

SWIB Board Materials for September 15, 2021

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Name of Meeting: Regular Meeting of the Board of Trustees
Date/Time: Wednesday, September 15, 2021 10:00 am
Room: Via Teleconference
Address: 121 E. Wilson St., Madison WI 53703
Dial In #: 608-512-0100 **Access Code:** 97018017

OPEN SESSION	
1. Committee Reports – Open Session Items	<ul style="list-style-type: none"> A. Audit and Finance Committee B. Strategic Planning and Corporate Governance Committee
2. Consent Agenda	<ul style="list-style-type: none"> A. Open Session Minutes of June 16, 2021 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 2021 B. Callan Quarterly Report
7. Investment Committee Open Session Business	<ul style="list-style-type: none"> A. Amendments to SWIB Investment Committee WRS Investment Guidelines B. Amendments to WRS Investment Policy C. Amendments to SIF & Separately Managed Funds Investment Policy and Guidelines D. Approved Open Session Committee Meeting Minutes of May 25, June 22 and July 27, 2021 E. Final Open Session Agenda for August 24, 2021 and Draft Open Session Agendas for September 28 and October 26, 2021 Meetings
8. Quarterly Investment Update, Q2 2021	

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): A. New Contracts, Q2 2021 B. Quarterly Charges to Funds Reports, Q2 2021 C. Private Markets and Funds Alpha Commitments, Q2 2021
11. Future Items for Discussion
12. Motion to Adjourn
<p><i>NOTES: Items may be taken in order other than listed.</i></p> <p><i>The meeting site is physical accessible. Upon prior request, reasonable accommodations will be provided.</i></p> <p><i>Members of the Board, in addition to those who have been appointed to the committee, may attend this meeting.</i></p>

¹ The motion to go into closed session at this meeting is made (i) pursuant to 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 (b) approve prior closed session minutes that discuss the same; (ii) pursuant to section 19.85(1)(c) of the Wisconsin Statutes to (a) discuss the performance evaluation and compensation data of specific SWIB employees, and (b) review performance evaluation data for SWIB's board of trustees. The Board may convene in additional closed sessions or announce additional closed session items at the meeting in accordance with the procedure outlined in the Attorney General's Opinion reported at 66 OAG 106 (1977). Whenever a closed session is held, the Board will subsequently reconvene in open session to cover remaining agenda items.

Board Meeting

Tab 1 - Committee Reports - Open Session Items

- A. Audit and Finance Committee
- B. Strategic Planning and Corporate Governance Committee

Board Meeting

Tab 2 - Consent Agenda

- A. Open Session Minutes of June 16, 2021
- 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 15, 2021

STATE OF WISCONSIN INVESTMENT BOARD

CONSENT AGENDA – OPEN SESSION ITEMS

Proposed Motions:

1. Move to approve the Open Session Minutes of June 16, 2021, as presented.
2. Move to approve the Closed Session Minutes of June 16, 2021, as presented.
3. Move to approve the amended Retroactive Incentive Compensation Errors Policy, as recommended by the Strategic Planning and Corporate Governance Committee.
4. Move to approve the amended SWIB Staff Titles Policy, as recommended by the Strategic Planning and Corporate Governance Committee.
5. Move to approve the amendments to the Total Cost of Management Plan & Policy, as recommended by the Audit and Finance Committee.
6. Move to approve five project positions with initial terms of 24 months and total terms not to exceed 48 months, as recommended by the Audit and Finance Committee.

STATE OF WISCONSIN INVESTMENT BOARD

Board Meeting & Investment Forum – Open Session

Tuesday/Wednesday, June 15-16, 2021

Via Teleconference

Board Members Present for Both Days: Dave Stein, Chair
Barb Nick, Vice-Chair & Secretary
Esther Ancel, Trustee
Mark Doll, Trustee
Kristi Palmer, Trustee
Dave Schalow, Trustee
Timothy Sheehy, Trustee
John Voelker, Trustee

OPEN SESSION

Dave Stein, Chair, called the meeting of the Board of Trustees to order at 1:30 p.m. on June 15, 2021. Trustee Stein introduced the other Trustees and Edwin Denson, Executive Director/Chief Investment Officer, noting that this was Mr. Denson's first meeting in his new role. 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 15, 2021) (See Attachment 1 for Attendance List)

1. Economic & Market Outlook **Pablo Villanueva, Senior US Economist, UBS**

Pablo Villanueva, Senior US Economist at UBS, discussed the outlook on labor markets and inflation. Mr. Villanueva's base case expectation is for the labor market to strengthen while inflation remains moderate. On the labor side, the economic growth momentum remains strong with many sectors benefiting from demand growth and strong consumer spending even alongside an expected shift from goods to services. While there have been supply disruptions, especially outside the US, due to vaccine rollout issues, he expects these to be temporary and factory output to accelerate into Q3. Another strong tailwind for the labor market is the historically high unemployed person per job opening ratio of 1, and as unemployment benefits expire and more employees return to the job market, Mr. Villanueva believes the jobs will be filled. On the inflation front, wage inflation creates upside pressure, as evident with the before-mentioned unemployed person per job opening ratio. That said, labor market participation in certain age groups has been markedly low; however, with significant progress on vaccinations and the expiration of unemployment benefits, he anticipates the participation rate to normalize. As this normalization occurs, the employment pool will grow meaningfully, reducing the pressure on inflation.

2. Equity Market Overview

Keith Parker, Head of US and Global Equity Strategy, UBS

Keith Parker, Head of US and Global Equity Strategy at UBS, shared his views on equity markets. UBS has a target for the S&P 500 for 2021 of 4400, based on 2022 earnings per share (EPS) of \$232 and forward price-to-earnings of 19. He expects companies to maintain the strong upside surprises in Q2 2021 earnings. Even as GDP slows to mid-single digits, the pace is still above the long-term trend, supporting EPS growth. In terms of sector rotations, Mr. Parker noted a continued preference for cyclical names over defensive ones even though the pace of further gains is expected to slow. He expects momentum to shift from low- to high-quality names and high- to low-volatility names. The “new” momentum is still in early stages of the cycle and could outperform meaningfully. High quality names are more likely to withstand peaking growth, accelerating inflation, and tighter financial conditions given their relative pricing power over low quality names. He identified energy, consumer discretionary, and financials as the sectors that rank the highest on their scorecard.

3. Diversity On and Off the Field

Katie Sowers, Former Offensive Assistant Coach, San Francisco 49ers

Katie Sowers, the NFL’s first female to coach in a Superbowl, shared insights that have been instrumental to her success as a coach and across all aspects of life. She identified passion, dedication, and hard work as the key ingredients to her success and noted that it only takes one example to break preconceptions that may be acting as a roadblock. She discussed micro aggressions, resistance, and ignorance and tools to combat these inhibitors of success. Ms. Sowers commented on the importance of accommodating different views, open communication, and dialogue. She also highlighted techniques that can help leaders gain the attention and trust of their team, commenting on the importance of the leader’s vision and methods being understood and accepted by the team. Ms. Sowers identified authenticity as a key attribute of a good leader. She also stated that acknowledging the diversity of needs that exists within a team, even when working toward the same objective, is an important step to achieving equality and success.

4. Simple Tools for Making Better Choices

Annie Duke, Author, Speaker, and Decision Strategist

Annie Duke, professional poker player, discussed the decision-making strategies she uses in her career and how they are similar to those of a portfolio manager. Both operate in a world of incomplete information and probabilistic outcomes. Ms. Duke believes that repeated good decision-making results in success over the long run and separates skill from luck. She noted the importance of having a well thought through decision making process. By following a process, the decision-maker can learn from mistakes and fine tune the process along the way. She noted that checklists, diverse perspectives, and objectivity are key elements to creating a good process. Identifying what is the right amount of information, which may be situation dependent, as well as understating the impact of making a wrong decision are two additional elements that can help to define process and create better outcomes. One of the most important things a decision-maker can do is to keep track of the decisions made and the assumptions under which they are made to learn from both mistakes and successes.

The Board recessed for the day at 4:36 p.m.

REGULAR BOARD MEETING (June 16, 2021)

Staff/Others Present: Nathan Ballard, Senior Legal Counsel
(For Board Meeting) 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 Chief Investment Officer
Greg Fletcher, Performance Director
Jameson Greenfield, Chief Financial Officer
Brian Hellmer, Global Public Market Strategies Chief Investment Officer
Rochelle Klaskin, Deputy Executive Director/Chief Administrative Officer
Janet Klosterman, Legal Assistant
Jon Loboda, Performance Measurement Operations Manager
Todd Ludgate, Head of Global Extended Fixed Income Strategies
Jeanne Peltier, Human Resources Director
Dawn Tuescher, Executive Administrative Assistant
Frank Albanese, Financial Investment News
Lauren Albanese, Financial Investment News
Nathan Heimler, Legislative Audit Bureau
Jack Houghteling, Mandate Wire (Financial Times)
Samuel Karasek, HFM Global
Chris Levell, NEPC
Bob Schaefer, State Engineers Association & Retired Conservationists
Liz Wedelstaedt, Cabrera Capital Markets LLC
(Some individuals may have attended only portions of the meeting.)

Trustee Stein, Chair of the Board, declared a quorum was present and called the Board of Trustees meeting to order at 10:46 a.m. on Wednesday, June 16, 2021. The meeting was held telephonically.

Trustee Stein announced that the Board intends to return to face-to-face meetings for the September 14-15, 2021 Board and Committee meetings and the October 27-28, 2021 Board Workshop. He further announced that Trustees Ancel and Nick have been reappointed by the Governor to new six-year terms and that this will be the last meeting for Trustee Doll, whose term has expired. Trustee Stein thanked Trustee Doll for his service on the Board since 2015, and for serving admirably on the Compensation, Benchmark and Performance, and Audit and Finance Committees.

Trustee Doll thanked and commended Chairman Stein for providing the Board with strong leadership as well as the rest of the Trustees for their professionalism and friendship and commented on how much he has enjoyed his time on the SWIB Board.

1. Committee Reports – Open Session Items

A. Audit and Finance Committee

Trustee Palmer, Chair of the Audit and Finance Committee, reported that the Committee met only in open session. After approving the prior meeting minutes, the Committee heard from Brandon Brickner, Internal Audit Director, regarding (1) the open audit issues report, (2) the draft Government/Credit Portfolio and Information Delivery and Reporting audit reports, (3) the annual affirmations and disclosures, (4) the status of the 2021 audit plan, and (5) the five-year audit summary. The Committee then reviewed the Q1 2021 quarterly cost update and addressed the reconciliation of the FY 2022 Chapter 20 Operating Budget to the CY 2021 total cost of management for purposes of reporting to the State.

B. Strategic Planning and Corporate Governance Committee

Trustee Nick, Chair of the Strategic Planning and Corporate Governance Committee, reported that in open session the Committee heard a report from SWIB's Hedge Fund Consultant, Aksia LLC, and was updated by staff on (1) Project Centum, and (2) SWIB's new facilities. She also announced that Trustee Ancel is now the Corporate Governance Liaison for the Committee.

Trustee Nick further reported that during closed session the Committee met with Edwin Denson, Executive Director/Chief Investment Officer, to discuss his 2021 performance goals.

C. Compensation Committee

Trustee Stein, Chair of the Compensation Committee, reported that in open session the Committee discussed a proposed change to the incentive compensation targets for non-exempt Investment Services Staff and heard an update from staff on the progress of the comprehensive RPM review. He further reported that Michael Oak of McLagan and key staff updated the Committee on the work McLagan is doing on SWIB's compensation framework and existing peer group, during both open and closed session.

2. Consent Agenda

Sara Chandler, Chief Legal Counsel, distributed a proposed consent agenda. Trustee Stein asked whether there were any motions listed on the consent agenda that should be removed for further discussion and individual action.

- Move to approve the Open Session Minutes of March 17, 2021 and April 16, 2021, as presented.
- Move to approve the Closed Session and Executive Closed Session Minutes of March 17, 2021 and April 16, 2021.
- Move to approve the FY2022 Chapter 20 Operating Budget of \$87.4 million, as recommended by the Audit and Finance Committee.
- Move to approve the 2021 incentive compensation targets for Investment Services Staff, as recommended by the Compensation Committee.

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

3. Investment Performance and Market Updates

A. Board Investment Performance Report, Q1 2021

Greg Fletcher, Performance Director, presented the *Investment Performance Report*, as of March 31, 2021, included on pages 21-35 in the meeting materials. Mr. Fletcher reported that **(a)** the Core Trust Fund (CTF) returned 2.77% net of all in Q1 2021, resulting in an excess return of 3 basis points (bps) for the quarter, **(b)** the CTF returned 33.80% net of all for the one-year period, resulting in an excess return of 277 bps, **(c)** the CTF five-year net-of-fee return of 10.86% outperformed the Policy Benchmark by 49 bps on an annualized basis, and **(d)** the CTF gross return outperformed the 60/40 Reference Portfolio return by 83% (cumulative) over the past 20 years, which equates to \$34.1 billion.

Mr. Fletcher then discussed that the percentage of WRS assets that were internally managed had remained stable at roughly 50% over the last few years. He also highlighted that the percentage of actively managed assets continued to increase in 2021. He then reviewed the performance by asset class for the first quarter, highlighting that **(a)** public equities had positive absolute returns and slightly outperformed the benchmark, **(b)** fixed income investment strategies had negative absolute returns in the short term as expected in the current rate environment, although long-term and relative performance remained strong, and **(c)** that although the private equity asset class had positive absolute returns, the private equity benchmark saw significant outperformance, particularly from the venture capital component, resulting in a negative year-to-date excess return.

Mr. Fletcher reviewed the performance for the Variable Trust Fund (VTF) and noted that the VTF is slightly underperforming its benchmark for the year-to-date, one-, and five-year periods, but has provided excess return for the ten-year period. He also noted positive relative returns for each of the Separately Managed Funds over all periods.

B. Leverage Performance

Mr. Fletcher then reviewed the performance of the CTF's leverage strategy, included on pages 36-39 in the meeting materials. He noted that leverage at SWIB is implemented passively and therefore does not generally contribute to active risk or excess returns. Leverage does amplify absolute returns and is an important component of SWIB's strategy to meet the 7% long-term actuarial target. He also noted that the CTF's benchmark return is correspondingly levered to create an apples-to-apples comparison for the evaluation of relative performance.

C. Callan Quarterly Report

Mr. Fletcher noted that the *Callan Quarterly Report Summary* as of March 31, 2021 was included on pages 40-45 in the meeting materials. He highlighted that SWIB's total fund unadjusted rankings are in the top quintile of peer returns over the 1-, 3- and 5-year periods and above median for the 10-year period.

D. Midwest Peer Group Comparison

Lastly, Mr. Fletcher reviewed the *Midwest Peer Group Comparison* chart, included on page 46 in the meeting materials, highlighting that being fully funded provides a performance advantage over other funds that are not fully funded, even if those funds appear on paper to have greater gross returns.

4. 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* made by the Investment Committee on April 27, 2021 and included on pages 48-50 in the meeting materials, noting that the revised guidelines reflect the Committee's approval of investments in collateralized loan obligations (CLOs).

B. Amendments to SIF and Separately Managed Funds Investment Policy

Ms. Chandler presented proposed revised State Investment Fund (SIF) investment guidelines, included on pages 51-60 in the meeting materials, that would simplify and modernize the current SIF investment guidelines. She explained that the SIF investment guidelines are difficult for investment staff to monitor and apply, more restrictive than required by statute or SWIB's fiduciary duty, and inefficient and manual for the Compliance team to test. Although the proposed guidelines provide greater flexibility to the Liquidity, Inflation & Rates Management team to execute its investment strategy, the SIF's fundamental investment strategy of safety of principal, liquidity, and competitive money-market returns is not changing. Further, the proposed guidelines continue to comply with all statutory requirements.

Ms. Chandler stated that the proposed guideline changes that are being recommended by the Investment Committee are not intended or expected to alter the investment objectives or risk profile of the SIF as a high-quality, short-term investment vehicle. She then reviewed the key proposed changes, noting that the new guidelines would focus on the overall exposure to an issuer and the corresponding credit risk of each issuer. Further, she noted that these proposed changes had been communicated to the constituents whose assets are managed pursuant to these guidelines and there were no concerns.

Motion: A motion was made by Trustee Nick and seconded by Trustee Schalow to approve the revised investment guidelines for the State Investment Fund, as presented in the meeting materials, and to make necessary amendments to the *State Investment Fund & Separately Managed Funds Investment Policy and Guidelines* to reflect the changes, as recommended by the Investment Committee. The motion passed unanimously.

C. Approved Open Session Investment Committee Minutes

Ms. Chandler stated that the approved open session minutes of the February 25, 2021, March 23, 2021, and April 27, 2021 Investment Committee meetings were included on pages 61-77 in the meeting materials for the Board's review and noted that staff had previously reviewed the agendas for these meetings with the Board.

D. Agendas for Upcoming Meetings

Ms. Chandler also stated that the final open session agenda for the May 25, 2021 Investment Committee meeting and the draft open session agendas for the June 22, 2021 and July 27, 2021 meetings were included on pages 78-83 in the meeting materials for the Committee's review.

5. Quarterly Investment Update, Q1 2021

Mr. Denson initiated a discussion of the *Quarterly Investment Update*, included on pages 85-123 in the meeting materials, with a brief commentary about the forecast for the 5-year CTF return. He noted that based on preliminary returns of 6.2% as of April 30, 2021, the current 5-year annualized return is 10.6%.

Mr. Denson commented that credit market spreads came under pressure as the pandemic broke but have narrowed very quickly and are now not just recovered but below pre-pandemic levels. Further, spreads reflect an optimistic market outlook for the next five years, and an internal model projects defaults to bottom out in 2022. He commented that the Federal Reserve is unlikely to raise rates in the near term and has become more expansive in its analysis of unemployment. The new Federal Reserve strategy is in response to the new era of lower neutral rates and reveals its preference for modestly higher inflation. Finally, he highlighted an expectation that fiscal support will start to wane through 2024, but even if stimulus is just ratcheted down (as opposed to eliminated), it will likely still cause a drag.

6. Motion to Convene in Closed Session

Motion: A motion to convene in closed session pursuant to Sections 19.36(5) and 19.85(1)(e) of the Wisconsin Statutes to consider confidential and proprietary strategies for the investment of public funds relating to specific proprietary investment strategies of internal WRS portfolios and approve prior closed session minutes that discuss the same was made by Trustee Stein and seconded by Trustee Ancel.

The Chair called for a roll call vote.

Ancel–Aye	Doll–Aye	Nick–Aye	Palmer–Aye
Schalow–Aye	Sheehy–Aye	Stein–Aye	Voelker–Aye

There being eight ayes and no nays, the Chair declared the motion passed. The Board convened in closed session at 11:49 a.m. and reconvened in open session at 12:32 p.m.

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

Trustee Stein reported that during its regular closed session staff reviewed proprietary investment strategy information, and Mr. Denson reviewed recent Investment Committee closed session business.

8. Reports Filed Without Comment

In the absence of questions, the following reports, included on pages 186-05 in the meeting materials, were filed without comment: (a) Draft Open Session Minutes of May 11, 2021

Enterprise Risk and Compliance Committee meeting; **(b)** Succession Working Group Minutes of April 16, 2021; **(c)** New Contracts, Q1 2021, **(d)** Quarterly Charges to Funds Report, Q1 2021; and **(e)** Private Markets and Funds Alpha Commitments, Q1 2021.

9. Future Items for Discussion

There were no future items for discussion noted.

The Board recessed at 12:34 p.m.

INVESTMENT FORUM (Session II, June 16, 2021) *(See Attachment 1 for Attendance List)*

The Chair called Session II of the Investment Forum to order at 1:00 p.m.

1. Policy Outlook: The Biden Agenda

Steve Pavlick, Head of Policy at Renaissance Macro Research

Steve Pavlick, Head of Policy at Renaissance Macro Research, presented on the agenda of the Biden administration, including the outlook for the rest of this year and the upcoming elections. Mr. Pavlick noted that Biden ran as a moderate candidate but has been increasingly pulled to the left by progressives. He noted how the appointment of cabinet members from the Obama administration has driven strategy, including on the stimulus plan already passed and the focus on the next large infrastructure bill. He highlighted other areas of focus, including climate, big tech, supply chain protectionism, increased taxes, and a continued focus on China, but less from an economic standpoint and more from a human rights perspective. Mr. Pavlick also talked about the upcoming midterm election in 2022, noting that the Senate is more difficult to forecast than in the past. Regarding House seats, he argued that Republicans are well-positioned to gain the 5 seats necessary to secure the majority given typical midterm expectations. This would put pressure on the Biden legislative agenda and explains why progressives are currently pushing their agenda so hard.

2. Energy Transition: The Role of Green Hydrogen

Sanjay Shrestha, Chief Strategy Officer at Plug Power

Sanjay Shrestha, Chief Strategy Officer at Plug Power, laid out the role for Plug Power and green hydrogen in decarbonization. He noted that European regulation has been the leading area for the push related to climate issues and commented that there is a need to act now as waiting is no longer an option. While he noted green hydrogen has an important role to play, he acknowledged the need for multiple different solutions. Green hydrogen could be the new diesel, and Mr. Shrestha thinks that it will be a significant transition to reach the next level. However, he believes energy transition represents a ten trillion-dollar opportunity and is large enough for multiple players. With multiple players, the burden of building out such a large infrastructure is more attainable. Overall, he expects that the adoption of green hydrogen will be driven not only by the infrastructure network, but also by a focus on the cost of energy input (including electrolysis, liquification, and transportation). The focus should still be on the overall cost of inputs for renewable energy as this will result in lower cost green hydrogen and will be needed to achieve decarbonization.

3. The Economic Impacts of Broadband Access in Wisconsin

Brittany Beyer, Executive Director of Grow North Regional Economic Development Corp.

Scott Williams, Founder and CEO of WiscLift

Jaron McCallum, State Broadband Director, Public Service Commission of Wisconsin

Moderated by Tessa Conroy, Economic Development Specialist and Assistant

Professor, UW-Madison.

The panel had an in-depth conversation on the economic impacts of broadband in Wisconsin. The key issues with broadband in Wisconsin come in three main areas. Access, which is the ability to connect to the internet from a location in the state. Affordability, which is what service options are available at a reasonable cost. And finally, Adaptation, which is the process and actions by which broadband can improve lives and the ability to make full use of it. The discussion also focused on the barriers to access, as even before the pandemic broadband was an issue for rural areas. The first hurdle is to have the correct mapping and data to identify the weak spots. In addition, an increased focus must be not only on the technical assistance to the rural areas, but also getting all the regions to come together and find solutions together. The funding front has improved and is becoming more available with a recently announced \$100 million grant in Wisconsin along with increased federal funding. Wisconsin is in a good position right now with its expansions of grants, the task forces that have been set up, and the state government agencies that have been focused on this area for years. If these broadband issues in Wisconsin can be solved, it will provide more opportunity in these rural areas not only for individuals, but also for businesses, and should increase overall prosperity.

4. Transitory or Enduring: The Pandemic's Impact on Commercial Real Estate

Nancy Muscatello, Managing Consultant with CoStar Advisory Services

Nancy Muscatello, Managing Consultant with CoStar Advisory Services, provided an outlook for the different areas within commercial real estate. On a United States macro front, she expects the southern and western metro areas will continue to outperform given the outsized growth in GDP and employment base compared to other parts of the country. However, there is still a focus on markets and regions that supply the deepest pool of talent. She noted the impact of accelerated e-commerce adoption and the large increase in online grocery shopping, which went from 13% to 50% of households using the service. She also sees the impact to the restaurant industry as transitory with progress increasing but also expects headwinds from labor shortages in the near term. Ms. Muscatello described relative stability in the suburbs while noting that urban areas will recover more slowly for retail given urban markets are still missing travelers and workers that are still not back in the office. Regarding hotels, the travel impact will take time to recover. She noted that they do not see business travel back to normal until 2024. However, there has already been improved leisure travel on the weekends, but many gateway markets will have the longest recovery times. She tied overall office demand to employment growth and office density, with remote work now a growing factor. However, life science and medical office are the areas that are outpacing general office. The overall landscape in commercial real estate has changed, but many of the underlying longer-term trends are still supported.

5. Adjournment

Trustee Stein thanked the presenters and attendees for taking part the Investment Forum, and adjourned the meeting at 5:00 p.m.

Date of Board Approval: _____

Signed: _____
Barb Nick, Board Secretary

DRAFT

Attachment 1

Last Name	First Name	Representing	Day One	Day Two
Addesso	Macauly	SWIB	X	X
Adox	Jim	Venture Investors	X	
Aggarwal	Nitin		X	
Ahmad	Esra	SWIB	X	
Ahmad	Tauseef	SWIB	X	X
Albright	Ryan	Jacobson & Schmitt Advisors	X	
Andersen	Danny	Baker Tilly US, LLP	X	X
Anderson	Ashley	SWIB	X	
Anderson	Erica	Perigon	X	X
Arnstein	David	Venture Investors	X	X
Atwood	Jeff	SWIB	X	X
Ault	Adam	SWIB	X	X
Baekelandt	David	Cambridge Associates	X	
Baik	Yeon Ju	SWIB	X	
Baird	Larina	SWIB	X	
Ballard	Nathan	SWIB	X	X
Barber	Eric	SWIB		X
Bauer	Emily	Wisconsin Alumni Research Foundation	X	
Behm	Angela	Jacobson & Schmitt Advisors	X	
Benish	Chris	SWIB	X	X
Benz	Kyle	UW Credit Union	X	X
Bernius	Michele	University of Wisconsin Foundation	X	X
Biederman	Dara	First Business Bank	X	X
Bormett	Becky	SWIB	X	X
Boyne	David	Michigan Department of Treasury	X	X
Brandon	Zach	Greater Madison Chamber of Commerce	X	X
Brennan	Joel	SWIB Trustee	X	
Brickner	Brandon	SWIB	X	X
Brooks	Teresa	US Bank	X	
Brown	Adam	SWIB	X	X
Brusberg	Michael	SWIB	X	X
Buchholtz	Eric	SWIB	X	X
Burkart-Paulson	Kate	SWIB	X	X
Button	Scott	Venture Investors	X	
Calame	Ian	SWIB	X	
Carlsson	Cecilia	SWIB	X	X
Cen	Wei	Shanghai Pudong Development Bank	X	X
Chafe	Andy	SWIB	X	X
Chandler	Sara	SWIB	X	X
Chehime	Hassan	SWIB	X	X
Chen	Bridget	SWIB	X	X

Last Name	First Name	Representing	Day One	Day Two
Christenson	Pam	Madison Gas & Electric	X	
Cliff	Jan	Kevin Bay Investments, LLC	X	X
Comito	Christian	SWIB	X	X
Concotelli	Marci	SWIB	X	
Consigny	Mark	US Bank	X	
Courtright	Thomas	City of Milwaukee Employees' Retirement System	X	X
Cox	Dan	SWIB	X	X
Culley	John	SWIB	X	X
Cunniff	Patrick	SWIB	X	X
Datta	Samir	SWIB	X	X
Dayioglu	Tunc	SWIB	X	
Denson	Edwin	SWIB	X	X
DiCristo	James	SWIB	X	
Diercks	David		X	X
Ding	Roger	SWIB	X	X
Dobson	Heather	SWIB	X	X
Doll	Terry		X	
Drake	John	SWIB	X	X
Drake	John A	SWIB		X
Drake	Thomas	SWIB	X	X
Drew	Jack	SWIB	X	X
Duchow	David	US Bank		X
Ebeling	Michael	SWIB	X	X
Eckerman	Chris	SWIB	X	X
Eckerman	Suzie	SWIB	X	X
Edwards	Greg	UW School of Business	X	X
Eggert	Randy	SWIB	X	X
El-Annan	Ali	SWIB	X	X
Fink	Anne-Marie	SWIB		X
Fox	Kirk	SWIB	X	
Freeman	Tom	SWIB	X	X
Friedel	Rhiannon	SWIB	X	
Fritzsche	Bob	SWIB		X
Fu	Nicole		X	
Gall	Megan	SWIB		X
Gallagher	John	SWIB	X	X
Gamlin	Kara	SWIB	X	
Gandhi	Chirag	SWIB	X	X
Gao	George	SWIB	X	X
Giageos	Doug	RMR Wealth Advisors	X	X
Goeddel	Noel D.	Isthmus Partners LLC	X	
Gorman	Maggie	SWIB	X	X
Greenfield	Jameson	SWIB	X	X
Harmelink	Michael	SWIB	X	X

Last Name	First Name	Representing	Day One	Day Two
Hayashi	Takaaki		X	X
Hearing	Vicki	SWIB		X
Heimsoth	Brian	SWIB	X	
Hellmer	Brian	SWIB	X	X
Heshelman	John	SWIB	X	X
Holstein	Hillary	SWIB	X	
Holzberger	Beth	SWIB	X	X
Hua	Chongyu	SWIB	X	X
Hung	Alain	Wisconsin Alumni Research Foundation	X	X
Jacobs	Michael	SWIB	X	X
Janecky	Vince	SWIB	X	X
Jethanandani	Anil	ExodusPoint Capital Management	X	
Johnson	Chris	Jacobson & Schmitt Advisors	X	
Johnson	Natalie	Madison Investment Advisors	X	X
Johnson	Nick	SWIB	X	X
Johnson	Phil	SWIB	X	X
Johnston	Ryan	SWIB	X	
Jones	Griffin	UW Alumni	X	
Jordan	Dave	SWIB	X	X
Kachel	Julie	SWIB	X	X
Karasek	Samuel	Pageant Media	X	X
Keating Heinemann	Lorrie	Madison Development Corporation	X	X
Kelsick	Ashley	Camden Partners		X
Klaskin	Rochelle	SWIB	X	X
Klosterman	Janet	SWIB	X	X
Kruger	David	Fiore Companies	X	
Lahman	John	SWIB	X	X
Lange	Lisa	SWIB	X	X
Lau	Teresa	SWIB	X	X
Laufenberg	James	SWIB	X	X
Leinweber	Ross	Cedar Road Realty	X	
Levell	Christopher	NEPC	X	X
Levine	Jonathan	SWIB	X	X
Liber	John	SWIB	X	X
Linn	Diane	SWIB	X	X
Lo	Shan	SWIB	X	X
Loboda	Jon	SWIB	X	X
Longlais	Adam	Nicolet National Bank	X	X
Loveless	Bensen	SWIB	X	X
Lucas	Jeff	SWIB	X	X
Ludgate	Todd	SWIB	X	X
Luetzow	Bill	SWIB	X	X
Lynch	Gregory	Michael Best & Friedrich LLP	X	X

Last Name	First Name	Representing	Day One	Day Two
Maier	Nate	SWIB	X	X
Maroun	Damian	SWIB		X
Martin	Dean	SWIB	X	X
Martinez	Ed	SWIB	X	X
Matthias	Jeffrey	Madison Investment Advisors	X	X
Mazzucco	Frank	SWIB	X	
McBride	Jeremy	SWIB		X
Meyers	Bradley	SWIB	X	X
Mirr	Jason	SWIB	X	X
Morgan	Andrew	Zurex Pharma	X	
Mukherjee	Joy	SWIB	X	X
Murnighan	Bill	Loch Alaiinn Capital	X	X
Nelms	Christopher	SWIB		X
Neumann	Chad	SWIB	X	X
Nicholson	Chase	SWIB	X	
Nobis	Brian	SWIB	X	X
Noronha	Sarah	SWIB	X	X
Nosair	Yasmine	SWIB	X	X
Notzon	Matt	SWIB		X
Olszewski	Dan	UW Weinert Center for Entrepreneurship	X	X
Olubiyi	Olu	SWIB	X	
O'Neill	Luke	SWIB	X	X
O'Rourke	Tom	SWIB	X	X
Osterberg	Melinda	University of Wisconsin Extension	X	X
Palese	Tony	Office of Senator Jeff Smith	X	X
Pall	Jason	UW Credit Union	X	X
Paloian	Mark	SWIB	X	X
Parrish	Scott	SWIB	X	
Peltier	Jeanne	SWIB	X	
Perik	Dan	SWIB	X	X
Petrie	Kurt	SWIB	X	X
Phan	Tinh	SWIB	X	X
Planey	Brian	SWIB	X	X
Porras	Nina	SWIB	X	
Preisler	Chris	SWIB	X	X
Prestigiacomo	Chris	SWIB	X	X
Pugh	Adam	Cuna Mutual Group	X	
Pusparajah	Vychel	SWIB	X	X
Rademacher	Gregory	Sycamore Investment Consulting	X	X
Reinke	Janet	Cuna Mutual Group	X	X
Richlen	Robert	SWIB	X	X
Risch	Jay	SWIB	X	X
Ritzenthaler	Jason	Member Trust Company		X
Robertson	Fred	Northwestern Mutual Capital	X	X

Last Name	First Name	Representing	Day One	Day Two
Robinson	Greg	4490 Ventures	X	
Robinson	John	Marathon County	X	X
Robinson	Tom	SWIB		X
Rothenberg	Jason	SWIB	X	X
Ruiz	Andrea	SWIB	X	
Saberwal	Karan	Manning & Napier	X	
Sassos	Thomas	SWIB	X	X
Schally	Dan	SWIB	X	X
Schalow	David	SWIB Trustee	X	X
Schroeder	Greg	Wisco Investment Management LLC	X	
Schuster	Jonathan	Axley Brynelson LLP	X	X
Seifert	John	SWIB	X	
Share	Stephen	Wisco Investment Management LLC	X	
Shearer	Michael	SWIB	X	X
Shen	Pu	SWIB	X	X
Shepley	Richard	University of Wisconsin Foundation		X
Shi	Cora	SWIB	X	X
Shibilski	Sam	SWIB	X	X
Silber	David	City of Milwaukee Employees' Retirement System	X	X
Simon	Jon	SWIB		X
Smith	Jeff	Senator Jeff Smith	X	
Smith	Taylor	SWIB	X	
Spiering	Chris	SWIB	X	
Stamm	Michael	SWIB		X
Stanton	Nick	SWIB	X	X
Stein	Kate	London School of Economics	X	X
Strole	Jacob	SWIB	X	X
Sun	Jack	Cephei Capital	X	X
Sweet	Adam	Jacobson & Schmitt Advisors	X	
Thiele	Christopher	SWIB	X	X
Toepel	Tim	EPIC	X	X
Toscano	Alain	WEA Member Benefits	X	X
Tuescher	Dawn	SWIB	X	X
Vander Meer	Jim	SWIB	X	X
Vanjani	Tarun	SWIB	X	
Voge	Ryan	American Family Insurance	X	
Wang	Yan	SWIB	X	X
Wang	Zhenping	SWIB		X
Weber	Robert	Matrix IDMS	X	X
Wegner	Gretchen	SWIB	X	X
Welch	Jeff	Electronic Theatre Controls, Inc.	X	X
Whelen	Jennifer	Graham Capital Management LP	X	
Wiitala	Derek	Reinhart Partners Inc.		X
Wilhelm	Terri	SWIB	X	X

Last Name	First Name	Representing	Day One	Day Two
Wilson	Alex	SWIB	X	X
Winer	Lisa	SWIB	X	X
Wolff	Kirk	SWIB	X	X
Wolverton	Brooke	Jacobson & Schmitt Advisors	X	
Wong	Ping	SWIB	X	X
Wu	Tong	SWIB	X	X
Zhang	Ivy	SWIB	X	X

DRAFT

Board Meeting

Tab 3 - Investment Forum Recap

Board Meeting

Tab 4 - Biennial Ethics Training



State of Wisconsin
Ethics Commission

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

Daniel Carlton
Administrator

David Buerger
Staff Counsel

ABOUT THE ETHICS COMMISSION

- Created by 2015 Wisconsin Act 118
- 6 members – Partisan Appointments
 - 2 former judges, 4 others
 - 5-year terms
- Headed by Commission Administrator
- All actions require four votes
- One Staff Counsel; Six Other Staff Positions
- Confidentiality: Advice & Investigations



RESPONSIBILITIES

- Administer Wisconsin Statutes
 - Chapter 11: Campaign Finance
 - Subchapter III, Chapter 13: Lobbying
 - Subchapter III, Chapter 19: Code of Ethics



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

IMPORTANT LAWS TO KNOW

- Lobbying
 - Limits on accepting something of value from lobbyists or lobbying principals
- Code of Ethics
 - Use of office for financial gain
 - Influence and reward
 - Food, drink, transportation, lodging
 - Use of confidential information for private gain
 - Unlawful benefit
 - Conflicts of Interest



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



DEFINITION OF AGENCY OFFICIAL

- “Agency official” means 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” essentially means rulemaking under ch. 227.
- It is our understanding that SWIB is a restricted agency under ch. 227 and may not participate in rulemaking unless a subsequent law specifically authorizes it.
- Ethics Commission has not yet issued an opinion on the applicability of the lobbying law to officials of “restricted agencies”.



EXCEPTIONS

- Items and services made available to the general public
- Providing or receiving any thing of pecuniary value involving a relative or an individual who resides in the same household
- Lobbyists may provide educational/informational materials
- Providing or receiving payment or reimbursement for actual and reasonable expenses allowed under WIS. STAT. §19.56: Honorariums, Fees and Expenses
- Other very limited exceptions to the blanket prohibition on accepting anything of pecuniary value from a lobbyist or principal



USE OF OFFICE FOR FINANCIAL 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.
 - “Organization” does **NOT** include bodies politic
 - “Associated” includes any organization in which an individual or a member of his or her immediate family is a director, officer, or trustee, or owns or controls at least 10% of the equity, or of which an individual or family member is an authorized representative or agent
- Special exceptions:
 - Campaign contributions
 - Candidates/officeholders may solicit for donations to nonprofits



USE OF GOVERNMENT RESOURCES

- 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.



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, DRINK, TRANSPORTATION, 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 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



ACCEPTING GIFTS

- Do NOT accept anything from a lobbyist or lobbying principal – even if you pay for it.
- Do NOT accept items or services of more than trivial value that are offered to you because of your official position.
- You may accept something if it is not from a lobbyist and not related to your public office.
- You may accept something if it is available to the general public
- Must report on Statement of Economic Interests if over \$50 (face value may not be true value)



USE OF CONFIDENTIAL INFORMATION FOR PRIVATE GAIN

- 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.



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.



CONFLICTS OF INTERESTS

- 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.



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

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 INTERESTS

- Annual requirement
- 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
- 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) 226-8123
Fax: (608) 264-9319

State of Wisconsin
Ethics Commission

Board Meeting

Tab 5 - Fiduciary & Public Records Topics

Board Meeting

Tab 6 - Investment Performance and Market Updates

- A. Board Investment Performance Report, Q2 2021
- B. Callan Quarterly Report

Investment Performance Report

As of
June 30, 2021

Executive Summary

June 30, 2021

- The Core Trust Fund returned 6.55% net of fees in Q2, resulting in an excess return of 23 bps in Q2. For one year, the Core Trust Fund has returned 28.08% net of fees, resulting in an excess return of 191 bps.
- The Core Trust Fund five year net of fee return of 11.84% outperforms the Policy Benchmark by 59 bps on an annualized basis.
- The Core Trust Fund gross return outperformed the 60/40 Reference Portfolio return by 82% (cumulative) over a 20 year period, which equates to \$33.7 billion over the same period.

WRS Performance

As of June 30, 2021

	Calendar YTD	1 Year
Core Trust Fund (Net of All) ¹	9.46	27.96
Core Trust Fund Benchmark (Net)	9.22	26.17
	0.24	1.79
Variable Trust Fund (Net of All) ¹	13.16	41.66
Variable Trust Fund Benchmark (Net)	13.39	41.76
	-0.23	-0.10

SWIB's investment management has added more than \$2.4 billion above benchmark returns over the last five years to the WRS.

	5 Years	10 Years	20 Years	30 Years ³
Core Trust Fund (Net) ²	11.84	8.88	7.53	8.82
Core Trust Fund Benchmark (Net)	11.25	8.49	7.27	8.48
	0.59	0.39	0.26	0.34
Variable Trust Fund (Net) ²	15.97	12.09	7.98	9.71
Variable Trust Fund Benchmark (Net)	15.98	12.01	8.03	9.53
	-0.01	0.08	-0.05	0.18

¹ Net of External Manager Fees and Internal Costs

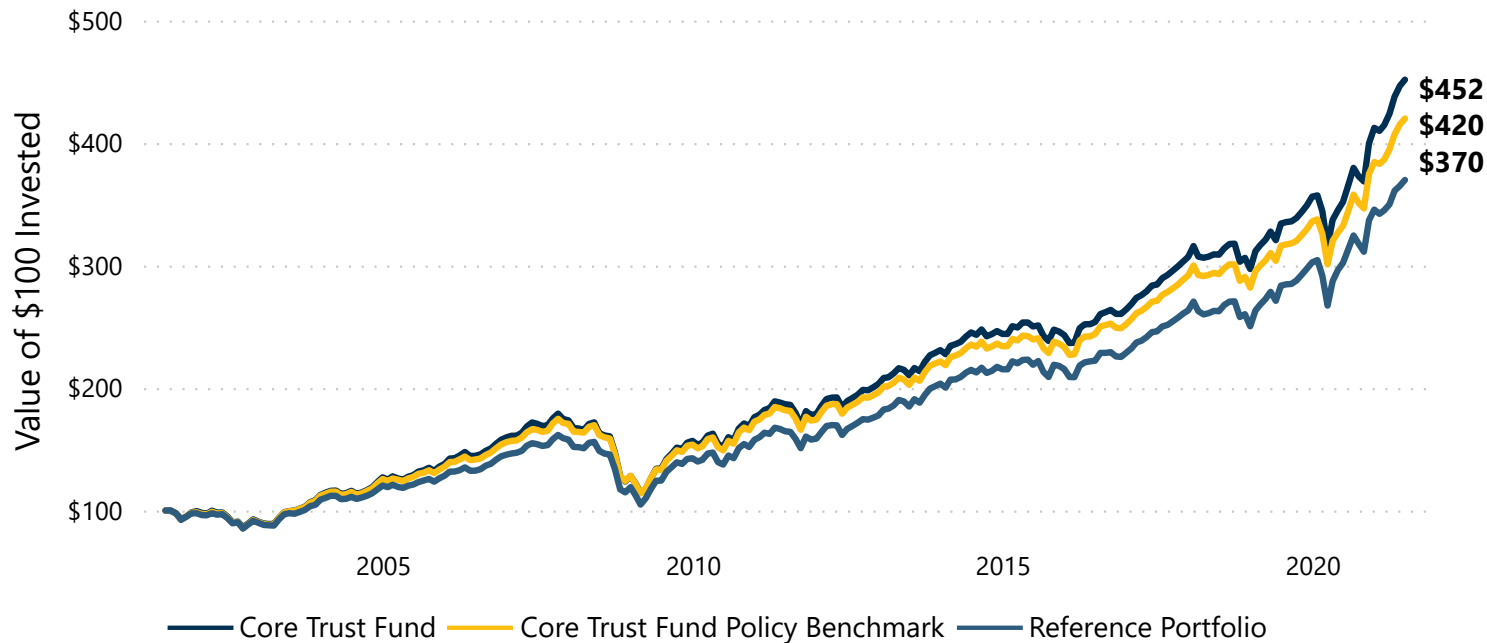
² Net of External Manager Fees

³ 30-Year Benchmark Returns are Presented Gross of Fees

CTF Performance vs. 60/40 Reference Portfolio*

July 2001 to June 2021

Benefit of SWIB's Asset Allocation & Active Management Over Time



- Due to SWIB's robust asset allocation and active management, CTF's gross return outperformed the 60/40 Reference Portfolio return by approximately 1.1% for the past 20 years, or approximately 82% on a cumulative basis for the time period.

- SWIB achieves this outperformance with less risk than the 60/40 reference portfolio

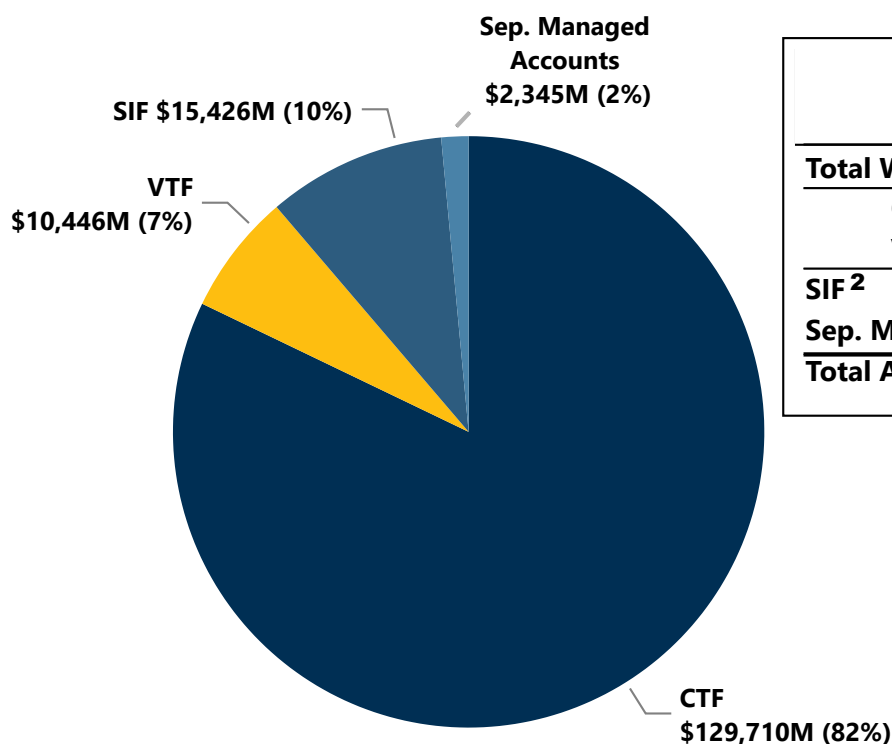
Reference Portfolio Ending Value	Additional Policy Portfolio Return Above Reference*	Additional Active Portfolio Return	CTF Ending Value**
\$96.0bn	+\$21.6bn	+\$12.1bn	=\$129.7bn

*The reference portfolio is 60% MSCI World and 40% Bloomberg Barclays Gov't/Credit (domestic)(rebalanced monthly). Core Trust Fund outperformance is calculated using gross returns.

**CTF beginning market value, as of July 1, 2001, was \$53.4 billion.

Total Assets Under Management (AUM)

June 30, 2021 (in millions)



Fund	06/30/2020 AUM ¹	06/30/2021 AUM ¹	1 Year AUM Change
Total WRS	\$112,498M	\$140,156M	\$27,658M
CTF	\$104,633M	\$129,710M	\$25,077M
VTF	\$7,865M	\$10,446M	\$2,581M
SIF²	\$11,649M	\$15,426M	\$3,777M
Sep. Managed Funds	\$2,197M	\$2,345M	\$148M
Total AUM	\$126,345M	\$157,927M	\$31,582M

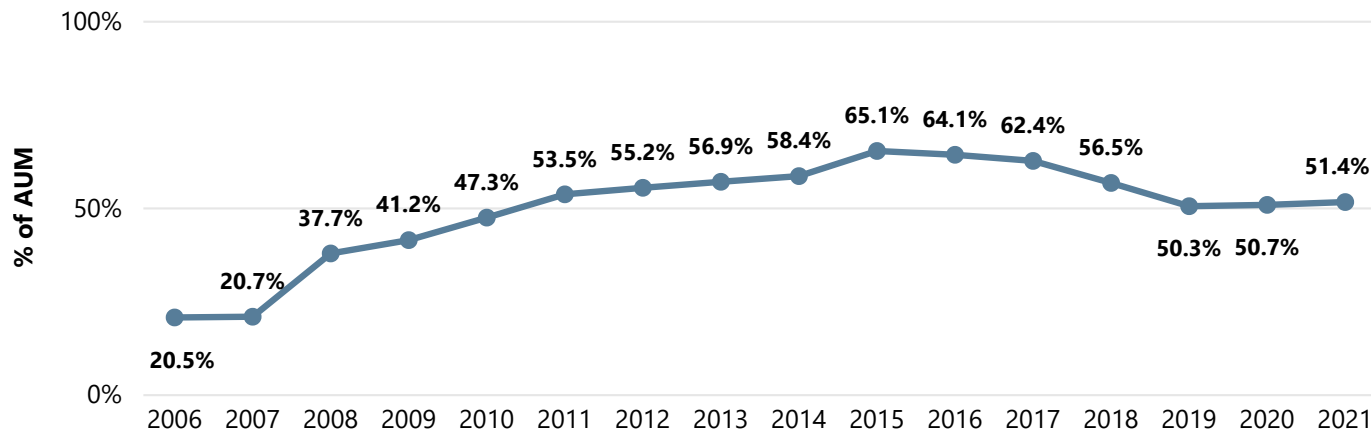
1 AUM is the gross market value of assets that an investment company or financial institution manages on behalf of investors.

2 Excludes cash in SIF held on behalf of CTF and VTF.

WRS Assets as of June 30, 2021

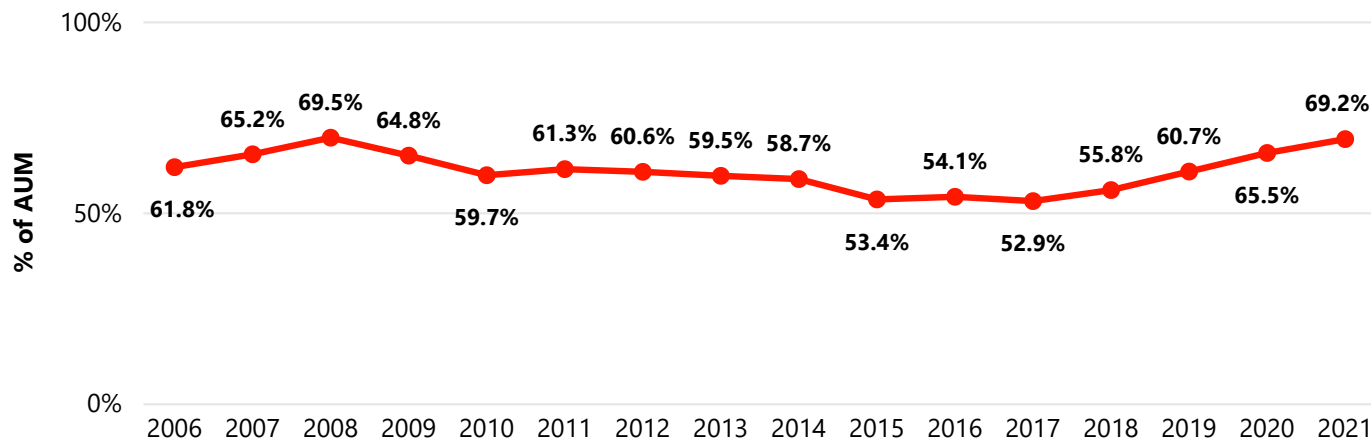
Breakdown of Internal vs. External and Active vs. Passive

Internally Managed Assets



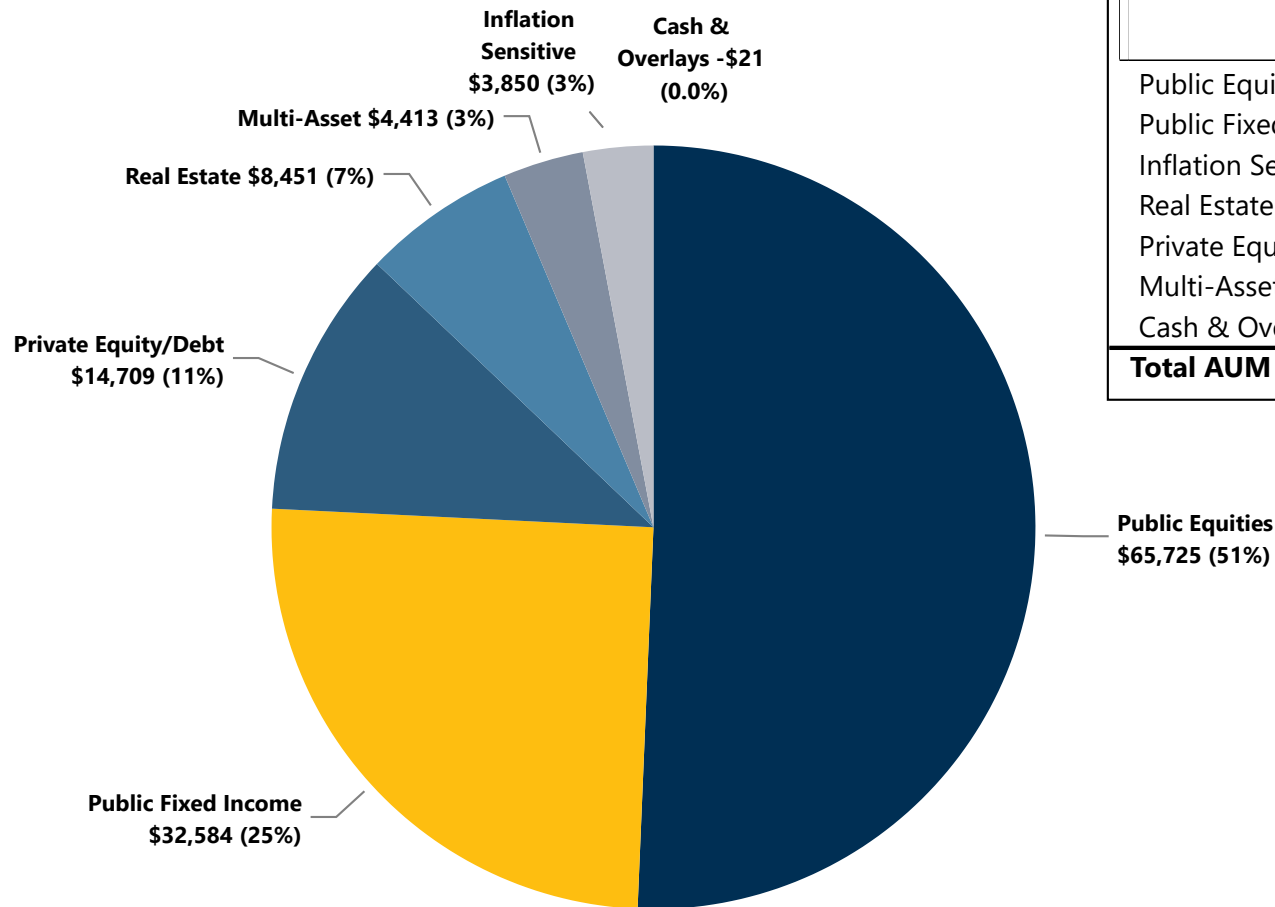
More assets are being actively managed.

Actively Managed Assets



Core Trust Fund Assets Under Management (AUM)

Breakdown by Asset Class as of June 30, 2021 (in millions)



Asset Class	06/30/2020 AUM ¹	06/30/2021 AUM ¹	1 Yr. AUM Change
Public Equities	\$50,364	\$65,725	\$15,361
Public Fixed Income	\$25,576	\$32,584	\$7,008
Inflation Sensitive	\$6,603	\$3,850	(\$2,753)
Real Estate	\$7,840	\$8,451	\$611
Private Equity/Debt	\$10,082	\$14,709	\$4,628
Multi-Asset	\$3,576	\$4,413	\$837
Cash & Overlays	\$593	(\$21)	(\$615)
Total AUM	\$104,633	\$129,710	\$25,077

1 AUM is the gross market value of assets that an investment company or financial institution manages on behalf of investors.

Core Trust Fund Allocation

All Values as of June 30, 2021

	Total Exposure (\$ Mil)	Total Exposure (%)	Adjusted Policy Target ⁴	Target Range
Public Equities ^{1,5}	\$67,200	51.8%	51.7%	45.7% - 57.7%
Global Developed	\$56,156	43.3%	43.1%	
Emerging Market	\$4,075	3.1%	3.2%	
US Small Cap	\$4,064	3.1%	3.2%	
EAFE Small Cap	\$2,906	2.2%	2.3%	
Public Fixed Income ^{1,5}	\$30,750	23.7%	26.0%	20.0% - 32.0%
Investment Grade ²	\$25,700	19.8%	22.1%	
High Yield	\$2,697	2.1%	2.0%	
Emerging Debt	\$2,353	1.8%	2.0%	
Emerging Debt	\$1,158	0.9%	1.0%	
Emerging Debt (Local)	\$1,195	0.9%	1.0%	
Inflation Sensitive ^{1,5}	\$20,705	16.0%	16.0%	11.0% - 21.0%
Real Estate Equity ^{1,5}	\$8,451	6.5%	6.5%	5.0% - 11.0%
Private Equity/Debt ^{1,5}	\$14,709	11.3%	11.3%	8.0% - 14.0%
Multi-Asset ^{1,5}	\$4,413	3.4%	3.4%	1.0% - 7.0%
Cash & Overlays ³	\$128	0.1%	0.0%	
Total Fund	\$146,357	112.8%	115.0%	105.0% - 115.0%

¹ Public and private market values include cash.

² Contains government/credit investment grade bonds, MBS, excess treasuries, and long treasuries.

³ Cash is liquidity, global equity income, overlay related cash and amount of cash needed to fund synthetic beta related to Alpha Pool as physical investment inclusive of adjustment for interest.

⁴ Adjusted Policy Target is the fund policy target weights dynamically adjusted for actual weights and other asset allocation and rebalancing.

⁵ Asset class exposures shown may incorporate security-level exposures from exposure management activities.

Core Trust Fund & Asset Class Performance

As of June 30, 2021

	Inception Date	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ³
Core Trust Fund (Net) ¹	6/30/77	\$129,691	9.51	28.08	11.84	8.88
Core Trust Fund Benchmark (Net)			9.22	26.17	11.25	8.49
			0.29	1.91	0.59	0.39

ASSET CLASSES - NET OF FEES

	Inception Date	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ³
Public Equities ²	12/31/92	\$67,191	12.74	40.93	15.21	10.61
Public Equity Benchmark			13.05	41.19	15.40	10.63
			-0.31	-0.26	-0.19	-0.02
Global Developed Equity ²	02/28/17	\$55,528	12.89	39.46		14.46
MSCI World Custom Net			13.31	39.65		14.76
			-0.42	-0.19		-0.30
US Small Cap ²	02/28/17	\$4,064	14.53	58.13		14.45
Russell 2000			17.54	62.03		14.00
			-3.01	-3.90		0.45
Emerging Market Equity	02/28/17	\$3,980	9.30	42.10		11.09
MSCI Emerging Market Custom Net			7.46	40.97		11.91
			1.84	1.13		-0.82
Intl Small Cap	12/31/19	\$2,901	11.81	42.12		17.92
MSCI EAFE Small Cap Custom			9.25	41.39		18.23
			2.56	0.73		-0.31

¹ Net of External Manager Fees, Market Value Shown on a Net of Fee Basis.

² Market Value Includes the Notional Exposure for Synthetic and/or Policy Overlay Accounts

³ 10 Years Annualized or Since Inception-to-Date Annualized (if there is less than 5- or 10-years' history).

Asset Class Performance (Cont'd)

As of June 30, 2021

ASSET CLASSES - NET OF FEES

	Inception Date	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ³
Public Fixed Income ²	12/31/92	\$33,786	-0.78	2.98	3.89	3.88
Fixed Income Benchmark			-1.55	0.85	3.44	3.58
			0.77	2.13	0.45	0.30
Investment Grade Fixed Income ^{2, 4}	05/31/05	\$28,737	-1.23	1.20	3.75	4.08
Barclays Capital Govt/Credit			-2.09	-0.99	3.17	3.64
			0.86	2.19	0.58	0.44
High Yield Fixed Income	01/31/01	\$2,697	5.41	17.74	7.72	6.64
BofA Merrill Lynch Corporate High Yield Ba/B Index Since 1/1/18			2.92	13.52	7.37	6.63
			2.49	4.22	0.35	0.01
Emerging Market Debt - Local	07/31/17	\$1,195	-3.24	7.52		1.39
JPM GBI-EM Global Diversified			-3.38	6.57		1.99
			0.14	0.95		-0.60
Emerging Market Debt	05/31/05	\$1,158	-0.20	10.91	5.48	5.54
JPM EMBI Global Diversified			-0.66	7.53	4.86	5.65
			0.46	3.38	0.62	-0.11
Inflation Sensitive ²	12/31/03	\$20,701	1.72	6.64	4.43	3.09
Inflation Sensitive Benchmark			1.73	6.51	4.29	2.91
			-0.01	0.13	0.14	0.18

¹ Net of External Manager Fees, Market Value Shown on a Net of Fee Basis.

