

MONTANA

BOARD OF INVESTMENTS

REGULAR BOARD MEETING
April 20, 2022

COMMITTEE MEETINGS

- A. **Audit Committee – Maggie Peterson, Chair** **9:30 AM**
1. Public Comment – *Public Comment on issues with Committee Jurisdiction*
 2. Approval of February 16, 2022, Committee Minutes
 3. Executive Director Comments
 4. Audit Checklist
 5. COOP Plan Update – **Decision**
- B. **Loan Committee – Jack Prothero, Chair** **10:00 AM**
1. Public Comment – *Public Comment on issues with Committee Jurisdiction*
 2. Approval of February 16, 2022, Committee Meeting Minutes
 3. Executive Director Comments
 4. Down Payment Loan Assistance Program Update
 5. INTERCAP Loan Requests – **Decision**
- C. **Human Resource Committee – Terry Cohea, Chair** **10:30 AM**
1. Public Comment – *Public Comment on issues with Committee Jurisdiction*
 2. Executive Director Comments
 3. Personnel Matters - **Closed Session**

- Tab 1 CALL TO ORDER – Karl Englund, Chairman** **11:00 AM**
- A. Notice of Video Recording of Meeting
 - B. Roll Call
 - C. Public Comment – *Public Comment on issues with Board Jurisdiction*
 - D. Approval of the February 16-17, 2022, Regular Meeting Minutes and the March 24, 2022, Special Meeting Minutes
 - E. Administrative Business
 1. Audit Committee Report – **Decision**
 2. Loan Committee Report – **Decision**
 3. Human Resource Committee Report
 - F. Comments from Pension Board Members
 - G. Comments from Board Legislative Liaisons

- Tab 4 CAPITAL MARKET ASSUMPTIONS – RVK, Inc.** **11:30 AM**

LUNCH **12:15 PM**

- Tab 3 DEFINED CONTRIBUTION/DEFERRED COMPENSATION EDUCATION -** **1:00 PM**
Dore Schwinden, Executive Director; Bill Holahan, Deputy Director – Montana Public Employees Retirement System

- Tab 2 EXECUTIVE DIRECTOR REPORTS – Dan Villa** **1:45 PM**
- A. Member Requests from Prior Meeting
 - B. Monthly Snapshot

- C. Benchmarks Used by the Board
- D. Board Policy Manual Sections 20, 30, and Policy 10.217 – **Decisions**
- E. Introduction of New Staff -
Sam Holman, Investment Accountant
Matthew Hoffman, Investment Analyst

Tab 5 USE OF CAPITAL MARKET ASSUMPTIONS – Jon Putnam, CFA, FRM, CAIA **2:30 PM**

BREAK **2:45 PM**

Tab 6 INVESTMENTS – NEW COMMITMENTS **3:00 PM**

- Real Estate/Real Assets – Ethan Hurley, CAIA
- Private Investments – Michael Nguyen
- Public Markets – Jason Brent, CFA, CAIA

Tab 7 DOMESTIC EQUITY ASSET CLASS REVIEW – Jason Brent, CFA, CAIA & Steve Strong **3:30 PM**

RECAP OF STAFF TO DO LIST AND ADJOURNMENT – Karl Englund, Chairman

Appendix

- A. Annual Board Meeting Schedule
- B. 2022/2023 Work Plan
- C. Acronym Index
- D. Terminology List

MONTANA

BOARD OF INVESTMENTS

REGULAR BOARD MEETING MINUTES

February 16-17, 2022

Meeting recordings are posted at: <https://leg.mt.gov/lcd/>

Call to Order

The Board of Investment's meeting was called to order by Chairman Karl Englund at 1:00 p.m. on Wednesday, February 16, 2022.

Attendance

Board Members Present: Chairman Karl Englund, Bruce Nelson, Diane Fladmo, Maggie Peterson, Mark Barry, Jeff Meredith, Terry Cohea, Jack Prothero

Board Members Absent: None

Legislative Liaisons Present: Rep. Ken Walsh, Sen. Ryan Lynch

Board Staff Present: Dan Villa, Dan Whyte, Dan Zarlring, Doug Hill, Emily Kovarik, Eron Krpan, Ethan Hurley, Jason Brent, John Carpenter, John Romasko, Jon Putnam, Julie Feldman, Kelsey Gauthier, Kirsten Haswell, Lindsay Ford, Louise Welsh, Mark Lodman, Michael Nguyen, Peggy MacEwen, Peggy Saarela, Roberta Diaz, Sam Holman, Savannah Morgan, Sheli Jacoby, Steve Strong, Tammy Lindgren, Teri Kolnik, Thomas Winkler, Tim House, Brenda Thomas, Ian Horwood

Interested Parties Present: Mark Higgins, Eryn Bacewich – RVK; Dore Schwinden, Bill Holahan, Sheena Wilson – MPERA; Greg Sawyer – OBPP; Joe Ebisa – With Intelligence; Joe Schulman, Deasee Phillips – J.P. Morgan

February 16, 2022

Tab 1 CALL TO ORDER (00:02)

A. Notice of Video Recording (00:13)

Chairman Englund advised of audio and video recording of the meeting.

B. Roll Call (00:21)

Roll was taken: eight Board members were present, forming a quorum.

C. Public Comment (01:13)

Chairman Englund asked for public comment. None was given.

D. Approval of Minutes (01:25)

November 30 – December 1, 2021, Regular Board Meeting

Member Barry moved to approve. Member Peterson seconded the motion which passed unanimously.

December 17, 2021, Special Board Meeting

Member Fladmo moved to approve. Member Peterson seconded the motion which passed unanimously

E. Introduction of New Staff (02:20)

Executive Director Dan Villa introduced Ian Horwood, Investment Analyst for Private Investments.

F. Administrative Business

1. Audit Committee Report (05:07)

Chair Peterson briefed the Board.

2. Loan Committee Report (07:04)

Chair Prothero briefed the Board.

3. HR Committee Report

Chair Cohea briefed the Board.

- Chair Cohea moved to approve Executive Director Villa's recommendations to hire Jason Brent as the Director of Public Market Investments and Kirsten Haswell as Investment Officer. Member Nelson seconded the motion which passed unanimously.

G. Comments from Pension Board Members (09:55)

Member Peterson briefed the Board.

H. Comments from Board Legislative Liaisons (13:00)

Rep. Walsh briefed the Board.

Tab 2 EXECUTIVE DIRECTOR REPORTS (13:29)

A. Member Requests or Follow up from Prior Meeting

Executive Director Villa briefed the Board.

B. Monthly Snapshot

Executive Director Villa briefed the Board.

C. Disaster Recovery and Emergency Preparedness

Executive Director Villa briefed the Board.

D. Outreach Efforts for the Board

Executive Director Villa briefed the Board.

Tab 3 NEW INVESTMENT POLICY STATEMENTS (22:00)

A. UM Lubrecht Experimental Forest

Kirsten Haswell briefed the Board.

Member Prothero moved to approve the Investment Policy Statement as submitted. Member Cohea seconded the motion which passed unanimously.

B. UM Kyiyo Pow Wow

Kirsten Haswell briefed the Board.

Member Fladmo moved to approve the Investment Policy Statement as submitted. Member Cohea seconded the motion which passed unanimously.

Tab 4 INVESTMENTS – NEW COMMITMENTS

A. Private Investments (25:08)

Michael Nguyen and Thomas Winkler briefed the Board.

B. Real Estate/Real Assets (39:12)

Ethan Hurley briefed the Board.

Tab 9 MONTANA LOAN PROGRAM (1:01:20)

A. Commercial and Residential Portfolios Report

Doug Hill briefed the Board.

Tab 10 BOND PROGRAM (1:07:21)

A. INTERCAP

1. Activity Report
2. Staff Approved Loans Report

Louise Welsh briefed the Board.

Tab 5 RVK (1:09:30)

Mark Higgins and Eryn Bacewicz briefed the Board and answered questions.

Tab 6 INVESTMENT UPDATE

CIO Update (2:03:33)

Jon Putnam briefed the Board.

Macro Attribution (2:31:40)

Eron Krpan briefed the Board.

Private Equity (2:36:06)

Jon Putnam briefed the Board.

Real Estate and Real Assets (2:40:10)

Ethan Hurley briefed the Board.

Core Fixed Income (3:05:20)

John Romasko briefed the Board.

Non-Core Fixed Income, Domestic Equity, and International Equity (3:09:24)

Jason Brent briefed the Board.

STIP (3:26:13)

Kirsten Haswell briefed the Board.

State Fund and Trust Fund Investment Pool (3:26:55)

John Romasko briefed the Board.

February 17, 2022

CALL TO ORDER (00:01)

A. Notice of Video Recording (00:02)

Chairman Englund advised of audio and video recording of the meeting.

B. Roll Call (00:03)

Roll was taken: eight Board members were present including Chairman Karl Englund, Bruce Nelson, Diane Fladmo, Maggie Peterson, Mark Barry, Jeff Meredith, Jack Prothero, and Terry Cohea, forming a quorum.

C. Public Comment (00:14)

Chairman Englund asked for public comment. None was given.

Tab 7 DEFINED CONTRIBUTION/DEFERRED COMPENSATION EDUCATION (00:27)

MPERA Executive Director, Dore Schwinden, MPERA Deputy Director, Bill Holahan, Executive Director Dan Villa, Jon Putnam, and Mark Higgins briefed the Board and answered questions.

Tab 8 SHORT TERM INVESTMENT POOL (1:05:21)

The Fixed Income Team briefed the Board and answered questions.

RECAP OF STAFF TO DO LIST AND ADJOURNMENT (2:04:53)

Chairman Englund and Executive Director Villa listed items to recap. Chairman Englund adjourned the meeting at 11:48 a.m.

MONTANA BOARD OF INVESTMENTS

APPROVE: _____
Karl J. Englund, Chairman

ATTEST: _____
Dan Villa, Executive Director

DATE: _____

MONTANA

BOARD OF INVESTMENTS

SPECIAL BOARD MEETING MINUTES

March 24, 2022

Meeting recordings are posted at: <https://leg.mt.gov/lspd/>

Call to Order

The Board of Investment's meeting was called to order by Chairman Karl Englund at 10:00 a.m. on Thursday, March 24, 2022.

Attendance

Board Members Present: Chairman Karl Englund, Bruce Nelson, Diane Fladmo, Maggie Peterson, Terry Cohea, Jack Prothero

Board Members Absent: Jeff Meredith, Mark Barry

Legislative Liaisons Present: None

Board Staff Present: Dan Villa, Dan Whyte, Doug Hill, Emily Kovarik, Jason Brent, John Romasko, Jon Putnam, Julie Feldman, Kelsey Gauthier, Kirsten Haswell, Lindsay Ford, Roberta Diaz, Savannah Morgan, Steve Strong, Tammy Lindgren, Teri Kolnik, Tim House, Polly Boutin

Interested Parties Present: None

CALL TO ORDER – Karl Englund, Board Chairman

1. Notice of Video/Audio Recording

Chairman Englund advised of audio and video recording of the meeting.

2. Roll Call

Roll was taken: six Board members were present, forming a quorum.

3. Public Comment – Public Comment on issues with Board Jurisdiction

Chairman Englund asked for public comment. None was given.

4. State Street Bank and Trust Custodial Banking Contract

Executive Director Villa and Jon Putnam briefed the Board and answered questions.

Member Fladmo moved to approve the State Street Bank and Trust Custodial Banking Contract as submitted. Member Cohea seconded the motion which passed unanimously.

5. Adjournment

Chairman Englund adjourned the meeting at 10:27 a.m.

