure Value (\$millions)	Net of External Manager Fee Return %				
			Calendar YTD	1 Year	3 Year	5 Year	10 Year or ITD
Real Estate	12/31/2003	\$12,018	(4.49)	(1.05)	9.47	7.57	9.70
Benchmark			(8.37)	(3.91)	7.46	6.56	8.38
Excess			+3.89	+2.86	+2.02	+1.01	+1.32
Private Equity / Debt	11/30/2006	\$22,211	3.10	0.69	22.88	16.45	14.77
Benchmark			3.42	(0.37)	20.81	13.80	12.26
Excess			(0.32)	+1.06	+2.07	+2.65	+2.51
<i>Other strategies:</i>							
Alpha Pool Overlay	1/31/2011	\$11,166	(1.21)	0.56	5.18	3.57	2.69
Benchmark (set to zero as of 1/1/2019)		(at 1/1/22 = \$6,336)	0.00	0.00	0.00	0.28	0.97
Excess			(1.21)	+0.56	+5.18	+3.29	+1.73

(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 June 30, 2023



Excess Return - % points

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

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

Core Trust Fund: Alpha Pool Overlay

as of June 30, 2023

Alpha Pool Return	Performance Start Date	Market Value (\$ millions)	Net of External Manager Fee Return %				
			Calendar YTD	1 Year	3 Year	5 Year	10 Year
Total Alpha Pool Composite	1/31/2011	\$11,166	(1.21)	0.56	5.18	3.57	2.69

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

Alpha Pool: Key Sub Strategies	Inclusion Date	Market Value (\$ millions)	Calendar YTD or Since Inclusion Net Return %
Hedge Funds	1/31/2011	\$7,625 (68%)	-0.02
Multi Strat	2/1/2022	\$2,387 (21%)	-0.93
Global Equity	4/1/2023	\$810 (7%)	-0.01

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

Alpha Pool Overlay Return (Alpha Pool + Beta Return)	Calendar YTD	1 Year	3 Year	5 Year	10 Year
CTF Policy Benchmark (Beta)	6.44	6.48	7.41	6.96	7.19
Alpha Pool Overlay Return (Alpha Pool + Beta)	5.23	7.04	12.59	10.53	9.88

(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 June 30, 2023

Performance

Fund	Performance Start Date	Market Value (\$ millions)	Net of External Manager Fee Return %				
			Calendar YTD	1 Year	3 Year	5 Year	10 Year
Variable Trust Fund	6/30/77	\$9,216	13.86	17.08	12.04	9.09	10.18
Variable Trust Fund Benchmark			14.36	17.53	12.09	9.19	10.20
Excess			(0.50)	(0.44)	(0.05)	(0.10)	(0.01)

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

Portfolio Allocation

By Portfolio	(\$ millions)	As % of Total Fund		
	Total Exposure	Portfolio Exposure	Exposure Target	Target Range
Public Equities	9,280	100.69	100.00	
US Equities	6,497	70.49	70.00	65.0 – 75.0%
International Equities	2,783	30.20	30.00	25.0 – 35.0%
Cash & Overlays	(63)	(0.69)	0.00	
Total Fund	\$9,217	100.00	100.00	

- *Asset class exposures are within the Target Range*

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

Separately Managed Funds

as of June 30, 2023

Fund	Performance Start Date	Market Value (\$ millions)	Net of External Manager Fee Return %				
			Calendar YTD	1 Year	3 Year	5 Year	10 Year or ITD
State Investment Fund (SIF)	6/30/1975	\$21,372	2.37	3.82	1.36	1.57	1.02
SIF Benchmark			2.23	3.78	1.36	1.52	0.99
Excess			+0.14	+0.04	(0.00)	+0.05	+0.03
State Life Insurance Fund	10/31/1994	\$98	3.45	(0.62)	(5.52)	1.29	2.70
No Benchmark							
Historical Society Endowment Fund	12/31/1993	\$24	12.95	14.24	9.99	9.31	9.99
Historical Society Endowment Benchmark			12.58	14.09	9.48	9.06	9.78
Excess			+0.37	+0.15	+0.51	+0.26	+0.20
Injured Patients & Families Comp. Fund	10/31/1993	\$1,384	4.13	2.51	(0.89)	2.94	3.68
IP&FC Benchmark			4.14	2.26	(1.42)	2.60	3.18
Excess			(0.00)	+0.25	+0.53	+0.34	+0.50
UW System Long Term Fund	3/31/2018	\$542	7.13	5.53	7.48	6.71	6.50
UW System Benchmark			6.98	5.38	7.33	6.50	6.29
Excess			+0.15	+0.15	+0.15	+0.20	+0.21
UW Cash Management Fund *	4/30/2022	\$652	4.29	4.27			1.17
UW Cash Management Benchmark			4.22	4.23			1.22
Excess			+0.07	+0.04			(0.05)

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

* **Error correction:** the UW Cash Management Fund's YTD and ITD returns reported as of March 31, 2023 of 3.24% and 0.34%, respectively, were understated by 5 bps due to a processing error made by the external Accounting and Performance Service Agent. The performance above reflects correction of the understatement in prior periods.

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

Leverage Performance

As of June 30, 2023

CTF Policy Leverage Performance

as of June 30, 2023

Core Trust Fund	Net of External Manager Fee Return %			
	Calendar YTD	1 Year	3 Year	5 Year
Unlevered Returns (as estimated):				
Portfolio ¹	6.08	6.86	7.86	7.12
CTF Benchmark Return ¹	5.95	6.32	6.95	6.56
Excess Return	+0.13	+0.54	+0.90	+0.56
<hr/>				
Portfolio Return (Unlevered)	6.08	6.86	7.86	7.12
Absolute Return from Leverage ^{1,2}	0.48	0.16	0.46	0.40
Implementation (+) or (-)	0.00	0.00	0.01	0.01
<hr/>				
Levered Returns (as reported):				
Portfolio	6.56	7.02	8.32	7.53
CTF Benchmark	6.44	6.48	7.41	6.96
Excess	+0.13	+0.54	+0.91	+0.57

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

Leverage notes:

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

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

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

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

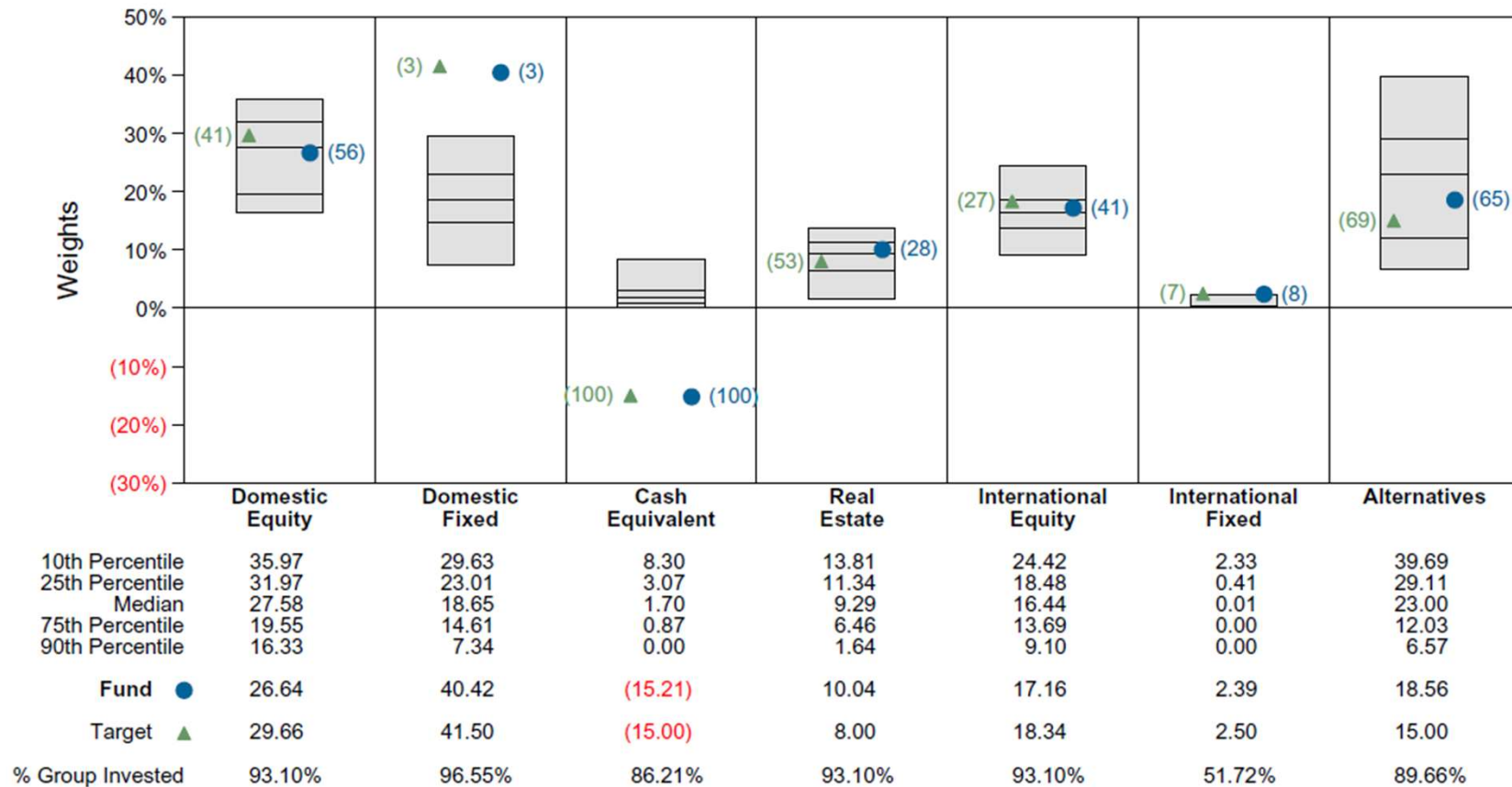
Callan Quarterly Report Summary

2nd Quarter 2023

Callan Peer Rank Update

CTF Asset Allocation Comparison to Peer Group (6.30.2023)

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

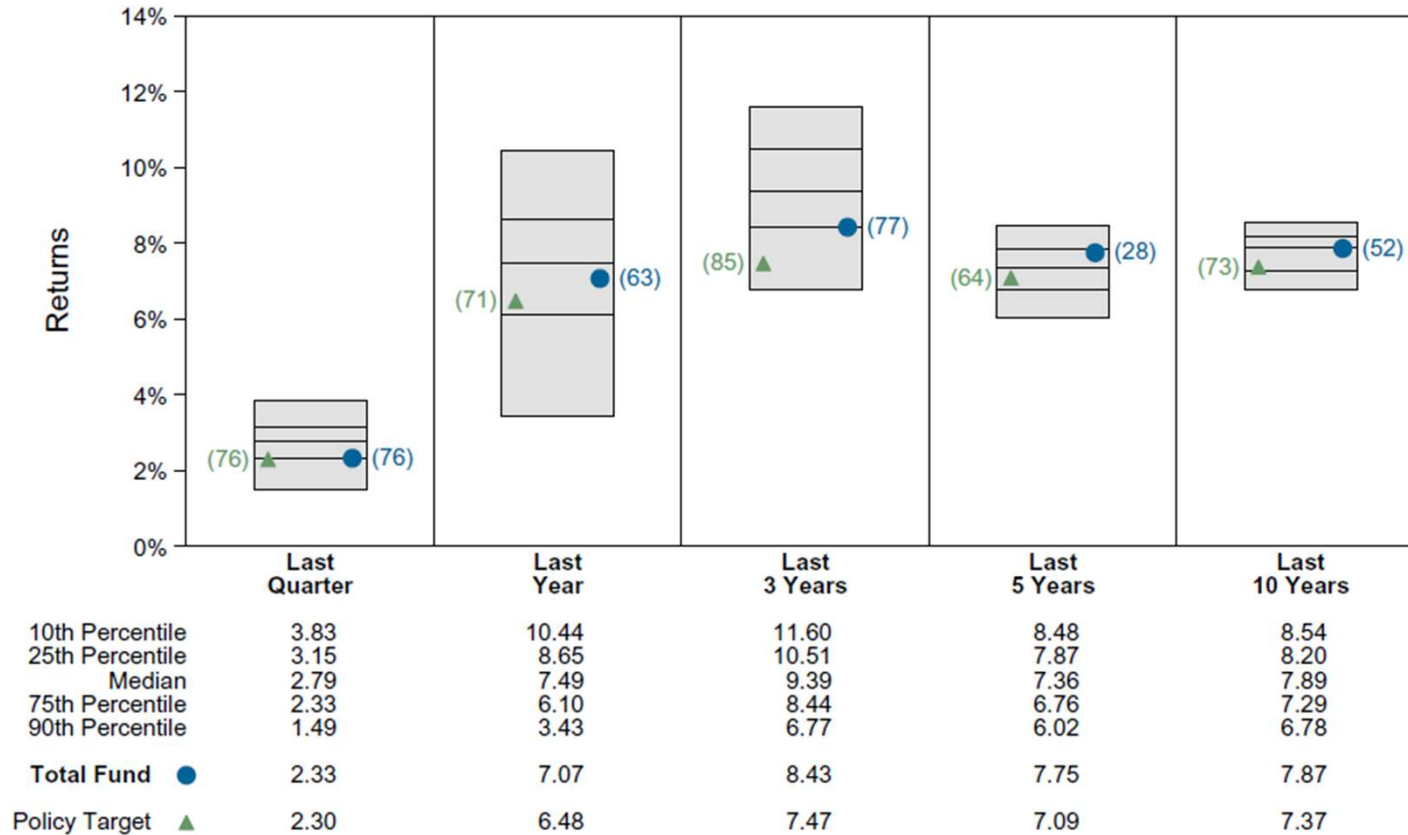


- SWIB's use of financial leverage (approximately 15%) enables more risk reducing/diversifying assets without sacrificing growth assets

Callan Peer Rank Update

CTF Performance vs. Peer Group (Gross Return, 6.30.2023)

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

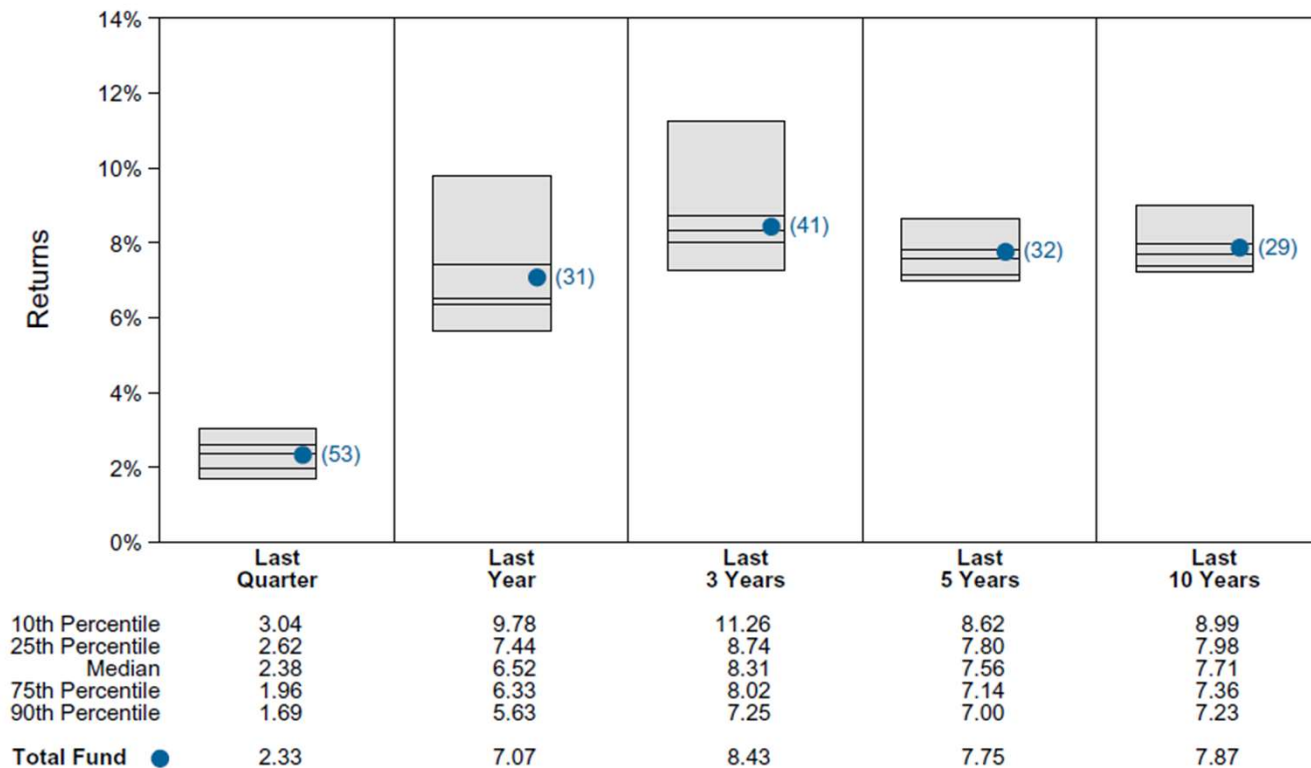


- CTF exceeds Policy Target over all periods
- 3rd quartile over the 1-year period, longer term 5- and 10-year periods near or above median

Callan Peer Rank Update

*CTF Performance on Asset Allocation Adjusted Basis vs. Peer Group
(Gross Return, 6.30.2023)*

Asset Allocation Adjusted Ranking

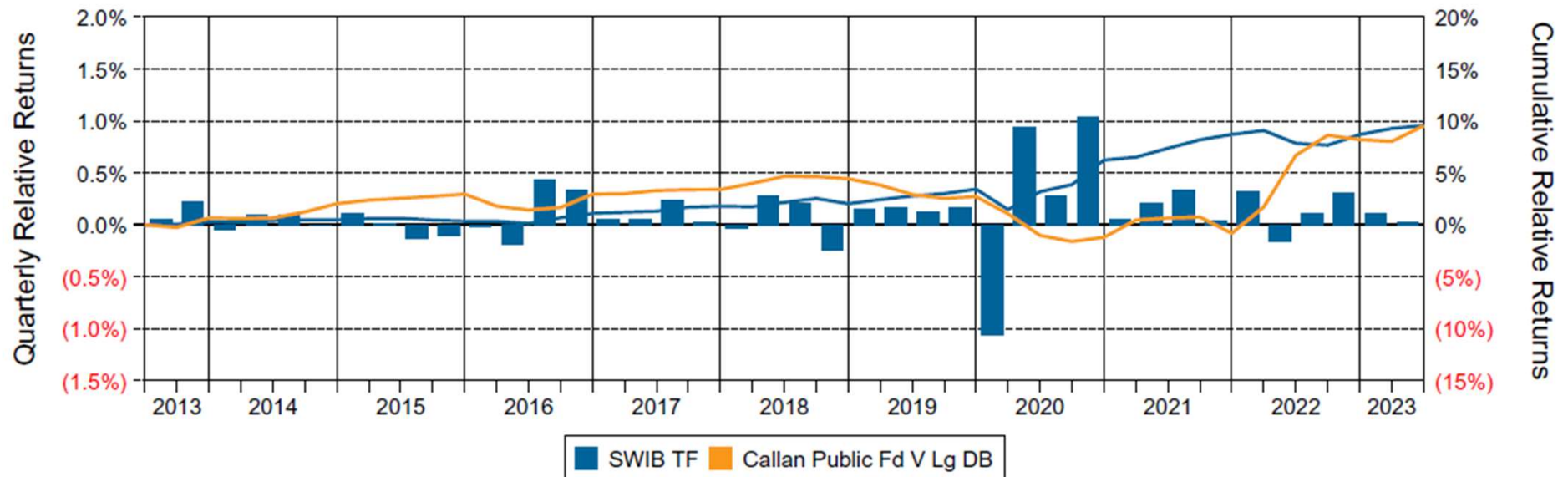


- Uses adjustment to peer universe to match the CTF risk-balanced allocation
- Last quarter at median, 2nd quartile ranking over 1-, 3-, 5-, and 10-year periods

Callan Peer Rank Update

10 Year Return Consistency vs. > \$10B Peer Group (6.30.2023)

Cumulative and Quarterly Relative Returns vs Target



- The CTF cumulative performance has consistently outpaced its peers over the past 3 years
- CTF Qtrly relative returns vs. Policy Benchmark are generally positive over the 10-year period

Report Disclosures

Glossary, Definitions & Data Sources

Report Disclosures

Key Terms and Portfolio Return Information

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

Report Disclosures

Key Terms and Portfolio Return Information

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

Report Disclosures

Key Terms and Portfolio Return Information

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

Report Disclosures

Key Terms and Portfolio Return Information

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

Report Disclosures

Key Terms and Portfolio Return Information

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

Leverage Disclosures

Calculation formulas to estimate impact

Report Disclosures

Notes on CTF Leverage Analysis

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

Report Disclosures

Notes on CTF Leverage Analysis

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

Board Meeting

Tab 7 – Committee Open Session Business – Sara Chandler,
Chief Legal Counsel

- A. Approved Open Session Investment Committee Meeting Minutes of May 23, June 27 and July 25, 2023
- B. Final Open Session Investment Committee Agenda for August 22, 2023 and Draft Open Session Agendas for September 26 and October 24, 2023
- C. Draft Open Session Minutes of May 25, 2023 Enterprise Risk and Compliance Committee Meeting

Review and Discussion

STATE OF WISCONSIN INVESTMENT BOARD
Investment Committee Meeting–Open Session

Tuesday, May 23, 2023

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
Jason Rector, Portfolio Manager–Funds Alpha
Mike Shearer, Head of Fixed Income Strategies
Nick Stanton, Head of Multi-Asset Strategies
Ivy Zhang, Senior Portfolio Manager–Asset & Risk Allocation

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

Also in Attendance: Chelsey Barczak, GPMS Business Director
Zach Berghouse, Internal Auditor
Kevin Blank, Analyst–Funds Alpha
Brandon Brickner, Internal Audit Director
Kate Burkart-Paulson, Senior Legal Counsel
Bridget Chen, Senior Analyst–Investment Grade Fixed Income
Christian Comito, Portfolio Manager–Investment Grade Fixed Income
Trey Edgerle, Compliance Analyst
Greg Fletcher, Performance Director
Scott Freundlich, Portfolio Manager–Non-Investment Grade Fixed Income
Shannon Gannon, Communications Director
Max Garcia, Analyst–Funds Alpha
Jameson Greenfield, Chief Financial Officer
Brian Heimsoth, Senior Portfolio Manager–Asset & Risk Allocation
Theresa Holterman, Funds Alpha Specialist
Vince Janecky, Internal Auditor Data Analyst
Salah Khalaf, Portfolio Manager–Private Markets & Funds Alpha
Jason Krueger, Compliance Analyst
Lisa Lange, Director of Compliance & Senior Legal Counsel
Jonathan Levine, Senior Portfolio Manager–Investment Grade Fixed Income
Jon Loboda, Performance Measurement Operations Manager

Jeff Lucas, Senior Portfolio Manager–Investment Grade Fixed Income
Bill Luetzow, Legal Counsel
Matt Marek, Senior Analyst–Asset & Risk Allocation
Damian Maroun, Head of Trading and Execution
Ed Martinez, PMFA Business Director
Frank Mazzuco, Legal Counsel
Chase Nicholson, Senior Portfolio Manager–Multi-Asset Strategies
Matt Notzon, Performance Analyst
Anand Rakesh, Director of Risk Analytics & Financial Engineering
Systems
Tom Robinson, Head of Corporate Governance
Nick Romero, Analyst–Investment Grade Fixed Income
Joe Roth, Transition Management and Portfolio Support Manager
Matt Terpstra, Internal Auditor
Rob Thornton, ARA Business Director
Dawn Tuescher, Executive Administrative Assistant
Rob Vanderpool, Fund Administration Director
Zhenping Wang, Senior Analyst–Asset & Risk Allocation
Chris Levell, NEPC
Joe Nankof, NEPC
Keri Ware, 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 1:01 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 April 25, 2023 Investment Committee (IC) meeting. Hearing no comments, Mr. Denson stated that the Committee could approve both the open and closed session minutes in open session.