² Market Value Includes the Notional Exposure for Synthetic and/or Policy Overlay Accounts

³ 10 Years Annualized or Since Inception-to-Date Annualized (if there is less than 5- or 10-years' history).

⁴ Contains Government/Credit Investment Grade Bonds, Excess Treasuries, and Long Treasuries

Asset Class Performance (Cont'd)

As of June 30, 2021

ASSET CLASSES - NET OF FEES

	Inception Date	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ³
Real Estate ¹	03/31/04	\$8,451	4.46	5.82	6.71	10.12
Real Estate Benchmark			3.00	1.47	5.25	8.44
			1.46	4.35	1.46	1.68
Private Equity/Debt ¹	12/31/02	\$14,709	19.46	46.27	17.76	14.02
Private Equity Benchmark			21.81	45.72	14.60	12.05
			-2.35	0.55	3.16	1.97
Multi-Asset ¹	03/31/03	\$4,413	9.68	26.64	10.26	7.36
Multi-Asset Benchmark			7.01	22.39	10.34	7.95
			2.67	4.25	-0.08	-0.59
Alpha Pool Overlay ¹	01/31/11	\$6,415	4.12	12.21	3.57	3.31
Alpha Pool Overlay Benchmark - No Leverage Benchmark Since 1/1/19			0.00	0.00	0.90	1.50
			4.12	12.21	2.67	1.81

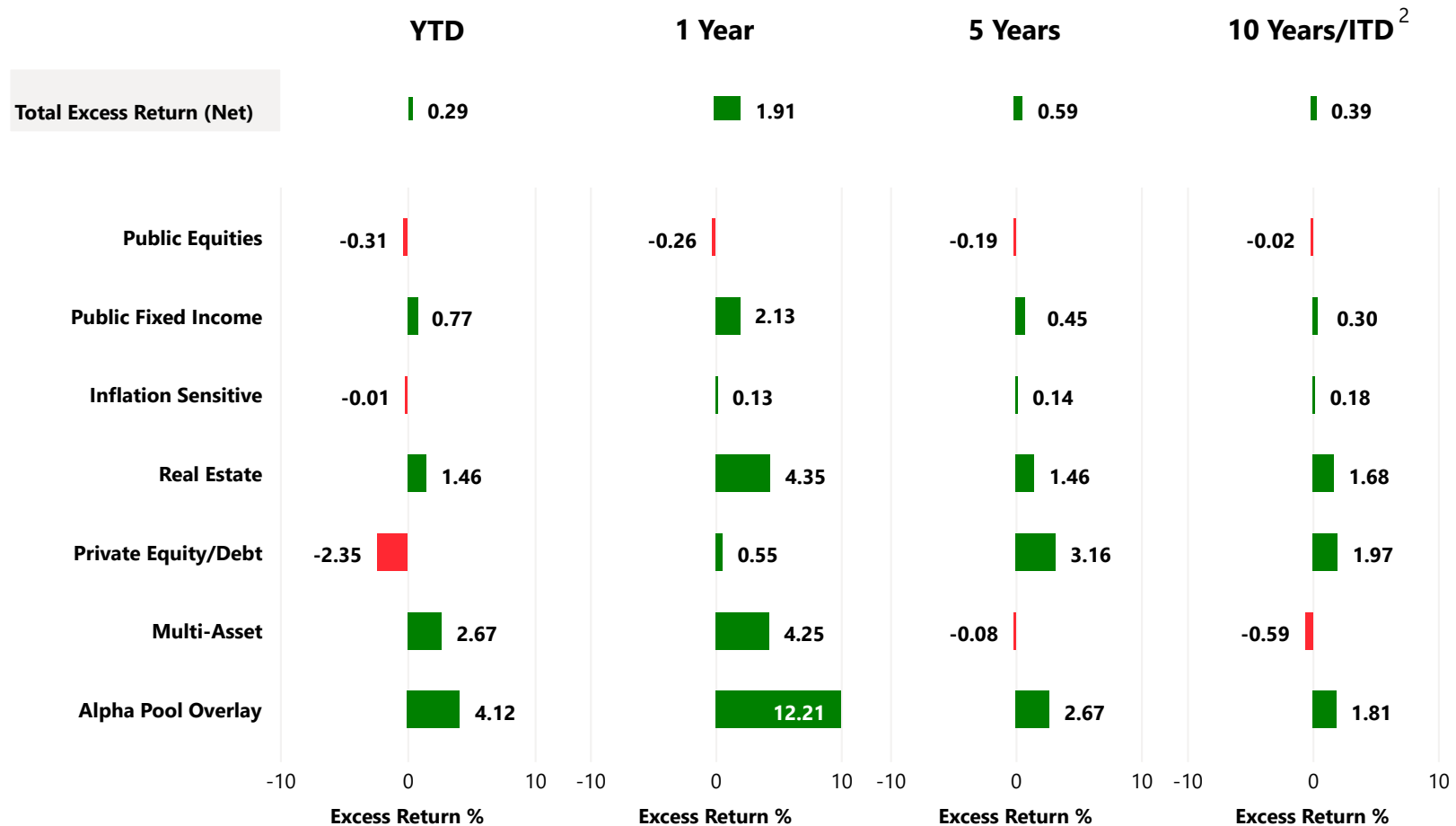
¹ Net of External Manager Fees, Market Value Shown on a Net of Fee Basis.

² Market Value Includes the Notional Exposure for Synthetic and/or Policy Overlay Accounts

³ 10 Years Annualized or Since Inception-to-Date Annualized (if there is less than 5- or 10-years' history).

Core Trust Fund Asset Class Excess Return¹

Performance Above Benchmark as of June 30, 2021



¹ Net of External Manager Fees

² 10 Years Annualized or Since Inception-to-Date Annualized (if there is less than 5- or 10-years' history).

Variable Trust Fund Performance

As of June 30, 2021

	Inception Date	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ²
Variable Trust Fund (Net) ¹	6/30/77	\$10,445	13.19	41.72	15.97	12.09
Variable Trust Fund Benchmark (Gross)			13.39	41.76	15.98	12.01
			-0.20	-0.04	-0.01	0.08

¹ Net of External Manager Fees

² 10 Years Annualized or Since Inception-to-Date Annualized (if there is less than 5- or 10-years' history).

Variable Trust Fund Allocation

All Values as of June 30, 2021

	Total Exposure (\$ Mil.)	Total Exposure (%)	Target	Target Range
Public Equities	\$10,453	100.1%	100.0%	
Domestic	\$7,317	70.0%	70.0%	65.0 - 75.0%
International	\$3,136	30.0%	30.0%	25.0 - 35.0%
Cash & Overlays	(\$7)	-0.1%	0.0%	
Total Fund	\$10,446	100.0%	100.0%	

Asset class exposures are within the Target Range

Separately Managed Funds Performance²

As of June 30, 2021

	Market Value (Millions)	Calendar YTD	1 Year	5 Years	10 Years/ITD ³
State Investment Fund (SIF)	\$19,481	0.03	0.09	1.15	0.65
SIF Benchmark		0.02	0.06	1.12	0.61
		0.01	0.03	0.03	0.04
State Life Insurance Fund	\$125	-2.64	-0.16	4.68	5.95
No Benchmark					
Historical Society Endowment Fund	\$25	11.49	33.92	14.74	12.24
Historical Society Endowment Benchmark		10.70	31.80	14.30	12.01
		0.79	2.12	0.44	0.23
Injured Patients & Families Compensation Fund	\$1,612	1.11	7.18	6.09	5.79
Injured Patients & Families Compensation Benchmark		0.41	5.32	5.35	5.19
		0.70	1.86	0.74	0.60
UW System Long Term Fund ¹	\$583	10.47	27.38		11.57
UW System Benchmark		10.35	27.07		11.28
		0.12	0.31		0.29

¹ Performance Start Date of April 1, 2018

² All returns are net of fees.

³ 10 Years Annualized or Since Inception-to-Date Annualized (if there is less than 5- or 10-years' history).

Leverage Performance

As of June 30, 2021

CTF Policy Leverage Performance

As of June 30, 2021

Core Trust Fund (Return % Net of Fees)	YTD	1 Year	3 Year	5 Year
Portfolio Return (Unlevered) ¹	8.31	25.13	12.03	10.91
CTF Benchmark Return (Unlevered) ¹	8.02	23.23	11.44	10.34
Excess Return (Unlevered)	0.29	1.90	0.59	0.58
<hr/>				
Portfolio Return (Unlevered)	8.31	25.13	12.03	10.91
Absolute Return from Leverage ^{1,2}	1.21	2.94	1.10	0.92
Implementation (+) or (-)	(0.00)	0.01	0.02	0.02
<hr/>				
Portfolio Return (Levered)	9.51	28.08	13.15	11.84
CTF Benchmark Return (Levered)	9.22	26.17	12.54	11.25
Excess Return (Levered)	0.29	1.91	0.61	0.59

- 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 7% 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)

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.

Leverage notes

Terms	Definitions
Portfolio Return (Unlevered)	<p>This is an estimated-only CTF return because SWIB does not implement a CTF unlevered portfolio to calculate actual performance against. Leverage is used to expand the CTF's entire asset base. All definitions that include (unlevered) are ESTIMATES only for this reason.</p> <p>It is estimated by:</p> <ol style="list-style-type: none"> 1) <u>Excess Return (Levered)</u> is first <i>subtracted</i> from the <u>Portfolio Return (Levered)</u>*; 2) The result of Step 1 is then <i>divided</i> by the <u>Policy Leverage Factor</u>; then 3) <u>Excess Return (Levered)</u> is <i>added</i> 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>*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% for the 2021 Calendar Year.</p>
CTF Benchmark Return (Unlevered)	Estimated by the <u>Benchmark Return (Levered)</u> <i>divided</i> by the <u>Policy Leverage Factor</u> for the period.

Leverage notes

Term	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> <i>minus</i> <u>Benchmark Return (Unlevered)</u>.</p> <p>Can also be estimated by taking the actual <u>Excess Return (Levered)</u> <i>minus</i> <u>Implementation (+) or (-)</u> (see below for definition).</p>
Absolute Return from Leverage	Estimated by the <u>Portfolio Return (Levered)</u> <i>minus</i> <u>Portfolio Return (Unlevered)</u> <i>minus</i> <u>Implementation (+) or (-)</u> .
Implementation (+) or (-)	<p>The relative cost of financing (i.e., the actual cost of financing <i>minus</i> the CTF benchmark cost of financing). The CTF benchmark cost of financing is the CTF cash benchmark, currently LIBOR 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)	Actual performance of the CTF Portfolio for the period presented, from all strategies including Policy Leverage.
CTF Benchmark Return (Levered)	Actual performance of the CTF Benchmark for the period, taking into account the use of Policy Leverage.
Excess Return (Levered)	Actual excess return of the CTF. <u>Portfolio Return (Levered)</u> <i>minus</i> <u>Benchmark Return (Levered)</u> .

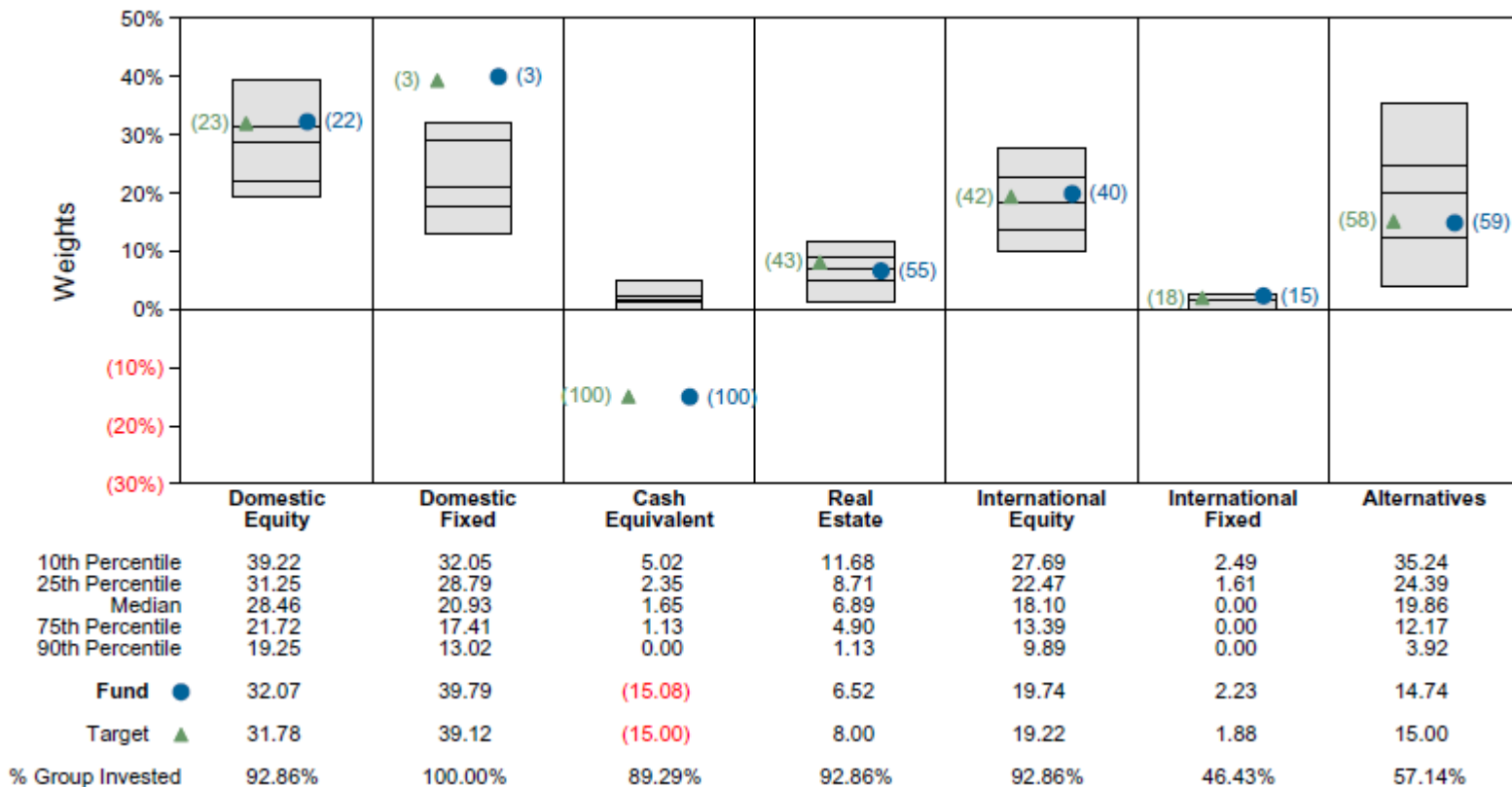
Callan Quarterly Report Summary

As of June 30, 2021

CTF Asset Allocation vs. Peer Asset Allocation

Gross of Fees as of June 30, 2021

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

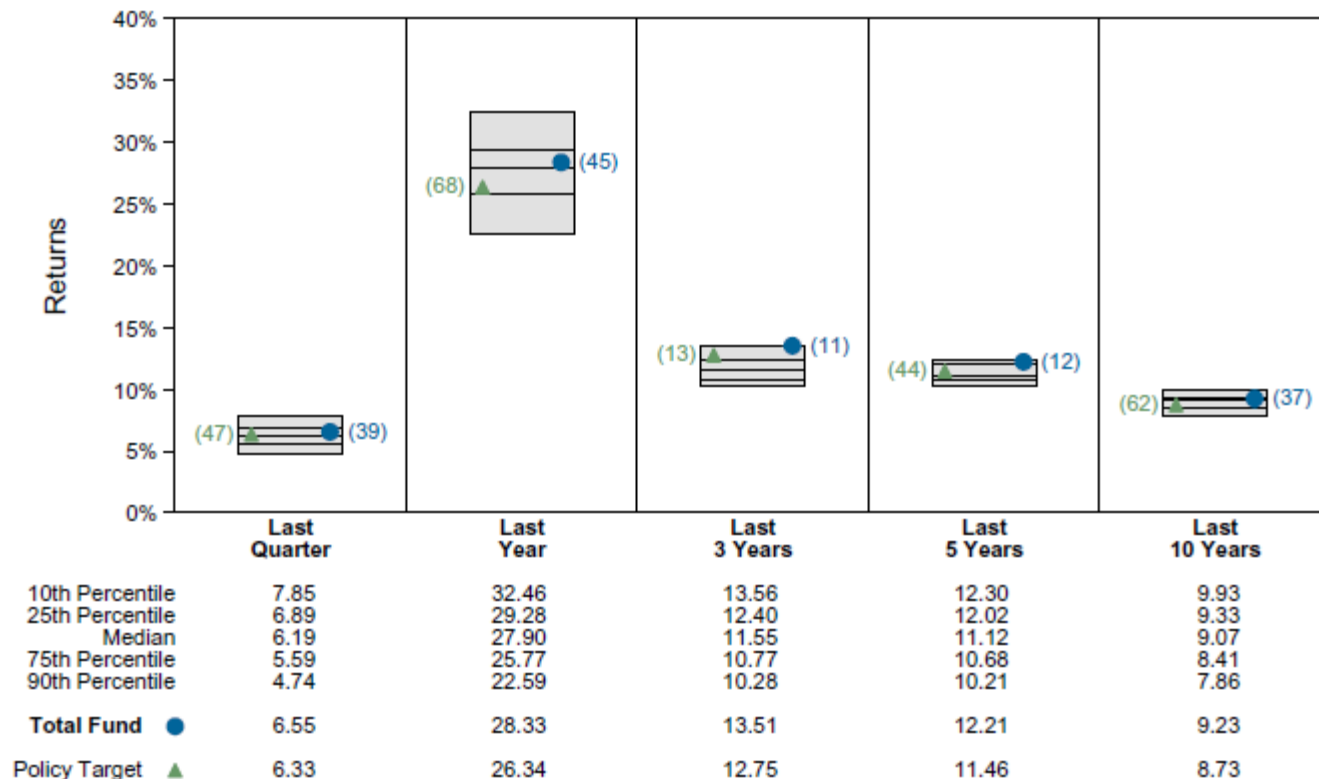


- Allocation to Domestic Fixed Income is top decile, Cash & Cash Equivalent (with leverage) is bottom.
- Allocation to Alternatives (Private Equity, Hedge Funds) near plan target, less than peer median.

Total Fund Ranking – Unadjusted Ranking

Gross of Fees as of June 30, 2021

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

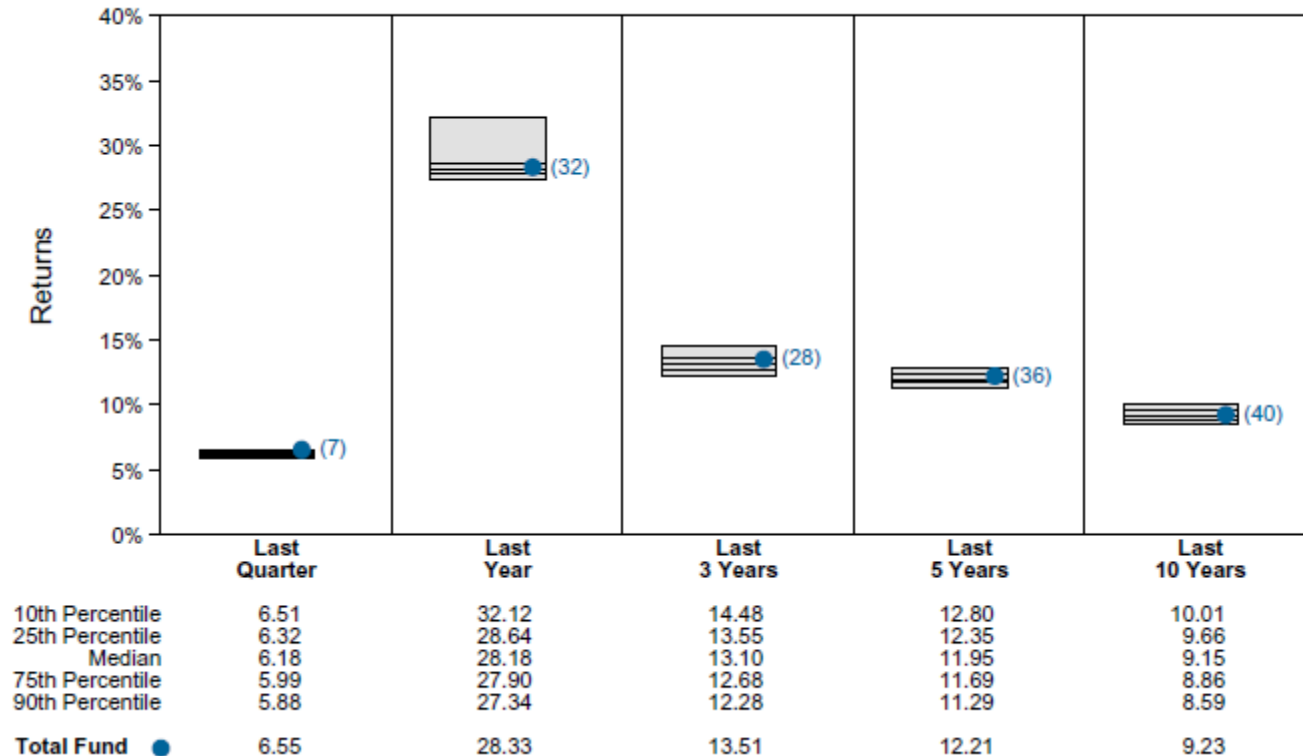


- CTF is outperforming the peer median over all time periods.

Total Fund Ranking – Asset Allocation Adjusted

Gross of Fees as of June 30, 2021

Asset Allocation Adjusted Ranking



- CTF is outperforming versus the peer median over all time periods on an asset allocation adjusted basis.
- CTF's 2Q21 performance was in the top decile versus our peer group on an asset allocation adjusted basis.

Glossary

Term	Definitions
Active Management	A process for managing a portfolio in which investment staff makes the day-to-day decisions on what to buy and sell with the goal of generating a return on investment that is greater than the market would otherwise provide.
Alpha Pool Overlay	ACTIVE MANAGEMENT strategies that focus on alpha (Hedge Funds, Tactical Alpha) with very little beta exposure.
AUM	(Assets Under Management) - The total market value of assets that an investment company or financial institution manages on behalf of investors.
Benchmark	A standard or reference point – often an index fund – used to measure or judge the performance of investments.
BPS	(Basis Point) - A unit of measure used in the investment industry. One basis point equals 1/100th of 1% (0.01%) or 1 cent for each \$100.
CTF	(Core Trust Fund) - The trust fund which holds the largest part of the WRS assets. It is a fully diversified, balanced fund that includes a mixture of holdings such as stocks, bonds and real estate.
Excess Return	Investment returns from a security or a portfolio that exceeds a BENCHMARK or index with a similar level of risk. It is widely used as a measure of the value added by the portfolio or investment manger or the manager's ability to beat the market.
Exposure	Exposure is the dollar value of physical assets plus the NOTIONAL VALUE of derivatives.

Glossary

Term	Definitions
Market Value	The price an asset would fetch in the marketplace.
Notional Value	The total value of a leverage position's assets. This term is commonly used in the options, futures and currency markets which employ the use of leverage, wherein a small amount of invested money can control a large portion of the market.
Passive Management	Investing in a fund that replicates a market index, such as the S&P 500, that will allow an investment performance that is no worse, or better, than the market as a whole.
Policy Benchmark	Fund level BENCHMARK approved by the Benchmark Committee. (Also referred to as "Policy Target" or "SWIB's Asset Allocation").
Policy Target	Fund level BENCHMARK approved by the Benchmark Committee. (Also referred to as "Policy Benchmark").
Reference Portfolio	Hypothetical global portfolio comprised of 60% MSCI World Net (custom net as of 2010) and 40% Bloomberg Barclays Government Credit Index (as of October 2019 Board Workshop). Assumes no contributions or withdrawals.
SIF	(State Investment Fund) - A pool of cash balances of the WRS various state and local government units.
VTF	(Variable Trust Fund) - The smaller of the two WRS funds. It is primarily a stock fund that has a relatively greater degree of risk than the Core Trust Fund due to the volatility of the stock market.
WRS	(Wisconsin Retirement System) – The total aggregate of the Core and Variable Trust Funds.

Board Meeting

Tab 7 - Investment Committee Open Session Business

- A. Amendments to SWIB Investment Committee WRS Investment Guidelines
- B. Amendments to WRS Investment Policy
- C. Amendments to SIF & Separately Managed Funds Investment Policy and Guidelines
- D. Approved Open Session Committee Meeting Minutes of May 25, June 22 and July 27, 2021
- E. Final Open Session Agenda for August 24, 2021 and Draft Open Session Agendas for September 28 and October 26, 2021 Meetings

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

Revised as of

~~April 27~~ June 22, 2021

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INTRODUCTION

The SWIB Board of Trustees (the “Board”) has delegated to the investment staff of SWIB standing authority to manage the assets of the Core Retirement Trust Fund (the “Core Fund”) and the Variable Retirement Trust Fund (the “Variable Fund”), which together make up the Wisconsin Retirement System (the “WRS”), pursuant to the Board’s WRS Investment Policy and to section 25.15(2) of the Wisconsin Statutes and section IB 2.02 of the Wisconsin Administrative Code. The Investment Committee was created to provide oversight of WRS¹ investments within the parameters established by the Board and pursuant to the Investment Committee’s Charter approved by the Board. To properly and prudently execute its delegated authority and oversight functions, the Investment Committee has established guiding policies, guidelines and procedures, which are set forth in this document, the Investment Committee Investment Guidelines (these “IC Guidelines”). These IC Guidelines articulate the policies and guidelines that are employed in the day-to-day management of the WRS assets by SWIB’s staff. This document will be reviewed periodically and updated as necessary by the Investment Committee to reflect changes in investment strategies and to reflect best industry practices for prudent investors. Notwithstanding the delegation of authority by the Board to the Investment Committee for the establishment, approval, and amendment of the policies, guidelines and procedures included in these IC Guidelines, the Board reserves all rights to modify and amend these IC Guidelines at any time in its discretion. Any changes to these IC Guidelines will be periodically reported to the Board. In addition to these IC Guidelines, SWIB staff may also have to comply with Compliance Division or legal requirements or review operational readiness with the Operations Division prior to the trading of the instruments and securities authorized herein.

I. LEVERAGE USE POLICY

Introduction

The funds managed by SWIB can have exposure to leverage through different structures and vehicles. Leverage is an exposure to an asset class that is not fully collateralized by cash assets or an exposure to an asset acquired that has not been fully funded. There are two types of leverage, financial leverage and economic leverage:

- Financial leverage (e.g., policy leverage) is an exposure to an asset class that is not fully collateralized by cash, with the remaining unfunded exposure not collateralized by another asset. An example of financial leverage is buying a future on an equity index that is only partially collateralized with cash assets.
- Economic leverage (e.g., alpha-beta overlay strategy) is an exposure that is partially collateralized by cash and partially collateralized by an alternative asset to cash but fully collateralized. An example of economic leverage is buying a future on an equity index and partially collateralizing the exposure with cash and collateralizing the remaining exposure with other assets so that the exposure is fully collateralized.

¹ The Investment Committee also has oversight of the State Investment Fund and other funds managed by SWIB as described in the Board’s SIF and Separately Managed Funds Investment Policy and Guidelines.

Certain internal active portfolios are also authorized to use portfolio-specific leverage. The Core Fund may provide unallocated cash to such internal active portfolios, [and to other portfolios to fund short-term financing needs](#), and charge a market-based funding rate to the applicable portfolio.

Leverage by itself does not necessarily create additional market risk or variation in market returns. Leverage may result in greater diversification and lower market risk than an unlevered portfolio.

Both financial and economic leverage, however, require liquid assets to pay down the levered obligation. This type of risk is called liquidity risk. Liquidity risk is managed by monitoring the level of liquidity required in various market scenarios and ensuring that an adequate quantity of liquid assets is available to meet commitments in times of market stress.

The total amount of financial leverage is approved by the Board through the WRS asset allocation process. The Board-approved asset allocation targets for each asset class together with the approved financial leverage is called the “Policy Portfolio.” The total amount of economic leverage is limited by the Board-approved active risk target and range.

Leverage may be generated through the use of futures, swaps (both OTC and CDX), repurchase agreements (repo), forwards and options, all of which may be traded long and short.

Leverage Use Philosophy

Leverage is used where it can improve investment portfolio efficiency in terms of return for risk versus alternative choices that do not use leverage. Leverage will also be used to improve portfolio diversification and reduce portfolio concentration.

Leverage Monitoring

Detailed reporting is regularly (i.e., daily, monthly and quarterly) produced by SWIB to provide feedback regarding leverage exposures for review by portfolio managers, the [Managing Director/head](#) of Asset and Risk Allocation (ARA), and the Executive Director/Chief Investment Officer (ED/CIO). Leverage use exposure risk metrics are reported at least quarterly to the Investment Committee. Leverage will be reviewed by the Investment Committee with an eye to diversifying counterparties, maturities and sources. Leverage will also be periodically reported by the ED/CIO to the Board. The balancing of these dimensions can vary through time as market conditions vary, especially with respect to liquidity.

Leverage Guidelines

1. Established leverage ratio ranges for each levered asset class are set forth below. Current Leverage Ratio is defined as the ratio of notional exposure to capital available in the portfolio (or total exposure to unencumbered exposure in the case of repo). If the Current Leverage Ratio for any levered asset class exceeds the Maximum Target Leverage Ratio, SWIB will, within 30 days (unless such time limit is waived with majority approval of the rebalancing task force), reduce exposure or add capital to bring the Current Leverage Ratio within the established range. A Current Leverage

Ratio below the Minimum Target Leverage Ratio will be monitored as part of the overall optimization of capital and funding costs.

<i>Levered Asset Class</i>	Minimum Target Leverage Ratio	Target Leverage Ratio	Maximum Target Leverage Ratio
<i>US Large Cap Equity</i>	2.7	3.3	4.0
<i>US Small Cap Equity</i>	2.7	3.3	4.0
<i>MSCI World xUS Equity</i>	2.7	3.3	4.0
<i>US TIPS</i>	6.0	8.0	10.0
<i>US Treasuries</i>	8.0	10.0	12.0

II. DERIVATIVES USE POLICY

Introduction

A "derivative instrument" is an investment instrument which usually derives its value and marketability from an underlying instrument which represents direct ownership of an asset or a direct obligation of an issuer (e.g. a "spot" or cash market instrument). SWIB recognizes that derivatives provide a means through which SWIB can implement investment strategies in a more cost and time efficient manner than through the physical investment of the underlying securities. Additionally, derivatives can be used to facilitate SWIB's risk management activities including risk mitigation. Derivatives include such instruments as futures, swaps, options and currency forwards and may be exchanged traded, traded over-the-counter (OTC) and/or cleared.

Derivatives Use Objectives

The overall strategic objective of SWIB's use of derivatives is to facilitate risk exposure management and to manage the cost of investing. Objectives for derivatives use include:

1. Constructing portfolios with risk and return characteristics that could not efficiently be created using underlying physical securities,
2. Changing systematic exposures without executing trades in the underlying physical securities,
3. Hedging or managing risks, and
4. Effecting varying active and passive investment strategies including, but not limited to: portable alpha, currency hedging, equitization, relative value trades, transition management, and rebalancings.

Derivatives Use Monitoring and Reporting

Derivatives use exposures will be monitored by portfolio managers that employ derivatives, the ED/CIO and the ARA Division. The Investment Committee will monitor derivatives use exposures and risk metrics on a quarterly basis or more frequently as needed.

Derivatives Guidelines Applicable to all WRS Internal Portfolios:

1. Exchange-traded derivatives must be traded on a recognized exchange approved by the Investment Committee, except for exchange-traded derivatives that are traded pursuant to Exchange for Related Position (EFRP) transactions, which are traded off-exchange and not subject to this requirement. Such approved exchanges are listed on *Appendix 1*. As additional exchanges are approved *Appendix 1* shall be updated without amendment to these IC Guidelines. For clarity, exchange-traded funds (ETFs), exchange-traded notes (ETNs), or exchange-traded vehicles (ETVs) shall not be deemed exchange-traded derivatives.
2. OTC derivatives may only be traded with counterparties with which SWIB has a current International Swap and Derivative Association (ISDA) agreement that includes a Credit Support Annex (CSA).

In addition:

- a) The counterparty, or its guarantor, must, on each date on which a transaction is entered into, have an actual credit rating of not less than: (1) "A2/P2" on short-term debt from S&P or Moody's; and/or (2) "Baa2/BBB" on long-term debt from S&P or Moody's.
- b) The collateral that SWIB holds under a CSA may be invested in the following:
 - i. Bank deposit accounts;
 - ii. Any money market fund having a rating of at least "Aaa" by Moody's or at least "AAAm" by S&P;
 - iii. Overnight commercial paper having a rating of at least "P-1" by Moody's and "A-1" by S&P;
 - iv. Overnight repurchase agreements with U.S. government, agency or dollar cash collateral;
 - v. Overnight reverse repurchase agreements with U.S. government, agency or dollar cash collateral; and
 - vi. The State Investment Fund or similar short term investment funds.

For clarity, this Item 2 does not apply to ETFs, ETNs, and ETVs, or to over-the-counter derivatives entered into on behalf of SWIB, or a title-holding entity that is wholly-owned by SWIB, by either an external manager or advisor in connection with a real estate separate account.

3. Investments may be made in put option contracts and call option contracts on securities, futures or an index of a group of securities. Put and call options may be purchased or sold on investments that could be held in the portfolio if the options were exercised.
4. Currency exposure management is permitted (but not required) through the use of exchange-traded currency instruments, and through the use of spot and forward contracts in foreign currencies (including FX Swaps). Direct currency hedging is

permitted to directly hedge currency exposure back to the U.S. dollar. Cross-currency exposure management to transfer out of an exposed currency and into a benchmark currency is permitted.

5. Guideline limits and soft parameters for each portfolio will be applied to the aggregate exposures which include both physical and synthetic securities.
6. New derivatives strategies will be reviewed and approved by the Investment Committee before their implementation or use.
7. SWIB shall not enter into new derivatives agreements with new counterparties until the ED/CIO has approved the agreement. Each ~~managing director,~~relevant division head or portfolio manager ~~in the relevant division~~ shall submit to the ED/CIO a written summary of any proposed addition of a relationship that may require evaluation of counterparty credit risks. Such relationship may involve (a) entering into a master netting or trading agreement with a new counterparty, which acts either as a principal or as an agent on behalf of multiple principals, or (b) hiring an external manager to implement a strategy that may require the manager to evaluate and monitor counterparty credit risks on SWIB's behalf (excluding external managers selected by Private Markets and Funds Alpha staff pursuant to their portfolio guidelines). The ED/CIO will review all proposals of such new relationships to determine that (i) the addition of the relationship is consistent with SWIB's investment goals and strategies, (ii) the appropriate loss and drawdown limits for the credit risk associated with the proposed counterparty relationship have been considered, and (iii) appropriate due diligence has been conducted. The ~~managing director,~~relevant division head or portfolio manager ~~in the relevant division~~ ("Initial Division User") shall retain responsibility for monitoring any such approved relationship. If another division expects to use the derivatives agreement for trading strategies after its initial approval, the ED/CIO, Initial Division User and the new division lead shall agree on the strategy for monitoring for the counterparty.

III. Rebalancing Procedures

1. Mandatory rebalancing is triggered by the procedures in the Board's WRS Investment Policy and the procedures below, as applicable. The Core Fund and Variable Fund asset mixes will be reviewed at least monthly for potential rebalancing.
2. A rebalancing task force will consist of the ED/CIO, and the ~~Managing Directors~~heads of ARA, Global Public Markets Strategies (GPMS) and Private Markets & Funds Alpha (PMFA). The ED/CIO may call a meeting of the rebalancing task force to consider a discretionary rebalancing from time to time. In consultation with the rebalancing task force, and with a majority approval of the task force, a discretionary rebalancing may be initiated pursuant to the plan developed by the ARA Division.
3. Discretionary rebalancing may be used to bring public market asset classes partially or fully back to their strategic target weights, to reduce or use active risk, to otherwise minimize asset allocation drift, or to intentionally overweight or underweight an asset or sub-asset class.

4. In connection with any rebalancing, the ARA Division will develop and implement a plan (a “Rebalancing Plan”) to affect the rebalancing. The Rebalancing Plan will include the total amount of each asset class to be bought and sold, the intended market exposures, and the time frame of purchases and sales. The Rebalancing Plan is based on best estimates of market prices, private market valuations, and benefits cash flows for when the rebalance will take effect. To the extent that the market prices are different at the time of a rebalancing from the anticipated market prices, valuations or cash flows, the Rebalancing Plan may be subsequently adjusted for additional purchases and/or sales to true up the market exposures to the anticipated levels of the originally approved rebalancing without further approval by the rebalancing task force.
5. The ARA Division, under the supervision of the ~~Managing Director~~, head of ARA, has the discretion to approve intra-month allocation adjustments of unallocated fund-level cash to passive portfolios and to manage asset class mis-alignments. Such adjustments may be, for example, to allocate unallocated fund-level cash arising from a distribution, to raise liquidity to fund private markets capital calls, to adjust for benchmark weight changes, or to otherwise make adjustments during the month as conditions may arise to return the asset allocation to its intended allocation targets consistent with most recently approved Rebalancing Plan. The manner in which intra-month allocation adjustments of unallocated fund-level cash are allocated or cash deficits are funded depends on the source of such unallocated cash or cash deficit and shall follow Guideline 8 below, as applicable. Only passive portfolios may be utilized for allocations or deallocations. Once unallocated fund level cash is allocated to a passive portfolio, investment of such cash shall be made in accordance with the underlying passive portfolio’s guidelines. Aggregate daily portfolio allocations or deallocations shall not exceed \$250 million unless approved by the ED/CIO.
6. Exchange-traded and OTC options or other derivatives may be purchased or sold in conjunction with managing asset class exposure and rebalancing. The aggregate notional value of the options will be limited to 2% of the market value of the trust fund at the date of purchase. The term of options used for this purpose may not exceed one year.
7. Cleared derivatives traded on a swap execution facility (SEF) may only be traded on or pursuant to the rules of the SEFs of which SWIB is a member or participant.
8. In connection with any rebalancing, the following procedures will be followed with respect to the following asset classes:
 - a. The Multi-Asset Strategy Class will rebalance 50% to Public Equities and 50% to Public Fixed Income. Accordingly, in connection with any rebalancing, for any percentage increase of assets in Multi-Asset, there will be a corresponding 50% reduction to Public Equities and a corresponding 50% reduction to Public Fixed Income, and vice versa if the Multi-Asset assets decrease. The rebalancing does not have to be proportional through the sub-asset classes.
 - b. The Real Estate Asset Class will rebalance 50% to Public Equities and 50% to Public Fixed Income. Accordingly, in connection with any rebalancing, for any percentage increase in Real Estate there will be a corresponding 50%

reduction to Public Equities and a corresponding 50% reduction to Public Fixed Income, and vice versa if the Real Estate assets decrease. The rebalancing does not have to be proportional through the sub-asset classes.

- c. The Private Equity Asset Class will rebalance on a 1 for 1 basis to Public Equities. Accordingly, in connection with any rebalancing, for any percentage increase in Private Equity there will be a corresponding 1% reduction to Public Equities. The rebalancing does not have to be proportional through the sub-asset classes.

IV. WRS General and Portfolio Guidelines – Internal Management

Each internal portfolio is assigned compulsory investment guidelines. Portfolio managers are generally not allowed to deviate from compulsory guidelines. If a deviation from compulsory guidelines occurs or is expected to occur, the staff member who becomes aware of it must immediately notify the head of the Compliance division, ED/CIO, and the ~~Managing Director or Head~~division head of the asset class in which the deviation occurred. Upon receiving notice of a deviation or potential deviation, the ED/CIO and relevant ~~Managing Director~~division head will either take action to correct the deviation or obtain a waiver approved by the ED/CIO. If the ED/CIO is not available, then the waiver may be granted by ~~the Managing Director of any asset class~~any division head (other than the ~~asset class to which~~division head of the portfolio ~~that~~ is requesting the waiver) and the Deputy Executive Director. All waivers will be reported to the Investment Committee and documented in the Investment Committee's meeting minutes.

All internal portfolios are also assigned "soft risk parameters." Soft risk parameters refer to desired characteristics and/or risk exposures. Portfolio managers are allowed, however, to deviate from soft parameters in pursuit of excess return or efficiency, subject to Investment Committee inquiry, discussion and concurrence of the continued exposure. Soft risk parameters for each portfolio are detailed in *Appendix 2*.

The following general compulsory guidelines ("General Guidelines") are applicable to all internally managed portfolios. Individual portfolio guidelines appear subsequently.

1. All portfolios must be managed in accordance with the fiduciary standards set forth in section 25.15(2) of the Wisconsin Statutes.
2. Credit quality rating requirements refer to an entire rating level, e.g., "A or better" includes "A-" and better ratings. The lower of split ratings is used. Investment grade securities are those rated "BBB-" or better (or the equivalent rating agency rating).
3. Fixed income securities backed by the full faith and credit of the U.S. government will be classified as U.S. government securities for purposes of these guidelines.
4. Any sovereign debt obligation in which SWIB invests must be rated "B3/B-" or above, unless otherwise approved in advance by the Investment Committee based on its guidelines for individual business case determinations.
5. Public equity investments in markets designated as "developed" or "emerging" are investments in entities that are incorporated or organized in countries included in the MSCI World Index or the MSCI Emerging Market Index, respectively. Public fixed

income investments in markets designated as “emerging” are investments in the debt of countries (or of companies incorporated or organized in countries) included in the JP Morgan Emerging Markets Diversified Index. Public fixed income investments in the debt of countries (or of companies incorporated or organized in countries) not included in the JP Morgan Emerging Markets Diversified Index will be designated as “developed.”

6. The Board approves the benchmarks for the Core Trust Fund and Variable Trust Fund, which are listed in *Appendix 3*. When new benchmarks are approved by the Board or modified by the Board, *Appendix 3* shall be updated without amendment to these IC Guidelines.
7. The ARA Division will monitor the risk exposures of all WRS portfolios. The ~~Managing Director~~, head of ARA will have the authority to recommend modifications to portfolio exposures to manage risk exposures. With the ED/CIO’s concurrence, the manager of a portfolio will make changes as recommended by the ~~Managing Director~~, head of ARA. In addition to such recommendations, drawdown control procedures for all active internal WRS portfolios will be implemented and monitored by the ARA Division and adhered to by the portfolios.
8. Portfolios may utilize cash instruments or derivatives in their investment strategy. All investments used will be subjected to the risk analysis and monitoring processes at the portfolio, asset class and fund levels. New derivative strategies and investment instruments will be reviewed with and approved by the Investment Committee prior to implementation.
9. Exposure limits and credit quality exposure limits are to be applied at the time of purchase. Unless otherwise indicated, “value” shall mean market value including un-invested cash.

A. Small Cap Portfolios

The Small Cap Portfolios are invested primarily in publicly traded equity securities that are registered with the Securities and Exchange Commission, including common stocks, preferred stocks, ETFs, American Depositary Receipts (ADRs), American Depositary Shares (ADSs), convertible bonds, securities issued in initial public offerings, and when-issued securities. The Small Cap Portfolios may also be invested in equity securities that are publicly traded on stock exchanges in other developed countries.

1. When aggregated with other SWIB portfolios, no more than 20% of outstanding shares of any single issuer, excluding shares held in commingled funds and ETFs, may be owned.
2. When aggregated with other SWIB portfolios, no single issuer’s equity securities may represent more than 3%, excluding shares held in commingled funds and ETFs, of the total market value of all SWIB equity portfolios.
3. When aggregated with other SWIB portfolios, securities subject to restrictions on trading pursuant to Rule 144 under the Securities Act of 1933 shall not constitute more than 1% of the market value of all SWIB equity portfolios.

4. Up to 10% of each portfolio's market value may be invested in international and emerging markets companies through common stocks, ADRs, ADSs, or country-specific ETFs. All international and emerging markets stock transactions must be in equity securities that are publicly traded on a stock exchange in a developed country.
5. Portfolios may use exchange-traded futures contracts or ETFs to equitize cash and receivables.
6. Portfolios may sell short any securities that may be purchased under applicable guidelines and may then use the proceeds from the short sale to purchase additional approved securities. The total value of the short sales in a portfolio may not exceed 50% of a portfolio's market value.
7. Except as provided in 4 above, securities must be issued by an entity that is incorporated in the United States; provided that investment is also permitted if the issuer is incorporated in a tax haven outside the United States if 1) the company's headquarters are located in the U.S. or 2) the headquarters are located in Belize, Bahamas, Bermuda, British Virgin Islands, Cayman Islands, Channel Islands, Cook Islands, Isle of Man, Marshall Islands, Panama, Liberia or Netherland Antilles and the primary exchange for the issuer's securities is located in the U.S.
8. The aggregate notional value of put options sold and not covered by portfolio cash is limited to 10% of the market value of the portfolio. The aggregate notional value of call options sold and not covered by the underlying security positions is limited to 10% of the market value of the portfolio.

B. Global Equity Portfolios

The global sector portfolios are invested primarily in publicly traded equity securities, including common stocks, preferred stocks, ADRs, ADSs, ETFs, convertible bonds, securities issued in initial public offerings, and when-issued securities, in each case that are issued and traded in U.S. and non-U.S. developed markets. Collectively, the global sector portfolios are referred to herein as the "global sector aggregate portfolio."

1. Investments in companies whose headquarters and/or primary exchange are located in emerging market countries shall not exceed 5% of the global sector aggregate portfolio's market value.
2. The global sector aggregate portfolio may own no more than 10% of outstanding shares of a single issuer, excluding shares held in commingled funds and ETFs.
3. No single issuer's equity securities, excluding shares held in commingled funds and ETFs, as a percentage of the total market value of the global sector aggregate portfolio, may exceed the greater of (i) 4.0% and (ii) the benchmark weight of the issuer plus 2.5%.
4. Securities subject to restrictions on trading pursuant to Rule 144 of the Securities Act of 1933 shall not constitute more than 1% of the market value of the global sector aggregate portfolio.

5. Securities offered or sold to U.S. investors pursuant to Regulation D or Rule 144A under the Securities Act of 1933 may be purchased if they are publicly traded on a stock exchange in a developed country.
6. Sector portfolios may use exchange-traded futures contracts or ETFs to equitize cash and receivables.
7. Sector portfolios may sell short any securities that may be purchased under applicable guidelines and may then use the proceeds from the short sale to purchase additional approved securities. The total value of the short sales in the global sector aggregate portfolio may not exceed 50% of the portfolio's market value.
8. The aggregate notional value of put options sold and not covered by portfolio cash is limited to 10% of the market value of the portfolio. The aggregate notional value of call options sold and not covered by the underlying security positions is limited to 10% of the market value of the portfolio.

C. Passive Portfolios

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

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

Guidelines #1-3 and may then use the proceeds from the short sale to purchase additional approved securities.

D. Government/Credit Portfolio

The Government/Credit Portfolio is primarily invested in publicly traded and Rule 144A fixed income instruments, primarily of investment grade, including governments, government-related entities, and corporations around the world, primarily in developed markets, including the United States.

1. Effective duration of the portfolio shall remain within 30% of the assigned benchmark's duration.
2. Non-investment grade securities shall not exceed 25% of the portfolio's market value.
3. With the exception of developed market sovereign securities, issuer concentrations are restricted to 8% (investment grade) and 3% (non-investment grade), excluding holdings of ETFs, of the market value of the portfolio.
4. Securities sold to SWIB under Rule 144A under the Securities Act of 1933 may not exceed 30% of the portfolio's market value.
5. The Portfolio may invest long or short in fixed income ETFs that have been approved by Compliance and included on an approved trading list (including put or call options thereon).
6. Emerging market sovereign debt is limited to (a) securities that are rated "B-" or above and (b) debt of countries in the JP Morgan Emerging Market Bond Index Global Diversified ("JP Morgan EM Bond Index"). Emerging market corporate debt is limited to (a) securities that are rated "B-" or above and (b) issuers in the Bloomberg Barclays US Credit Index.
7. Gross emerging market ("EM") debt shall not exceed 25% of the portfolio's market value on a long or short basis (i.e., long % + short %). EM FX forwards will not be counted against the EM debt exposure threshold.
8. Subject to Guideline #10, gross EM currency shall not exceed 15% of the portfolio's market value on a long or short basis (i.e., long % + short %), except that EM FX forwards intended to hedge the currency risk of an EM debt of same country may be netted (measured using the notional value of the currency forwards) and only the netted amount shall count against the 15% threshold. To calculate the threshold under this Guideline #8, EM unhedged local currency debt shall be included, and any FX exposure described in Guideline #9, that is not used to hedge EM debt shall be counted toward the EM currency limit.
9. Currency, interest rate, credit or return derivatives use is permitted for the purposes of adjusting durations, taking or modifying credit or currency positions, investing anticipated cash flows or to replicate a position taken through the purchase or sale of a permitted bond. Derivatives use is permitted through the use of (a) exchange-traded interest rate, credit and currency instruments, including futures and options, (b) spot and forward contracts in foreign currencies, (c) Over-the-counter and

exchanged traded currency ("FX") options limited to delta-adjusted notional value of +/- 5% of the market value of the portfolio, (d) interest rate, credit default and total return swaps on securities approved herein in accordance with the General Guidelines above and (e) volatility derivatives (including options) limited to 5% gross notional exposure and 2% net notional exposure of the portfolio market value. Notwithstanding Guideline #6, underlying securities in traded credit default swap indices ("CDSI") may include (i) EM sovereign and EM corporate debt securities rated "B-" or below, (ii) EM debt of countries that are not included in the JP Morgan EM Bond Index, or (iii) EM corporate issuers that are not included in the Bloomberg Barclays US Credit Index; provided however, that at least 75% of the EM sovereign debt securities or EM corporate debt securities that underlie any such traded CDSI are included in the indices listed in Guideline #6, as applicable, and are rated at least "B-" and above. Also, underlying securities in traded CDSI may include corporate securities rated lower than "B-" or below; provided however, that at least 75% of the corporate securities underlying the traded CDSI are rated at least "B-" and above.

10. Subject to the limitation in Guideline #8, the portfolio may take a position in a single market currency of developed (non-U.S.) countries of up to +/- 10% of the market value of the portfolio. Currencies of developed (non-U.S.) and emerging markets countries may be held through the use of forward contracts (including FX Swaps) provided that the notional value of any single EM currency shall not exceed +/- 5% of the market value of the portfolio.
11. Maximum cash in the portfolio shall not exceed 25% of the market value of the portfolio.

E. U.S. TIPS Index Portfolio

The U.S. TIPS Index Portfolio is invested in U.S. Treasury Inflation-Protected Securities (TIPS).

1. Individual securities must be U.S. TIPS which are included in the Barclays U.S. TIPS benchmark.
2. The portfolio's option adjusted duration should be +/- 15% of the benchmark duration.

F. Currency Overlay

To separate the management of currency risk from the risk of asset allocation and security selection, a currency overlay may be established at the fund level for the Core Fund and/or the Variable Fund. The ED/CIO, the ~~Managing Director~~, head of ARA, and the internal Global Bond Portfolio Manager shall set the currency overlay strategy.

1. The amount of the overlay will be expressed in relation to the size of the aggregate non-U.S. market value of the internally managed Global Sector Portfolios and the internally managed MSCI World ex U.S. Index Portfolio. This amount is referred to as the "portfolio reference value." For example, if the Global Sector Portfolios have a

non-U.S. market value of \$1 billion and the MSCI World ex U.S. Index Portfolio has a market value of \$1 billion, then the portfolio reference value is \$2 billion.

2. Only the currencies in the MSCI All Country World Index (ACWI) may be used to implement the currency overlay.
3. Currencies may be bought or sold.
4. Positions in any individual non-U.S. currency may be taken equal to +/- 10% of the portfolio reference value for major currencies (Euro, UK Sterling and Japanese Yen) and +/- 5% for all other ACWI currencies. For example, if the portfolio reference value is \$2 billion, individual currency positions in major currencies could be taken of +/- \$200 million.
5. Up to 25% of the portfolio reference value may be hedged into U.S. dollars.
6. The risk of the currency overlay strategy in aggregate will be limited to 25% of the active risk target for the total trust fund, which is set by the Board.
7. Limits shall be calculated using the notional value of the currency instruments (*i.e.*, forwards and futures) and the portfolio reference value at the time of purchase.

G. Exposure Management Portfolios

Portfolios may be established at the asset class level for multi-asset, public equity and public fixed income asset classes to provide for adjustment and management of the Core Fund and Variable Fund exposures and to utilize or adjust active risk of the Core Fund and Variable Fund. In determining portfolio investments, exposures held in both internally and externally managed portfolios will be considered. These portfolios may also be used to express investment strategies and ideas where the sizing of the investment requires it to be outside of an individual internal portfolio.

Each strategy and/or investment idea expressed in the portfolios shall be approved by any three of the ED/CIO and the ~~Managing Directors~~[heads](#) of ARA, GPMS and PMFA. Portfolio oversight will be the responsibility of the ARA Division, and the Investment Committee will monitor each investment in the portfolios. The Investment Committee shall establish procedures to monitor these portfolios. These portfolios may invest in any instrument approved for the relevant asset class portfolios described elsewhere in these guidelines. The portfolios may use derivative instruments.

Portfolios will not have a separate benchmark or risk target, but will be included within the benchmark and risk parameters for the applicable aggregated asset class. The portfolios may include, for example, investments strategies to adjust aggregate equity beta, the allocations between specific sectors or sub-asset class exposures, currency exposures, volatility exposure, or credit exposure or duration.

H. Multi-Asset Strategies Portfolios

The Multi-Asset Strategies portfolios are authorized to invest in or short any instrument and derivative, subject to the general and derivative guidelines contained in these IC Guidelines and the following restrictions:

1. The maximum amount to be allocated to Multi-Asset Strategies, expressed as a percentage of the total Core Fund, shall be approved by the Board.
2. The maximum active risk target of an individual Multi-Asset Portfolio at time of implementation will be targeted at no more than 6% of the active risk target for the total Core Fund, which is set by the Board.
3. The strategies within a Multi-Asset Portfolio may be managed either by internal investment staff or by an external manager. The SWIB individual(s) proposing a strategy will manage and monitor the strategy and ensure that all reporting requirements are satisfied.
4. Leverage and derivatives may be used to implement individual strategies and to adjust the market exposure of a Multi-Asset Portfolio, subject to the active risk target limit stated in guideline 2 above.
5. To-be-announced mortgage-backed securities (TBA MBS) may be traded only with a counterparty with which SWIB has a current Master Securities Forward Transaction Agreement (MSFTA).
 - a. The counterparty, or its guarantor, must, on each date on which a transaction is initiated, have a credit rating of not less than "Baa2/BBB" on long-term debt from S&P or Moody's.
 - b. If the counterparty is not rated, then its parent must have such a rating and must guarantee the obligations of the counterparty.
 - c. If a counterparty or its parent is downgraded to a credit rating below "Baa2/BBB" after the initiation of a trade, then trades may be initiated with that same counterparty only to reduce the existing exposure to that downgraded counterparty.
6. The settlement of any forward TBA contract shall not be more than 90 days from the date of the trade.

Global Securities Portfolio:

1. Any physical and derivative instrument is permitted subject to the Multi-Asset Strategies Portfolios Guidelines contained in these IC Guidelines. Shorting is permitted. Up to 50% of the portfolio market exposure can be created synthetically to fund long/short ideas.
2. Positions may be purchased long and sold short, and the use of leverage will be incorporated in ex-ante risk assessments and active risk contributions.

3. The Global Securities Portfolio (GSP's) ex-ante tracking error limit will not exceed 6% as measured by SWIB's standard model used at any given time by SWIB's ARA Division. If market conditions (compared to active management actions) cause the portfolio's ex-ante tracking error to exceed this limit, then the GSP will not be deemed to be out of compliance with these guidelines and this guideline will not be deemed to be violated; except that, if the GSP's ex-ante tracking error exceeds 6% then the portfolio may not trade or take any other action which is predicted to increase the ex-ante tracking error of the portfolio.

I. Mortgage-Backed Securities Portfolio

The Mortgage-Backed Securities (MBS) portfolio is primarily invested in agency-backed securities in the United States, including mortgage pools, TBA MBS and collateralized mortgage obligations (CMOs).

1. Securities not eligible for inclusion in the benchmark, but otherwise permitted in these portfolio guidelines, may not exceed 25% of the portfolio's market value. TBA MBS and ETFs will not be counted toward this 25% limit.
2. Effective duration of the portfolio shall remain within one year of the assigned benchmark's duration.
3. Non-agency MBS, including GSE risk-sharing securities, may not exceed 10% of the portfolio's market value.
4. The MBS portfolio may invest long or short in ETFs that invest primarily in U.S. MBS and that have been approved by Compliance and included on an approved trading list (including put or call options thereon).
5. Ex-ante tracking error will not exceed 4% as measured by SWIB's standard model used at any given time by SWIB's ARA Division. If market conditions (compared to active management actions) cause the portfolio's ex-ante tracking error to exceed this limit, then the portfolio will not be deemed to be out of compliance with these guidelines and this guideline will not be deemed to be violated; except that, if the portfolio's ex-ante tracking error exceeds 4% then the portfolio may not trade or take any other action which is predicted to increase the ex-ante tracking error of the portfolio.
6. Except for TBA MBS, US Treasuries and ETFs, no single issue may exceed 5% of the portfolio's market value. No single BBB-rated issue may exceed 2% of the portfolio's market value. No single issue rated below BBB may exceed 1% of the portfolio's market value. Each tranche of a securitized product is considered a separate issue. Total exposure to issues rated BBB or below may not exceed 10% of the portfolio's market value.
7. Commercial mortgage-backed securities (CMBS), asset-backed securities (ABS) and collateralized loan obligations (CLOs) with a maturity of more than one year may not, in the aggregate, exceed 10% of the portfolio's market value.

8. CMBS, ABS and CLOs with a maturity of one year or less (i) may not, in the aggregate, exceed 25% of the portfolio's market value, (ii) may not be rated below investment grade, and (iii) will have an average credit rating of "A" or better. The portfolio may also use repurchase agreements and reverse repurchase agreements for cash management.
9. Interest rate and volatility derivatives use is permitted for the purposes of duration, interest rate, yield curve and volatility management. Derivatives use is permitted through the use of (a) exchange-traded interest rate instruments, including futures and options, (b) interest rate swaps and swaptions, (c) MBS options, and (d) other volatility derivatives (including options) limited to 10% gross notional exposure and 5% net notional exposure of the portfolio's market value. The portfolio may also invest in securities issued by the US government and its agencies, including through futures.
10. TBA MBS will conform to Guidelines #5-6 under the Multi-Asset Strategies Portfolios.
11. Maximum cash (including cash equivalent securities as defined above) may not exceed 20% of the portfolio's market value.
12. CLOs collateralized by corporate bank loans may not exceed 3% of the portfolio's market value.

J. High-Yield Bond Portfolio

The High-Yield Bond Portfolio is eligible to invest in any instruments included in the assigned benchmark — primarily U.S. dollar denominated publicly-traded and Rule 144A high-yield corporate bonds or other fixed income instruments rated between BB+/Ba1 and B-/B3. Subject to the limitations set forth below, the portfolio may also invest in non-U.S. dollar denominated bonds of issuers located outside of the United States, as well as convertible, preferred securities and equity securities.