MONTANA BOARD OF INVESTMENTS

APPROVE: _____
KARL J. ENGLUND, CHAIRMAN

ATTEST: _____
DAN VILLA, EXECUTIVE DIRECTOR

DATE: _____

MONTANA

BOARD OF INVESTMENTS

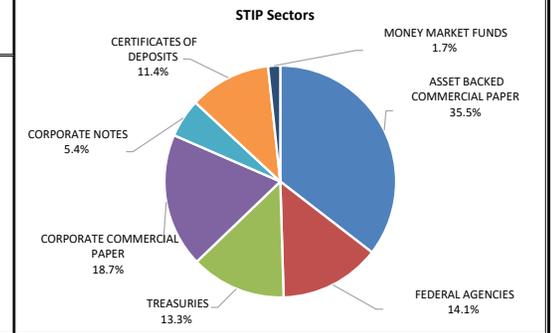
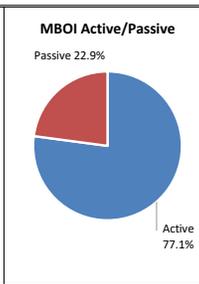
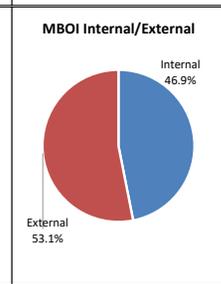
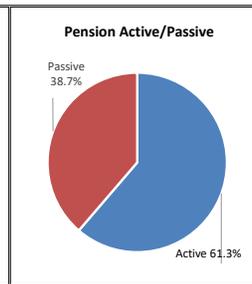
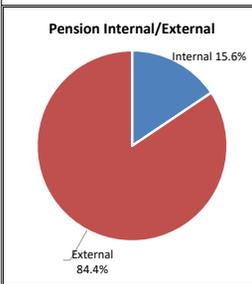
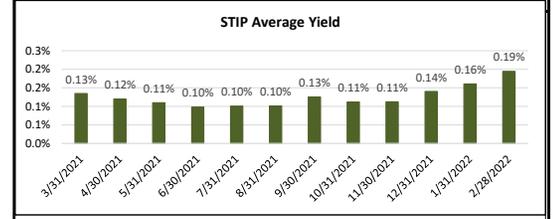
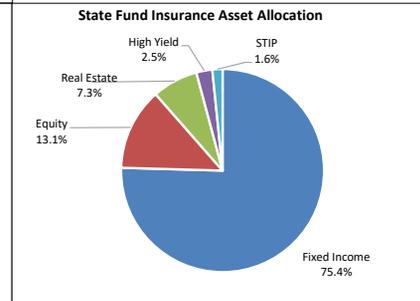
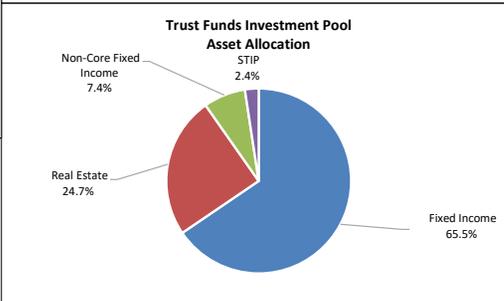
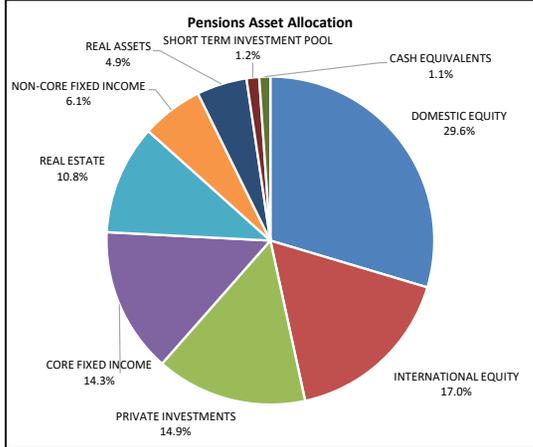
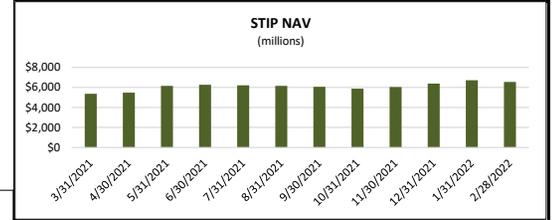
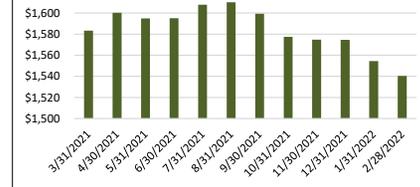
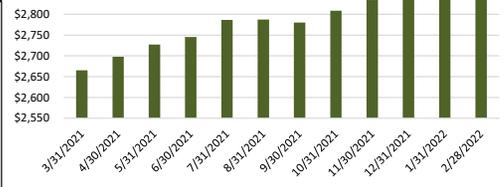
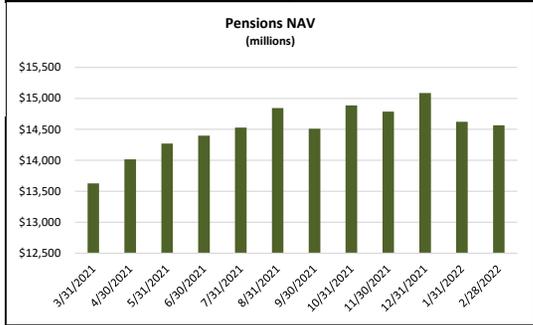
To: Members of the Board
From: Dan Villa, Executive Director
Date: April 20, 2022
Re: Executive Director Report

- A. Member Requests from Prior Meeting
- B. Monthly Snapshot – *attached*
- C. Benchmarks Used by the Board – *attached*
- D. Board Policy Manual Sections 20, 30, and Policy 10.217 – **Decisions**
- E. Introduction of New Staff

MBOI Snapshot
Asset Management View
2/28/2022 Unaudited
Assets Under Management \$25,381,821,289



Pensions	NAV	%	TFIP	NAV	%	State Fund	NAV	%	Other Fixed Income & Pending	\$	(131,768,979)
DOMESTIC EQUITY	\$4,313,073,396	29.61%	Fixed Income	\$ 1,869,998,374	65.51%	Fixed Income	\$ 1,162,210,114	75.44%			
INTERNATIONAL EQUITY	\$2,473,265,567	16.98%	Real Estate	\$ 706,156,073	24.74%	Equity	\$ 201,625,828	13.09%	STIP*		
PRIVATE INVESTMENTS	\$2,171,692,608	14.91%	Non-Core Fixed Income	\$ 209,926,606	7.35%	Real Estate	\$ 112,434,907	7.30%	ASSET BACKED COMMERCIAL PAPER	\$2,323,457,847	35.46%
CORE FIXED INCOME	\$2,086,333,951	14.32%	STIP	\$ 68,384,298	2.40%	High Yield	\$ 39,235,662	2.55%	CORPORATE COMMERCIAL PAPER	\$1,225,380,291	18.70%
REAL ESTATE	\$1,574,836,934	10.81%	Total	\$ 2,854,465,351	100.00%	STIP	\$ 24,981,134	1.62%	FEDERAL AGENCIES	\$922,768,822	14.08%
NON-CORE FIXED INCOME	\$886,069,512	6.08%				State Fund Total	\$ 1,540,487,645	100.00%	TREASURIES	\$870,622,717	13.29%
REAL ASSETS	\$720,949,791	4.95%						CERTIFICATES OF DEPOSITS	\$746,135,037	11.39%	
SHORT TERM INVESTMENT POOL	\$181,414,216	1.25%						CORPORATE NOTES	\$352,662,137	5.38%	
CASH EQUIVALENTS	\$158,831,700	1.09%						MONEY MARKET FUNDS	\$111,142,748	1.70%	
Pensions Total	\$14,566,467,674	100.00%						STIP Total	\$6,552,169,598	100.00%	



Definition of NAV: Net Asset Value is the total value of the account including assets held, adjusted for payables, receivables and liabilities

(1) Other Holdings column on page two represents the value of securities, receivables, payables and liabilities that comprise the Net Asset Value for the asset owner.

*Difference of \$226,208,196 is attributable the portion of STIP held within CAPP (\$157,831,696) and TFIP (\$68,376,489) as a cash investment. Such value is represented in the NAV for the CAPP and STIP columns.