Motion: A motion was made by Mr. Mattina and seconded by Mr. Shearer to approve both the open session and the closed session minutes of April 25, 2023, as presented. The motion passed unanimously.

2. Amendments to Investment Committee WRS Investment Guidelines

Sara Chandler, Chief Legal Counsel, discussed the proposed amendments to the *SWIB Investment Committee Wisconsin Retirement System Investment Guidelines*, included on pages 9-11 in the meeting materials. She noted that the proposed changes **(a)** add a new guideline for the global equity portfolio requiring that its gross notional exposure not exceed \$20 billion unless approved by the ED/CIO, and **(b)** added soft risk parameters for ex ante tracking error and duration for the long Treasury portfolio and duration for the high yield portfolio.

Motion: A motion was made by Mr. Drummond and seconded by Mr. Mattina to approve the proposed amendments to the *SWIB Investment Committee WRS Investment Guidelines*, as presented in the Committee materials. The motion passed unanimously.

3. October Workshop Preview

Todd Mattina, Head Economist & Asset and Risk Allocation Chief Investment Officer, provided an overview of the upcoming October Board Workshop, which will include (a) the biennial presentation from the Department of Employee Trust Funds' independent actuary in connection with the asset allocation review, including their stress testing analysis, (b) a discussion of SWIB's use of policy leverage, (c) NEPC's preview of the asset allocation recommendations to be presented to the Board for approval in December 2023, (d) an overview of a new strategic initiative regarding portfolio implementation at SWIB, and (e) an external speaker presentation regarding macroeconomic conditions.

4. Q1 2023 Quarterly Updates

A. Multi-Asset Strategies

Nick Stanton, Head of Multi-Asset Strategies, referred the Committee to the *Global Public Markets Strategies Quarterly Update*, included on pages 12-16 in the meeting materials, for the division's performance summary as of March 31, 2023. He confirmed that each portfolio was in compliance with its guidelines during Q1 2023.

B. Funds Alpha

Derek Drummond, Head of Funds Alpha, presented the *Funds Alpha Q1 2023 Update*, included on pages 17-24 in the meeting materials. He discussed performance for the first quarter, noting that Funds Alpha had negative excess value added (EVA) across all three business lines (with positive EVA in beta one fixed income slightly offsetting negative EVA in both hedge funds and beta one equity). Mr. Drummond then (a) reviewed manager positioning in the beta one portfolios, commenting that the beta one equities portfolio maintained its overweight to quality, (b) observed that managers across all Funds Alpha portfolios remained defensively positioned, with divergent views regarding the macroeconomic environment, and (c) reported that tracking error from both beta one portfolios and the hedge fund portfolio was below long-term tracking error targets.

Mr. Drummond provided an update on the market environment, noting that (a) dispersion is low as a subset of mega cap equity names is driving returns, (b) liquidity is scarce across asset classes and both leverage and corporate activity remain low as managers navigate macroeconomic uncertainty and elevated financing costs, (c) key risks include Federal Reserve policy, federal debt ceiling negotiations, geopolitical tensions, and the role played by large, systemically important hedge fund platforms, and (d) in the credit market, lending has contracted and dislocation in the commercial real estate market may create future opportunities to provide liquidity. Finally, he confirmed that the portfolios were in compliance with their guidelines and soft risk parameters as of March 31, 2023.

5. Convene in Closed Session

Motion: A motion to go into closed session at this meeting as authorized pursuant to sections

19.85(1)(e) and 19.36(5) of the Wisconsin Statutes to consider confidential strategies for the investment of public funds, including **(i)** the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, **(ii)** the review of specific proprietary investment strategies and investment instruments related to multi-asset, funds alpha, currency exposure and exposure management, and **(iii)** the review of broker information, was made by Mr. Cavaglia and seconded by Mr. Maung.

Mr. Denson called for a roll call vote.

Denson-Aye	Fink-Aye	Mattina-Aye	Cavaglia-Aye
Drummond-Aye	Linn-Aye	Maung-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 1:17 p.m. and reconvened in open session at 2:54 p.m.

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

Mr. Denson announced that, while in closed session, the Committee **(a)** reviewed active risk profiles of portfolio investments and the Core and Variable Trust Funds, **(b)** reviewed specific proprietary investment strategies and investment instruments related to multi-asset, funds alpha, currency exposure and exposure management, and **(c)** reviewed broker information.

7. Currency Task Force Report

Mr. Stanton noted that a copy of the agenda for the May 15, 2023 Currency Task Force meeting, with additional materials for reference, was included on pages 160-162 in the meeting materials for the Committee's information.

8. Research Task Force Report

Stefano Cavaglia, Senior Portfolio Manager–Asset & Risk Allocation, presented the *Research Task Force Update*, included on pages 163-172 in the meeting materials. He reviewed with the Committee the mission of the Research Task Force and encouraged participation from all SWIB staff in promoting SWIB's research culture. Mr. Cavaglia then discussed recent task force initiatives, including **(a)** sponsoring a presentation on the implications of regional bank failures on banking system fragility, **(b)** considering the impact of artificial intelligence on businesses, asset pricing, and the investment management industry, **(c)** promoting internal knowledge-sharing and educational programs, including collaboration across divisions within SWIB, and **(d)** sponsoring membership in a forum for quantitative research in finance.

A. June Investment Forum Preview

Finally, Mr. Cavaglia provided an update on the June Investment Forum, which will be held virtually with sessions during the afternoons of June 13-14, 2023, and noted that the

confirmed session topics and speakers were included on page 169 in the meeting materials for the Committee's information.

9. Quarterly Performance Review (Q1 2023)

Mr. Denson noted that the *Investment Performance Report*, as of March 31, 2023, was included on pages 173-183 in the meeting materials for the Committee's information.

10. Soft Risk Parameters

Hassan Chehime, Head of Risk Management, noted that the report *Soft Risk Parameters– Asset Class and Portfolio*, as of April 28, 2023, was included on pages 184-185 in the meeting materials for the Committee's review. Mr. Chehime noted that there was one new discussion trigger relating to the ex ante tracking error for the beta one portfolios. No discussion triggers had been dropped this month.

11. Future Meeting Topics

Mr. Denson noted that draft agendas for the June 27, 2023 and July 25, 2023 Committee meetings were included on pages 186-189 in the meeting materials for the Committee's review.

12. Adjournment

Motion: A motion to adjourn the meeting was made by Mr. Mattina and seconded by Mr. Shearer. The motion passed unanimously, and the meeting adjourned at 3:04 p.m.

Date of Committee Approval: 06/27/2023

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

STATE OF WISCONSIN INVESTMENT BOARD
Investment Committee Meeting–Open Session

Tuesday, June 27, 2023

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
Jason Rector, Portfolio Manager–Funds Alpha
Mike Shearer, Head of Fixed Income Strategies
Nick Stanton, Head of Multi-Asset Strategies
Ivy Zhang, Senior Portfolio Manager–Asset & Risk Allocation

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

Also in Attendance: Joe Amoyal, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Nathan Ballard, Senior Legal Counsel
Zach Berghouse, Internal Auditor
Brandon Brickner, Internal Audit Director
Kate Burkart-Paulson, Senior Legal Counsel
Bridget Chen, Senior Analyst–Investment Grade Fixed Income
Dan Cox, 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
Shannon Gannon, Communications Director
Jameson Greenfield, Chief Financial Officer
Beth Holzberger, Senior Portfolio Manager–Private Equity
Vince Janecky, Internal Auditor Data Analyst
Phil Johnson, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Jason Krueger, Compliance Analyst
Lisa Lange, Director of Compliance & Senior Legal Counsel

Jonathan Levine, Senior Portfolio Manager–Investment Grade
Fixed Income
Alex Li, Analyst–Asset & Risk Allocation
Bill Luetzow, Legal Counsel
Matt Marek, Senior Analyst–Asset & Risk Allocation
Damian Maroun, Head of Trading and Execution
Ed Martinez, PMFA Business Director
Frank Mazzucco, Legal Counsel
Chad Neumann, Senior Portfolio Manager–Global Equity
Strategy
Chase Nicholson, Senior Portfolio Manager–Multi-Asset Strategies
Scott Parrish, Head of Private Equity
Chris Prestigiacommo, Head of Private Debt & Venture Capital
Anand Rakesh, Director of Risk Analytics & Financial Engineering
Systems
Joe Roth, Transition Management and Portfolio Support Manager
Jason Rothenberg, Head of Real Estate
Edouard Senechal, Senior Portfolio Manager–Asset & Risk
Allocation
Sam Shibilski, Fund Administration Analyst
Chris Spiering, Senior Portfolio Manager–Non-Investment
Grade Fixed Income
Matt Terpstra, Internal Auditor
Rob Thornton, ARA Business Director
Dawn Tuescher, Executive Administrative Assistant
Rob Vanderpool, Fund Administration Director
Zhenping Wang, Senior Analyst–Asset & Risk Allocation
Chris Levell, NEPC
Joe Nankof, NEPC
Keri Ware, 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 1:01 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 May 23, 2023 Investment Committee (IC) meeting. Hearing no comments, Mr. Denson stated that the Committee could approve both the open and closed session minutes in open session.

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

2. June Investment Forum Debrief

Beth Holzberger, Senior Portfolio Manager–Private Equity, provided a summary of the June Investment Forum, which was held virtually on June 13-14, 2023. Ms. Holzberger reported that more than 220 individuals attended the conference, including SWIB staff and trustees, state legislators and Wisconsin Retirement System (WRS) participants. She noted that feedback has been favorable, with attendees pleased with the conference’s substantive topics, speaker lineup and virtual format.

3. Private Markets & Funds Alpha Division Update

Anne-Marie Fink, Private Markets & Funds Alpha–Chief Investment Officer, presented the *Private Markets & Funds Alpha Overview*. Ms. Fink highlighted the Private Markets & Funds Alpha (PMFA) division’s positive year-to-date performance, led by performance from the private markets strategies. She observed that, after a challenging 2022 relative to the benchmark, the real estate portfolio has generated relative outperformance year-to-date and is now strongly positive for the three- and five-year periods. Finally, Ms. Fink discussed the division’s investment pacing plan and provided an update on operations, technology and staffing.

4. Q1 2023 Quarterly Updates

A. Private Equity

Scott Parrish, Head of Private Equity, presented the *Quarterly Activity Report – Private Equity*, included on pages 9-32 in the meeting materials. He provided a private equity market update for the first quarter of 2023, noting that **(a)** U.S. private equity fundraising dollars increased slightly while the number of funds decreased relative to the first quarter of 2022, reflecting the challenging fundraising environment, **(b)** U.S. private equity deal value and exit value in dollars decreased significantly from the first quarter of 2022, while the number of deals and exits remained flat, **(c)** median leverage multiples decreased materially year-over-year to the lowest level since 2016, **(d)** the number of portfolio company exits was split evenly between strategic acquirers and sponsor-to-sponsor transactions, with nearly 70% of exit value attributable to strategic acquirers, and **(e)** the European private equity market experienced broadly similar trends in terms of both fundraising and exit activity.

Mr. Parrish then reported that, as of March 31, 2023, the market value of the aggregate private equity asset class, including the venture capital, private debt, and overage portfolios, made up approximately 18% of the Core Trust Fund (CTF). He commented that capital calls continued to exceed distributions during the first quarter of 2023, due primarily to funds calling capital in connection with recent commitments and the continued headwinds facing portfolio companies seeking exits.

With respect to performance, Mr. Parrish highlighted that the private equity portfolios all outperformed their benchmarks for the one-, three-, and five-year time periods and that, as of December 31, 2022, the combined private equity and co-investment portfolios achieved second quartile performance for vintage years 2014-2021. He also reviewed the internal rates of return (IRRs) for the portfolios’ sub-strategies, noting strong performance from mid- and large buyout and growth equity managers, and highlighted potential increased exposure to private credit managers, including opportunistic and mezzanine sub-strategies, given the

opportunity set in the current market environment.

Mr. Parrish then discussed the private equity portfolios' **(a)** sub-asset class diversification, highlighting the increased percentage of co-investments, **(b)** public versus private portfolio company exposure, noting that public exposure had decreased year-over-year as a result of lower market valuations and fewer portfolio companies exiting via public offerings, and **(c)** industry diversification, noting that the portfolios' overweight to information technology decreased modestly year-over-year while exposure to the healthcare and industrials sectors increased. Finally, he highlighted the commitments made in Q1 2023, reviewed the portfolio pipeline for Q2 2023, and confirmed that the portfolio remained in compliance with all investment guidelines.

B. Real Estate

Jason Rothenberg, Head of Real Estate, presented the *Quarterly Activity Report – Real Estate*, included on pages 33-45 in the meeting materials. He noted that while **(a)** outside of the office sector, operating fundamentals remain relatively strong, as reflected by stable occupancy levels and positive rent growth, and **(b)** significant dry powder remains available for deployment, which should help support the market, that **(c)** the real estate market remains in the middle of a repricing, with further downward pressure on valuations anticipated, **(d)** higher debt service costs and constrained lending may force borrowers to restructure, and **(e)** the office sector continues to face unique headwinds, particularly older buildings in certain markets. Mr. Rothenberg answered questions regarding the balance of supply and demand of residential housing, noting that the issue is best considered on a market-by-market basis, and discussed the team's views on the multi-family sector and outlook for rent growth.

Mr. Rothenberg then provided further commentary on the current market environment, reporting that **(a)** net operating income (NOI) is continuing to grow at an aggregate level, **(b)** increased interest rates are negatively impacting debt service coverage ratios, with additional equity likely required to maintain asset ownership upon debt maturity, and **(c)** significant dispersion exists within various types of office assets, particularly between legacy and modern office properties.

Mr. Rothenberg reviewed the real estate portfolio, noting that the portfolio's market value of approximately \$11.9 billion as of March 31, 2023 represented approximately 10% of the CTF, which was generally consistent with the prior quarter. He noted that the portfolio size may increase modestly in future quarters as capital calls are expected to continue to outpace distributions. He then reviewed the portfolio's **(a)** risk profile, noting that the portfolio's core exposure declined slightly due to depreciation of some of the portfolio's core holdings and recent investments in the non-core space, and **(b)** diversification by property type, highlighting that the team is evaluating credit and certain industrial opportunities.

Mr. Rothenberg discussed the portfolio's performance, highlighting outperformance relative to the benchmark over all time periods, and reviewed performance by sub-strategy over the one- and five-year periods, noting that retail was the only sector in which one-year performance exceeded five-year performance. Lastly, he **(a)** highlighted the new commitments made in the quarter, as the team continues to deploy capital judiciously as assets reprice, **(b)** discussed the pipeline under review, and **(c)** confirmed that the portfolio remained in compliance with its investment guidelines.

C. Private Debt

Chris Prestigiaco, Head of Private Debt & Venture Capital, presented the *Private Debt Portfolio Investment Committee Quarterly Report*, included on pages 46-57 in the meeting materials. He provided a private debt market update for the first quarter, noting that (a) fundraising dollars have generally remained consistent year-over-year, even with a slight decline relative to the fourth quarter of 2022, (b) experienced managers continue to have the most success fundraising, (c) amid slowing flows into retail-oriented vehicles, other credit providers (e.g., non-traded business development companies) may present compelling opportunities, (d) deployments by mezzanine funds outpaced direct lending during the quarter, due primarily to strong demand from private equity sponsors, (e) following regional banking sector upheaval, lending to venture-backed companies declined but held up well overall, and (f) dry powder available to invest has continued to decline.

Mr. Prestigiaco then reviewed the portfolio's (a) characteristics, noting that the portfolio added four new loans and average life decreased slightly from the prior quarter, (b) barbell credit strategy, with staff targeting loans of both higher and lower credit quality than the benchmark to maintain an overall portfolio weighting of BBB, (c) current below investment grade (BIG) holdings of 8%, down 3% from the prior quarter, and (d) sector mix, noting that the historical overweight to industrial and underweight to financials arises from the opportunity set of the portfolio. Comparing the Wisconsin and non-Wisconsin loans in the portfolio, he commented that the average coupon is higher for Wisconsin loans due to higher BIG loans outstanding in Wisconsin and that non-Wisconsin deal flow continues to increase.

Lastly, Mr. Prestigiaco reviewed the portfolio's performance, highlighting that the portfolio outperformed its benchmark over the one-, five- and ten-year time periods with slight underperformance over the three-year time period, and reported that there were no problem credits or workouts in the portfolio, which remained in compliance with its guidelines.

5. Convene in Closed Session

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

Mr. Denson called for a roll call vote.

Denson-Aye	Fink-Aye	Mattina-Aye	Cavaglia-Aye
Drummond-Aye	Linn-Aye	Maung-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 1:47 p.m. and reconvened in open session at 2:47 p.m.

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

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

7. Transition Update (Q1 2023)

Joe Roth, Transition Management and Portfolio Support Manager, presented the *Transition Management Summary, Q1 2023*, included on page 143 in the meeting materials, and reviewed the two transition events during the quarter. Mr. Roth noted that the first transition was implemented in connection with the launch of the new global equities portfolio. He highlighted that the \$7.3 billion transition was managed efficiently internally, with only \$58 million liquidated at a shortfall of 21 basis points (bps) on the liquidated amount. He reported that the second transition, which was also managed internally, repurposed internally managed small cap portfolio assets to effectuate a rebalance between active and passive strategies, along with a reduction in small cap exposure, and fell within the established shortfall tolerance range.

8. Soft Risk Parameters

Hassan Chehime, Head of Risk Management, noted that the report *Soft Risk Parameters—Asset Class and Portfolio*, as of May 31, 2023, was included on pages 144-145 in the meeting materials for the Committee’s review. Mr. Chehime noted that there were no new discussion triggers and that none had been dropped this month.

9. Future Meeting Topics

Mr. Denson noted that draft agendas for the July 25, 2023 and August 22, 2023 Committee meetings were included on pages 146-149 in the meeting materials for the Committee’s review.

10. Adjournment

Motion: A motion to adjourn the meeting was made by Ms. Fink and seconded by Mr. Mattina. The motion passed unanimously, and the meeting adjourned at 2:51 p.m.

Date of Committee Approval: 07/25/2023

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

STATE OF WISCONSIN INVESTMENT BOARD
Investment Committee Meeting–Open Session

Tuesday, July 25, 2023

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
Jason Rector, Portfolio Manager–Funds Alpha
Mike Shearer, Head of Fixed Income Strategies
Nick Stanton, Head of Multi-Asset Strategies
Ivy Zhang, Senior Portfolio Manager–Asset & Risk Allocation

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

Also in Attendance: John Voelker, Trustee
Joe Amoyal, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Nathan Ballard, Senior Legal Counsel
Chelsey Barczak, GPMS Business Director
Brandon Brickner, Internal Audit Director
Kate Burkart-Paulson, Senior Legal Counsel
Christian Comito, Portfolio Manager–Investment Grade Fixed Income
Tom Dobesh, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Kliton Duri, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Trey Edgerle, Compliance Analyst
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
Jameson Greenfield, Chief Financial Officer
Phil Johnson, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Salah Khalaf, Portfolio Manager–Private Markets & Funds Alpha

Jason Krueger, Compliance Analyst
Shan Lo, Senior Portfolio Manager–Multi-Asset Strategies
Jeff Lucas, Senior Portfolio Manager–Investment Grade Fixed Income
Bill Luetzow, Legal Counsel
Matt Marek, Senior Analyst–Asset & Risk Allocation
Ed Martinez, PMFA Business Director
Frank Mazzucco, Legal Counsel
Joy Mukherjee, Senior Portfolio Manager–U.S. Small Cap Strategy
Chad Neumann, Senior Portfolio Manager–Global Equity Strategy
Chase Nicholson, Senior Portfolio Manager–Multi-Asset Strategies
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.
Susan Schmidt, Head of Equities
Edouard Senechal, Senior Portfolio Manager–Asset & Risk Allocation
Sam Shibilski, Fund Administration Analyst
Chris Spiering, Senior Portfolio Manager–Non-Investment
Grade Fixed Income
Leif Thybony, Senior Portfolio Manager–Non-Investment Grade
Fixed Income
Dawn Tuescher, Executive Administrative Assistant
Rob Vanderpool, Fund Administration Director
Zhenping Wang, Senior Analyst–Asset & Risk Allocation
Ping Wong, Portfolio Manager–Liquidity, Inflation & Rates
Mgmt.
Chris Levell, NEPC
Eileen Neill, Verus Advisory
Carolyn Stittleburg, Legislative Audit Bureau
Mark Taylor, MT Analytics
(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 June 27, 2023 Investment Committee (IC) meeting. Hearing no comments, Mr. Denson stated that the Committee could approve both the open and closed session minutes in open session.

Motion: A motion was made by Mr. Shearer and seconded by Mr. Stanton to approve both the open session and the closed session minutes of June 27, 2023, as presented. The motion passed unanimously.

2. Q2 2023 Quarterly Updates

Mike Shearer, Head of Fixed Income Strategies, presented the *Global Public Markets Strategies Quarterly Update, Q2 2023*, included on pages 10-21 in the meeting materials. Mr. Shearer reported on performance from the Global Public Market Strategies division for Q2 2023, noting that performance varied across the board, with six of eight division strategies exhibiting positive absolute returns and three of eight generating positive excess returns. He confirmed that each portfolio was in compliance with its guidelines, but noted that the small cap portfolio's ex ante tracking error remained below its soft risk parameter's target range.

Susan Schmidt, Head of Equities, then presented the *Global Equity Strategy Update*, included on pages 22-23 in the meeting materials. Ms. Schmidt noted that **(a)** strong portfolio performance early in the second quarter was offset by weaker performance later in the quarter, **(b)** the market shifted to a risk-on posture, which proved detrimental to the positions in the portfolio with higher-quality characteristics, and **(c)** breadth was limited across market indices, with a select few names driving strong index performance.

Finally, Mr. Shearer and Nick Stanton, Head of Multi-Asset Strategies, provided a market review, included on pages 24-27 in the meeting materials. They noted that **(a)** concerns of a wider banking crisis receded in the second quarter, which contributed to lower volatility and stronger equity and credit markets, **(b)** the Federal Reserve enacted another rate increase in the second quarter and other central banks adopted tighter monetary policies, with the notable exception of China, **(c)** global rates were generally higher, while yield curves flattened, **(d)** the U.S. Dollar appreciated relative to the Japanese Yen and the Chinese Yuan amid stronger U.S. macroeconomic data and reduced regional banking sector uncertainty, **(e)** U.S. mortgage-backed securities (MBS) underperformed relative to other spread products, and **(f)** equity markets overall rallied during the second quarter. Mr. Stanton then answered questions regarding the momentum, quality, and value equity factors and specific drivers of performance.