1. The portfolio shall maintain at minimum a weighted average rating of B-. Subject to the foregoing, the portfolio may hold fixed income instruments rated below B-/B3 as well as unrated securities, provided the unrated securities have been assigned an internal SWIB rating by portfolio management staff using similar rating methodologies as the rating agencies.
2. Effective duration of the portfolio shall remain within +/- five years of the assigned benchmark's effective duration.
3. Positions may be purchased long and sold short, and the use of leverage will be incorporated in ex-ante risk assessments and active risk/tracking error contributions. The portfolio may take short exposure by shorting individual securities, cash bonds, buying single name CDS, shorting the CDX index, shorting high-yield and equity ETFs that have been approved by Compliance and included on an approved ETF trading list (including put or call options thereon), as well as shorting the underlying equity of a leveraged issuer.

4. Instruments not included in the benchmark, but otherwise permitted in these portfolio guidelines, may not exceed 25% of the portfolio's market value on a long or short basis (i.e., long % + short %). For the avoidance of doubt, any instrument that is subsequently removed from the portfolio's benchmark due solely to the instrument's maturity falling below the benchmark's stated thresholds shall not be deemed to be out of benchmark for purposes of the 25% limitation described in this Guideline #4.
5. Maximum single issuer concentration is limited to 5%, excluding [Treasuries](#), [Treasury futures](#) and holdings of ETFs, of the portfolio's market value on a net basis.
6. Gross exposure to non-U.S. Dollar denominated instruments shall not exceed 10% of the portfolio's market value on a long or short basis (i.e., long % + short %).
7. Gross exposure to emerging market corporate debt is limited to (a) securities that are rated "B-/B3" or above and (b) issuers incorporated or organized in countries included in the JP Morgan Emerging Markets Diversified Index, and in aggregate shall not exceed 5% of the portfolio's market value on a net basis.
8. Exposure to any single industry sector shall remain within 20% of the assigned benchmark's industry sector weighting on a net basis.
9. Exposure to high-yield bank loans shall not exceed 10% of the portfolio's market value on a net basis.
10. Ex-ante tracking error shall not exceed 5% as measured by SWIB's standard model used at any given time by SWIB's ARA Division. If market conditions (compared to active management actions) cause the portfolio's ex-ante tracking error to exceed this limit, then the portfolio will not be deemed to be out of compliance with these guidelines and this guideline will not be deemed to be violated; except that, if the portfolio's ex-ante tracking error exceeds 5% then the portfolio may not trade or take any other action which is predicted to increase the ex-ante tracking error of the portfolio.
11. The portfolio may use eligible derivative instruments to manage the duration, yield curve exposure, currency, interest rate, and market exposure of the portfolio. Eligible derivatives include (i) CDS (as described in more detail under Guideline #3 above); (ii) futures contracts on securities, indices, and interest rates; (iii) forward contracts for securities, indices, and interest rates; (iv) swap contracts for securities, indices, and interest rates; (v) options on high yield [and equity](#) ETFs (as described in more detail under Guideline #3 above); and (vi) options on the underlying equity of a leveraged issuer.
12. Gross exposure for the portfolio shall not exceed 200% of the portfolio's market value, and net exposure for the portfolio shall not exceed 150% of the portfolio's market value, in each case unless approved by the ED/CIO.

K. Short Term Credit Portfolio

The Short-Term Credit Portfolio is an investment vehicle of cash and short-term investments of the WRS designed to achieve a return equal to USD Three Month LIBOR. Its investment objectives are: 1) Safety of principal; 2) Return Objective of 3-Month LIBOR; and 3) Liquidity.

Portfolio Allocation

(Percent of Portfolio at Par Value)

Treasuries, Agencies, and FDIC Insured Bank Deposits	0-100%
Repurchase Agreements	0-100%
Commercial Paper	0-100%
Corporate Notes	0-100%
Certificates of Deposit/Time Deposits	0-50%
Bankers' Acceptances	0-50%
Yankee/Euro Certificates of Deposit/Time Deposits (U.S. Dollars)	0-50%

Maturity Guidelines

(Maximum)

Consistent with the portfolio purpose and objectives, the portfolio weighted average maturity will not exceed one year (the weighted average maturity of floating rate securities is based on interest rate reset dates).

Repurchase Agreements	1 year
Reverse Repurchase Agreements	1 year
U.S. Treasuries and Agencies	5 years
Commercial Paper/Bankers' Acceptances	1 year
Corporate Notes – Fixed Rate	3.1 years
Corporate Notes – Floating Rate	5.1 years
Certificates of Deposit/Time Deposits	5 years
Yankee/Euro Certificates of Deposit/Time Deposits	5 years

Issuer Exposure

(Percent of Portfolio at Par Value)

The maximum exposure for each issuer/guarantor/counterparty shall be in the aggregate as follows:

U.S. Treasury Bills and U.S. Agency Discount Notes	No limit
Repurchase Agreements (Gov't/Agency Collateral)	25%
Repurchase Agreements (Other Collateral)	5%
Commercial Paper and Corporate Notes	5%
Certificates of Deposit/Time Deposits	5%

Bankers' Acceptances	5%
Yankee/Euro Certificates of Deposit/Time Deposits (U.S. Dollars)	5%
Wisconsin CD Program – individual bank (unless a higher limit from another category applies.)	\$20MM or 3% of bank assets, whichever is less
Bank Deposits	Up to the amount guaranteed by the FDIC or the amount allowable for a bank instrument, whichever is higher

CREDIT QUALITY

The minimum rating of an issuer/counterparty shall be the lowest in the event of a split rating and shall be as follows:

U.S. Treasury Bills and U.S. Agency Discount Notes	No minimum
Repurchase Agreements	BBB
Commercial Paper	A-2/P-2
Unrated Wisconsin Company Commercial Paper (maximum maturity of 90 days and percentage of the portfolio in unrated CP cannot exceed 15%)	Unrated
Corporate Notes, Bankers' Acceptances, Certificates of Deposit/ Time Deposit, Bank Deposits and Yankee/Euro Certificates of Deposit/Time Deposits (U.S. Dollars) greater than 1 year	A
Corporate Notes, Bankers' Acceptances, Certificates of Deposit/ Time Deposit, Bank Deposits and Yankee/Euro Certificates of Deposits (U.S. Dollars) less than 1 year (the percentage of the portfolio in BBB cannot exceed 15%).	BBB
Wisconsin CD Program – individual bank	Unrated

L. General Guidelines specific for Private Market and Hedge Fund Portfolios

1. The portfolio manager shall be responsible for notifying the ED/CIO of any referrals or significant contacts by or on behalf of SWIB Trustees regarding consideration of an investment opportunity.
2. The Private Markets & Funds Alpha (PMFA) staff shall report to the Trustees all portfolio commitments to non-public investments.

3. Each portfolio manager shall obtain written confirmation from legal counsel (which may be external legal counsel) that documentation has been satisfactorily completed prior to closing of any investment in his or her portfolio that involves negotiated SWIB documentation.

4. Each portfolio manager shall submit to the ~~Managing Director~~head of PMFA a written summary of any proposed investment. The ~~Managing Director~~head of PMFA will review all such investments to determine that a) the investment falls within the portfolio's investment guidelines, including limits on invested capital, b) the investment is consistent with the portfolio's established strategy, and c) the appropriate due diligence standards are being applied. No such investment may be closed without approval of the ~~Managing Director~~head of PMFA or ED/CIO depending upon the nature and amount of the investment as required in the relevant portfolio guidelines. The portfolio manager shall retain responsibility for each investment decision. External managers with delegated investment discretion operate under separate authority. For purposes of this paragraph, "investments" does not include the individual properties within a Real Estate Equity Portfolio separate account tranche, but does include the tranche that holds such properties.

5. Dollar limitations for commitments to funds or other investments do not apply to incidental and customary contractual reinvestment, indemnity, reserve or similar obligations incorporated into the terms of an investment, provided such obligations are not expected to be material.

6. Private equity and venture capital investments in markets designated as "developed" or "emerging" are investments in countries included in the MSCI World Index or the MSCI Emerging Market Index, respectively. Real estate investments in markets designated as "developed" or "emerging" are investments in properties in countries included in the EPRA/NAREIT Developed Index and the EPRA/NAREIT Emerging Market Index, respectively.

7. Funds or commingled investments shall be considered U.S., non-U.S., "developed" or "emerging" based on their primary strategy and not on a look-through basis to the underlying investments.

8. Exposure limits and credit quality exposure limits are to be applied at the time of purchase. The term "exposure" is defined as the net asset value plus unfunded commitments.

M. Private Debt Portfolio

The overall objective of the Private Debt Portfolio (the “Private Debt Portfolio” includes both the Wisconsin Private Debt Portfolio and the Non-Wisconsin Private Debt Portfolio) is to invest funds of the Core Fund in market rate fixed income instruments consistent with SWIB’s fiduciary responsibilities that are primarily private loans negotiated by SWIB directly or as part of an investor group that includes banks or other institutional investors. The two portfolios are invested as follows:

- Wisconsin Private Debt Portfolio – This portfolio’s investments will consist of loans or fixed income securities issued by companies or entities that are headquartered in Wisconsin, have existing operations in Wisconsin, or intend to apply the proceeds to new business operations in Wisconsin which contribute to the Wisconsin economy.
- Non-Wisconsin Private Debt Portfolio – This portfolio can invest in loans or fixed income securities issued by companies or entities located in or doing business in the United States.

The Private Debt Portfolio may also include securities sold to SWIB pursuant to Rule 144A or in the public fixed income markets. Investments may be made in fixed income instruments and in instruments with both fixed income and equity features.

1. Investments may carry a rating from a national rating agency, the National Association of Insurance Commissioners (NAIC) or SWIB. Notwithstanding the provisions of the General Guidelines above, the Portfolio Manager may make investments that carry a “BBB” or better rating from a national rating agency or the NAIC, provided that if the investment carries only a SWIB rating, it shall be approved by the ~~Managing Director~~ head of PMFA, regardless of size.
2. Investments may be made in below investment grade instruments provided that such investments do not in the aggregate constitute more than 25% of the Private Debt Portfolio’s par value. Any investment below investment grade requires approval from the ~~Managing Director~~ head of PMFA.
3. The Private Debt Portfolio’s aggregate portfolio issuer limits shall be scaled by quality and a purchase may not cause the Private Debt Portfolio’s exposure to a borrower or issuer to exceed the following limits (at par value):

Rating	Maximum Position
U.S. Gov’t/Agency	No Limit
“AA” or higher	\$100 MILLION
“A”	\$75 MILLION
“BBB”	\$50 MILLION
“BB” or less	\$25 MILLION

4. The Private Debt Portfolio shall maintain at minimum a weighted average rating of “BBB”, where “AAA”=4, “AA”=3, “A”=2, “BBB”=1, and “BB” or less =0.
5. Other guideline limitations notwithstanding, portfolio managers or other staff authorized by the ~~Managing Director~~ head of PMFA may modify or waive terms of investments in the portfolio and generally take any and all other actions that are necessary and reasonable to protect, maintain or enhance the value of SWIB’s position in the investments.

N. Venture Capital Portfolio

The SWIB Venture Capital Portfolio (the “Venture Capital Portfolio” includes both the Wisconsin Venture Capital Portfolio and the Non-Wisconsin Venture Capital Portfolio) consists of venture capital or venture capital-related investments and invests as follows:

- The Non-Wisconsin Venture Capital Portfolio shall make venture capital investments on a global basis in limited partnership or other fund vehicles, through strategic partnerships, or as co-investments in venture-backed companies or publicly traded companies that were venture backed.
- The Wisconsin Venture Capital Portfolio shall make venture capital investments in limited partnership or other fund vehicles or strategic partnerships that are either located in Wisconsin and/or which target Wisconsin as a primary market or as co-investments in venture-backed companies or publicly traded companies that were venture backed that are located or have operations in Wisconsin.

A private equity consultant hired by SWIB will review prospective investments in limited partnerships or other fund vehicles with new managers and make individual written recommendations to SWIB staff. SWIB shall only invest in new limited partnerships or other fund vehicles with new managers that are affirmatively recommended by the Consultant. Follow-on funds, co-investments and secondary fund purchases do not require consultant review. A “follow-on fund” is an investment or an investment vehicle that has the same sponsor or manager and is either parallel to, or has a substantially similar investment strategy as, a fund in which SWIB is or has been an investor. From time to time, SWIB may also consider formation of fund investments where it may participate both as a general partner and as limited partner. In such cases, subject to the approval limits below, SWIB will retain a consultant to advise it on the strategy and opportunity.

1. Any other guidelines notwithstanding, the Venture Capital Portfolio commitments are subject to the following approvals:

Approval By:	Managing Director <u>Head of</u> PMFA	ED/CIO
New Manager		
• Venture Capital Funds	Up to \$60 million or less	More than \$60 million
• Venture Capital Co-Investments	Up to \$20 million or less	More than \$20 million

Follow on Commitments		
• Venture Capital Funds	Up to \$75 million	More than \$75 million
• Venture Capital Co-Investments (excluding funds of one)	Up to \$25 million	More than \$25 million
SWIB ownership equal to or greater than 50% of an individual fund (excluding funds of one and any fund/vehicle through which a co-investment is made)		ED/CIO, provided that notice shall be given to the ED/CIO if ownership of an individual fund (excluding a fund/vehicle through which a co-investment is made) is equal to or greater than 33 1/3%

2. No more than 45% of the Venture Capital Portfolio's exposure may be invested outside of the U.S., without the approval of the ED/CIO. No more than 20% of the Venture Capital Portfolio's exposure may be invested in emerging markets. No more than 5% of the Venture Capital Portfolio's exposure may be invested in companies located in emerging markets.
3. No more than 2% of the Core Fund may be invested in venture capital.
4. Venture capital investments may be made through funds, strategic partnerships, or co-investments. Venture capital co-investments (excluding funds of one) must be made in one of the following ways:
 - (1) alongside a fund with the same sponsor or manager as a fund in which SWIB is or has been an investor,
 - (2) alongside a fund with the same sponsor or manager as a fund on which SWIB is conducting due diligence and is actively evaluating for a prospective commitment, or
 - (3) as approved by the ED/CIO.
5. Venture capital co-investments made within the Wisconsin Venture Capital Portfolio are limited to companies with their headquarters or primary operations in Wisconsin. Co-investments in the Non-Wisconsin Venture Capital Portfolio may not make up more than 15% of the Venture Capital Portfolio's exposure.
6. Neither the aggregate exposure (including co-investments) to any fund manager or sponsor, nor the aggregate amount of investments in any company, may exceed 20% of the Venture Capital Portfolio's exposure without approval of the ED/CIO.
7. No single co-investment (excluding funds of one) shall exceed 10% of the Venture Capital Portfolio's exposure.
8. The Venture Capital Portfolio may make co-investments in public company securities through private placements, including PIPEs, or other offerings. Co-investments in

public company securities shall not exceed 10% of the Venture Capital Portfolio's exposure. For purposes of this guideline, public company securities received via a distribution are not counted and are expected to be sold as soon as reasonably practicable.

9. Subject to the approval thresholds and the restrictions above, the Venture Capital Portfolio Manager or other staff authorized by the ~~Managing Director~~head of PMFA may modify or waive terms of investments in the portfolio and generally take any and all other actions that are necessary and reasonable to protect, maintain or enhance the value of SWIB's position in the investments.

O. Private Equity Portfolio

The Private Equity Portfolio consists of private equity or private equity-related investments, made on a global basis, in limited partnership or other fund vehicles, strategic partnerships, and co-investments in operating or holding companies. Investment guidelines and soft parameters shall be applied to the aggregate composition of the Private Equity Portfolio (including the Legacy, Private Equity Co-Investment, Current Return and Current Return Co-Investment Portfolios), unless otherwise stated. A private equity consultant hired by SWIB will review prospective investments in limited partnerships or other fund vehicles with new managers and make individual written recommendations to SWIB staff. SWIB shall only invest in limited partnerships or other fund vehicles with new managers that are affirmatively recommended by the Consultant. Follow-on funds, co-investments and secondary fund purchases do not require consultant review. A "follow-on fund" is an investment or an investment vehicle that has the same sponsor or manager and is either parallel to, or has a substantially similar investment strategy as, a fund in which SWIB is or has been an investor. Co-investments where SWIB is the lead investor may not be made.

1. Any other guidelines notwithstanding, all portfolio commitments are subject to the following approvals:

	Managing Director <u>Head of</u> PMFA	ED/CIO
New Manager		
• Funds or Strategic Partnerships	\$150 million or less	Over \$150 million
• Co-Investments	\$50 million or less	Over \$50 million
Follow-on Commitments		
• Funds or Strategic Partnerships	\$300 million or less	Over \$300 million
• Co-Investments	\$100 million or less	Over \$100 million

SWIB ownership equal to or greater than 50% of an individual fund (excluding a fund/vehicle through which a co-investment is made)	ED/CIO, provided that notice shall be given to the ED/CIO if ownership of an individual fund (excluding a fund/vehicle through which a co-investment is made) is equal to or greater than 33 1/3%
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2. The Private Equity Portfolio shall not include investments in venture capital funds.
3. Investments may be made through funds, strategic partnerships, or co-investments. Co-investments must be made in one of the following ways:
 - (1) alongside a fund with the same sponsor or manager as a fund in which SWIB is or has been an investor,
 - (2) alongside a fund with the same sponsor or manager as a fund on which SWIB is conducting due diligence and is actively evaluating for a prospective commitment, or
 - (3) as approved by the ED/CIO.
4. Neither the aggregate exposure (including co-investments) to any fund manager or sponsor, nor the aggregate amount of investments in any company, may exceed 10% of the total Private Equity Portfolio's exposure without approval of the ED/CIO.
5. No more than 45% of the Private Equity Portfolio's exposure may be invested outside of the U.S., without the approval of the ED/CIO. No more than 20% of the Private Equity Portfolio may be invested in emerging markets.
6. No more than 45% of the Private Equity Co-Investment Portfolio's exposure may be invested outside of the U.S., without the approval of the ED/CIO. No more than 20% of the Private Equity Co-Investment Portfolio's exposure may be invested in companies located in emerging markets.
7. The Private Equity Co-Investment Portfolio may make co-investments in public company securities through private placements, including PIPEs, or other offerings. Co-investments in public company securities shall not exceed 10% of the Private Equity Co-Investment Portfolio's exposure. For purposes of this guideline, public company securities received via a distribution are not counted and are expected to be sold as soon as reasonably practicable.
8. Other guideline limitations notwithstanding, portfolio managers or other staff authorized by the ~~Managing Director~~ head of PMFA may modify or waive terms of investments in the portfolio and generally take any and all other actions that are necessary and reasonable to protect, maintain or enhance the value of SWIB's position in the investments.

P. Real Estate Equity Portfolio Guidelines

The Real Estate Equity Portfolio contains investments in a broad range of real estate and real estate-related assets, including equity and debt investments, either solely, or through investment vehicles and structures such as public or private Real Estate Investment Trusts

(REITs), public or private real estate company securities, limited liability corporations, limited partnerships, joint ventures, separate accounts or co-investment vehicles. Investment guidelines and soft parameters for Real Estate shall be applied, on an invested basis, to the aggregate composition of the Real Estate Equity Portfolio (except that all REIT portfolios shall be included in the aggregate as Core holdings). A real estate consultant hired by SWIB will review prospective commingled fund investments with new managers and make individual written recommendations to SWIB staff. SWIB shall only invest in commingled fund investments with new managers that are affirmatively recommended by the Consultant. Follow-on funds and secondary fund purchases will not require consultant review. A “follow-on fund” is an investment or an investment vehicle that has the same sponsor or manager and is either parallel to, or has a substantially similar investment strategy as, a fund in which SWIB is or has been an investor.

All portfolio commitments are subject to the following approvals:

	Managing Director <u>Head of PMFA</u>	ED/CIO
Commingled Fund		
• New Fund	\$150 million or less	Over \$150 million
• Follow-on Fund	\$300 million or less	Over \$300 million
Core - Separate Account*	\$300 million or less	Over \$300 million
Non-Core – Separate Account*	\$200 million or less	Over \$200 million

*With respect to a separate account tranche, approval is required for the tranche, but not for individual investments within the tranche.

1. Aggregate exposure (including co-investments) to any commingled fund manager or sponsor may not exceed 20% of the Real Estate Equity Portfolio’s exposure without approval of the ED/CIO. This does not apply to real estate investments for which SWIB has sole discretion to select, retain, and terminate manager(s) and/or advisor(s) without cause.
2. Aggregate direct public REIT and real estate company stock holdings (excluding underlying commingled fund holdings and externally managed REIT Portfolios) may not exceed 15% of the Real Estate Equity Portfolio’s exposure and portfolio investments in any one public REIT or company may not exceed 3% of the Real Estate Equity Portfolio’s exposure. SWIB’s direct ownership position in any public REIT or company may not exceed 20% of outstanding voting equity, without ED/CIO approval. Any externally managed REIT portfolio(s) will be managed under separate authority, with guidelines set out in the management agreement(s) between SWIB and the selected manager(s).
3. No more than 45% of the Real Estate Equity Portfolio’s exposure may be invested outside the U.S., without the approval of the ED/CIO. No more than 20% of the Real

Estate Equity Portfolio's exposure may be invested in emerging markets, and no more than 10% of the Real Estate Equity Portfolio's exposure may be invested in separate accounts invested in emerging markets.

4. Other guideline limitations notwithstanding, the portfolio manager or other staff authorized by the ~~Managing Director~~—head of PMFA may: modify or waive terms of investments in the portfolio, including without limitation mortgages and leases on real estate in the portfolio; enter into new mortgages and leases; execute deeds and bills of sale; make expenditures for maintenance and improvements; grant easements; hire consultants, service providers, real estate advisors and property managers; and generally take any and all other actions that are necessary and reasonable to protect, maintain or enhance investment value of SWIB's position in the investments.
5. Prior to funding a direct investment (including a property within a separate account tranche) where real property is a material component, the property shall be evaluated for the presence of environmental and code compliance issues. If environmental issues that require action by governmental authorities exist, then funding shall not occur until an adequate remediation program is in place. If code compliance issues exist, then an adequate plan to bring the property into compliance shall be in place.
6. SWIB may not initiate improvement or development of real property owned or controlled by SWIB without making provisions for compliance with applicable Federal, state and local codes and ordinances.

Q. Current Return Portfolio

The Current Return Portfolio consists of current return or certain equity-related investments, made on a global basis, in limited partnership or other fund vehicles, strategic partnerships, and co-investments in operating or holding companies. Investments may be made in fixed income instruments and in instruments with both current pay and equity features. Investment guidelines and soft parameters shall be applied to the aggregate composition of the Private Equity Portfolio (including the Legacy, Private Equity Co-Investment, Current Return and Current Return Co-Investment Portfolios), unless otherwise stated. A private equity consultant hired by SWIB will review prospective investments in limited partnerships or other fund vehicles with new managers and make individual written recommendations to SWIB staff. SWIB shall only invest in limited partnerships or other fund vehicles with new managers that are affirmatively recommended by the Consultant. Follow-on funds, co-investments and secondary fund purchases do not require consultant review. A "follow-on fund" is an investment or an investment vehicle that has the same sponsor or manager and is either parallel to, or has a substantially similar investment strategy as, a fund in which SWIB is or has been an investor. Co-investments where SWIB is the lead investor may not be made.

1. Any other guidelines notwithstanding, all portfolio commitments are subject to the following approvals:

	Managing Director <u>Head of PMFA</u>	ED/CIO
New Manager		
• Funds or Strategic Partnerships	\$150 million or less	Over \$150 million
• Co-Investments	\$50 million or less	Over \$50 million
Follow-on Commitments		
• Funds or Strategic Partnerships	\$300 million or less	Over \$300 million
• Co-Investments	\$100 million or less	Over \$100 million
SWIB ownership equal to or greater than 50% of an individual fund (excluding a fund/vehicle through which a co-investment is made)	ED/CIO, provided that notice shall be given to the ED/CIO if ownership of an individual fund (excluding a fund/vehicle through which a co-investment is made) is equal to or greater than 33 1/3%	

2. Investments may be made through funds, strategic partnerships, or co-investments. Co-investments must be made in one of the following ways:
 - (1) alongside a fund with the same sponsor or manager as a fund in which SWIB is or has been an investor;
 - (2) alongside a fund with the same sponsor or manager as a fund on which SWIB is conducting due diligence and is actively evaluating for a prospective commitment; or
 - (3) as approved by the ED/CIO.
3. Neither the aggregate exposure (including co-investments) to any fund manager or sponsor, nor the aggregate amount of investments in any company, may exceed 10% of the total Private Equity Portfolio's exposure without approval of the ED/CIO.
4. No more than 45% of the Current Return Portfolio's exposure may be invested outside of the U.S., without the approval of the ED/CIO. No more than 20% of the Current Return Portfolio may be invested in emerging markets.
5. No more than 45% of the Current Return Co-Investment Portfolio's exposure may be invested outside of the U.S., without the approval of the ED/CIO. No more than 20% of the Current Return Co-Investment Portfolio's exposure may be invested in companies located in emerging markets.
6. The Current Return Co-Investment Portfolio may make co-investments in public company securities through private placements or other offerings. Co-investments in public company securities shall not exceed 10% of the Current Return Co-Investment Portfolio's exposure. For purposes of this guideline, public company securities

received via a distribution are not counted and are expected to be sold as soon as reasonably practicable.

7. Other guideline limitations notwithstanding, portfolio managers or other staff authorized by the ~~Managing Director~~ head of PMFA may modify or waive terms of investments in the portfolio and generally take any and all other actions that are necessary and reasonable to protect, maintain or enhance the value of SWIB's position in the investments.

R. Hedge Fund Portfolio

The Hedge Fund Portfolio ("HF Portfolio") will be comprised primarily of direct investments in hedge funds and is intended to generate a low-beta, alpha-oriented return stream.

1. The HF Portfolio will be comprised of the following investment vehicles:
 - a. *Direct Investments or Fund-of-Funds*: SWIB intends for its portfolio to be comprised primarily of direct investments in hedge funds rather than fund-of-funds vehicles that use an intermediary investment advisor(s) to select and allocate to hedge funds through a commingled fund, but SWIB may make investments in fund-of-fund vehicles, as may be deemed appropriate by Funds Alpha staff and otherwise approved hereunder.
 - b. *Hedge Funds or Separately Managed Accounts* ("SMAs"): Investments can be made in limited liability partnerships with other investors or, in some cases depending upon the manager and size of investment, in separately managed accounts. SWIB expects its investments will be in limited liability vehicles rather than SMAs, but may make use of SMAs if it is in the best interest of SWIB to do so.
 - c. *Special Opportunity Investments*: SWIB may invest a portion of its portfolio in special opportunity investments, which may include: interests in the equity or revenues of hedge fund managers, co-invest, or external manager "best ideas" opportunities. Special Opportunity Investments will be capped at 20% of the market value of the total HF Portfolio.
2. Hedge Fund Investment Strategies:
 - a. *Event-Driven* – investments up (debt or credit) and down (equity) the corporate capital structure where an expectation exists for realized profits over a short to medium time frame as a result of a known catalyst such as a merger, spinoff, or restructuring.
 - b. *Long-Short Equity* – long and short investments in publicly traded stocks.
 - c. *Tactical Trading* – global investments in indexes, commodities, interest rates, and currencies and, in each case, their derivatives as a result of relative value or directional forecasts from a systematic or discretionary approach.
 - d. *Relative Value* – strategies that seek to take advantage of price differentials by buying and selling different yet related securities. Relative value strategies

include fixed income arbitrage, insurance linked, long/short credit, quantitative strategies, structured credit, and volatility-related investments.

- e. *Multistrategy* – funds that invest across multiple asset classes, typically (but not always) with multiple portfolio managers. Most multistrategy funds diversify across three or more underlying strategies.

In the event a sub-strategy could fall under more than one Investment Strategy, the categorization designated by the Consultant will be utilized.

The HF Portfolio has the following target weightings and ranges to the individual hedge fund strategies, based on the Consultant’s “Lower Beta” model portfolio recommendations:

	<u>Target Allocation</u>	<u>Target Maximum</u>
Relative Value	20%	40%
Event-Driven	15%	30%
Long-Short Equity	20%	30%
Tactical Trading	20%	40%
Multistrategy	20%	40%
Special Opportunity Investments	<u>5%</u>	20%
	100%	

3. Roles of SWIB staff and Consultant: SWIB Funds Alpha staff and the HF Portfolio Consultant (the “Consultant”) will be responsible for conducting initial and ongoing hedge fund due diligence, selecting individual hedge funds, and determining the allocations to individual hedge funds. The Consultant, in concert with staff, will conduct investment and operational due diligence and make individual hedge fund written recommendations to SWIB staff. SWIB staff will conduct its own review and assessment of the universe of recommended managers from the Consultant and recommend hedge funds according to the approval process. SWIB shall only invest in new Hedge Funds that are affirmatively recommended by the Consultant, and SWIB shall obtain an additional recommendation from the Consultant for additional subscriptions to existing funds of \$50 million or 30% of the current investment (whichever is less). SWIB staff and the Consultant will be responsible for ongoing monitoring of SWIB’s hedge fund investments.

4. Approvals: HF Portfolio allocations are subject to the following approvals:

	Managing Director <u>Head of PMFA</u>	ED/CIO
New Funds		
• Core	Up to \$300 million	More than \$300 million
• Special Opp/ Co-invest	Up to \$50 million	More than \$50 million

Additional Subscriptions to Existing Funds		
• Core	Up to \$400 million aggregate invested	More than \$400 million
• Special Opp/ Co-invest	Up to \$100 million aggregate invested	More than \$100 million
SWIB ownership equal to or greater than 50% of an individual fund, calculated at the master fund level (excluding funds of one and a fund/vehicle through which a co-investment is made)	ED/CIO, provided that notice shall be given to the ED/CIO if ownership of an individual fund (excluding funds of one and a fund/vehicle through which a co-investment is made) is equal to or greater than 33 1/3%	

5. The aggregate exposure to any hedge fund manager or sponsor (including co-investments) may not exceed 15% of the total HF Portfolio's exposure without approval of the ED/CIO.
6. Other guideline limitations notwithstanding, portfolio managers or other staff authorized by the ~~Managing Director~~ head of PMFA may modify or waive terms of investments in the portfolio and generally take any and all other actions that are necessary and reasonable to protect, maintain, or enhance the value of SWIB's position in the investments.
7. All redemptions, terminations or reductions of capital will be at the discretion of the Funds Alpha Manager and ~~Managing Director~~ the head of PMFA.

S. Beta One Portfolio

The Beta One Portfolio will be comprised primarily of direct investments in strategies of external managers that are intended to generate both (1) a beta or SWIB policy benchmark return and (2) an active alpha return stream above the benchmark. These managers are referred to as Beta One External Managers due to their dual mandate to manage both a Core Fund asset allocation benchmark and a tracking error around the given benchmark. The manager is expected to deliver the total return of the benchmark (or beta of one), plus an excess return (alpha) over the benchmark. This is distinctive compared to SWIB's external hedge fund portfolio, which is designed to deliver only an excess return or alpha. This section does not govern passive external managers which the Asset and Risk Allocation Division oversees and monitors.

1. Investments in Beta One External Managers will be comprised of the following investment vehicles:
 - a. *Separately Managed Accounts* ("SMAs"): SWIB intends for its portfolio to be comprised primarily of direct investments in various strategies via SMAs, the assets of which would reside at SWIB's custodial bank.

- b. *Commingled Investments or Fund Investments*: Investments can be made in commingled funds and/or limited liability partnerships with other investors or in a Fund-of-One structure where SWIB is the sole investor.
2. Investment Strategies and Broad Guidelines for Beta One External Managers:
 - a. *Equities* – strategies will be comprised of various fundamental, quantitative and other approaches intended to produce an active return above the respective benchmarks. Strategies will be invested in traditional long only portfolios, active extension formats (i.e. 130/30, 150/50) and other public equity securities approaches across various styles, geographies and market cap weights. A limited use of shorting (up to 50%) may be used in the active extension format in non-SMAs.
 - b. *Fixed Income* – strategies will be comprised of various fundamental, quantitative, and other approaches intended to produce an active return above the respective benchmarks. Strategies will primarily be invested in traditional long only portfolios across the credit quality spectrum, varying geographies, including emerging and frontier market debt, high yield and structured securities. Derivatives may be used primarily for duration and currency management and will be set forth in the individual manager guidelines.
 - c. Notwithstanding any shorting permitted above and pursuant to SWIB’s policies, the investment guidelines for SMAs will prohibit the Beta One External Managers from shorting any securities and from purchasing securities in certain secondary offerings.
3. Any use of derivatives, leverage, and shorting allowed will be incorporated into the ex-ante risk assessments and active risk contributions.
4. Roles of SWIB staff and Consultant: SWIB Funds Alpha staff and any Staff Consultant engaged by SWIB to conduct public markets managers search, ongoing due diligence, and/or external manager oversight (any such consultant a “Consultant”) will be responsible for (i) conducting initial and ongoing due diligence, (ii) selecting individual strategies, (iii) determining the allocations to individual strategies (subject to the applicable approvals below), and (iv) negotiating and executing investment management agreements and investment guidelines consistent with this document. The Consultant, in concert with staff, will conduct due diligence (which may include business management, trading and operations, operational due diligence, valuation, risk management, and disclosures and investment terms) and make individual strategy written recommendations to SWIB staff. SWIB staff will conduct its own review and assessment with advice of the Consultant and recommend strategies according to the approval process. SWIB shall only invest in new Beta One External Managers that are affirmatively recommended by the Consultant. SWIB staff and the Consultant will be responsible for on-going monitoring, reporting, and assessment of SWIB’s investments in Beta One External Managers.

5. Approvals: Beta One External Manager allocations are subject to the following approvals:

Investment	Managing Director <u>Head of</u> PMFA	ED/CIO
New Manager Relationship	Up to \$1.75 billion	More than \$1.75 billion
Additional Subscriptions to Existing Manager	Up to \$2 billion	More than \$2 billion
Includes all Funds Alpha investments with the Manager, regardless of vehicle, strategy or portfolio.		

6. Other guideline limitations notwithstanding, the Funds Alpha Manager or other staff authorized by the ~~Managing Director~~ head of PMFA may modify, amend or waive terms of Beta One Manager investment management agreements and generally take any and all other actions that are necessary and reasonable to protect, maintain, or enhance the value of SWIB's position in the investments.
7. All redemptions, terminations or reductions of capital will be at the discretion of the Funds Alpha Manager and ~~Managing Director~~ the head of PMFA in consultation with the ~~Managing Director~~ head of ARA for policy benchmark exposure consideration.
8. Notwithstanding the above discretion regarding redemptions, terminations or reductions, if ARA determines that certain risk attributes in the context of the total Core Fund or the aggregate Beta One Portfolio are undesirable for the Core Fund or the aggregate portfolio, then the ~~Managing Director~~ head of ARA will have the authority to recommend redemptions, terminations or reductions to portfolio exposures. With the ED/CIO's concurrence, the Funds Alpha Manager will make the changes as recommended by the ~~Managing Director~~ head of ARA.

T. Private Markets and Funds Alpha Overage Portfolios

Portfolios may be established at the asset class level for private equity, co-invest, real estate, venture capital, hedge fund, and private debt asset classes to provide for (i) excess exposure to certain investment ideas where the sizing of the investment requires it to be held, in part, outside of an individual internal portfolio or (ii) hedging transactions using public or private securities. In each case, a primary investment must be made by the relevant private markets or hedge fund portfolio with the excess exposure or hedging transaction being allocated to an overage portfolio. The relevant private markets or funds alpha portfolio manager will be responsible for portfolio oversight and monitoring of the investment, including the securities in the overage portfolio.

These portfolios may also be used to express investment strategies and ideas that do not fit clearly in any of the private markets or funds alpha portfolios but are attractive from a risk/return perspective. In such cases, no primary investment will be made in the existing

private markets portfolios, and the ED/CIO will designate a portfolio manager that will be responsible for portfolio oversight and monitoring.

These portfolios may invest in (1) any instrument approved for the relevant private markets asset class portfolios described elsewhere in these guidelines, and (2) any other public or private securities or derivatives approved for trading by SWIB solely for hedging purposes. Each investment idea expressed in the portfolios shall be approved by the ~~Managing Director~~ head of PMFA, the relevant portfolio manager, and a majority of the ED/CIO and the ~~Managing Directors~~ heads of ARA and GPMS. Any approved investment shall be reported to the Investment Committee on a monthly basis. Other governance, monitoring, compliance or reporting for the investment may also be specified in the approval. Portfolios will not have a separate benchmark or risk target, but will be included within the benchmark and risk parameters for the applicable aggregated asset class, portfolio, or Core Trust Fund, as applicable and as approved at the time of the investment. If the investment will use active risk assigned to exposure management, it will be noted in the investment approval.

V. EXTERNAL MANAGEMENT

Portfolios may be managed internally by SWIB investment professionals or externally by money management firms. In making the decision on how the portfolios will be managed, SWIB compares the resources, expertise, and cost of internal management versus external management. If the decision is made to manage the portfolios externally, SWIB will determine whether a separate account or commingled fund best suits SWIB's needs.

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.

APPENDIX 1 - APPROVED EXCHANGES

Approved Exchanges for Derivatives Trading as of January 28, 2020*

Australian Securities Exchange
BOX Options Exchange
CBOE C2 Options Exchange
CBOE BZX Options Exchange
CBOE EDGX Options Exchange
CBOE Futures Exchange
CBOE Options Exchange
Chicago Board of Trade
Chicago Mercantile Exchange
CurveGlobal Markets (London Stock Exchange Derivatives Market)
Eurex Exchange
Euronext Amsterdam
Euronext Brussels
Euronext Lisbon
Euronext Paris MATIF
Euronext Paris MONEP
ICE Futures Europe
ICE Futures US
ICE Futures Singapore
International Securities Exchange
Montreal Exchange
Nasdaq BX
Nasdaq Futures
Nasdaq GEMX
Nasdaq MRX
Nasdaq Options Market
Nasdaq PHLX
New York Mercantile Exchange
NYSE Arca Options
NYSE American LLC
Osaka Exchange
TMX (Toronto Montreal Exchange)
Tokyo Stock Exchange

*Approved exchanges shall include any and all exchanges that may be acquired by, merged with or otherwise reorganized with or into, or any subset of, any of the above-listed exchanges subsequent to the date above provided that such exchange continues to clear through a Qualifying Central Counterparty (QCCP). This list may be updated for such organizational or name changes from time to time by Legal & Compliance without any additional action of the Investment Committee, and all additions or changes shall be deemed Approved Exchanges for purposes of the WRS Investment Committee Investment Guidelines effective as of the date of such acquisition, merger or reorganization. On a quarterly basis, Compliance shall provide notice to the Investment Committee if there have been any such changes to the list.

The Global Securities Portfolio, Alpha Portfolio and Exposure Management Portfolios are approved to trade on any of the above exchanges and any other exchange whose clearing house is a Qualifying Central Counterparty (QCCP) as defined by the Bank for International Settlement (BIS) (subject to annual reporting to the Investment Committee).

APPENDIX 2 - SOFT RISK PARAMETERS

SOFT RISK PARAMETERS – ASSET CLASS AND PORTFOLIO

PORTFOLIO ASSET CLASS CHARACTERISTIC	ASSET CLASS ²	DISCUSSION TRIGGER
Asset Class Exposure	Core Fund	
	Global Equities	39.8% - 47.8%*
	EM Equities	0.0% - 7.5%*
	Small Cap	0.0% - 6.0%*
	U.S. Inv Grade	16.6 – 26.6%*
	High Yield	0.0% - 5.6%*
	EM Debt	0.0% - 6.6%*
	Variable Fund	
	U.S. Equity	65% to 75%
	Int'l Equity	25% to 35%
*Post-Corridor Treatment		
Maximum Small Cap Exposure	U.S. Equities	2.75x Benchmark
Ex Ante Tracking Error	Public Equities	.75% - 2.25%
	Public Fixed	.4% - 1.2%
	Core Fund	.6% - 1.8%
Counterparty Exposure (internal and external separate account portfolios)	WRS (Core and Variable Funds)	5 bp exposure (net of collateral, if any) to a single counterparty
Duration	Public Fixed	+/- 15% of Benchmark
Base Portfolio	Global Equities	8-12% of Aggregate Sector Portfolio
Scaled Portfolio	Global Equities	88-92% of Aggregate Sector Portfolio

ACTIVE/INDEXED EQUITIES

Minimum Number of Holdings		
	Small Cap Diversified	100

² "Passives," as used in these Soft Risk Parameters, means portfolios 0797, 0799, 0812 and 0813.

	Global Sector Aggregate Portfolio	Lesser of 100 names or 25% of index names
Ex Ante Tracking Error	Passives (Variable Fund): R1000 Index MSCI ex US	6 bp annualized 20 bp annualized
	Passives (Core Fund): MSCI US MSCI ex US Small Cap Diversified Global Sector Aggregate Portfolio	10 bp annualized 20 bp annualized 3% - 9% 1% - 4%
Maximum Position Size	Passives	5% notional value of futures
Issuer Concentration	Small Cap Diversified Global Sector Aggregate Portfolio	Benchmark weight \pm 2% Benchmark weight \pm 2%
Maximum Total Value of Short Sales	Global Sector Aggregate Portfolio	40% of portfolio value
Maximum ETF Exposure	Passives Small Cap Diversified Global Sector Aggregate Portfolio	5% of portfolio value +/- 15% of portfolio value +/- 15% of portfolio value
Maximum Company Ownership	Passives Small Cap Diversified Global Sector Aggregate Portfolio	10% of outstanding 10% of outstanding 10% of outstanding
Maximum Equity Exposure	High Yield	5% of portfolio value
Top Ten Holdings	Small Cap Diversified	25% of portfolio
P/E Ratio	Small Cap Diversified Global Sector Aggregate Portfolio	50%-150% of Benchmark 50%-150% of Benchmark

Maximum Sector Exposure		
	Small Cap Diversified	Benchmark weight $\pm 10\%$
	Global Sector Aggregate Portfolio	Benchmark weight $\pm 5\%$
Maximum Notional Uncovered Sold Calls		
	Passives	5% of portfolio value
	Small Cap Diversified	5% of portfolio value
	Global Sector Aggregate Portfolios	5% of portfolio value
Maximum Notional Uncovered Sold Puts		
	Passives	5% of portfolio value
	Small Cap Diversified	5% of portfolio value
	Global Sector Aggregate Portfolio	5% of portfolio value
Maximum Cash		
	Passives	1% in unequitized cash
	Small Cap Diversified	5%
	Global Sector Aggregate Portfolio	5%
GOVERNMENT/CREDIT		
Minimum Number of Issuers	Gov't/Credit	50
Maximum Corporate Industry Sector Exposure	Gov't/Credit	Greater of 10% or 3 x Benchmark
Ex Ante Tracking Error	Gov't/Credit	.34% - 1.30%
Maximum ETF Exposure	Gov't/Credit	+/- 15% contribution to portfolio duration
STATE INVESTMENT FUND		
<u>Maximum investments in a single issuer, in the aggregate (excluding instruments listed in SIF guideline #2)</u>	<u>State Investment Fund</u>	<u>5% of portfolio value</u>

PRIVATE MARKETS & FUNDS ALPHA

Maximum Co-Investments	Private Equity	20% of core Private Equity Portfolio for Private Equity Co-Investments 20% of Current Return Portfolio for Current Return Co-Investments
Maximum Co-Investments alongside funds with the same sponsor or manager as a fund on which SWIB was conducting due diligence and actively evaluating for a prospective commitment at the time of co-investment ³	Private Equity	5% of core Private Equity Portfolio for Private Equity Co-Investments 5% of Current Return Portfolio for Current Return Co-Investments
Minimum Funds	Private Equity	80% of aggregate Private Equity Portfolio
Maximum Venture Capital Exposure	Venture Capital	1.7% of Core Fund
Maximum Development Risk (Direct Holdings Only)	Real Estate	10%
Maximum Single Property Type Exposure - Quarterly	Real Estate	50%
Minimum Core Holdings (Including REIT portfolios)	Real Estate	50%
Maximum Value Holdings	Real Estate	30%
Maximum Opportunistic Holdings	Real Estate	30%
Maximum Core Portfolio Leverage	Real Estate	50%
Maximum Core Fund/Deal Leverage (Must be non-recourse to SWIB)	Real Estate	65%
Maximum Real Estate Equity Portfolio Leverage	Real Estate	60%
Ex ante volatility (tracking error) range	Hedge Fund	2.5% to 6.5%, measured with a trailing two-year risk sampling period
	Beta One	1.0% to 2.0%
Equity Delta to the S&P 500	Hedge Fund	Range of -0.3 to +0.3 with a target of zero over a market cycle. This is measured ex ante with a trailing two-year risk sampling period

³ If SWIB subsequently commits to a limited partnership or other fund vehicle of the sponsor or manager, then such co-investment shall no longer be included for purposes of calculating this soft parameter.

Target Beta	Beta One	Range of 0.85 to 1.15 with a target of 1.0
One-year annual Conditional Value at Risk (CVaR)	Hedge Fund	A targeted 95% one-year annual CVaR of greater than 7% based on trailing two-year risk sampling period

State of Wisconsin Investment Board Benchmarks as of January 1, 2021¹

Core Trust Fund Benchmark ²		
	Current Benchmark	
Global Public Equity	49% Fixed Blend of Four Components ³	<ul style="list-style-type: none"> - Current and previous benchmark asset classes are weighted by asset class strategic target weights - Current Benchmark updated 4/30/2012 to include Cash, which reflects leverage
Fixed Income	24.5% Fixed Blend of Seven Components ⁴	
Inflation Sensitive	15.5% Bloomberg Barclays US Treasury Inflation-Linked Bond Index	
Private Equity/Debt	9% Roll-Up of Seven Components ⁵	
Real Estate	8% Open End Diversified Core Equity (ODCE) Real Estate Index	
Multi Asset	4% Fixed Blend of Two Components ⁶	
Cash	(-10%) 3-Month LIBOR + 30bps	
Total	100%	

Variable Trust Fund Benchmark		
	Current Benchmark	
Domestic Equities	70% Russell 3000	
International Equities	30% MSCI All Country World Index (ACWI) ex US	
Total	100%	

Note: Roll-Up refers to the market-weighted aggregation of benchmark components or indices, based on SWIB's actual market exposures.

¹ Refer to the Historical Benchmark Adjustments for additional background.

² The major asset class weights are established through the annual asset allocation exercise; Private Equity weights float between 6% and 12% and Real Estate weights float between 5% and 11%. The Private Equity excess weights are taken from Public Equities, Real Estate excess weights are taken 50% from Public Equities and 50% from Fixed Income. Multi-Asset weights float between 1% and 7% with excess weights taken 50% from Public Equities and 50% from Fixed Income.

³ Global Public Equity Benchmark: Fixed Blend of Four Components
83.40% MSCI World Custom Net Index
6.10% Russell 2000 Index
4.40% MSCI EAFE Small Cap Custom Net Index
6.10% MSCI EM Custom Net Index

⁴ Public Fixed Income Benchmark (effective 1/1/2010, excludes TIPS): Fixed Blend of Seven Components
66.90% Bloomberg Barclays Capital Govt/Credit Index
8.20% Bloomberg Barclays Mortgage-Backed Securities Index
7.90% Bloomberg Barclays US Treasuries Index
2.00% Bloomberg Barclays US Long Treasuries Index
7.50% BofA Merrill Lynch Corporate HY Ba/B Index
3.75% JPM EMBI Global Diversified
3.75% JPM GBI-EM Diversified

⁵ Private Equity/Debt Benchmark: Roll-Up of Seven Components
Component One: State Street Global Exchange Private Equity Index - Buyouts
Component Two: State Street Global Exchange Private Equity Index – Buyouts, weighted by Vintage Year
Component Three: State Street Global Exchange Private Equity Index – Venture Capital, weighted by Vintage Year
Component Four: Private Equity Legacy (SW050300) Actual Portfolio Returns
Component Five: Bloomberg Barclays Capital Duration-Adjusted Baa Corporate plus 20 basis points
Component Six: Burgiss Global Senior Debt Universe
Component Seven: Burgiss Global Senior Debt Universe, equal weighted by Vintage Year

⁶ Multi Asset Benchmark: Fixed Blend of Two Components
60.0% MSCI World Custom Net Index
40.0% Bloomberg Barclays Capital Govt/Credit Index

⁷ Effective 1/1/2010, the tax treatment of the MSCI benchmark updated to a custom net-of-tax benchmark based on SWIB-specific tax treatment.

Board of Trustees
**WISCONSIN RETIREMENT SYSTEM
INVESTMENT POLICY**

Updated

~~March 18, 2020~~

[September 15, 2021]

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I. INTRODUCTION

The State of Wisconsin Investment Board (“SWIB”) is an independent state agency responsible for the management and investment of all funds entrusted to it, including assets of the Wisconsin Retirement System (“WRS”), the State Investment Fund, and the assets of various other state agencies and programs. In its role as investment manager for these funds, SWIB is held to a high standard of fiduciary duty by the Wisconsin Statutes.

SWIB was created by the Wisconsin Legislature for the sole purpose of providing professional investment management of trusts and public funds under its control pursuant to the prudent expert standard of fiduciary duty found in Section 25.15(2) of the Wisconsin Statutes. The Board of Trustees (the “Board” or “Trustees”) has established the investment policy set forth herein for the WRS, pursuant to a comprehensive and ongoing evaluation of the appropriate risk and return standards for the WRS.

This Board of Trustees WRS Investment Policy (“WRS Investment Policy”) is intended to assist in development of a diversified portfolio of investments, tailored to accomplish the purpose of the WRS within acceptable risk parameters. This WRS Investment Policy represents a delegation of standing authority to SWIB staff within the organization to promote efficient and cost effective operations of the two WRS trust funds. In addition to the WRS funds managed by SWIB staff, external managers are used for certain active and passive investment strategies. This document will be reviewed periodically and updated as necessary by the Board to reflect changes in SWIB’s investment strategy and to reflect best industry practices for prudent investors.

Accordingly, the Trustees hereby delegate to the Executive Director/Chief Investment Officer (“ED/CIO”) and the investment staff of SWIB standing authority to make prudent investments pursuant to this WRS Investment Policy and to sections 15.02(4) and 25.15(2) of the Wisconsin Statutes and section IB 2.02 of the Wisconsin Administrative Code. The ED/CIO shall identify and delegate in writing the individual professional investment staff members who have authority to manage each of the specific asset classes and internal portfolios and who have authority to direct, hire, and terminate external managers.

In addition to this WRS Investment Policy, the Trustees have also adopted the State Investment Fund and Separately Managed Funds Investment Policy and Guidelines (“SIF & SMF Investment Policy”) to govern the administration of the other funds that the Board manages pursuant to the Wisconsin Statutes. Further, the Trustees have delegated to SWIB’s Investment Committee the establishment and maintenance of guidelines for the management of internal WRS portfolios and for external managers of WRS assets pursuant to the Investment Committee Investment Guidelines (“IC Guidelines”). Such IC Guidelines are hereby delegated to the Investment Committee or investment staff, as applicable, as part of the standing authority delegated pursuant to this WRS Investment Policy and the Investment Committee’s charter approved by the Trustees.

II. WISCONSIN RETIREMENT SYSTEM

The assets of the WRS constitute a large majority of the total funds invested by SWIB. The retirement funds are invested globally in both long-term and short-term investments, across

a wide range of asset types and classes. Pursuant to the Wisconsin Statutes, WRS assets are divided into two funds---a Core Retirement Investment Trust and a Variable Retirement Investment Trust. The Core Fund is a broadly diversified portfolio of stocks, bonds, non-public securities, real estate and other holdings. The Variable Fund is an equity-focused portfolio primarily invested in global stocks.

A. Core Retirement Investment Trust (“Core Fund”)

The Core Fund is a pooled fund consisting of the retirement contributions made by and on behalf of participants in the WRS. Participants include state, school, and local government employees (with the exception of the City and County of Milwaukee). All participant contributions are invested in the Core Fund unless the participant has elected to contribute to the Variable Fund. (Wis. Stat. § 40.04(7))

B. Variable Retirement Investment Trust (“Variable Fund”)

The Variable Fund, like the Core Fund, is a pooled fund consisting of retirement contributions made by or on behalf of the participants of the WRS. An active participant can elect to credit 50% of the total future monthly retirement contributions made by or on behalf of the participant to the Variable Fund, with the balance going to the Core Fund. The purpose of the Variable Fund is to permit participants to increase their exposure to the public equity markets beyond the allocation to public equities in the Core Fund. However, unlike the Core Fund, the Variable Fund does not pursue diversification across a variety of different asset classes and could be subject to greater volatility of earnings. (Wis. Stat. § 25.17(5))

III. STATEMENT OF PURPOSE AND INVESTMENT PHILOSOPHY

This WRS Investment Policy is intended to summarize the fundamental investment objectives, philosophies, and directives relative to the implementation and oversight of the investment of the WRS assets managed by SWIB. Key areas are elaborated upon and general investment guidelines are articulated. The WRS Investment Policy is intended to provide an outline of the common and critical components of successful administration of a large pool of public assets. Supplemental policies and guidelines pertaining to derivatives use, rebalancing assets, and portfolio-specific guidelines are set forth within the IC Guidelines maintained and approved by SWIB’s Investment Committee.

A. Broad Investment Objectives

SWIB’s overall objectives in managing WRS assets are:

1. To maximize long-term investment returns with a prudent level of risk to ensure that sufficient funds are available to meet pension fund obligations;
2. To seek aggregate returns in excess of the Core Fund’s and Variable Fund’s benchmarks over all cumulative time periods constructed with a prudent level of risk; and
3. To comply with all applicable fiduciary and legal standards.

B. Key Investment Philosophies

1. Investment returns are a function of risk; thus, losses are inevitable. The optimal SWIB strategic asset allocation policy should reflect a probability of losses that is consistent with SWIB's investment return expectations.
2. Asset classes and sub-asset classes are broadly defined to gain exposure to the entire investable opportunity set and capture the greatest depth of available investment opportunities to the extent they offer a risk-return trade-off commensurate with SWIB's return objectives and risk tolerance.
3. Through quantitative asset/liability modeling and qualitative evaluation, an appropriate strategic asset allocation mix can be selected. Application of a rebalancing regimen after allowing a predetermined amount of "drift" around targets effectively contains allocation risk and can add value by enforcing an efficient allocation at the asset class level.
4. A well-diversified asset mix in the Core Fund historically has been a favorable position for meeting long-term objectives, recognizing that strategies will not always appear to add value over shorter time frames. It is essential to hold to the investment program during difficult times, and the diversified asset mix should mitigate the impact of negative market environments.
5. Including an allocation to passive investments within major asset classes is a relatively efficient way to provide benchmark returns, adjust risk within the overall fund, provide a liquid and low cost pool of assets, and facilitate timely fund rebalancing.
6. Positive returns can be gained from active management and supplement the returns earned from the allocation to passive investments. Over the long term, active management can add value beyond market-neutral benchmarks at the asset class, sector, and security levels by exploiting market inefficiencies and their resulting valuation opportunities.
7. Risk management and performance benchmarking are integral to the entire investment process. SWIB manages and monitors risk at multiple levels. The primary risk resulting from WRS drawdowns is lower dividend annuities and higher employee and employer contributions. Fund-level absolute and relative return volatility are other key risks that affect the WRS.
8. Ex-ante (forecasted) and ex-post (actual) total fund risk, and component contributions to risk, are assessed and considered in the structuring of the investment program and monitored by SWIB staff. Performance benchmarking compares actual investment results to expected results.
9. Fund and portfolio results are most appropriately measured against investable market indices, representing neutral, or passive, market positions. Peer comparisons are fraught with difficulties due to differences in liability structure, investment style, risk preferences, and inconsistencies over time and are generally used as secondary comparisons. Results are evaluated on the basis of investment return as well as return for the level of assumed risk.

10. Cost optimization is a component of investment results, and costs are optimized through lower-cost internal management, external fee negotiations, and a focus on net performance. Maintenance of an internal team of investment professionals is an appropriate strategy to optimize costs and retain better control of the assets compared to outsourcing asset management. When SWIB does use external managers, it negotiates competitive fee arrangements that are driven by pay for performance metrics.

IV. RESPONSIBILITIES

SWIB's investment responsibilities break down into these primary areas:

- A. Setting the Asset Allocation and Investment Strategy**
- B. Asset Allocation Rebalancing**
- C. Establishing the Active Risk Target**
- D. Risk Monitoring and Compliance; Waivers**
- E. Investment Performance Monitoring and Benchmarking**
- F. Cost Management and Optimization**

The roles for each of SWIB's fiduciaries with respect to these responsibilities are outlined in Section V.

A. Setting the Asset Allocation and Investment Strategy

The SWIB Trustees undertake an in-depth review of the strategic asset allocation plan for the WRS every other year, including asset/liability modeling, to determine a suitable target allocation for each asset class included in the Core Fund and the Variable Fund (subject to the statutory restrictions of the Variable Fund). These reviews contemplate a long-term time horizon over which potential results are evaluated. This exercise is not an attempt to predict short-term market movements, but to better understand the long-term impacts of poor, normal, and above average market results. In the "off year" of the two-year cycle, structural asset allocation adjustments and other funding initiatives are considered. In addition to the potential future market impact, SWIB Trustees also contemplate the impact of actuarial analysis, the soundness of investment return and risk expectations, and the asset allocation policies of its peers.

The recommended asset allocation targets are approved on an annual basis in the asset allocation memorandum attached to this WRS Investment Policy as *Appendix 1*. Each year upon approval by the Board, *Appendix 1* shall be updated without amendment to this WRS Investment Policy. The recommended asset allocation targets and Trustee-approved financial leverage (for the Core Fund) constitute the policy portfolio for each of the Core Fund and Variable Fund (each the "Policy Portfolio").

Portfolios within each of the approved asset classes will be structured in a manner that attempts to effectively cover the universe represented by appropriate benchmarks and provide adequate flexibility to deviate from the benchmarks to generate active returns by taking active risk. This is accomplished through the active risk budgeting process approved

by the Investment Committee for each asset class. Index funds and actively managed portfolios will be combined in a manner that attempts to accomplish desired performance objectives within acceptable risk parameters.

B. Asset Allocation Rebalancing

When a major liquid asset class (i.e., Total Public Equities, Total Public Fixed Income, or Inflation Sensitive Assets) falls outside of a rebalance range approved annually by the Board, as reflected in *Appendix 1*, as of a month end, a mandatory rebalancing will be initiated. A rebalancing task force, consisting of the ED/CIO and ~~Managing Directors~~heads of Asset and Risk Allocation (ARA), Global Public Markets Strategies (GPMS) and Private Markets & Funds Alpha (PMFA) (collectively, Investment Division Heads), will review and approve the mandatory rebalancing. In a mandatory rebalancing, an asset class in excess of its target will be adjusted to a level recommended by the ED/CIO and ~~Managing Director~~head of ARA so that the asset class is returned to a level within its target allocation range.

The ED/CIO and ~~Managing Director~~head of ARA may also from time to time initiate discretionary rebalancing pursuant to procedures described in the IC Guidelines to use or reduce active risk or to minimize asset allocation drift from the Policy Portfolio. Whenever a rebalancing is triggered (mandatory or discretionary), a plan will be developed whereby specific dollar amounts will be considered for movement based on the degree of the over/underweight, liquidity characteristics, and current market conditions.

WRS asset allocations will be reviewed at least monthly for potential rebalancing. When feasible, index funds may also be used to facilitate rebalancing to minimize opportunity and trading costs. Derivative securities may be used to implement adjustments. When active portfolios are used in a rebalance, portfolio managers will be consulted and included in the process.

C. Establishing the Active Risk Target

As part of the strategic asset allocation, the Trustees approve a fund level active risk target for the WRS. Active risk represents a measurement of the added risk of actively investing the assets rather than replicating the benchmark to achieve returns beyond market returns. The active risk target for the Core Fund is 120 bps +/- 60 bps. The active risk target for the Variable Fund is 60 bps +/- 30 bps. Guidelines for individual portfolios will be constructed so that the aggregate risk of the portfolios is within the range established for the fund level risk objective. The Investment Committee approves an active risk budget that allocates the active risk target to the Core Trust Fund's portfolios and monitors the allocation of active risk.