MBOI Snapshot
Asset Ownership View
2/28/2022 Unaudited



	CAPP Holdings	CAPP %	STIP Holdings*	STIP %	TFIP Holdings	TFIP%	Other Holdings ¹	Other %	Asset Value	Total Net
Total Funds \$(000)	\$14,385,053	56.67%	\$6,325,961	24.92%	\$2,854,465	11.25%	\$1,816,341	7.16%		\$25,381,821
Pensions	CAPP	%	STIP	%	TFIP	%	Other	%	Total	
FIREFIGHTERS RETIREMENT	\$ 605,505	98.99%	\$ 6,174	1.01%	\$ -	0.00%	\$ -	0.00%	\$ 611,680	
GAME WARDENS RETIREMENT	\$ 274,515	99.00%	\$ 2,770	1.00%	\$ -	0.00%	\$ -	0.00%	\$ 277,285	
HIGHWAY PATROL RETIREMENT	\$ 186,620	99.01%	\$ 1,862	0.99%	\$ -	0.00%	\$ -	0.00%	\$ 188,482	
JUDGES RETIREMENT	\$ 132,083	99.01%	\$ 1,318	0.99%	\$ -	0.00%	\$ -	0.00%	\$ 133,401	
POLICE OFFICERS RETIREMENT	\$ 558,969	98.99%	\$ 5,707	1.01%	\$ -	0.00%	\$ -	0.00%	\$ 564,676	
PUBLIC EMPLOYEES RETIREMENT	\$ 7,091,654	98.99%	\$ 72,010	1.01%	\$ -	0.00%	\$ -	0.00%	\$ 7,163,665	
SHERIFFS RETIREMENT	\$ 485,476	98.95%	\$ 5,141	1.05%	\$ -	0.00%	\$ -	0.00%	\$ 490,617	
TEACHERS RETIREMENT	\$ 5,002,458	98.31%	\$ 85,956	1.69%	\$ -	0.00%	\$ -	0.00%	\$ 5,088,413	
VOL FIREFIGHTERS RETIREMENT	\$ 47,773	99.01%	\$ 477	0.99%	\$ -	0.00%	\$ -	0.00%	\$ 48,249	
Total	\$ 14,385,053	98.75%	\$ 181,414	1.25%	\$ -	0.00%	\$ -	0.00%	\$ 14,566,468	
Trust Funds	CAPP	%	STIP	%	TFIP	%	Other	%	Total	
ABANDONED MINE RECLAMATION	\$ -	0.00%	\$ 6,667	99.99%	\$ -	0.00%	\$ 1	0.01%	\$ 6,668	
BARKER HUGHESVILLE ST RESPONSE	\$ -	0.00%	\$ 806	8.65%	\$ 8,492	91.17%	\$ 17	0.18%	\$ 9,314	
BELT WATER TREATMENT PLANT	\$ -	0.00%	\$ 3,120	11.29%	\$ 24,461	88.53%	\$ 48	0.17%	\$ 27,629	
BUTTE AREA ONE REST	\$ -	0.00%	\$ 1,319	19.28%	\$ 5,511	80.56%	\$ 11	0.16%	\$ 6,840	
BUTTE AREA REDEVELOP AUTHORITY	\$ -	0.00%	\$ 1,439	10.07%	\$ 12,825	89.75%	\$ 25	0.17%	\$ 14,289	
CLARK FORK REST	\$ -	0.00%	\$ 6,356	21.16%	\$ 23,634	78.68%	\$ 47	0.15%	\$ 30,037	
CLARK FORK SITE RESP ACTION	\$ -	0.00%	\$ 2,715	4.12%	\$ 63,096	95.70%	\$ 122	0.19%	\$ 65,934	
COAL TAX PARK TRUST FUND	\$ -	0.00%	\$ 1,853	5.93%	\$ 29,325	93.88%	\$ 57	0.18%	\$ 31,236	
CULTURAL TRUST FUND	\$ -	0.00%	\$ 878	5.22%	\$ 15,906	94.60%	\$ 31	0.18%	\$ 16,814	
E HELENA GREENWAY TRAIL MAINT	\$ -	0.00%	\$ 269	26.27%	\$ 752	73.58%	\$ 1	0.15%	\$ 1,022	
EAST HELENA COMPENSATION FUND	\$ -	0.00%	\$ 3,764	80.84%	\$ 890	19.11%	\$ 2	0.05%	\$ 4,656	
ENDOWMENT FOR CHILDREN	\$ -	0.00%	\$ 83	5.72%	\$ 1,366	94.10%	\$ 3	0.18%	\$ 1,451	
FLYING J CECRA FACILITIES FUND	\$ -	0.00%	\$ 243	8.99%	\$ 2,455	90.83%	\$ 5	0.18%	\$ 2,702	
FWP MITIGATION TRUST	\$ -	0.00%	\$ 3,192	28.42%	\$ 7,540	67.14%	\$ 499	4.44%	\$ 11,232	
HAROLD HAMM ENDOWMENT	\$ -	0.00%	\$ 4	7.51%	\$ 48	92.31%	\$ 0	0.18%	\$ 52	
INVASIVE SPECIES TRUST FUND	\$ -	0.00%	\$ 68	2.39%	\$ 2,761	97.43%	\$ 5	0.19%	\$ 2,834	
LIBBY ASBESTOS SITE STATE COST	\$ -	0.00%	\$ 685	13.27%	\$ 4,470	86.56%	\$ 9	0.17%	\$ 5,163	
LUTTRELL PIT - OPER & MAINT	\$ -	0.00%	\$ 216	9.02%	\$ 2,174	90.80%	\$ 4	0.18%	\$ 2,394	
MONTANA HISTORICAL SOCIETY	\$ -	0.00%	\$ 728	17.37%	\$ 3,457	82.47%	\$ 7	0.16%	\$ 4,193	
MT POLE SUPERFUND SETTLEMENT	\$ -	0.00%	\$ 5,390	20.36%	\$ 21,038	79.48%	\$ 41	0.16%	\$ 26,470	
NOXIOUS WEED MGMT TRUST FUND	\$ -	0.00%	\$ 0	0.00%	\$ 11,299	99.81%	\$ 22	0.19%	\$ 11,321	
OLDER MONTANANS TRUST FUND	\$ -	0.00%	\$ 12	3.78%	\$ 316	96.04%	\$ 1	0.19%	\$ 330	
POTTER TRUST FUND	\$ -	0.00%	\$ 19	7.29%	\$ 236	92.53%	\$ 0	0.18%	\$ 255	
PUBLIC SCHOOL TRUST	\$ -	0.00%	\$ 15,529	1.78%	\$ 855,229	98.03%	\$ 1,653	0.19%	\$ 872,410	
REAL PROPERTY TRUST FUND	\$ -	0.00%	\$ 319	4.22%	\$ 7,231	95.60%	\$ 14	0.19%	\$ 7,564	
RESOURCE INDEMNITY TRUST FUND	\$ -	0.00%	\$ 23	0.02%	\$ 115,988	99.79%	\$ 224	0.19%	\$ 116,235	
SMEALTER HILL UPLANDS REST FUND	\$ -	0.00%	\$ 1,346	14.46%	\$ 7,948	85.38%	\$ 16	0.17%	\$ 9,309	
STREAMSIDE TAILINGS OU FUND	\$ -	0.00%	\$ 2,200	12.15%	\$ 15,874	87.68%	\$ 31	0.17%	\$ 18,105	
TOBACCO TRUST FUND	\$ -	0.00%	\$ 2,245	0.76%	\$ 293,910	99.05%	\$ 567	0.19%	\$ 296,722	
UPPER BLACKFT RESP ACT & REST	\$ -	0.00%	\$ 1,135	92.47%	\$ 92	7.50%	\$ 0	0.03%	\$ 1,227	
UPPER CLRK FK RIVER BASIN RES	\$ -	0.00%	\$ 516	2.30%	\$ 21,914	97.52%	\$ 42	0.19%	\$ 22,472	
UPPER CLRK FK RIVER BASIN REST	\$ -	0.00%	\$ 2,303	3.08%	\$ 72,229	96.73%	\$ 140	0.19%	\$ 74,671	
WILDLIFE HABITAT TRUST FUND	\$ -	0.00%	\$ 810	4.92%	\$ 15,624	94.90%	\$ 30	0.18%	\$ 16,464	
YELLOWSTONE PIPELINE CLEANUPFD	\$ -	0.00%	\$ 3,349	49.50%	\$ 3,410	50.40%	\$ 7	0.10%	\$ 6,765	
ZORTMAN/LANDUSKY LT WATER	\$ -	0.00%	\$ 15,646	99.99%	\$ -	0.00%	\$ 2	0.01%	\$ 15,649	
ZORTMANLANDUSKY LT WATER TRUST	\$ -	0.00%	\$ 20,349	99.99%	\$ -	0.00%	\$ 3	0.01%	\$ 20,352	
Total	\$ -	0.00%	\$ 105,594	6.00%	\$ 1,651,501	93.79%	\$ 3,686	0.21%	\$ 1,760,781	
Coal Severance	CAPP	%	STIP	%	TFIP	%	Other	%	Total	
BIG SKY ECONOMIC DEV FUND	\$ -	0.00%	\$ 4,760	3.52%	\$ 130,362	96.30%	\$ 252	0.19%	\$ 135,373	
COAL SEVERANCE TAX PERM FUND	\$ -	0.00%	\$ 14,782	2.53%	\$ 378,464	64.72%	\$ 191,528	32.75%	\$ 584,774	
MONTANA COAL ENDOWMENT FUND	\$ -	0.00%	\$ 3,069	1.03%	\$ 293,295	98.78%	\$ 566	0.19%	\$ 296,931	
SCHOOL FACILITIES FUND	\$ -	0.00%	\$ 8,502	9.24%	\$ 83,368	90.59%	\$ 162	0.18%	\$ 92,031	
MT COAL ENDOWMENT REGIONAL WAT	\$ -	0.00%	\$ 1,192	1.05%	\$ 101,511	89.50%	\$ 10,722	9.45%	\$ 113,424	
Total	\$ -	0.00%	\$ 32,304	2.64%	\$ 986,999	80.73%	\$ 203,230	16.62%	\$ 1,222,533	
Operating Funds	CAPP	%	STIP	%	TFIP	%	Other	%	Total	
FWP GENERAL LICENSE ACCOUNT	\$ -	0.00%	\$ 33,953	48.61%	\$ 32,679	46.79%	\$ 3,214	4.60%	\$ 69,846	
MONTANA LOCAL GOVERNMENTS	\$ -	0.00%	\$ 1,802,006	99.98%	\$ -	0.00%	\$ 272	0.02%	\$ 1,802,279	
MONTANA STATE AGENCIES	\$ -	0.00%	\$ 1,131,807	99.99%	\$ -	0.00%	\$ 168	0.01%	\$ 1,131,975	
MONTANA STATE UNIVERSITY	\$ -	0.00%	\$ 242,635	83.66%	\$ 47,259	16.30%	\$ 128	0.04%	\$ 290,022	
MONTANA TECH	\$ -	0.00%	\$ 9,790	95.18%	\$ 493	4.79%	\$ 2	0.02%	\$ 10,286	
STATE TREASURER'S FUND	\$ -	0.00%	\$ 2,471,752	95.41%	\$ 45,434	1.75%	\$ 73,434	2.83%	\$ 2,590,620	
UNIVERSITY OF MONTANA	\$ -	0.00%	\$ 101,454	73.40%	\$ 31,834	23.03%	\$ 4,937	3.57%	\$ 138,224	
Total	\$ -	0.00%	\$ 5,793,396	96.02%	\$ 157,699	2.61%	\$ 82,156	1.36%	\$ 6,033,252	
Insurance Reserves	CAPP	%	STIP	%	TFIP	%	Other	%	Total	
SUBSEQUENT INJURY TRUST FUND	\$ -	0.00%	\$ 658	99.98%	\$ -	0.00%	\$ 0	0.02%	\$ 658	
STATE EMPLOYEE GROUP BENEFITS	\$ -	0.00%	\$ 95,550	69.16%	\$ 40,119	29.04%	\$ 2,483	1.80%	\$ 138,152	
PERS-DCRP LT DISABILITY PLAN	\$ -	0.00%	\$ 574	7.28%	\$ -	0.00%	\$ 7,314	92.72%	\$ 7,888	
MUS WORKERS COMPENSATION	\$ -	0.00%	\$ 12,406	74.09%	\$ 4,328	25.85%	\$ 10	0.06%	\$ 16,744	
MUS GROUP INSURANCE	\$ -	0.00%	\$ 79,087	83.37%	\$ 13,819	14.57%	\$ 1,952	2.06%	\$ 94,858	
MONTANA STATE FUND	\$ -	0.00%	\$ 24,978	1.62%	\$ -	0.00%	\$ 1,515,510	98.38%	\$ 1,540,488	
Total	\$ -	0.00%	\$ 213,253	11.86%	\$ 58,266	3.24%	\$ 1,527,269	84.91%	\$ 1,798,788	

Short Term Investment Pool

Account	# Accounts	Total Market Value	%
Total State	346	4,750,163,449	72.5%
Total Local	179	1,802,006,149	27.5%
Total STIP	525	\$ 6,552,169,598	100.0%
STIP Reserve		\$ 55,522,163	
Prior month average STIP Yield		0.1941%	

Intercap Statistics

Loans Outstanding	\$ 65,886,847
Bonds Outstanding	\$ 68,706,869
Number of Borrowers	141
Loan Rate	1.55%

MONTANA

BOARD OF INVESTMENTS

TO: Members of the Board
FROM: Jon Putnam, Chief Investment Officer
DATE: April 20, 2022
RE: Asset Class Benchmark Review

MBOI's current asset class benchmarks are listed below (page 3). No changes are recommended.

Benchmarks are selected based on seven factors endorsed by the CFA Institute. An optimal benchmark is: **S**pecified in advance, **A**ppropriate, **M**easurable, **U**nambiguous, **R**elevant, **A**ccountable, and **I**vestable. These factors can be remembered with the acronym **SAMURAI**.

MBOI's public equity benchmarks (Domestic & International) conform to all seven factors. Investors can invest in these benchmarks at relatively low cost and obtain the return offered by the passive benchmark.

MBOI's public fixed income benchmarks (Core, Non-Core & Cash) conform to most of the seven factors. However, it is impossible to fully replicate the fixed income benchmarks. The benchmarks are not investable, but they provide a reasonable approximation of fixed income risk and return characteristics and are a valid point of reference to gauge success.

MBOI's illiquid asset class benchmarks (Private Investments, Real Estate & Real Assets) face several inherent challenges in conforming to the seven factors. The main hurdle is the absence of comparable, investable indexes for these asset classes. For example, it is not possible to invest in a "private equity index" because no such index exists. Additional challenges include extended time horizons, existence of lock-up periods, less liquid fund structures, and lower levels of information transparency and frequency. A few of the more notable challenges are explained in greater detail below.

- **J-Curve Effect** – Performance of illiquid asset classes can send deceptive signals, as return patterns typically follow a trajectory referred to as a "J-Curve." This return pattern stems from the fact that capital is called for investment over several years and the timing of cash flows is uncertain. The J-Curve produces negative returns in the early years, as capital calls and

manager fees comprise most of the cash flows, followed by increasing returns as investments mature. This can create the perception investments are generating returns that significantly trail the public markets in the early years and substantially exceed public markets in the later years.

- **Lagged Valuations** – Asset prices for illiquid investments are typically estimated quarterly resulting in a significant return lag relative to public markets. Within illiquid and private asset classes, there is limited or selective data available from managers as well as the underlying investments.

In short, the above-mentioned obstacles limit the utility of benchmarks for illiquid asset classes – especially when evaluated over short time horizons. Given the obstacles, it is clear there is no perfect benchmark for illiquid asset classes. All benchmarks currently available have some shortcomings with respect to the SAMURAI standard. However, staff has selected benchmarks that provide a reasonable approximation of the risk and return characteristics of the assets over the long-term.

In addition, staff supplements the asset class benchmarks with other information when evaluating the attractiveness of each asset class, sub-asset class, manager, or individual investment. For example, staff considers the performance of previous funds versus peers across multiple metrics and benchmarks when evaluating private investment managers.

In conclusion, staff recognizes the tradeoffs and shortcomings of some of the asset class benchmarks. Nevertheless, we believe that the current benchmarks are consistent with industry best practice. The selected benchmarks provide useful information regarding asset class performance and progress toward MBOI's long-term goals. Staff will continue to supplement this information to gain a full understanding of the performance of the portfolio and its underlying holdings.

Asset Class	Benchmark
Domestic Equity	MSCI USA Investable Market Index (IMI)
International Equity	MSCI All Country World Index (ACWI) ex USA Investable Market Index (IMI)
Core Fixed Income	Bloomberg Barclays US Aggregate Bond Index
Non-Core Fixed Income	Bloomberg Barclays US High Yield 2% Issuer Cap Index
Private Investments	Weighted average of Private Equity and Private Credit
Equity	MSCI USA Small Cap Index
Credit	S&P/LSTA 100 Leveraged Loan Index
Real Assets	Weighted average of Commodity, Infrastructure and TIPS Index
Commodity	MSCI All Country World Index (ACWI) Commodity Producers
Infrastructure	MSCI All Country World Index (ACWI) Infrastructure Index
TIPS portfolio	Bloomberg Barclays US Treasury Inflation Protected Securities (TIPS) Index
Real Estate	National Council of Real Estate Investment Fiduciaries (NCREIF) Fund Index - Open End Diversified Core Equity (ODCE) Index
Pension Plans	Blend of the asset class benchmarks weighted by the midpoint of the asset allocation range
Trust Funds Investment Pool (TFIP)	Weighted average of the Bloomberg Barclays US Aggregate Bond Index, NCREIF-ODCE Index and the Bloomberg Barclays US High Yield 2% Issuer Cap Index
State Fund Investment Pool (SFIP)	Weighted average of the Bloomberg Barclays Intermediate Aggregate Bond Index, S&P 500 Index, MSCI ACWI ex US Index and the NCREIF-ODCE Index
Short-Term Investment Pool (STIP)	Federal Reserve US Treasury Constant Maturity 1-Month Index

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 20.100

EFFECTIVE DATE: April 20, 2022

TITLE: Code of Ethics

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Code of Ethics

- A. The Board shall create and annually confirm adherence to a Code of Ethics (Code) for its Board members and staff.
- B. The Code shall be designed to ensure that Board members and Board staff have no conflicting interests that would:
 1. Harm the integrity of the Board.
 2. Harm the clients for whom the Board invests funds.
 3. Interfere with the Board's fiduciary responsibility.

II. Purpose: To Protect and Honor the Public Trust

- A. The Board fully accepts its responsibility and obligation to follow all state laws regarding ethical conduct.
- B. The Board expects its Board members, employees, and all associated parties doing business with the Board to conduct themselves within the highest ethical standards that shall in all circumstances reflect well on the Board and the people it serves.
- C. All Board members and employees must obey state law and the additional requirements as to their conduct as further provided within this policy.

III. State Code of Ethic Provisions

- A. The Board's ethics policy complements and does not substitute for state law and Montana Operations Manual (MOM) Ethics Policy.
- B. Board members and employees are expected to be familiar with and obey all state laws and MOM policy, and understand and obey those regarding conduct, disclosure, and conflict of interest requirements of the state code of ethics. (see Section 2-2-1, MCA.)

IV. Additional Areas Relating to Ethical Conduct at the Montana Board of Investments

- A. Conflict of Interest
 1. There shall be no action taken by a Board member or employee related to the affairs of the Board that would result in the receipt of a financial benefit to the Board member or employee or the appearance of a 'quid pro quo.'
 2. Board members must disclose and recuse themselves from any situation involving a possible conflict.
 3. Employees must disclose to their supervisor and avoid any situation involving a possible conflict.