3. Convene in Closed Session

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

Mr. Denson called for a roll call vote.

Denson-Aye	Fink-Aye	Mattina-Aye	Cavaglia-Aye
Drummond-Aye	Linn-Aye	Maung-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 1:07 p.m. and reconvened in open session at 3:20 p.m.

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

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

5. QIR Certification

Jason Krueger, Compliance Analyst, presented a proposal that the Committee appoint **(a)** Joe Amoyal as a Qualified Independent Representative (QIR) for Single-Name Credit Default Swaps, and **(b)** Christian Comito as a QIR for Fixed Income Total Return Swap (TRS) Baskets and Fixed Income ETF TRS, as set forth on pages 152-161 in the meeting materials. Mr. Krueger noted that the appointments would be for all approved counterparties with whom SWIB has a master netting agreement for such instruments and that a signed Internal QIR Certificate and Agreement for each of Mr. Amoyal and Mr. Comito documenting their relevant knowledge and experience was included in the meeting materials for the Committee's review. He also explained that Mr. Amoyal and Mr. Comito would be subject to quarterly and annual certifications regarding their QIR status as a condition of their employment.

Motion: A motion was made by Mr. Shearer and seconded by Mr. Stanton to approve that **(1)** Joe Amoyal meets all of the QIR Criteria with respect to Single-Name Credit Default Swaps for all approved counterparties with whom SWIB has a master netting agreement for such instruments, from time to time, and he is approved to act and is hereby appointed as a QIR with respect to such counterparties, and **(2)** Christian Comito meets all of the QIR Criteria with respect to Fixed Income TRS Baskets and Fixed Income ETF TRS for all approved counterparties with whom SWIB has a master netting agreement for such instruments, from time to time, and he is approved to act and is hereby appointed as a QIR with respect to such counterparties. The motion passed unanimously.

6. Soft Risk Parameters

Anand Rakesh, Director of Risk Analytics & Financial Engineering Systems, noted that the report *Soft Risk Parameters—Asset Class and Portfolio*, as of June 30, 2023, was included on pages 162-163 in the meeting materials for the Committee's review. Mr. Rakesh noted that there was one new discussion trigger relating to the ex ante tracking error for the Variable Trust Fund. No discussion triggers had been dropped this month.

7. Future Meeting Topics

Mr. Denson noted that draft agendas for the August 22, 2023 and September 26, 2023 Committee meetings were included on pages 164-167 in the meeting materials for the Committee's review.

8. Adjournment

Motion: A motion to adjourn the meeting was made by Mr. Mattina and seconded by Ms. Fink. The motion passed unanimously, and the meeting adjourned at 3:24 p.m.

Date of Committee Approval: 08/22/2023

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

Name of Meeting: Staff Investment Committee Meeting
Date/Time: Tuesday, August 22, 2023 1:00 pm
Room: 7th Floor Conference Room - 7022
Address: 4703 Madison Yards Way, Madison, WI 53705

Est. Time Minutes	Action Item	Topic	Presenter
		OPEN SESSION	
	Motion	1. Approval of the Minutes – Open Session A. July 25, 2023	
30		2. Q2 2023 Quarterly Updates A. Multi-Asset Strategies B. Funds Alpha	Nick Stanton Derek Drummond
	Motion	CLOSED SESSION*	
	Motion	RECONVENE IN OPEN SESSION	
		3. Announcement of Committee Actions Relating to Items Taken Up in Closed Session	
10		4. Research Task Force Report	Stefano Cavaglia
		5. Quarterly Performance Review (Q2 2023) (No presentation unless requested)	
		6. Soft Risk Parameters (No presentation unless requested)	
		7. Fair Value Measurement Review of WRS Investments (No presentation unless requested)	
		8. Future Meeting Topics	
	Motion	9. Motion to Adjourn	

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

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

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

Future Meetings

9/26/23 – September Committee Mtg.
10/24/23 – October Committee Mtg.
11/28/23 – November Committee Mtg.
12/21/23 – December Committee Mtg.

Voting Committee Members:

Edwin Denson (Chair), Executive Director/Chief Investment Officer
Anne-Marie Fink, Private Markets & Funds Alpha–CIO
Todd Mattina, Head Economist, Asset & Risk Allocation–CIO
Stefano Cavaglia, Senior Portfolio Manager–Asset & Risk Allocation
Derek Drummond, Head of Funds Alpha
Diane Linn, Senior Portfolio Manager–Multi-Asset Strategies
Lin Maung, Senior Portfolio Manager–Private Equity
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/CAO
Sara Chandler (Secretary), Chief Legal Counsel
Hassan Chehime, Head of Risk Management

Name of Meeting: Staff Investment Committee Meeting
Date/Time: Tuesday, September 26, 2023 1:00 pm
Room: 7th Floor Conference Room - 7022
Address: 4703 Madison Yards Way, Madison, WI 53705

Est. Time Minutes	Action Item	Topic	Presenter
		OPEN SESSION	
	Motion	1. Approval of the Minutes – Open Session A. August 22, 2023	
5		2. October Board Workshop Preview	Todd Mattina
5		3. Private Markets & Funds Alpha Division Update	Anne-Marie Fink
30		4. Q2 2023 Quarterly Updates A. Private Equity B. Real Estate C. Private Debt	Scott Parrish Jason Rothenberg Chris Prestigiacomio
	Motion	CLOSED SESSION*	
	Motion	RECONVENE IN OPEN SESSION	
		5. Announcement of Committee Actions Relating to Items Taken Up in Closed Session	
5		6. Currency Task Force Report	Chirag Gandhi Todd Mattina
10		7. Corporate Governance Update	Tom Robinson
5		8. Transition Update (Q2 2023)	Joe Roth
		9. Soft Risk Parameters (No presentation unless requested)	

* A motion to go into closed session at this meeting is authorized pursuant to sections 19.85(1)(e) and 19.36(5) of the Wisconsin Statutes (a) to consider confidential strategies for the investment of public funds, including (i) the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, (ii) the review of specific strategies related to asset allocation, and (iii) the review of specific proprietary investment strategies and investment instruments related to private equity, real estate, private debt, venture capital, currency exposure 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.

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

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

Est. Time Minutes	Action Item	Topic	Presenter
		OPEN SESSION	
	Motion	1. Approval of the Minutes – Open Session A. September 26, 2023	
30	Motion	2. Annual Benchmark Presentation	Joe Nankof, NEPC
10		3. Q3 2023 Quarterly Updates	Mike Shearer Nick Stanton
	Motion	CLOSED SESSION*	
	Motion	RECONVENE IN OPEN SESSION	
		4. Announcement of Committee Actions Relating to Items Taken Up in Closed Session	
15		5. Separately Managed Funds Update	Rob Thornton
5		6. October Board Workshop Debrief	Todd Mattina
		7. Soft Risk Parameters (No presentation unless requested)	
		8. Future Meeting Topics	
	Motion	9. Motion to Adjourn	
		<i>NOTES: Items may be taken in order other than listed.</i>	
		<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 of portfolio investments and the Core and Variable Trust Funds and (ii) the review of specific proprietary investment strategies and investment instruments related to global equities, small cap equities, short-term credit, fixed income strategies and exposure management, and (b) to discuss and approve prior closed session minutes that discuss the same. The Committee may convene in additional closed sessions or announce additional closed session items at the meeting in accordance with the procedure outlined in the Attorney General’s Opinion reported at 66 OAG 106 (1977). Whenever a closed session is held, the committee will subsequently reconvene in open session to cover remaining agenda items.

Future Meetings

11/28/23 – November Committee Mtg.

12/21/23 – December Committee Mtg.

Voting Committee Members:

Edwin Denson (Chair), Executive Director/Chief Investment Officer

Anne-Marie Fink, Private Markets & Funds Alpha–CIO

Todd Mattina, Head Economist, Asset & Risk Allocation–CIO

Stefano Cavaglia, Senior Portfolio Manager–Asset & Risk Allocation

Derek Drummond, Head of Funds Alpha

Diane Linn, Senior Portfolio Manager–Multi-Asset Strategies

Lin Maung, Senior Portfolio Manager–Private Equity

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/CAO

Sara Chandler (Secretary), Chief Legal Counsel

Hassan Chehime, Head of Risk Management

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

Thursday, May 25, 2023

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)
Sara Chandler, Chief Legal Counsel (Secretary)
Edwin Denson, Executive Director/Chief Investment Officer
Rochelle Klaskin, Deputy Executive Director/Chief Administrative Officer
Todd Mattina, Head Economist, Asset & Risk Allocation CIO
Brandon Brickner, Internal Audit Director (*non-voting*)

Others Present: Eric Barber, Senior Legal Counsel
Trey Edgerle, Compliance Analyst
Jason Krueger, Compliance Analyst
Alyssa Moore, Compliance Analyst
Sunil Nair, Operational Risk Director
Olu Olubiyi, Information Security & Governance Manager
Dawn Tuescher, Executive Administrative Assistant

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 10:02 a.m. Ms. Lange opened the meeting by welcoming Todd Matina, Head Economist, Asset & Risk Allocation Chief Investment Officer, as the ERCC’s newest member.

1. Approval of Minutes

Ms. Lange confirmed that there were no questions or comments on either the open session or closed session minutes of November 30, 2022, which were included on pages 4-6 in the meeting materials.

Motion: A motion was made by Sara Chandler, Chief Legal Counsel, and seconded by Jameson Greenfield, Chief Financial Officer, to approve the open session and closed session minutes of November 30, 2022, 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 7-8 in the meeting materials. Mr. Chehime first announced that after a

comprehensive and comparative assessment of various enterprise risk systems, the Risk Management team would continue to use FactSet Risk System as its enterprise risk system. While the team will continue to refine its use of and improvements to the FactSet Risk System, it continues to meet all the current requirements. Next, Mr. Chehime discussed a series of enhancements to the risk management ecosystem, including releasing certain risk monitoring dashboards in Snowflake and developing a new FactSet risk analytics framework that will allow for the expansion of analytics into Snowflake. The risk management team will continue expansion of these enhancements into other asset classes but is now doing daily risk monitoring of portfolios. In response to a question regarding the U.S. debt ceiling and potential default, Mr. Chehime outlined the steps his team is taking to evaluate the day-to-day risk to SWIB.

3. Compliance Update

Lisa Lange, Director of Compliance and Senior Legal Counsel, presented the *Compliance Reporting & Updates* for Q4 2022 and Q1 2023, which were included on pages 9-14 in the meeting materials.

A. Q4 2022

Ms. Lange reported that the fourth quarter of 2022 had slightly more trade requests than the prior corresponding quarter, with a higher approval rate. There was one personal trading violation in the quarter, no guideline violations and one waiver granted. The High Yield Portfolio was granted a waiver extension allowing the tracking error to be increased from 5% to 6.5%. This waiver was extended through December 31, 2022. Ms. Lange also reported four individuals with a late compliance affirmations.

B. Q1 2023

Ms. Lange noted that the first quarter saw slightly fewer personal trading requests than the prior quarter, with a similar approval rate. The approval rate has begun to increase since implementing personal trading policy updates late in the quarter. There was one personal trading violation in the first quarter, which was identified through SWIB's new compliance software. There was one employee with late compliance affirmations. Ms. Lange noted no guideline violations and no waivers granted.

C. New Compliance Software and Trade Approval Policy Updates

Finally, Ms. Lange gave an overview of the Compliance team's successful implementation of a new compliance software system following the acquisition and decommissioning of SWIB's long-time compliance software system. The team met the short implementation window and onboarded approximately twenty different brokerage firms and 279 users at SWIB. At the same time, Compliance also spearheaded efforts to revise the SWIB Personal Trade Approvals Policy. Both the software and policy updates went live on March 13, 2023.

4. 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 Mr. Chehime and seconded by Ms. Chandler.

Ms. Chandler called for a roll call vote.

Chandler-Aye
Klaskin-Aye

Cehime-Aye
Lange-Aye

Denson-Aye
Mattina-Aye

Greenfield-Aye

There being seven ayes and no nays, Ms. Lange declared the motion passed. The Committee convened in closed session at 10:31 a.m. and reconvened in open session at 11:15 a.m.

5. Announcement of Matters Taken Up in Closed Session

Ms. Lange announced that, while in closed session, the Committee approved prior meeting minutes and received an update on operational risk management and access management in connection with information security.

6. Future Meeting Topics

No future meeting topics were discussed.

7. Adjournment

Motion: A motion to adjourn was made by Rochelle Klaskin, Deputy Executive Director/Chief Administrative Officer, and seconded by Mr. Chehime. The motion passed unanimously, and the ERCC meeting was adjourned at 11:16 a.m.

Date of Committee Approval: _____

Signed: _____

Sara Chandler, Secretary
Enterprise Risk and Compliance Committee

Board Meeting

Tab 8 – Quarterly Investment Update, Q2 2023 –Todd Mattina, Head Economist and Asset & Risk Allocation CIO; and Leo Kropywiansky, Senior Portfolio Manager

Summary: Messrs. Mattina and Kropywiansky will provide a review of the Q2 2023 markets and performance.

Presentation and Discussion



Quarterly Investment Update

Board Meeting

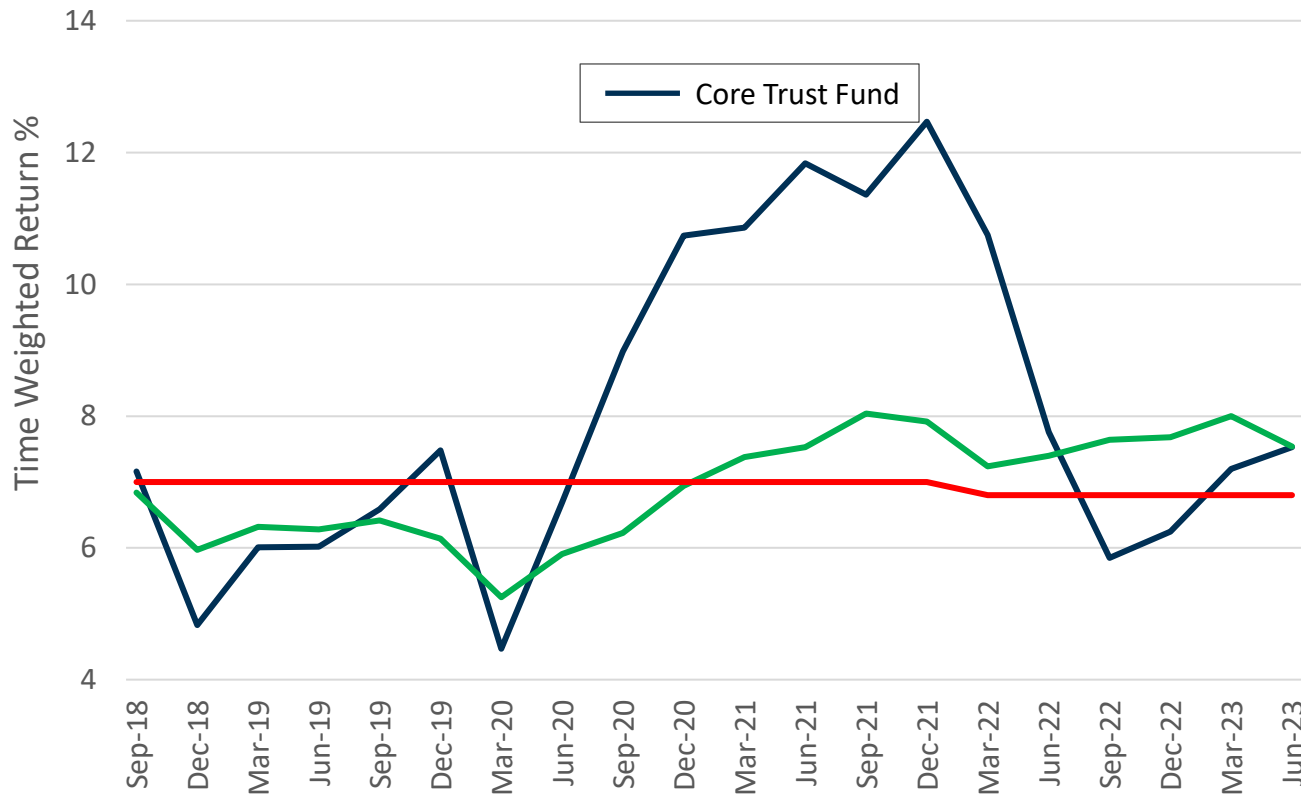
September 13, 2023

Performance Trends & Outlook

CTF 5 Year Rolling Return Trend

Quarter-end Results Through June 30, 2023

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



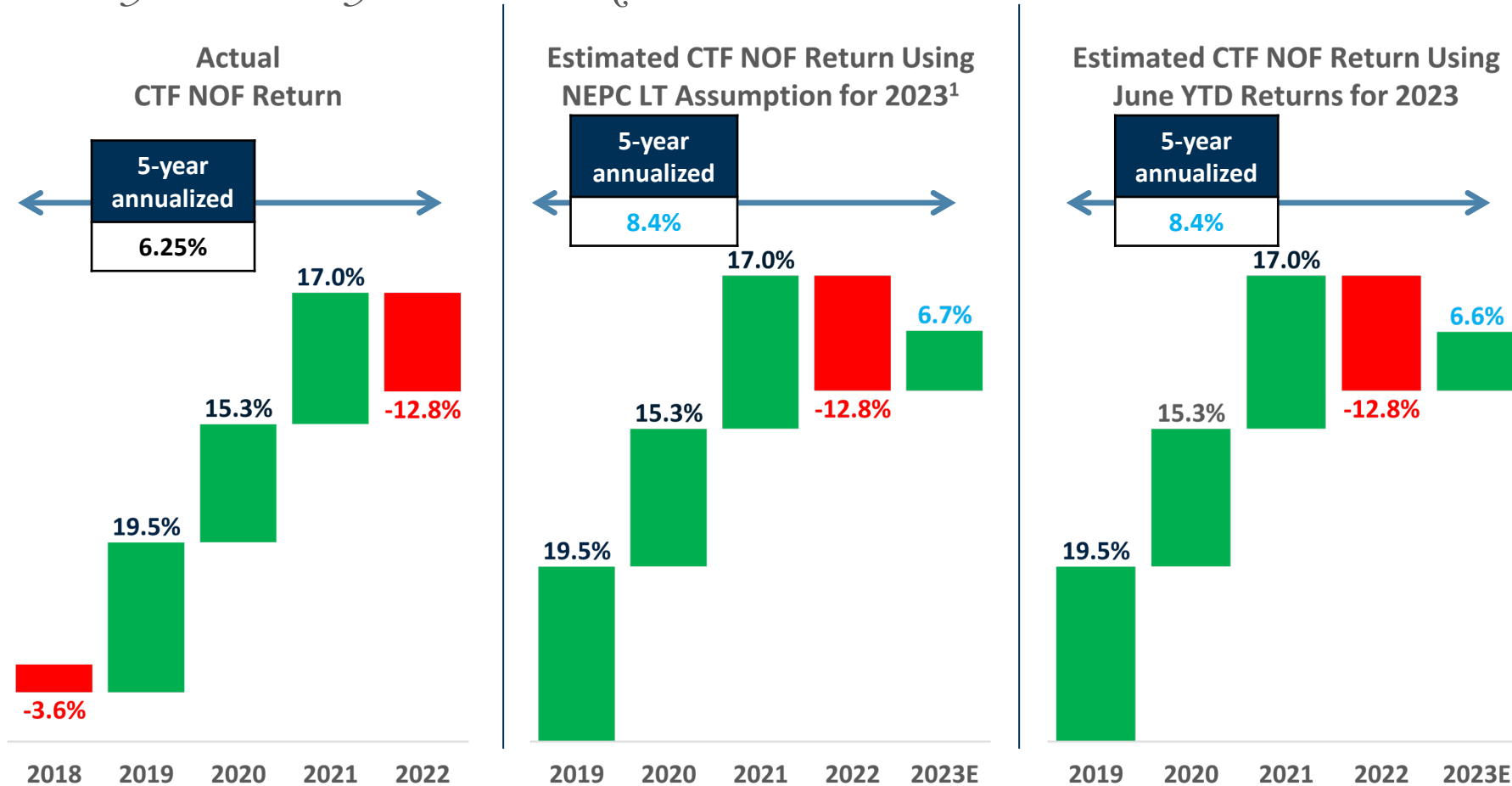
5 Year Annualized NOF Return (as of June 30, 2023)	
7.53%	Core Trust Fund
6.96%	CTF Policy Benchmark

7.54%
CTF 20-year NOF Return

6.8%
Actuarial Target Rate of Return

CTF 5-year Return Estimate

Calendar year and 5-year annualized returns



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

CTF Policy Benchmark & Other Indices

Equity and Fixed Income asset classes increased this year

July 31, 2023: Total Rate of Return %, Annualized					
Index Name (Gross Return Basis, unless noted)	YTD	1yr	5yr	10yr	10yr volatility
CTF Policy Benchmark (Gross)	8.3	3.4	7.1	7.3	8.5
MSCI USA	21.2	13.1	12.1	12.6	15.1
MSCI USA Small Cap	15.0	9.7	7.5	9.7	18.8
MSCI World ex US Equities	14.9	15.5	4.7	5.2	14.9
MSCI World ex US Equities (Local)	13.4	13.0	6.3	7.4	12.2
MSCI EAFE Small Cap	10.6	8.4	2.5	6.4	16.1
MSCI Emerging Markets ex China	15.0	12.1	4.6		
MSCI China	4.9	2.0	(2.7)	3.9	23.4
MSCI ACWI	18.5	13.5	8.8	9.2	14.5
MSCI ACWI (Local)	18.0	12.8	9.4	10.3	13.3
Bloomberg US Gov't / Credit	2.1	(2.9)	1.0	1.6	4.6
ICE BOFA High Yield BB/B	6.2	3.6	3.5	4.3	7.2
Bloomberg U.S. TIPS	2.0	(5.4)	2.6	2.0	4.9