D. Risk Monitoring and Compliance; Waivers

Risk is a consideration and factor in the management of the WRS assets, and risk is considered throughout the investment process from asset allocation to performance evaluation. SWIB's risk management policy is detailed in Section VI.

The ~~ARA~~Risk Management Division will also measure soft risk parameters established by the IC Guidelines for asset classes and portfolios. Soft risk parameters refer to desired characteristics and/or risk exposures. Investment staff are permitted to deviate from soft risk parameters in pursuit of excess return. However, anything outside of the soft risk

parameters will be discussed with the Investment Committee to determine whether the exposure should be maintained. All such Investment Committee discussions will be documented in the Investment Committee's meeting minutes.

Portfolio managers are responsible for the compliance of their portfolios with this WRS Investment Policy, IC Guidelines, as well as the Wisconsin Statutes and Administrative Code. SWIB's Compliance division will review portfolios and asset classes monthly for compliance with investment guidelines. Portfolios out of compliance with guidelines will be brought into compliance immediately, or a plan for doing so or a waiver will be discussed and approved by the ED/CIO pursuant to the IC Guidelines. Violations and the status of any remediation plans or waivers will be discussed at the next scheduled Enterprise Risk and Compliance Committee meeting and reported to the Investment Committee, and documented in the minutes for such meetings.

E. Investment Performance Monitoring and Benchmarking

The Trustees will review investment performance at least quarterly. Performance reviews will be conducted compared to the benchmarks approved by the Trustees. Quarterly results will be evaluated to review progress toward longer term objectives. It is understood that there are likely to be intermittent periods when portfolio performance deviates from market indexes. During such times, comparisons with specific peer groups also will be considered. A third-party performance benchmarking consultant analyzes SWIB's performance in comparison to its peers, and the Trustees shall review such analysis quarterly.

F. Cost Management and Optimization

Costs reduce investment returns. SWIB is committed to managing the WRS in a prudent and cost-efficient manner. Retaining internal investment management of a significant amount of SWIB assets is key to managing costs efficiently. External management fees are negotiated to ensure that manager interests are aligned with SWIB and that SWIB's net performance is optimized. Fees for all individual vendors and external managers are reported to Trustees for their review by SWIB management on a quarterly basis. A third-party cost benchmarking consultant is retained by SWIB management to analyze SWIB's costs in comparison to peers and the net of cost value-added given the level of risk taken.

V. ROLES AND RESPONSIBILITIES OF SWIB FIDUCIARIES

The following section provides the delineation of roles and responsibilities among SWIB's fiduciaries. Each employee of SWIB also has a definitive job description which describes all of the employee's specific job responsibilities, and the Trustees have a governance manual that outlines all responsibilities for the Trustees. This section supplements both. Below, the primary investment management responsibilities as they relate to each person's fiduciary obligations are highlighted for purposes of defining those fiduciary obligations and where the roles are distinctive and where they overlap.

Trustees

SWIB Trustees are fiduciaries of the WRS. Trustees are responsible for the overall professional investment management of the assets entrusted to them under Wisconsin state law. Trustees must manage the investment of trust assets pursuant to the prudent expert standard as set forth in Section 25.15(2) of the Wisconsin Statutes. The Trustees have the following investment responsibilities:

- Establish and approve this WRS Investment Policy
- Review and approve:
 - asset allocation for the Policy Portfolio as recommended by the Board's Asset Allocation Consultant, Investment Committee, ED/CIO, and ~~Managing Director~~, head of ARA
 - sub-asset class allocation policy for public equities and public fixed income asset classes
 - the mandatory rebalancing trigger for major asset classes
 - the total fund absolute risk exposure through approving the asset allocation policy and active risk target
 - total fund policy-level financial leverage (as established by the asset allocation)
 - total fund active risk target and range
 - total fund, asset class and portfolio performance benchmarks, as recommended by the Board's Benchmark Committee and Benchmark Consultant
 - incentive compensation payments based on investment performance, as recommended by the Board's Compensation Committee
 - SWIB's total cost of management budget, as recommended by the Board's Audit and Finance Committee
- Delegate the establishment and approval of portfolio-specific investment guidelines to the Investment Committee through the IC Guidelines
- Through updates and reports provided at board meetings, monitor and be informed of:
 - investment performance and risk metrics of the WRS
 - investment performance against a simplified reference portfolio used to evaluate the efficacy of the Policy Portfolio's complexity and diversification
 - significant investment strategy and processes and infrastructure implemented to enable them
 - spending on investment activities

- approved actions and recommendations arising out of Board Committees and the Investment Committee
- Approve the Investment Committee Charter

Executive Director/Chief Investment Officer

The ED/CIO assists the Trustees in meeting their fiduciary and statutory duties by monitoring issues and trends and making recommendations to the Trustees. The ED/CIO is also responsible for establishing investment strategy, investment priorities, achieving investment performance targets and managing the associated investment risks. In addition to the overall management of the agency and duties prescribed by statute, the ED/CIO has the following responsibilities:

- Implements the investment strategy approved by the Board
- Develops, identifies and leads strategic initiatives to enable SWIB's investment strategy
- Identifies and reports issues or risks related to the investment policy or strategy to the Board
- Leads the organization and evaluates its performance against its annual objectives
- Leads the SWIB Management Council and evaluates their performance
- Leads the investment staff and evaluates their performance
- Serves as Chairperson of the Investment Committee and sets the Investment Committee agenda
- Reports the business of the Investment Committee to the Board and presents quarterly market trends and other macroeconomic conditions
- Recommends, with the ~~Managing Director~~, [head of](#) ARA, the WRS Policy Portfolio to the Investment Committee and the Board
- Designs and approves the implementation of the Policy Portfolio approved by the Board and by doing so sets overall investment direction, strategies and priorities for each asset class
- Determines the implementation of the Policy Portfolio set by the Board by approving the allocation between:
 - active versus passive management, and
 - internal versus external management
- Approves the portfolios established or eliminated in each internal asset class
- Reviews each investment division's strategy prior to its presentation to, and approval by, the Investment Committee
- Approves the monthly asset allocation memo which details the movement of assets across all portfolios

- Approves the implementation of mandatory and discretionary rebalancing
- Approves investment portfolio commitments at varying thresholds for private markets and funds alpha (PMFA) investments
- Develops, in consultation with the ~~Managing Directors~~ Investment Division Heads, the appropriate active risk target for each asset class and the active risk budget prior to its presentation to, and approval by, the Investment Committee
- Manages and monitors risk at both the total fund and asset class level
- Develops, recommends, and approves exposure management implementation strategies pursuant to the IC Guidelines
- Approves all internal strategies for achieving fund level financial leverage
- Monitors and manages liquidity risk and approves the implementation of internal leverage strategies
- Approves all new derivatives counterparties
- Collaborates with the Deputy Executive Director and Human Resources division regarding talent acquisition, development and retention
- Ensures the appropriate implementation of the incentive compensation program approved by the Board
- Ensures that prudent investment processes are implemented and works with the Section 25.167 CIO to monitor investment staff compliance with investment policies and guidelines
- Ensures, with the Section 25.167 CIO, that operating procedures have been developed and implemented that are intended to ensure that investment policies and guidelines are followed
- Ensures, with the Section 25.167 CIO, that investments are completely and accurately reported on all management and financial reports and that any information requested by the Board is provided on a timely basis

Management Council

The Management Council was established by the Board as an advisory council to assist the ED/CIO in leading the organization. It consists of the ED/CIO and at least four (4) other senior leaders from investment management and investment services. The membership of the Management Council (including the number of members) will be set by the ED/CIO, and the ED/CIO will provide notice to the Board any time a change is made to the membership of the Management Council.

- Assists the ED/CIO in implementing SWIB's investment strategy
- Assists the ED/CIO in developing, identifying and leading key initiatives to enable SWIB's investment strategy

- Assists the ED/CIO in identifying and reporting issues or risks related to the investment policy or strategy to the Board

Section 25.167 CIO

The Section 25.167 CIO is an investment management staff member designated by the ED/CIO to assist with the fulfillment of certain statutory duties. The ED/CIO retains oversight of those responsibilities delegated to the Section 25.167 CIO, which include the following:

- Monitors activities of the investment staff for compliance with investment policies and guidelines
- Develops and implements operating procedures that are intended to ensure that investment policies and guidelines are followed
- Ensures that investments are completely and accurately reported on all management and financial reports and that any information requested by the Board is provided on a timely basis

Investment Committee

The Investment Committee provides oversight of SWIB's investments within the parameters established by the Board. The Investment Committee is chaired by the ED/CIO and has nine additional voting members drawn from the investment management staff as well as three non-voting members. The Investment Committee has the following investment responsibilities which are also outlined in its charter approved by the Board:

- Establishes and approves the IC Guidelines, which includes portfolio-level guidelines for all internally managed portfolios
- Fulfills the duties and purposes set forth in its charter approved by the Trustees
- Reviews and Approves:
 - the active risk budget, and the Net Economic Value Added, for the Core Fund and Variable Fund
 - the investment strategy for each division
 - passive external manager guidelines and waivers therefrom
 - the use of new investment instruments or initiatives, including derivatives and leverage, in all SWIB portfolios
- Reviews and Monitors:
 - implementation of active risk budget
 - soft risk parameters for all internal portfolios
 - strategies and trades in the exposure management portfolios and the over and underweights to asset and sub-asset classes

- sources of absolute and active risk through regular review of monthly risk reports
- Reviews and Recommends to the Trustees:
 - any proposed changes to this WRS Investment Policy
 - the annual asset allocation plan and strategies and any proposed changes during the year
 - annual benchmark recommendations from Board's Benchmark Consultant
- Sets the procedures for rebalancing included in the IC Guidelines
- Delegates approval for active external managers' guidelines to the PMFA Division

Managing Director, Head of Asset and Risk Allocation (ARA)

The ~~Managing Director, head of~~ ARA maintains the quantitative analysis and research that supports the policy allocation of capital and risk. The ~~Managing Director, head of~~ ARA has the following investment responsibilities:

- Recommends, with the ED/CIO and the Board's Asset Allocation Consultant, the WRS Policy Portfolio to the Trustees and Investment Committee
- Heads the rebalancing task force to consider and approve the implementation of mandatory and discretionary rebalancing and coordinates rebalancing and monthly cash flow activities
- ~~• Directs, in consultation with the ED/CIO, the internally managed portfolios to modify their risk profile based on changes in the capital markets and total policy risk~~
- Develops, recommends, and approves exposure management implementation strategies pursuant to the IC Guidelines
- Manages the passive external manager relationships and implements internal leverage strategies
- Determines appropriate contingency plans and risk mitigation actions for stressed market environments or when Core Fund or Variable Fund risk levels exceed expectations
- Recommends, with the ED/CIO and the Board's RPM Consultant, the Relative Performance Maximums to the Trustees

Head of Risk Management

Upon the direction of the ED/CIO, the Risk Management Division will assume oversight of the organization's risk monitoring and risk management functions from ARA. Beginning at that time, the Head of Risk Management will have the following responsibilities:

- Oversees risk monitoring for the WRS and ensures risk management measures are implemented

- Monitors relative performance drawdowns for active portfolios and participates, with the ED/CIO and the head of ARA, in discussions regarding such drawdowns and the responses thereto
- ~~In~~ Conducts stress testing analysis and, in conjunction with the ED/CIO, monitors and manages liquidity risk
- Monitors, and collaborates with investment staff to manage, counterparty risk
- Serves as Co-Chair of the Enterprise Risk & Compliance Committee and sets the Committee agenda
- Establishes and maintains SWIB's enterprise risk management architecture, framework, and policies. Identifies, measures, and monitors the risks affecting SWIB's business.

~~Managing Directors~~ Investment Division Heads

The primary responsibility of each ~~managing director~~ Investment Division Head is to develop an overall divisional strategy and assure that the portfolios within the division are successfully managed. The ~~managing directors~~ Investment Division Heads have the following responsibilities:

- Report quarterly to the Board regarding performance and market trends
- In collaboration with the ED/CIO, determine an efficient and achievable division strategy
- Review and approve the implementation of mandatory and discretionary rebalancing
- Implement and monitor the division's strategy, and, as applicable, approve investment recommendations for the PMFA division
- Report annually to the Investment Committee ~~and Board~~ regarding the division's strategy (may be delegated to Investment Managers as applicable) and report quarterly to the Board regarding market trends
- Monitor risk and performance of the division
- Assure compliance with all investment policies, guidelines and risk controls
- Manage, and evaluate performance of, employees within the division
- Manage and implement improvements to the investment analysis process for and asset management within each portfolio within each division

Investment Portfolio Managers and Managing Analysts (“Investment Managers”)

The primary responsibility of each Investment Manager is to invest assets in accordance with written guidelines established by the Investment Committee and in accordance with the policies and guidelines established by the Trustees. The Investment Managers have the following responsibilities:

- Manage the portfolios in accordance with the guidelines and objectives contained within IC Guidelines
- Develop and present asset class strategy for Investment Committee approval
- Exercise full investment discretion with respect to the purchase, sale and ongoing management of assets within their respective guidelines to achieve established objectives subject to direction from the ED/CIO and ~~Managing Director~~[head of](#) ARA regarding appropriate risk levels
- Implement active risk budgets
- Manage and monitor drawdown levels and implement risk drawdown controls

Board Consultants with Investment Responsibilities

Asset Allocation Consultant

- Annually, conduct analysis and evaluation of SWIB’s asset allocation plan and provide SWIB staff and Trustees with any recommendations for adjustments
- Every two years, present full review of asset-liability modeling process, results and recommendations for strategic asset allocation targets for the Core and Variable Trust Funds to SWIB staff and Trustees and coordinate with Wisconsin Department of Employee Trust Funds’ actuaries to ascertain the liabilities of the WRS

Benchmark Consultants

- Annually, and throughout the year as necessary, review staff-recommended benchmark changes or benchmark changes resulting from updates to the asset allocation or investment strategy changes. Make a recommendation regarding any modifications or updates to any benchmarks or new provisional benchmarks to the Investment Committee and Benchmark Committee.
- Every three to five years, conduct a comprehensive benchmark review. Align benchmarks to the investment strategies and asset allocation. Consider staff-recommended benchmark changes. Make a recommendation regarding any modifications or updates to any benchmarks to the Investment Committee and Benchmark Committee.

Staff Consultants

- Pursuant to the Board Consultant Services Policy, SWIB staff hire consultants for the Private Equity, Real Estate, Hedge Fund and Beta One Portfolios. These consultants may be terminated by the Board. These consultants make recommendations in accordance with the SWIB Investment Committee WRS Investment Guidelines.

- Staff consultants provide updates to SWIB investment staff regarding developments involving SWIB's investments and provide commentary regarding the impacts of such developments.
- Staff consultants meet once a year with the Board's Strategic Planning and Corporate Governance Committee to report on their view of the applicable WRS portfolio and present relevant market commentary.

VI. TOTAL FUND INVESTMENT RISK MANAGEMENT POLICY

A. Introduction

Risk is a consideration and factor in the management of the WRS assets, and risk is considered throughout the investment process from asset allocation to performance evaluation. Risk management is integral to SWIB's investment processes and is guided by this Policy. However, risk evolves through time as markets and investment strategies change. SWIB also strives to evolve its risk monitoring to better analyze, measure, quantify, and report risks over time.

B. Risk Management Philosophy

Risk must be taken to achieve sufficient returns to meet financial obligations for the various funds under the purview of SWIB. Risk is viewed from multiple perspectives. It is most commonly viewed as the loss of capital or of not meeting objectives within the designated time frame. It is deconstructed between systematic (i.e., market) and unsystematic, or specific risk, at the total fund, asset class and portfolio levels. The sources and types of risk inherent in any strategy are evaluated and acknowledged prior to implementation. However, even with the most sophisticated risk measurement techniques, extreme events cannot easily be measured in advance. Accordingly, risk models may only provide limited predictive qualities but should provide investment professionals opportunities to test and challenge investment strategies and assumptions prior to implementation. Post implementation, investment risks are managed, measured, and monitored at all relevant levels. Benchmarking is employed to determine whether risks taken achieve expected rewards.

C. Risk Management Objectives

The primary investment risk SWIB seeks to manage is drawdowns to the Core Fund and Variable Fund that could cause reduction in participant dividends, create volatility in contributions from both employers and employees, or cause the WRS to be less than fully funded. SWIB's investment strategy is designed to take intentional risk, called active risk, and achieve investment results commensurate with the levels of risk taken. Expectations for active return earned per unit of active risk taken are set and monitored for all portfolios. A risk budgeting approach will be employed to set active risk targets for each asset class. Unintended risk due to asset allocation drift or other factors is to be minimized where feasible from an implementation and cost perspective. Risk will be managed through implementation of investment guidelines, multiple approaches to diversification, and investment risk analyses and measurement. Pursuant to SWIB's statutory fiduciary standard

under Section 25.15(2)(b) SWIB shall “diversify investments to minimize the risk of large losses, unless under the circumstances it is clearly prudent not to do so.” Diversification is a significant tool to manage risk.

Risks that are assessed generally will include (but are not limited to):

1. Market risk: risk of drawdowns or swings in volatility
2. Valuation risk: trending towards or reaching extremes (e.g., historically wide credit spreads), pricing integrity
3. Event risk: e.g., sovereign downgrade, Lehman bankruptcy, Asian currency crisis, etc.
4. Liquidity risk: ability to quickly raise funds to support leveraged and synthetic exposures, asset/liability mismatch
5. Counterparty risk: risk of counterparty defaulting or otherwise not meeting their obligation to SWIB
6. Operational risk: risk of failure in risk measurement/monitoring processes, systems or personnel responsible for managing and/or monitoring risk exposures

D. Risk Measurement

The [ARA Risk Management](#) Division will measure investment risk using multiple metrics on both an absolute and relative basis at all relevant levels (i.e. total fund, asset class and portfolio level). In addition, downside risk metrics identified through stress testing and scenario analyses will be employed. Financial and economic analysis will also be undertaken to better understand the current and potential risks of non-public markets.

E. Risk Monitoring and Reporting

The Investment Committee will monitor investment risk to evaluate sources of risk, and changes to sources of risk, on a regular basis. In particular, regular stress testing and scenario analysis by the [ARA Risk Management](#) Division enables SWIB to identify potential weaknesses, or ‘tail risks’, in the investment program given extreme market environments that have occurred in the past. Risk monitoring will be conducted on both an absolute and relative risk basis. Assets that cannot be readily modeled will be subject to unique review process to better ascertain the risks. Reports will be assembled and reviewed by SWIB’s Investment Committee at least quarterly and will generally include summaries of key risk exposures and risk attribution and summaries of stress test and scenario analyses results.

F. Risk Mitigation

SWIB’s strategic asset allocation reflects SWIB’s philosophy that market risks must be taken to ensure sufficient asset growth to meet SWIB’s financial obligations. However, SWIB is cognizant of the fact that large drawdowns can significantly negatively impact funded status and future contributions. Thus, SWIB has adopted drawdown risk controls for internally managed, public markets strategies, which comprise the majority of SWIB’s assets. The controls call for instituting action to adjust the risk of a portfolio if the portfolio’s benchmark relative returns fall below a pre-specified downside trigger. Appropriate mitigating actions would be deployed at either the portfolio level or the Core Trust Fund Level.

G. Risk Resources

SWIB is committed to conducting periodic assessments of its analytic and personnel risk resources to ensure that SWIB maintains adequate tools and skills to sufficiently support a robust risk management framework.

VII. GENERAL INVESTMENT GUIDELINES

The following compulsory guidelines are applicable to all internally managed portfolios. Individual portfolio guidelines are included in the IC Guidelines.

1. All investment decisions are subject to all applicable federal and state statutes and administrative rules and are subject to the prudent expert fiduciary standard as set forth in Wis. Stat. § 25.15(2).
2. SWIB shall attempt to invest in organizations that adhere to prevailing local and national laws and generally accepted standards of conduct including the respect of human rights (Wis. Admin. Code s. IB 2.02 (7)). SWIB will exercise its fiduciary duty to vote all proxies pursuant to its ownership in publicly held companies in accordance with the Board's Corporate Governance Policy.
3. Portfolios may utilize cash instruments or derivatives in their investment strategy. All investments used will be subjected to the risk analysis and monitoring processes at the portfolio, asset class and fund levels.

Board of Trustees
**STATE INVESTMENT FUND & SEPARATELY
MANAGED FUNDS
INVESTMENT POLICY AND GUIDELINES**

Updated ~~June 16~~

[September 15, 2021]

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I. INTRODUCTION

The State of Wisconsin Investment Board (“SWIB”) is an independent state agency responsible for the management and investment of all funds entrusted to it, including assets of the Wisconsin Retirement System (“WRS”), the State Investment Fund (“SIF”), and the assets of additional state agencies and programs (“Separately Managed Funds”). In its role as investment manager for these funds, SWIB is held to a high standard of fiduciary duty by the Wisconsin Statutes.

SWIB was created by the Wisconsin Legislature for the sole purpose of providing professional investment management of trusts and public funds under its control pursuant to the prudent expert standard of fiduciary duty found in Section 25.15(2) of the Wisconsin Statutes. The Board of Trustees (the “Board” or “Trustees”) has adopted this Investment Policy and Investment Guidelines for the State Investment Fund and Separately Managed Funds (“SIF & SMF Investment Policy”).

This SIF & SMF Investment Policy represents a delegation of standing authority to SWIB investment staff to promote efficient and cost effective operations of the SIF and Separately Managed Funds. In addition to this delegated authority to SWIB staff, external managers may also be used for certain active and passive investment strategies for the SIF or Separately Managed Funds.

Accordingly, the Trustees hereby delegate to the Executive Director/Chief Investment Officer (“ED/CIO”) and the investment staff of SWIB standing authority to make prudent investments pursuant to this SIF & SMF Investment Policy and to sections 15.02(4) and 25.15(2) of the Wisconsin Statutes and section IB 2.02 of the Wisconsin Administrative Code. The ED/CIO shall identify and delegate in writing the SWIB staff members who have authority to manage the SIF and Separately Managed Funds and who have authority to direct, hire, and terminate external managers.

SWIB investment staff assigned to the Separately Managed Funds also have the authority to set investment guidelines for external managers of Separately Managed Funds assets.

II. FUNDS UNDER MANAGEMENT

The State Investment Fund

The SIF is a short-term investment pool of the cash balances of various state agencies and trusts, certain WRS fund cash balances, and numerous local governmental bodies that elect to participate in the SIF through the Local Government Investment Pool. The SIF functions as the state's cash management fund. By pooling idle cash balances of the WRS, all state funds and a large number of municipalities, the SIF provides all participants in the fund with competitive rates of return and enhanced liquidity. The stated objectives of the SIF in order of priority are to provide safety of principal, liquidity, and competitive rates of return. The SIF is invested primarily in obligations of the U.S. Government and its agencies, and high quality commercial bank and corporate debt obligations. (Wis. Stat. § § 25.14(5), 25.17(3)(b), (ba), (bd) and (dg))

Separately Managed Funds

SWIB also manages Separately Managed Funds as authorized by statute: the Injured Patients and Families Compensation Fund, the UW System Trust Funds, the State Life Insurance Fund, the State Historical Society Trust Fund, the Tuition Trust Fund, and the Local Government Property Insurance Fund. Separate objectives, policies, and guidelines apply to investment of the assets in each fund. They are managed in accordance with risk and investment parameters determined to be appropriate for achieving the purpose of each fund and subject to the specific statutory authority provided for the fund. (Wis. Stat. §§ 24.61(2)(c), 25.15(1), and 25.17)

III. STATEMENT OF PURPOSE AND INVESTMENT PHILOSOPHY

This SIF & SMF Investment Policy is intended to summarize the fundamental investment objectives, philosophies, and directives relative to the investment and oversight of the assets managed by SWIB on behalf of the SIF and Separately Managed Funds.

A. Broad Investment Objectives

1. SWIB's overall objective in managing the SIF and Separately Managed Funds is to achieve investment returns that meet or exceed each fund's respective benchmark over all cumulative time periods constructed with a prudent level of risk; and
2. To comply with all applicable fiduciary and legal standards.

B. Key Investment Philosophies

1. Investment returns are a function of risk; thus, losses are inevitable.
2. Asset classes are broadly defined to gain exposure to the entire investable opportunity set and capture the greatest depth of available investment opportunities to the extent they offer a risk-return trade-off commensurate with the respective fund's return objectives and risk tolerance.
3. Including an allocation to passive investments can provide an efficient way to provide benchmark returns, adjust risk within the overall fund, provide a liquid and low cost pool of assets, and facilitate timely fund rebalancing.
4. Risk management and performance benchmarking are integral to the entire investment process. SWIB manages and monitors risk at multiple levels. Performance benchmarking compares actual investment results to expected results.
5. Cost optimization is a component of investment results, and costs are contained through lower-cost internal management, external fee negotiations, and a focus on net performance.

IV. RESPONSIBILITIES

SWIB's investment responsibilities for the SIF and Separately Managed Funds break down into these primary areas:

- A. Setting the Asset Allocation and Investment Strategy**
- B. Risk Monitoring and Compliance; Waivers**
- C. Investment Performance Monitoring and Benchmarking**
- D. Cost Optimization**

The roles for each of SWIB fiduciaries with respect to these responsibilities specific to the SIF and the Separately Managed Funds are outlined in Section V.

A. Setting the Asset Allocation

The SWIB Trustees approve the Separately Managed Funds asset allocation based on the specific statutes that govern the investments in the SIF and Separately Managed Funds, based on the investment objectives for each respective fund, and information provided to SWIB by the SIF and Separately Managed Funds regarding each fund's liabilities. The respective asset allocation for each fund is set forth in the investment guidelines for the SIF and Separately Managed Funds contained herein. Unless the guidelines contained herein for the SIF or the Separately Managed Funds indicate otherwise, if a major public asset class exceeds its target allocation by more than 4%, a rebalancing will be initiated. Discretionary rebalancing may also occur from time to time as determined by the investment staff assigned to the Separately Managed Funds. In a rebalancing, an asset class that exceeds its target will be returned to its target allocation range.

B. Risk Monitoring and Compliance; Waivers

Risk is a consideration and factor in the management of the SIF and Separately Managed Funds assets, and risk is considered throughout the investment process. Portfolio managers assigned to the SIF and Separately Managed Funds are responsible for the compliance of their portfolios with this SIF & SMF Investment Policy as well as the Wisconsin Statutes and Wisconsin Administrative Code. Portfolios out of compliance with guidelines will be brought into compliance immediately, or a plan for doing so or waiver will be discussed and approved by the ED/CIO. Violations and the status of any remediation plans or waivers will be discussed at the next scheduled Enterprise Risk and Compliance Committee meeting and reported in the meeting's minutes.

C. Investment Performance Monitoring and Benchmarking

The Trustees will review the SIF and Separately Managed Funds' investment performance quarterly compared to the benchmarks approved by the Trustees.

D. Cost Management

Costs reduce investment returns. SWIB is committed to managing the SIF and Separately Managed Funds in a prudent and cost-efficient manner. Any applicable external management fees are negotiated to ensure that manager interests are aligned with the SIF and Separately Managed Funds and that the SIF and Separately Managed Funds net performance is optimized. Passive index management is employed where feasible to also contain costs.

V. ROLES AND RESPONSIBILITIES OF SWIB FIDUCIARIES

The following section provides the delineation of roles and responsibilities among SWIB's fiduciaries. Below, the primary investment management responsibilities for each group as they relate specifically to the SIF and Separately Managed Funds are highlighted¹:

Trustees

SWIB Trustees are fiduciaries of the SIF and Separately Managed Funds. Trustees are responsible for the overall professional investment management of the assets entrusted to them under Wisconsin state law. Trustees must manage the investment of the SIF and Separately Managed Funds' assets pursuant to the prudent expert standard as set forth in Section 25.15(2) of the Wisconsin Statutes. The Trustees have the following investment responsibilities specific to the SIF and Separately Managed Funds:

- Establish and approve this SIF & SMF Investment Policy
- Review and approve:
 - the investment guidelines for the SIF and the Separately Managed Funds, which includes the asset allocation for each respective fund.
 - the benchmarks for the SIF and Separately Managed Funds, as recommended by the Board's Benchmark Committee and Benchmark Consultant
- Through updates and reports provided at board meetings, monitor and be informed of:
 - investment performance and risk metrics of the SIF and Separately Managed Funds
 - spending on investment activities

Executive Director/Chief Investment Officer

The ED/CIO assists the Trustees in meeting their fiduciary and statutory duties by monitoring issues and trends and making recommendations to the Trustees. The ED/CIO is also responsible for establishing investment strategy, investment priorities, achieving investment performance targets and managing the associated investment risks. In addition

¹ General investment responsibilities are also contained in the SWIB Board of Trustees WRS Investment Policy.

to the overall management of the agency and duties prescribed by statute, the ED/CIO has the following responsibilities specific to the SIF and Separately Managed Funds:

- Implements the SIF & SMF Investment Policy approved by the Board
- Sets overall investment direction, strategies and priorities for the SIF and Separately Managed Funds
- Determines implementation of the respective funds' investment policies set by the Board by approving the allocation between:
 - active versus passive management, and
 - internal versus external management
- Identifies for the Board issues or risks related to the SIF and Separately Managed Funds
- Ensures that prudent investment processes are implemented and works with the Section 25.167 CIO to monitor investment staff compliance with investment policies and guidelines
- Ensures, with the Section 25.167 CIO, that operating procedures have been developed and implemented that are intended to ensure that investment policies and guidelines are followed
- Ensures, with the Section 25.167 CIO, that investments are completely and accurately reported on all management and financial reports and that any information requested by the Board is provided on a timely basis

Section 25.167 CIO

The Section 25.167 CIO is an investment management staff member designated by the ED/CIO to assist with the fulfillment of certain statutory duties. The ED/CIO retains oversight of those responsibilities delegated to the Section 25.167 CIO, which include the following:

- Monitors activities of the investment staff for compliance with investment policies and guidelines
- Develops and implements operating procedures that are intended to ensure that investment policies and guidelines are followed
- Ensures that investments are completely and accurately reported on all management and financial reports and that any information requested by the Board is provided on a timely basis

Investment Committee

The Investment Committee provides oversight of SWIB's investments within the parameters established by the Board. The Investment Committee has the following investment responsibilities specific to the SIF and Separately Managed Funds:

- Reviews performance and investment objectives:

- quarterly, for the SIF
- annually, for the Separately Managed Funds
- Reviews and recommends to the Trustees
 - any proposed changes to this SIF & SMF Investment Policy
 - any proposed changes to the SIF's or Separately Managed Funds' guidelines
 - any annual benchmark recommendations for the SIF and Separately Managed Funds from the Board's benchmark consultant

Head of Risk Management

Upon the direction of the ED/CIO, the Risk Management Division will assume oversight of the organization's risk monitoring and risk management functions from ARA. Beginning at that time, the Head of Risk Management will have the following responsibilities:

- Oversees risk monitoring for the SIF and Separately Managed Funds and ensures risk management measures are implemented
- Conducts stress testing analysis and, in conjunction with the ED/CIO, monitors and manages liquidity risk
- Monitors, and collaborates with investment staff to manage, counterparty risk

Investment Portfolio Managers and Managing Analysts

- Manage the portfolios in accordance with the guidelines and objectives contained within this SIF & SMF Investment Policy and assure compliance with the same
- Report the Separately Managed Funds' performance to the Investment Committee and applicable state agencies that are the beneficiaries or administers the respective fund
- Exercise full investment discretion with respect to the purchase, sale and ongoing management of assets within their respective guidelines to achieve established investment objectives
- Manage and monitor investment risks, drawdown levels and implement risk drawdown controls

VI. GENERAL INVESTMENT GUIDELINES

The following guidelines are applicable to SIF and Separately Managed Funds' portfolios managed internally by SWIB in addition to the other guidelines contained in this SIF & SMF Investment Policy for each respective portfolio. For portfolios or assets that are externally managed the guidelines set for that external manager shall apply and control, except that #1 below shall also be applicable to all external managers.

1. All investment decisions and investment instruments are subject to applicable federal and state statutes and administrative rules for the SIF and Separately Managed Funds and to the prudent expert fiduciary standard as set forth in Wis. Stat. § 25.15(2), unless otherwise provided for by statute.
2. Exposure limits and credit quality exposure limits are to be applied at the time of purchase. Unless otherwise indicated, “value” shall mean market value including un-invested cash.
3. Credit quality rating requirements refer to an entire rating level, e.g., “A or better” includes “A-” and better ratings. The lower of split ratings is used. Investment grade securities are those rated “BBB-” or better (or the equivalent rating agency rating).
4. Fixed income securities backed by the full faith and credit of the U.S. government will be classified as U.S. government securities for purposes of these guidelines.
5. Any sovereign debt obligation in which SWIB invests must be rated “B3/B-” or above, unless otherwise approved in advance by the Investment Committee based on its guidelines for individual business case determinations.
6. Public equity investments in markets designated as “developed” or “emerging” are investments in entities that are incorporated or organized in countries included in the MSCI World Index or the MSCI Emerging Market Index, respectively. Public fixed income investments in markets designated as “developed” or “emerging” are investments in the debt of countries (or of companies incorporated or organized in countries) included in the Citigroup World Government Bond Index or the JP Morgan Emerging Markets Diversified Index, respectively
7. The SIF and Separately Managed Funds are measured against benchmarks approved by the Board. Current benchmarks are listed in the portfolio guidelines contained within. When new benchmarks are approved by the Board or modified by the Board, these benchmarks will be updated without amendment to this SIF & SMF Investment Policy.
8. Exposure limits and credit quality exposure limits are to be applied at the time of purchase. Unless otherwise indicated, “value” shall mean market value including un-invested cash.
9. Portfolios may utilize cash instruments or derivatives in their investment strategy. All investments used will be subjected to the risk analysis and monitoring processes.
10. SWIB shall attempt to invest in organizations that adhere to prevailing local and national laws and generally accepted standards of conduct including the respect of human rights (Wis. Admin. Code s. IB 2.02 (7)).

STATE INVESTMENT FUND
(Wis. Stat. § 25.14)

Description: The State Investment Fund (SIF) is the investment vehicle for cash and short-term investments of various state and local government funds, including that portion of the Core Fund and the Variable Fund.

Investment Objectives: In order of importance:

1. Safety of principal
2. Liquidity
3. Competitive money market returns (as defined by the current benchmark)

Investment Guidelines: Subject to the guidelines below, the SIF portfolio shall be invested primarily in obligations of the U.S. Government and its agencies, and high-quality commercial bank and corporate debt obligations. All rating references are to ratings of S&P and/or Moody's.

1. The portfolio weighted average maturity will not exceed one year.
2. In the aggregate, the following instruments must comprise at least 70% of the market value of the portfolio: (i) instruments issued or guaranteed by the U.S. Government and its agencies (maturing in 10 years or less), (ii) repurchase agreements (collateralized with Treasury and Agency securities maturing in 10 years or less), (iii) deposit instruments guaranteed or secured by letters of credit issued by U.S. Agencies or government-sponsored enterprises (GSEs), and (iv) FDIC insured bank instruments.
3. Investments in a single issuer, in the aggregate, may not exceed the greater of (a) 2% of the portfolio market value, or (b) \$100,000,000, excluding those instruments listed in #2.
4. Investment in deposit instruments guaranteed or secured by letters of credit issued by U.S. Agencies or GSEs are limited to a maximum per issuer of 5% of the portfolio market value.
5. Investments in CD programs with FDIC pass-through insurance are limited to a maximum per issuer of the greater of (a) 2% of the portfolio market value, or (b) \$100,000,000.
6. Direct obligations of or guaranteed by the government of Canada (issued in U.S. Dollars) must mature within 2 years.
7. Commercial paper of an issuer with a long-term rating of A or higher must carry a rating of at least A-1 or P-1 and mature within one year.

8. Notes and bonds of financial and industrial issuers must mature within 3 years and carry a rating of at least AA (or A if the issuer has long-term senior debt issues outstanding).
9. Banker's acceptances must be accepted by banks located in the United States.
10. Bank instruments (including Yankee/Euro CD and time deposits) must carry a rating of at least A or qualify for the FDIC "pass through" insurance, or carry FDIC insurance, or be secured with letters of credit issued by U.S. Agencies or GSEs. The rating applies to the instrument or the issuer, if the instrument does not have a rating.
11. Certificates of deposit must mature within one year from the date of investment and be issued by banks, credit unions, savings banks or savings and loan associations, in each case, located in the United States and having capital and surplus of at least \$50,000,000.
12. Reverse repurchase agreements must have a maturity limit no longer than one business day.
13. Investments in other high-quality short-term investments not listed above (subject to Wis. Stat. §25.15(2)) may not, in the aggregate, exceed 10 percent of the market value of the portfolio.

STATE HISTORICAL SOCIETY TRUST FUND
(Wis. Stat. § 25.17(3)(c))

Description: The State Historical Society Trust Fund supports current and anticipated initiatives and operations of the Society through the generation of current income as well as longer-term capital growth. The Society is responsible for administering the operations of the Fund, and the fund's securities are invested by SWIB. The Historical Society policy permits annual expenditures of up to 5% of the market value of the fund (calculated using a three-year rolling average) for purposes determined by the Historical Society Board of Curators.

Investment Objective: To maintain a diversified portfolio of high quality publicly issued equities and fixed income obligations providing long-term growth in capital and income generation.

Investment Guidelines (exposure limits are to be applied at the time of purchase):

1. The bond portfolio shall maintain a minimum quality rating of "A-," using the lower of split ratings
2. Non-Investment Grade securities shall not exceed 5% of the fund
3. No single issuer shall constitute more than 5% of the fund, with the exception of the US Government and its agencies
4. Equity issues with market capitalization \leq \$500 million shall not exceed 10% of the market value of the equity portfolio
5. Notwithstanding the above requirements, investments may be made in index funds that are benchmarked against the Russell 3000 Index, the Russell 2000 Index, the Russell 1000 Index, the Bloomberg Barclays Intermediate Government Index, the Barclays Intermediate Credit Index, the Bloomberg Barclays Long Government Index and the Bloomberg Barclays Long Credit Index
6. Make any other legal investment that is specifically approved by the Board

Asset Allocation, Benchmarks and Rebalancing

The Fund's target allocation and benchmark shall be:

<u>Target</u>	<u>Range</u>	<u>Asset Class</u>	<u>Benchmark</u>
75%	71.25% to 78.75%	Equities	Russell 3000 Index
23%	20.7% to 25.3%	Fixed Income	Bloomberg Barclays Capital Government/Credit Index
2%	0% to 2%	Cash	80% T-Bills (60-Day)/20% CD (30 Day)

Upon request by the State Historical Society, a cash balance of approximately \$150,000 to \$250,000 shall be maintained and will be replenished if requested by the State Historical Society when the cash balance falls below \$150,000 as of any calendar quarter end.

The asset allocation of fund investments shall be reviewed at the end of each quarter. If the allocation by asset class is off of the above targets by more than + or – 10% for fixed income or + or – 5% for equities, assets will be systematically rebalanced back to the target allocation.

STATE LIFE INSURANCE FUND
(Wis. Stat. § 604.05, 607 and 620)

Description: The State Life Insurance Fund offers low cost life insurance protection to Wisconsin residents in amounts not exceeding \$10,000 per person. The State Office of the Commissioner of Insurance is responsible for administering the operations of the State Life Insurance Fund (the “Fund”). The Fund’s securities are maintained by SWIB.

Investment Objective: To maintain a diversified portfolio of high-quality, publicly-issued fixed income obligations that will preserve principal, maximize income while minimizing costs to policyholders and impacts of realized gains on the Fund, and approximate the expected life of the Fund’s insurance contracts. Surplus income from the Fund is used to minimize the cost of insurance to the Fund’s policyholders. Further, to take advantage of below-market costs and economies of scale by relying on SWIB’s existing research and credit coverage in its Government/Credit portfolio when making direct investments.

Investment Guidelines (exposure limits are to be applied at the time of purchase):

1. Portfolio is to be invested in U.S. dollar-denominated fixed income instruments, including government, agency, corporate and Yankee securities, that are either publicly-traded or issued under Rule 144A with registration rights
2. Non-investment grade securities shall not exceed 5% of the portfolio
3. No single issuer shall constitute more than 10% of the portfolio, with the exception of the U.S. government and its agencies
4. May invest up to 15% of the fund in securities not otherwise permitted by these guidelines and not specifically prohibited by statute, including, without limitation:
 - a. investments in fixed income commingled funds, separately managed accounts or similar vehicles managed by a third party investment manager
 - b. investments in issuers outside of the United States and Canada in excess of 2% of the portfolio
 - c. direct obligations of foreign governments in excess of 1% of the portfolio
5. Make any other legal investment that is specifically approved by the Board

Direct investments will generally be held until maturity, unless (a) credit concerns are identified by SWIB staff, (b) an issuer on SWIB’s fixed income research list falls below a rating of BBB- from S&P, or (c) an issuer not on SWIB’s fixed income research list falls below a rating of BBB+ from S&P.

New direct investment purchases will generally be selected from investment grade issuers currently held in SWIB’s Government/Credit portfolio or otherwise included on SWIB’s fixed income research list. SWIB will generally purchase 30-year bonds if available, but may purchase shorter maturity bonds in the discretion of the portfolio manager. SWIB

acknowledges that the Fund wishes to maintain a portfolio with a minimum quality rating from a national rating agency of “A-,” and a ladderred portfolio structure.

As a result of the Fund’s Investment Guidelines, it may have a more concentrated portfolio than SWIB’s Government/Credit portfolio.

Asset Allocation:

<u>Asset Class</u>	<u>Target</u>	<u>Expected Range</u>
Fixed Income	100%	100%-98%
Cash	0%	0%-2%

INJURED PATIENTS AND FAMILIES COMPENSATION FUND
(Wis. Stat. § 655.27)

STATEMENT OF INVESTMENT POLICY
(*Injured Patients and Families Compensation Fund*)

INTRODUCTION

The following document represents the investment objectives, policies, guidelines and review procedures for the Injured Patients and Families Compensation Fund.

The Injured Patients and Families Compensation Fund (the “Fund”) was created by Chapter 655 of the Wisconsin Statutes to provide excess medical malpractice coverage for Wisconsin health care providers and to compensate injured claimants. This statement was developed recognizing the liability conditions of the Injured Patients and Families Compensation Fund and the importance of the performance of the capital markets providing investment returns to assist in securing the solvency and integrity of the Fund.

This Injured Patients and Families Compensation Fund Statement of SIF & SMF Investment Policy serves the following purposes:

1. Provides written documentation of the expectations for the investment program of the Fund.
2. Establishes objectives and guidelines for the investment of the Fund assets which are consistent with the Fund’s stated purpose.
3. Outlines criteria and procedures for the ongoing evaluation of the Fund investment.
4. Provides a communication vehicle for the investment manager(s).

The descriptions below outline the content of the following five sections.

Section I - Delegation of Responsibilities - The section will list the primary responsibilities of various parties related to the Fund.

Section II - Investment Objectives - The Fund expects to receive results from the investment manager(s) that are consistent with the policies included herein. This section outlines the specific objectives established for each asset category and for the total portfolio, including portfolio and fund benchmarks. These objectives will provide a basis for evaluating the effectiveness of the investment program over time.

Section III - Investment Policy - The principal components of policy are asset mix or the percentage of assets invested in various classes of securities and the fund rebalancing policy.

Section IV - Investment Guidelines - These are the specific parameters within which the Fund's investment manager(s) should operate in executing the SIF & SMF Investment Policy and making specific security selection decisions.

Section V - Review Procedures - Review procedures generally identify the review process relative to SIF & SMF Investment Policy, investment performance and investment management.

I. DELEGATION OF RESPONSIBILITIES (Injured Patients and Families Compensation Fund)

The Wisconsin State Statutes establish responsibilities for the Board of Governors and for the State of Wisconsin Investment Board (SWIB). The responsibilities of the Board of Governors relate to the management of the Fund liabilities and setting cash flow requirements. SWIB's responsibility is to manage the Fund's assets to meet the maturity and liquidity needs established by the Board of Governors.

Responsibilities of the Board of Governors

- Handles overall administrative management of the Fund [s. 655.27 (2)];
- May contract out for services necessary for operation of the Fund, through the Office of the Commissioner of Insurance (OCI) [s. 655.27 (2)];
 - The contractor may hire legal counsel if approved by the Board of Governors;
 - The contractor may subcontract its duties;
- OCI has interpreted the Board of Governors' contracting authority as limited to claim services [Ins. 17.29, Wis. Admin. Code];
 - The contracted claims servicing agent's duties include reporting on claims, establishing reserves, subcontracting for annuity payments, investigating claims, negotiating settlements, preparing reports as requested by OCI or the Board of Governors, and making recommendations on filing appeals;
- Recommends health care provider fees to be set by OCI [s. 655.7 (3)];
- Is responsible for overseeing and reporting on Fund accounting [s. 655.27 (4)];
- Must submit a report to SWIB and DOA quarterly that projects cash flow needs of the Fund [s. 655.27 (4) (e)];
- With approval of OCI, may arrange reinsurance or pursue other loss funding management to preserve solvency and integrity of the Fund [s. 655.27 (4) (g)];
- Must approve settlements of claims against the Fund [s. 655.27 (5) (c)];
- Appoints a council to oversee peer reviews on claims paid by the Fund [s. 655.275 (2)].

Responsibilities of the State of Wisconsin Investment Board

- Is required to invest moneys in the Fund [s. 655.27 (4) (e)];

- Has “exclusive control of the investment” of the Fund [s. 25.17 (1) (intro) and (kp)];
- Must determine what investments will meet the needs of the Fund (*i.e.*, establish asset allocation policies), as reported by the Board of Governors, including maturity and liquidity needs [s. 655.27 (4) (e)];
- Must perform its duties in accordance with the prudent expert fiduciary standards [s. 25.15(2)];
- May retain investment counsel or advisers to assist in matters relating to its investment authority for the Fund [s. 25.18 (1) (a)];
- May contract with outside managers for investment of assets in the Fund [s. 25.18 (2) (e)];
- May set standards for and monitor such managers in accordance with its fiduciary duty [s. 25.18 (2) (e)]; and
- Shall comply with the statutory investment authority granted with respect to the Fund and pursuant to Section 25.17(3) may invest in any loans, securities, and any investments authorized by Section 620.22 and all investments permitted by Section 25.17(4)[ss. 25.17(2)(a), 25.17(3), 25.17(4)].

Responsibilities of the External Investment Manager

SWIB may manage the Fund assets with internal staff or may hire external money managers for certain asset classes. Individual firms with money management responsibility shall:

1. Comply with any applicable legislative or regulatory requirements.
2. Manage Fund assets under their control in accordance with the policy, objectives and guidelines included in this Statement of SIF & SMF Investment Policy for the Fund, and in accordance with their specific agreements with SWIB.
3. Exercise full investment discretion within the policies and standards included herein as to buy, hold and sell decisions for all assets under management.

Responsibilities of the Finance, Audit, and Investment Committee

The Board of Governors has delegated certain oversight responsibility to its Finance, Audit, and Investment Committee.

1. Provide SWIB with maturity and liquidity information on the Fund to assist in the establishment of asset allocation targets.
2. Receive reports from SWIB regarding asset performance and asset class levels.
3. Hire an investment consultant to assist the Committee and Board of Governors as necessary.

II. INVESTMENT OBJECTIVES (Injured Patients and Families Compensation Fund)

The primary objective of the investment managers, with respect to the Fund assets, is to manage the assets of the Fund for the benefit of the Fund participants and claimants as set forth in Section 655.27(1) and Section 655.27(6) of the Wisconsin Statutes, through prudent investment management.

A secondary objective is to provide a balance between capital appreciation, preservation of capital, and current income. An emphasis is placed on preservation of capital and current income. Risk is viewed principally as the long-term erosion of aggregate capital. To minimize the probability of substantial loss of principal over the investment horizon, an emphasis is placed on minimizing portfolio volatility before seeking substantial capital growth.

Benchmarks are established for the Fund as well as asset classes and subclasses. Performance of the Fund, asset class or asset subclass is measured with reference to the applicable benchmark.

Fund

<u>Target Allocation</u>	<u>Asset Class</u>	<u>Index/Benchmark</u>
83%	Fixed Income	Bloomberg Barclays Capital Government/Credit
12.75%	U.S. Equities	Russell 3000
2.25%	International Equities	MSCI World ex-U.S.
2%	Cash ¹	80% T-Bills (60-Day)/20% CD (30 Day)

<u>Portfolios</u>	<u>Index/Benchmark</u>
Fixed Income	Bloomberg Barclays Capital Government/Credit
U.S. Equities	Russell 3000
International Equity	MSCI World ex U.S.
Cash	80% T-Bill (two month)/20% CD (one month)

III. INVESTMENT POLICY (Injured Patients and Families Compensation Fund)

The asset mix that follows is a target mix with a maximum standard for the commitment to each asset category. Maximum and minimum commitments to the various asset classes have

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- ¹ The target allocation for Cash is the greater of 2% or the actual portfolio cash allocation required to meet the actuarially established cash reserve. The additional Cash target allocation beyond 2% is offset by a reduction in the Fixed Income target allocation.

been defined to limit the overall risk to the Fund assets. Equity investments are limited to the level of surplus funds, as determined by the Board of Governors. Should surplus funds change significantly, the equity target will be reset and guidelines amended.

<u>Asset Class</u>	<u>Minimum</u>	<u>Target</u>	<u>Maximum</u>
Equities	10%	15%	20%
Fixed Income	75%	83%	90%
Cash	0%	2%	5%

A cash reserve is established by the Fund's actuary and updated periodically. In addition, amounts equal to unpaid claims that have been authorized but not yet paid shall be held as cash and excluded from performance. Note that Fund performance will be calculated in comparison to the asset class target weighted benchmark with the benchmark cash allocation equal to the greater of 2% or the actual portfolio cash allocation (see footnote 1). The asset mix shown above is for the Fund as a whole. To the extent multiple managers are used, individual manager targets will be established by agreement with the manager.

Exposure limits and credit quality exposure limits are to be applied at the time of purchase. Unless otherwise indicated, "value" shall mean market value.

The minimum and maximum standards were determined as a result of the desired objectives and risk tolerances of the Fund. Should the percentage investment in any class rise above the stated maximum standards or fall below the stated minimum as of any month end, an automatic rebalancing will be triggered to bring the asset class to the midpoint between the target and the minimum or maximum, whichever has been breached.

Diversification

Fund assets are to be broadly diversified in order to minimize the risk of large losses in individual investments. Diversification is, in part, accomplished through asset allocation and portfolio selection.

IV. INVESTMENT GUIDELINES (Injured Patients and Families Compensation Fund)

Investment guidelines are the specific parameters investment managers should follow in executing policies and strategies. SWIB's investment managers shall ensure that Fund's assets in the aggregate are invested to comply fully with these guidelines and rules in addition to any other investment management agreement.

Bonds Portfolio Guidelines

1. The bond portfolio shall maintain an average quality rating of A or better.

2. Effective duration of the bond portfolio shall remain within 15% of the assigned benchmark's duration.
3. Non-Investment Grade securities shall not exceed 15% of the aggregate portfolio's market value.
4. With the exception of U.S. government and agency securities, issuer concentrations are restricted to 5% (investment grade) and 3% (non-investment grade) of the market value of the bond portfolio.
5. Securities sold to SWIB under Rule 144A under the Securities Act of 1933 may not exceed 20% of the bond portfolio's market value.
6. Investments authorized under Section 620.22 of the Wisconsin Statutes shall be to the limits set forth thereby, including without limitation all derivatives permitted thereunder¹.
7. May invest up to 15% of the Fund in securities and investments not otherwise permitted by these guidelines and not specifically prohibited by statute, including without limitation derivatives.

Equities Portfolio Guidelines

1. U.S. Equity Portfolios may invest in publicly traded equity securities, including convertible bonds, preferred stocks, Exchange Traded Funds (ETFs), American Depositary Receipts (ADRs) initial public offerings and when issued securities.
2. International Equity Portfolios may invest in publicly traded equity securities, including convertible bonds, ADRs and ETFs primarily in non-U.S. developed markets.
3. Equity funds will employ an indexing strategy.
4. Any other equity securities permitted by statute.

Asset allocation within the equity asset class has been established into the following sub-asset classes. (Note that the U.S. indices are weighted based upon their market capitalization.):

<u>Sub-Asset Class</u>	<u>Index</u>	<u>Target</u>
U.S. Equities	Russell 3000	85%
International-Developed	MSCI World ex U.S.	15%

¹ For purposes of Section INS 6.20(8)(o)(5) of the Wisconsin Administrative Code, these Investment Guidelines shall satisfy the requirement for a plan thereunder; and, when these Investment Guidelines are publicly available the requirement under Section INS 6.20(8)(o)(6) of the Wisconsin Administrative Code shall be deemed to be satisfied.

On a quarterly basis, SWIB will report the actual market value of equity investments by category to the target. Through discussion with the Finance, Audit and Investment Committee, decisions will be made on rebalancing within the sub-asset class.

Cash Equivalents Portfolio Guidelines

As a guideline, cash equivalent investments should be of high quality involving minimal risk of principal. A diversified money market fund is appropriate as are U.S. Treasury Bills.

Prohibited Investments

Fund assets may not be invested in the following instruments or strategies:

1. Short Selling
2. Use of Margin
3. Hedge Funds

V. REVIEW PROCEDURES (Injured Patients and Families Compensation Fund)

All investment policies, objectives and guidelines will be reviewed periodically by SWIB in collaboration with the Board of Governors, whenever circumstances warrant.

Review of Performance

On a monthly basis, SWIB will review the asset mix as of the end of the month for potential rebalancing. If the rebalancing target is triggered, SWIB will execute the rebalancing in accordance with the guidelines.

On a quarterly basis, SWIB will perform the following:

1. Review the Fund for compliance with the Injured Patients and Families Compensation Fund's investment guidelines.
2. Compare the manager's investment reports with the custodian's report to identify and resolve any discrepancies.
3. Review the asset valuation basis used by the manager(s) or custodians for all classes of assets, particularly those with limited marketability.
4. Review Fund's rate of return.
5. Compare each investment manager's results with appropriate indices or benchmarks.

TUITION TRUST FUND ***
(Wis. Stat. § 25.80)

Description: This is a State of Wisconsin prepaid college tuition program. SWIB's investment responsibility is to maintain sufficient cash balances to meet current liabilities and to horizon match the remaining assets in fixed income instruments to the estimated liabilities.

Investment Objectives:

1. Market value of assets is to exceed the present value of the estimated liabilities.
2. Cash balances and estimated annual income should be sufficient to meet current requirements.

*****Note:** *This is the legacy program under the Wisconsin statutes. Only a few bonds remain, and all are maturing by 2019 to match liabilities of the program as identified by the Department of Administration. There is no current investment activity by SWIB.*

Investment Guidelines (exposure limits are to be applied at the time of purchase):

1. All issues shall be rated "A-" or better, using the lower of split ratings.
2. Individual corporate bond sector weightings shall not exceed two times the relevant weighting in the Lehman Corporate Bond Index.
3. No issuer shall represent more than 5% of the fund, with the exception of the U.S. Government and its agencies.
4. Any other legal investment that is specifically approved by the Board may be made.

Benchmarks:

<u>Asset Class</u>	<u>Benchmark</u>
Fixed Income	Duration-neutral Bloomberg Barclays Capital Intermediate Government Credit Index and the State Investment Fund Benchmark

LOCAL GOVERNMENT PROPERTY INSURANCE FUND***
(Wis. Stat. § 604.05 and 605 et. seq.)

Description: The Local Government Property Insurance Fund was created by Chapter 605 of the Wisconsin Statutes and is administered by the State Office of the Commissioner of Insurance (OCI). It provides a vehicle through which any local governmental unit in Wisconsin may insure its property against damage or destruction. OCI and its contract administrator regularly monitor fiscal activity in the Fund and are responsible for ensuring that an adequate liquidity reserve is maintained to pay claims. OCI funds targeted for near-term liquidity are invested in the State Investment Fund (SIF). The remaining assets are invested in a fixed income portfolio, laddered by maturity.

Investment Objective*:** OCI is responsible for advising SWIB at least annually of projected cash flow needs of the Fund and the size of the liquidity reserve to be invested through the SIF. Funds not included in the liquidity reserve are invested by laddering assets into fixed income investments. The investment objective of the Fund is to ensure safety of principal and maximization of return within liquidity needs established by OCI. This is accomplished using a laddered portfolio of fixed income securities.

**** Note: Due to the high liquidity needs expressed by the OCI, the Fund consists exclusively of the liquidity reserve described above, which is invested in the SIF. These guidelines for fixed income investments (separate from the liquidity reserve) are currently inactive until the Fund's balance is in excess of the liquidity reserve identified by the OCI.*

Investment Guidelines (exposure limits are to be applied at the time of purchase):

Quality: Issues rated "A-" or better, using the lower of split ratings

Sector: U.S. Treasury and government agencies (Including TIPS) – no limit

U. S. Corporates – no limit

AAA rated U.S. Mortgage-backed, asset-backed securities – maximum 3% of the market value of the fund

Issuer: 3% maximum per corporate issuer of the market value of the fund

Maturity limit: 10 years

Make any other legal investment that is specifically approved by the Board

Benchmarks:

<u>Asset Class</u>	<u>Benchmark</u>
Fixed Income	Duration neutral using Bloomberg Barclays 1-5 Gov't
Cash	80% T-Bill (two month) / 20% CD (one month)
Fund Benchmark	"Roll-up" of asset class benchmarks using fund's market values

UNIVERSITY OF WISCONSIN SYSTEM TRUST FUNDS **LONG-TERM FUND**
(Wis. Stat. § 25.17(9)(m))

Description: The University of Wisconsin System (System) trust funds consist primarily of monies that have been gifted directly to a UW institution, rather than to one of the separate, supporting foundations. The Trust Funds Office works externally with donors and other related parties, and internally with the benefiting campuses and colleges, to facilitate the receipt and proper use (compliant with donor terms and conditions) of all gifts and bequests. The majority of the trust funds are invested by SWIB. The System's spending policy targets annual expenditures of 4% of the market value of the assets (calculated using a three-year rolling average) for payment to beneficiaries.

Investment Objective: To achieve, net of administrative and investment expenses, reasonable, attainable and sustainable returns over and above the rate of inflation. SWIB seeks to achieve this objective through the use of passive, externally-managed, public markets funds.

Investment Guidelines:

1. See *VI. General Investment Guidelines* above
2. Make any other legal investment that is specifically approved by the Board

Asset Allocation, Benchmarks and Rebalancing:

The target allocation and benchmarks for the liquid portion of the portfolio shall be:

<u>Target</u>	<u>Rebalance Range</u>	<u>Asset Class</u>	<u>Benchmark</u>
48%	44-52%	Global Equities	MSCI ACWI IMI Index, Net
20%	18-22%	US Government / Credit Fixed Income	BBG/Barclays US Government/Credit Index
20%	18-22%	US TIPS	BBG/Barclays US TIPS Index, Series L
6%	5-7%	Hedged Developed Market Equities	MSCI EAFE Index Net 100% USD Hedged Index, Net
3%	2-4%	Emerging Market Equities	MSCI Emerging Markets Index, Net
3%	2-4%	REITS	FTSE EPRA/NAREIT Developed Index

In addition, the portfolio has an allocation to private equity through a legacy portfolio that is expected to roll off over time.

	<u>Asset Class</u>	<u>Benchmark</u>
<i>\$60M estimated NAV as of December 31, 2017</i>	Private Equity	Actual portfolio return

Rebalancing:

The asset allocation of fund investments shall be reviewed at the end of each quarter. Quarterly net capital flows to the System shall be utilized to rebalance to the target allocation. If the allocation by asset class falls outside the rebalance range following quarterly cash flows, assets will be systematically rebalanced back to the target allocation as soon as practicable and in any event prior to the next quarterly net capital flows.