Adopted: November 30, 2021

Revised: April 20, 2022

Reviewed: March 3, 2022

B. Protection of Information

1. Board members and employees must protect and may not disclose or use any investment information, internal control procedures, or any confidential personal information, except as allowed by Board procedures.

C. Use of Board's Assets

1. No person may use the physical or electronic assets of the Board for personal gain or for any use other than to fulfill the missions and programs of the Board.
 - a) This provision also pertains to all the fiduciary assets, including all investment or Board program information of every type.
2. All assets of the Board are exclusively for the benefit of the citizens and must be protected in all respects.

V. Specific Provisions Related to Gifts, Travel Meals, and Conferences

A. Gifts

1. All gifts received shall be addressed as provided by state law and as further limited by this Policy.
2. All gifts shall be logged with the date of receipt, a description, and final disposition noted.
3. All allowable gifts, i.e., those having values below the statutory limit of \$50, if perishable shall be shared with Board staff, if non-perishable shall be auctioned and the proceeds provided to a charity designated by the Executive Director.

B. Travel

1. All travel is to be approved by the Executive Director.
2. Reimbursement for travel expenses and for determining work time or overtime is subject to state policy.
 - a) Where the Board participates on a Limited Partner Advisory Committee (LPAC) and the limited partnership agreement or other legal documents entered into by the General Partner and the Limited Partners explicitly provide for LPAC members to be reimbursed for reasonable expenses related to travel, lodging, and meals incurred while attending LPAC meetings, such reimbursement may be accepted, but only with the express approval of the Executive Director.

(1) The Executive Director shall report such activity to the Board at least annually.

3. Meals

- a) Meals provided by vendors or other parties that are reasonably incidental to the conduct of the Board's business, such as during breakfast or lunchtime meetings or during conferences, may be accepted.
- b) Meals at restaurants are to be "no-host."

4. Conferences

- a) All Board members requests and permission to attend conferences are to be approved by the Chair after consulting with the Executive Director.
- b) All other conferences are to be approved by the Executive Director.

I have read and understand the Montana Board of Investments Code of Ethics and agree to comply with all its provisions; that it is my responsibility to abide both by the state ethics law Section 2-2-1, MCA, and MOM Ethics Policy.

It is also my responsibility to abide by the state’s travel policy as provided in the MOM governing allowable travel reimbursement expenses and the rules for designating work or overtime hours.

Board member/staff

Date

Title

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 20.200

EFFECTIVE DATE: April 20, 200

TITLE: Travel, Lodging, and Meals

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Travel, Lodging, and Meals

- A. While in travel status, Board members and staff are subject to the provisions of Section 2-18-5, MCA, for meals, lodging, and transportation.
- B. Lunch may be provided for Board members, staff, and necessary participants during regularly scheduled meetings, for the benefit of the organization. That benefit includes:
 - 1. Improved communication,
 - 2. Efficiency of time, or
 - 3. Increased collaboration.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 20.300

EFFECTIVE DATE: April 20, 2022

TITLE: Confidentiality and Use of Position

SUPERSEDES: January 1, 2022

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Confidentiality and Use of Position

- A. Board members and staff in possession of nonpublic information may not purchase or sell securities of the concerned company or other publicly traded securities to which the information pertains.
- B. Board members and staff may not disclose nonpublic information to another person who could subsequently use that information for profit.
 - 1. Recommending purchases or sales of securities to which the nonpublic information relates, even without disclosing the basis for the recommendation, is prohibited.
 - 2. Information that is “nonpublic” includes information that an employee knows or reasonably should know:
 - a) Is routinely exempt from disclosure under the Freedom of Information Act or protected from disclosure by statute, including proprietary or trade secret information,
 - b) Is designated by a state agency, Board vendor or Board investment manager as confidential, or
 - c) Has not been disseminated to the general public and is not authorized to be made available to the general public.
- C. It is the policy of the Board that “front running” is prohibited.
 - 1. Front running occurs when a person enters into a trade of securities with advance knowledge of pending orders from other investors.
 - a) Front running could occur, for example, when any Board member or staff covered by this policy trades with the knowledge that a trade is pending on behalf of the Board.
 - 2. Front running, like insider trading, may subject Board members or staff to criminal and/or civil proceedings.
 - a) Front running may constitute a misappropriation of Board proprietary information for private or personal gain.
- D. Board members and staff may not place an order for a personal securities transaction in a company in which a Board securities transaction is pending.
 - 1. Board members and staff must wait until fifteen (15) days after such Board securities transaction is executed before placing an order for a personal securities transaction involving the same company.

- E. Board members and staff may not knowingly delay, hinder, modify, or cancel any internal Board buy or sell recommendation, decision, or trading order intending to facilitate a personal securities transaction.
 - 1. This action would otherwise constitute front running or violations of state or federal laws.
- F. Board members and staff in possession of nonpublic information relating to a tender offer may not trade in target company securities. Nonpublic information includes information acquired directly or indirectly from the bidder or target company.
 - 1. Board members and staff may not disclose such nonpublic information to another person where it is reasonably foreseeable that the recipient of the information could purchase or sell such company securities.
 - 2. Board members and staff in possession of nonpublic information may not purchase, directly or indirectly, any security in the initial public offering of such security.
 - a) Such new issue securities may only be purchased in the secondary trading market once such a market is established.
 - b) Board members and staff may not encourage, facilitate, or arrange such a purchase by or on behalf of any other person.
- G. Staff have a duty to protect and conserve Board property, and to use Board property only for authorized purposes.
 - 1. Board property includes material, equipment, real property, and all provided software and systems used to perform an employee's job function.
 - 2. Authorized purposes are those for which the Board property is used during the normal course of business, authorized in accordance with the duties and roles prescribed by the Board.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 20.400

EFFECTIVE DATE: April 20, 2022

TITLE: Internal Control Policy

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Internal Control Policy

A. The Board shall:

1. Annually review the Internal Control Procedures used by staff.
2. Conduct a Service Organization Control (SOC) 1 Type 2 audit on an annual basis.
3. Take appropriate action on any internal control audit finding.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 30.100

EFFECTIVE DATE: April 20, 2022

TITLE: Board Staff

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Board Staff

- A. The Board appoints the Executive Director who has general responsibility for selection, management, and the job performance of Board staff.
- B. The Board also appoints the Chief Investment Officer (CIO).
- C. The Board assigns the duties and sets the salaries of exempt staff.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 30.200

EFFECTIVE DATE: April 20, 2022

TITLE: Executive Director

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Executive Director

- A. The Board authorizes the Executive Director to administratively supervise all Board staff and to delegate responsibilities and work assignments as necessary and annually approve job descriptions and evaluations for nonexempt employees.
- B. The Executive Director shall authorize expenditures, all travel, and sign all documents required to conduct Board business, unless there are specific written policies or instructions from the Board to the contrary. These documents include, but are not limited to, vendor contracts, commitments to investment managers, invoices, official letters detailing the position of the Board on any matter, resolutions approved by the Board, leases for Board owned buildings, authorizations to renovate and repair Board owned buildings, staff time sheets, and staff job descriptions.
- C. In exercising the delegated authority, the Executive Director shall provide the Board with the information and reports necessary for the Board to fulfill its fiduciary duty in monitoring and reviewing the actions of the Board staff and operations.
- D. The Executive Director may direct the Chief Investment Officer (CIO) to delay any investment decision if, in the Executive Director's opinion, it is contrary to the strategic asset allocation, policy, or practices of the Board. Any delays must be reported to the Board at the next regular or special Board meeting.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 30.210

EFFECTIVE DATE: April 20, 2022

TITLE: Operations Delegation

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Operations Delegation

A. Executive Director

1. The Executive Director is responsible for all day-to-day operations of the Board and may delegate as necessary but remain in specific compliance with this Policy.
2. As an agency head, the Executive Director has all powers and authority normally vested in similar positions in other state agencies to include, but not be limited to, the supervision and management of all staff, the hiring and firing of nonexempt staff, and the commitment of funds necessary for the efficient conduct of Board business.
 - a) Exempt staff may only be terminated upon Board Approval.
 - b) In carrying out these duties, the Executive Director shall ensure compliance with Board policies and directives, as well as applicable state and federal laws and regulations.

B. Board Office Space

1. The Executive Director shall provide for office space for the Board's operations and is authorized to negotiate and sign leases for office space, as appropriate, and in conformance with state policy.

C. Budget

1. The Executive Director shall prepare the Board's budget and staffing level recommendations for Board review and approval.
2. After Board approval the budget is submitted to the Department of Commerce for submission to the Governor's Office of Budget and Program Planning for final approval.

POLICY NUMBER: 30.212

EFFECTIVE DATE: April 20, 2022

TITLE: Annual Report

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Annual Report

- A. The Board is required by law to submit an annual report of its business and activities by December 31.
- B. The Executive Director shall prepare and publish the annual report.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 30.220

EFFECTIVE DATE: April 20, 2022

TITLE: Communications Delegation

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Communications Delegation

- A. The Executive Director shall serve as the primary spokesperson for the Board when communicating with the Legislature, the Governor, the public, and the media, and depending on the circumstances, be clear when communications represent the official position of the Board or is for informational purposes.
- B. Board members in any of their communications on Board matters, policy, or position shall distinguish whether they are speaking on behalf of the Board or speaking only as an individual Board member; however, the Chairperson is deemed a spokesperson for the Board. Board committee chairs are also deemed to be a spokesperson for the Board when the context is clearly within the scope of their respective committee missions.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 30.230

EFFECTIVE DATE: April 20, 2022

TITLE: Investment Manager Contracts

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Investment Manager Contracts

- A. The Board in discharging its duties under Article VIII, Section 13 of the Montana Constitution, and the Unified Investment Program (Program) defined in Section 17-6-201, MCA, enters into various contracts.
- B. For those contracts that are fundamental in enabling the Board to invest public funds and satisfy its legal duty under the Program, including its responsibility to “determine the type of investment to be made” (Section 17-6-201(5)(c), MCA), the Board reserves the sole discretion of entering into such contracts in compliance with constitutional and statutory mandates.
- C. The Board delegates and directs the following:
 1. The Executive Director and the Chief Investment Officer (CIO) are authorized jointly to contract for investment manager services and if deemed appropriate, terminate them. However, the CIO is authorized to have the final decision on external investment managers, subject to this Policy.
 - a) The Executive Director may be a part of any negotiation and at a minimum sign all contracts for investment manager services, and
 - b) Legal counsel shall review and sign all investment management contracts and review all other investment related service contracts as the Executive Director or CIO deem necessary or advisable.
 2. All new investment manager contracts and commitments, as well as terminations along with sufficient other related information and key terms, shall be reported to the Board at its next regularly scheduled meeting.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

~~POLICY NUMBER: 30.231~~ ~~EFFECTIVE DATE: April 20, 2022~~

~~TITLE: Authorization of Investment Vendors~~ ~~SUPERSEDES: November 30, 2021~~

~~BOARD ADOPTION: November 30, 2021~~ ~~REVIEWED: March 3, 2022~~

~~I. Authorization of Investment Vendors~~

- ~~A. Board funds may not be committed, wired, or otherwise transferred to investment vendors without the specific approval by the Executive Director of such vendors as per Policy 10.217 of the Governance Manual approved by the Board.~~

Commented [FL1]: See draft of Policy 10.217 in Executive Director Report

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

~~POLICY NUMBER: 30.232~~ ~~EFFECTIVE DATE: April 20, 2022~~

~~TITLE: Authorization of Staff Transactions~~ ~~SUPERSEDES: November 30, 2021~~

~~BOARD ADOPTION: November 30, 2021~~ ~~REVIEWED: March 3, 2022~~

~~I. Authorization of Staff Transactions~~

~~A. Board staff may not transact business with investment managers without the specific approval of the Executive Director as per Policy 10.217 of the Governance Manual approved by the Board.~~

Commented [FL1]: See draft of Policy 10.217 in Executive Director Report

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 30.240

EFFECTIVE DATE: April 20, 2022

TITLE: All Other Contracts

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. All Other Contracts

A. All contracts, excluding investment manager contracts, both competitive and sole source shall be processed according to the state's procurement and contracting laws.

1. The Executive Director is authorized to negotiate and enter into contracts necessary to carry out the Board's mission without advance approval of the Board, except for contracts with the Board's Custodial Bank and Investment Consultant.
2. The Board shall approve (as permitted by statute) the selection of the Custodial Bank and the Investment Consultant after which the Executive Director shall negotiate contracts with the firms.
3. Subject to state law, the Executive Director may approve contract extensions for which the Board's Custodial Bank and Investment Consultant are eligible under the original contract terms.
4. Subject to state law and Board policies, legal counsel shall review all contracts.

B. Building Management Services

1. The Executive Director is authorized to make all day-to-day decisions required in managing the Board's direct real estate holdings. These decisions include but are not limited to:
 - a) Negotiating and signing leases.
 - b) Authorizing payment of invoices.
 - c) Authorizing repair and renovation.
 - d) Authorizing improvement, construction, and contracting with a Building Manager.
2. The Board must approve the purchase and sale of all direct real estate.