Source: Factset, SWIB

Economic Update

Summary

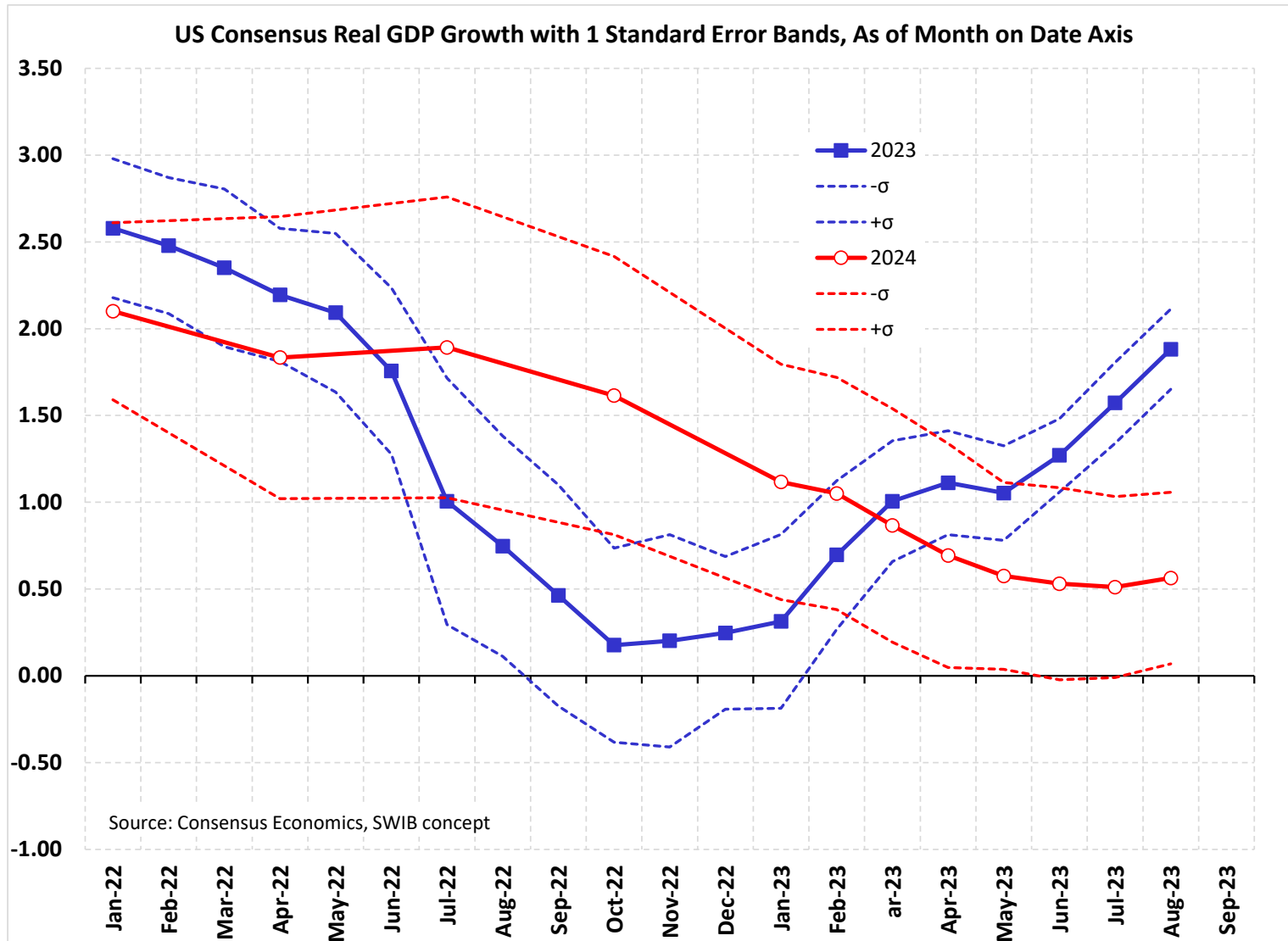
- Despite large and rapid Fed rate hikes, the economy has been resilient, skirting recession thus far.
- The labor market remains tight, with solid jobs growth and strong nominal wage growth.
- Consumer balance sheets are in good shape. Household holdings of liquid assets are still elevated, a consequence of sizeable government pandemic stimulus and the fact of depressed spending on discretionary services during 2020-22.
- Inflation is behaving better on the margin, with core PCE measures in the 3.4% to 4.6% range in recent months. This is still well above the Fed's 2.0% target, however.
- Goods inflation has rebounded somewhat, due in large part to used motor vehicles.
- Services inflation ex housing has eased to the low end of the post-pandemic range. Sustainable disinflation depends on this trend continuing.
- Interestingly, "missing workers" might no longer be a supply-side problem, as the labor force has returned to levels that were expected for 2023 before the COVID shock occurred.
- While it's good news that the economy has avoided recession thus far, it's difficult to see inflation normalizing back to the 2% Fed target without a more significant growth slowdown that brings demand and supply into better alignment.
- The implication is that the Fed might need to hike a bit above the 5.5% peak currently priced by markets for 2023, and keep Fed funds at restrictive levels for longer than currently priced. This said, Fed pricing currently looks more reasonable than it has at any point in the current hiking cycle.

Inflation & Growth Outlook

SWIB outlook is for moderating inflation, at a slower pace than consensus or last FOMC SEP

Core PCE Outlook	Wgt	Y/Y Actual			Y/Y Forecast			Contribs to change				
		Sep-22	Dec-22	Jun-23	Dec-23	Dec-24	Dec-25	Dec-22	Jun-23	Dec-23	Dec-24	Dec-25
Core PCE	100.0%	5.2	4.6	4.1	3.7	2.9	2.5	-0.58	-0.52	-0.44	-0.73	-0.39
New motor vehicles	2.4%	9.3	7.4	4.4	5.0	3.5	3.0	-0.05	-0.07	0.02	-0.04	-0.01
Used motor vehicles	1.6%	7.1	-6.7	-4.6	-2.0	1.0	1.0	-0.23	0.03	0.04	0.05	0.00
Other durable goods	10.0%	4.6	2.1	2.0	2.5	2.5	2.0	-0.26	-0.29	0.33	0.00	-0.05
Core nondurables	12.9%	5.7	4.9	3.9	3.5	2.0	2.0	-0.11	-0.13	-0.06	-0.19	0.00
Housing	17.0%	6.8	7.7	8.0	6.8	5.3	3.5	0.16	0.05	-0.20	-0.25	-0.31
Core utilities	0.8%	4.9	5.1	5.8	4.0	3.5	3.0	0.00	0.01	-0.01	0.00	0.00
Health care	17.9%	2.5	2.5	2.2	2.5	2.5	2.5	0.00	-0.05	0.05	0.00	0.00
Motor vehicle rental	0.2%	-1.4	-1.1	-16.5	-10.0	1.0	2.0	0.00	0.13	-0.15	0.02	0.00
Air transportation	1.1%	33.1	18.8	-5.5	-2.0	3.5	2.5	-0.13	-0.25	0.04	0.06	-0.01
Other transp services	2.4%	11.0	12.3	9.1	6.0	2.5	2.5	0.03	-0.07	-0.07	-0.08	0.00
Food services	7.1%	7.9	7.5	7.1	5.0	3.0	3.0	-0.02	-0.02	-0.15	-0.14	0.00
Accommodation	1.3%	3.0	1.7	3.3	3.5	2.5	2.0	-0.02	0.02	0.00	-0.01	-0.01
Education services	2.0%	2.3	2.5	2.5	2.2	2.2	2.2	0.00	0.00	-0.01	0.00	0.00
Financial & insurance	8.5%	0.2	0.6	3.7	2.0	2.5	2.5	0.03	0.27	-0.15	0.04	0.00
Other household svcs	11.5%	4.5	5.0	3.4	3.0	2.2	2.2	0.06	-0.18	-0.04	-0.09	0.00
Non-profit consumption	3.4%	9.9	7.6	8.8	5.0	2.5	2.5	-0.08	0.04	-0.13	-0.08	0.00
Core PCE forecasts		Sep-22	Dec-22	Jun-23	Dec-23	Dec-24	Dec-25					
SWIB		5.2	4.6	4.1	3.7	2.9	2.5					
FOMC SEP 14-Jun-23		5.2	4.6	4.1	3.9	2.6	2.2					
BBG Consensus 25-Aug-23		5.2	4.6	4.1	3.6	2.4	--					

Consensus growth for 2023: recession called off. Sluggish but positive growth in 2024.



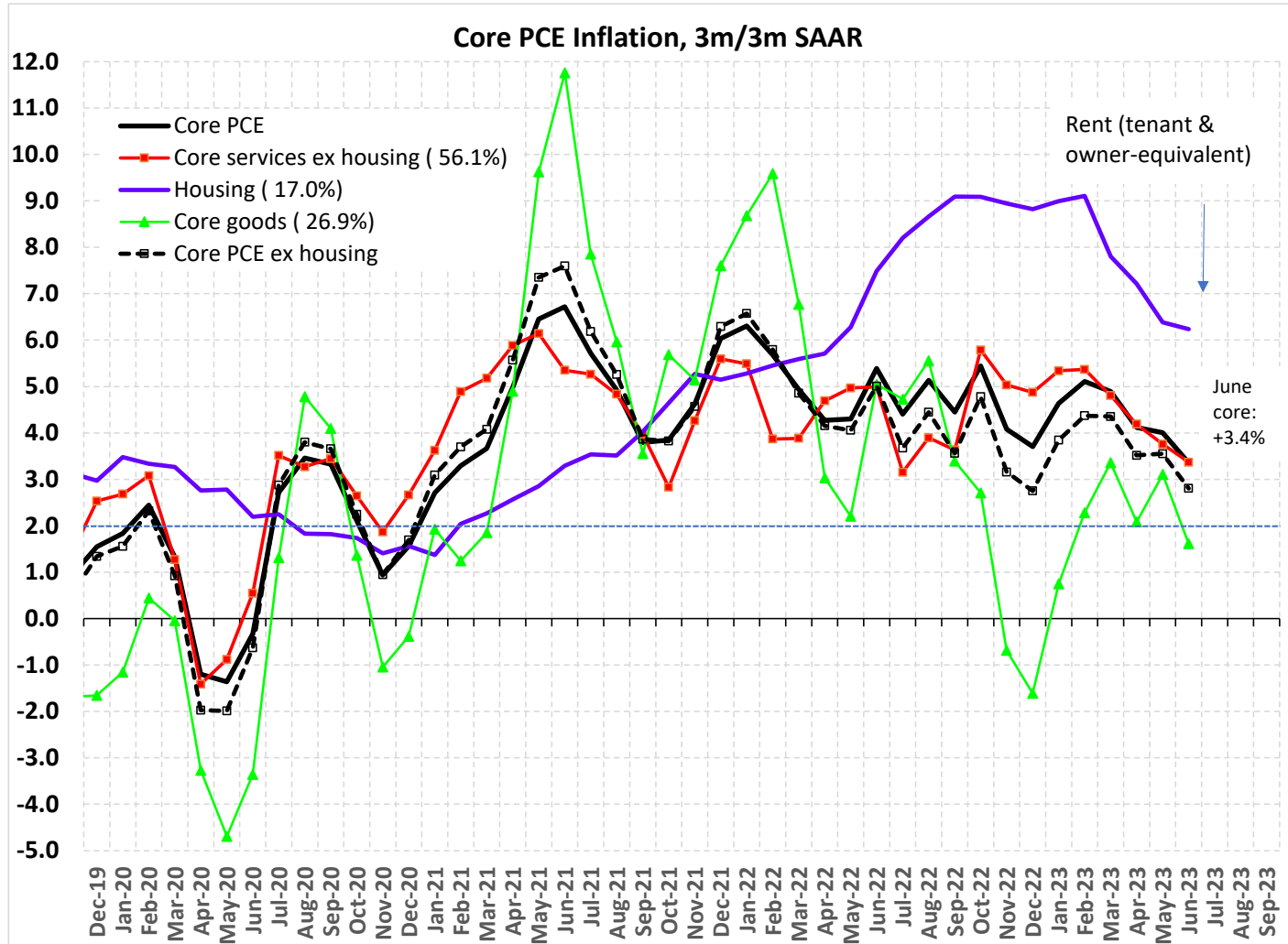
- Tail risk of 2023 recession has been removed...
- ...as growth this year has been pretty good.
- Mean forecast is for a “soft landing” in 2024, with soft but positive +0.6% growth.

Real GDP growth and final sales growth have been respectable

US: RGDP Q/Q SAAR													US: RGDP Q/Q SAAR		% Wgt	
	Dec/20	Mar/21	Jun/21	Sep/21	Dec/21	Mar/22	Jun/22	Sep/22	Dec/22	Mar/23	Jun/23	Mar/23	Jun/23	Δ	Mar/23	Jun/23
Real GDP	3.9	6.3	7.0	2.7	7.0	-1.6	-0.6	3.2	2.6	2.0	2.4	2.0	2.4	0.4	100.0	100.0
Personal consumption	3.9	10.8	12.1	3.0	3.1	1.3	2.0	2.3	1.0	4.2	1.6	4.2	1.6	-2.5	70.8	70.7
Gross private investment	18.0	-5.4	0.9	10.4	32.0	5.4	-14.1	-9.6	4.5	-11.9	5.7	-11.9	5.7	17.6	17.6	17.8
Private fixed inv	16.8	9.7	5.8	-1.1	0.6	4.8	-5.0	-3.5	-3.8	-0.5	4.9	-0.5	4.9	5.4	17.3	17.4
Nonresidential	11.5	8.9	9.9	0.6	1.1	7.9	0.1	6.2	4.0	0.6	7.7	0.6	7.7	7.1	14.8	14.9
Residential	33.4	11.6	-4.8	-5.8	-1.1	-3.1	-17.8	-27.1	-25.1	-4.0	-4.1	-4.0	-4.1	-0.2	2.8	2.8
Δ in private inventories*	0.5	-3.0	-1.3	1.9	5.0	0.3	-2.1	-1.4	2.0	-2.6	0.1	-2.6	0.1	2.8	0.0	0.0
Net exports G&S*	-2.4	-1.3	-0.8	-1.3	-0.6	-3.8	1.2	3.3	0.6	0.6	0.1	0.6	0.1	-0.5	-6.0	-5.9
Govt consn & inv	-0.1	6.5	-3.0	-0.2	-0.9	-2.3	-1.6	3.7	3.8	5.0	2.6	5.0	2.6	-2.4	17.2	17.2
Federal	1.8	17.3	-6.8	-7.2	0.0	-5.3	-3.4	3.7	5.8	6.0	0.9	6.0	0.9	-5.1	6.9	6.8
Defense	11.8	-8.9	-2.7	-3.1	-5.3	-8.5	1.5	4.7	2.2	2.5	2.5	2.5	2.5	0.0	3.9	3.9
Nondefense	-10.9	64.9	-12.0	-12.2	7.4	-1.1	-9.2	2.5	10.6	10.5	-1.1	10.5	-1.1	-11.6	3.0	3.0
State & local	-1.3	0.1	-0.4	4.6	-1.6	-0.4	-0.6	3.7	2.6	4.4	3.6	4.4	3.6	-0.8	10.3	10.3
S&L consn	-3.2	1.6	2.4	6.1	-1.1	0.9	1.1	1.9	1.9	3.3	2.6	3.3	2.6	-0.7	8.5	8.5
S&L investment	7.9	-6.4	-12.5	-2.6	-3.6	-6.6	-8.4	13.3	5.9	9.8	8.5	9.8	8.5	-1.3	1.8	1.8
Gross domestic purchases	5.5	7.1	7.4	3.6	6.9	1.4	-1.6	0.3	2.1	1.4	2.5	1.4	2.5	1.1		
Final sales to domestic purchasers	5.3	9.9	8.2	1.7	2.0	1.3	0.2	1.5	0.7	3.5	2.3	3.5	2.3	-1.2		
Final sales to private domestic purchasers	6.5	10.6	10.7	2.1	2.6	2.1	0.5	1.1	0.0	3.2	2.3	3.2	2.3	-0.9		
US: RGDP Q/Q SAAR Arithmetic Contribution													US: RGDP Q/Q SAAR Arithmetic Contribution			
Real GDP	3.9	6.2	6.8	2.6	6.8	-1.6	-0.6	3.2	2.5	2.0	2.4	2.0	2.4	0.4		
PCE	2.7	7.2	8.1	2.1	2.2	0.9	1.4	1.6	0.7	2.9	1.2	2.9	1.2	-1.7		
Gross private investment	3.1	-1.0	0.2	1.8	5.2	1.0	-2.9	-1.9	0.8	-2.3	1.0	-2.3	1.0	3.3		
Private fixed inv	2.8	1.7	1.1	-0.2	0.1	0.8	-0.9	-0.6	-0.7	-0.1	0.8	-0.1	0.8	0.9		
Nonresidential	1.6	1.2	1.4	0.1	0.2	1.1	0.0	0.9	0.6	0.1	1.1	0.1	1.1	1.0		
Residential	1.1	0.4	-0.2	-0.2	0.0	-0.1	-0.7	-1.0	-0.9	-0.1	-0.1	-0.1	-0.1	0.0		
Δ in private inventories	0.5	-3.0	-1.3	1.9	5.0	0.3	-2.1	-1.4	2.0	-2.6	0.1	-2.6	0.1	2.8		
Net exports G&S	-2.4	-1.3	-0.8	-1.3	-0.6	-3.8	1.2	3.3	0.6	0.6	0.1	0.6	0.1	-0.5		
Govt consn & inv	0.0	1.1	-0.5	0.0	-0.2	-0.4	-0.3	0.6	0.6	0.8	0.4	0.8	0.4	-0.4		
Federal	0.1	1.2	-0.5	-0.5	0.0	-0.4	-0.2	0.2	0.4	0.4	0.1	0.4	0.1	-0.3		
Defense	0.5	-0.4	-0.1	-0.1	-0.2	-0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0		
Nondefense	-0.3	1.5	-0.4	-0.4	0.2	0.0	-0.3	0.1	0.3	0.3	0.0	0.3	0.0	-0.3		
State & local	-0.1	0.0	0.0	0.5	-0.2	0.0	-0.1	0.4	0.3	0.4	0.4	0.4	0.4	-0.1		
S&L consn	-0.3	0.1	0.2	0.5	-0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.3	0.2	-0.1		
S&L investment	0.1	-0.1	-0.3	0.0	-0.1	-0.1	-0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.0		
Gross domestic purchases	5.6	7.3	7.6	3.8	7.1	1.5	-1.8	0.4	2.2	1.4	2.6	1.4	2.6	1.1		
Final sales to domestic purchasers	5.4	10.0	8.5	1.8	2.1	1.4	0.2	1.6	0.7	3.6	2.4	3.6	2.4	-1.2		
Final sales to private domestic purchasers	5.5	8.9	9.1	1.9	2.3	1.8	0.5	0.9	0.0	2.8	2.0	2.8	2.0	-0.8		

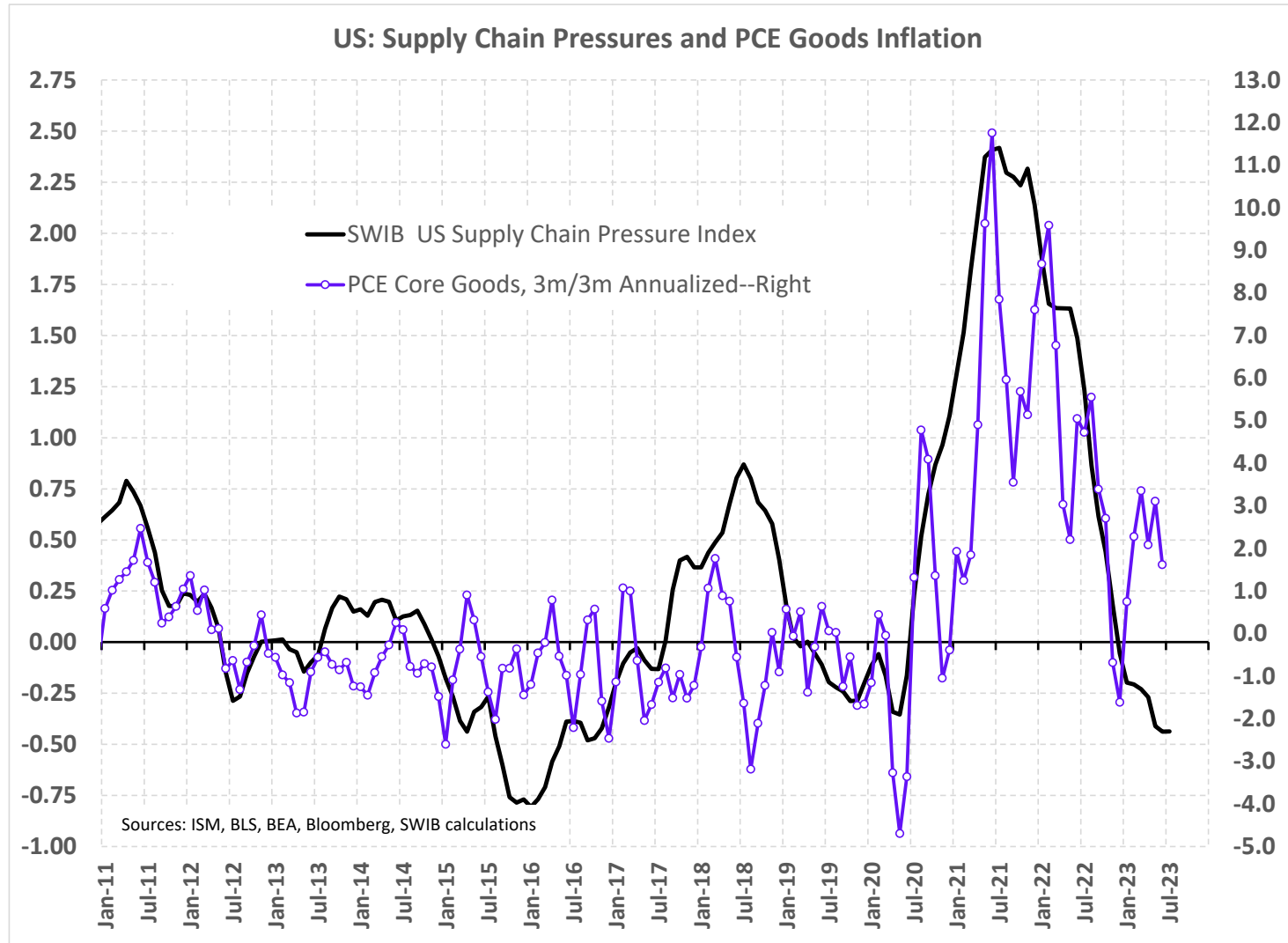
- Personal consumption growth has been solid, supported by a strong labor market and high levels of household liquid assets.
- Residential investment is the only category that is unambiguously in recession, but it has a small weight in GDP.
- The two quarters of GDP contraction in Q1 and Q2 '22 fit one definition of recession, but were a bit technical, involving adjustments in inventories and net exports.