Roles and Responsibilities:

SWIB. SWIB's roles and responsibilities are detailed in an investment management agreement with the System, which provides the definitive terms of SWIB's engagement. SWIB's responsibilities include the following (references to the trust funds in this section refer solely to the trust funds delegated to SWIB's management by the System):

- Serve as the outsourced investment manager for the trust funds
- Determine and set appropriate asset allocation targets and ranges based on the return and risk objectives of the System
- Implement the asset allocation by selecting appropriate external investment managers or funds
- Determine performance benchmarks
- Determine or review investment guidelines for managers and/or funds to which trust funds are allocated
- Provide for the third-party custody of all trust funds assigned to SWIB's direct management
- Rebalance the trust funds to the asset allocation targets on a periodic basis as described above
- Coordinate cash distributions for the System's liquidity/cash flow requirements
- Regularly communicate with, and provide quarterly investment-related reports to, the System
- Consult with the System regarding investment risk and return objectives and long-term asset class expectations to allow the System to set an appropriate endowment distribution/spending policy as market conditions change
- Provide various reports and information reasonably needed for the System to compile financial statements and complete all audits

University of Wisconsin System. The System, including its Board of Regents, remains responsible for the implementation, oversight and monitoring of all aspects of the management and administration of the trust funds, other than those which have been specifically delegated to SWIB, including responsibility for monitoring its delegation of investment management authority to SWIB. Primary responsibilities of the System and its Board of Regents include:

- Approve the investment management agreement with SWIB
- Consult with SWIB in setting asset allocation targets, ranges and benchmarks
- Determine the endowment distribution/spending policy
- Communicate to SWIB liquidity/cash flow requirements
- Work with donors, estates, and trusts in taking in and properly establishing new trust funds accounts
- Maintain all accounting and recordkeeping systems related to the trust funds, and for all trust funds accounts
- Assist benefiting campuses and departments in their utilization of trust funds accounts
- Monitor and oversee the investment of all trust funds not delegated to SWIB's management
- Direct and oversee the System's cash flows in and out of the State Investment Fund

UNIVERSITY OF WISCONSIN SYSTEM TRUST FUNDS —
CASH MANAGEMENT ACCOUNT
(Wis. Stat. § 25.17(9)(m))

Description: The University of Wisconsin System (System) trust funds consist primarily of monies that have been gifted directly to a UW institution, rather than to one of the separate, supporting foundations. The Trust Funds Office works externally with donors and other related parties, and internally with the benefiting campuses and colleges, to facilitate the receipt and proper use (compliant with donor terms and conditions) of all gifts and bequests. The majority of the trust funds are invested by SWIB. The System's spending policy targets annual expenditures of 4% of the market value of the assets (calculated using a three-year rolling average) for payment to beneficiaries.

Investment Objective: To achieve, net of administrative and investment expenses, reasonable, attainable and sustainable returns over and above the returns of money market funds while controlling risk. UW seeks to achieve this objective through the use of passive, externally-managed, public markets funds.

Investment Guidelines:

1. See VI General Investment Guidelines above
2. Make any other legal investment that is specifically approved by the Board at the request of UW (or its asset allocation consultant)

Asset Allocation and Rebalancing:

The target allocation and rebalancing ranges for the portfolio shall be:

<u>Target</u>	<u>Rebalance Range</u>	<u>Asset Class</u>
<u>33.3%</u>	<u>23.3% - 43.3%</u>	<u>Short-Term Fixed Income</u>
<u>16.7%</u>	<u>6.7% - 26.7%</u>	<u>Intermediate Fixed Income</u>
<u>16.7%</u>	<u>11.7% - 21.7%</u>	<u>Broad Fixed Income</u>
<u>8.3%</u>	<u>3.3% - 13.3%</u>	<u>Bank Loans</u>
<u>8.3%</u>	<u>3.3% - 13.3%</u>	<u>High Yield Fixed Income</u>
<u>16.7%</u>	<u>11.7% - 21.7%</u>	<u>Global Equity</u>

Rebalancing.

The asset allocation of fund investments shall be reviewed at the end of each quarter. Quarterly net capital flows to the System shall be utilized to rebalance to the target allocation. If the allocation by asset class falls outside the rebalance range following quarterly cash flows, assets will be systematically rebalanced back to the target allocation as soon as practicable and in any event prior to the next quarterly net capital flows.

Roles and Responsibilities:

SWIB. SWIB's roles and responsibilities are detailed in an investment management agreement with the System, which provides the definitive terms of SWIB's engagement. SWIB's responsibilities are limited to the following:

- = Implement the asset allocation set by UW and its asset allocation consultant
- = Rebalance the trust funds to the asset allocation targets on a periodic basis, as described above
- = Coordinate cash distributions for the System's liquidity/cash flow requirements;
- = Regularly communicate with, and provide quarterly investment-related reports to, the System
- = Consult with the System regarding investment risk and return objectives and long-term asset class expectations to allow the System to set an appropriate endowment distribution/spending policy as market conditions change

University of Wisconsin System. The System, including its Board of Regents, remains responsible for the implementation, oversight and monitoring of all aspects of the management and administration of the trust funds, other than those which have been specifically delegated to SWIB. Primary responsibilities of the System and its Board of Regents include:

- = Approve the investment management agreement with SWIB
- = Determine and set, in consultation with its asset allocation consultant, asset allocation targets and ranges based on the return and risk objectives of the System
- = Identify appropriate external investment managers or funds for the desired asset allocation
- = Determine the endowment distribution/spending policy
- = Communicate to SWIB liquidity/cash flow requirements
- = Work with donors, estates, and trusts in taking in and properly establishing new trust funds accounts
- = Maintain all accounting and recordkeeping systems related to the trust funds, and for all trust funds accounts
- = Assist benefiting campuses and departments in their utilization of trust funds accounts

- = Monitor and oversee the investment of all trust funds not delegated to SWIB's management
- = Direct and oversee the System's cash flows in and out of the State Investment Fund

STATE OF WISCONSIN INVESTMENT BOARD
Investment Committee Meeting–Open Session

Tuesday, May 25, 2021

Via Teleconference

Committee Members Present: Edwin Denson, Executive Director/Chief Investment Officer (Chair)
Derek Drummond, Portfolio Manager–Funds Alpha
Anne-Marie Fink, Private Markets Funds Alpha–Chief Investment Officer
Brian Hellmer, Global Public Market Strategies–Chief Investment Officer
James Laufenberg, Managing Analyst–Real Estate
Diane Linn, Managing Analyst–Multi-Asset Strategies
Todd Ludgate, Head of Global Extended Fixed Income Strategies
Pu Shen, Managing Analyst–Asset & Risk Allocation
Nick Stanton, Head of Multi-Asset Strategies

Sara Chandler, Chief Legal Counsel (Secretary) (non-voting)
Brian Heimsoth, Quantitative Manager (non-voting)
Rochelle Klaskin, Deputy Executive Director/Chief Administrative Officer (non-voting)

Also in Attendance: Esther Ancel, Trustee
Larina Baird, Internal Auditor
Nathan Ballard, Senior Legal Counsel
Derek Bloom, Managing Analyst–Asset & Risk Allocation
Kate Burkart-Paulson, Senior Legal Counsel
Bill Campbell, Data Management Director
Hassan Chehime, Head of Risk Management
Bridget Chen, Analyst–Alternative Fixed Income Strategies
Christian Comito, Managing Analyst–Alternative Fixed Income Strategies
Tunc Dayioglu, Managing Analyst–Funds Alpha
Greg Fletcher, Performance Director
Chirag Gandhi, Portfolio Manager–Global Bonds
Jameson Greenfield, Chief Financial Officer
John Heshelman, Managing Analyst–Alternative Fixed Income Strategies
Mike Jacobs, Agency Business Director
Phil Johnson, Managing Analyst–Global Extended Fixed Income Strategies
David Jordan, Portfolio Manager–High Yield
Janet Klosterman, Legal Assistant
John Lahman, Managing Analyst–Global Extended Fixed Income Strategies
Lisa Lange, Director of Compliance & Senior Legal Counsel
Shan Lo, Managing Analyst–Global Extended Fixed Income Strategies
Jon Loboda, Performance Measurement Operations Manager
Bill Luetzow, Assistant Compliance Counsel
Damian Maroun, Head of Trading and Execution
Frank Mazzucco, Legal Counsel

Joy Mukherjee, Head of Domestic Small Cap Strategy
Chad Neumann, Head of Global Sector Aggregate Strategy
Chris Preisler, Communications Specialist
Tom Robinson, Head of Corporate Governance
Andrea Ruiz, Portfolio Manager–Liquidity, Inflation & Rates Mgmt.
Edouard Senechal, Managing Analyst–Asset & Risk Allocation
Mike Shearer, Head of Alternative Fixed Income Strategies
Jon Simon, Managing Analyst–Global Extended Fixed Income Strategies
Chris Spiering, Managing Analyst–Alternative Fixed Income Strategies
Mike Stamm, Director of Financing & Collateral Management
Dawn Tuescher, Executive Administrative Assistant
Zhenping Wang, Analyst–Asset & Risk Allocation
Gretchen Wegner, Managing Analyst–Global Extended Fixed Income Strategies
Ping Wong, Securities Analyst–Global Extended Fixed Income Strategies
Ivy Zhang, Managing Analyst–Asset & Risk Allocation
Lauren Albanese, Financial Investment News
Chris Levell, NEPC
Claudia Schloss, Verus Advisory
David Sheng, Aksia
Jennifer Wildeman, Aksia
Nate Heimler, 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 1:31 p.m. All attendees participated in this meeting telephonically.

1. Approval of the Minutes

Mr. Denson asked if there were any comments on either the open or closed session minutes of the April 27, 2021 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. Drummond and seconded by Mr. Ludgate to approve both the open session and the closed session minutes of April 27, 2021, as presented. The motion passed unanimously.

2. Quarterly Performance Review (Q1 2021)

Greg Fletcher, Performance Director, presented the *Investment Performance Report*, as of March 31, 2021, included on pages 10-20 in the meeting materials. Mr. Fletcher reported that **(a)** the Core Trust Fund (CTF) returned 2.79% net of fees in Q1 2021, resulting in an excess return of six basis points (bps) for the quarter, **(b)** the CTF returned 33.92% net of fees for the one-year period, resulting in an excess return of 288 bps, **(c)** the CTF five-year net-of-fee return of 10.86% outperformed the Policy Benchmark by 49 bps on an annualized basis, and **(d)** the CTF outperformed the 60/40

Reference Portfolio return by 83% (cumulative) over the past 20 years, which equates to \$34.1 billion.

Mr. Fletcher reviewed the performance for the Variable Trust Fund (VTF) and noted that the VTF is slightly underperforming its benchmark for the year-to-date, one-, and five-year periods, but provided excess return for the ten-year period.

Mr. Fletcher then discussed the percentage of WRS assets that were internally managed versus externally managed, noting that internally managed assets had remained stable at roughly 50% over the last few years. He also highlighted that the percentage of actively managed assets continued to increase in 2021. He then reviewed the performance by asset class for the first quarter, highlighting that (a) public equities had performed in line with the benchmark, (b) fixed income investment strategies had negative absolute returns in the short term as expected in the current rate environment, although long-term and relative performance remained strong, and (c) the significant benchmark increase in the private equity benchmark, particularly from the venture capital component, resulted in a negative year-to-date excess return.

Finally, Mr. Fletcher reviewed the performance of the CTF's leverage strategy. He noted that leverage at SWIB is implemented passively and therefore does not generally contribute to active risk or excess returns. Leverage does amplify absolute returns and is an important component of SWIB's strategy to meet the 7% long-term actuarial target. He also noted that the CTF's benchmark return is correspondingly levered to create an apples-to-apples comparison for the evaluation of relative performance. He highlighted that the effect of utilizing leverage to amplify returns was observed in the leverage performance analysis for all time periods.

3. Amendments to State Investment Fund & Separately Managed Funds Investment Policy and Guidelines

Sara Chandler, Chief Legal Counsel, and Andrea Ruiz, Portfolio Manager–Liquidity, Inflation & Rates Management, presented proposed revised State Investment Fund (SIF) investment guidelines, which would simplify and modernize the current SIF investment guidelines. Referring to the memo and proposed guidelines included on pages 21-25 in the meeting materials, Ms. Chandler explained that the SIF investment guidelines are difficult for investment staff to monitor and apply, more restrictive than required by statute or SWIB's fiduciary duty, and inefficient and manual for the Compliance team to test. Although the proposed guidelines provide greater flexibility to the Liquidity, Inflation & Rates Management team to execute its investment strategy, the SIF's fundamental investment strategy of safety of principal, liquidity, and competitive money-market returns is not changing. Further, the proposed guidelines continue to comply with all statutory requirements.

Ms. Ruiz added that the proposed guideline changes are not intended or expected to alter the investment objectives or risk profile of the SIF as a high-quality, short-term investment vehicle. She highlighted that the new guidelines would focus on the overall exposure to an issuer and the corresponding credit risk of each issuer. Ms. Chandler reviewed the key changes and highlighted that the proposed guidelines would be presented to the Board of Trustees in June for approval.

Motion: A motion was made by Mr. Ludgate and seconded by Ms. Shen to recommend to the Board of Trustees that it approve the revised investment guidelines for the State Investment Fund, as presented in the meeting materials, and that it approve necessary amendments to the *State Investment*

Fund & Separately Managed Funds Investment Policy and Guidelines to reflect the changes. The motion passed unanimously.

4. Q1 2021 Quarterly Updates

Brian Hellmer, Global Public Market Strategies–Chief Investment Officer, provided a brief introduction to the quarterly updates, highlighting that six of the eight division strategies generated positive performance relative to their benchmarks year-to-date as of March 31, 2021. Mr. Hellmer observed that rising interest rates during Q1 created a headwind for fixed income in the quarter, which led to negative absolute returns for the Government/Credit and Mortgage-Backed Securities portfolios.

A. Small Cap Diversified Strategy

Referring to the *Small Cap Diversified Strategy Review*, included on pages 28-32 in the meeting materials, Joy Mukherjee, Head of Domestic Small Cap Strategy, reported that the Small Cap Diversified portfolio underperformed its benchmark by 184 bps in Q1, due primarily to the portfolio's overweight to high-quality, low-volatility stocks and the comparatively strong performance of lower-quality, higher-volatility stocks during the quarter. Mr. Mukherjee noted that tracking error continued to run higher since the onset of COVID-19 as a result of the increase in market volatility. The financials sector reported the best quarterly performance, while most other sectors, including the consumer discretionary sector, were hurt by the market rally driven by value and high volatility stocks. Mr. Mukherjee stated that the portfolio was in compliance with its guidelines and soft risk parameters other than the ex-ante tracking error range soft risk parameter.

B. Global Sector Aggregate Strategy

Chad Neumann, Head of Global Sector Aggregate Strategy, provided the *Global Sector Aggregate Strategy Review*, included on pages 33-37 in the meeting materials. He reported that the Global Sector Aggregate portfolio outperformed its benchmark by 28 bps in Q1, due primarily to the overweight to value stocks, which experienced strong performance amid the continued economic recovery. Mr. Neumann also noted that tracking error has risen since the onset of COVID-19 given increases in performance variation among the stocks constituting the benchmark. With respect to the portfolio's performance attribution by sector and industry, he noted that **(a)** sector performance was mixed during Q1, as the sectors with significant value tilts outperformed during the quarter in a reversal of last year's performance, and **(b)** many winners from 2020, including real estate, communication services, and consumer discretionary sectors, underperformed in Q1 despite the team reducing their active risk during the quarter. Finally, Mr. Neumann stated that the portfolio was in compliance with its guidelines and soft risk parameters.

C. Funds Alpha

Derek Drummond, Portfolio Manager–Funds Alpha, presented the *Funds Alpha Q1 2021 Update*, included on pages 38-47 in the meeting materials. He highlighted that Funds Alpha generated approximately \$130 million in Excess Value Added (EVA) year-to-date, with each of the three business lines outperforming in Q1 and for the one-year time period. He then commented on the current market environment, noting **(a)** there is cautious optimism in hedge funds regarding economic growth, coupled with moderate and persistent volatility, which has resulted in positive trading opportunities for managers, **(b)** the level and persistence of inflation is a key risk for most

Beta One Equities managers, and (c) in the Beta One Fixed Income space, spread risk accounts for the majority of risk.

Mr. Drummond reported that the tracking error for both Beta One portfolios remains at or above long-term targets, but, as anticipated, tracking error for the Hedge Fund portfolio decreased significantly over the past few months. He then discussed where SWIB's Hedge Fund portfolio falls relative to other Aksia clients, noting that SWIB has more line items as a result of the portfolio's larger size and the portfolio has higher exposure to mid-size managers and less exposure to newer, smaller managers and those larger than \$6 billion.

Regarding the active management environment, Mr. Drummond highlighted (a) the large number of special purpose acquisition vehicles (SPACs) that are yet to announce an acquisition, (b) in the credit markets, emerging markets have not rebounded as much as developed markets, which may provide pockets of opportunity, and (c) over 90% of the commodity universe is in a bullish trend, which the team is keeping an eye on as it tends to reverse quickly. Mr. Drummond then confirmed that the portfolios remained in compliance with their 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, (b) the review of specific proprietary investment strategies and investment instruments related to small cap, global sector aggregate, funds alpha, currency exposure, asset and risk allocation and exposure management, and (c) the review of credit counterparty and broker information, was made by Mr. Denson and seconded by Mr. Drummond.

The Chair called for a roll call vote.

Denson-Aye	Drummond-Aye	Fink-Aye	Hellmer-Aye	Laufenberg-Aye
Linn-Aye	Ludgate-Aye	Shen-Aye	Stanton-Aye	

There being nine ayes and no nays, Mr. Denson declared the motion passed. The Committee then convened in closed session at 2:08 p.m. and reconvened in open session at 4:12 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 proprietary investment information for the investment strategies and investment instruments related to small cap, global sector aggregate, funds alpha, currency exposure, asset and risk allocation and exposure management, (b) reviewed credit counterparty and broker information, (c) reviewed the total and active risk for the Core and Variable Trust Funds, and (d) discussed soft risk parameters.

7. Financing and Collateral Update

Mike Stamm, Director of Financing & Collateral Management, reported that the Financing and Collateral Management team had assumed the counterparty-related responsibilities previously undertaken by the Credit Task Force, but that the substantive review processes had not changed.

8. Brokerage Task Force Report

Damian Maroun, Head of Trading and Execution, noted that a copy of the agenda for the May 20, 2021 Brokerage Task Force meeting was included on page 151 in the meeting materials for the Committee's information.

9. Currency Task Force Report

Chirag Gandhi, Portfolio Manager–Global Bonds, noted that a copy of the agenda for the May 17, 2021 Currency Task Force meeting was included on page 152 in the meeting materials for the Committee's information.

10. Research Task Force

Brian Hellmer, Global Public Market Strategies–Chief Investment Officer, presented the *Research Task Force Report*, included on pages 156-157 in the meeting materials. Mr. Hellmer assumed the role of Chair of the Research Task Force (RTF) in May 2021, following Mr. Denson's appointment as Executive Director/Chief Investment Officer. He reported that the RTF recently met with the front office leadership to discuss increasing participation in the RTF Ideas Forum, a venue built for collaboration, knowledge sharing, and team building across the agency. He then highlighted the list of RTF activities over the last twelve months, noting that ESG was the primary theme, and the June Investment Forum scheduled for June 15-16, 2021.

11. Soft Risk Parameters

Brian Heimsoth, Quantitative Manager, noted that the report *Soft Risk Parameters–Asset Class and Portfolio*, as of April 30, 2021, was included on pages 158-159 in the meeting materials for the Committee's review. He noted that there was one new discussion trigger for the Equity Delta to the S&P 500 for the Hedge Fund portfolio.

12. Future Meeting Topics

Mr. Denson noted that a summary of standard IC agenda items and draft agendas for the June 22, 2021 and July 27, 2021 meetings are included on pages 160-165 in the meeting materials for the Committee's review.

13. Adjournment

Motion: A motion to adjourn the meeting was made by Mr. Denson and seconded by Mr. Hellmer. The motion passed unanimously, and the meeting adjourned at 4:19 p.m.

Date of Committee Approval: 6/22/2021

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

STATE OF WISCONSIN INVESTMENT BOARD
Investment Committee Meeting–Open Session

Tuesday, June 22, 2021

Via Teleconference

Committee Members Present: Edwin Denson, Executive Director/Chief Investment Officer (Chair)
Derek Drummond, Portfolio Manager–Funds Alpha
Anne-Marie Fink, Private Markets & Funds Alpha–Chief Investment Officer
Brian Hellmer, Global Public Market Strategies–Chief Investment Officer
James Laufenberg, Managing Analyst–Real Estate
Diane Linn, Managing Analyst–Multi-Asset Strategies
Todd Ludgate, Head of Global Extended Fixed Income Strategies
Pu Shen, Managing Analyst–Asset & Risk Allocation
Nick Stanton, Head of Multi-Asset Strategies
Sara Chandler, Chief Legal Counsel (Secretary) (non-voting)

Brian Heimsoth, Quantitative Manager (non-voting)
Rochelle Klaskin, Deputy Executive Director/Chief Administrative Officer (non-voting)

Also in Attendance: Nathan Ballard, Senior Legal Counsel
Chelsey Barczak, GPMS Business Director
Derek Bloom, Managing Analyst–Asset & Risk Allocation
Brandon Brickner, Internal Audit Director
Kate Burkart-Paulson, Senior Legal Counsel
Bill Campbell, Data Management Director
Hassan Chehime, Head of Risk Management
Bridget Chen, Analyst–Alternative Fixed Income Strategies
Christian Comito, Managing Analyst–Alternative Fixed Income Strategies
Chris Eckerman, Portfolio Manager–Co-Investments
Greg Fletcher, Performance Director
Jameson Greenfield, Chief Financial Officer
John Heshelman, Managing Analyst–Alternative Fixed Income Strategies
Mike Jacobs, Agency Business Director
David Jordan, Portfolio Manager–High Yield
Janet Klosterman, Legal Assistant
Lisa Lange, Director of Compliance & Senior Legal Counsel
Jonathan Levine, Managing Analyst–Global Extended Fixed Income Strategies
Shan Lo, Managing Analyst–Global Extended Fixed Income Strategies
Bill Luetzow, Assistant Compliance Counsel
Damian Maroun, Head of Trading and Execution
Edward Martinez, PMFA Business Director
Frank Mazzucco, Legal Counsel
Chase Nicholson, Managing Analyst–Multi-Asset Strategies
Luke O’Neill, Legal Intern

Scott Parrish, Portfolio Manager–Private Equity
Kurt Petrie, Internal Auditor
Chris Preisler, Communications Specialist
Chris Prestigiacomio, Portfolio Manager–Private Debt & Venture Capital
Joe Roth, Business Analyst
Jason Rothenberg, Portfolio Manager–Real Estate
Edouard Senechal, Managing Analyst–Asset & Risk Allocation
Mike Shearer, Head of Alternative Fixed Income Strategies
Chris Spiering, Managing Analyst–Alternative Fixed Income Strategies
Dawn Tuescher, Executive Administrative Assistant
Zhenping Wang, Analyst–Asset & Risk Allocation
Tong Wu, Securities Analyst Intern
Ivy Zhang, Managing Analyst–Asset & Risk Allocation
Lauren Albanese, Financial Investment News
John Kevin Balaod, FundMap
Chris Levell, NEPC
Eileen Neill, Verus Advisory
Nate Heimler, Legislative Audit Bureau
Samuel Karasek, HFM Global
Liz Wedelstaedt, Cabrera Capital Markets LLC
(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 1:31 p.m. All attendees participated in this meeting telephonically.

1. Approval of the Minutes

Mr. Denson asked if there were any comments on either the open or closed session minutes of the May 25, 2021 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. Denson and seconded by Mr. Stanton to approve both the open session and the closed session minutes of May 25, 2021, as presented. The motion passed unanimously.

2. October Workshop Preview

Mr. Denson reminded the IC that this is an “on year” for the asset allocation review, so the October Workshop will include a presentation by the WRS actuarial consultant in addition to the standard presentation by NEPC. He noted that additional topics tentatively planned for the workshop include discussions of the comprehensive review of relative performance maximums (RPMs), an education session regarding the Alpha/Beta Overlay and SWIB’s use of leverage, and an investment discussion about factor investing at the policy level. The Private Markets & Funds Alpha Division is also expected to source an external speaker.

3. Transition Update (Q1 2021)

Joe Roth, Business Analyst, reviewed the two Q1 2021 transitions, included on the *Transition Management Summary, Q1 2021* on page 11 in the meeting materials. Both transitions were requested by the Asset & Risk Allocation (ARA) team and performed internally. The first transition, completed within the established shortfall tolerance range, moved approximately \$2 billion from internally managed passive index accounts to the actively managed Global Equity Sector portfolios. The second transition shifted approximately \$1.5 billion out of long and excess treasuries to the actively managed Government/Credit portfolio, as approved as part of the 2021 active risk budget. The team estimated that the transitions were completed in a cost-efficient manner.

Lastly, Mr. Roth noted that a summary of Transition Statistics from 2006 to March 2021 was also included for the Committee's information.

4. 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 12-54 in the meeting materials. She noted that the proposed changes **(a)** updated investment management staff titles throughout the document, **(b)** clarified that the Core Trust Fund (CTF) can provide short-term financing capital to internal portfolios with a market-based financing charge, and **(c)** added a soft risk parameter for the State Investment Fund (SIF) to monitor investments in a single issuer at a maximum concentration of 5% of the SIF's value. In addition, in line with guideline waivers recently granted, the High Yield Bond portfolio guidelines were revised to **(i)** exclude Treasuries and Treasury futures from the maximum single issuer concentration limit, **(ii)** allow investments in equity exchange traded funds (ETFs) in addition to high yield ETFs, and **(iii)** include a soft risk parameter for maximum equity exposure within the portfolio at 5% of the portfolio value.

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

5. 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 reported that the Private Markets & Funds Alpha (PMFA) division's long-term performance remained strong and that the division had a very busy quarter. In particular, she highlighted that the PMFA division **(a)** made good progress on systems improvements and implementation with both eFront and onboarding the document management process internally, **(b)** increased strategic planning efforts in connection with top-down investment themes and attribution analysis, which continues to inform new commitments, and **(c)** continued to innovate on the investment front, including through cross-portfolio collaboration, streamlining certain private equity co-investment reviews, and evaluating new sub-asset classes.

6. Q1 2021 Quarterly Updates

A. Private Equity

Scott Parrish, Portfolio Manager–Private Equity, presented the *Quarterly Activity Report – Private Equity*, included on pages 55-73 in the meeting materials. Mr. Parrish provided a private equity market update, noting that **(a)** private equity fundraising dollars and the number of funds raised were up significantly year-over-year, **(b)** deal activity in dollars and number of deals were also up year-over-year, with add-on activity accounting for 60% of all deal activity, **(c)** purchase price and leverage multiples remained flat relative to Q1 2020, and **(d)** a record \$90 billion was raised through special purpose acquisition vehicles (SPACs) in Q1, which impacted portfolio company exit activity through public listings.

Mr. Parrish then reported that, as of March 31, 2021, the aggregate Private Equity portfolio (excluding private debt and venture capital) had a market value of just over \$11.3 billion, an increase of approximately \$2 billion in 2020. Including the Venture Capital, Private Debt and Overage portfolios, the asset class makes up approximately 11% of the CTF, which is in line with the target allocation. With respect to performance, Mr. Parrish highlighted that all portfolios outperformed their benchmarks for the one-, three- and five-year time periods and that the combined Private Equity and Co-investment portfolios achieved above median performance for six of the seven vintage years from 2014-2020. He also discussed the five-year internal rates of return (IRRs) for each of the portfolios' sub-strategies, noting particularly strong performance in growth equity funds, driven by the favorable exit environment for software companies.

Mr. Parrish then discussed the Private Equity portfolio's **(a)** sub-asset class diversification, noting the increasing allocation to small- and mid-market buyout managers, and **(b)** geographic and industry diversification, highlighting that the underweights to Asia/rest of world and financials and the overweight to information technology had added alpha over the past five years. He and Ms. Fink also responded to questions from the Committee regarding sector allocation, strategic direction, and manager selection as well as benchmark transparency. Finally, Mr. Parrish highlighted the commitments made in Q1 2021 and the active portfolio pipeline for Q2 and noted that the portfolio remained in compliance with all investment guidelines.

B. Real Estate

Jason Rothenberg, Portfolio Manager–Real Estate, presented the *Quarterly Activity Report – Real Estate*, included on pages 74-88 in the meeting materials. He discussed the current market environment, noting **(a)** the persistent divergence in performance among various property types, with industrial continuing to perform well while the office environment remains uncertain, **(b)** negative rent growth year-over-year in the apartment and office sectors, and **(c)** attractive relative pricing for real estate compared to other alternative assets, leading to a competitive transaction environment.

Mr. Rothenberg then reviewed the Real Estate portfolio, noting that the portfolio's market value of approximately \$8.2 billion as of May 31, 2021 represented approximately 6.4% of the CTF. While below the target asset allocation of 8%, he noted that the team has a strong pipeline and expects increased capital calls from funds that have been investing using their subscription lines. Mr. Rothenberg commented that leverage remained below 40% but was

increasing modestly in the current financing environment. He then reviewed the portfolio's historical diversification by property and market type, noting the portfolio's increasing exposure to the industrial sector, primarily in lieu of office and retail, which remain underweight relative to the benchmark.

Mr. Rothenberg reviewed the portfolio's performance, noting that (a) the portfolio had outperformed the benchmark over the one-, three-, five-, and ten-year time periods, and (b) the industrial sector was a strong contributor to overall performance while the retail and office sectors continued to experience headwinds. He then presented quarterly comparative data from Callan, which underscored the portfolio's consistent outperformance with less risk relative to its peer set. Lastly, he discussed the four new commitments made in the quarter and the active pipeline under review, and confirmed that the portfolio remained in compliance with its investment guidelines.

C. Private Debt

Chris Prestigiacomio, Portfolio Manager–Private Debt & Venture Capital, presented the *Private Debt Portfolio Investment Committee Quarterly Report*, included on pages 89-95 in the meeting materials. Mr. Prestigiacomio reported that two new loans were closed during the quarter, with an average credit quality of BBB and a credit spread of approximately 200 basis points. He then reviewed the portfolio characteristics, noting that (a) duration and average coupon both declined slightly from the previous quarter while average life held steady, (b) the portfolio's concentration in both Wisconsin companies and the industrial sector is expected to continue to decline as a result of the expansion of the portfolio's investable geography, and (c) the portfolio's aggregated below-investment grade holdings are currently 12%, which is expected to increase in 2021 as additional below-investment grade holdings are added.

Mr. Prestigiacomio reviewed the loan pipeline and portfolio returns, highlighting that the portfolio outperformed its benchmark over the three-, five-, and ten-year periods, but underperformed during the one-year period. With respect to the market, he noted that fundraising among private debt funds was effectively flat relative to prior quarters but is expected to increase. He then discussed the team's outreach efforts to generate more direct deal flow, and concluded by reporting that there were no problem credits or workouts in the portfolio, which remained in compliance with its guidelines.

7. Convene in Closed Session

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

The Chair called for a roll call vote.

Denson-Aye
Linn-Aye

Drummond-Aye
Ludgate-Aye

Fink-Aye
Shen-Aye

Hellmer-Aye
Stanton-Aye

Laufenberg-Aye

There being nine ayes and no nays, Mr. Denson declared the motion passed. The Committee then convened in closed session at 2:28 p.m. and reconvened in open session at 3:32 p.m.

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

Mr. Denson announced that, while in closed session, the Committee (a) reviewed proprietary investment information for the investment strategies and investment instruments related to private equity, real estate, private debt, venture capital and exposure management, (b) reviewed the total and active risk for the Core and Variable Trust Funds, and (c) discussed Q1 2021 transitions and soft risk parameters.

9. Soft Risk Parameters

Brian Heimsoth, Quantitative Manager, noted that the report *Soft Risk Parameters–Asset Class and Portfolio*, as of May 31, 2021, was included on pages 176-177 in the meeting materials for the Committee’s review. He noted that there were no new discussion triggers and that the discussion trigger for the Equity Delta to the S&P 500 for the Hedge Fund portfolio had dropped off since last month.

10. Fair Value Measurement Review of WRS Investments

Mr. Denson noted that a report entitled *Fair Value Measurement Review of WRS Investments*, with an overview of the nature and liquidity of SWIB’s assets, was included on pages 178-188 in the meeting materials for the Committee’s review.

11. Future Meeting Topics

Mr. Denson noted that a summary of standard IC agenda items and draft agendas for the July 27, 2021 and August 24, 2021 meetings are included on pages 189-194 in the meeting materials for the Committee’s review.

12. Adjournment

Motion: A motion to adjourn the meeting was made by Mr. Denson and seconded by Mr. Drummond. The motion passed unanimously, and the meeting adjourned at 3:36 p.m.

Date of Committee Approval: 7/27/2021

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

STATE OF WISCONSIN INVESTMENT BOARD
Investment Committee Meeting–Open Session

Tuesday, July 27, 2021

Via Teleconference

Committee Members Present: Edwin Denson, Executive Director/Chief Investment Officer (Chair)
Derek Drummond, Portfolio Manager–Funds Alpha
Anne-Marie Fink, Private Markets & Funds Alpha–Chief Investment Officer
Brian Hellmer, Global Public Market Strategies–Chief Investment Officer
James Laufenberg, Managing Analyst–Real Estate
Diane Linn, Managing Analyst–Multi-Asset Strategies
Todd Ludgate, Head of Global Extended Fixed Income Strategies
Pu Shen, Managing Analyst–Asset & Risk Allocation
Nick Stanton, Head of Multi-Asset Strategies

Sara Chandler, Chief Legal Counsel (Secretary) (non-voting)
Brian Heimsoth, Quantitative Manager (non-voting)
Rochelle Klaskin, Deputy Executive Director/Chief Administrative Officer (non-voting)

Also in Attendance: Adam Ault, Managing Analyst–Global Sector Aggregate Strategies
Larina Baird, Internal Auditor
Nathan Ballard, Senior Legal Counsel
Chelsey Barczak, GPMS Business Director
Derek Bloom, Managing Analyst–Asset & Risk Allocation
Kate Burkart-Paulson, Senior Legal Counsel
Bill Campbell, Data Management Director
Hassan Chehime, Head of Risk Management
Bridget Chen, Analyst–Alternative Fixed Income Strategies
Christian Comito, Managing Analyst–Alternative Fixed Income Strategies
Greg Fletcher, Performance Director
Chirag Gandhi, Portfolio Manager–Global Bonds
Jameson Greenfield, Chief Financial Officer
John Heshelman, Managing Analyst–Alternative Fixed Income Strategies
Mike Jacobs, Agency Business Director
Phil Johnson, Managing Analyst–Global Extended Fixed Income Strategies
David Jordan, Portfolio Manager–High Yield
Janet Klosterman, Legal Assistant
John Lahman, Managing Analyst–Global Extended Fixed Income Strategies
Lisa Lange, Director of Compliance & Senior Legal Counsel
Alex Li, Quantitative Analyst–Asset & Risk Allocation
Shan Lo, Managing Analyst–Global Extended Fixed Income Strategies
Bill Luetzow, Assistant Compliance Counsel
Damian Maroun, Head of Trading and Execution

Frank Mazzucco, Legal Counsel
Joy Mukherjee, Head of Domestic Small Cap Strategy
Chase Nicholson, Managing Analyst–Multi-Asset Strategies
Jason Rector, Managing Analyst–Funds Alpha
Tom Robinson, Head of Corporate Governance
Edouard Senechal, Managing Analyst–Asset & Risk Allocation
Mohammed Sahail Kutagulla Shaik, Business Analyst
Chris Spiering, Managing Analyst–Alternative Fixed Income Strategies
Matt Terpstra, Internal Auditor
Rob Thornton, ARA Business Director
Dawn Tuescher, Executive Administrative Assistant
Tarun Vanjani, Managing Analyst–Private Debt & Venture Capital
Ping Wong, Securities Analyst–Global Extended Fixed Income Strategies
Tong Wu, Securities Analyst Intern
Ivy Zhang, Managing Analyst–Asset & Risk Allocation
Lauren Albanese, Financial Investment News
Chris Levell, NEPC
Eileen Neill, Verus Advisory
Nate Heimler, Legislative Audit Bureau
Liz Wedelstaedt, Cabrera Capital Markets LLC
(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 1:32 p.m. All attendees participated in this meeting telephonically.

1. Approval of the Minutes

Mr. Denson asked if there were any comments on either the open or closed session minutes of the June 22, 2021 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. Denson and seconded by Ms. Fink to approve both the open session and the closed session minutes of June 22, 2021, as presented. The motion passed unanimously.

2. June Investment Forum Debrief

Adam Ault, Managing Analyst–Global Sector Aggregate Strategies, noted that feedback for the annual Investment Forum held on June 15-16, 2021, has been favorable, with attendees pleased with the speakers and the virtual format split over two days. Attendance was higher than the 2020 virtual forum, and significantly higher (up 66%) than the last live forum held in 2019. He also commended Wisconsin-based company Perigon, the virtual event planner, for their platform and customer service in supporting SWIB’s virtual investment forums.

Mr. Ault reviewed the speakers and their presentation topics and noted that video replay of the forum was available at <https://www.swib.state.wi.us/videolibrary>.

3. Global Public Markets Division Update

Brian Hellmer, Global Public Market Strategies–Chief Investment Officer, presented the *Global Public Market Strategies Quarterly Update*, included on pages 10-40 in the meeting materials. Mr. Hellmer reported that five of the eight division strategies generated positive performance relative to their benchmarks year-to-date. He noted that the Global Sector Aggregate and Small Cap Diversified equity portfolios both returned positive absolute performance, but negative relative performance, given the overall strong returns of the equity markets. Mr. Hellmer also commented that, although interest rates have declined slightly in Q2 2021, higher interest rates year-to-date continue to create a headwind for returns for the fixed income and mortgage-backed securities (MBS) strategies. He noted that each portfolio was in compliance with its guidelines during Q2 2021.

Mr. Hellmer then commented on the equity markets, noting that **(a)** equity markets have experienced strong performance thus far in 2021, as global vaccination progress, favorable corporate earnings reports, and government stimulus have led to optimism for economic growth, **(b)** stock valuation levels remain high relative to historical measures, with risk if there are disruptions to current high expectations, **(c)** the valuation disparity between growth and value continues to indicate opportunities in value stocks, **(d)** international stocks remain atypically discounted relative to U.S. stocks, which may present opportunities as economic growth recovers globally, and **(e)** inflationary expectations have risen slightly, with debate over whether inflation will be transitional or longer term.

With respect to the fixed income markets, Todd Ludgate, Head of Global Extended Fixed Income Strategies, noted that the market now expects a longer transitory period of higher inflation, but that long-term inflation expectations remain well anchored. He highlighted that the U.S. dollar fell modestly relative to both developed and emerging market currencies in Q2 2021 and that credit spreads continued to rally strongly with high yield bonds outperforming investment-grade credits. Mr. Ludgate commented that short-term rates remain extremely low, with excess cash vying for too few assets. He also noted that the Federal Reserve adjusted the Interest on Reserve Balances (IORB) and Reverse Repurchase (RRP) rates by five basis points in June and answered questions regarding the potential impact of those adjustments on the State Investment Fund (SIF).

4. Convene in Closed Session

Motion: A motion to go into closed session pursuant to sections 19.85(1)(e) and 19.36(5) of the Wisconsin Statutes to consider confidential strategies for the investment of public funds, including **(a)** the review of active risk profiles of portfolio investments and the Core and Variable Trust Funds, and **(b)** the review of specific proprietary investment strategies and investment instruments related to global public market strategies, public fixed income, multi-asset, mortgage-backed securities, high yield bonds, and exposure management, was made by Mr. Denson and seconded by Ms. Shen.

The Chair called for a roll call vote.

Denson-Aye
Linn-Aye

Drummond-Aye
Ludgate-Aye

Fink-Aye
Shen-Aye

Hellmer-Aye
Stanton-Aye

Laufenberg-Aye

There being nine ayes and no nays, Mr. Denson declared the motion passed. The Committee then convened in closed session at 2:03 p.m. and reconvened in open session at 4:03 p.m.

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

Mr. Denson announced that while in closed session the Committee **(a)** reviewed proprietary investment information for the investment strategies and investment instruments related to global public markets strategies, public fixed income, multi-asset, mortgage-backed securities, high yield bonds and exposure management, and **(b)** reviewed the total and active risk for the Core and Variable Trust Funds.

6. Soft Risk Parameters

Brian Heimsoth, Quantitative Manager, noted that the report *Soft Risk Parameters–Asset Class and Portfolio*, as of June 30, 2021, was included on pages 163-164 in the meeting materials for the Committee’s review. He noted that there were no new discussion triggers this month and that the discussion trigger relating to the ex-ante tracking error for the Small Cap Diversified portfolio had dropped off since last month. He also commented that two new soft risk parameters previously approved by the IC have been added to the report to monitor maximum single issuer concentration in the SIF and maximum equity exposure in the High Yield portfolio.

7. Future Meeting Topics

Mr. Denson noted that a summary of standard IC agenda items and draft agendas for the August 24, 2021 and September 28, 2021 meetings were included on pages 165-170 in the meeting materials for the Committee’s review.

8. Adjournment

Motion: A motion to adjourn the meeting was made by Mr. Denson and seconded by Mr. Hellmer. The motion passed unanimously, and the meeting adjourned at 4:06 p.m.

Date of Committee Approval: 8/24/2021

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

AGENDA / NOTICE

Name of Meeting: Staff Investment Committee Meeting
Date/Time: Tuesday, August 24, 2021 1:00 pm
Room: Via Teleconference
Address: 121 E. Wilson St., Madison WI 53703
Dial In # 1-608-267-3179 **Access Code:** 125098993

Est. Time Minutes	Action Item	Topic	Presenter
		OPEN SESSION	
	Motion	1. Approval of the Minutes – Open Session A. July 27, 2021	
5		2. October Workshop Preview	Edwin Denson
10		3. Quarterly Performance Review (Q2 2021)	Greg Fletcher
10		4. Corporate Governance Update	Tom Robinson
5	Motion	5. Trustee WRS Investment Policy Amendments	Sara Chandler
5	Motion	6. Amendments to State Investment Fund & Separately Managed Funds Investment Policy and Guidelines	Sara Chandler
35		7. Q2 2021 Quarterly Updates A. Small Cap B. Global Sector C. Funds Alpha	Brian Hellmer Joy Mukherjee Chad Neumann Derek Drummond
	Motion	CLOSED SESSION*	
	Motion	RECONVENE IN OPEN SESSION	
		8. Announcement of Committee Actions Relating to Items Taken Up in Closed Session	

* 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 small cap, global sector aggregate, funds alpha, currency exposure, asset and risk allocation and exposure management, and (iii) the review of credit counterparty and 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.

5		9. Financing and Collateral Update	Mike Stamm
5		10. Currency Task Force Report	Chirag Gandhi
5		11. Research Task Force Report	Brian Hellmer
		12. Soft Risk Parameters (No presentation unless requested)	
		13. Future Meeting Topics	
	Motion	14. Motion to Adjourn	
		<p><i>NOTES: Items may be taken in order other than listed.</i></p> <p><i>The meeting site is physical accessible. Upon prior request, reasonable accommodations will be provided.</i></p>	

Future Meetings

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

Voting Committee Members:

Edwin Denson (Chair), Executive Director/Chief Investment Officer
Anne-Marie Fink, Private Markets & Funds Alpha–CIO
Brian Hellmer, Global Public Market Strategies–CIO
Todd Ludgate, Head of Global Extended Fixed Income Strategies
Nick Stanton, Head of Multi-Asset Strategies
Derek Drummond, Portfolio Manager–Funds Alpha
James Laufenberg, Managing Analyst–Real Estate
Diane Linn, Managing Analyst–Multi-Asset Strategies
Pu Shen, Managing Analyst–Asset & Risk Allocation

Non-voting Committee Members

Rochelle Klaskin, Deputy Executive Director/CAO
Sara Chandler (Secretary), Chief Legal Counsel
Brian Heimsoth, Quantitative Manager

AGENDA / NOTICE

Name of Meeting: Staff Investment Committee Meeting
Date/Time: Tuesday, September 28, 2021 1:30 pm
Room: TBD
Address: 121 E. Wilson St., Madison WI 53703
Dial In # 1-608-267-3179 **Access Code:**

Est. Time Minutes	Action Item	Topic	Presenter
		OPEN SESSION	
	Motion	1. Approval of the Minutes – Open Session A. August 24, 2021	
5		2. October Workshop Preview	Edwin Denson
5		3. Transition Update (Q2 2021)	Joe Roth
15		4. Separately Managed Funds Update	Rob Thornton
10		5. Private Markets & Funds Alpha Division Update	Anne-Marie Fink
30		6. Q2 2021 Quarterly Updates A. Private Equity B. Real Estate C. Private Debt	Scott Parrish Jason Rothenberg Chris Prestigiacomo
	Motion	CLOSED SESSION*	
	Motion	RECONVENE IN OPEN SESSION	
		7. Announcement of Committee Actions Relating to Items Taken Up in Closed Session	
10	Motion	8. QIR Certification	Lisa Lange
5		9. Brokerage Task Force Report	Damian Maroun

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

		10. Soft Risk Parameters (No presentation unless requested)	
		11. Future Meeting Topics	
	Motion	12. Motion to Adjourn	
		<p><i>NOTES: Items may be taken in order other than listed.</i></p> <p><i>The meeting site is physical accessible. Upon prior request, reasonable accommodations will be provided.</i></p>	

Future Meetings

10/26/21 – October Committee Mtg.
11/23/21 – November Committee Mtg.
12/21/21 – December Committee Mtg.

Voting Committee Members:

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

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

Brian Hellmer, Global Public Market Strategies–CIO

Todd Ludgate, Head of Global Extended Fixed Income Strategies

Nick Stanton, Head of Multi-Asset Strategies

Derek Drummond, Portfolio Manager–Funds Alpha

James Laufenberg, Managing Analyst–Real Estate

Diane Linn, Managing Analyst–Multi-Asset Strategies

Pu Shen, Managing Analyst–Asset & Risk Allocation

Non-voting Committee Members

Rochelle Klaskin, Deputy Executive Director/CAO

Sara Chandler (Secretary), Chief Legal Counsel

Brian Heimsoth, Quantitative Manager

AGENDA / NOTICE

Name of Meeting: Staff Investment Committee Meeting
Date/Time: Tuesday, October 26, 2021 1:30 pm
Room: Via Teleconference
Address: 121 E. Wilson St., Madison WI 53703
Dial In # 1-608-267-3179 **Access Code:**

Est. Time Minutes	Action Item	Topic	Presenter
		OPEN SESSION	
	Motion	1. Approval of the Minutes – Open Session A. September 28, 2021	
20	Motion	2. Annual Benchmark Presentation	Eileen Neill, Verus
10	Motion	3. Amendments to Investment Committee WRS Investment Guidelines	Sara Chandler
20		4. Global Public Markets Division Update A. Division Update B. Market Overview	Brian Hellmer Todd Ludgate
	Motion	CLOSED SESSION*	
	Motion	RECONVENE IN OPEN SESSION	
		5. Announcement of Committee Actions Relating to Items Taken Up in Closed Session	
		6. Soft Risk Parameters (No presentation unless requested)	
		7. Future Meeting Topics	
	Motion	8. Motion to Adjourn	
		<i>NOTES: Items may be taken in order other than listed.</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 public markets strategies, public fixed income, multi-asset, mortgage-backed securities, high yield bonds 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.

		<i>The meeting site is physical accessible. Upon prior request, reasonable accommodations will be provided.</i>	
<u>Future Meetings</u> 11/23/21 – November Committee Mtg. 12/21/21 – December Committee Mtg.		<u>Voting Committee Members:</u> Edwin Denson (Chair) , Executive Director/Chief Investment Officer Anne-Marie Fink , Private Markets & Funds Alpha–CIO Brian Hellmer , Global Public Market Strategies–CIO Todd Ludgate , Head of Global Extended Fixed Income Strategies Nick Stanton , Head of Multi-Asset Strategies Derek Drummond , Portfolio Manager–Funds Alpha James Laufenberg , Managing Analyst–Real Estate Diane Linn , Managing Analyst–Multi-Asset Strategies Pu Shen , Managing Analyst–Asset & Risk Allocation <u>Non-voting Committee Members</u> Rochelle Klaskin , Deputy Executive Director/CAO Sara Chandler (Secretary) , Chief Legal Counsel Brian Heimsoth , Quantitative Manager	

Board Meeting

Tab 8 - Quarterly Investment Update, Q2 2021



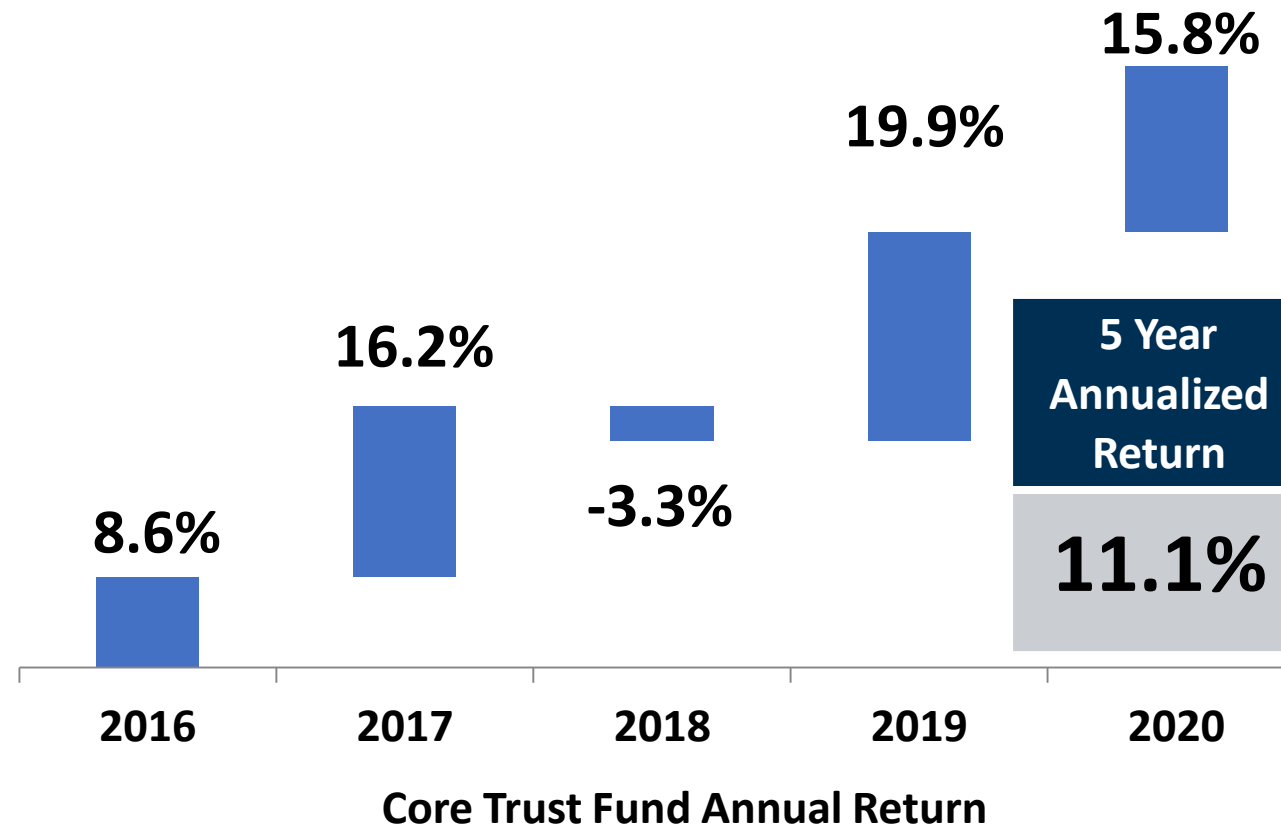
Quarterly Investment Update

Board Meeting

September 15, 2021

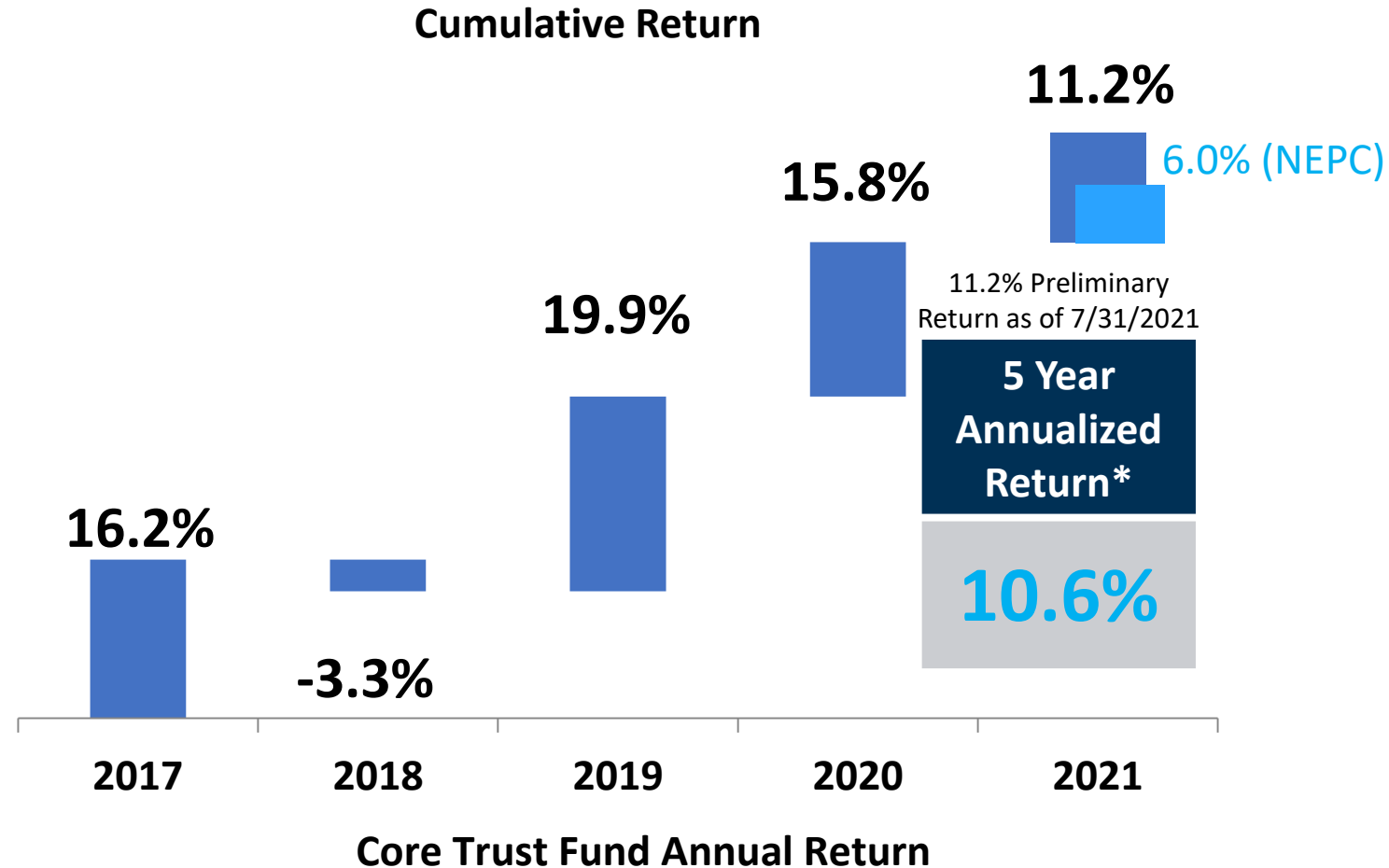
Performance Outlook

2020 CTF 5-Year Return Decomposed



Source: SWIB; 11.1% is the geometric average realized return, 2016 to 2020; Gross of Fee.

2021 CTF 5-Year Forecast Return - ?



Source: SWIB; 5-year Annualized Return is forecast using NEPC assumptions for 2021;
Gross of Fee.

Benchmark Index Performance

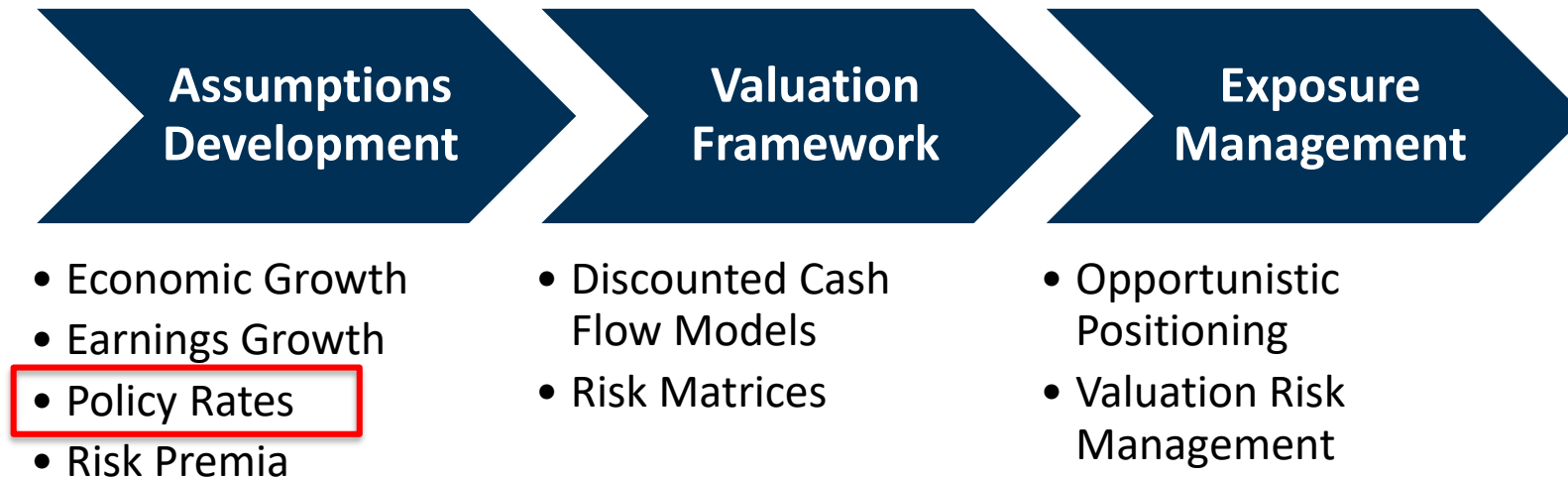
Equities have performed strongly year to date and bonds have detracted as yields moved higher.

Summary of Returns					
August 31, 2021					
Benchmark Indices (% change, annualized)	YTD	1 Yr	5 Yr	10 Yr	10 Yr Volatility
CTF Policy Benchmark (Gross of Fee)	10.9%	19.1%	11.1%	9.3%	7.8%
S&P 500	21.6%	31.2%	18.0%	16.3%	13.4%
Russell 2000	15.8%	47.1%	14.4%	13.6%	18.6%
MSCI ACWI Gross	16.2%	29.2%	14.9%	11.9%	13.8%
MSCI ACWI Gross (Local)	17.5%	29.1%	14.9%	13.3%	12.3%
MSCI World ex US Equities	12.4%	26.6%	9.8%	7.1%	14.7%
MSCI World ex US Equities (Local)	16.1%	27.5%	9.4%	9.5%	12.0%
MSCI Emerging Markets	2.8%	21.1%	10.4%	4.9%	17.6%
Barclays Capital Govt/Credit	-0.9%	-0.1%	3.4%	3.5%	3.5%
BOFA ML High Yield	4.6%	10.3%	6.5%	6.9%	6.9%
Citigroup World Govt Bonds	-3.8%	-1.3%	1.9%	1.1%	5.0%
Citigroup World Govt Bonds (Hedged)	-1.2%	-0.2%	2.8%	3.7%	3.0%

Source: FactSet, SWIB; CTF Benchmark return is preliminary.