C. Personal Services Contracts

1. The Executive Director is empowered to negotiate personal services contracts as necessary to ensure proper staffing levels or to obtain specialized services not otherwise available.

D. Interagency Agreements

1. The Executive Director is empowered to sign Interagency Agreements and contracts with other state agencies as necessary to fulfill the Board's mission or to implement recently enacted legislation.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 30.241

EFFECTIVE DATE: April 20, 2022

TITLE: Legal Services and

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Legal Services and Approved Counsel

A. Legal Action

1. When the Board is named as a defendant in a legal action the Executive Director is authorized to act on behalf of the Board with the advice of legal counsel and shall notify the Chairperson of all significant developments in a timely manner.
2. The Executive Director may initiate legal action to fulfill the Board's fiduciary duty and shall notify the Chairperson of all significant developments in a timely manner.

B. Legal Services

1. The Board delegates to the Executive Director the responsibility to provide appropriate legal representation for all Board activities.
2. The Executive Director may contract for legal services and must ensure there is no lapse in service.
3. The Executive Director shall ensure that the Board has legal representation for any class action litigation to which it is entitled to participate.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 30.251

EFFECTIVE DATE: April 20, 2022

TITLE: Class Action Litigation

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Class Action Litigation

- A. The Executive Director is authorized to join class action lawsuits on behalf of the Board so that the Board may share in any distribution from the settlement, unless it is determined that independent legal action by the Board is advisable.
- B. As part of this delegated authority, the Executive Director shall consider the following:
 - 1. In addition to the requirements of Policies 10.250 and 10.251, the Executive Director may consult with legal counsel and Audit Committee members as necessary.
 - 2. The Executive Director shall report to the Board, at its next meeting, any decisions made by the Executive Director regarding class action suits.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 30.260

EFFECTIVE DATE: April 20, 2022

TITLE: Credit Enhancement Implementation

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Credit Enhancement Implementation

- A. The Executive Director is authorized to take all necessary action to implement credit enhancement activity authorized by the Board per Policy 10.700 of the Governance Manual.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 30.290

EFFECTIVE DATE: April 20, 2022

TITLE: Legislative Duties

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Legislative Duties

- A. The Executive Director, or designee, shall represent the Board before the Legislature.
 1. Duties include and are not limited to:
 - a) Recommending for Board approval proposed legislation to further the Board's mission.
 - b) Testifying on legislation that may impact the Board and its mission.
 - c) Monitoring all legislation introduced to determine what, if any, impact such legislation may have on the Board and its mission.
 2. The Executive Director shall keep the Board informed on these activities as necessary during legislative sessions.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 30.300

EFFECTIVE DATE: April 20, 2022

TITLE: Deputy Director

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Deputy Director

- A. To ensure continuity the Deputy Director is empowered by the Board to carry out the duties of the Executive Director in his/her absence unless there are specific written policies or instructions from the Board to the contrary.
- B. The Executive Director shall establish a written protocol to ensure continuity in his/her absence and pursuant to Policy 90.300.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 30.400

EFFECTIVE DATE: April 20, 2022

TITLE: Chief Investment Officer

SUPERSEDES: November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: March 3, 2022

I. Chief Investment Officer

- A. The Chief Investment Officer (CIO) is empowered by the Board to serve as the lead staff person responsible for overseeing the investment activities under the Board's jurisdiction in compliance with the Board's policies.
1. The CIO's duties include but are not limited to:
- a) Managing asset exposures within approved asset allocation ranges.
 - b) Recommending new asset types.
 - c) Overseeing all aspects of the investment process including but not limited to:
 - (1) Rebalancing assets,
 - (2) Hiring and terminating external investment managers,
 - (3) Setting appropriate due diligence standards to be followed in the selection of any new external managers,
 - (4) Overseeing the review of and recommendation for revisions to investment policies, and
 - (5) Providing staff investment reports to the Board.
- B. The CIO supervises staff as assigned by the Executive Director and delegates duties to them as necessary to achieve the various investment objectives of the funds under management of the Board, consistent with fiduciary best practices and state laws.
- C. The Executive Director shall establish a written protocol to ensure continuity in the absence of the CIO pursuant to Policy 90.400.

MONTANA

BOARD OF INVESTMENTS

BOARD ADOPTED POLICY

POLICY NUMBER: 10.217

EFFECTIVE DATE: April 20, 2022

TITLE: Staff Authorization for
Investment Managers

SUPERSEDES: November 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: April 20, 2022

I. Staff Authorization for Investment Managers

A. The Board designates its Executive Director as agent of the Board to deal with investment managers in connection with Board accounts with such managers.

1. The investment managers are authorized to deal with the Executive Director or the Executive Director's designated staff as agents of the Board. Board staff may not transact business with investment managers without the specific approval of the Executive Director.
2. The investment managers are authorized to accept all orders for purchases and sales and all instructions given by the Executive Director or the Executive Director's designated staff on behalf of the Board without further inquiry as to their authority.
3. The investment managers are authorized to receive any funds, securities, or property for the account of the Board. Board funds may not be committed, wired, or otherwise transferred to investment firm without the specific approval of the Executive Director.
4. The investment managers are authorized to sell, assign, transfer, or deliver any funds, securities, or other property held for the account of the Board, to said persons or otherwise, as ordered by the Executive Director or the Executive Director's designated staff.
 - a) Orders shall be in writing or verbally with subsequent confirmation in writing.
 - b) Funds, securities, or other property are in bearer form, in street certificates, or in such names as directed by the Executive Director or the Executive Director's designated staff.
5. The investment managers will send all confirmations, notices, demands, and other communications to the Executive Director or the Executive Director's designated staff, and the Board, at the following address:

Montana Board of Investments
P.O. Box 200126
Helena, MT 59620-0126

B. The establishment and maintenance of all the accounts, and the actions of the Executive Director or the Executive Director's designated staff member shown, acting on behalf of the Board dealing with investment managers related to said accounts since January 21, 1993, are approved and ratified.

C. The Board authorizes the Executive Director to:

1. Close any of the accounts listed herein,
2. Open new accounts,
3. Designate additional staff members to act on behalf of the Board for the purpose of dealing with investment managers regarding any account, or

Adopted: November 30, 2021

Revised: April 20, 2022

Reviewed: April 20, 2022

4. Remove the authority of any of the named staff member or other staff member designated by him/her to act on behalf of the Board for purposes of dealing with investment managers regarding any account.
- D. An investment manager may continue to act in reliance upon the foregoing policy and subsequent designations by the Executive Director of staff members acting on behalf of the Board, until receipt of written notice that the authority of a designated staff member to act on behalf of the Board has been terminated.
 - E. The Executive Director shall provide an annual report to the Board showing the staff members and the accounts added to, or deleted from, and the date on which the addition or deletion occurred. The report will be provided at the last regularly scheduled Board meeting of each calendar year.



RVK 2022 Capital Market Assumptions: Summary



Capital Markets Assumptions

Philosophy

- Each year, RVK's general consulting and research teams collaborate to review the capital markets environment and update long-term, forward-looking capital markets assumptions (CMAs) for each asset class utilized by our clients.
- The forecast horizon is for long-term periods – greater than 10 years.
- The components we estimate include:
 - Return
 - Risk (volatility of returns)
 - Correlation (relationship of asset class returns with all other asset classes)
- Return assumptions are generally index-based, net of fees, and assume no manager “alpha”.
- Annual updates are typically gradual and incorporate historical performance, current valuations, as well as the overall economic environment.

What does it mean to get CMAs “right”?

Relative accuracy is more important...

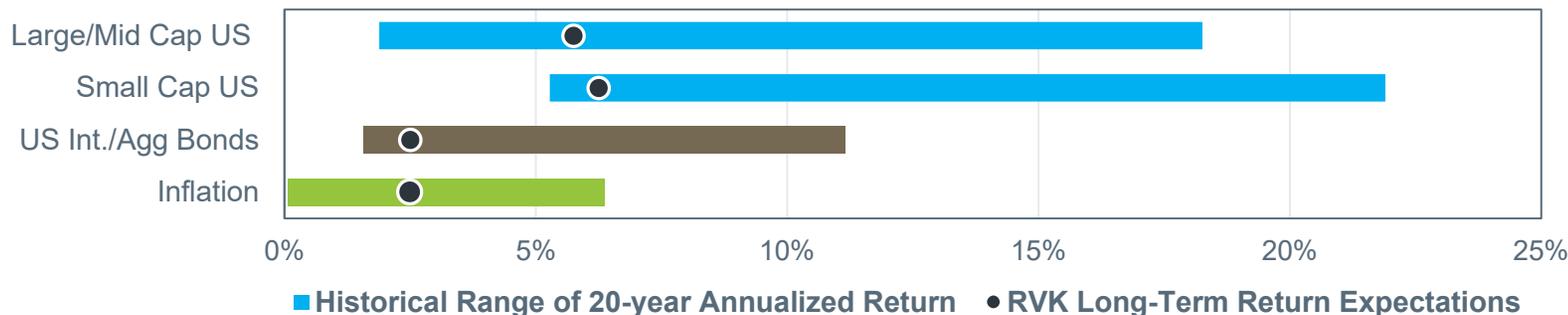
- **Relative Accuracy:** Assumptions capture the relative relationships between asset classes, which are vitally important to trade-off decisions when modeling.
 - Having some assumptions that are spot on, and others that are far off, will produce unbalanced and poorly diversified portfolios.

...but “absolute” accuracy matters too – just not as much.

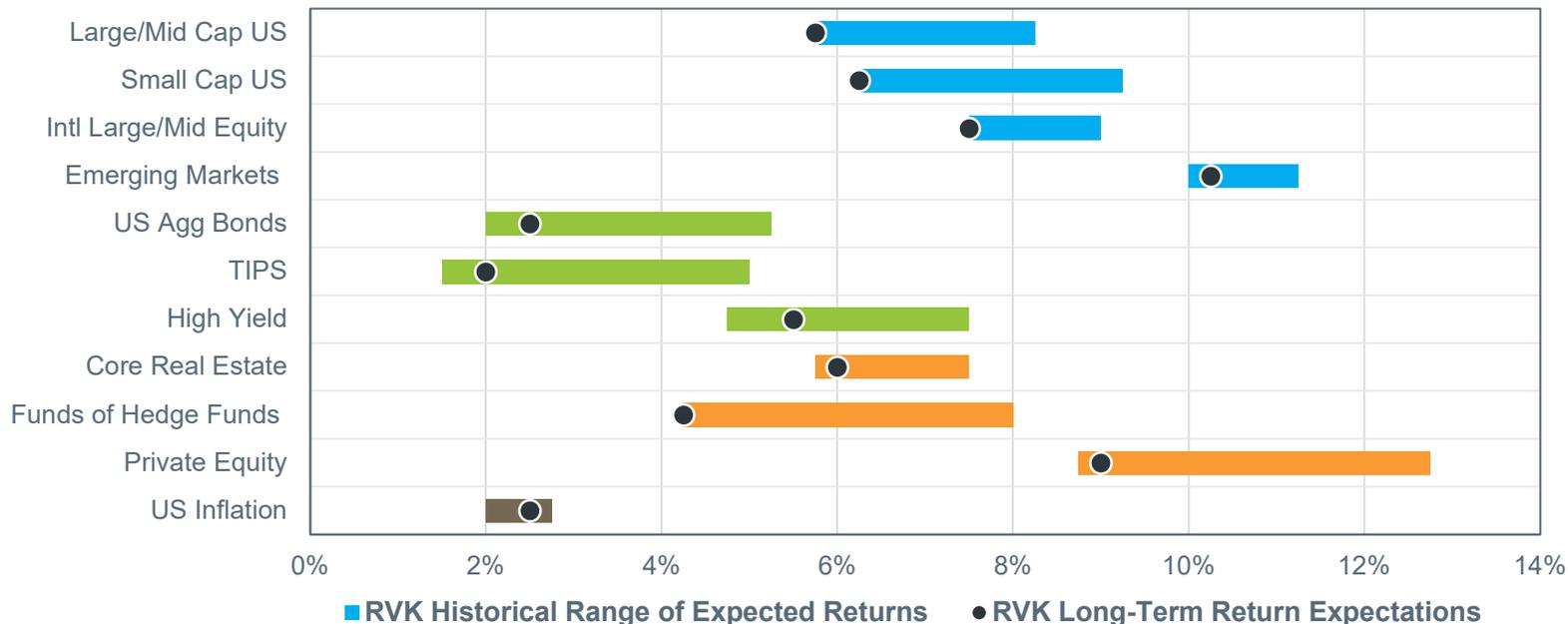
- **Absolute Accuracy:** Assumptions reflect the absolute values actually experienced in future long-term market environments.
 - Having assumptions that are too high or too low across the board can cause a Fund to believe it can distribute more than it can afford or restrict spending more than necessary.