Jun-23 core PCE reading was favorable: +3.4% 3m/3m, lowest since Feb-21



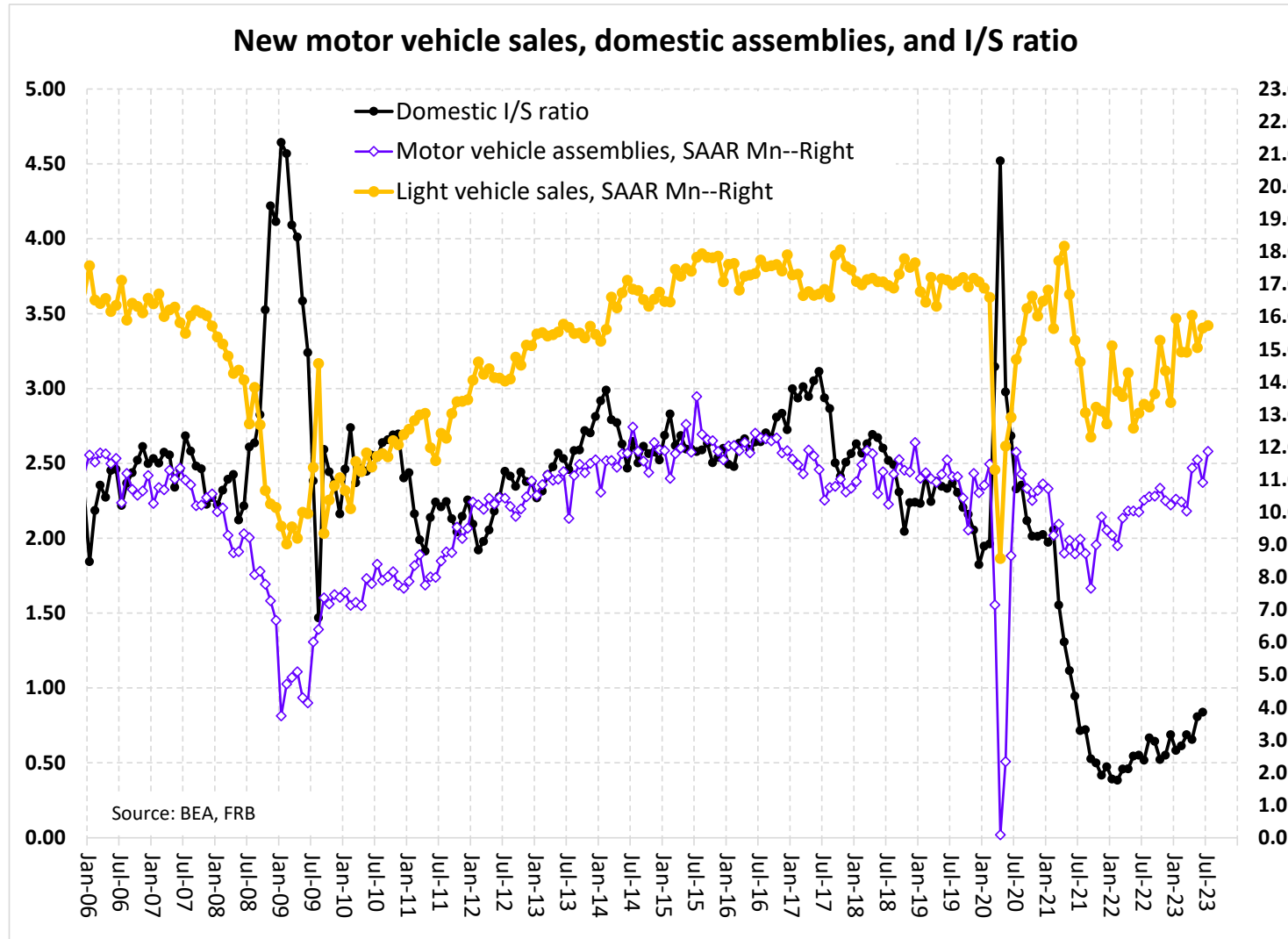
- Services ex housing are labor-intensive and the majority of personal consumption...
- ...on this measure inflation has been behaving better. Sustainable disinflation depends on the trend continuing.
- Housing inflation (tenant rent, owner-equivalent rent) has eased but remains at a 30-year high.
- “Supercore” (core ex housing) is at 2.8%, same rate as in Dec-22, before the resurgence of goods inflation.

Supply-chain pressures have eased—but goods inflation has rebounded somewhat



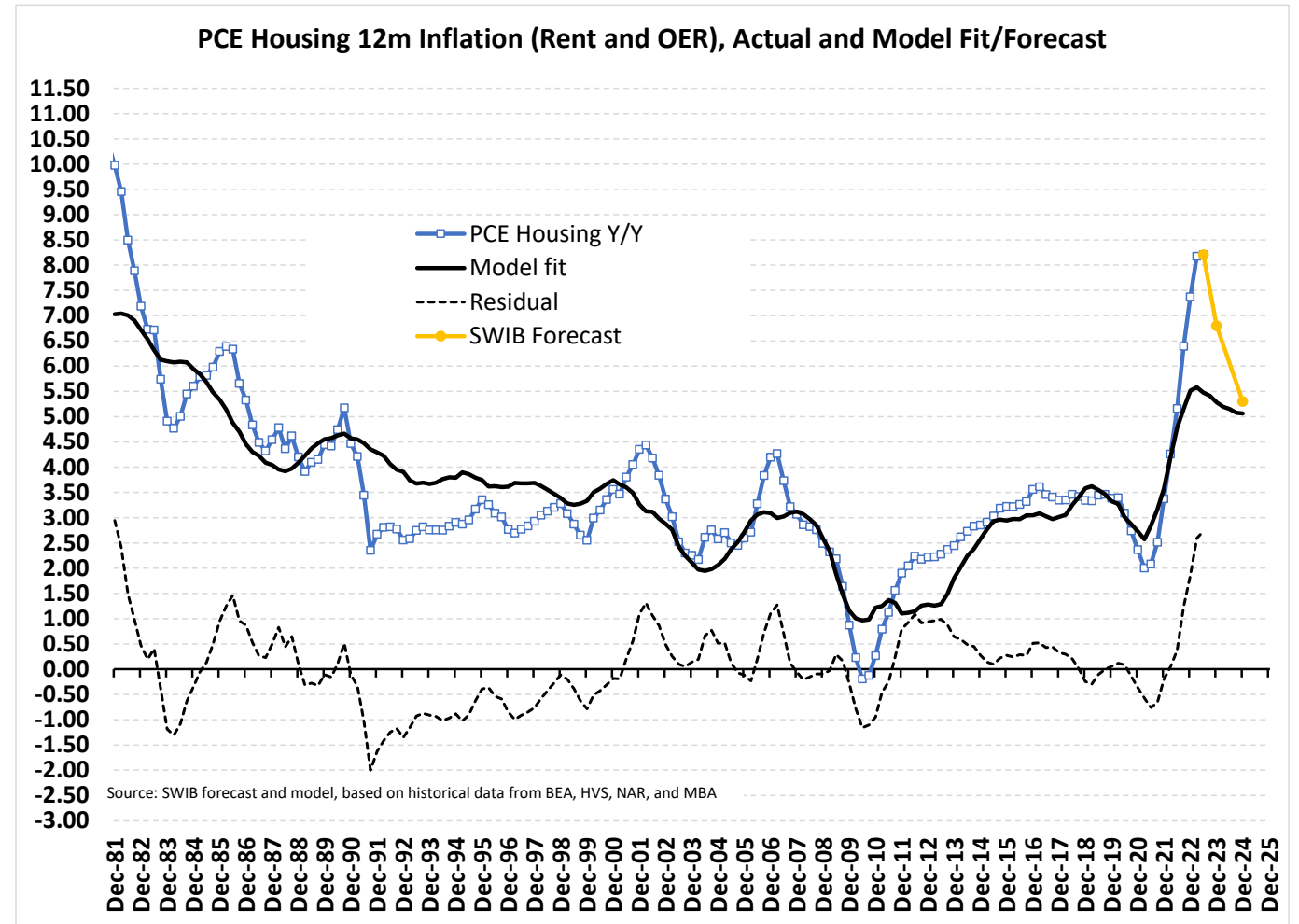
- A substantial portion of the goods re-inflation this year is due to used motor vehicles.
- On-the-ground reports suggest there are still lingering supply issues for autos.

Motor vehicle production is back to pre-COVID rates, but inventories are still low

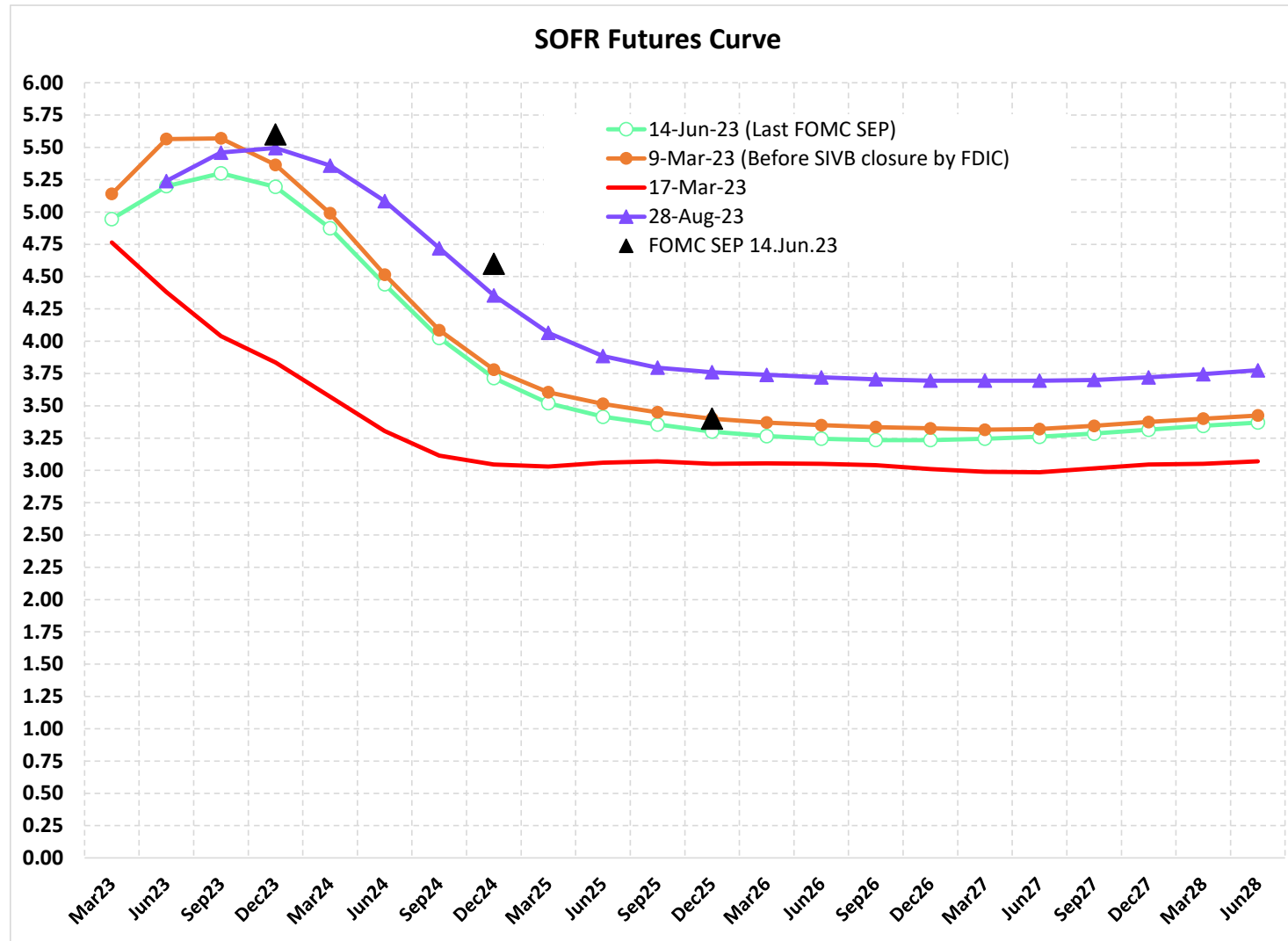


Rent inflation is high, but moderation likely through end-'24.

- Rental inflation pickup has been sharp.
- High-priced housing is unaffordable for many potential buyers, forcing them to rent.
- The rental vacancy rate is at a 40-year low.
- However, a period of slower house price appreciation is likely ahead.
- Improved housing affordability should help cap rental inflation. This process will take time, and lower mortgage rates need to be part of the adjustment.
- Early evidence from high-frequency rental indicators, e.g., Zillow index, show rental inflation moderation has already begun.



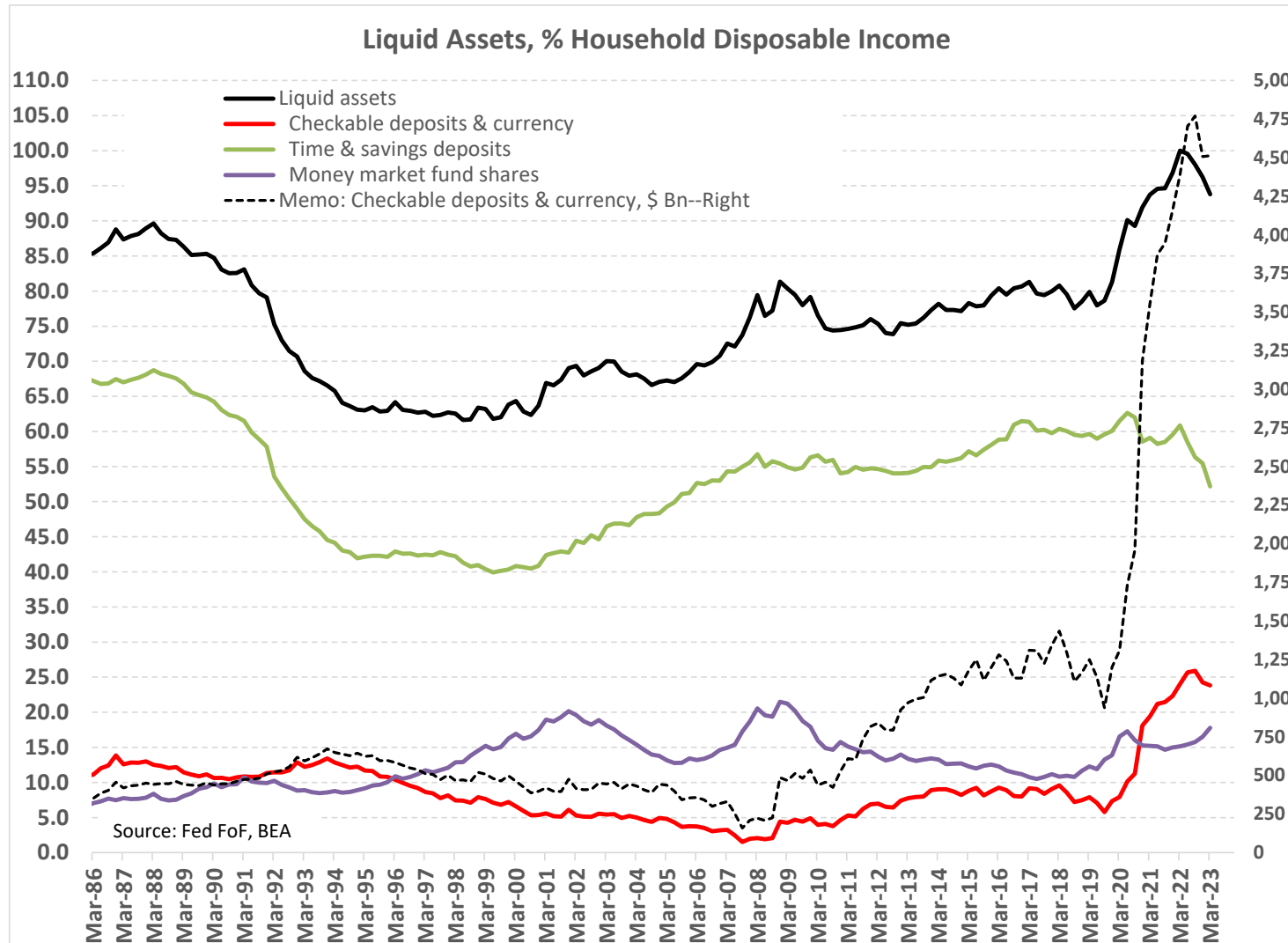
Market now pricing a more hawkish Fed than was the case 14-Jun-2023 (last FOMC SEP)



- Next Fed decision (and new SEP) comes on 20-Sep
- The 17-Mar low in SOFR futures followed a period of regional banking sector stress

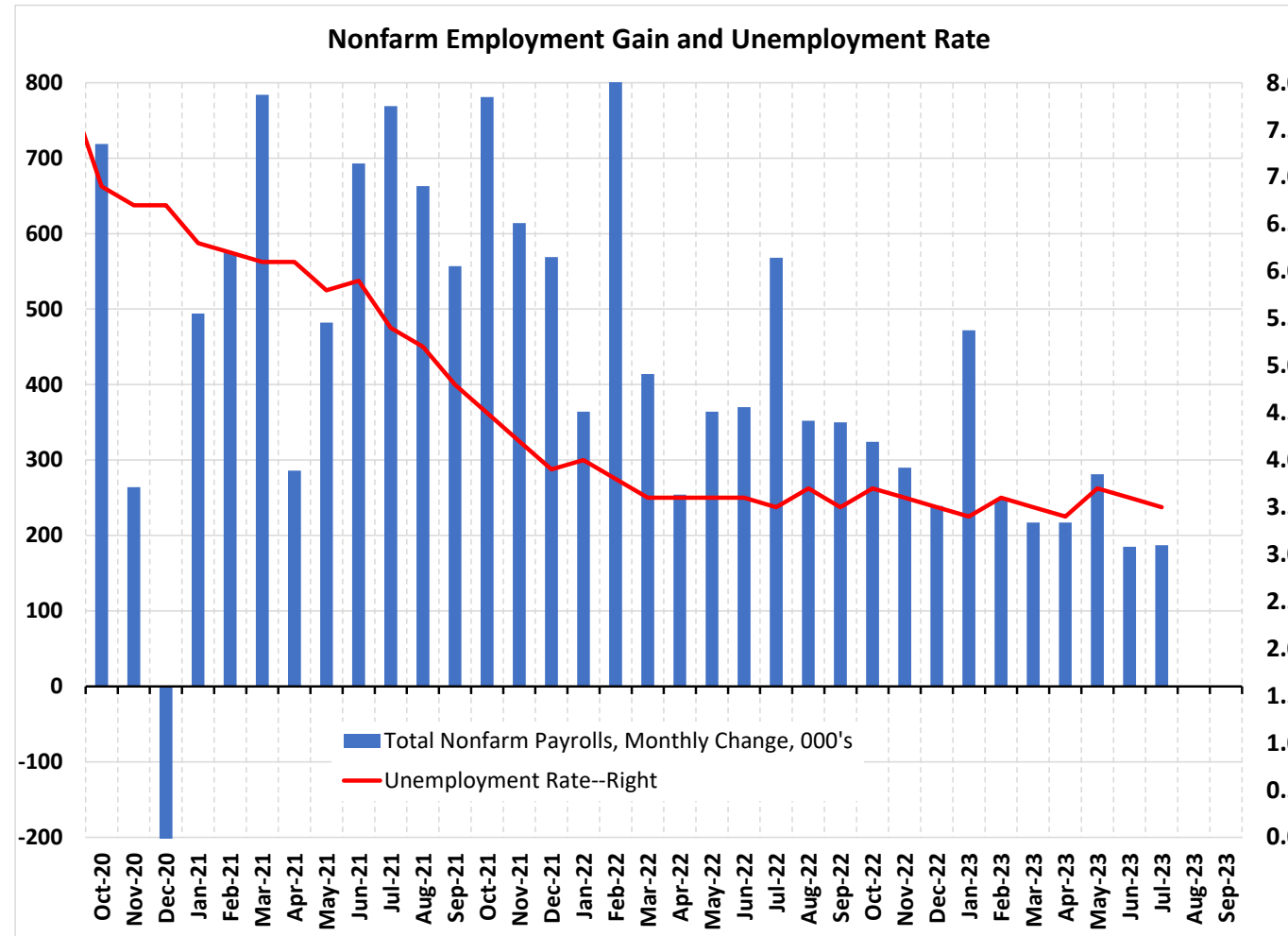
High savings rates and pandemic relief payments have left households with lots of liquid assets

About \$4.5 trillion sitting in checking accounts & currency—a decent cushion for whatever lies ahead

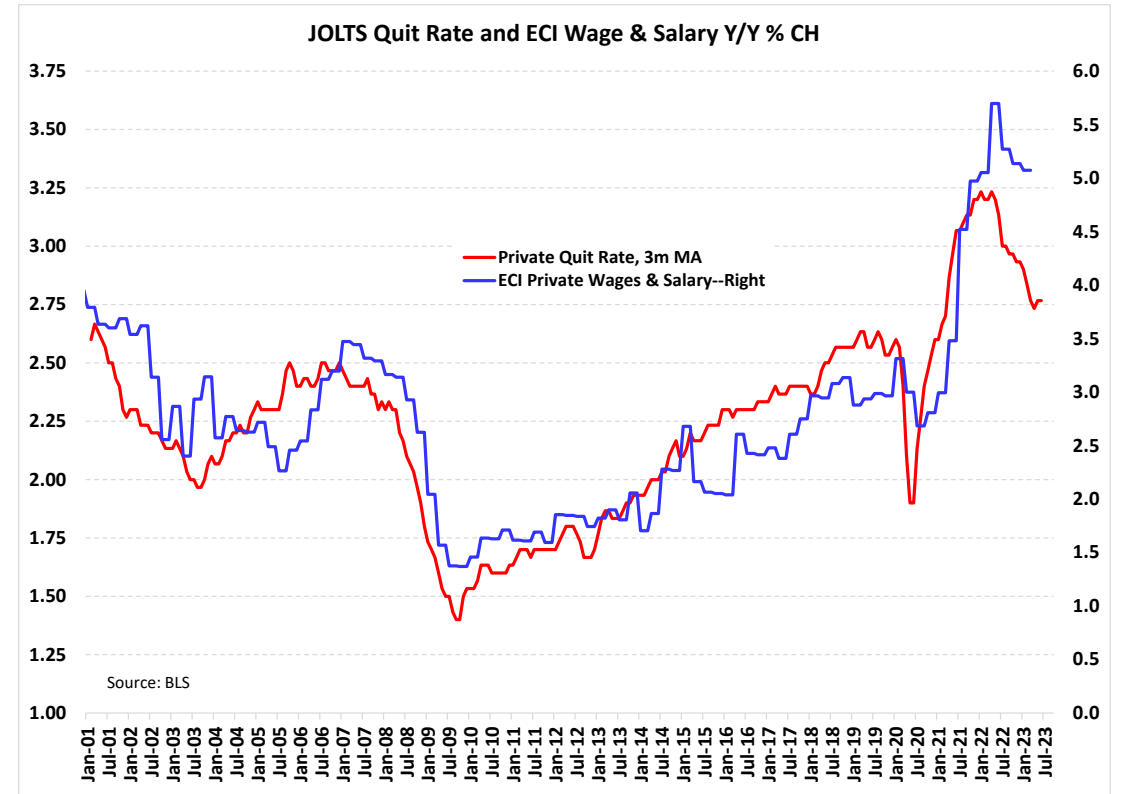
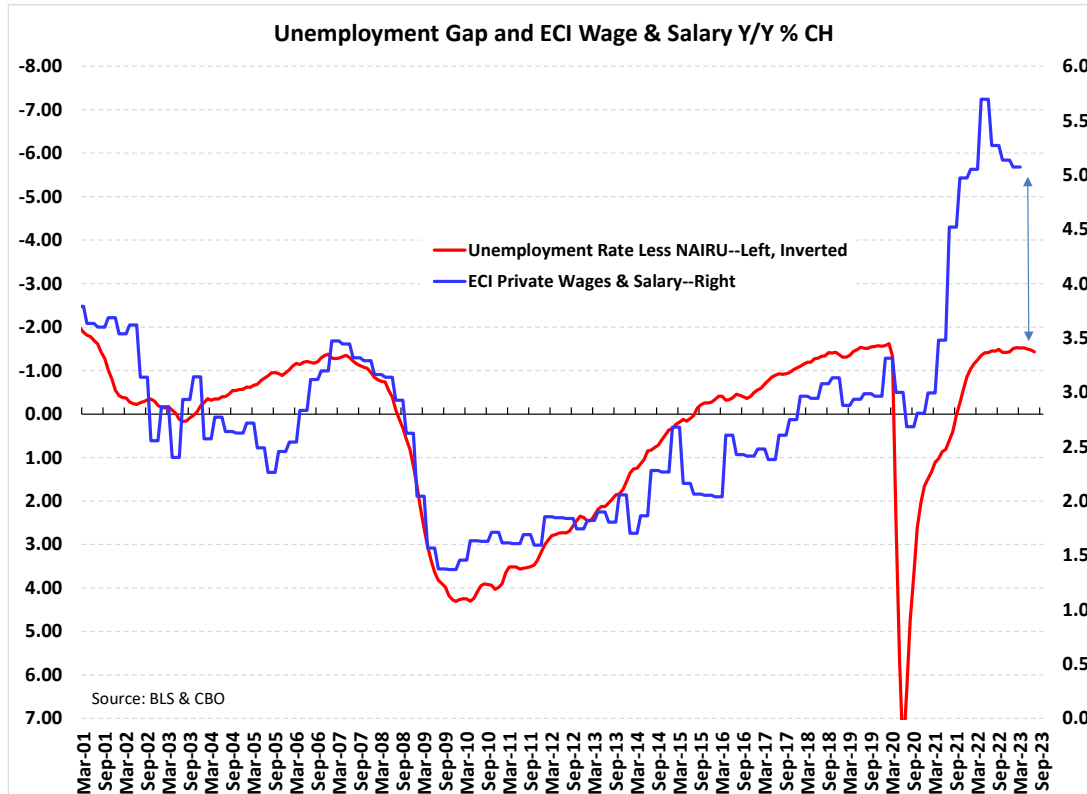