Exposure Management Process

Exploit near-term opportunities and manage valuation risk



Inflation Outlook Summary

Next 18 months: U.S. experiences a disinflation, ending 2022 much closer to the Fed's 2.0% target.

- Interpreting the recent strong core PCE (personal consumption expenditure) inflation (3.6%) requires detailed study of specific components.
- Price increases have been concentrated in pandemic-affected durable goods categories as well as some services (air fares, hotels, auto rentals).
- Base Case: Housing (rent) inflation will likely strengthen, but disinflation in goods categories will be an offset, bringing core PCE to 2.2% at end-2022.
- Higher Inflation Scenario: Slower durable goods disinflation plus an upside surprise to rents could bring end-2022 inflation to 2.6%, 60bps above the Fed's target.
- Lower Inflation Scenario: Faster normalization of durable goods imbalances and softer-than-expected housing rents would mean return to below-target 1.8% inflation (the regime of the last decade).

US Inflation Outlook

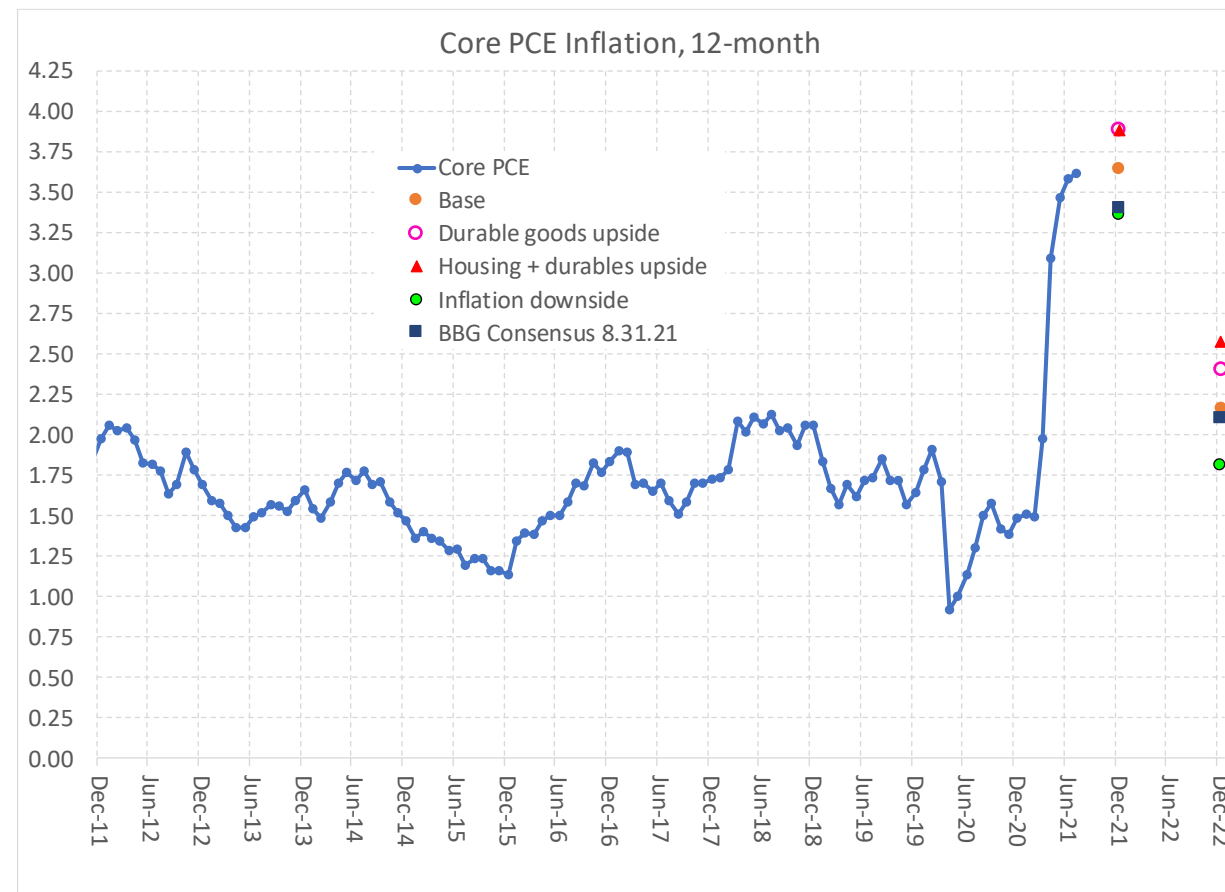
- US inflation is near peak, and will fall towards the Fed's 2.0% target by end-2022.
- Faster rent inflation will likely be offset by slowing in (currently very sharp) durable goods inflation.
- Risk is of a slow decline, given constrained supply in durable goods markets, notably motor vehicles.
- The big negative supply shock is likely in the past: faced with COVID uncertainty in 2020, firms aggressively cut capacity and workers.
- Demand recovered more quickly than was expected, due to (1) fiscal and monetary policy support and (2) faster-than-expected arrival of vaccines.
- Consumers are venting pent-up demand for discretionary goods and services: autos and other durable goods, hotels and air travel.
- COVID-related home-switching (a flow from downtown to suburbs, and to some degree to other metros) has also supported durables demand.
- Businesses were caught out, short on inventories and labor. Imbalance has been most striking in the auto space.
- Price incentives should lead to normalization of inflation in the most imbalanced sectors over the coming year.
- Rent inflation, both tenant and OER¹, is likely to rise through 2022, even as durable goods inflation slows.
- Wage and benefit growth is contained, though arguably higher than warranted by a still-somewhat-slack labor market.
- There is labor market mismatch: openings in industries where unemployed at present don't want to work. Extended UI benefits have allowed workers to be more choosy. These are expiring, which is likely to improve matching.
- Oil prices are likely to be stable or lower as oil inventories build, with modest downside effects on core inflation.

¹ OER: Owners' Equivalent Rent

Core PCE inflation scenarios: disinflation, just a matter of how much

Core PCE 12m inflation	Feb-20	Jul-21	Dec-21	Dec-22
Base	1.91	3.62	3.64	2.16
Housing (rent) upside	1.91	3.62	3.64	2.33
Durable goods upside	1.91	3.62	3.88	2.40
Housing + durables upside	1.91	3.62	3.88	2.58
Inflation downside	1.91	3.62	3.36	1.81
BBG Consensus 8.31.21	1.91	3.62	3.40	2.10

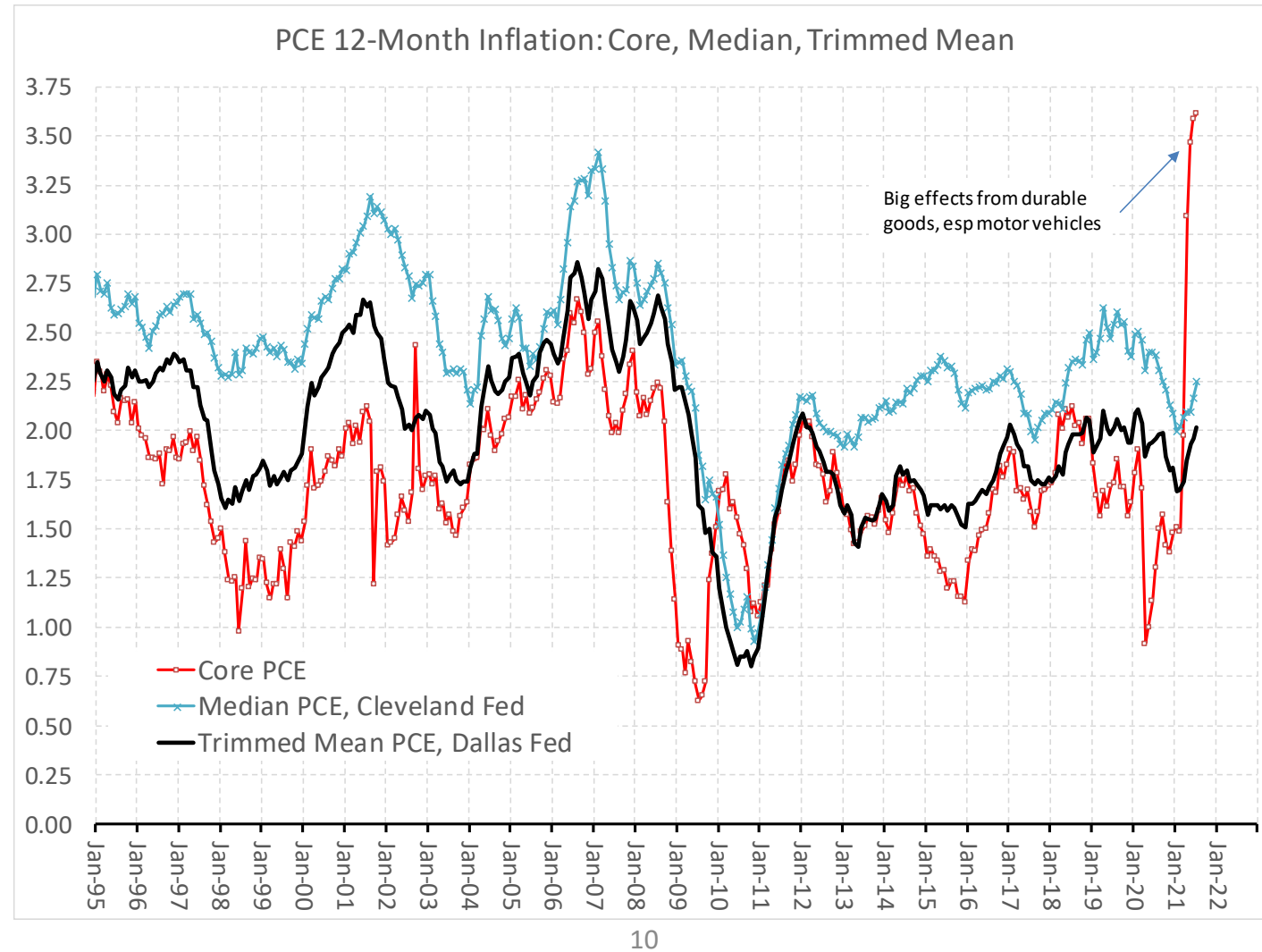
- Base case is a bit higher than consensus, leaves end-2022 inflation higher than the last decade.
- Double-whammy upside scenario sees both faster durables & housing (rent) inflation, leaves end-2022 at a rather elevated 2.6%.
- Downside case not totally implausible, but would require (1) fairly prompt normalization of supply/demand pressures in durable goods and (2) contained pickup in rental inflation.



Ex-volatiles measures of inflation have picked up...

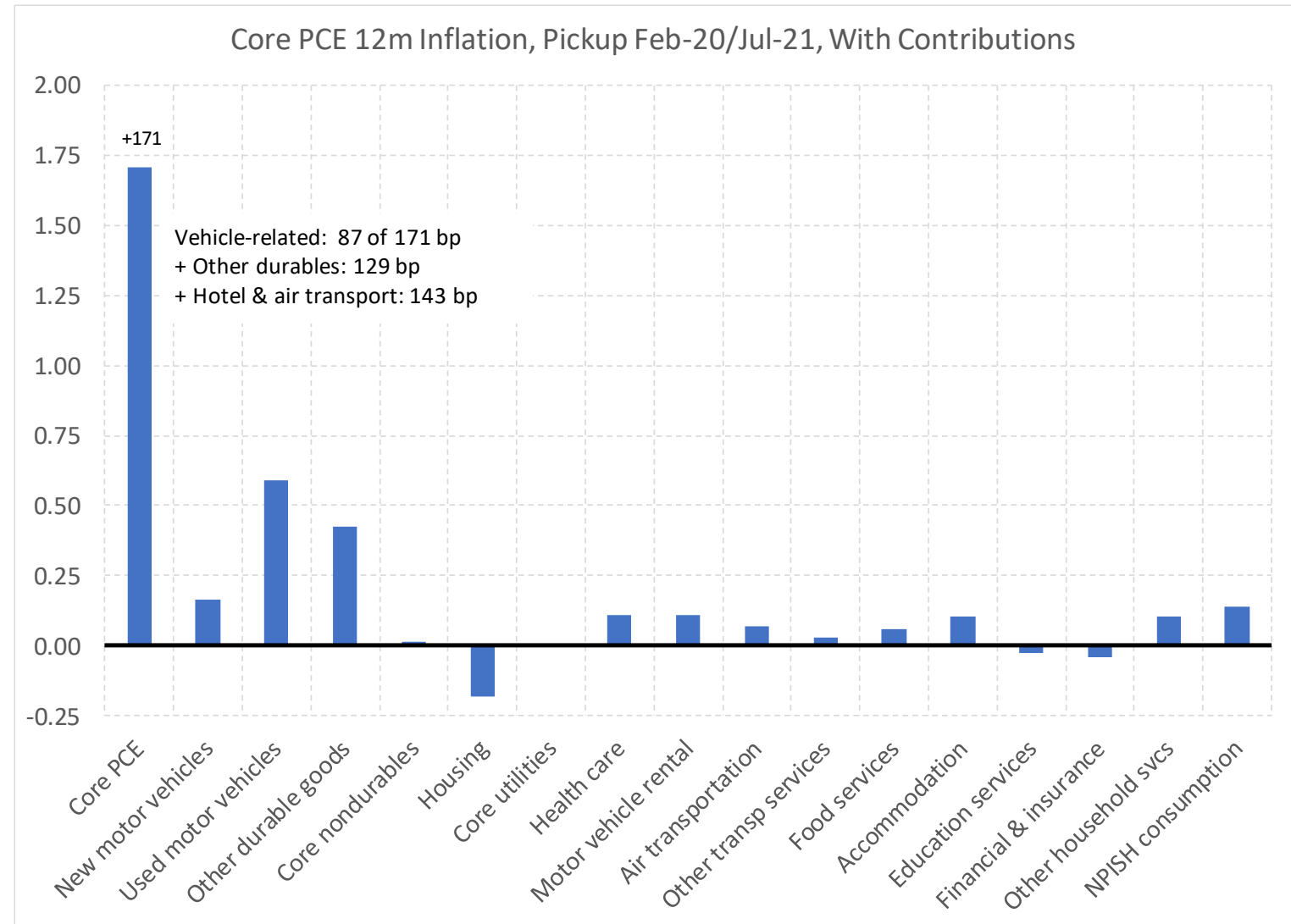
...sharply in the case of traditional “core” or ex food & energy measures

Better-behaved medians & trimmed means have also made a bottom, but indicate that inflation breadth is limited



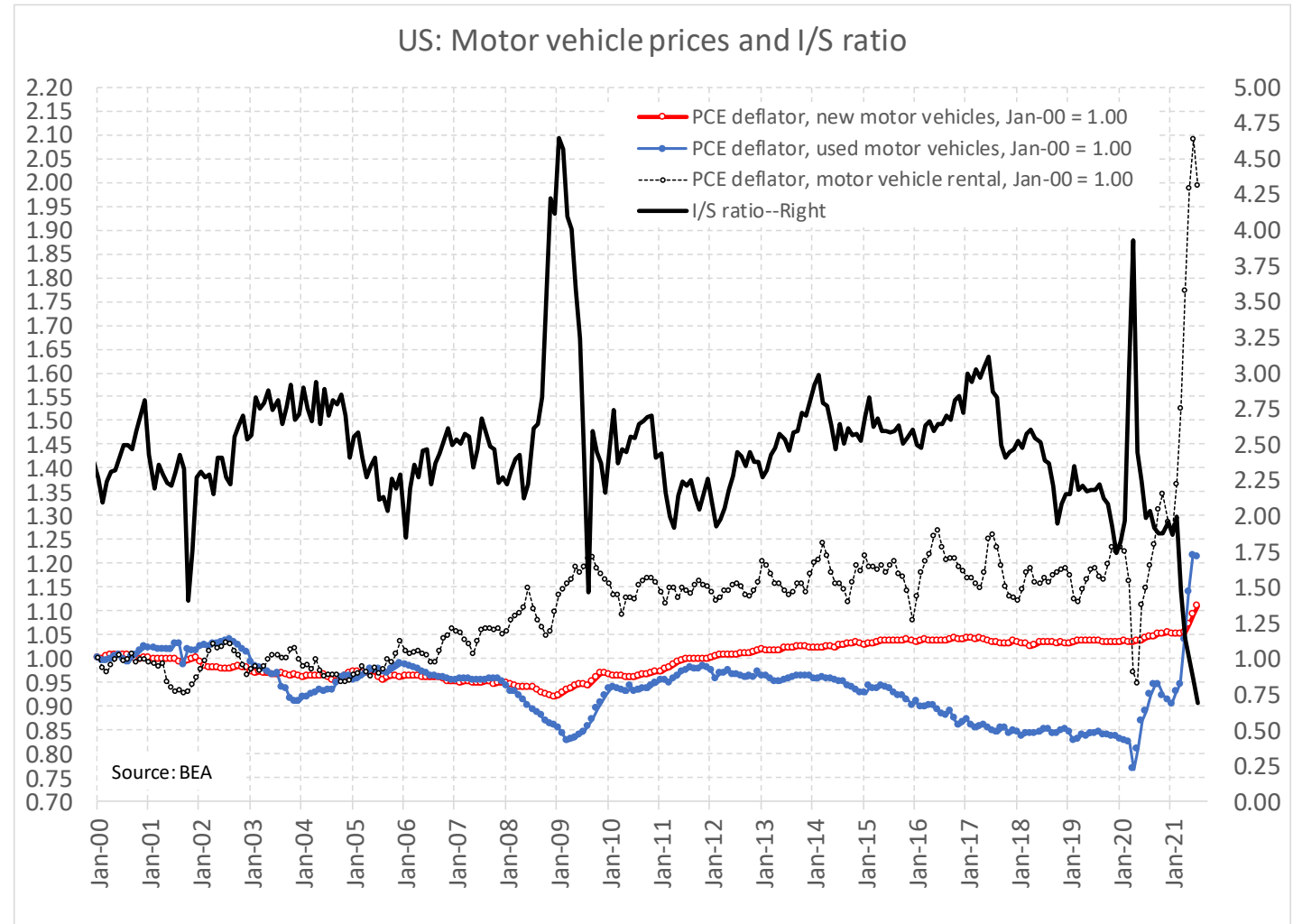
Core PCE inflation pickup has been concentrated in goods categories, air fares, hotels, auto rental

- Comparison is to Feb-20 pre-pandemic baseline.
- Constrained supply and venting of pent-up demand for discretionary items.
- An unusual and outsized role for used auto prices, which have been flat or deflating the past 20 years.
- New autos are facing component shortages, which could take months to work out.
- Lodging and airlines cut capacity in 2020, have been surprised to the upside.
- Housing (rent, OER) has been subdued, but poses upside risk to inflation in the next two years.



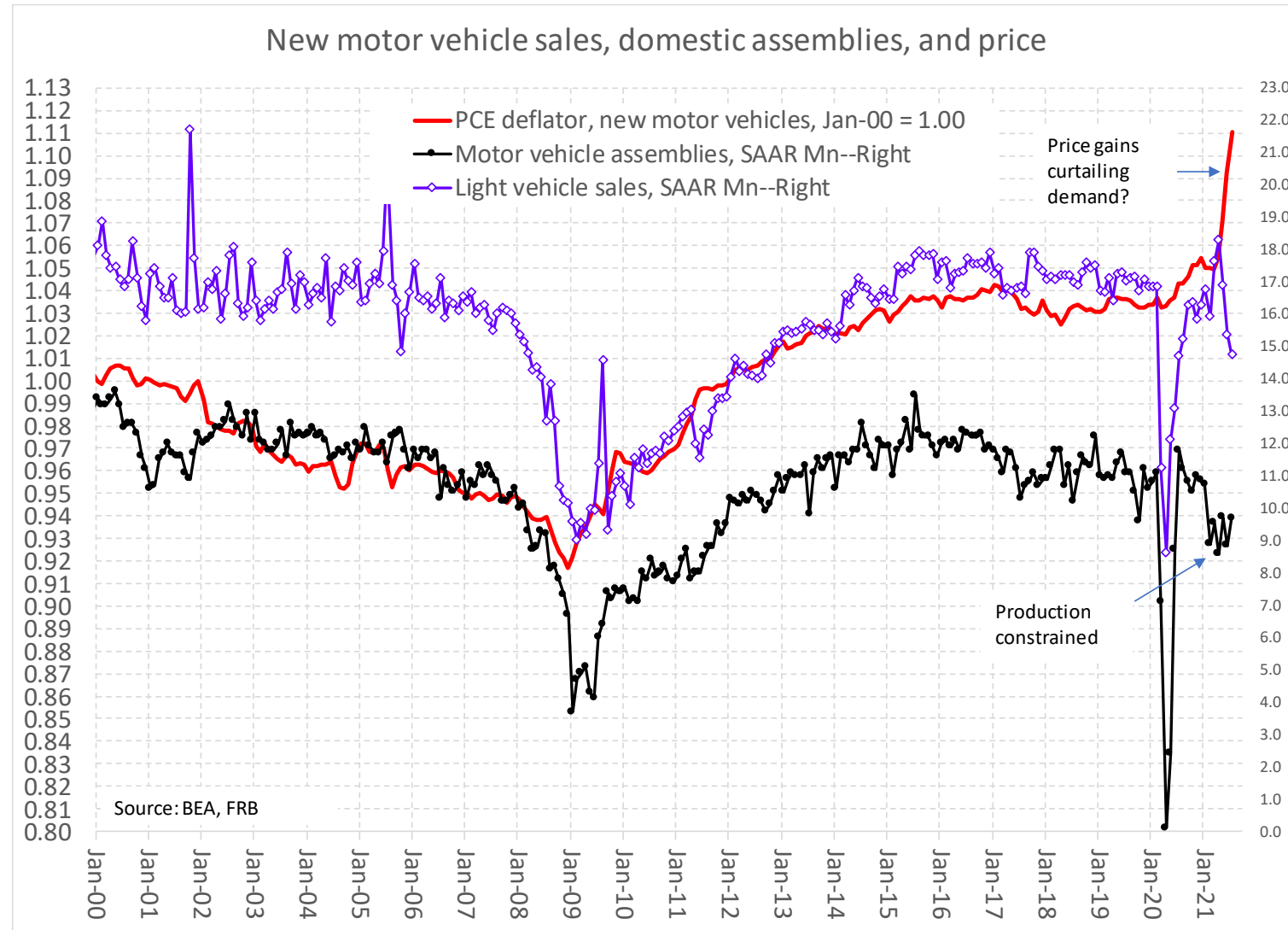
Severe imbalances in motor vehicle markets

- Faced with COVID uncertainty, rental companies trimmed fleets in 2020, selling into the used market, but have since rebuilt to a degree.
- Component shortages for automakers have constrained new auto supply, pushing buyers into the used market.
- New vehicle inventory to sales ratio is at a historical low: only 20 days of demand on hand.
- New vehicle prices have been rising sharply since April.
- Used prices and motor vehicle rental rates have seen unprecedented gains since their spring 2020 trough.



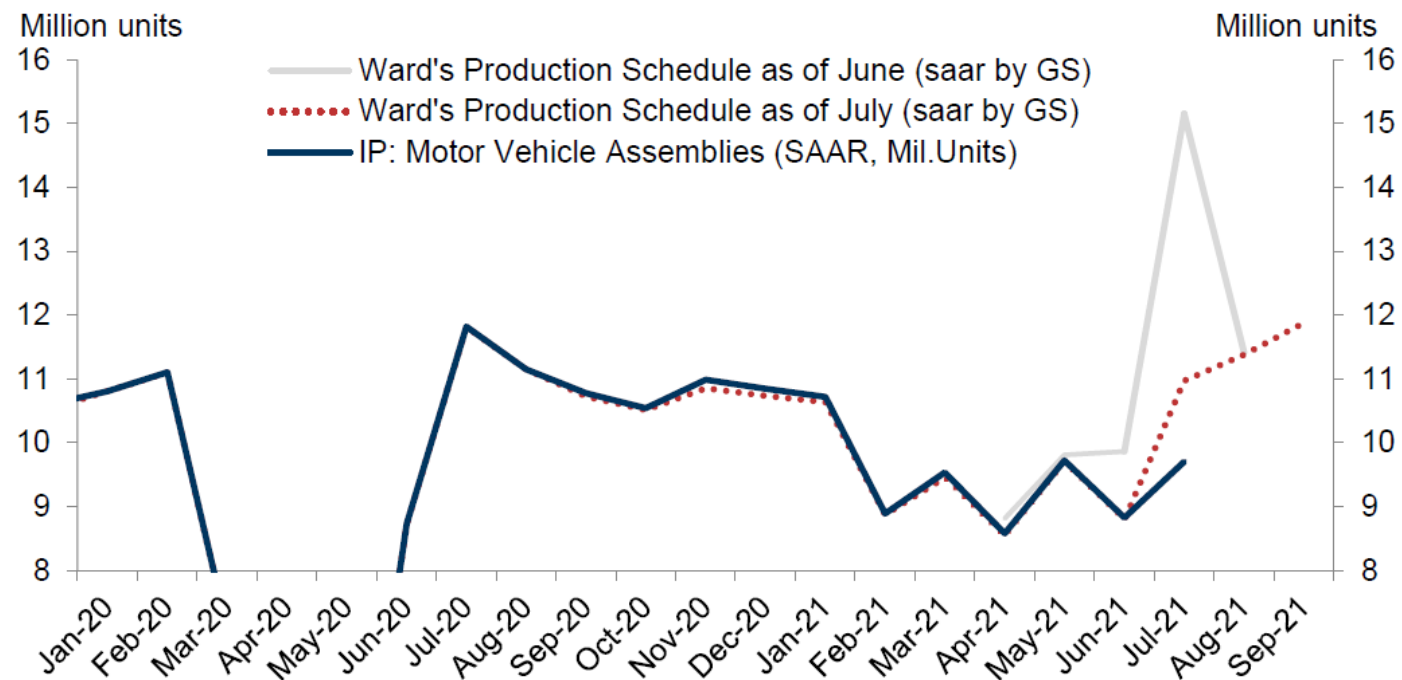
Sharp price gains might at this point be limiting new auto demand as much as supply constraints

Imbalance correction could come from both (1) discretionary buyers postponing buying as well as (2) eventual easing of supply problems



Expected increases in vehicle production have been slow to materialize

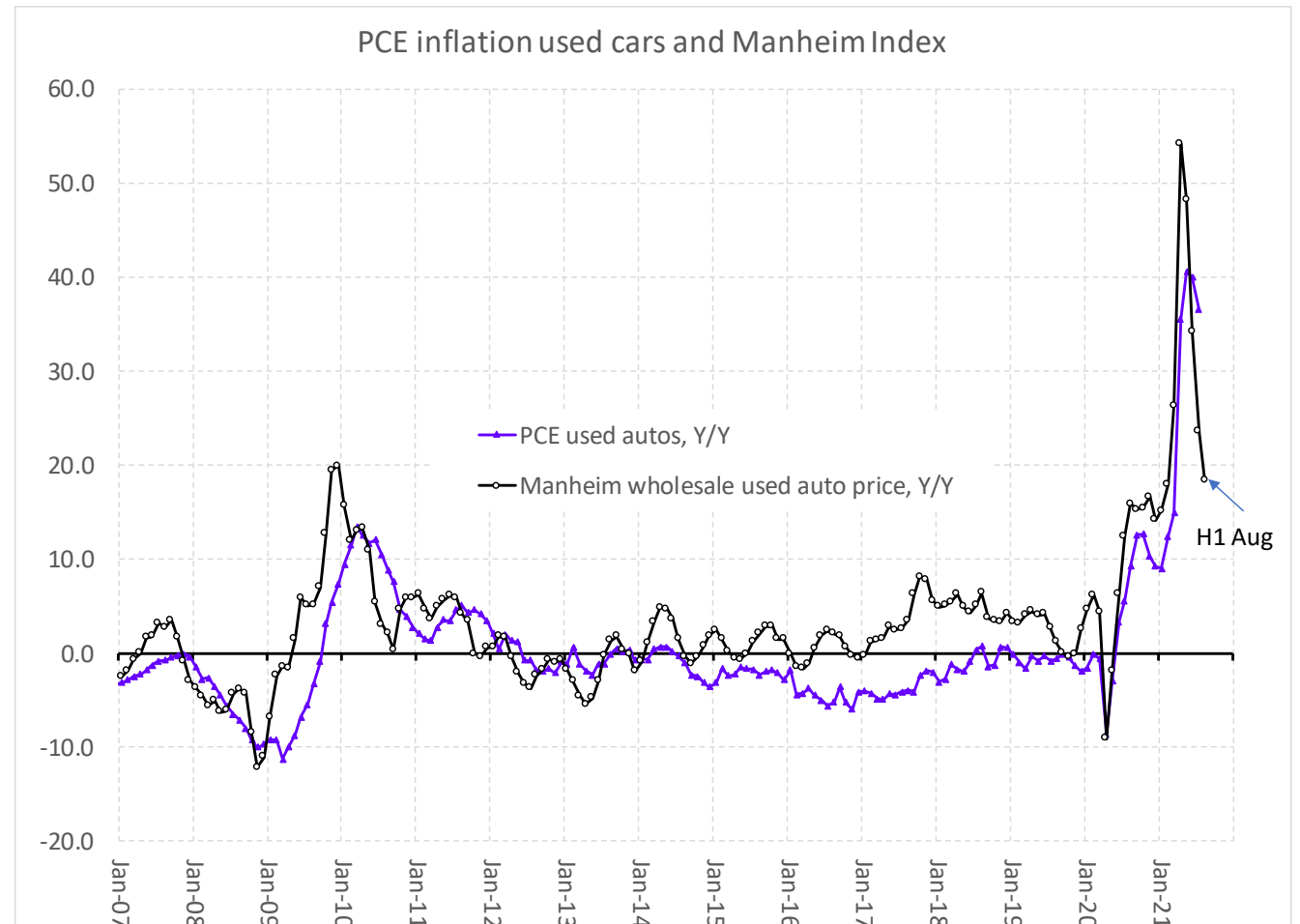
Exhibit 2: Supply Chain Disruptions Have Lowered Q3 Auto Production Well Below Initial Expectations



Source: Ward's, Federal Reserve Board, Goldman Sachs Global Investment Research

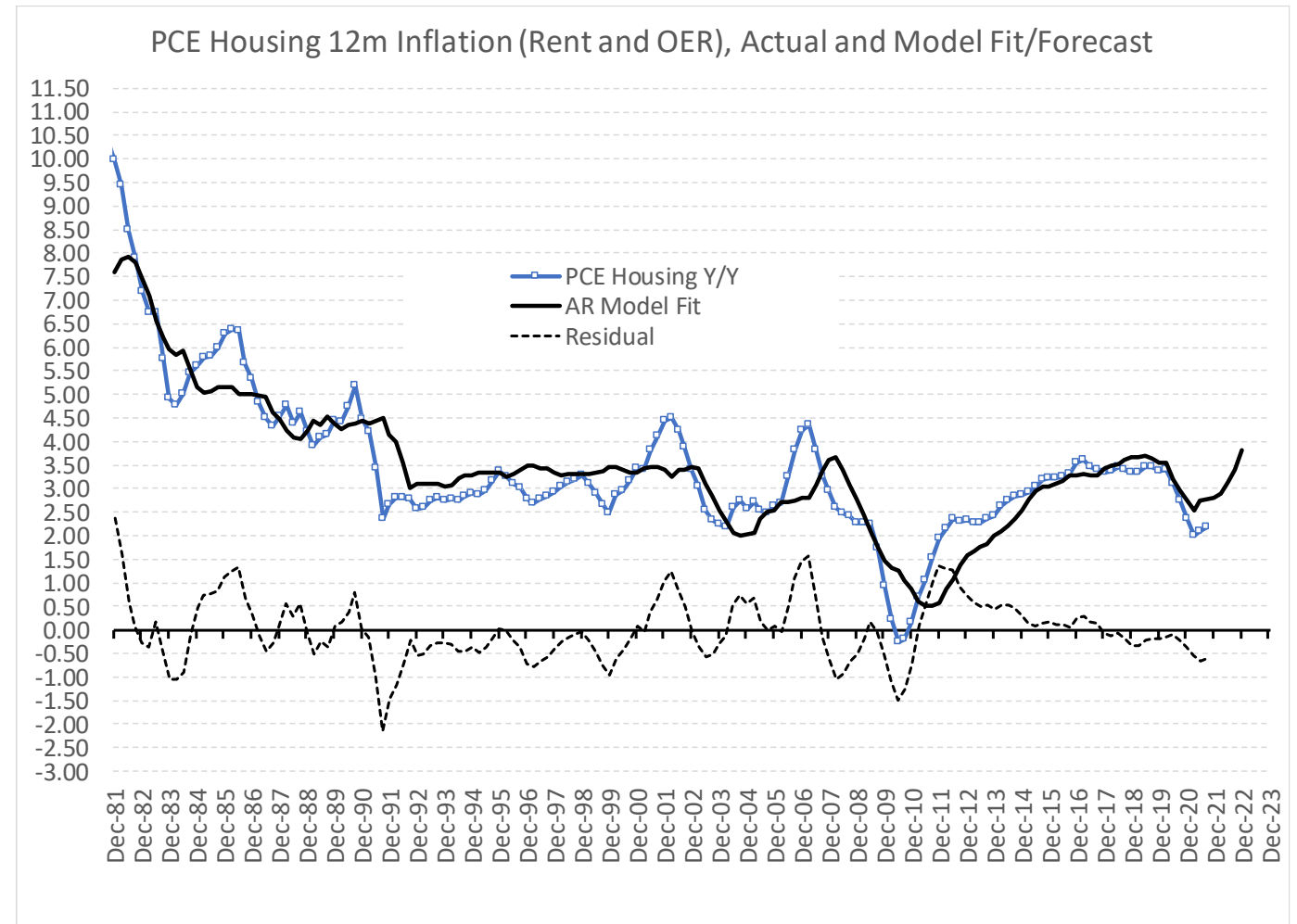
Used vehicle prices might be stabilizing

- A (tentative) sign of stabilizing used vehicle prices
- The Manheim used car wholesale index has at times led the PCE deflator for used cars...
- ...and has eased from its April year-over-year peak.
- A return to pre-COVID status of flat-to-declining used auto prices would erase ~60 bps from core PCE inflation.
- GFC aftermath was similar for used autos, but nowhere near as pronounced.



Rent inflation has eased from pre-COVID rates but is poised to pick up through end-2022

- Despite relatively low rental vacancy rate, slowing rent inflation was driven by:
 - Higher unemployment
 - Improving housing affordability
 - Low foreclosure starts due to moratorium: owners who lose homes are at times a source of rental demand
- Tailwinds poised to reverse through end-2022
 - Lower unemployment, in line with consensus
 - Decline in housing affordability
 - Pickup in foreclosures as moratorium ends

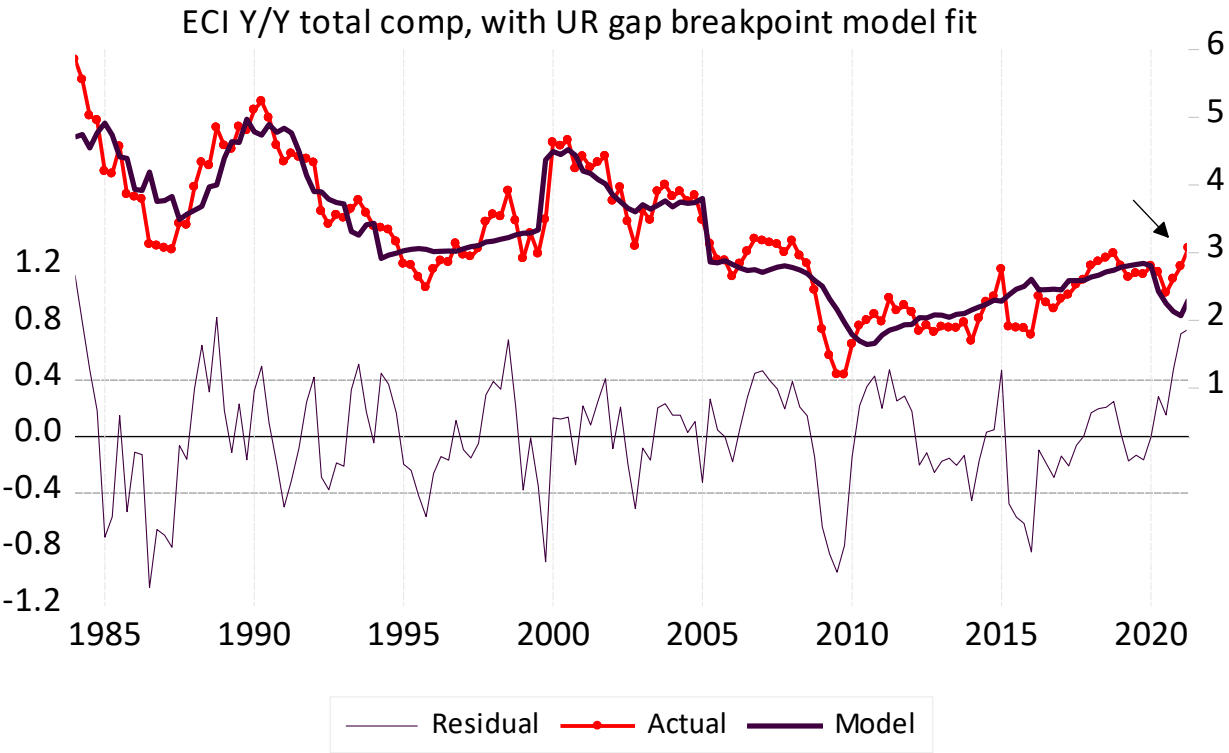
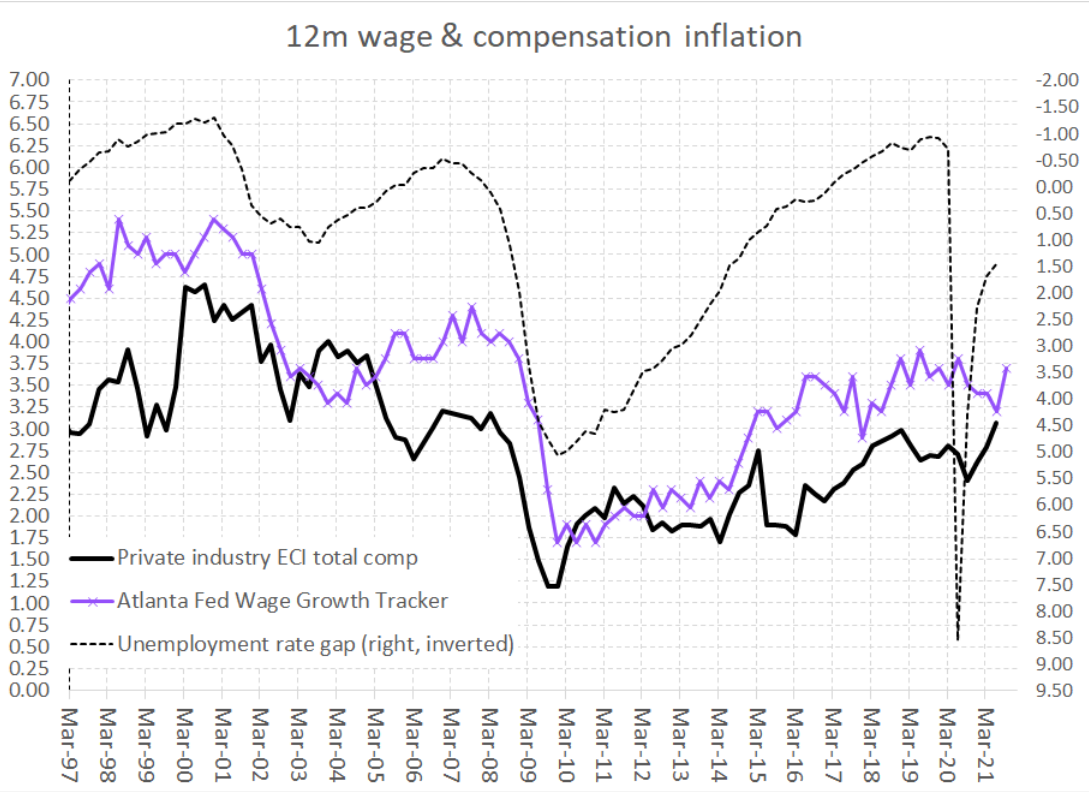


Housing (rent) inflation is in focus, but forecast of core PCE disinflation is robust to faster (say 4.5%) rent inflation

Scenario 1: Base		Y/Y				Contribs to change		
	Wgt	Feb-20	Jul-21	Dec-21	Dec-22	Jul-21	Dec-21	Dec-22
Core PCE	100.0%	1.9	3.6	3.6	2.2	1.71	0.03	-1.49
New motor vehicles	2.2%	0.5	6.5	7.5	-2.0	0.17	-0.01	-0.21
Used motor vehicles	1.2%	-0.1	36.5	25.0	-10.0	0.59	-0.30	-0.41
Other durable goods	8.4%	-2.3	2.3	3.0	-1.0	0.43	0.02	-0.34
Core nondurables	12.4%	0.9	0.9	1.0	0.5	0.01	0.00	-0.06
Housing	17.3%	3.4	2.3	3.0	3.5	-0.18	0.11	0.09
Core utilities	0.8%	3.2	3.7	3.5	3.5	0.00	0.00	0.00
Health care	19.2%	2.0	2.7	2.7	2.7	0.11	0.02	0.00
Motor vehicle rental	0.2%	8.8	73.5	55.0	0.0	0.11	-0.03	-0.09
Air transportation	1.0%	1.4	19.7	25.0	5.0	0.07	0.16	-0.19
Other transp services	2.8%	1.7	3.4	3.5	3.5	0.03	0.02	0.00
Food services	6.6%	2.7	3.8	6.5	3.8	0.06	0.20	-0.18
Accommodation	1.2%	2.7	19.9	5.0	3.5	0.10	-0.07	-0.02
Education services	2.3%	2.0	0.8	2.0	2.0	-0.03	0.03	0.00
Financial & insurance	9.1%	3.6	3.1	2.5	2.5	-0.04	-0.06	0.00
Other household svcs	11.8%	1.6	3.0	3.5	3.0	0.10	0.12	-0.06
Non-profit consumption	3.4%	4.3	7.7	4.0	3.5	0.14	-0.15	-0.02

Scenario 2: Housing Inflation		Y/Y				Contribs to change		
	Wgt	Feb-20	Jul-21	Dec-21	Dec-22	Jul-21	Dec-21	Dec-22
Core PCE	100.0%	1.9	3.6	3.6	2.3	1.71	0.03	-1.31
New motor vehicles	2.2%	0.5	6.5	7.5	-2.0	0.17	-0.01	-0.21
Used motor vehicles	1.2%	-0.1	36.5	25.0	-10.0	0.59	-0.30	-0.41
Other durable goods	8.4%	-2.3	2.3	3.0	-1.0	0.43	0.02	-0.34
Core nondurables	12.4%	0.9	0.9	1.0	0.5	0.01	0.00	-0.06
Housing	17.3%	3.4	2.3	3.0	4.5	-0.18	0.11	0.26
Core utilities	0.8%	3.2	3.7	3.5	3.5	0.00	0.00	0.00
Health care	19.2%	2.0	2.7	2.7	2.7	0.11	0.02	0.00
Motor vehicle rental	0.2%	8.8	73.5	55.0	0.0	0.11	-0.03	-0.09
Air transportation	1.0%	1.4	19.7	25.0	5.0	0.07	0.16	-0.19
Other transp services	2.8%	1.7	3.4	3.5	3.5	0.03	0.02	0.00
Food services	6.6%	2.7	3.8	6.5	3.8	0.06	0.20	-0.18
Accommodation	1.2%	2.7	19.9	5.0	3.5	0.10	-0.07	-0.02
Education services	2.3%	2.0	0.8	2.0	2.0	-0.03	0.03	0.00
Financial & insurance	9.1%	3.6	3.1	2.5	2.5	-0.04	-0.06	0.00
Other household svcs	11.8%	1.6	3.0	3.5	3.0	0.10	0.12	-0.06
Non-profit consumption	3.4%	4.3	7.7	4.0	3.5	0.14	-0.15	-0.02

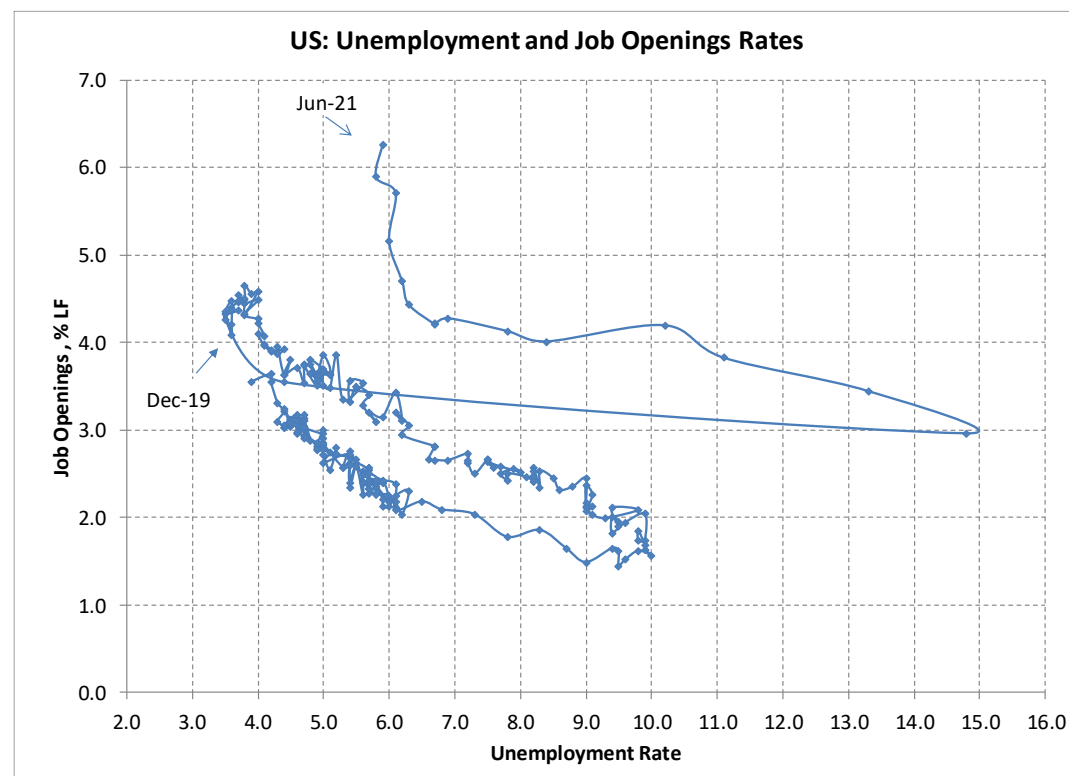
Wage inflation is contained, but higher than might be expected based on remaining labor market slack



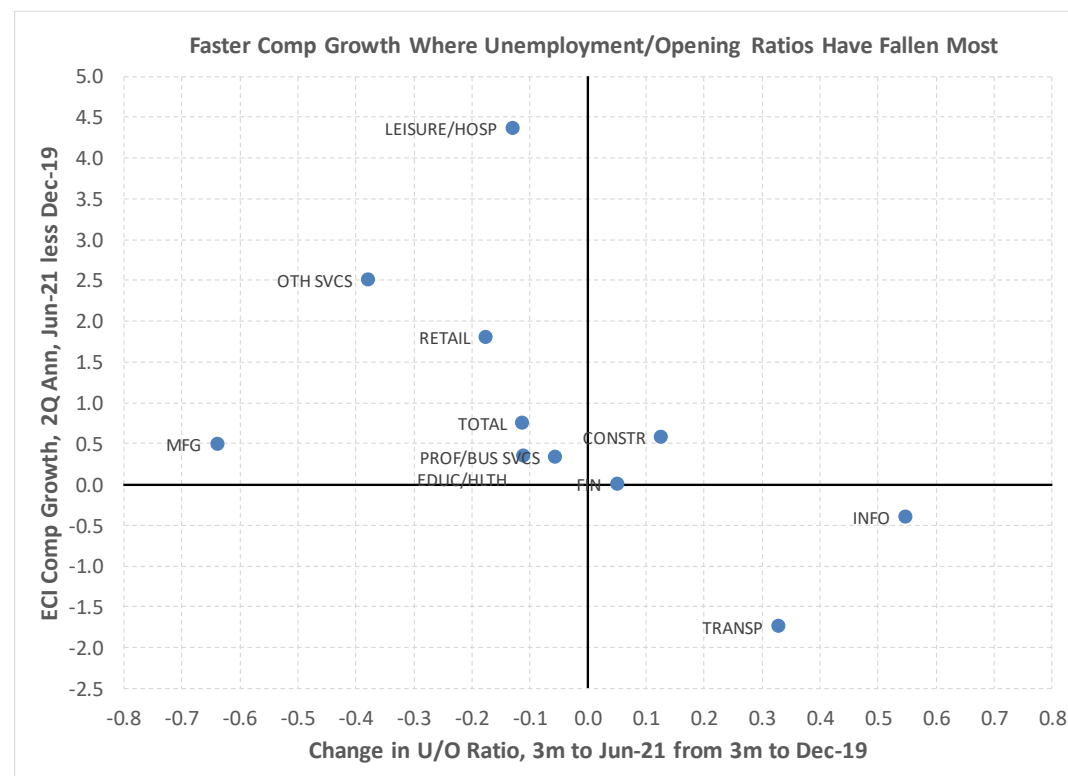
Industrial (and maybe geographic) labor market mismatch, more than broad-based wage pressure?

- Extended UI benefits have allowed workers to be more choosy...but these benefits are going away.
- Shifts in preference for types of work: e.g., exodus and planned exodus from food & accommodation, retail, and newfound preference for remote work.
- Possibly some pandemic migration away from where the work is (big cities) to where there is less work...and not yet a reflux.

Lots of open jobs relative to unemployment rate

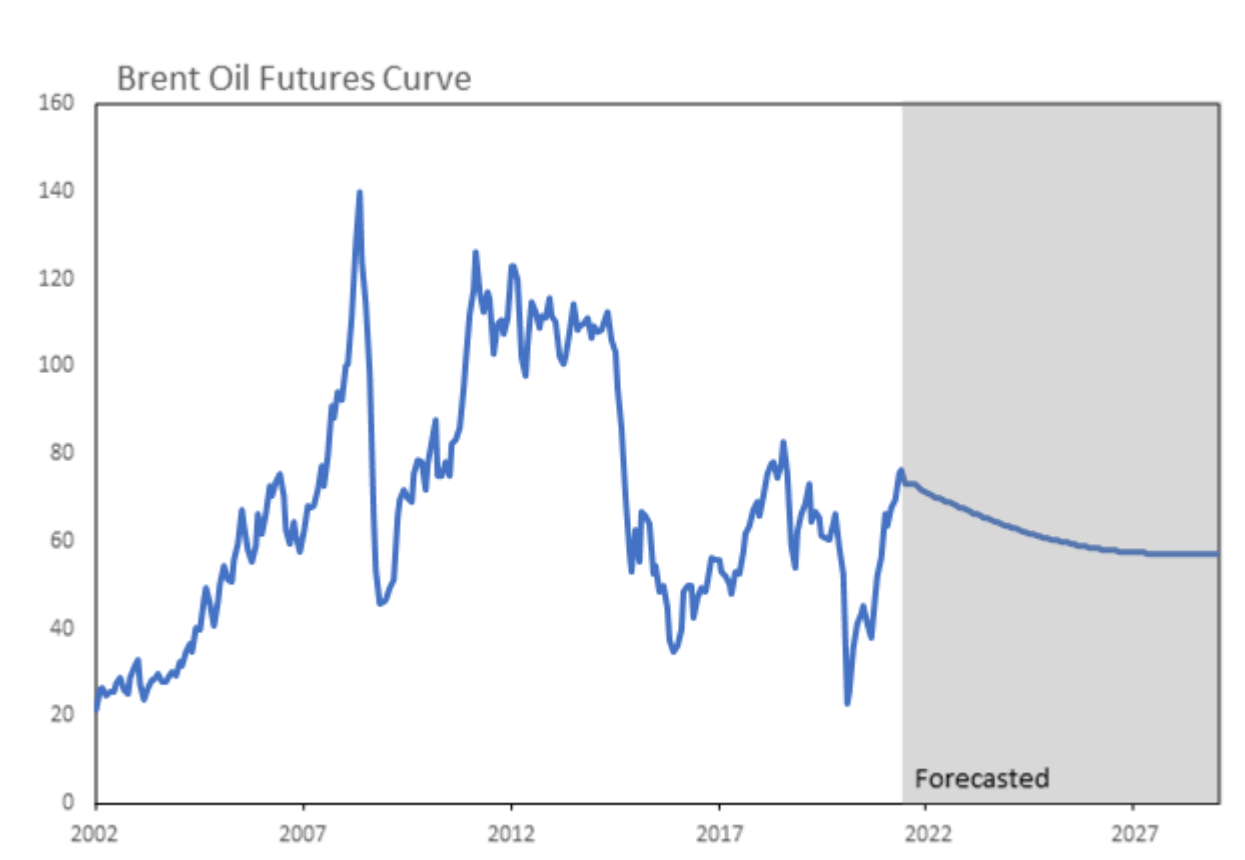


Compensation growth pickup: bigger in sectors with increasing U/O mismatch



Energy outlook

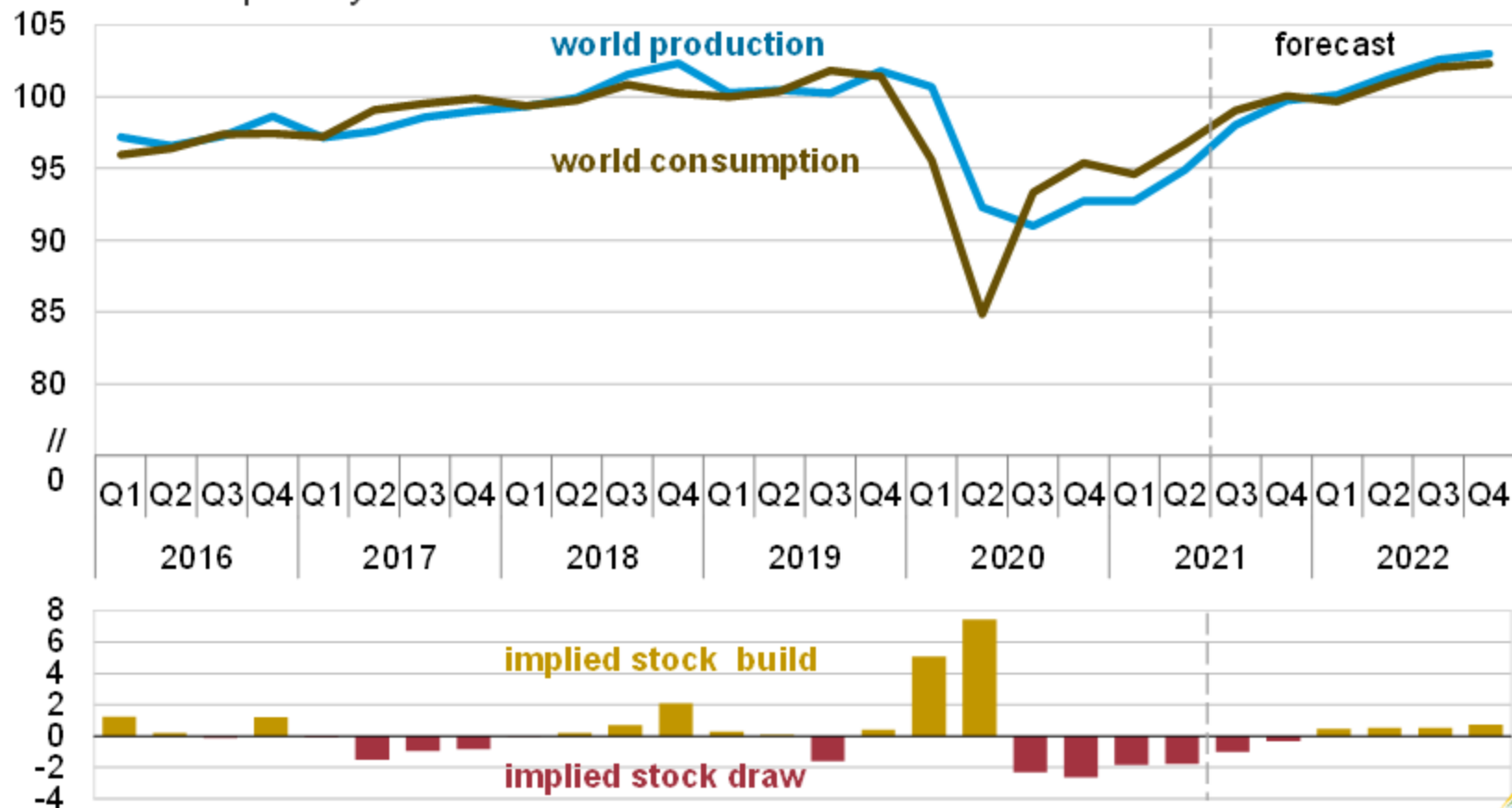
- SWIB energy team does not have a strong directional view on oil price. In line with futures looks about right.
- Crude inventories are expected to build in 2022, justifying current backwardation.
- SWIB energy team notes (modest) downside risk to prices in 2022 due to less supply discipline on part of OPEC+ and US shale oil producers.
- SWIB energy team notes upside risks exist as well due to underinvestment. Projects have been delayed to a degree. European producers have been pushed to allocate a greater proportion of capital to green projects, under-allocating to fossil fuel capacity.
- Oil price movements in line with futures would have little implication for US core inflation. A 10% decline over next two years would shave perhaps 10 to 20 bps from core PCE inflation.