Historical Perspective of Expected Returns

RVK Long-Term Expected Returns vs. Historical Range of Returns¹



2022 Expected Returns vs. RVK Historical Range of Expected Returns²

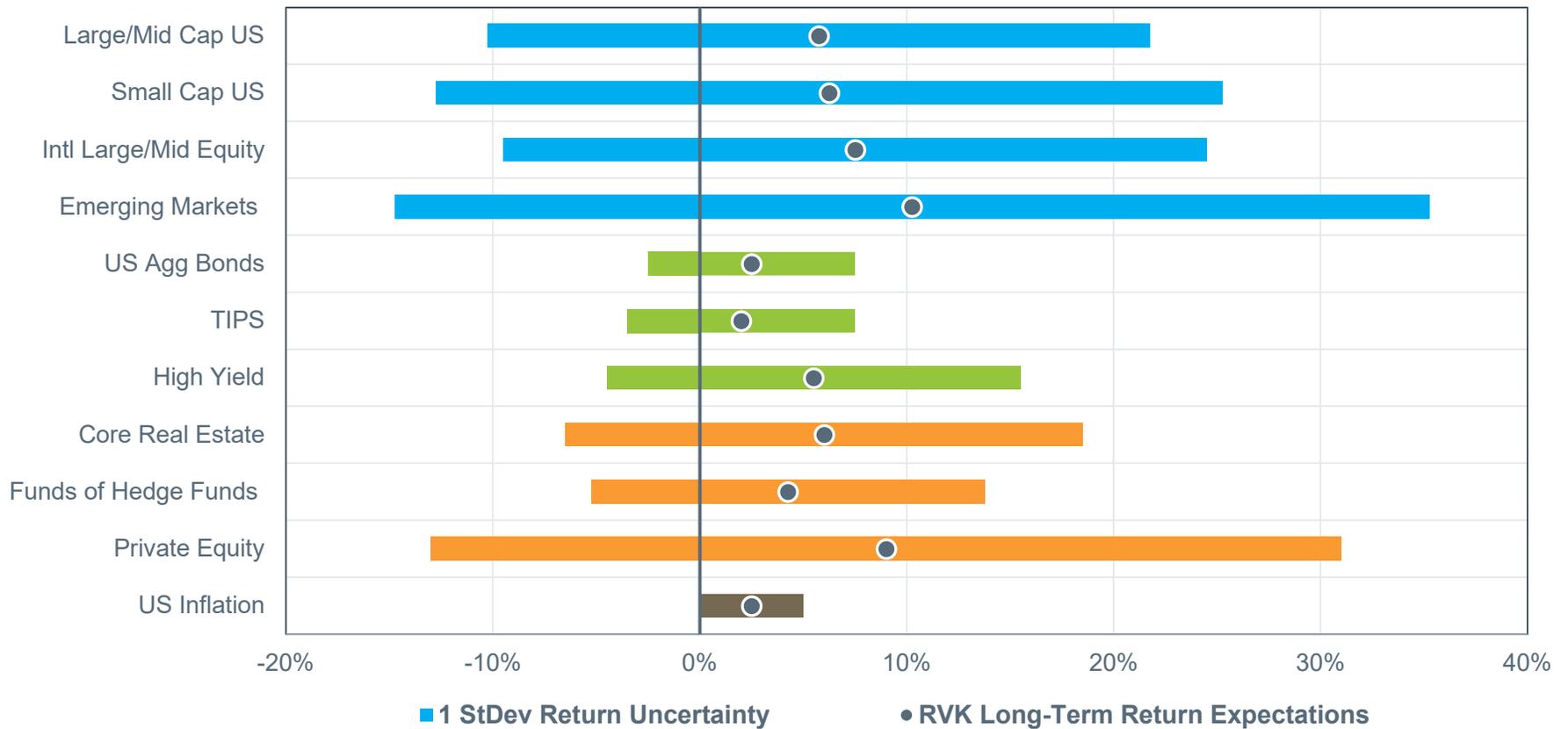


¹ Historical range shows the minimum and maximum 20-year annualized return for a given asset class based on monthly rolling 20-year annualized return series starting from Jan 1926. Large/Mid Cap US is represented by SBBI US Large Stock; Small Cap US by SBBI US Small Stock; US Int./Agg Bonds by SBBI US Intermediate Government Jan 1926 – December 1999 and Barclays US Aggregate Bond Index thereafter; US Inflation by SBBI US Inflation.

² Data shown includes 2006 through 2022 Capital Market Assumptions for selected asset classes.

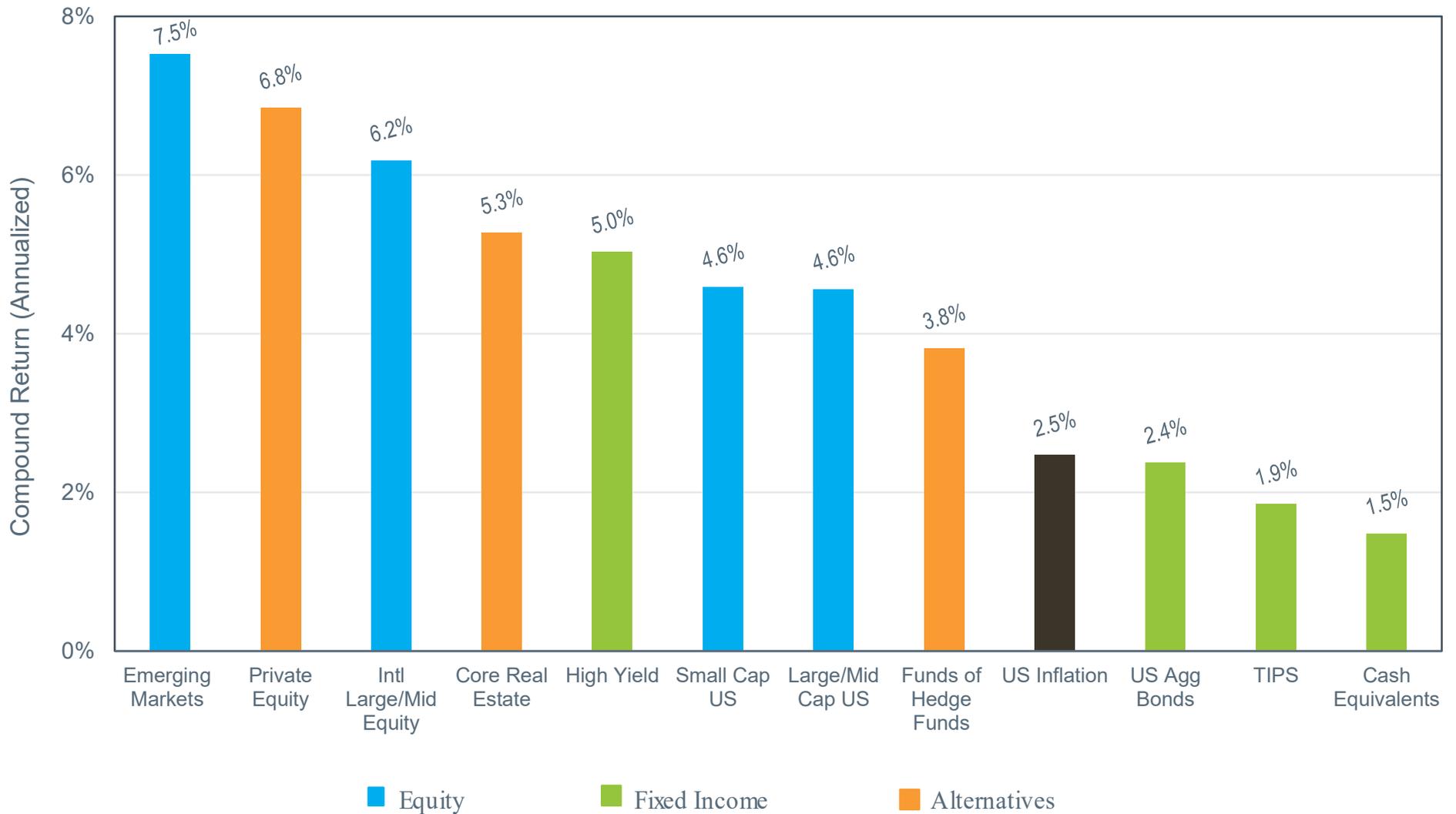
Asset Return Expectations and Uncertainty

RVK 2022 Long-Term Return Expectations and Uncertainty of Returns Distribution



¹ StDev return uncertainty is based on RVK 2022 CMA risk assumption for each asset class.

RVK 2022 Compound Return Assumptions



Themes for 2022 Capital Markets Assumptions

Inflation

Past and future inflation levels are studied and considered given market conditions, break-even indications, sovereign intervention, and inflation component pricing behavior. *The 2022 inflation assumption increased by 50 bps to 2.5% to reflect short- to medium-term inflationary pressures stemming from pandemic related supply chain bottlenecks and stimulus driven demand, while also accounting for longer term deflationary factors such as deficits, debt, demographics, automation and globalization.*

Mean-reversion

Mean reversion is considered for asset classes that demonstrated strong performance over the last year (or longer). *Domestic equity return assumptions were decreased, given the historically elevated valuation levels following strong post-pandemic returns.*

Higher yields

Yield history, current environment, and prospective environments are considered. *The majority of the fixed income return assumptions were increased, reflecting higher current yields as well as expectations for rising rates to keep inflation under control.*

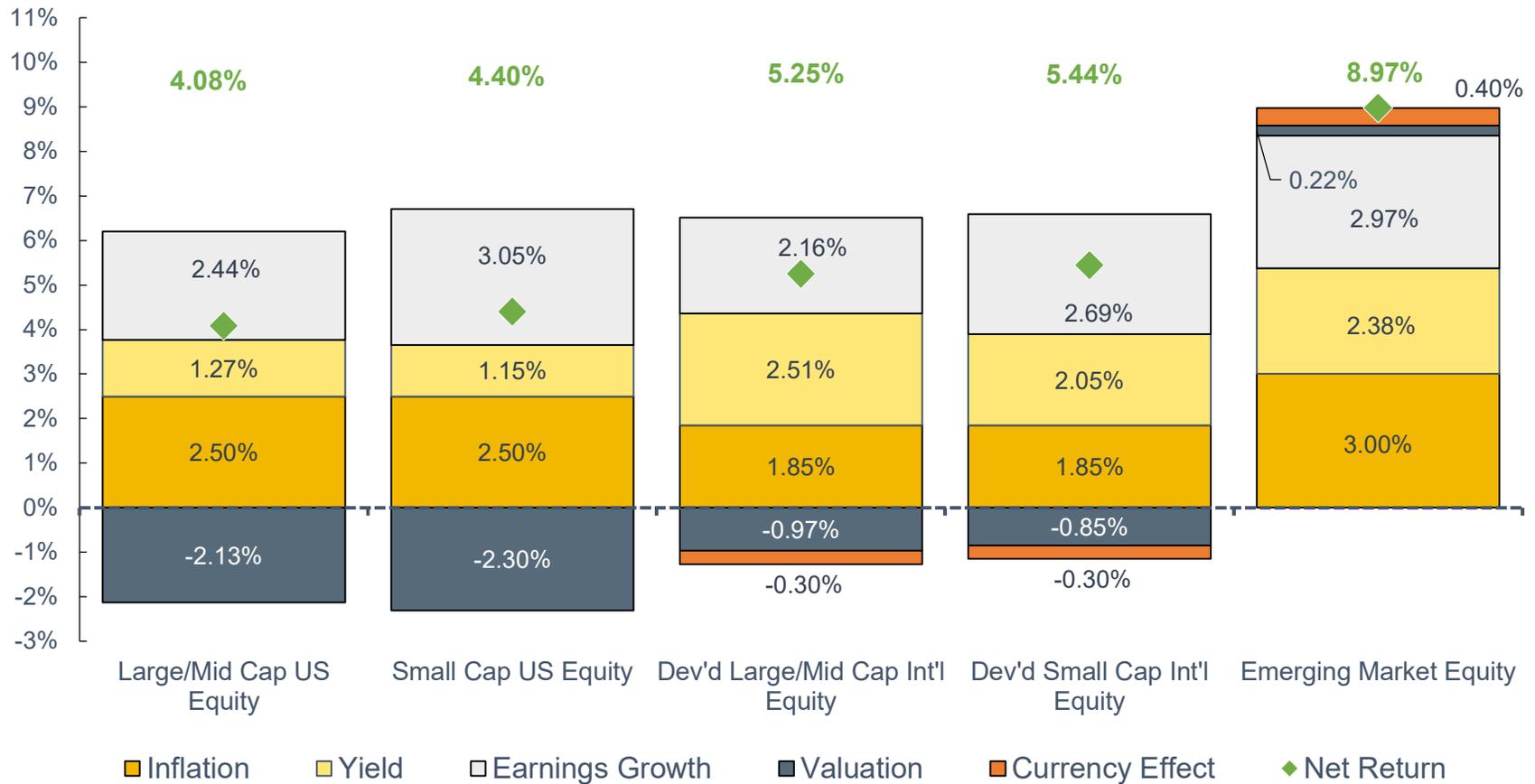
Summary of Expected Return Methodology

Building Block Methodology	Income	+	Inflation	+	Real Growth	+ -	Valuation Change
Cash Equivalents	Income						
Fixed Income	Income + OAS change + Expected interest rate changes (and duration impact)						
TIPS	Real Income + Inflation						
Public Equity	Income + Inflation + Real GDP/earnings growth +/- Currency Effect +/- Valuation						
Core Real Estate	Income + Inflation +/- Valuation – Fees						
Hedge Funds	Income (collateral return, cash) + Beta return + Alpha return (net)						
Commodities	Collateral return (cash assumption) + Spot return (inflation assumption) + Roll return						
Spread Methodology	Beta assumption	+	Illiquidity premium				
Private Credit	Bank loan assumption + Return premium						
Private Equity	US Large/Mid cap equity assumption + Return premium						
Asset Blend Methodology							
GTAA	30% global equity + 25% US Agg fixed income + 5% int'l developed fixed income + 10% EMD (local) + 10% TIPS + 10% high yield + 10% commodities						
Diversified Inflation Strategies	1/3 TIPS + 1/3 commodities + 1/3 global REITs						

While the above factors generally inform the direction and magnitude of the capital market assumptions, RVK also considers qualitative, triangulation, and other factors as needed, when arriving at final assumption values.