Labor Market

The labor market remains tight: it's hard to say we're (already) in recession given slowing but still sizeable employment gains and a low unemployment rate



**Traditional wage Phillips curve can't explain current high wage inflation.
Quit rate the better overall indicator of labor market tightness—it is still high but has fallen.**

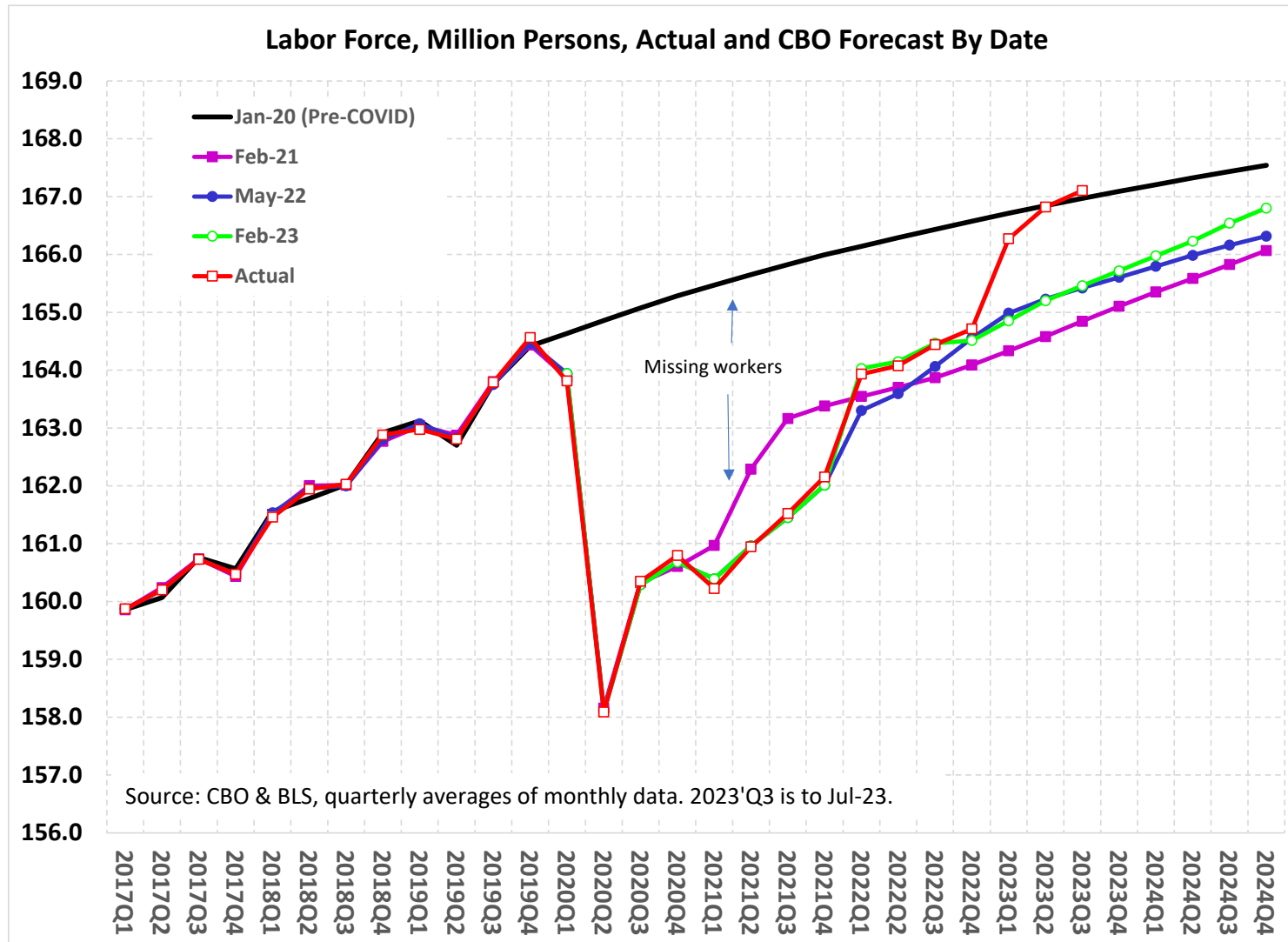


Labor force defined

- Are there missing workers, in the sense of the *supply* of workers as measured by the labor force?
- This question is sensibly counter-questioned: missing relative to what?
- A sensible counter-answer: missing relative to what was expected before COVID...
- ... which caused a historically large disruption to US labor supply.
- “Expectations pre-COVID” are herein taken to be CBO projections as of Jan-2020.
- Labor supply is the labor force: the sum of
 - (1) the employed
 - (2) the unemployed (those not employed but actively seeking work)
- As an identity, the US labor force is
$$\text{Labor force} = (\text{Population 16+ years of age}^*) \times (\text{Labor force participation rate})$$
- Given this set of definitions, workers and potential workers (those unemployed who are actively seeking to work) can be “missing” if
 - (1) the population 16+ years of age is “missing” relative to pre-COVID expectation
 - (2) labor force participation is low relative to pre-COVID expectation
 - (3) Or: some multiplicative combination of (1) and (2)

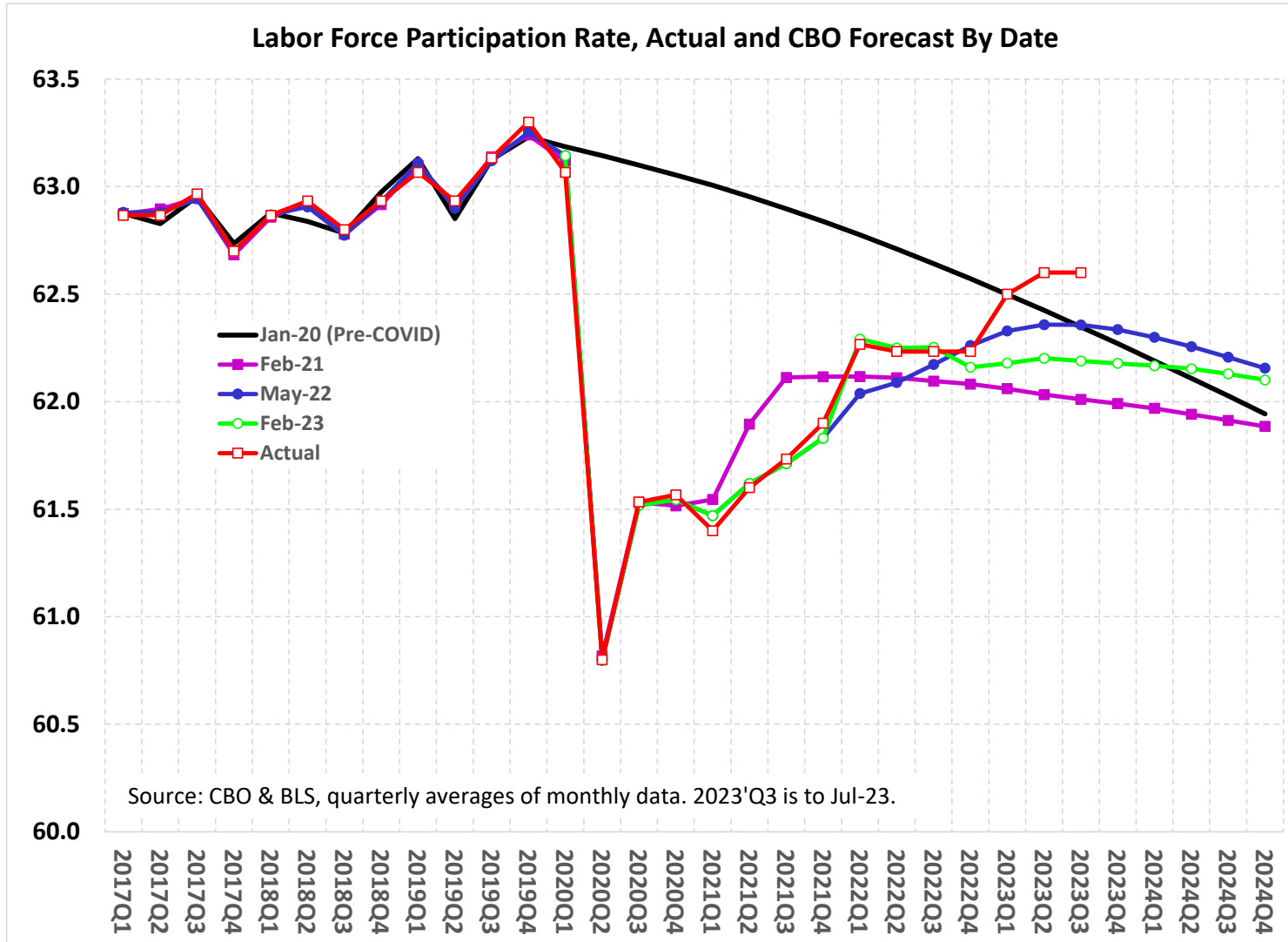
**Civilian noninstitutional population*: Persons 16 years of age and older residing in the 50 states and the District of Columbia, who are not inmates of institutions (e.g., penal and mental facilities, homes for the aged), and who are not on active duty in the Armed Forces. Source: BLS. Inquiring minds will wonder why the population 16+ is the base, given that labor force participation drops off sharply at 65+. Indeed, the official ILO base for international comparisons is the population 15-64. Nonetheless, the US retains the 16+ definition for the base, which is multiplied by the participation rate to get the “labor force” for the US.

The labor force has recovered to the level projected by CBO pre-COVID



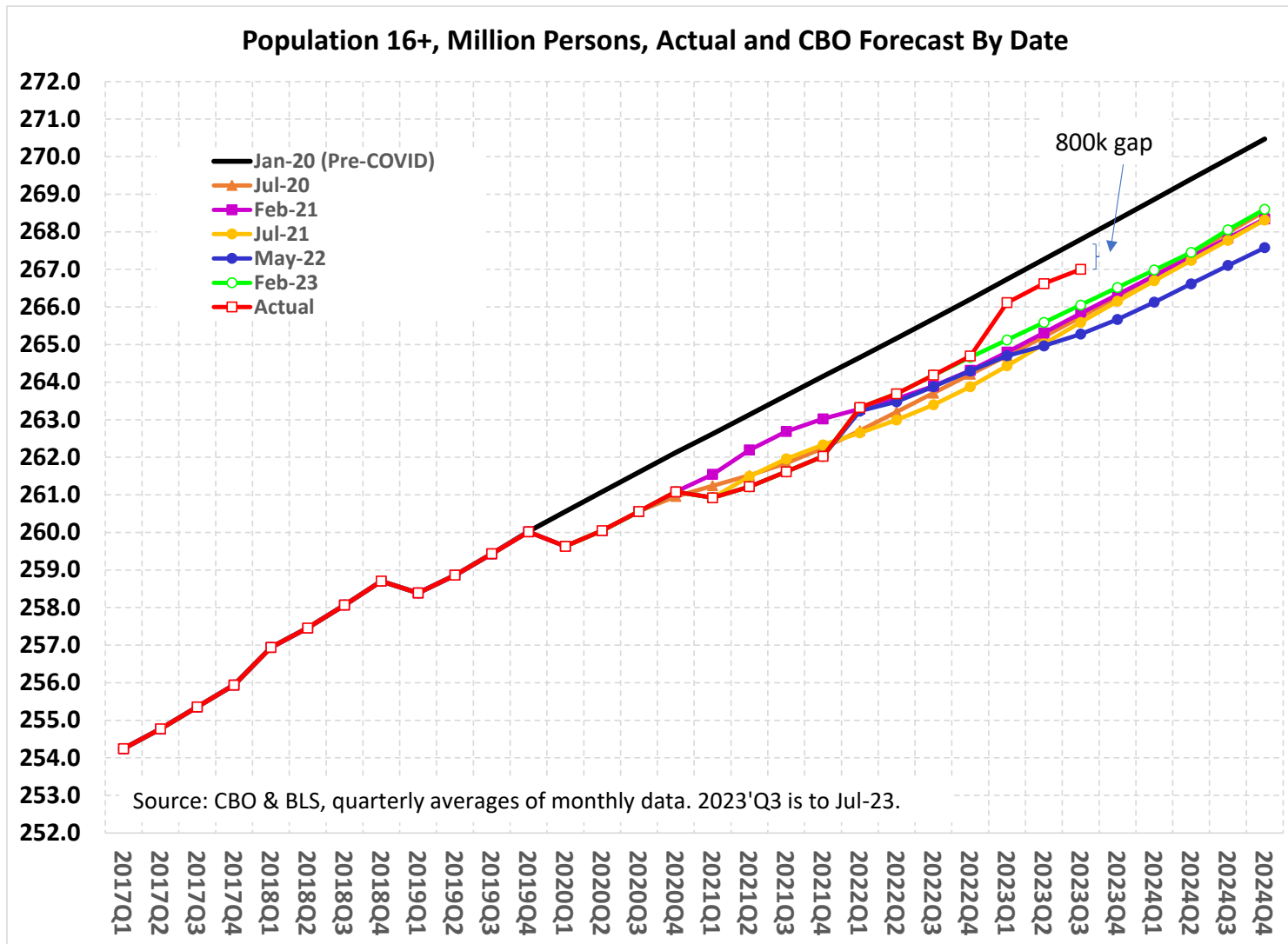
- The labor force has reached the level that was being forecast for 2023.
- Labor force increases have been particularly notable this year
- ...and are due both to higher participation and increases in the population 16+.

Participation is now above the pre-COVID projection—but with more demographic drag ahead



- Population aging drives secular declines in the participation rate.
- COVID caused a sharp decline in participation, followed by a rebound.
- Participation is now a bit above the level that was expected pre-COVID.
- Aging will continue as a secular depressor of participation in the future.

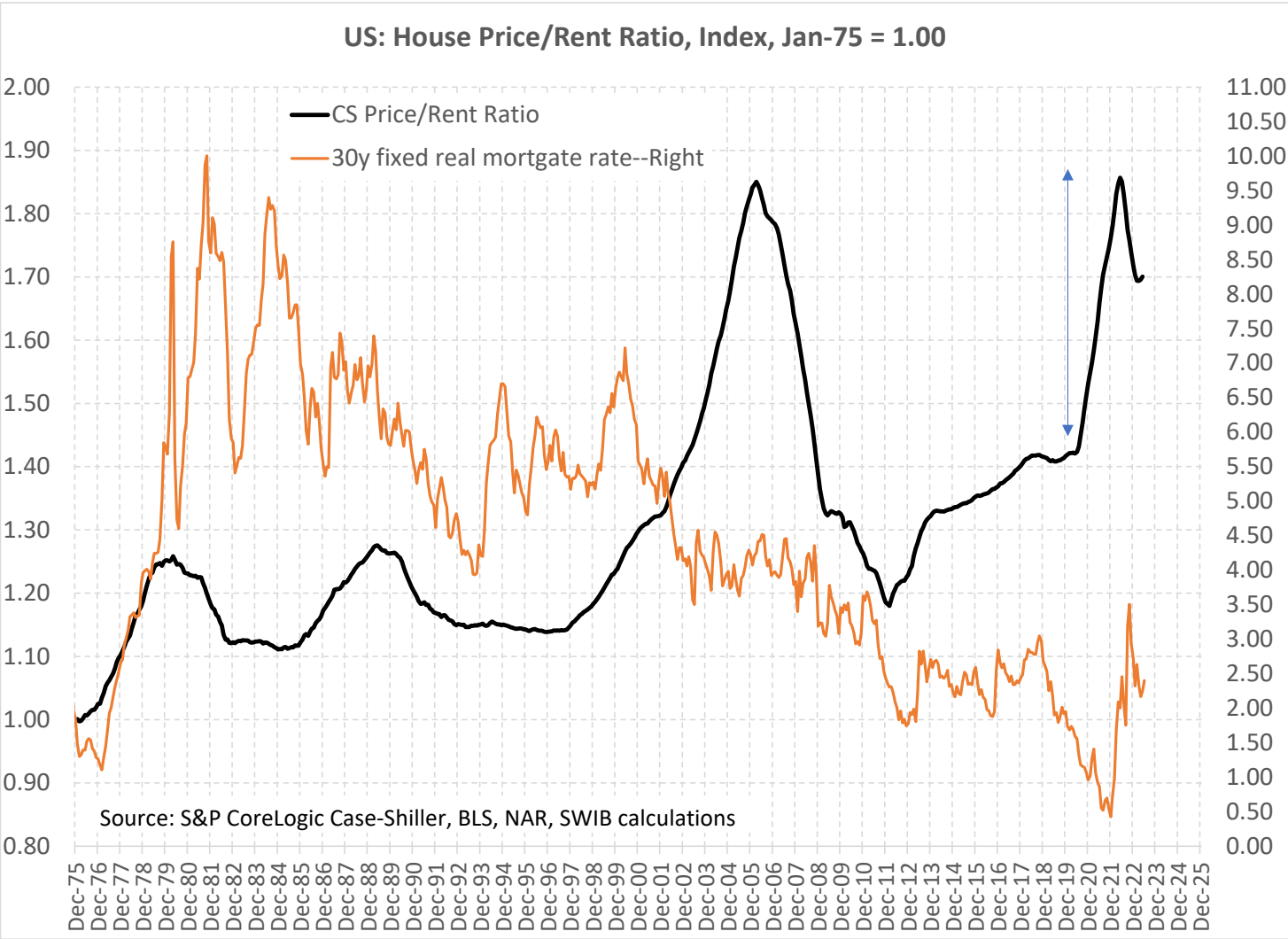
Population 16+ is 800k below its projected level, but is recovering



- 1.1 million died due to COVID, with 273,000 in the 15-64 population.
- There were also sizable decreases in net immigration during COVID.
- Recovery in the 16+ population has been notable, but it is still 800k persons short of the pre-COVID expectation.

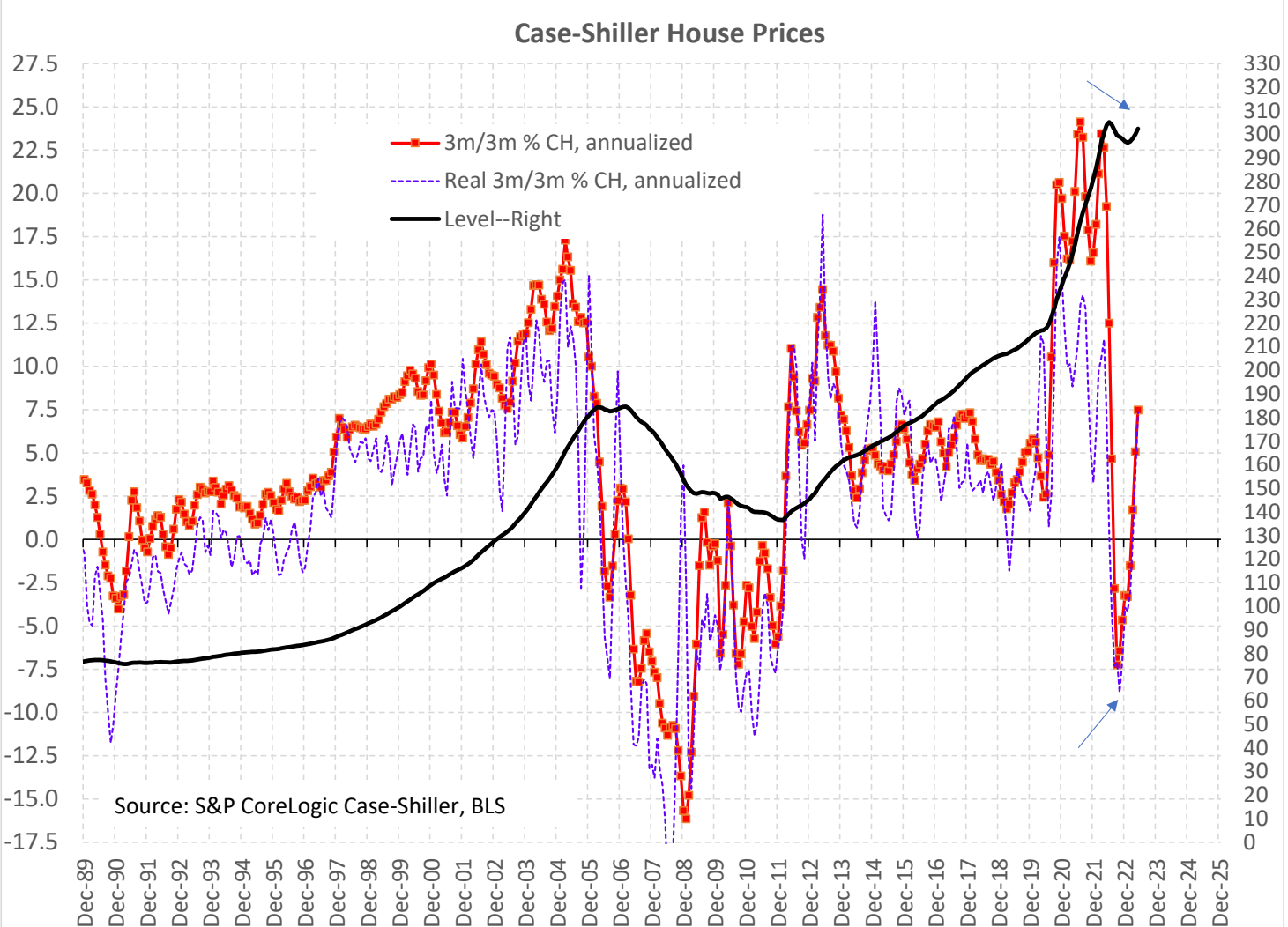
Housing Market

Housing market overvaluation reached lofty 2006 levels by Jun-22, but has been correcting since then