Crude inventories still drawing down, but will build in 2022

World liquid fuels production and consumption balance

million barrels per day

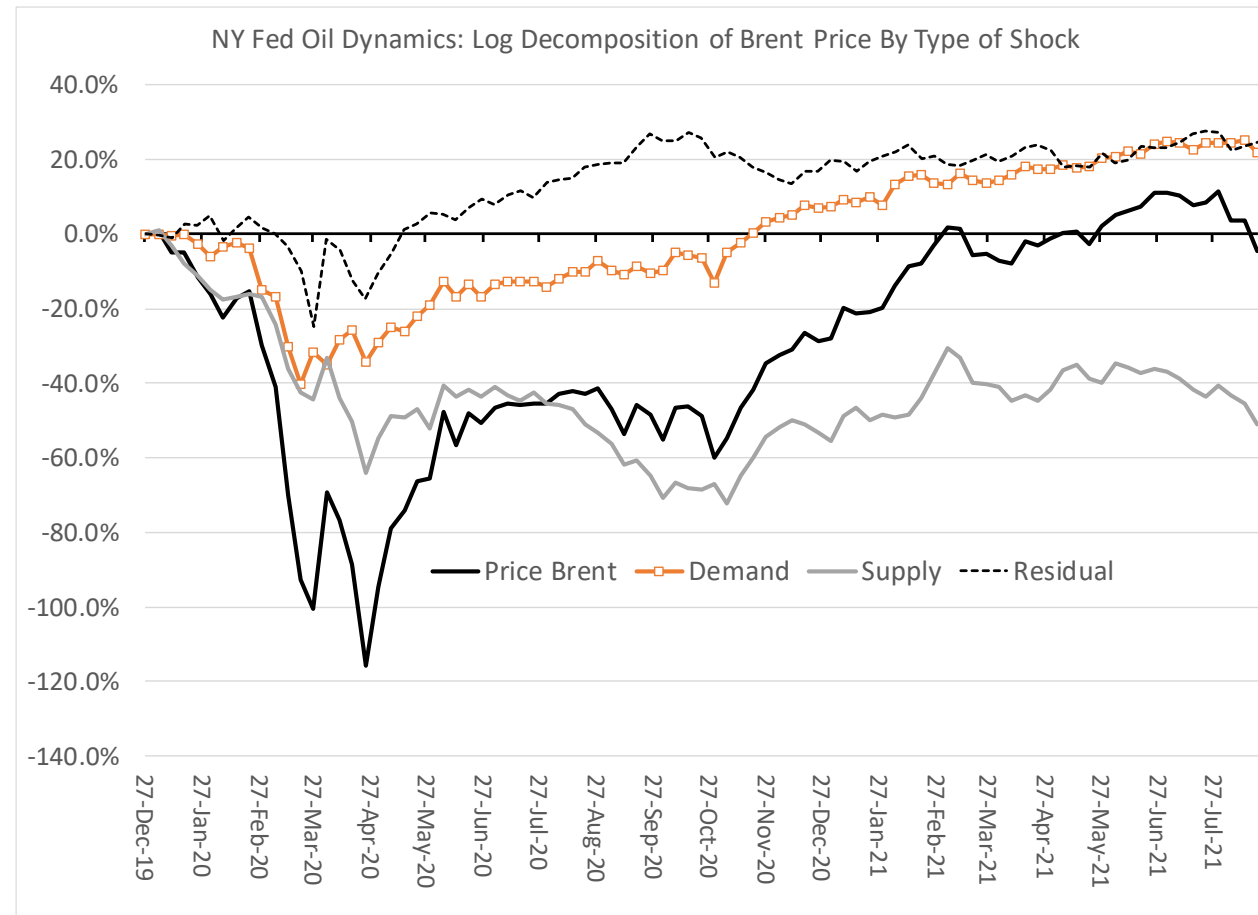


Source: U.S. Energy Information Administration, Short-Term Energy Outlook, August 2021



NY Fed shock identification scheme suggests much of the oil price recovery is demand-driven

Not a supply shock, just consequence of recovering global demand



Scenario: Faster housing (rent) inflation

Scenario 1: Base		Y/Y				Contribs to change		
	Wgt	Feb-20	Jul-21	Dec-21	Dec-22	Jul-21	Dec-21	Dec-22
Core PCE	100.0%	1.9	3.6	3.6	2.2	1.71	0.03	-1.49
New motor vehicles	2.2%	0.5	6.5	7.5	-2.0	0.17	-0.01	-0.21
Used motor vehicles	1.2%	-0.1	36.5	25.0	-10.0	0.59	-0.30	-0.41
Other durable goods	8.4%	-2.3	2.3	3.0	-1.0	0.43	0.02	-0.34
Core nondurables	12.4%	0.9	0.9	1.0	0.5	0.01	0.00	-0.06
Housing	17.3%	3.4	2.3	3.0	3.5	-0.18	0.11	0.09
Core utilities	0.8%	3.2	3.7	3.5	3.5	0.00	0.00	0.00
Health care	19.2%	2.0	2.7	2.7	2.7	0.11	0.02	0.00
Motor vehicle rental	0.2%	8.8	73.5	55.0	0.0	0.11	-0.03	-0.09
Air transportation	1.0%	1.4	19.7	25.0	5.0	0.07	0.16	-0.19
Other transp services	2.8%	1.7	3.4	3.5	3.5	0.03	0.02	0.00
Food services	6.6%	2.7	3.8	6.5	3.8	0.06	0.20	-0.18
Accommodation	1.2%	2.7	19.9	5.0	3.5	0.10	-0.07	-0.02
Education services	2.3%	2.0	0.8	2.0	2.0	-0.03	0.03	0.00
Financial & insurance	9.1%	3.6	3.1	2.5	2.5	-0.04	-0.06	0.00
Other household svcs	11.8%	1.6	3.0	3.5	3.0	0.10	0.12	-0.06
Non-profit consumption	3.4%	4.3	7.7	4.0	3.5	0.14	-0.15	-0.02

Scenario 2: Housing Inflation		Y/Y				Contribs to change		
	Wgt	Feb-20	Jul-21	Dec-21	Dec-22	Jul-21	Dec-21	Dec-22
Core PCE	100.0%	1.9	3.6	3.6	2.3	1.71	0.03	-1.31
New motor vehicles	2.2%	0.5	6.5	7.5	-2.0	0.17	-0.01	-0.21
Used motor vehicles	1.2%	-0.1	36.5	25.0	-10.0	0.59	-0.30	-0.41
Other durable goods	8.4%	-2.3	2.3	3.0	-1.0	0.43	0.02	-0.34
Core nondurables	12.4%	0.9	0.9	1.0	0.5	0.01	0.00	-0.06
Housing	17.3%	3.4	2.3	3.0	4.5	-0.18	0.11	0.26
Core utilities	0.8%	3.2	3.7	3.5	3.5	0.00	0.00	0.00
Health care	19.2%	2.0	2.7	2.7	2.7	0.11	0.02	0.00
Motor vehicle rental	0.2%	8.8	73.5	55.0	0.0	0.11	-0.03	-0.09
Air transportation	1.0%	1.4	19.7	25.0	5.0	0.07	0.16	-0.19
Other transp services	2.8%	1.7	3.4	3.5	3.5	0.03	0.02	0.00
Food services	6.6%	2.7	3.8	6.5	3.8	0.06	0.20	-0.18
Accommodation	1.2%	2.7	19.9	5.0	3.5	0.10	-0.07	-0.02
Education services	2.3%	2.0	0.8	2.0	2.0	-0.03	0.03	0.00
Financial & insurance	9.1%	3.6	3.1	2.5	2.5	-0.04	-0.06	0.00
Other household svcs	11.8%	1.6	3.0	3.5	3.0	0.10	0.12	-0.06
Non-profit consumption	3.4%	4.3	7.7	4.0	3.5	0.14	-0.15	-0.02

Scenario: Durable goods inflation persists for longer

Scenario 1: Base		Y/Y				Contribs to change		
	Wgt	Feb-20	Jul-21	Dec-21	Dec-22	Jul-21	Dec-21	Dec-22
Core PCE	100.0%	1.9	3.6	3.6	2.2	1.71	0.03	-1.49
New motor vehicles	2.2%	0.5	6.5	7.5	-2.0	0.17	-0.01	-0.21
Used motor vehicles	1.2%	-0.1	36.5	25.0	-10.0	0.59	-0.30	-0.41
Other durable goods	8.4%	-2.3	2.3	3.0	-1.0	0.43	0.02	-0.34
Core nondurables	12.4%	0.9	0.9	1.0	0.5	0.01	0.00	-0.06
Housing	17.3%	3.4	2.3	3.0	3.5	-0.18	0.11	0.09
Core utilities	0.8%	3.2	3.7	3.5	3.5	0.00	0.00	0.00
Health care	19.2%	2.0	2.7	2.7	2.7	0.11	0.02	0.00
Motor vehicle rental	0.2%	8.8	73.5	55.0	0.0	0.11	-0.03	-0.09
Air transportation	1.0%	1.4	19.7	25.0	5.0	0.07	0.16	-0.19
Other transp services	2.8%	1.7	3.4	3.5	3.5	0.03	0.02	0.00
Food services	6.6%	2.7	3.8	6.5	3.8	0.06	0.20	-0.18
Accommodation	1.2%	2.7	19.9	5.0	3.5	0.10	-0.07	-0.02
Education services	2.3%	2.0	0.8	2.0	2.0	-0.03	0.03	0.00
Financial & insurance	9.1%	3.6	3.1	2.5	2.5	-0.04	-0.06	0.00
Other household svcs	11.8%	1.6	3.0	3.5	3.0	0.10	0.12	-0.06
Non-profit consumption	3.4%	4.3	7.7	4.0	3.5	0.14	-0.15	-0.02

Scenario 3: Durable Goods		Y/Y				Contribs to change		
	Wgt	Feb-20	Jul-21	Dec-21	Dec-22	Jul-21	Dec-21	Dec-22
Core PCE	100.0%	1.9	3.6	3.9	2.4	1.71	0.27	-1.48
New motor vehicles	2.2%	0.5	6.5	10.0	0.0	0.17	0.05	-0.22
Used motor vehicles	1.2%	-0.1	36.5	25.0	0.0	0.59	-0.30	-0.29
Other durable goods	8.4%	-2.3	2.3	5.0	0.0	0.43	0.19	-0.42
Core nondurables	12.4%	0.9	0.9	1.0	0.5	0.01	0.00	-0.06
Housing	17.3%	3.4	2.3	3.0	3.5	-0.18	0.11	0.09
Core utilities	0.8%	3.2	3.7	3.5	3.5	0.00	0.00	0.00
Health care	19.2%	2.0	2.7	2.7	2.7	0.11	0.02	0.00
Motor vehicle rental	0.2%	8.8	73.5	65.0	0.0	0.11	-0.02	-0.10
Air transportation	1.0%	1.4	19.7	25.0	5.0	0.07	0.16	-0.19
Other transp services	2.8%	1.7	3.4	3.5	3.5	0.03	0.02	0.00
Food services	6.6%	2.7	3.8	6.5	3.8	0.06	0.20	-0.18
Accommodation	1.2%	2.7	19.9	5.0	3.5	0.10	-0.07	-0.02
Education services	2.3%	2.0	0.8	2.0	2.0	-0.03	0.03	0.00
Financial & insurance	9.1%	3.6	3.1	2.5	2.5	-0.04	-0.06	0.00
Other household svcs	11.8%	1.6	3.0	3.5	3.0	0.10	0.12	-0.06
Non-profit consumption	3.4%	4.3	7.7	4.0	3.5	0.14	-0.15	-0.02

Scenario: double-trouble of higher housing and durables inflation

Scenario 1: Base		Y/Y				Contribs to change		
	Wgt	Feb-20	Jul-21	Dec-21	Dec-22	Jul-21	Dec-21	Dec-22
Core PCE	100.0%	1.9	3.6	3.6	2.2	1.71	0.03	-1.49
New motor vehicles	2.2%	0.5	6.5	7.5	-2.0	0.17	-0.01	-0.21
Used motor vehicles	1.2%	-0.1	36.5	25.0	-10.0	0.59	-0.30	-0.41
Other durable goods	8.4%	-2.3	2.3	3.0	-1.0	0.43	0.02	-0.34
Core nondurables	12.4%	0.9	0.9	1.0	0.5	0.01	0.00	-0.06
Housing	17.3%	3.4	2.3	3.0	3.5	-0.18	0.11	0.09
Core utilities	0.8%	3.2	3.7	3.5	3.5	0.00	0.00	0.00
Health care	19.2%	2.0	2.7	2.7	2.7	0.11	0.02	0.00
Motor vehicle rental	0.2%	8.8	73.5	55.0	0.0	0.11	-0.03	-0.09
Air transportation	1.0%	1.4	19.7	25.0	5.0	0.07	0.16	-0.19
Other transp services	2.8%	1.7	3.4	3.5	3.5	0.03	0.02	0.00
Food services	6.6%	2.7	3.8	6.5	3.8	0.06	0.20	-0.18
Accommodation	1.2%	2.7	19.9	5.0	3.5	0.10	-0.07	-0.02
Education services	2.3%	2.0	0.8	2.0	2.0	-0.03	0.03	0.00
Financial & insurance	9.1%	3.6	3.1	2.5	2.5	-0.04	-0.06	0.00
Other household svcs	11.8%	1.6	3.0	3.5	3.0	0.10	0.12	-0.06
Non-profit consumption	3.4%	4.3	7.7	4.0	3.5	0.14	-0.15	-0.02

Scenario 4: Housing + Durables		Y/Y				Contribs to change		
	Wgt	Feb-20	Jul-21	Dec-21	Dec-22	Jul-21	Dec-21	Dec-22
Core PCE	100.0%	1.9	3.6	3.9	2.6	1.71	0.27	-1.31
New motor vehicles	2.2%	0.5	6.5	10.0	0.0	0.17	0.05	-0.22
Used motor vehicles	1.2%	-0.1	36.5	25.0	0.0	0.59	-0.30	-0.29
Other durable goods	8.4%	-2.3	2.3	5.0	0.0	0.43	0.19	-0.42
Core nondurables	12.4%	0.9	0.9	1.0	0.5	0.01	0.00	-0.06
Housing	17.3%	3.4	2.3	3.0	4.5	-0.18	0.11	0.26
Core utilities	0.8%	3.2	3.7	3.5	3.5	0.00	0.00	0.00
Health care	19.2%	2.0	2.7	2.7	2.7	0.11	0.02	0.00
Motor vehicle rental	0.2%	8.8	73.5	65.0	0.0	0.11	-0.02	-0.10
Air transportation	1.0%	1.4	19.7	25.0	5.0	0.07	0.16	-0.19
Other transp services	2.8%	1.7	3.4	3.5	3.5	0.03	0.02	0.00
Food services	6.6%	2.7	3.8	6.5	3.8	0.06	0.20	-0.18
Accommodation	1.2%	2.7	19.9	5.0	3.5	0.10	-0.07	-0.02
Education services	2.3%	2.0	0.8	2.0	2.0	-0.03	0.03	0.00
Financial & insurance	9.1%	3.6	3.1	2.5	2.5	-0.04	-0.06	0.00
Other household svcs	11.8%	1.6	3.0	3.5	3.0	0.10	0.12	-0.06
Non-profit consumption	3.4%	4.3	7.7	4.0	3.5	0.14	-0.15	-0.02

Scenario: Inflation falls below 2.0% in 2022 (normalizing durables, slower-than-base housing inflation)

Scenario 1: Base		Y/Y				Contribs to change		
	Wgt	Feb-20	Jul-21	Dec-21	Dec-22	Jul-21	Dec-21	Dec-22
Core PCE	100.0%	1.9	3.6	3.6	2.2	1.71	0.03	-1.49
New motor vehicles	2.2%	0.5	6.5	7.5	-2.0	0.17	-0.01	-0.21
Used motor vehicles	1.2%	-0.1	36.5	25.0	-10.0	0.59	-0.30	-0.41
Other durable goods	8.4%	-2.3	2.3	3.0	-1.0	0.43	0.02	-0.34
Core nondurables	12.4%	0.9	0.9	1.0	0.5	0.01	0.00	-0.06
Housing	17.3%	3.4	2.3	3.0	3.5	-0.18	0.11	0.09
Core utilities	0.8%	3.2	3.7	3.5	3.5	0.00	0.00	0.00
Health care	19.2%	2.0	2.7	2.7	2.7	0.11	0.02	0.00
Motor vehicle rental	0.2%	8.8	73.5	55.0	0.0	0.11	-0.03	-0.09
Air transportation	1.0%	1.4	19.7	25.0	5.0	0.07	0.16	-0.19
Other transp services	2.8%	1.7	3.4	3.5	3.5	0.03	0.02	0.00
Food services	6.6%	2.7	3.8	6.5	3.8	0.06	0.20	-0.18
Accommodation	1.2%	2.7	19.9	5.0	3.5	0.10	-0.07	-0.02
Education services	2.3%	2.0	0.8	2.0	2.0	-0.03	0.03	0.00
Financial & insurance	9.1%	3.6	3.1	2.5	2.5	-0.04	-0.06	0.00
Other household svcs	11.8%	1.6	3.0	3.5	3.0	0.10	0.12	-0.06
Non-profit consumption	3.4%	4.3	7.7	4.0	3.5	0.14	-0.15	-0.02

Scenario 5: Inflation downside		Y/Y				Contribs to change		
	Wgt	Feb-20	Jul-21	Dec-21	Dec-22	Jul-21	Dec-21	Dec-22
Core PCE	100.0%	1.9	3.6	3.4	1.8	1.71	-0.26	-1.55
New motor vehicles	2.2%	0.5	6.5	5.0	-5.0	0.01	-0.06	-0.22
Used motor vehicles	1.2%	-0.1	36.5	18.0	-10.0	0.59	-0.38	-0.33
Other durable goods	8.4%	-2.3	2.3	3.0	-2.0	0.43	0.02	-0.42
Core nondurables	12.4%	0.9	0.9	1.0	0.5	0.01	0.00	-0.06
Housing	17.3%	3.4	2.3	2.8	3.0	-0.18	0.08	0.03
Core utilities	0.8%	3.2	3.7	3.5	3.5	0.00	0.00	0.00
Health care	19.2%	2.0	2.7	2.7	2.7	0.11	0.02	0.00
Motor vehicle rental	0.2%	8.8	73.5	25.0	-10.0	0.11	-0.08	-0.06
Air transportation	1.0%	1.4	19.7	18.0	-5.0	0.07	0.09	-0.22
Other transp services	2.8%	1.7	3.4	3.5	3.5	0.03	0.02	0.00
Food services	6.6%	2.7	3.8	6.5	3.8	0.06	0.20	-0.18
Accommodation	1.2%	2.7	19.9	5.0	3.5	0.10	-0.07	-0.02
Education services	2.3%	2.0	0.8	2.0	2.0	-0.03	0.03	0.00
Financial & insurance	9.1%	3.6	3.1	2.5	2.5	-0.04	-0.06	0.00
Other household svcs	11.8%	1.6	3.0	3.5	3.0	0.10	0.12	-0.06
Non-profit consumption	3.4%	4.3	7.7	4.0	3.5	0.14	-0.15	-0.02

Global Equities - Performance

Emerging Markets have been flat year to date versus strong gains in Developed World.

09/02/2021

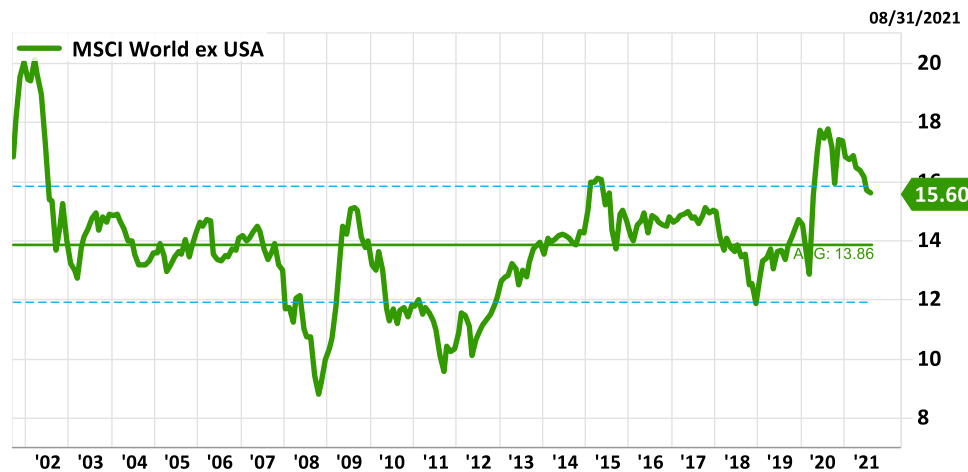
Local Equity Performance



Source: FactSet

Global Equities - Valuation

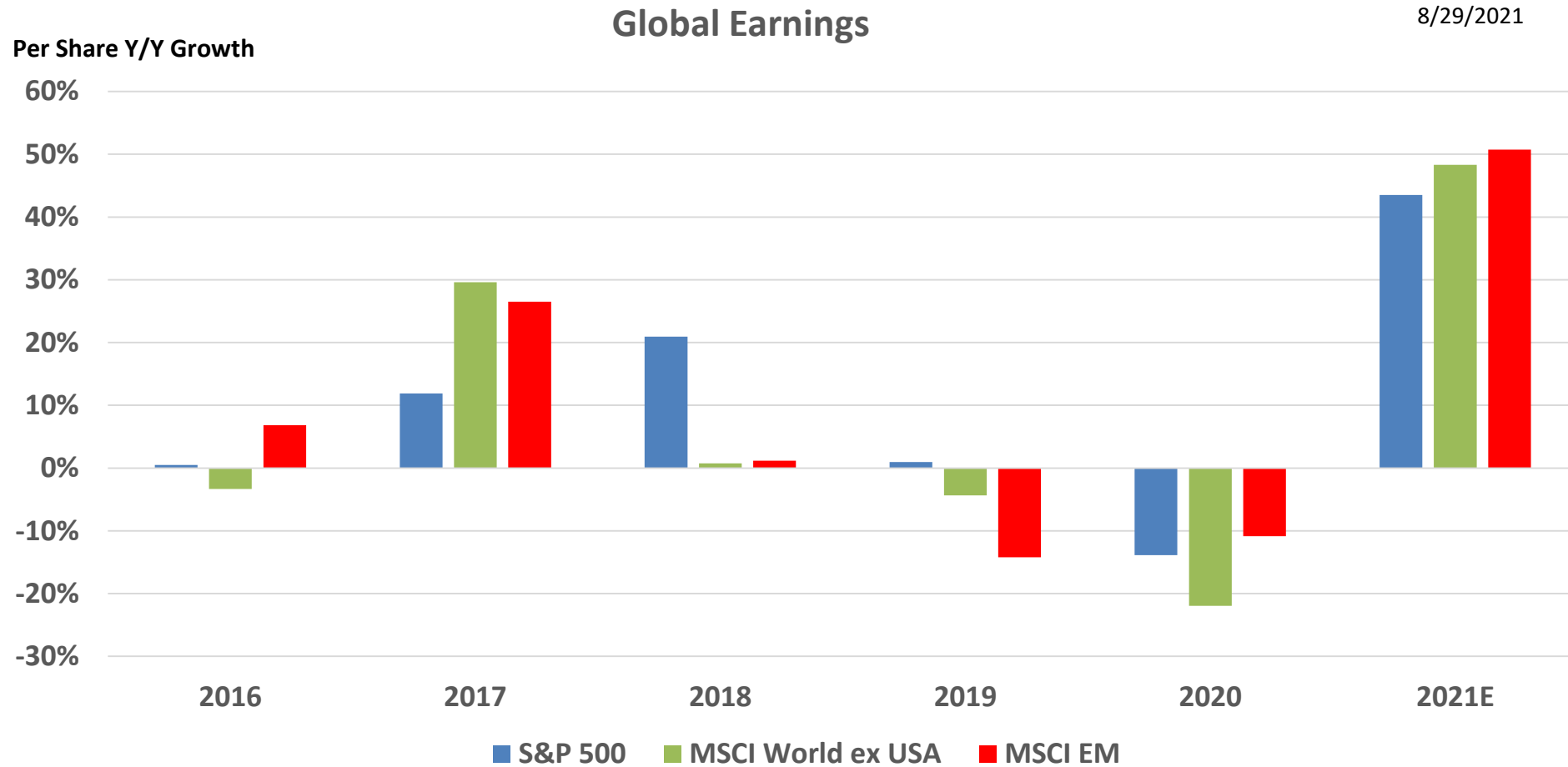
P/E ratios have moved closer to historic averages, especially outside U.S.



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

Earnings Growth

Strongest Recovery Expected in Emerging Markets



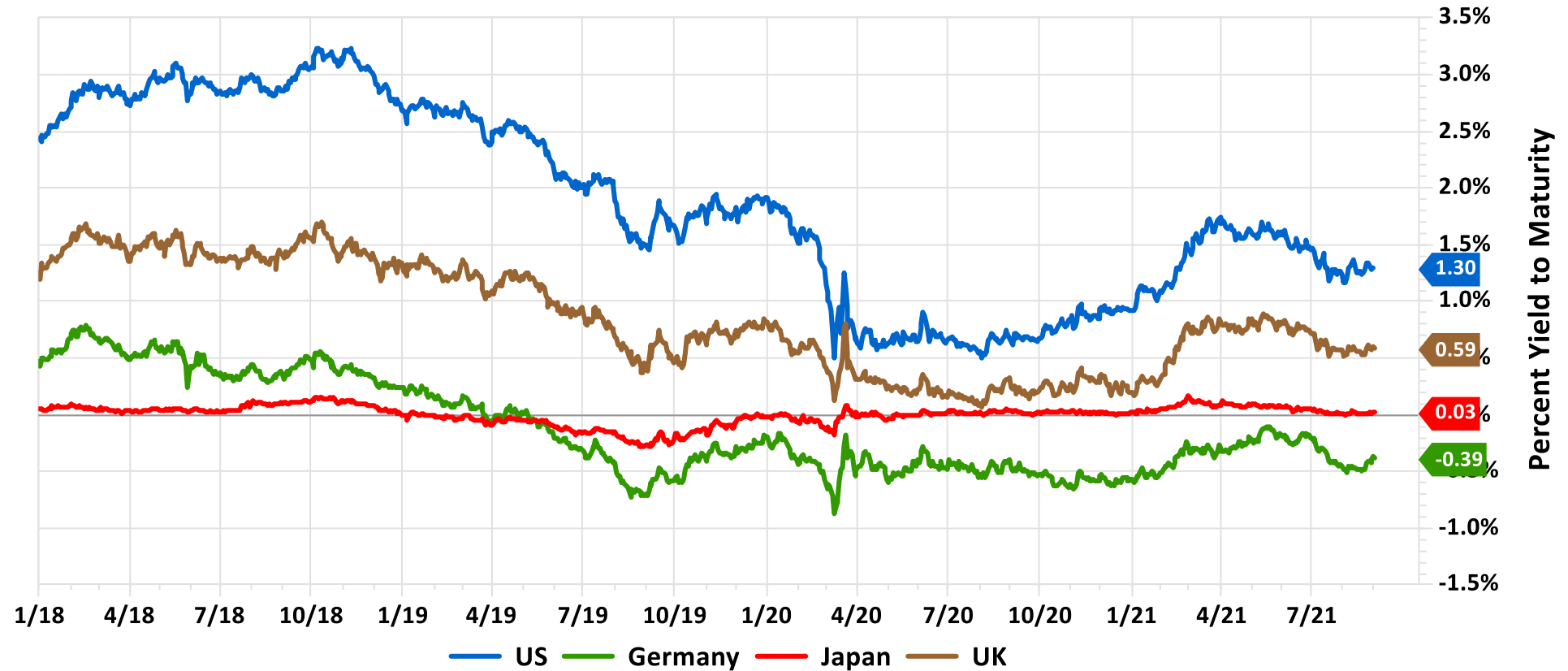
Source: Analyst Consensus; FactSet

Global Bonds

Yields, higher year to date, have retreated in Q3.

09/02/2021

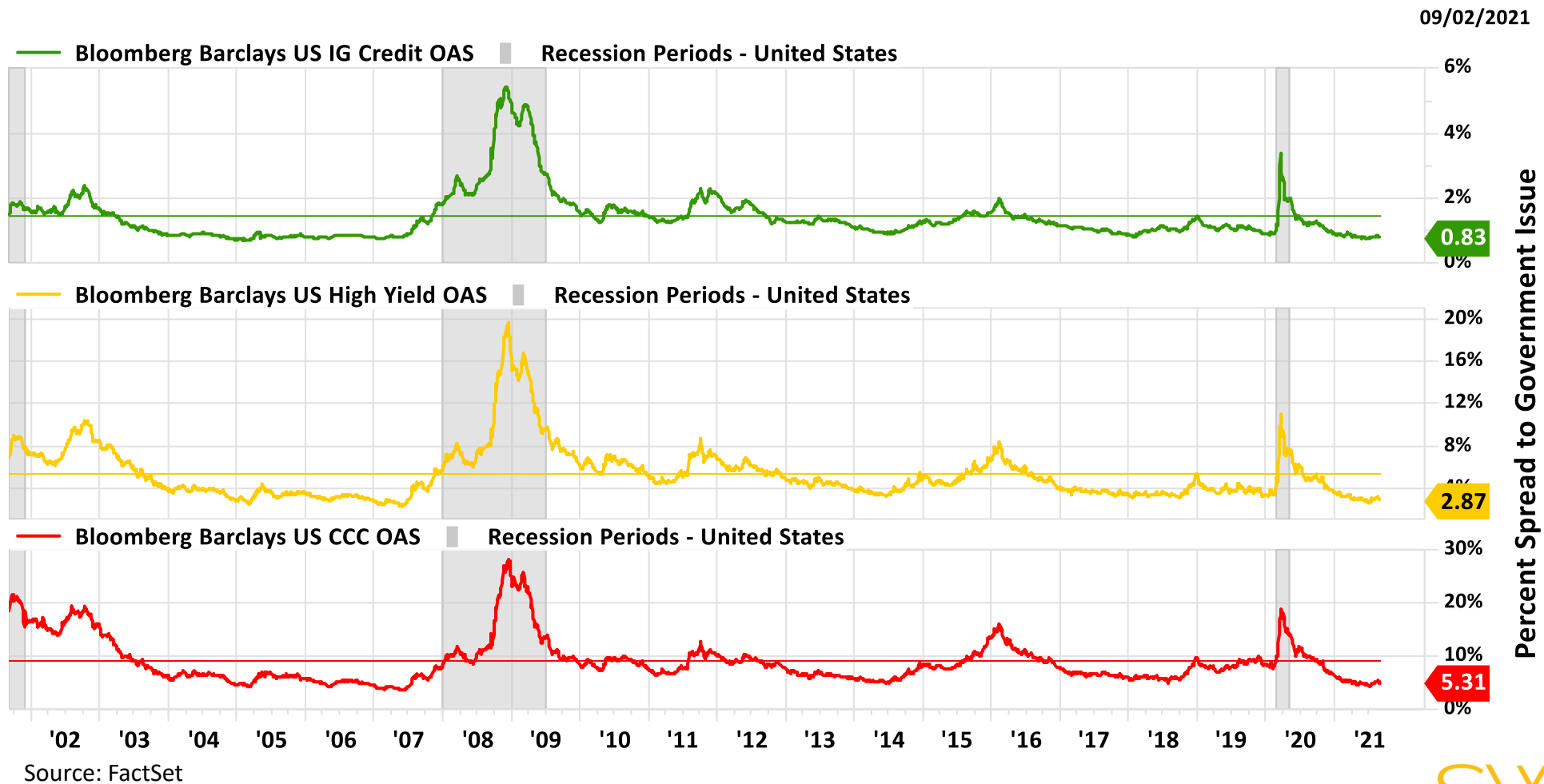
10-Year Government Bond Yields



Source: FactSet

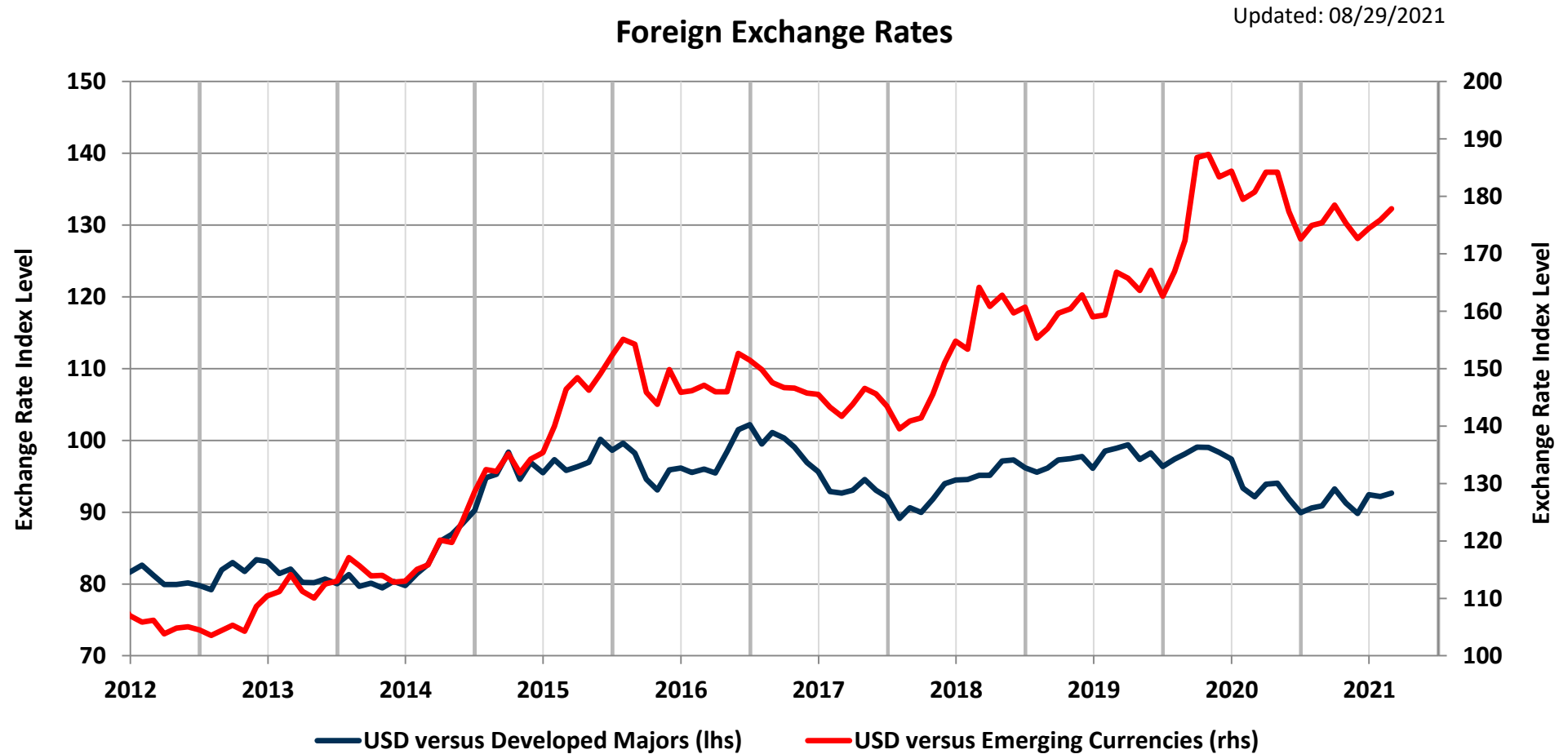
Credit Sectors

Spreads are significantly below long run averages.



Currency Performance

U.S. Dollar has been stable in 2021.



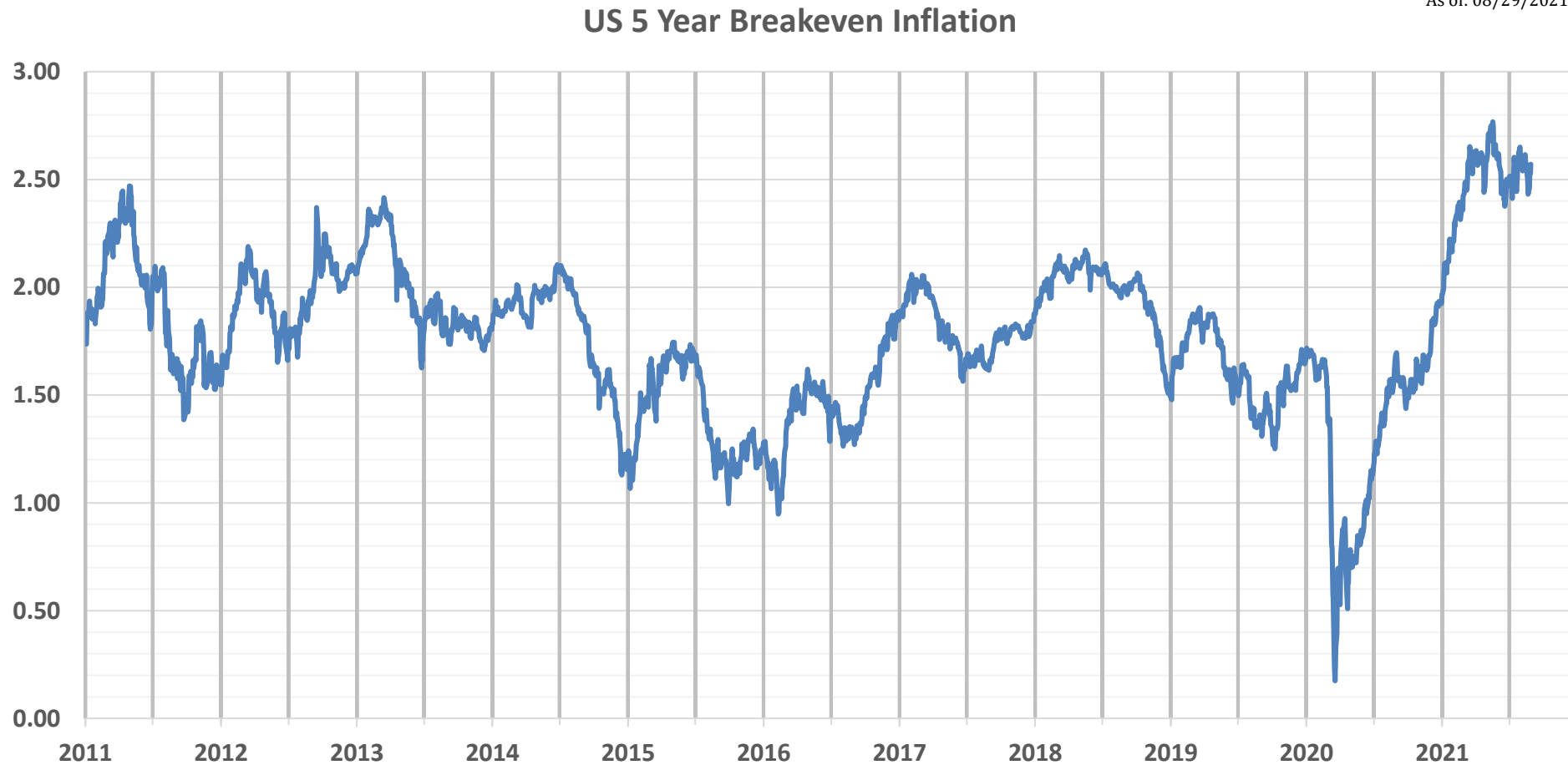
Source: Bloomberg, DXY Index, JPM Emerging Markets Currency Index (Inverted)

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U.S. Inflation

Medium term expectations remain in the range of 2.5%.

As of: 08/29/2021

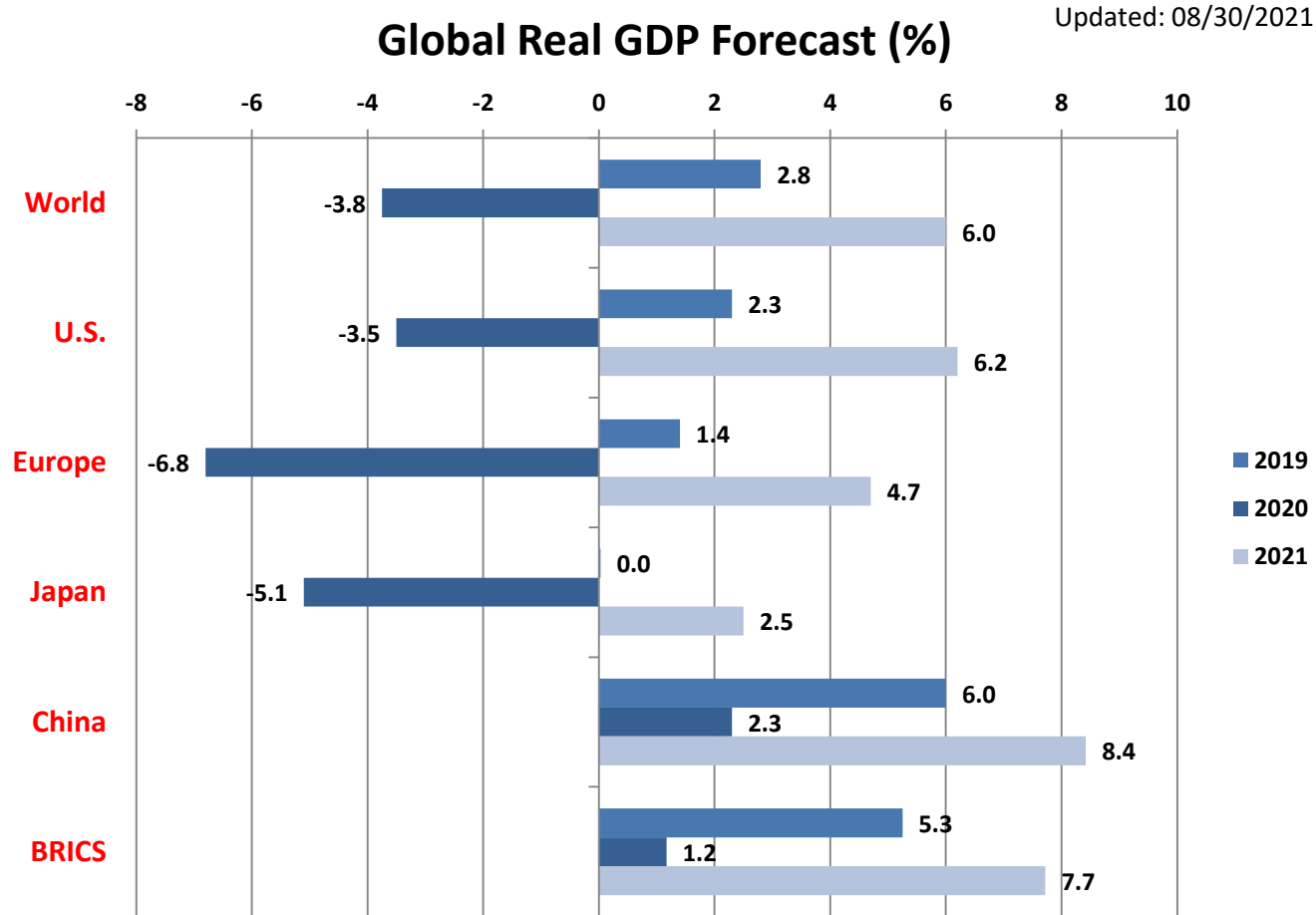


Source: Bloomberg

Economic Outlook

Global Growth

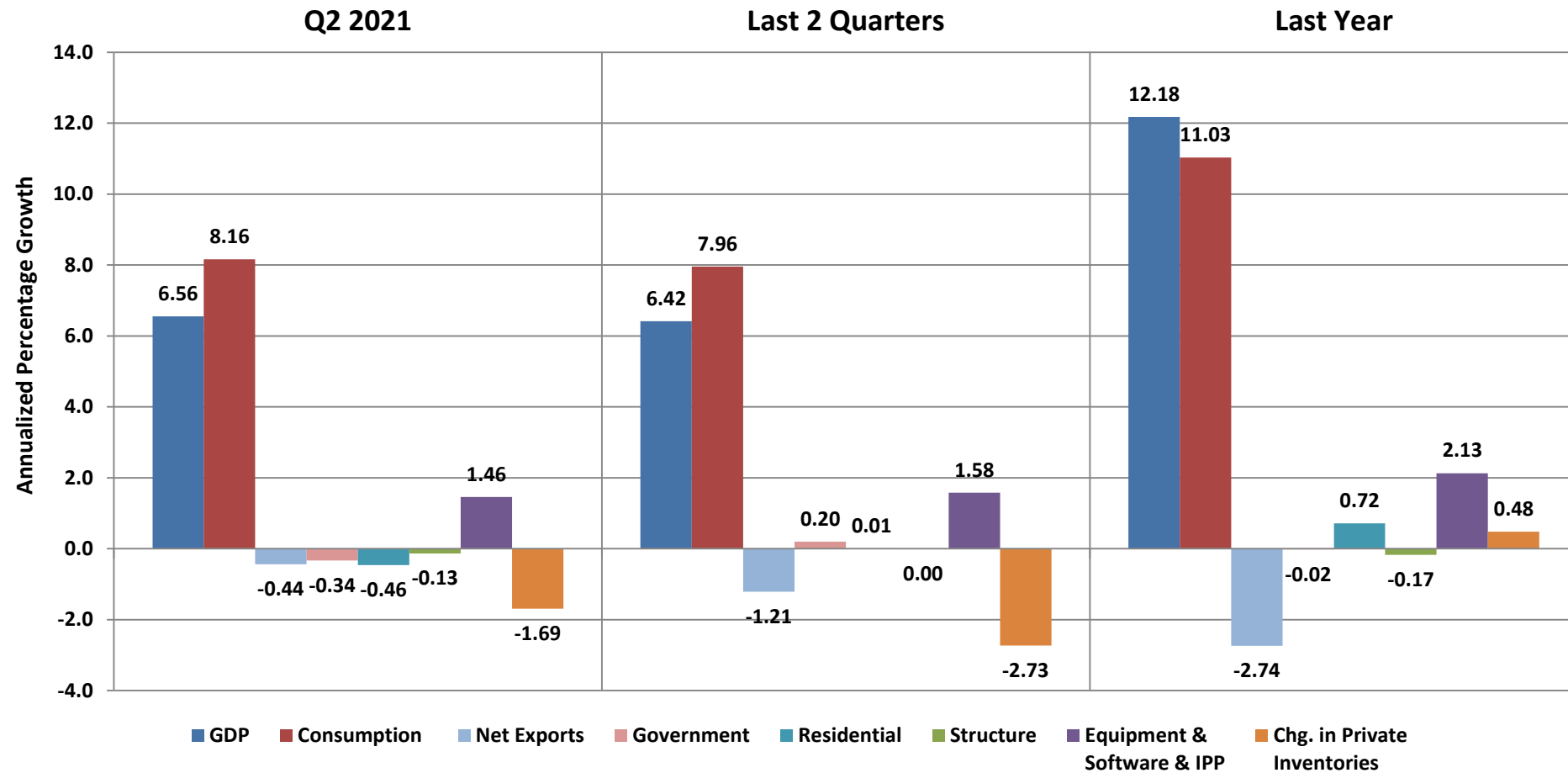
Emerging countries lead strong global recovery.



Source: Bloomberg Consensus

U.S. Growth

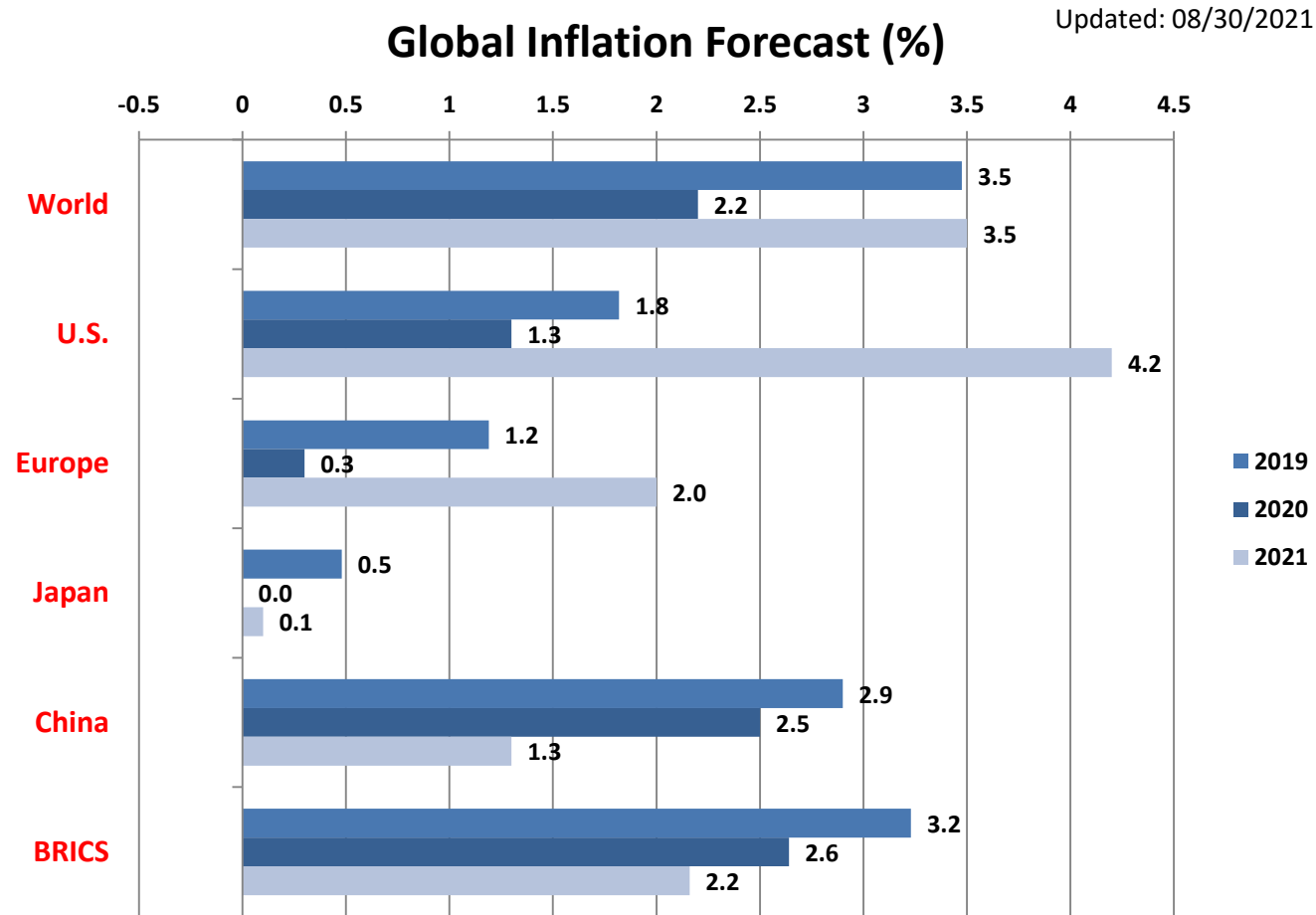
Q2 driven by consumption and business investment in equipment, software, intellectual property.



Source: Bloomberg, Bureau of Economics Analysis

Global Inflation

U.S. price increases expected to outpace global averages.



Source: Bloomberg Consensus

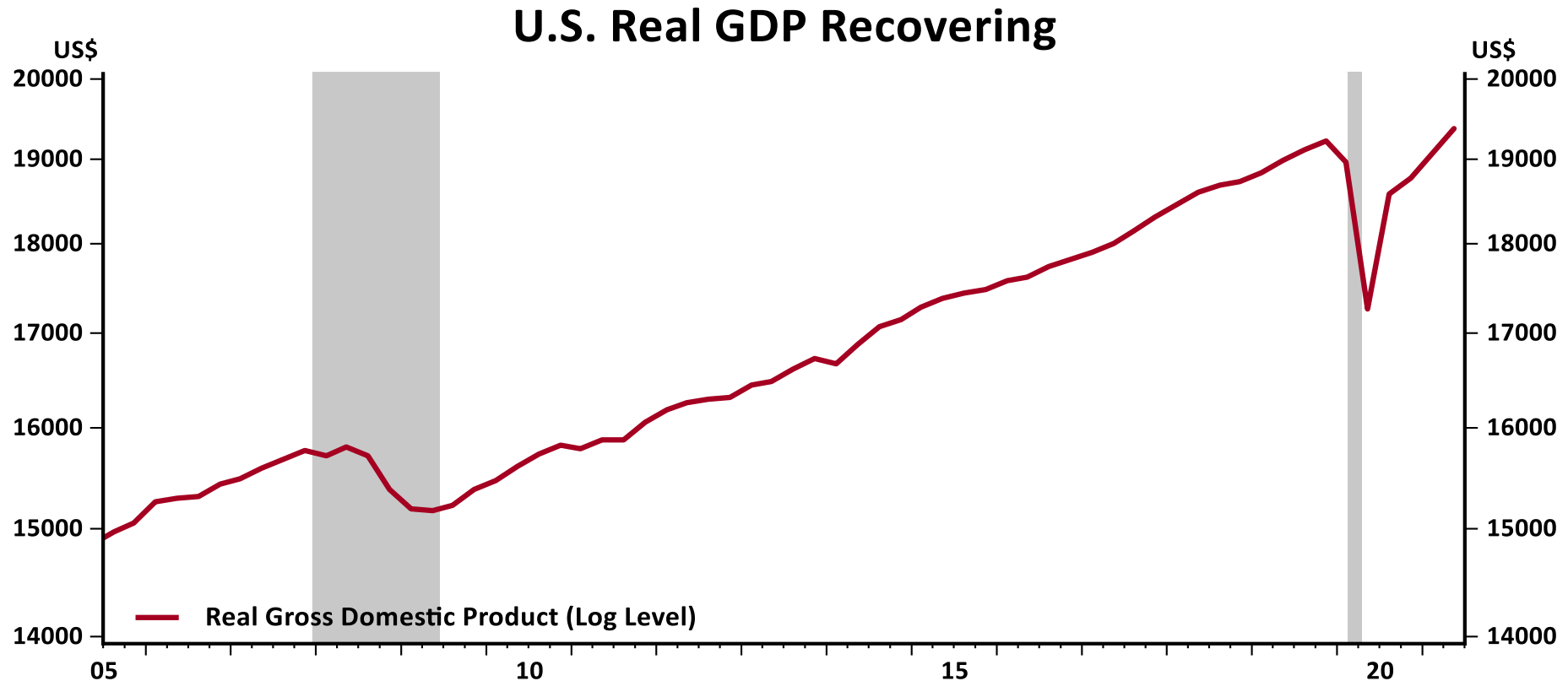
U.S. Economy Continues to Recover From COVID

But progress is uneven.

- The Delta variant has not derailed growth, but it may slow down progress and exacerbate supply chain disruptions and inflationary pressures.
- US GDP grew at a 6.6% annualized rate in q2, and the level of GDP finally surpassed the pre-pandemic level.
 - The main drivers were personal consumption and business investment in equipment and intellectual property products.
- Labor market continued to improve
 - The unemployment rate in August fell to 5.2%.
 - Yet the total number of employment was still more than 5 million below the pre-pandemic peak.
- Inflation surged, mainly due to supply shortages relative to fast recovering demand, especially in the goods sector.

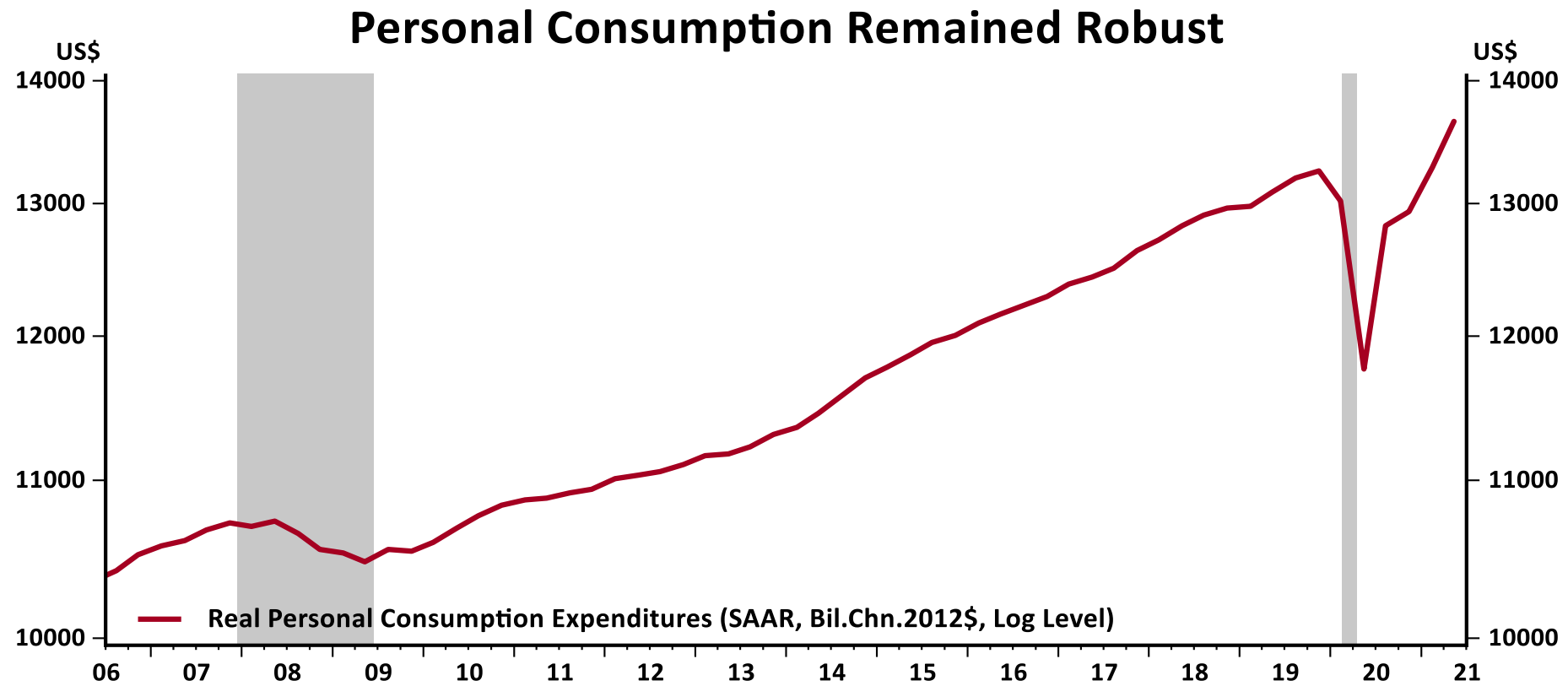
U.S. Growth Continuing

Q2 GDP surpassed pre-pandemic level.