RVK Return Methodology for Equities

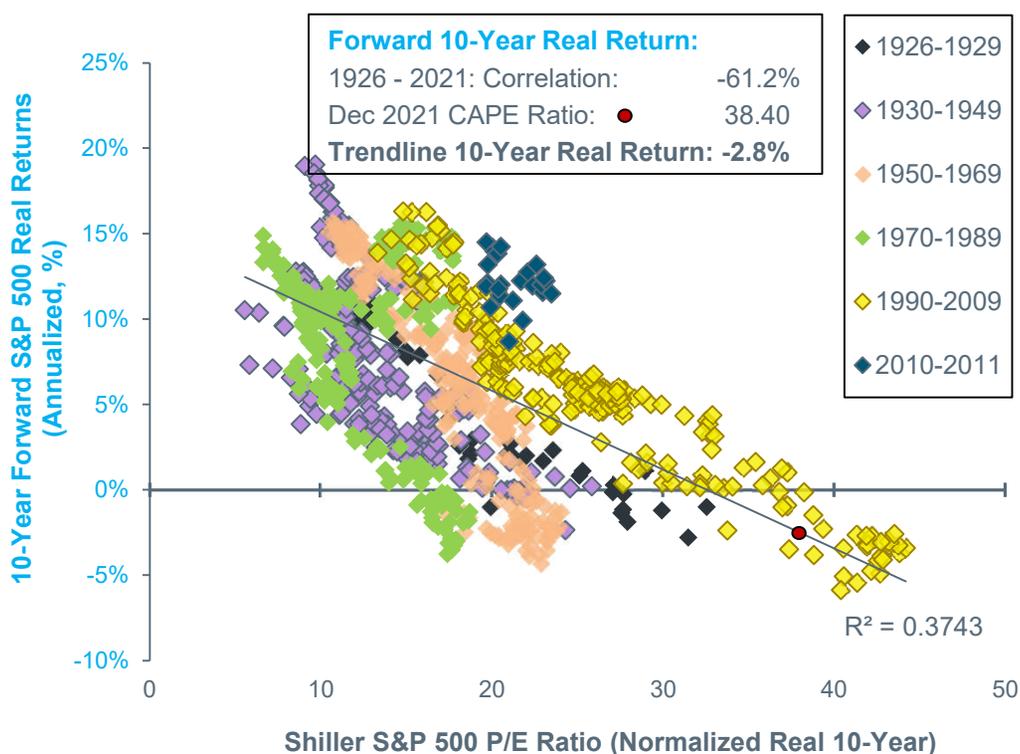
2022 Decomposition of the Building Blocks for Public Equity Asset Classes



Public Equity – US

Public Equity: US									
Asset Class	2021			2022			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
Large/Mid Cap US	6.00%	16.00%	4.81%	5.75%	16.00%	4.56%	-0.25%	--	-0.25%
Small Cap US	6.50%	19.00%	4.84%	6.25%	19.00%	4.59%	-0.25%	--	-0.25%
Broad US Equity	6.05%	16.05%	4.86%	5.80%	16.00%	4.61%	-0.25%	-0.05%	-0.25%

Relationship between Valuations and Forward 10 Year Returns



- Decreased all US equity return forecasts relative to 2021.
- The decrease was yield and valuation driven, as domestic equities rallied in 2021 supported by strong economic recovery post pandemic despite inflation concerns and supply issues.
- Year-end valuation for the large-cap domestic equities as represented by the Shiller CAPE ranked in the 99th percentile of historical values going back to 1926.
- Current return assumptions remain lower than historical averages.

RVK Broad US Equity assumption is a combination of 92.9% Large/Mid Cap US Equity and 7.1% Small Cap US Equity.

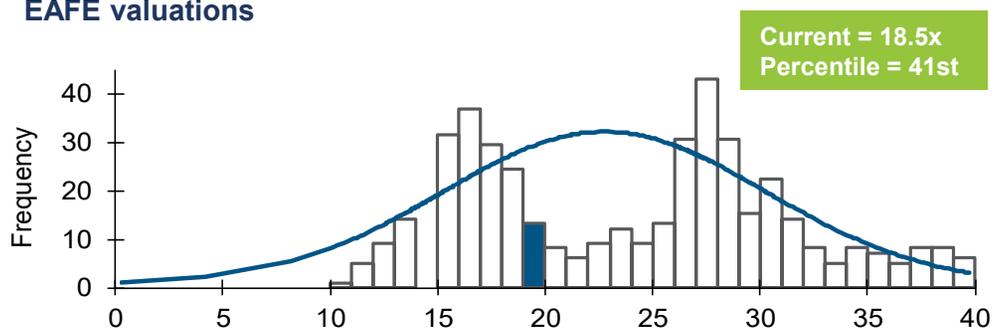
Source: RVK, based on data from the Robert Shiller Database (2021). December 2021 CAPE ratio uses the S&P 500 earnings estimate for the Q4 2021.

Public Equity – International

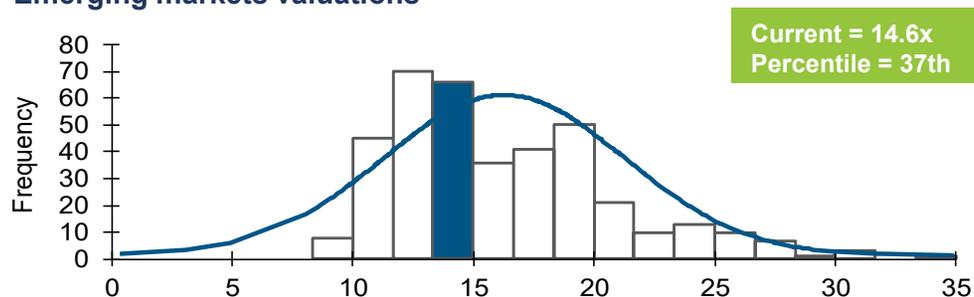
Public Equity: International									
Asset Class	2021			2022			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
Intl Large/Mid Equity	7.50%	17.00%	6.18%	7.50%	17.00%	6.18%	--	--	--
Dev'd Small Cap	8.00%	20.00%	6.19%	8.00%	20.00%	6.19%	--	--	--
Emerging Markets	10.00%	25.00%	7.26%	10.25%	25.00%	7.52%	+0.25%	--	+0.26%
Broad International	8.30%	18.80%	6.70%	8.35%	18.65%	6.78%	+0.05%	-0.15%	+0.08%

Valuations: Cyclically-adjusted P/E

EAFE valuations



Emerging markets valuations



- No change to the developed international equity assumptions as higher dividend yields, improved valuations and regional inflation expectations were offset by lower real growth/earnings expectations as well as currency considerations.
- Increased return assumption for emerging markets is largely based on higher dividend yields and improved valuations.

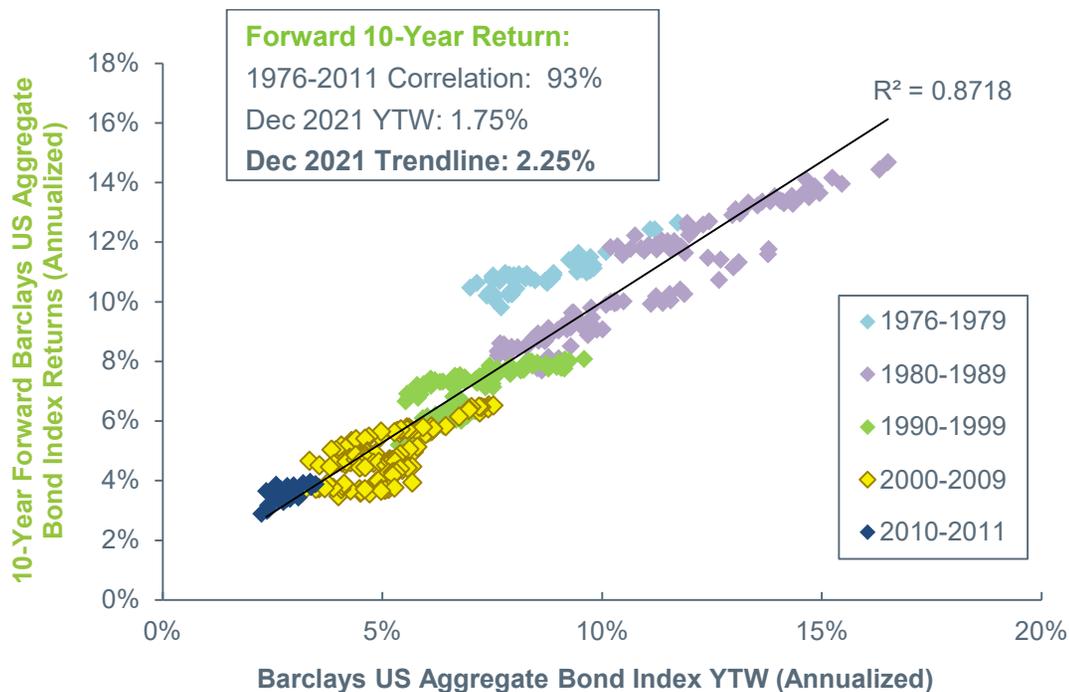
RVK Broad International equity is a combination of 64.0% Dev'd Large/Mid Cap Int'l Equity, 10.7% Dev'd Small Cap Int'l Equity, and 25.3% Emerging Markets Equity.

Source: Research Affiliates (RA); EAFE valuations represented by MSCI EAFE CAPE calculations by RA since December 1982; EM represented by MSCI EM CAPE calculations by RA since Jan 1990. Data as of December 31, 2021.

Fixed Income

Fixed Income									
Asset Class	2021			2022			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
US Aggregate	2.00%	5.00%	1.88%	2.50%	5.00%	2.38%	+0.50%	--	+0.50%
Non-US Dev. Sovereign	1.00%	8.50%	0.64%	1.25%	8.50%	0.90%	+0.25%	--	+0.25%
Low Duration	1.50%	2.50%	1.47%	2.00%	2.50%	1.97%	+0.50%	--	+0.50%
Long Duration	2.50%	10.00%	2.02%	2.75%	10.00%	2.27%	+0.25%	--	+0.25%
TIPS	1.50%	5.50%	1.35%	2.00%	5.50%	1.85%	+0.50%	--	+0.50%

Relationship between YTW and Forward 10 Year Returns

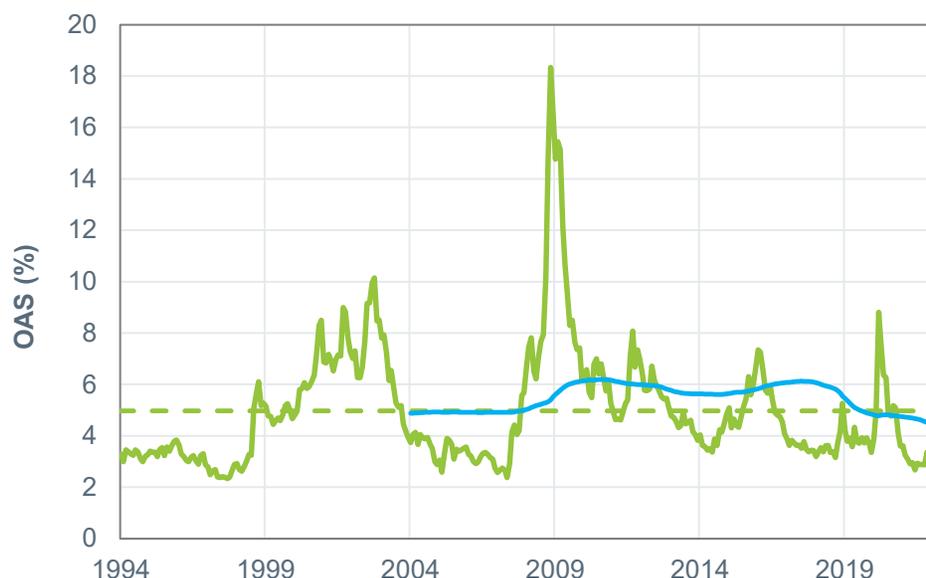


- Initial yields have historically been a reasonable starting point when forecasting future fixed income returns.
- Therefore, most bond return assumptions increased based on higher starting yields and expectations for interest rate increases.
- Changes in spreads and durations were mostly nominal and thus did not generally have material impacts on the return forecasts.