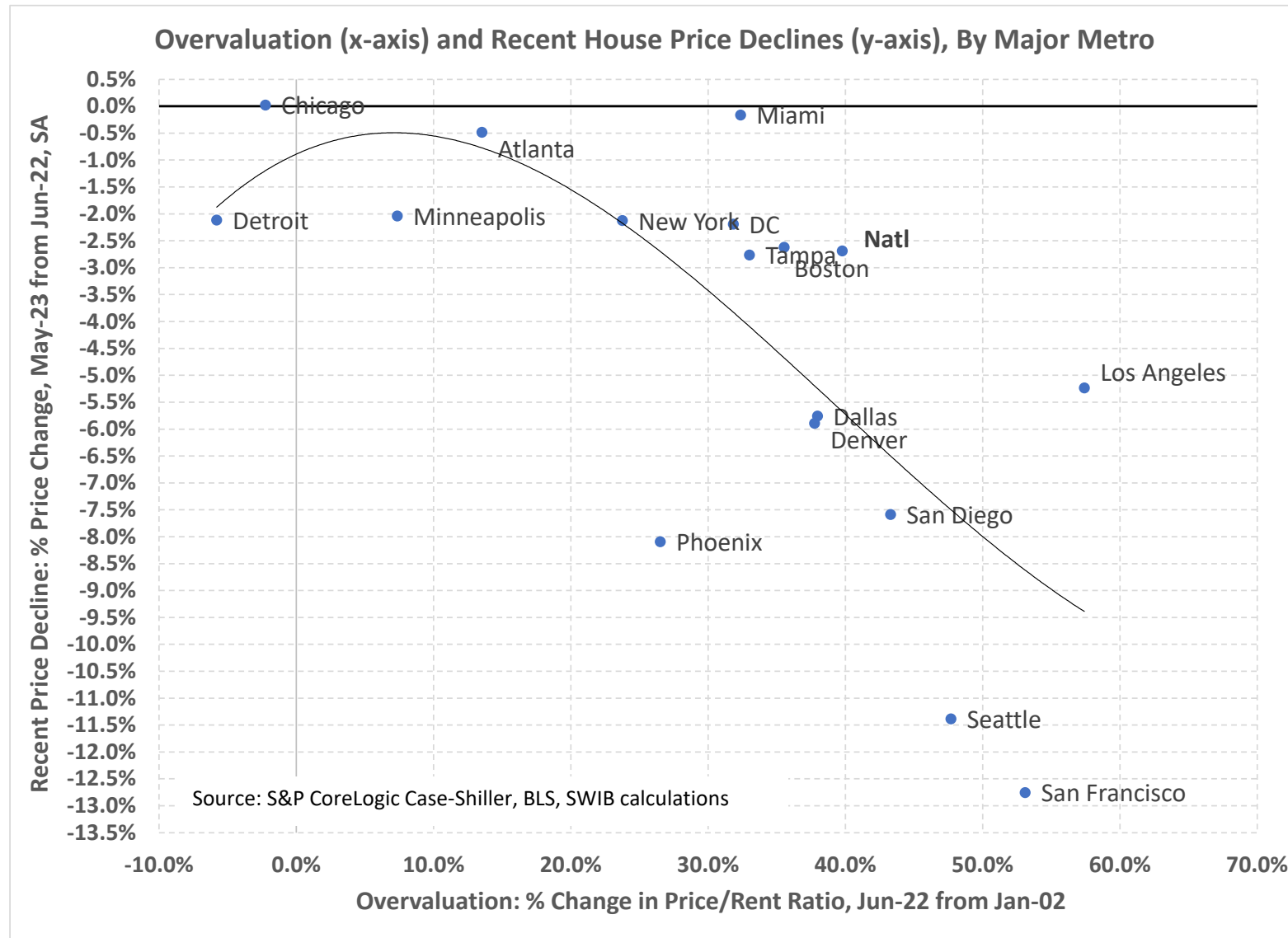


- Easy monetary policy, COVID-related 2nd-home buying were two big forces behind the run-up.
- Both forces are in reverse now, and extreme overvaluation has been partially corrected.

House prices have fallen since Jun-22, but are recently rising again



Cities with biggest price declines May-23 from Jun-22 became the most overvalued in the last 20 years



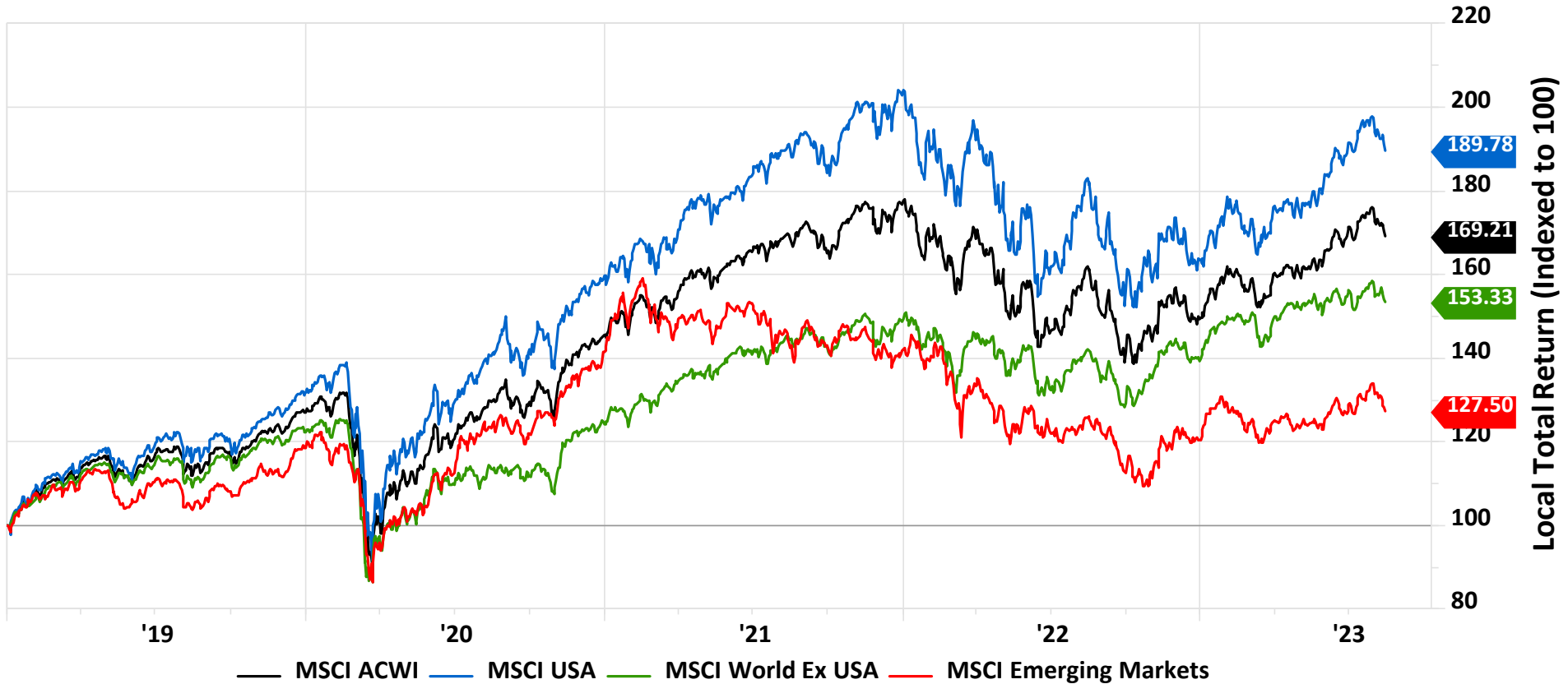
Asset Class Review

Global Equities - Performance

Both DM and EM equities strengthened in the last few months

08/17/2023

Local Equity Performance



Source: FactSet

Global Equities - Valuation

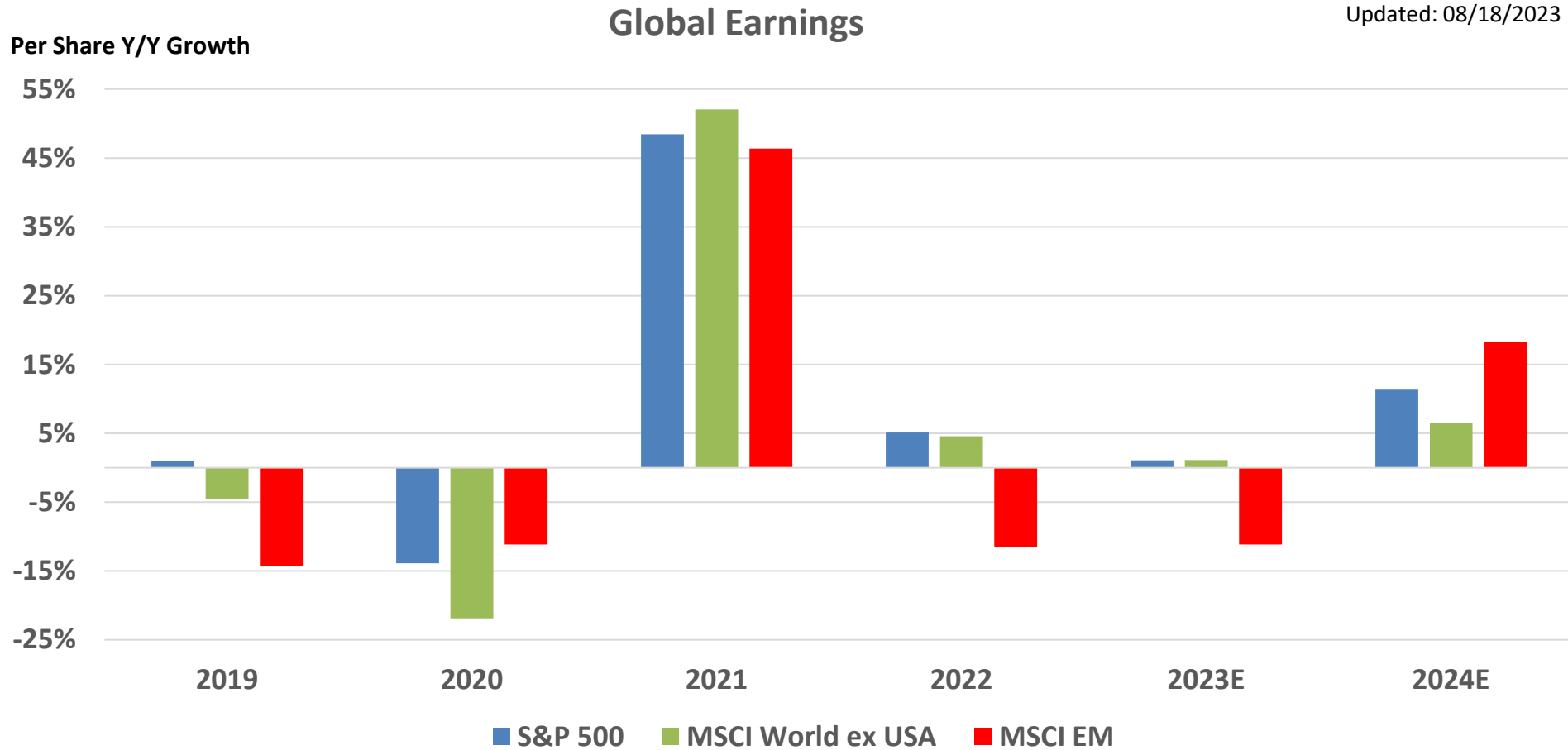
US P/E ratios are above 20-year average; EM as well, impacted by lower forward EPS



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

Earnings Growth

Earnings rebound expected in 2024



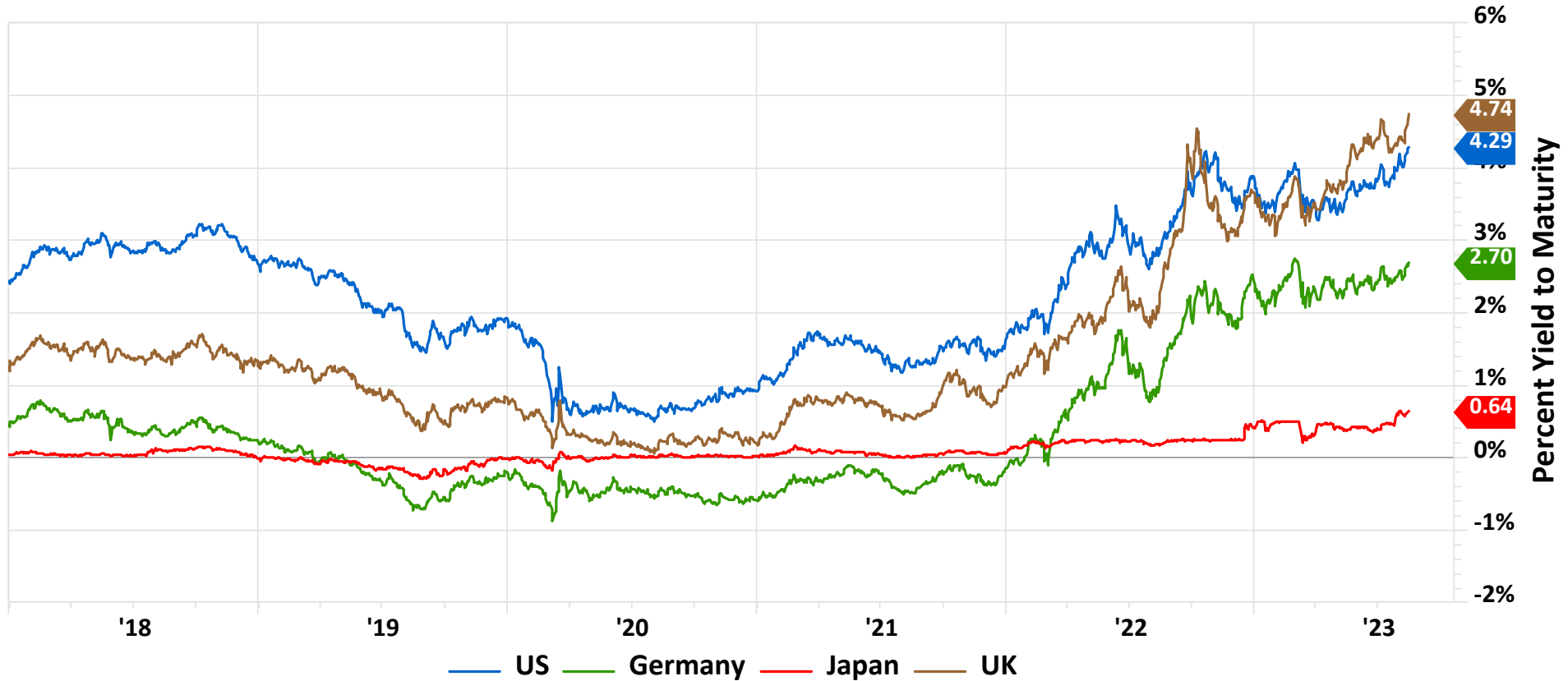
Source: Analyst Consensus; FactSet

Global Bonds

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

08/17/2023

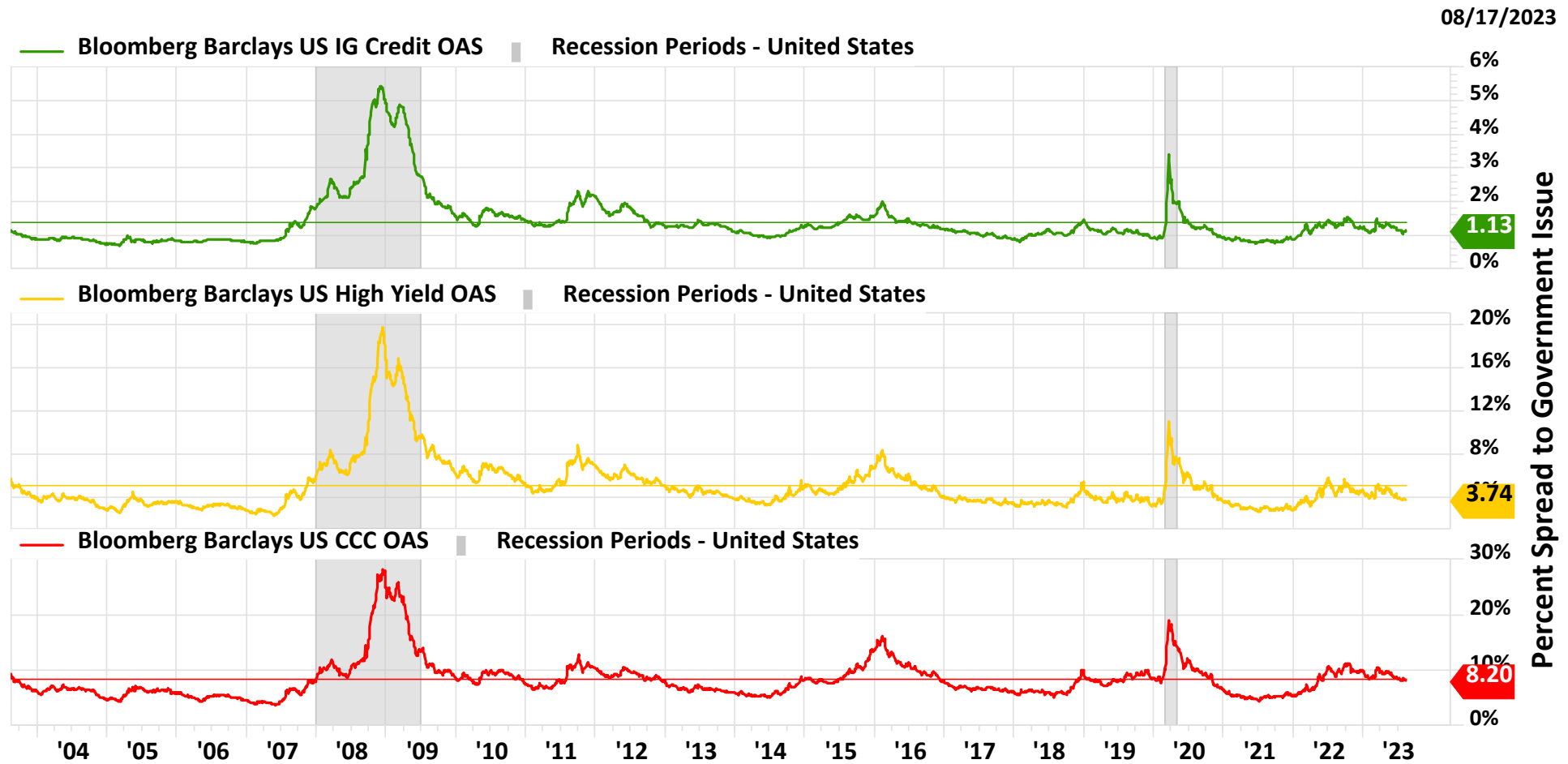
10-Year Government Bond Yields



Source: FactSet

Credit Sectors

Spread levels near the long run averages

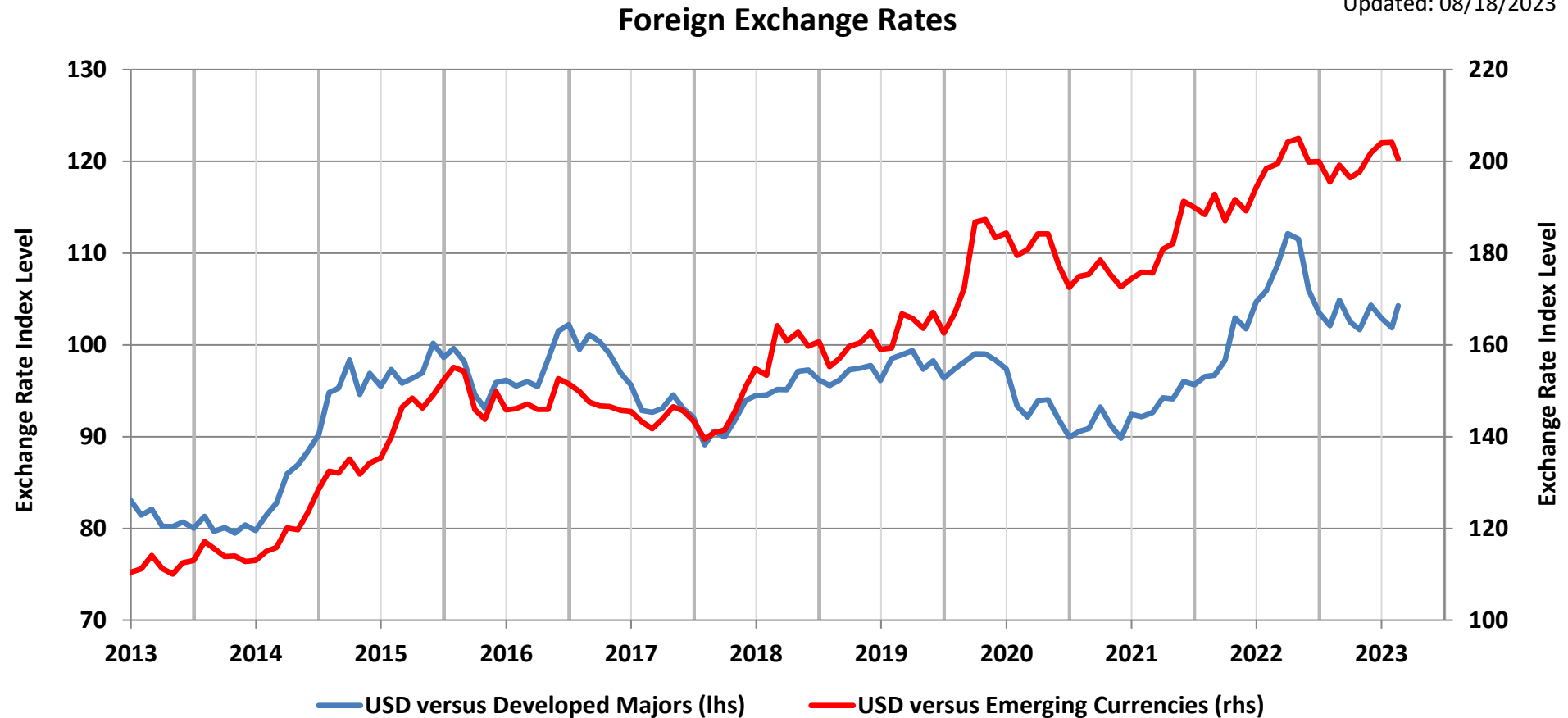


Source: FactSet

Currency Performance

U.S. Dollar stays in range year to date

Updated: 08/18/2023



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

U.S. Inflation

Medium term expectations have moved higher in recent weeks.