Source: Bureau of Economic Analysis/Haver Analytics

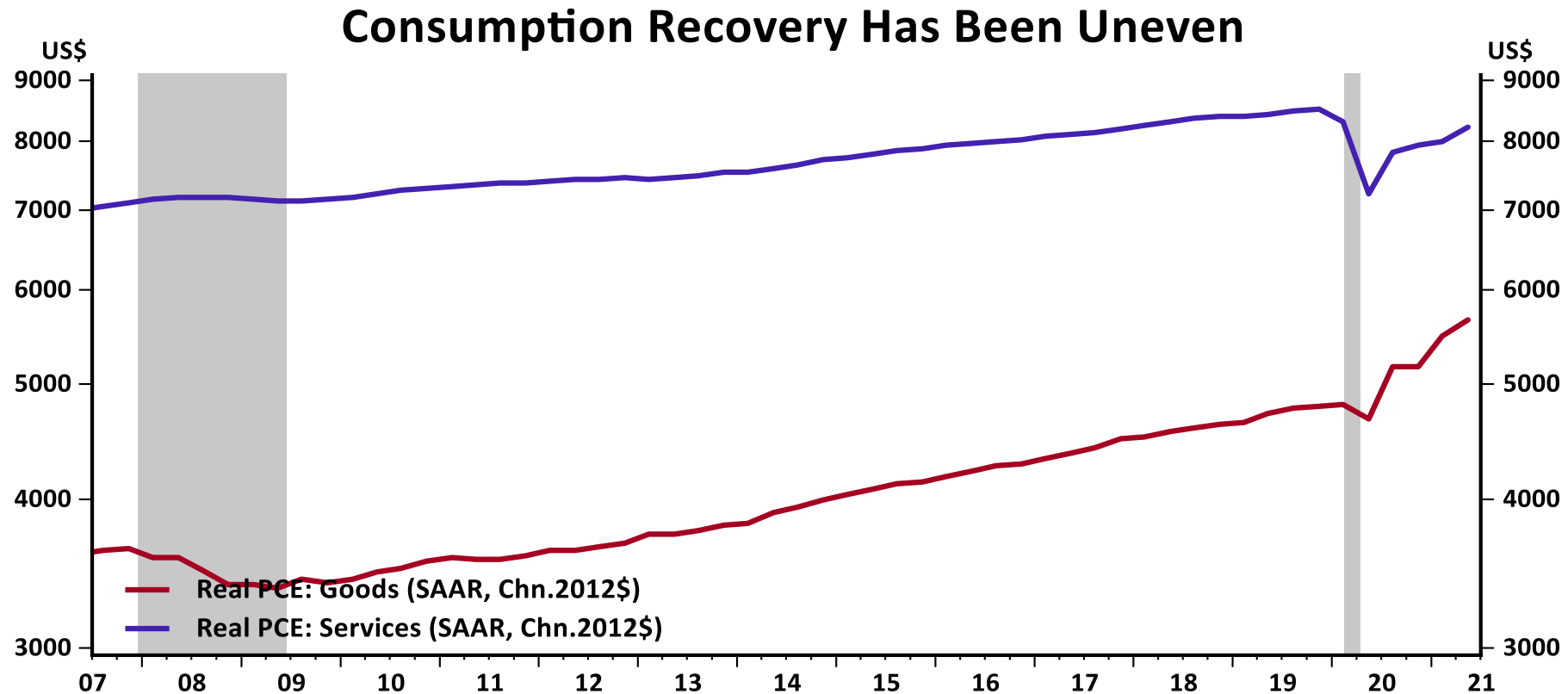
Consumption A Major Support to Growth



Source: Bureau of Economic Analysis/Haver Analytics

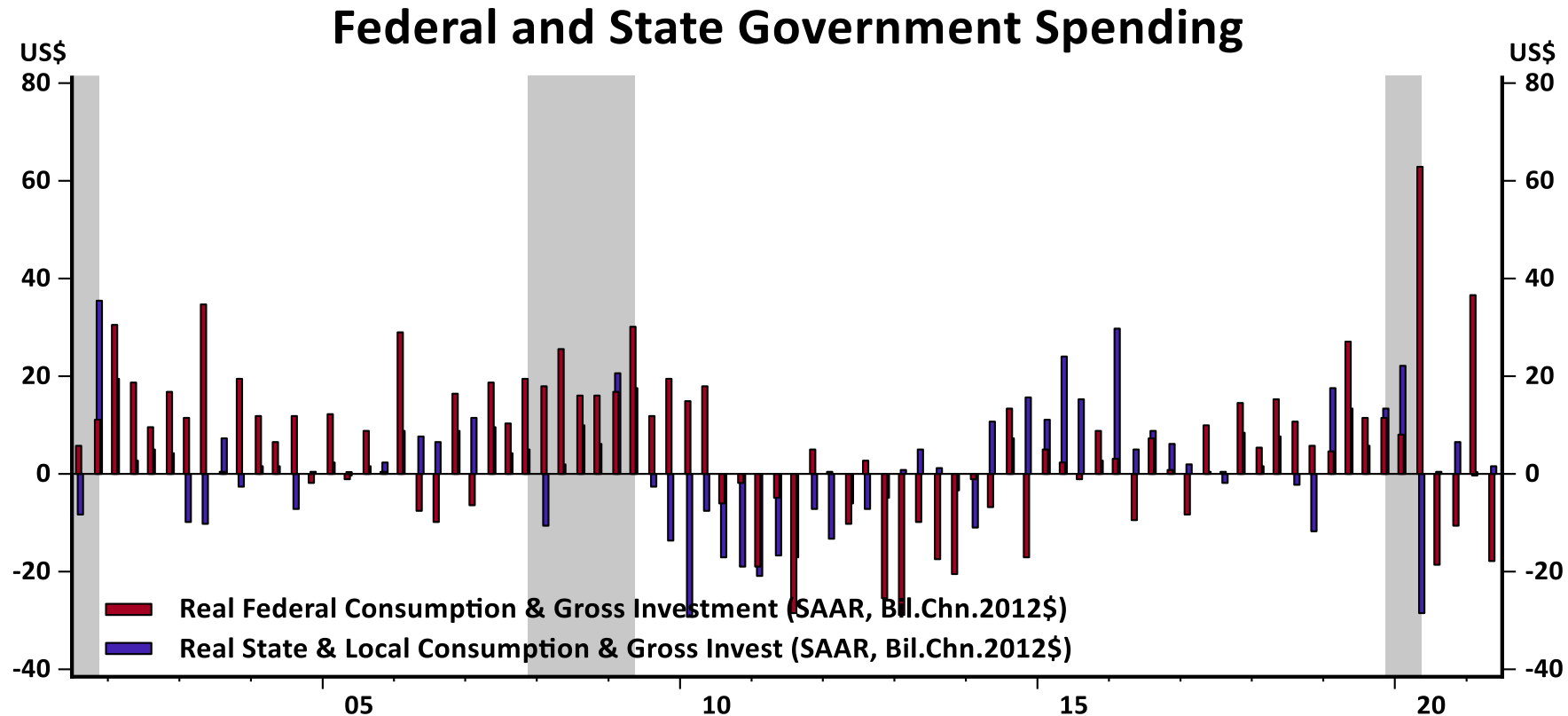
Service Consumption Was Subdued

Consumption Recovery Concentrated in the Goods Sector



Source: Bureau of Economic Analysis/Haver Analytics

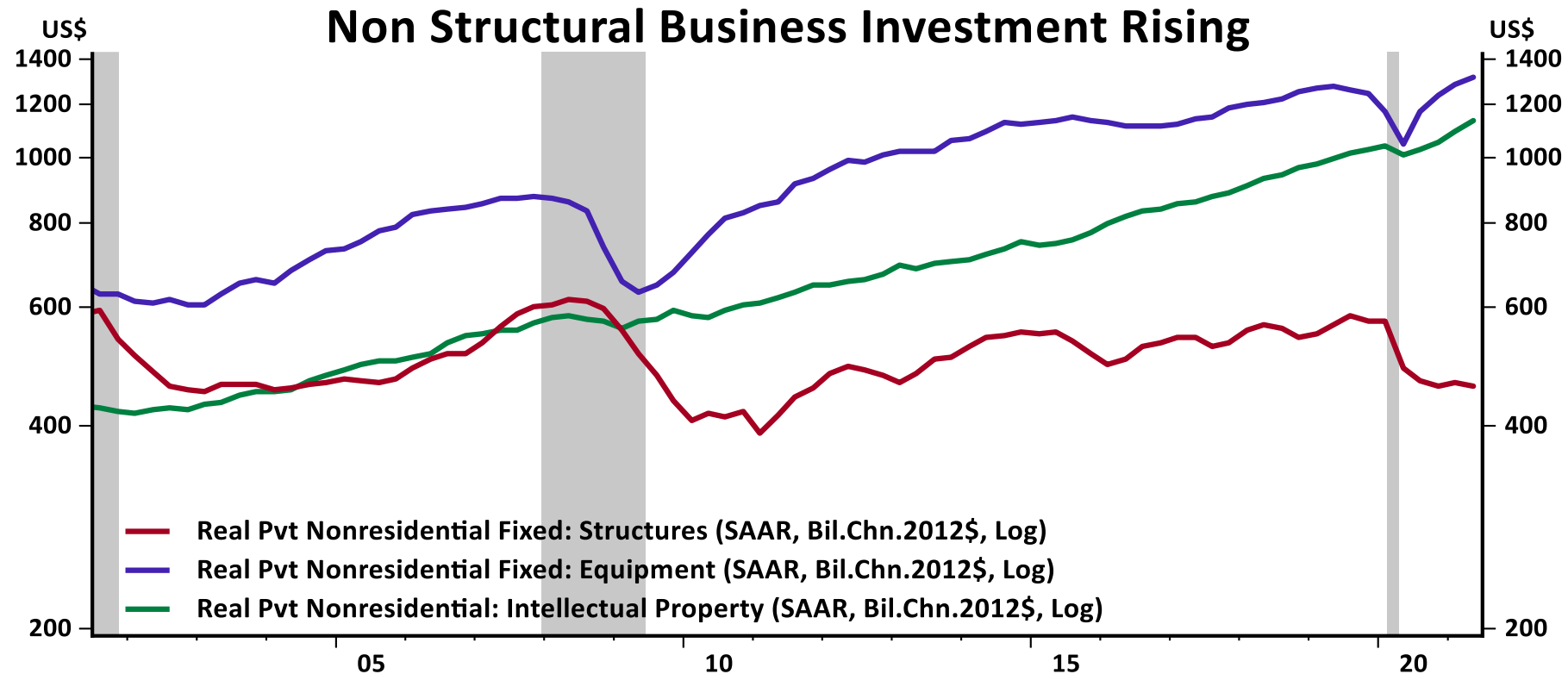
Direct Government Spending Was Soft in Q2



Source: Bureau of Economic Analysis/Haver Analytics

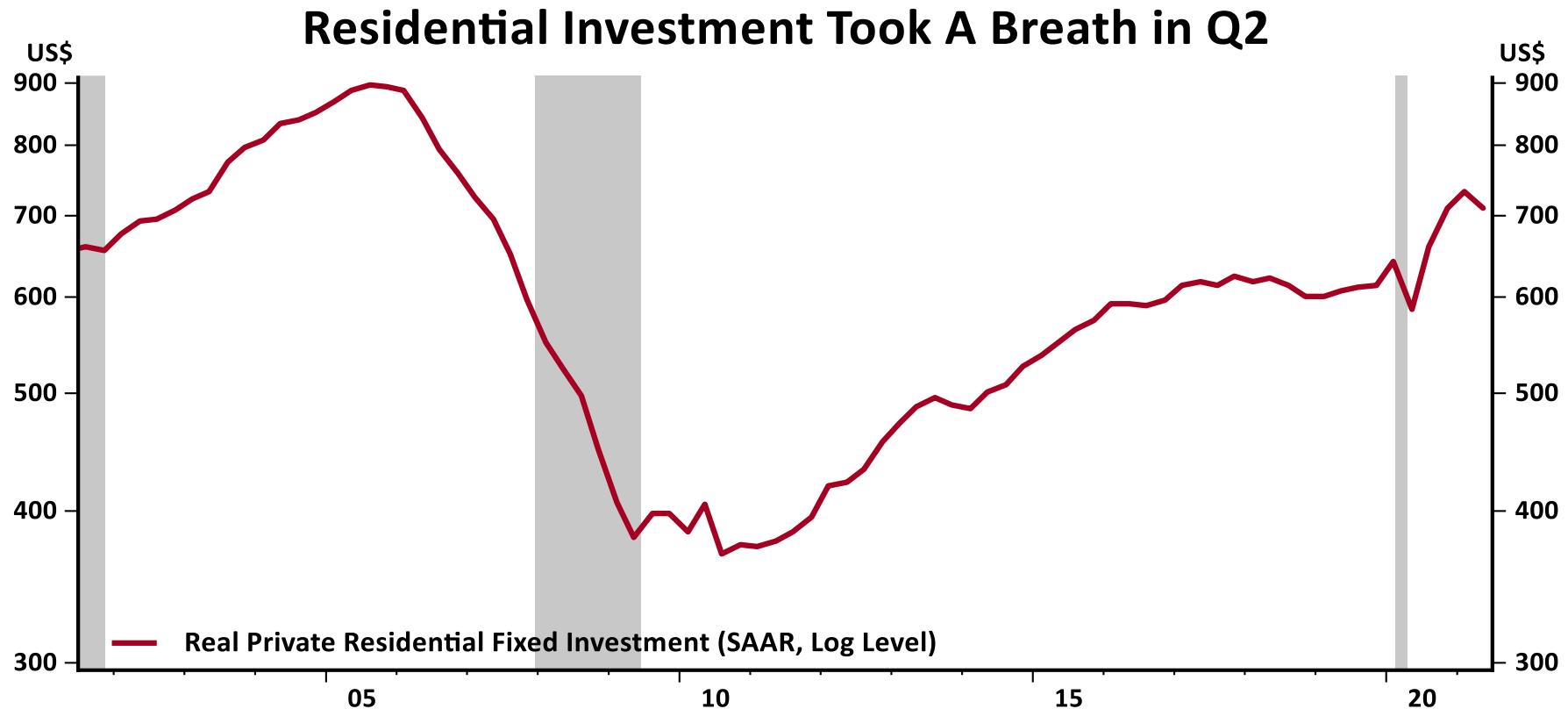
Robust Business Investment in IP and Equipment

While Structural Investment Remained Low



Source: Bureau of Economic Analysis/Haver Analytics

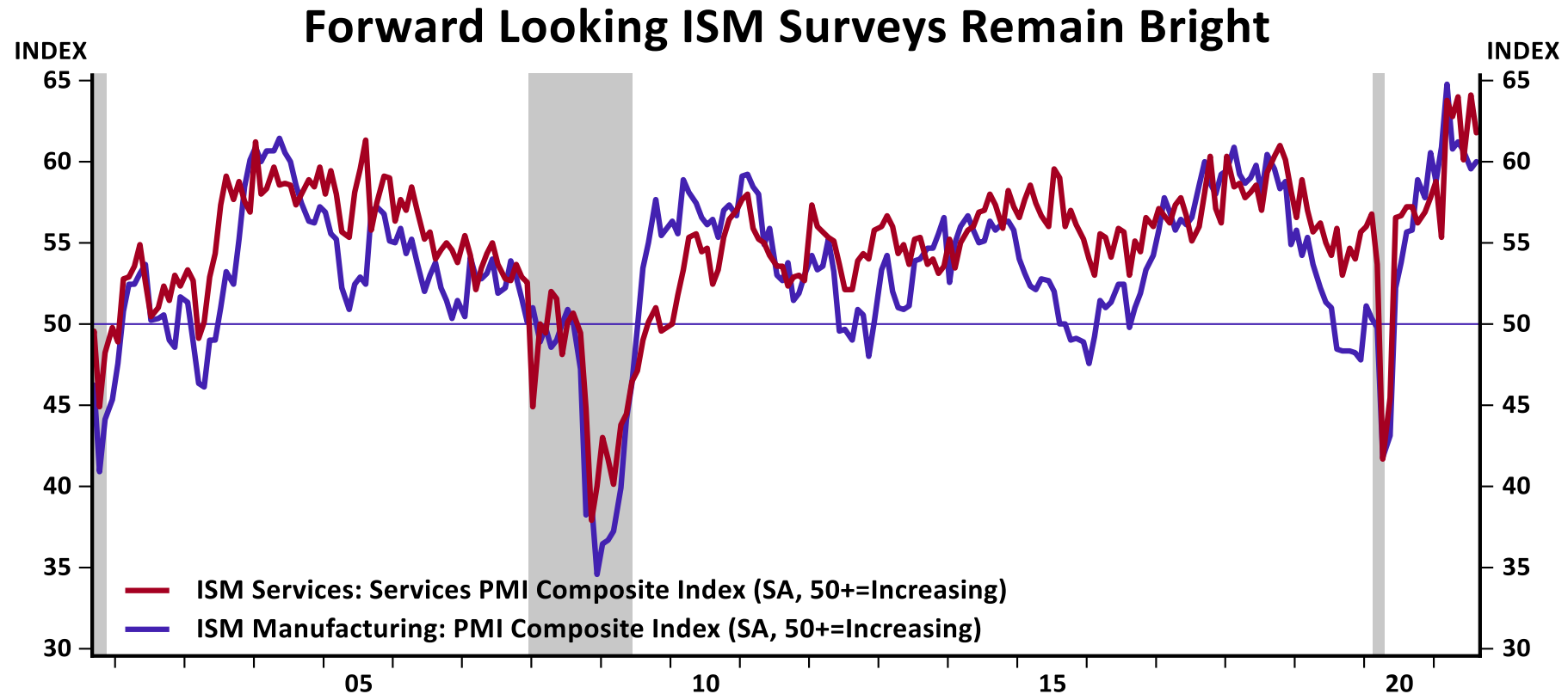
Residential Investment Stable



Source: Bureau of Economic Analysis/Haver Analytics

Surveys Suggest Further Improvement in Activity

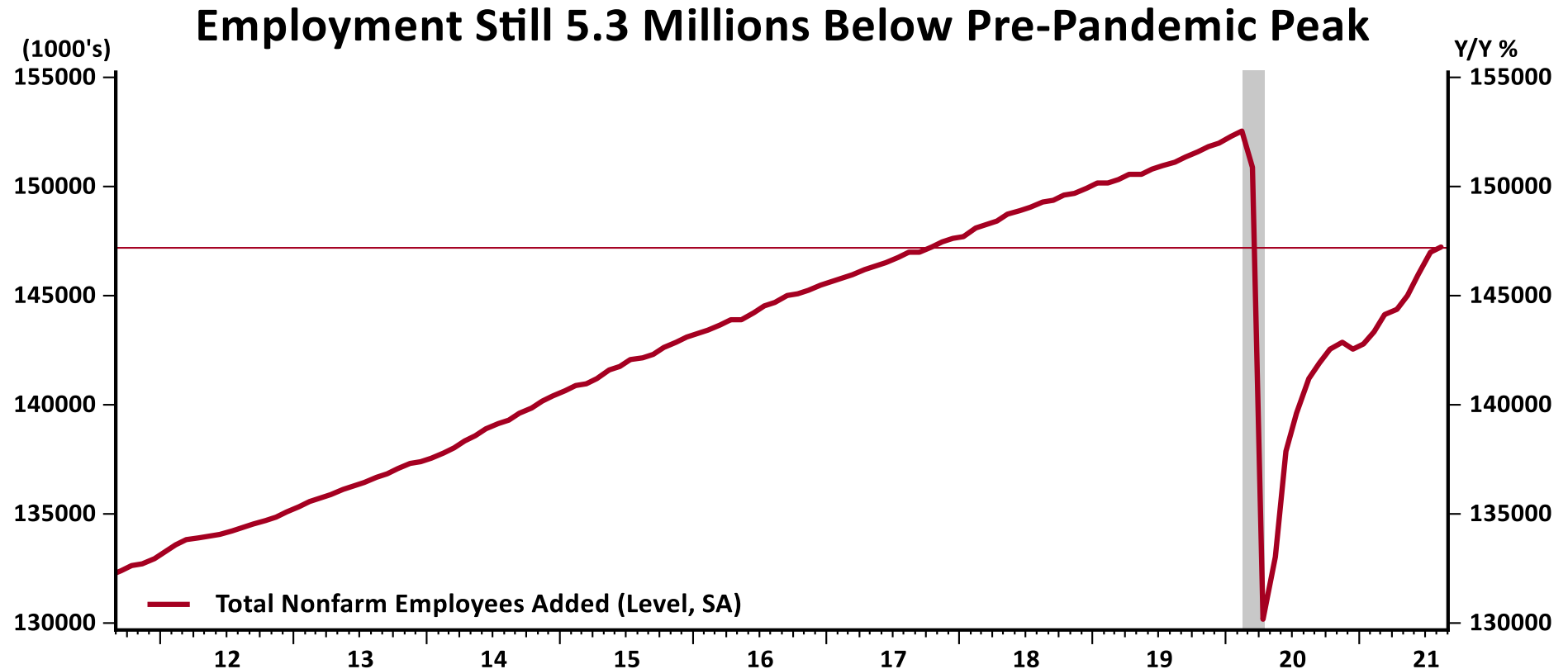
Despite Resurgence in COVID Cases due to Delta Variant



Source: Institute for Supply Management/Haver Analytics

Labor Market Continues to Improve

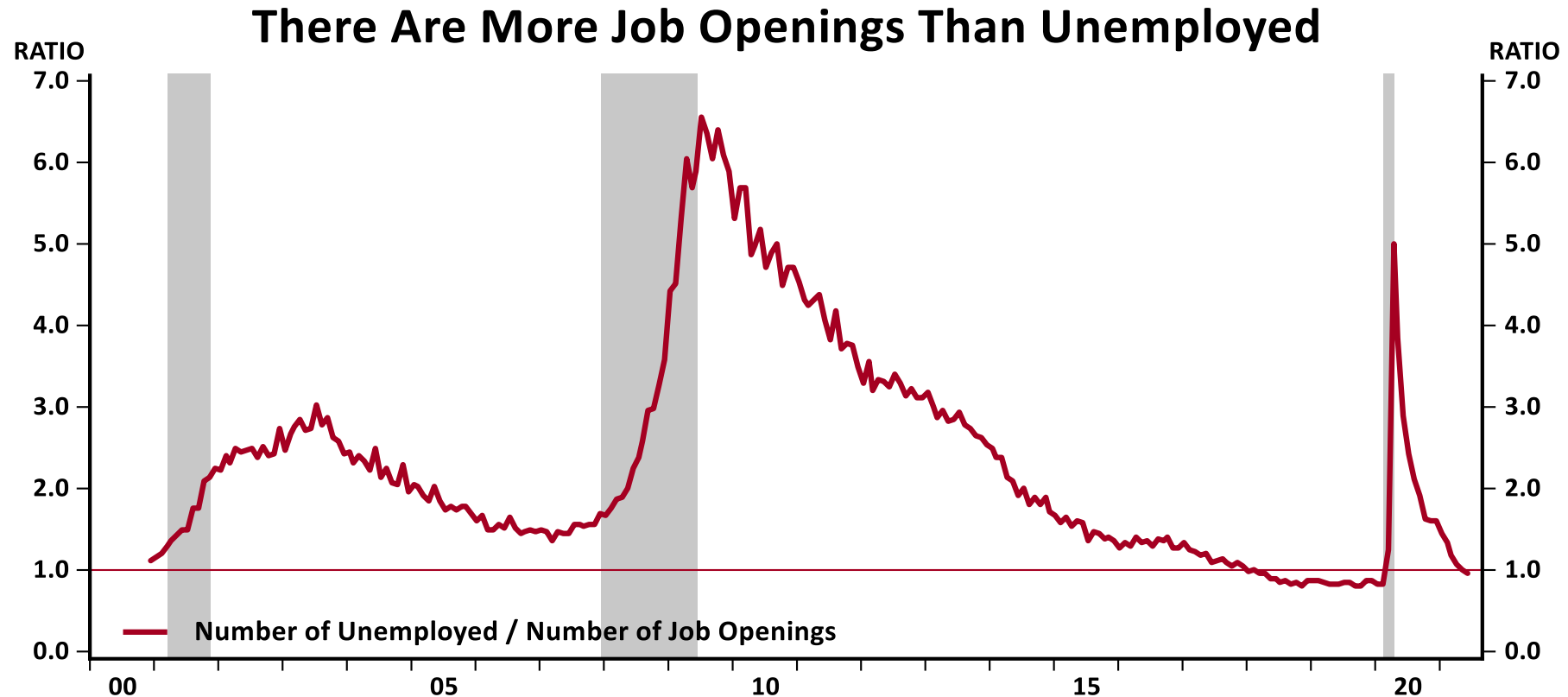
Yet Still A Long Way to Fully Repair the COVID Damage



Source: Bureau of Labor Statistics/Haver Analytics

Outlook for Labor Market Remains Bright

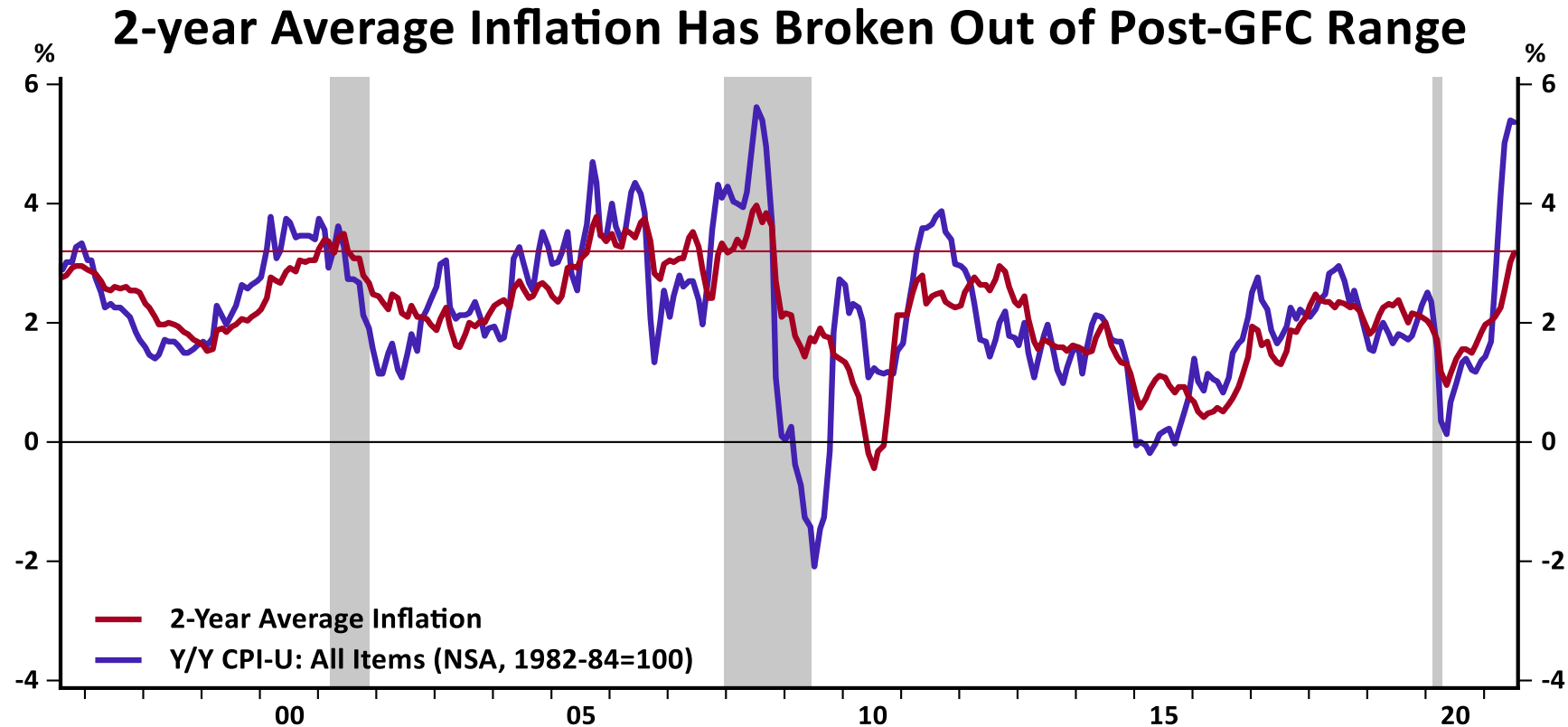
Job Openings Exceeding Number of People Looking for Jobs



Source: Haver Analytics

Much of the Recent High Inflation Was a Payback...

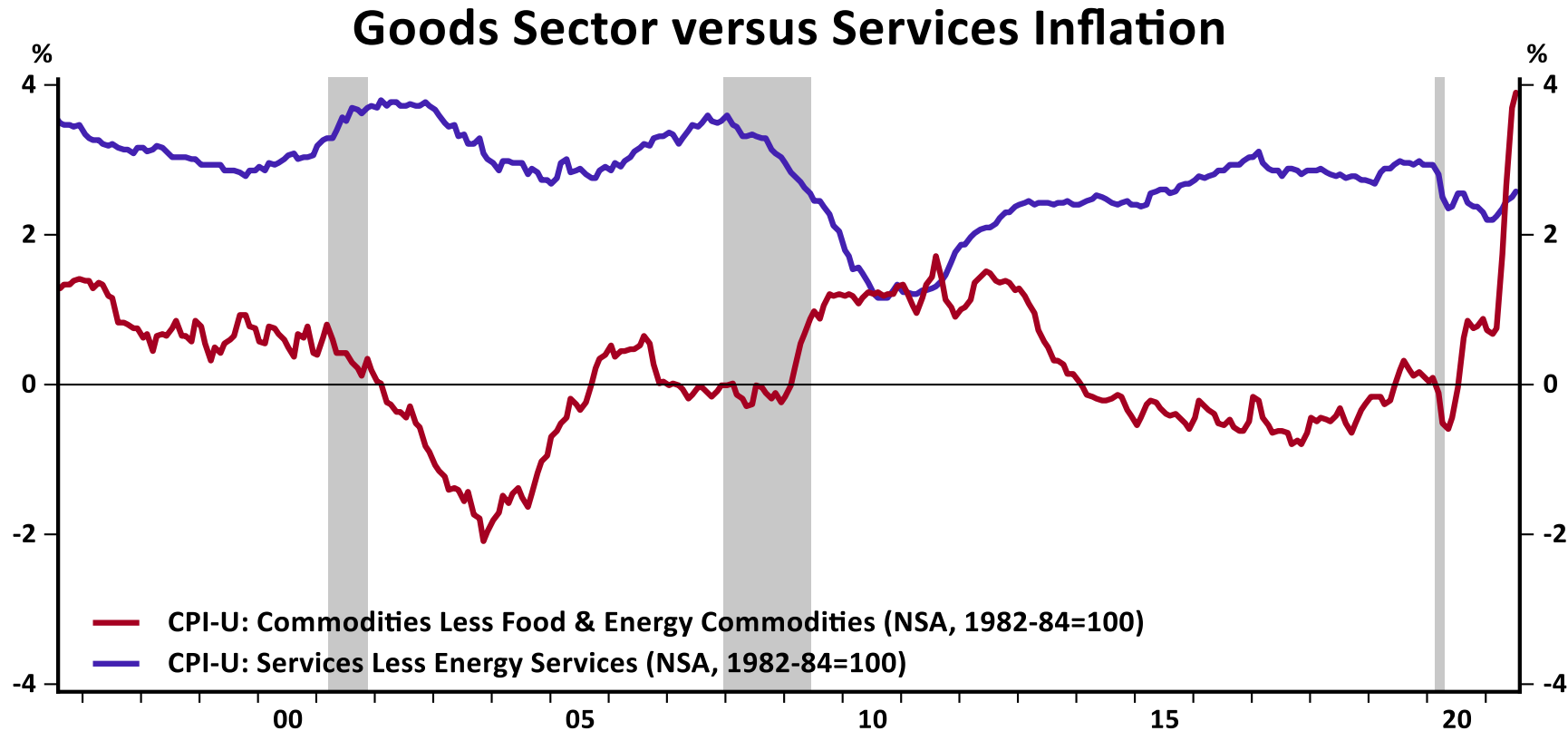
...to pandemic lows. Although some of the rising prices may reflect a new trend.



Source: Bureau of Labor Statistics/Haver Analytics

Goods Sector Inflation Has Outstripped Services

A Departure from the Pattern of the Last 25 Years

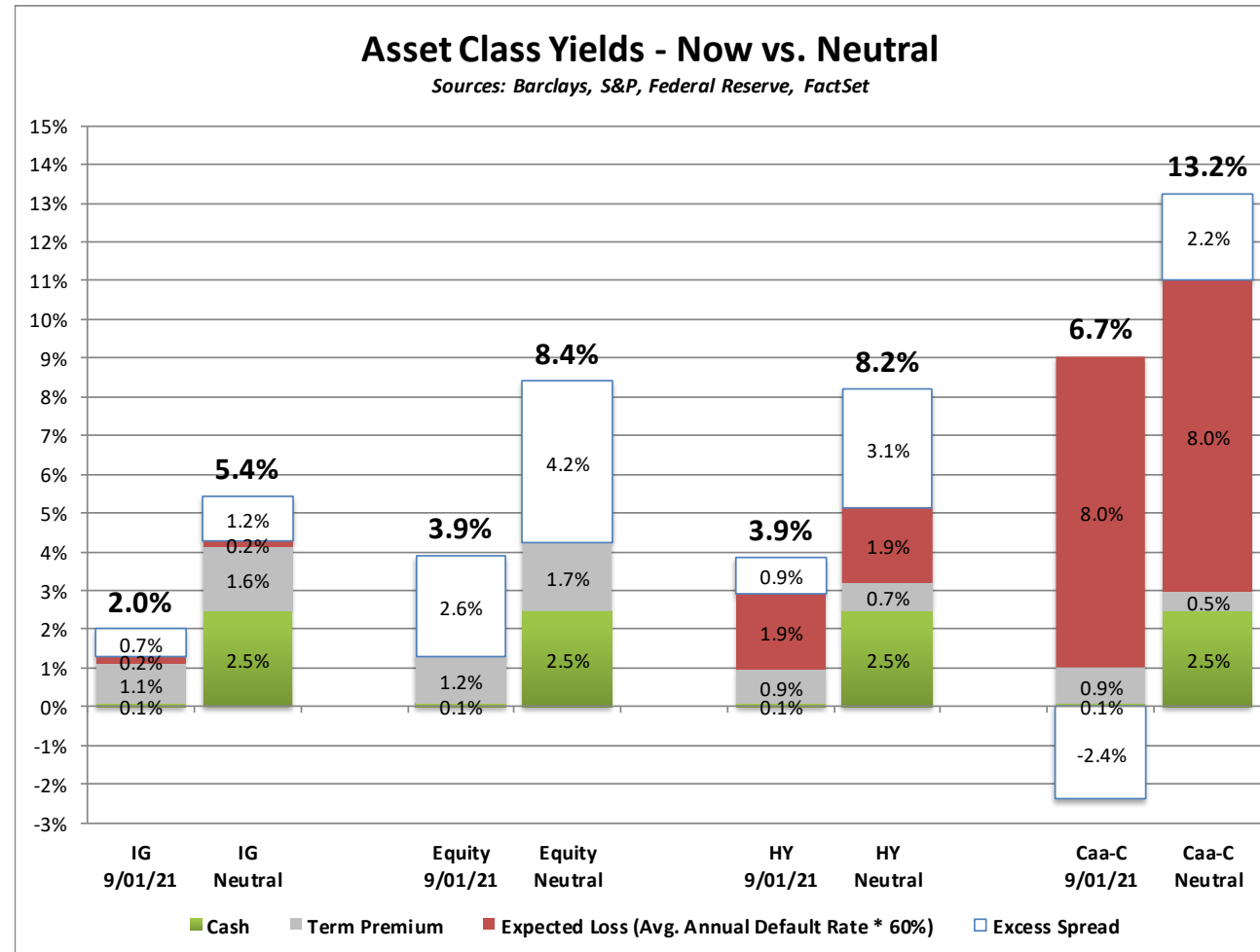


Source: Bureau of Labor Statistics/Haver Analytics

Appendix

Asset Yields

Zero cash rates and low term premium reduce expected yields.



Valuation Indicators

Markets characterized by low yields, high multiples, and low volatility versus long run.

Valuation Metric	Valuation Date	Current	1 Yr	5Yr	10 Yr	All Data	Earliest Data
10 Year Treasury Yield (%)	Aug-2021	1.3	1.2	2.0	2.0	6.0	Jan-62
S&P 500 Forward P/E (NTM)	Aug-2021	21.8	22.3	18.7	16.9	16.3	Jan-90
MSCI xUS Forward P/E (NTM)	Aug-2021	15.5	17.4	15.3	14.5	14.1	Feb-05
Private Equity Multiple (EBITDA, Large)	Jun-2021	11.1	11.3	11.1	10.4	9.1	Jan-94
Barclays Corp Investment Grade OAS (bps)	Aug-2021	88	97	117	133	131	Jun-89
Barclays Corp High Yield OAS (bps)	Aug-2021	294	353	402	460	500	Jan-94
US Inflation (Calendar YoY %)	Aug-2021	5.4	2.7	2.1	1.8	3.8	Jan-62
US Real GDP Growth (Calendar YoY %)	Aug-2021	12.2	1.9	1.6	1.9	3.0	Dec-61
US Volatility	Aug-2021	16.4	23.7	18.4	17.9	19.6	Jan-90
Europe Volatility	Aug-2021	17.6	23.9	19.7	21.5	23.8	Jan-99
UK Volatility	Aug-2021	15.6	22.2	17.4	17.3	19.1	Jan-00
Japan Volatility	Aug-2021	19.0	23.0	21.0	22.5	24.7	Jan-98

US 2021 GDP Growth Forecast: 6.2%

US 2021 CPI Forecast: 4.2%

Source: FactSet, Bloomberg

Board Meeting

Tab 9 - Announcement of Matters Taken Up in Closed Session

Board Meeting

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

- A. New Contracts, Q2 2021
- B. Quarterly Charges to Funds Report, Q2 2021
- C. Private Markets and Funds Alpha Commitments, Q2 2021

New and Amended Contracts Approved April – June 2021

New Contracts:

Focus Consulting Group

Focus Consulting Group is the sole source vendor to provide consulting services to continue enhancing SWIB's *Culture Development Initiative*. This cost for this extension is \$49,500.

MSCI - Barra

MSCI - Barra is the sole source vendor to provide daily security-level factor data for several indices through Snowflake. The cost to add this service is \$45,000.

MSCI, Inc.

MSCI, Inc. is the sole source vendor to provide additional licenses to our existing equity index subscription, which will allow access to historical data that supports exposure management research. The cost of this addition is \$75,000.

Odeon Capital Research

Odeon Capital Research is the sole source vendor to provide access to their proprietary multi-asset research. The annual cost of this service is \$30,000.

RCM Technologies

RCM Technologies was selected from SWIB's competitively bid pool of contract workers with investment industry experience to provide one temporary investment-related resource with experience enhancing and implementing Simcorp. The resource will be engaged for six months, at a cost of \$128,000.

Simcorp USA, Inc.

Simcorp USA, Inc. is the sole source vendor to provide their customized eLearning training specific to the *business foundations* and *data warehouse* offerings. This cost of this training for 15 participants is \$50,000.

V-Soft Consulting Group Inc

V-Soft Consulting Group Inc was selected from SWIB's competitively bid pool of contract workers with investment industry experience to provide one temporary investment-related resource with experience enhancing and implementing CRD. The resource will be engaged for six months, at a cost of \$145,000.

WorldBridge Partners Inc

WorldBridge Partners Inc was the selected vendor to provide placement services for the recruiting team. The cost for placement is \$38,750.

Amended Contracts/Extensions:

Adeptvx Consulting

- One contract worker extended through 06/30/2021 at a cost of \$100,000.

Grandview Analytics LLC.

- One contract worker extended through 06/30/2021 at a cost of \$100,000.

Sharp Decisions, Inc.

- One contract worker extended through 06/30/2021 at a cost of \$40,000.
- One contract worker extended through 09/30/2021 at a cost of \$180,000.

Note: the dollar amounts listed above for contract workers represent the estimated total contract costs and may not reflect actual costs incurred. For example, estimated and actual costs may differ due to variances in actual hours worked by the contractor, travel expenses, etc.

August 13, 2021

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

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

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

Representative Samantha Kerkman, Co-Chair
Joint Legislative Audit Committee
P.O. Box 8952
Madison WI 53708-8952

Secretary Joel Brennan
Department of Administration
101 East Wilson Street
P.O. Box 7864
Madison, WI 53707-7864

Dear Senator Marklein, Senator Cowles, Representative Born, Representative Kerkman, and Secretary Brennan:

State statutes require the State of Wisconsin Investment Board (SWIB) to report all costs and expenses charged to the trust funds under management during the prior quarter as well as 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, 2021.

Total Cost of Management Summary	3Q2020	4Q2020	1Q2021	2Q2021	Trailing 4 Qtr Total	% of Total
Internal Operating Expenses						
Operating Budget Expenses	\$ 10,778,834	\$ 12,809,354	\$ 11,960,506	\$ 39,468,133	\$ 75,016,827	61.8%
Custodial, Investment Operations & Banking	878,460	1,945,599	1,597,860	1,667,094	6,089,013	5.0%
Legal	734,351	916,718	412,361	237,486	2,300,916	1.9%
Investment Research & Consulting	8,015,276	8,861,556	8,716,569	9,505,930	35,099,331	28.9%
Total Internal Operating Expenses	\$ 20,406,921	\$ 24,533,227	\$ 22,687,296	\$ 50,878,643	\$ 118,506,087	97.6%
Securities Lending Agent Expenses	519,933	633,569	906,556	884,053	2,944,111	2.4%
Total SWIB Operating Costs	\$ 20,926,854	\$ 25,166,796	\$ 23,593,852	\$ 51,762,696	\$ 121,450,198	100.0%
External Investment Management Fees						
Externally Managed Separate Account Fees						
Beta One & Other - Separately Managed	\$ 7,700,650	\$ 10,014,059	\$ 11,815,893	\$ 12,846,225	\$ 42,376,827	8.5%
Supplemental Information - External Fund Fees						
Real Estate ¹	\$ (259,551)	\$ 14,508,274	\$ 16,246,132	\$ 16,794,113	\$ 47,288,968	9.5%
Private Equity & Venture Capital ¹	(5,834,168)	53,017,487	42,901,170	57,849,368	147,933,857	29.7%
Hedge Funds	49,267,918	80,920,383	60,313,126	43,171,220	233,672,647	47.0%
Beta One & Other - External Funds	4,311,185	2,465,978	3,971,887	15,468,903	26,217,953	5.3%
Total External Investment Management Fee	\$ 55,186,034	\$ 160,926,181	\$ 135,248,208	\$ 146,129,829	\$ 497,490,252	100.0%
Total Cost of Management	\$ 76,112,888	\$ 186,092,977	\$ 158,842,060	\$ 197,892,525	\$ 618,940,450	

¹ Costs decreased in the 3rd quarter 2020 due to an accounting change.

For definitions of the expense categories presented above, please refer to Attachment C.

¹Wisconsin Statutes Section 25.17 (13m): All 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 and externally managed fund fees are netted against the 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, 2020, after consideration of all expenses, costs, and fees, SWIB generated \$1.91 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. SWIB's total authorized positions are 261 as shown in the table below.

Assets Under Management & Positions		
	3/31/2021	6/30/2021
Internal Management	55.5%	55.5%
External Management	44.5%	44.5%
Total SWIB Positions	261	261

In addition, Attachment B provides details of the services provided to SWIB and their associated quarterly costs.

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)	9/30/2020		12/31/2020		3/31/2021		6/30/2021	
	Amount (in millions)	Percent	Amount (in millions)	Percent	Amount (in millions)	Percent	Amount (in millions)	Percent
Internally Managed	\$58,773	49.8%	\$65,735	50.7%	\$68,456	51.6%	\$72,061	51.4%
Externally Managed Dedicated Accounts	35,417	30.0%	37,393	28.8%	35,943	27.1%	36,723	26.2%
Externally Managed Commingled Accounts	23,907	20.2%	26,617	20.5%	28,164	21.2%	31,351	22.4%
1. Passive Index Funds	2,417	2.0%	2,730	2.1%	2,864	2.2%	2,966	2.1%
2. Limited Partnerships	15,314	13.0%	16,724	12.9%	17,894	13.5%	19,692	14.1%
3. Actively Managed Commingled Accounts	6,176	5.2%	7,163	5.5%	7,406	5.6%	8,693	6.2%
TOTAL WRS Assets	\$118,097	100.0%	\$129,745	100.0%	\$132,563	100.0%	\$140,136	100.0%

State Investment Fund - Internally Managed	\$11,778		\$11,861		\$13,988		\$15,426	
Various Funds Internally Managed	\$128		\$129		\$119		\$124	
Various Funds Externally Managed	\$2,065		\$2,174		\$2,148		\$2,221	

Total Assets Under Management	\$132,068		\$143,909		\$148,819		\$157,906	
Total Internal Management	\$70,679	53.5%	\$77,725	54.0%	\$82,564	55.5%	\$87,611	55.5%
Total External Management	\$61,389	46.5%	\$66,184	46.0%	\$66,255	44.5%	\$70,295	44.5%

STATE OF WISCONSIN INVESTMENT BOARD
Expenses for All Funds Under Management
Quarter Ending June 30, 2021

EXPENSE CATEGORY ¹	SERVICE PROVIDED	EXPENSES
<u>Internal Operating Expenses</u>		
Staff Compensation	Staff Compensation	\$ 32,065,070
Fringe Benefits	Fringe Benefits	5,554,486
Equipment, Supplies & Services	General Supplies & Services	1,848,577
Total Internal Operating Expenses		\$ 39,468,133
<u>Custodial, Investment Operations and Banking Fees</u>		
BNY Mellon Asset Servicing - Custody	Master Custody Services	\$ 255,868
BNY Mellon Asset Servicing - Investment Operations	Investment Operating Services	1,411,134
US Bank	Banking Fees	92
Total Custodial, Investment Operations and Banking Fees		\$ 1,667,094
<u>Legal Fees</u>		
Cox Castle & Nicholson LLP	Legal Work for Investment Strategies	\$ 9,525
DLA Piper LLP (US)	Legal Work for Investment Strategies	52,237
Godfrey & Kahn SC	Legal Work for Investment Strategies	10,142
Purrington Moody Weill LLP	Legal Work for Investment Strategies	8,274
Quarles & Brady	Legal Work for Investment Strategies	123,520
Reinhart Boerner Van Deuren SC	Legal Work for Investment Strategies	2,496
Robins Kaplan LLP	Legal Work for Investment Strategies	6,764
Shearman & Sterling LLP	Legal Work for Investment Strategies	24,528
Total Legal Fees		\$ 237,486
<u>Investment Counsel</u>		
Adeptyx Consulting	Investment Consulting Services	\$ 182,019
Aksia LLC	Hedge Fund Investment Consulting	193,750
Alex Solutions	Research & Data Service	65,750
Ananth Seshadri	Economic Consulting Services	15,000
BCA Research Inc	Global & Domestic Fixed Income Strategy Research	32,250
Blackrock Financial Management Inc	Risk Services	75,000
Bloomberg Finance LP	Market, Company, Industry & Benchmark Information	816,713
BNY Mellon Asset Servicing - Eagle/Pace	Investment Consulting Services	298,100
Callan Associates Inc	Investment Consulting & Performance Benchmarking	12,500
CBOE Global Markets, Inc.	Research and Data Services	1,500
CFRA Research	Investment Research Services	23,100
Charles River System Inc	Portfolio Management Trading Software & Services	346,475
Consensus Economics Inc	Investment Research Services	33,707
CoStar Portfolio Strategy	Real Estate Consulting & Research Services	47,896
CreditSights	Credit Assessments	17,500
Dacheng Xiu	Investment Research	37,500
Dow Jones News Service	Company and Industry News Services	312
DTCC – EPN	Trade Settlement Service	6,603
EFront Financial Solutions Inc	Private Markets Portfolio Management Services	260,654
Elevation LLC	Research and Data	10,000
Ernst & Young LLP	Tax Compliance Services & Investment Consulting	14,645
Euromonitor International	Research and Data Services	24,677
Evercore Group LLC	Investment Research	1,104,078
eVestment Alliance LLC	Research and Data Services	7,404
FactSet Research Systems Inc	Financial & Economic Database	932,138
Fitch Solutions Inc	Credit Rating Services	43,000
Gartner Inc	Technology Sector Research	28,430
Global Financial Data Inc	Research and Data Services	30,600
Grandview Analytics LLC	Investment Information Technology Consulting Services	95,742
Green Street Advisor	Real Estate Analytics	57,937
Hammerstone Markets Inc	Investment Research	300
Haver Analytics	Global Macroeconomic Research	19,500
Ice Data LP	Fixed Income Indices	10,302
Institutional Shareholder Services Inc	Proxy Voting Analysis	41,914
Keystone Consulting Inc	Investment Information Technology Consulting Services	296,640
Kreischer Miller LLP	Investment Consulting	25,000
Kroll Bond Rating Agency, Inc. (KBRA)	Investment Research and Data Services	15,000
London Stock Exchange	London Stock Exchange Data	45,817
Mackey LLC	Research Management System	47,395
Markit-EDM Limited	Investment Consulting	173,674
MarkLines Co Ltd	Investment Research	5,100
Matrix IDM, LLC	Investment Consulting	88,200
Meketa Investment Group	Public Markets External Manager Consultant	64,413
Money-Media Inc	Research and Data Services	4,890
Moodys Analytics	Economic, Currency & Bond Analysis	35,198
MSCI - Barra	Research and Data Services	76,500
MSCI Inc - Risk Metrics Solutions	Research and Data Services	294,838
MSCI, Inc	Research and Data Services	47,884
NEPC LLC	Investment Consulting Services	100,000
Novus Partners Inc	Profit & Loss Analytics System	47,025

STATE OF WISCONSIN INVESTMENT BOARD
Expenses for All Funds Under Management
Quarter Ending June 30, 2021

EXPENSE CATEGORY ¹	SERVICE PROVIDED	EXPENSES
Nuware Technology Corp	Investment Information Technology Consulting Services	233,216
NYSE Market Inc	New York Stock Exchange Data	7,444
Odeon Capital Group, LLC	Research and Data Services	5,000
Oliver James	Investment Consulting	66,560
Options Price Reporting Authority	Quote System for Options Market	2,741
Pac-invest	Research and Data Services	11,637
Pageant Media Limited	Investment Data and Research	4,250
RCM Technologies	Investment Consulting	20,000
Refinitiv	Research Pricing (Autex, Baseline, FirstCall)	41,168
Russell Investment Group	Index Data	13,075
S&P Dow Jones Indices	Research and Data Services	52,826
S&P Global Market Intelligence	Industry & Corporate Research	163,420
Sagient Research Systems	Investment Research	5,000
Schwab Compliance Technologies, Inc.	Research and Data Services	1,986
Seaport Global Securities LLC	Research and Data Services	2,670
Sharp Decisions Inc	Investment Information Technology Consulting Services	129,875
Simcorp USA, Inc.	Investment System	1,404,186
Simmons & Simmons	Global Regulatory Services	7,584
Snowflake Inc	Research and Data Services	17,687
Solve Advisors Inc	Investment Research	9,000
SPACInsider	Research and Data	2,999
Speaking.com	Investment Consulting	12,500
State Street	Investment Consulting	20,000
StepStone Group	Private Equity Consulting Services	303,803
StepStone Group Real Estate	Real Estate Consulting Services	56,471
Strategic Economic Decisions Inc	Investment Research Reports	12,500
SVB Leerink	Research and Data Services	7,000
SWIFT SC	Research and Data Services	5,483
SystemsAccountants	Investment Information Technology Consulting Services	85,760
Taranis, Inc.	Investment Information Technology Consulting Services	86,000
Telsey Advisory Group	Consumer Sector Research	62,500
The Financial Times Limited	Investment Research	8,171
The Harry Walker Agency	Investment Consulting	10,000
The Nasdaq Stock Market, LLC	Research & Data Services	1,500
Toronto Stock Exchange	Market Data	15,131
TradeWeb	On-Line Fixed Income Trading Services	9,356
Unit4 Business Software Inc	Financial & Administration Services System	56,746
Verus Advisory Inc	Benchmarking Consulting Services	42,000
Virtu ITG Analytics LLC	Trading Transaction Cost Analysis	11,250
Visible Alpha LLC	Research and Data Services	42,673
V-Soft Consulting Group Inc	Investment Information Technology Consulting Services	54,450
Wall Street Journal	Investment Research & Information	12
WIPFLi LLP	Income Tax Preparation Services	919
Wisconsin Technology Council	Investment Research Sponsorship	7,500
Wolters Kluwer Law & Business	GDP Forecasting Services	10,985
Wolverine Execution Services LLC	Options Trading Platform	1,326
WorldBridge Partners Inc	Recruitment Consulting	80,000
Yipit, LLC	Research and Data Services	45,000
Total Investment Counsel		\$ 9,505,930
Securities Lending Agent Fees		
BNY Mellon Asset Servicing	Securities Lending Agent Fees	\$ 884,053
Total Securities Lending Agent Fees		\$ 884,053
Total Quarterly Charges to Funds		\$ 51,762,696

¹All 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 the 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. The Attorney General annually reviews and approves a list of law firms to provide investment legal services for SWIB.

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. The securities lending agent fees are no longer netted with income and are reported as securities lending agent fee expenses starting on July 1, 2019.

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.

Private Equity Commitments*

April 2021 – June 2021

<i>Investment</i>	<i>Commitment (millions)</i>
Aldrich Capital Partners II	\$50.0
Anthos Capital V	\$50.0
Ashbridge Transformational Secondaries Fund II	\$200.0
Flexpoint Asset Opportunity Fund II	\$50.0
FP Credit Partners II	\$50.0
New State Capital Partners III	\$35.0
Percheron Capital Fund I (add-on)	\$20.0
Prairie Capital VII	\$40.0
PSG V	\$100.0
PSG Encore Warehouse III	\$100.0
Recognize Partners I	\$50.0
SkyKnight Capital Fund III	\$60.0
Shore Capital Healthcare Partners Fund IV	\$3.0
Shore Capital Business Services Partners Fund I	\$4.0
SPC Wilson Point	\$150.0
Trident IX	\$200.0

Private Equity Commitments*

April 2021 – June 2021

<i>Investment</i>	<i>Commitment (millions)</i>
Industrials Co-Investment	\$17.3
Information Technology Co-Investment	\$20.0
Information Technology Co-Investment	\$25.0
Information Technology Co-Investment	\$30.0
Health Care Co-Investment	\$25.0
Consumer Staples Co-Investment	\$45.0
Information Technology Co-Investment	\$10.0

**Includes Current Return Co-Invest Portfolio*

Private Debt Investments/Commitments

April 2021 to June 2021 (Second Quarter)

<i>Investment</i>	<i>Investment/Commitment</i>
Communications Technology	\$10,000,000
Financial Services	\$25,000,000
Total	\$35,000,000

Real Estate Commitments

April 2021 – June 2021

<i>Investment</i>	<i>Commitment (millions)</i>
Wilson DWS Senior Finance, LLC	\$300
USCOF-Wilson MOB JV, LLC	\$215
CASA Partners IX, LP	\$100
Barings Distressed Hotel Opportunity Venture, LP	\$100
Heitman Real Estate Debt Partners II, LP	\$47
HSREF VI Elgin Venture, LLC	\$36
Total	\$798

Funds Alpha Commitments*

April 2021 – June 2021

<i>Investment</i>	<i>Commitment (millions)</i>
Marshall Wace TOPS (Initial Subscription)	CTF: \$700 VTF: \$100
Total	\$800

**Includes Hedge Funds and Beta One*

Board Meeting

Tab 11 - Future Items for Discussion

Motion to Recess

Action Required

Proposed Motion: Move to recess

2021 Board Meeting and Agenda Plan

<p>March 2021 (TUESDAY)</p> <p>Committees:</p> <p>SPCG:</p> <p>Open Session</p> <ul style="list-style-type: none"> • Real Estate Consultant • SWIB Foundations/Centum Update • Recruiting Update • Corporate Governance Program Update • Pension Governance • Pandemic Response • Investment Forum Preview <p>Executive Closed Session:</p> <ul style="list-style-type: none"> • Succession Planning <p>Compensation:</p> <p>Open Session:</p> <ul style="list-style-type: none"> • Charter Review • Compensation Philosophy Review • Strategic Results Scorecard Approval • Incentive Compensation Program Review • Incentive Compensation Award Recommendations • Comprehensive RPM Review Planning <p>Executive Closed Session:</p> <ul style="list-style-type: none"> • Incentive Compensation Award Recommendations for Specific Individuals • ED/CIO Evaluation and Compensation <p>Audit & Finance:</p> <p>Open Session:</p> <ul style="list-style-type: none"> • Charter Review • Open Audit Issues Report • Approval of Draft Audit Reports • Audit Plan Status • 2021 Internal Audit Strategic Plan • 2021 Internal Audit Goals • Quarterly Cost Update (Q4) • Administrative Reports 	<p>(WEDNESDAY)</p> <p>Board Meeting:</p> <p>Open Session:</p> <ul style="list-style-type: none"> • Committee Reports <ul style="list-style-type: none"> ◦ Incentive Compensation Award Recommendations • Election of Secretary and Assistant Secretary • Annual Committee Assignments • Proposed Meeting Dates for Next Year • Q4 Performance Report • Q4 Callan Peer Report • Q4 Investment Update • Investment Committee Open Session Business • Q4 PMFA Commitments • Q4 New Contracts • Q4 Direct Charges to Funds <p>Closed Session:</p> <ul style="list-style-type: none"> • Investment Committee Closed Session Business <p>Executive Closed Session:</p> <ul style="list-style-type: none"> • Incentive Compensation Award Recommendations for Specific Individuals
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<p>June 2021 (TUESDAY)</p> <p>Committees:</p> <p>SPCG:</p> <p>Open Session:</p> <ul style="list-style-type: none"> • Hedge Fund Consultant • SWIB Foundations/Centum Update • Recruiting Metrics • October Workshop Preview <p>Closed Session</p> <ul style="list-style-type: none"> • Consultant Review <p>Executive Closed Session:</p> <ul style="list-style-type: none"> • ED/CIO Goals Review <p>Audit & Finance:</p> <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 • Quarterly Cost Update (Q1) • Total Cost of Management Update (FY) • Administrative Reports <p>Executive Closed Session:</p> <ul style="list-style-type: none"> • LAB Review of Statements of Economic Interest (generally, no presentation) <p>Board:</p> <p>Open Session:</p> <ul style="list-style-type: none"> • Committee Reports • Q1 Performance Report • Q1 Callan Peer Report • Q1 Investment Update • Investment Committee Open Session Business • Q1 PMFA Commitments • Q1 New Contracts • Q1 Direct Charges to Funds <p>Closed Session:</p> <ul style="list-style-type: none"> • Investment Committee Closed Session Business 	<p>(WEDNESDAY)</p> <p>INVESTMENT FORUM</p>
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<p>September 2021 (TUESDAY)</p> <p>Committees:</p> <p>SPCG:</p> <p>Open Session:</p> <ul style="list-style-type: none"> • Introduction to Head of Risk Management • Private Equity Consultant • Corporate Governance 2021 Proxy Voting Review, ISS Update and ESG Trends (including ISS) • Project Centum Update • Board Policies/Trustee Manual Review • October Workshop Preview • Recruiting Metrics <p>Closed Session:</p> <ul style="list-style-type: none"> • Annual Consultant Reporting <p>Executive Closed Session:</p> <ul style="list-style-type: none"> • ED/CIO Goals Review <p>Audit & Finance:</p> <p>Open Session:</p> <ul style="list-style-type: none"> • Approve WRS Audited Financial Statements • Open Audit Issues Report • Approval of Draft Audit Reports • 2021 Internal Audit Plan Status and Plan Update • 2022 Internal Audit Plan Preview • Quarterly Cost Update (Q2) • Administrative Reports <p>Closed Session:</p> <ul style="list-style-type: none"> • 2021 Security Management Report and IT Update 	<p>(WEDNESDAY)</p> <p>Board Meeting:</p> <p>Open Session:</p> <ul style="list-style-type: none"> • Committee Reports • Investment Forum Recap • Biennial Ethics Training • Fiduciary & Public Records Topics • Q2 Investment Performance Report • Q2 Callan Peer Report • Investment Committee Open Session Business • Q2 Investment Update • Q2 New Contracts • Q2 Direct Charges to Funds • Q2 PMFA Commitments <p>Closed Session:</p> <ul style="list-style-type: none"> • Investment Committee Closed Session Business <p>Executive Closed Session:</p> <ul style="list-style-type: none"> • Board Self Evaluation with Governance Consultant
<p>October 2021 (TUESDAY)</p> <p>BOARD WORKSHOP</p> <p>Outside Speakers Asset Allocation Review with Actuaries</p>	<p>(WEDNESDAY)</p> <p>BOARD WORKSHOP</p> <p>Outside Speakers Asset Allocation Review with Actuaries</p>

<p>December 2021 (TUESDAY)</p> <p>Committees:</p> <p>SPCG:</p> <p>Open Session:</p> <ul style="list-style-type: none"> • Beta One Consultant • Charter Review • SWIB Foundations/Centum Update • Recruiting Metrics <p>Executive Closed Session:</p> <ul style="list-style-type: none"> • ED/CIO Goals Review <p>Audit & Finance:</p> <p>Open Session:</p> <ul style="list-style-type: none"> • External Quality Assessment of Internal Audit • Approve SIF Audited Financial Statements • Open Audit Issues Report • Approval of Draft Audit Reports • Audit Plan Status • Strategic Plan Review • Proposed 2022 Audit Plan • CY22 Total Cost of Management (Budget and Position Request) • Quarterly Cost Update (Q3) • Five Year Forecast • Administrative Reports <p>Executive Closed Session:</p> <ul style="list-style-type: none"> • LAB Review of Statements of Economic Interest (generally, no presentation) • Evaluation of Internal Audit Director • Internal Audit Director Salary Recommendation <p>Benchmark and Performance:</p> <p>Open Session:</p> <ul style="list-style-type: none"> • Charter, Policies and Philosophy Review • Benchmark Consultant Report <p>Compensation:</p> <p>Open Session:</p> <ul style="list-style-type: none"> • Compensation Consultant • Scoring of Strategic Results Scorecard / Review Division Scorecards • Incentive Compensation Plan Changes for Next Performance Year • Comprehensive RPM Review • Incentive Compensation Projections • People Metrics 	<p>(WEDNESDAY)</p> <p>Board Meeting:</p> <p>Open Session:</p> <ul style="list-style-type: none"> • Committee Reports • Q3 Performance Report • Q3 Callan Peer Report (Callan onsite) • Cost Benchmarking Report • Asset Allocation Recommendation • Q3 Investment Update • Investment Committee Open Session Business • Q3 PMFA Commitments • Q3 New Contracts • Q3 Direct Charges to Funds <p>Closed Session:</p> <ul style="list-style-type: none"> • Asset Allocation Implementation • Investment Committee Closed Session Business • Annual review of expected tail loss analysis <p>Executive Closed Session:</p> <ul style="list-style-type: none"> • Internal Audit Director Salary
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