As of: 08/18/2023

US 5 Year Breakeven Inflation



Source: Bloomberg

Board Meeting

Tab 9 – Announcement of Matters Taken Up in Closed Session

Report on Closed Session

Board Meeting

Tab 10 – In the Absence of Questions, the Following Reports will be filed without comment (for informational purposes):

- A. Quarterly Charges to Funds Reports, Q2 2023
- B. Private Markets and Funds Alpha Commitments, Q2 2023
- C. Board Contact Log

No presentation unless requested

August 11, 2023

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

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

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

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

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

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

State statutes require the State of Wisconsin Investment Board (SWIB) to report all expenses charged to the trust funds under management and the number of full-time equivalent positions created or abolished during the quarter¹. The information contained in this report is for the quarter ended June 30, 2023.

Total Cost of Management Summary	3Q2022	4Q2022	1Q2023	2Q2023	Trailing 4 Qtr Total	% of Total
Internal Operating Expenses						
Operating Budget Expenses	\$ 13,275,388	\$ 16,013,990	\$ 14,718,435	\$ 19,303,861	\$ 63,311,674	56.2%
Custodial, Investment Operations & Banking	1,647,965	1,961,451	2,057,242	1,723,893	7,390,551	6.6%
Legal	625,000	371,714	561,635	558,921	2,117,270	1.9%
Investment Research & Consulting	9,112,954	7,570,768	8,387,483	8,535,712	33,606,917	29.9%
Total Internal Operating Expenses	\$ 24,661,307	\$ 25,917,923	\$ 25,724,795	\$ 30,122,387	\$ 106,426,412	94.4%
Securities Lending Agent Expenses	\$ 1,198,959	\$ 1,125,732	\$ 1,455,665	\$ 1,064,140	\$ 6,256,634	5.6%
Total SWIB Operating Costs	\$ 25,860,266	\$ 27,043,655	\$ 27,180,460	\$ 31,186,527	\$ 112,683,046	100.0%
External Investment Management Fees						
Externally Managed Separate Account Fees						
Beta One & Other - Separately Managed	\$ 15,970,497	\$ 12,231,686	\$ 10,289,679	\$ 15,796,013	\$ 54,287,875	7.7%
Supplemental Information - External Fund Fees						
Real Estate	\$ 20,775,122	\$ 20,890,279	\$ 19,702,319	\$ 21,394,315	\$ 82,762,036	11.7%
Private Equity & Venture Capital	67,722,428	72,422,893	55,955,436	64,812,083	260,912,839	36.9%
Hedge Funds	58,023,466	61,423,994	52,940,887	56,693,136	229,081,483	32.5%
Beta One & Other - External Funds	3,044,345	15,891,147	55,999,027	3,082,375	78,016,893	11.1%
Total External Investment Management Fees	\$ 165,535,858	\$ 182,859,999	\$ 194,887,348	\$ 161,777,922	\$ 705,061,126	100.0%
Total Cost of Management	\$ 191,396,124	\$ 209,903,654	\$ 222,067,808	\$ 192,964,449	\$ 817,744,172	

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

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

Attachment A provides a breakdown of the amount and percentage of assets managed under each type of dedicated and commingled account or partnership, and the change in the amount and percentage from the prior calendar quarter. As of June 30, 2023, SWIB's total authorized full-time equivalent positions are 290 as shown in the table below.

Assets Under Management & Positions		
	03/31/2023	06/30/2023
Internal Management	46.5%	46.7%
External Management	53.5%	53.3%
Total SWIB Positions	290	290

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

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

Sincerely,



Edwin Denson
Executive Director/Chief Investment Officer

Attachments

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

Total Assets Under Management

Wisconsin Retirement System (WRS)	9/30/2022		12/31/2022		3/31/2023		6/30/2023	
	Amount (in millions)	Percent	Amount (in millions)	Percent	Amount (in millions)	Percent	Amount (in millions)	Percent
Internally Managed Assets	\$45,843	39.1%	\$46,587	37.9%	\$49,730	39.2%	\$50,868	39.5%
Externally Managed Dedicated Assets	26,743	22.8%	29,344	23.9%	29,282	23.1%	29,758	23.1%
Externally Managed Commingled Assets	44,579	38.0%	46,979	38.2%	47,809	37.7%	48,259	37.4%
1. Passive Index	1,711	1.5%	1,488	1.2%	1,168	0.9%	1,011	0.8%
2. Limited Partnerships	30,771	26.3%	31,719	25.8%	32,060	25.3%	32,894	25.5%
3. Active Managed Commingled	12,097	10.3%	13,772	11.2%	14,581	11.5%	14,354	11.1%
TOTAL WRS Assets	\$117,165	100.0%	\$122,910	100.0%	\$126,821	100.0%	\$128,885	100.0%

State Investment Fund - Internally Managed	\$17,876		\$17,742		\$19,285		\$19,718	
Separately Managed Funds - Internally Managed	\$93		\$95		\$98		\$96	
Separately Managed Funds - Externally Managed	\$2,438		\$2,523		\$2,582		\$2,603	

Total SWIB Assets Under Management	\$137,573		\$143,269		\$148,786		\$151,302	
Total Internal Management	\$63,813	46.4%	\$64,423	45.0%	\$69,113	46.5%	\$70,682	46.7%
Total External Management	\$73,760	53.6%	\$78,846	55.0%	\$79,673	53.5%	\$80,620	53.3%

STATE OF WISCONSIN INVESTMENT BOARD
Expenses for All Funds Under Management
Quarter Ending June 30, 2023

EXPENSE CATEGORY	SERVICE PROVIDED	EXPENSES
<u>Internal Expenses</u>		
Staff Compensation	Staff Compensation	\$ 12,709,967
Fringe Benefits	Fringe Benefits	3,364,452
Supplies, Travel & Facilities	General Supplies & Services	3,229,442
Total Internal Expenses *		\$ 19,303,861
<u>Custodial, Investment Operations and Banking Fees</u>		
BNY Mellon Asset Servicing - Custody	Master Custody Services	\$ 273,210
BNY Mellon Asset Servicing - Investment Operations	Investment Operating Services	1,290,249
Markit NA	Investment Data Management Software	160,434
Total Custodial, Investment Operations and Banking Fees		\$ 1,723,893
<u>Legal Fees</u>		
Arentfox Schiff LLP	Legal Work for Investment Strategies	\$ 20,604
Cox Castle & Nicholson LLP	Legal Work for Investment Strategies	78,793
DLA Piper LLP (US)	Legal Work for Investment Strategies	122,061
Godfrey & Kahn SC	Legal Work for Investment Strategies	44,162
Legal Services Expense Accrual	Legal Work for Investment Strategies	145,717
Purrington Moody Weill LLP	Legal Work for Investment Strategies	60,637
Quarles & Brady	Legal Work for Investment Strategies	76,175
Reinhart Boerner Van Deuren SC	Legal Work for Investment Strategies	423
Vedder Price PC	Legal Work for Investment Strategies	10,350
Total Legal Fees		\$ 558,921
<u>Investment Counsel</u>		
Aksia LLC	Hedge Fund Investment Consulting	\$ 193,750
Alembic Global Advisors	Market Research	2,750
Alex Solutions	Research and Data Services	40,750
Algomi Corporation	Investment Consulting Services	4,201
Apex Systems - CH25	Investment Consulting Services	72,891
Arthur Selender	Investment Consulting Services	14,000
B Riley FBR Inc	Investment Research	6,000
Backstop Solutions Group	Investment Software	46,375
Bank of America Merrill Lynch	Investment Research	65,700
Barrington Research Associates Inc	Investment Research	3,450
Barrons	Investment Research	122
BCA Research Inc	Global & Domestic Fixed Income Strategy Research	32,042
Berenberg	Investment Research	10,500
Bixby Research and Analytics LLC	Research and Data Services	8,333
BiZZdesign United States Inc.	Enterprise Architecture Software	25,000
Blacklight Technology Partners, LLC	Research and Data Services	18,333
Blackrock Financial Management Inc	Risk Services	80,000
Bloomberg Finance LP	Market, Company, Industry & Benchmark Information	1,212,272
BMO Capital Markets Corp	Investment Research Services	22,500
BNY Mellon Asset Servicing - Eagle/Pace	Investment Consulting Services	115,000
BTIG, LLC	Investment Research	3,000
Callan Associates Inc	Investment Consulting & Performance Benchmarking	6,250
Canaccord Genuity	Investment Research	5,050
Cantor Fitzgerald Investment Advisors, L.P.	Investment Research	3,800
CappThesis, LLC	Research and Data Services	2,500
Carahsoft Technology Corp	Investment Consulting Services	26,767
CBJL Incorporated	Investment Consulting Services	(36,080)
CBOE Global Markets, Inc.	Research and Data Services	1,620
CCG Data Solutions	Investment Consulting Services and Software	36,400
CFRA Research	Investment Research	23,793
Charles River System Inc	Portfolio Management Trading Software & Services	443,011
CIBC World Markets Inc	Investment Research	1,000
CL King & Associates	Investment Research	3,050
Compass Point Research & Trading, LLC	Investment Research	3,300
CoStar Portfolio Strategy	Real Estate Consulting & Research Services	15,742
Cowen and Company LLC	Investment Research	41,400
Craig-Hallum Capital Group	Investment Research	5,250
Crane Data LLC	Research and Data Services	3,000
Credit Benchmark, LTD	Benchmark Service	50,000

EXPENSE CATEGORY	SERVICE PROVIDED	EXPENSES
CUSIP Global Services	Research and Data Services	16,250
Cutter Associates	Investment Organization and Systems Consulting	13,727
DA Davidson & Co	Investment Research	26,700
Dacheng Xiu	Investment Research	25,000
Daiwa Capital Markets America	Investment Research	9,000
Datacamp Inc	Research and Data Services	5,983
Davy Securities Limited	Investment Research	19,500
Deutsche Bank	Tax registration fees	40,700
DiatomC LLC	Investment Consulting Services	97,440
Dow Jones News Service	Company and Industry News Services	790
DTCC – EPN	Trade Settlement Service	3,600
DTCC ITP LLC	Trade Settlement Service	2,315
Eberstatistics LLC	Investment Forum Speaker	25,000
EFront Financial Solutions Inc	Private Markets Portfolio Management Services	191,204
Empirical Research Partners LLC	Investment Research	38,200
enableIT LLC	Investment Research	7,920
Ernst & Young LLP	Tax Compliance Services & Investment Consulting	39,563
Euromonitor International	Research and Data Services	6,589
Evercore Group LLC	Investment Research	51,750
Exane Inc	Investment Research	44,575
FactSet Research Systems Inc	Financial & Economic Database	1,048,709
FBN Securities, Inc.	Investment Research	2,400
FIS Data Systems Inc.	Research and Data Services	16,469
Fitch Solutions Inc	Credit Rating Services	18,750
FocusEconomics S.L.U	Investment Consulting Services	36,783
Funston Advisory Services LLC	Investment Consulting Services	14,500
Furey Research Partners LLC	Small Cap Research	11,500
Gallagher	Insurance and Risk Management Services	15,875
Gcon4 Group	Integration Software	3,698
Global Financial Data Inc	Research and Data Services	33,000
Goodbody	Investment Research	500
Green Street Advisor	Real Estate Analytics	29,263
Guggenheim Securities LLC	Investment Research	5,900
Hammerstone Markets Inc	Investment Research	300
Haver Analytics	Global Macroeconomic Research	22,740
Ice Data LP	Fixed Income Indices	42,257
Institutional Shareholder Services Inc	Proxy Voting Analysis	41,914
Intelligent Automation Consulting	Automation Consulting Services	15,000
Investment Research Expense Accrual	Investment Research	(665,025)
IPC Systems Inc	Trading Telecommunication System	10,500
Janney Montgomery Scott	Investment Research	7,200
Jefferies Research Services LLC	Investment Research	57,050
Jerry Kang	Investment Forum Speaker	13,000
JP Morgan	Public Market Management Fee	15,000
Keefe Bruyette & Woods (KBW)	Investment Research	25,500
Kepler Capital Markets Inc	Investment Research	2,000
KeyBanc Capital Markets Inc	Investment Research	14,500
Keystone Consulting Inc	Investment Information Technology Consulting Services	80,960
Knowledge Services	Recruitment and Staffing Services	64,291
KPMG Limited	Tax Representation Services	5,840
Liberum Capital Inc	Investment Research	13,000
London Stock Exchange	London Stock Exchange Data	(359)
Loop Capital Markets LLC	Investment Research	6,300
Mackey LLC	Research Management System	35,577
Macquarie Capital (USA) Inc	Investment Research	11,000
Manalo Advisors Limited	Research and Data Services	3,750
Markit Group Limited	Investment Consulting Services	6,770
Markit NA	Investment Data Management Software	27,500
Markit-EDM Limited	Investment Consulting Services	191,319
Matrix IDM, LLC	Investment Consulting Services	9,800
McLagan Partners Inc	Investment Compensation Data and Analysis	6,250
Meketa Investment Group	Public Markets External Manager Consultant	70,365
MNI Market News	Research and Data Services	3,893
Money-Media Inc	Research and Data Services	5,250
Moodys Analytics	Economic, Currency & Bond Analysis	85,334
Morningstar Inc	Industrial Sector Market Research & Analysis	20,500
MSCI - Barra	Research and Data Services	99,475
MSCI Inc - Risk Metrics Solutions	Research and Data Services	288,722
MSCI, Inc	Research and Data Services	132,023
MT Analytics ULC	Investment Consulting Services	125,974

EXPENSE CATEGORY	SERVICE PROVIDED	EXPENSES
My Data Outlet International, LLC	Research and Data Services	22,000
Needham & Company LLC	Investment Research	11,300
NEPC LLC	Investment Consulting Services	80,000
Northcoast Research Partners, LLC	Research and Data Services	3,800
Northland Securities	Investment Research	4,500
Novus Partners Inc	Profit & Loss Analytics System	18,885
Nuware Technology Corp	Investment Information Technology Consulting Services	65,120
NYSE Market Inc	New York Stock Exchange Data	6,551
Oliver James	Investment Consulting Services	74,752
Oppenheimer & Co Inc	Investment Research	11,050
Options Price Reporting Authority	Quote System for Options Market	2,077
Oxford Economics USA INC	Research and Data Services	24,463
Pac-invest	Research and Data Services	12,765
Phil Erlanger Research Co Inc	Investment Research	4,000
Piper Sandler & Co	Investment Research	44,450
Pitchbook Data Inc	Research and Data Services	20,000
PremiaLab	Investment Research	12,451
Private Placements Investors Association	Investment Research	315
Quantum Research Consulting LLC	Investment Consulting	39,600
Raymond James	Research and Data Services	16,550
Redburn Europe Limited	Investment Research	18,000
Refinitiv	Research Pricing (Autex, Baseline, FirstCall)	215,565
Renaissance Macro Research	Macro Economic Research	10,750
RIMES Technologies Corporation	Research and Data Service	46,250
Robert W. Baird & Co.	Investment Research	59,825
Rosenblatt Securities Inc	Investment Research	7,000
Roth Capital Partners	Investment Research	6,100
Russell Investment Group	Index Data	8,932
S&P Global Market Intelligence	Industry & Corporate Research	105,825
SailPoint Technologies, Inc.	Information Security Software	57,000
Sanford C Bernstein & Co LLC	Investment Research	44,150
Seaport Global Securities LLC	Research and Data Services	17,460
Sharp Decisions Inc	Investment Information Technology Consulting Services	90,240
Sheffield Haworth Inc	Recruitment Consulting	150,000
Sidoti & Company LLC	Investment Research	7,350
Simcorp USA, Inc.	Investment System	854,558
SMBC Nikko Securities America Inc	Investment Research	10,000
Snowflake Inc	Research and Data Services	41,667
Solve Advisors Inc	Investment Research	10,000
SPACInsider	Research and Data Services	3,149
Spherion	Recruitment and Staffing Services	10,663
Standards Board for Alternative Investments Limited	Investment Membership	2,440
State Street	Investment Consulting	20,000
Statista	Investment Research	177
Stephens Inc	Investment Research	9,250
StepStone Group	Private Equity Consulting Services	224,348
StepStone Group Real Estate	Real Estate Consulting Services	59,330
Stifel Nicolaus & Company Incorporated	Investment Research	30,150
Susquehanna Financial Group LLP	Investment Research	2,800
SVB Leerink	Research and Data Services	3,500
SWIFT SC	Research and Data Services	300
SystemsAccountants	Investment Information Technology Consulting Services	87,040
Taranis, Inc.	Investment Information Technology Consulting Services	66,660
TD Securities (USA) LLC	Investment Research	1,000
Telsey Advisory Group	Consumer Sector Research	18,750
The Benchmark Company LLC	Investment Research	3,150
The Financial Times Limited	Investment Research	8,047
The Leuthold Group LLC	Broad Based Market Research	2,000
The Nasdaq Stock Market, LLC	Research & Data Services	3,150
Toronto Stock Exchange	Market Data	7,759
TradeWeb	On-Line Fixed Income Trading Services	10,188
Trahan Macro Research LLC	Research and Data Services	5,300
Trivariate Research LP	Investment Research	5,000
Truist Securities, Inc.	Investment Research	12,150
Tudor Pickering Holt & Co	Investment Research	2,500
Unit4 Business Software Inc	Financial & Administration Services System	77,019
Verity LLC	Research Management System	36,289
Vertical Research Partners	Industrial Sector Market Research & Analysis	5,000
Verus Advisory Inc	Benchmarking Consulting Services	2,500
Virtu ITG Analytics LLC	Trading Transaction Cost Analysis	20,500

EXPENSE CATEGORY	SERVICE PROVIDED	EXPENSES
Visible Alpha LLC	Research and Data Services	23,739
Wedbush	Investment Research	4,500
William Blair & Company LLC	Investment Research	7,800
Wisconsin Technology Council	Investment Research Sponsorship	7,500
With Intelligence LLC	Investment Data and Research	8,568
Wolfe Trahan	Transportation and Macro Economic Research	17,000
Wolters Kluwer Law & Business	GDP Forecasting Services	13,608
Wolverine Execution Services LLC	Options Trading Platform	1,395
WorldBridge Partners Inc	Recruitment Consulting	46,250
Worth Charting LLC	Investment Consulting Services	11,000
Zelman & Associates, A Walker & Dunlop Company	Investment Forum Speaker	7,500
Total Investment Counsel		\$ 8,535,712
<u>Separate Account Public Market Management Fees</u>		
Alliance Bernstein	Public Market Management Fees	\$ 8,939,525
Blackrock	Public Market Management Fees	1,321,428
Dodge and Cox	Public Market Management Fees	742,574
Driehaus	Public Market Management Fees	282,930
eSecLending	Public Market Management Fees	4,000
Fidelity Investments	Public Market Management Fees	1,379,853
Parametric	Public Market Management Fees	586,270
Prudential Global Investment Management (PGIM)	Public Market Management Fees	140,952
Wellington Trust Company	Public Market Management Fees	2,398,482
Total Separate Account Public Market Management Fees		\$ 15,796,013
<u>Securities Lending Agent Fees</u>		
BNY Mellon Asset Servicing	Securities Lending Agent Fees	\$ 1,064,140
Total Securities Lending Agent Fees		\$ 1,064,140
Total Quarterly Charges to Funds		\$ 46,982,540

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

Explanation of Expenses

Internal Operating Expenses

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

Custodial & Banking Fees

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

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

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

Legal Fees, Services, and Expenses

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

Investment Counsel

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

Securities Lending Agent Fees

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

Externally Managed Separate Account Fees

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

External Funds Fees

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

Private Equity Commitments*

April 2023 – June 2023

<i>Investment</i>	<i>Commitment (millions)</i>
CVC Capital Partners IX	€100.0
Great Range Capital Fund III	\$50.0
Montefiore Investment Fund VI	€75.0
Montefiore Investment Expansion Fund I	€25.0
Rivean Buy-Out Fund VII	€50.0
SkyKnight IV	\$75.0
Consumer Co-Investment	\$18.8
Consumer Co-Investment	\$25.0
Industrials Co-Investment	\$19.2
Information Technology Co-Investment	\$30.0
Industrials Co-Investment	\$50.0
Healthcare Co-Investment	\$2.3
Financials Co-Investment	\$30.0

*Includes Current Return Portfolio and Co-Investments.

Private Debt Investments/Commitments

April 2023 to June 2023

<i>Investment</i>	<i>Investment/Commitment</i>
Real Estate	\$25,000,000
Food Production	\$6,400,000
Total	\$31,400,000

Real Estate Commitments

April 2023 – June 2023

<i>Investment</i>	<i>Commitment (millions)</i>
RLIF Co-Investment Fund I, L.P.	\$100
Total	\$100

Funds Alpha Commitments*

April 2023 – June 2023

Manager	Commitment (Millions)
Ares Badger Fund	\$ 200
DE Shaw Composite	\$ 155
Brevan Howard CoInvest II	\$ 150
Reflow	\$ 46
I-94 Partners Fund	\$ 175
Artisan Partners EMLO	\$ 425
TOTAL	\$ 1,151

**Includes Hedge Funds and Beta One*

Board Contact Log

DATE OF INBOUND COMMUNICATION	COMMUNICATION SOURCE	TOPIC
August 3, 2023	Charles Stannard	Investments in China
August 8, 2023	Peter Clothier	Mutual fund proxy voting
September 1, 2023	Frank Wolff	Compensation

This log records communications directed to SWIB's Board of Trustees. It is maintained pursuant to the procedures set forth at <https://www.swib.state.wi.us/board-contact>.

Board Meeting

Tab 11 - Future Items for Discussion

Discussion

Proposed Motion: Move to adjourn

2023 Board Meeting and Agenda Plan

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

2023 Board Meeting and Agenda Plan

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

2023 Board Meeting and Agenda Plan

September 2023	
SPCG	<p>Open Session</p> <ul style="list-style-type: none"> • Private Equity Strategy Report and Market Outlook • Corporate Governance 2023 Proxy Voting Review and ISS Update • Trustee Manual Review/Policies Update • October Workshop Preview • Project Centum Update <p>Closed Session</p> <ul style="list-style-type: none"> • Consultant Annual Reporting • Security Management, IT, and Data Management Update
Audit & Finance	<p>Open Session</p> <ul style="list-style-type: none"> • WRS Audited Financial Statements • Open Audit Issues Report • Approval of Draft Audit Reports • Audit Plan Status • 2024 Audit Plan Preview • Financial Reporting • Administrative Reports
Benchmark & Performance	<p>Open Session</p> <ul style="list-style-type: none"> • Annual Benchmark Preview
Compensation & Workforce Development	<p>Open Session</p> <ul style="list-style-type: none"> • Talent Acquisition and Employee Engagement Update
Board Meeting	<p>Open Session</p> <ul style="list-style-type: none"> • Committee Reports • Investment Forum Recap • Biennial Ethics Training • Fiduciary Training • Public Records Training • Investment Performance and Market Updates; Callan Peer Report • Committee Open Session Business • Quarterly Investment Update • Q2 Direct Charges to Funds / PMFA Commitments <p>Closed Session</p> <ul style="list-style-type: none"> • Risk Management Update • Committee Closed Session Business

OCTOBER BOARD WORKSHOP
<ul style="list-style-type: none"> • Outside Speakers • Asset Allocation review with Actuaries • Board Self-Evaluation with Governance Consultant

2023 Board Meeting and Agenda Plan

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