Fixed Income – Spread Assets

Fixed Income: Spread Sectors									
Asset Class	2021			2022			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
High Yield	4.75%	10.00%	4.28%	5.50%	10.00%	5.03%	+0.75%	--	+0.75%
Emerging Markets Debt (HC)	5.00%	10.00%	4.53%	6.00%	10.00%	5.53%	+1.00%	--	+1.00%
Emerging Markets Debt (LC)	5.00%	11.50%	4.38%	5.75%	11.50%	5.13%	+0.75%	--	+0.75%
Bank Loans	4.75%	8.00%	4.45%	5.00%	8.00%	4.70%	+0.25%	--	+0.25%

BB US Corporate High Yield Index Option-Adjusted Spread (OAS)



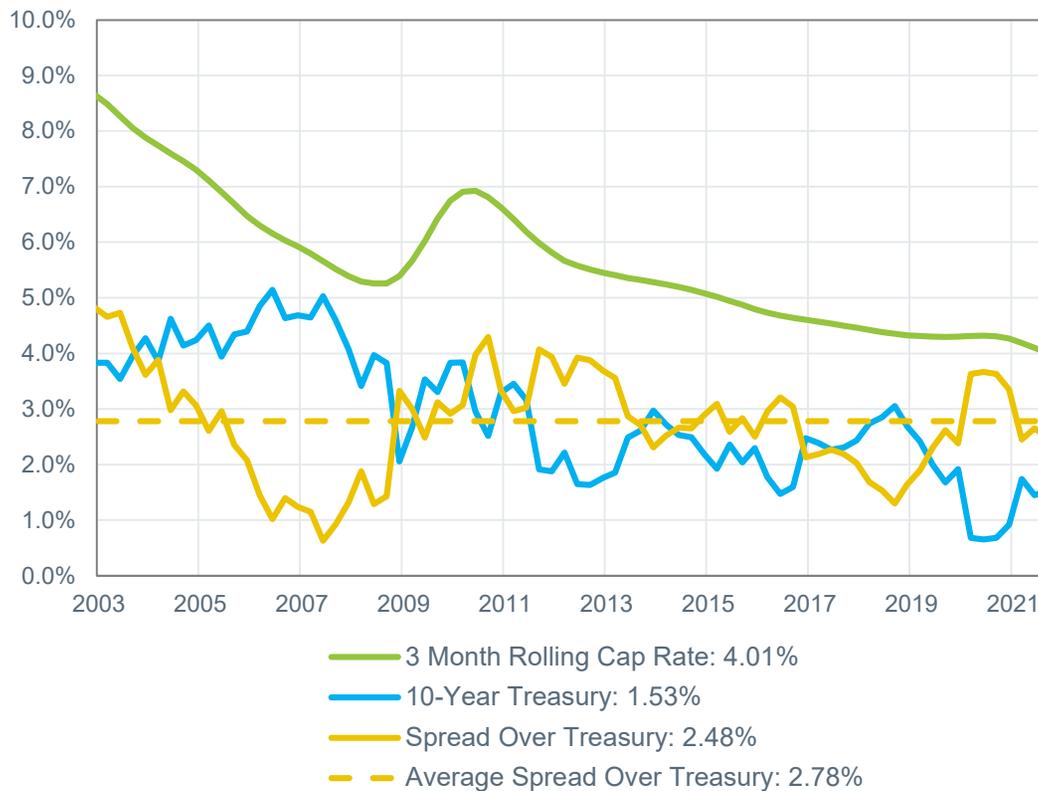
— Option-Adjusted Spread (OAS): 2.83%
- - - Average OAS: 4.98%
— OAS (Rolling 120-Mth Avg): 4.45%

- Significantly increased our long-term return expectations for all fixed income spread sectors.
- Higher starting yields for the emerging market debt (both HC and LC) led to higher expected long-term returns.
- Rising rates and widening spreads will – over the long run – help returns for low duration assets such as bank loans and high yield bonds.

Real Estate

Real Estate									
Asset Class	2021			2022			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
Core Real Estate	5.75%	12.50%	5.02%	6.00%	12.50%	5.27%	+0.25%	--	+0.25%
Global REITs	6.75%	21.00%	4.74%	6.50%	21.00%	4.49%	-0.25%	--	-0.25%

Cap Rates and Spread to Treasuries



- Cap rates dropped to historic lows given heightened activity in 2021.
- However, on a relative basis – with Treasury rates still near historic lows – income yields for core real estate assets remain reasonably attractive.
- Increased our long-term core real estate assumption given small rise in net yields and the inflation upturn.
- Decreased global REITs assumption due to a significant reduction in the yield, as well as elevated valuations.

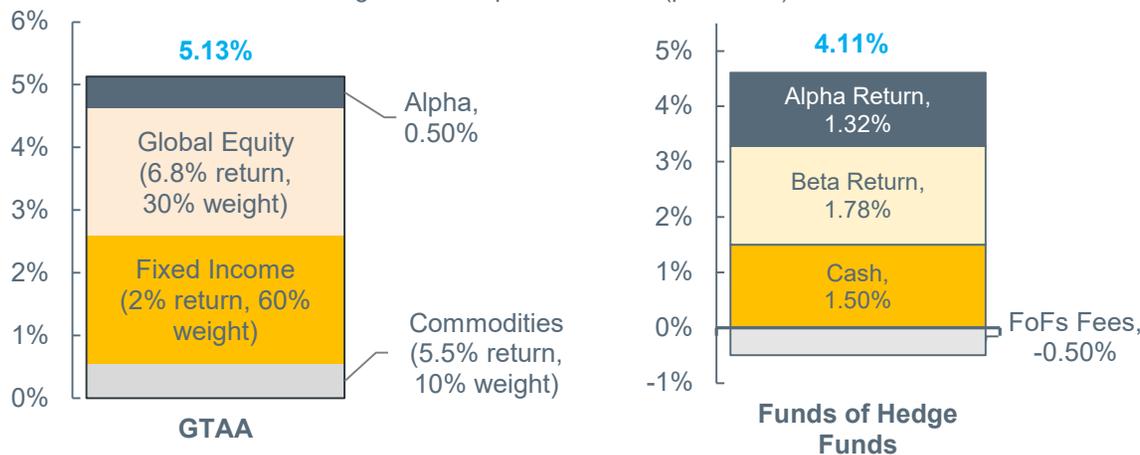
Hedge Funds

Hedge Funds and GTAA									
Asset Class	2021			2022			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
Funds of Hedge Funds	4.25%	9.50%	3.82%	4.25%	9.50%	3.82%	--	--	--
Multi-Strat. Hedge Funds	5.00%	8.50%	4.66%	5.00%	8.50%	4.66%	--	--	--
GTAA	5.00%	9.00%	4.62%	5.00%	9.00%	4.62%	--	--	--

HFRI Multi-Strategy Blend 1-Year Rolling Alpha



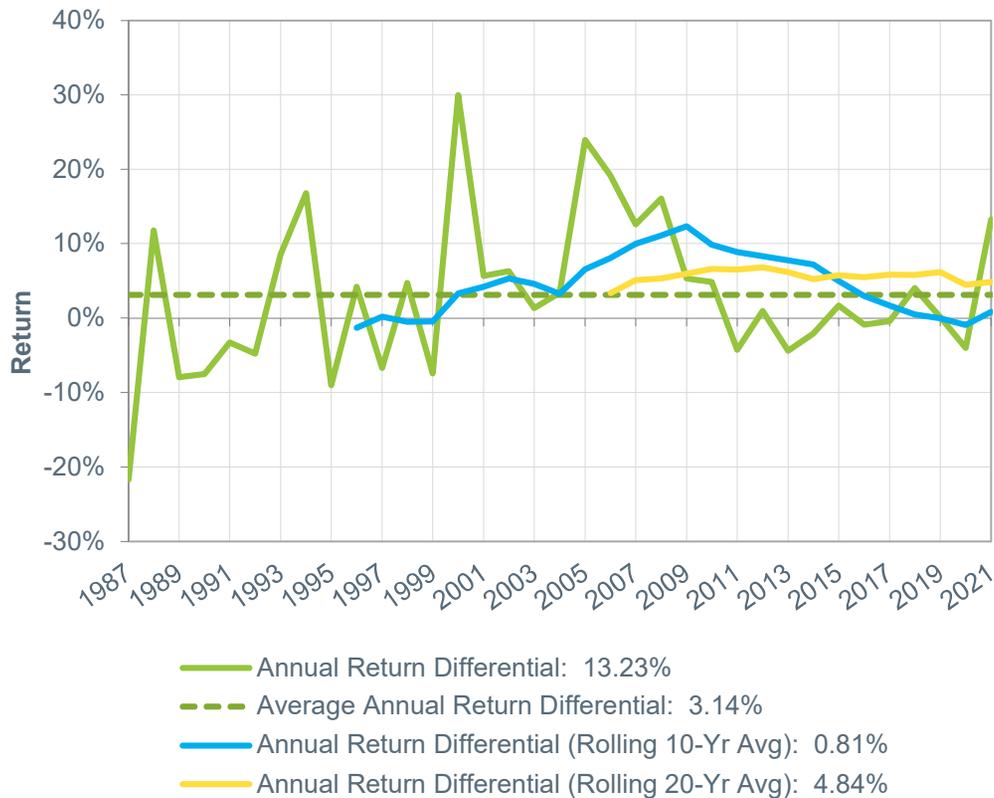
- Hedge fund return assumptions remained the same.
- While alpha levels remain fairly robust since inception, post-GFC alpha levels are more muted.
- The GTAA return assumption also did not change, given the offsetting impacts from return forecast increases to some of the underlying asset classes (i.e., bonds) and decreases to other asset classes (i.e., stocks).



Private Equity

Private Equity									
Asset Class	2021			2022			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
Private Equity	8.75%	22.00%	6.59%	9.00%	22.00%	6.85%	+0.25%	--	+0.25%

**Annual Return Differential:
Cambridge US Private Equity Index vs. S&P 500 Index**



- Our spread assumption increased to 325 basis points above Large/Mid Cap US Equities.
- This spread differential is similar to the historical spread differential, as outlined in the chart shown.
- However, the PE return forecast was negatively impacted by the reduction in the underlying public market return forecast. The Large/Mid Cap US Equity assumption was decreased by 0.25% due to reduced dividend yields and elevated valuations.

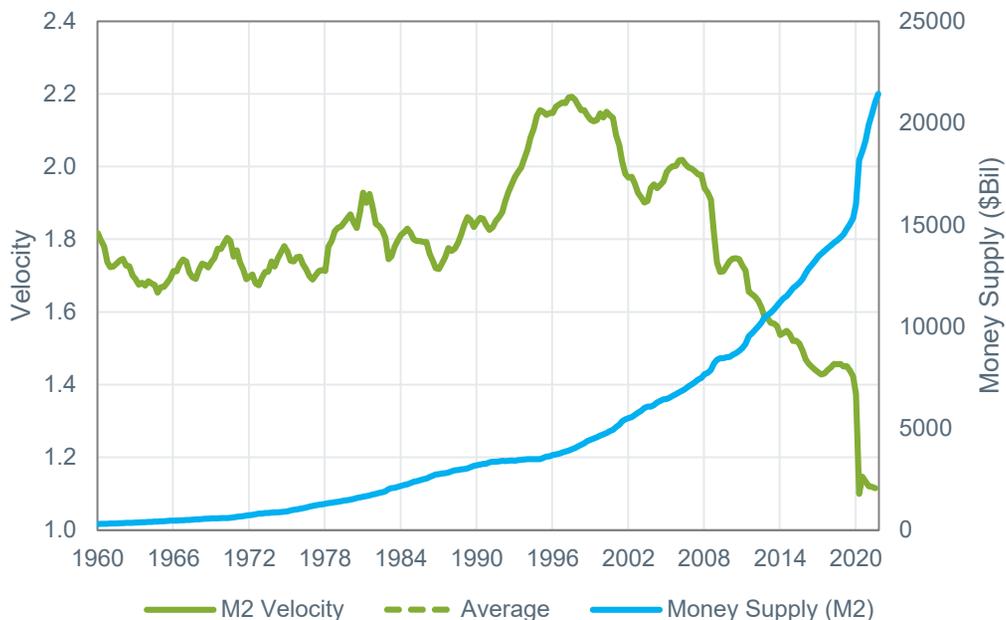
Source: Cambridge Associates LLC and FactSet (2022). Data as of June 30, 2021. Cambridge index is pooled horizon internal rates of return, net of fees, expenses, and carried interest.

US Inflation & Cash Equivalents

US Inflation & Cash Equivalents									
Asset Class	2021			2022			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
US Inflation	2.00%	1.50%	1.99%	2.50%	2.50%	2.47%	+0.50%	+1.00%	+0.48%
Cash Equivalents	1.50%	2.00%	1.48%	1.50%	2.00%	1.48%	--	--	--

As of December 31, 2021	5-Year	7-Year	10-Year	20-Year	30-Year
Treasury Yield	1.26%	1.44%	1.52%	1.94%	1.90%
TIPS Yield	-1.61%	-1.31%	-1.04%	-0.63%	-0.44%
Implied Expected Inflation	2.87%	2.75%	2.56%	2.57%	2.34%

Supply and Velocity of Money

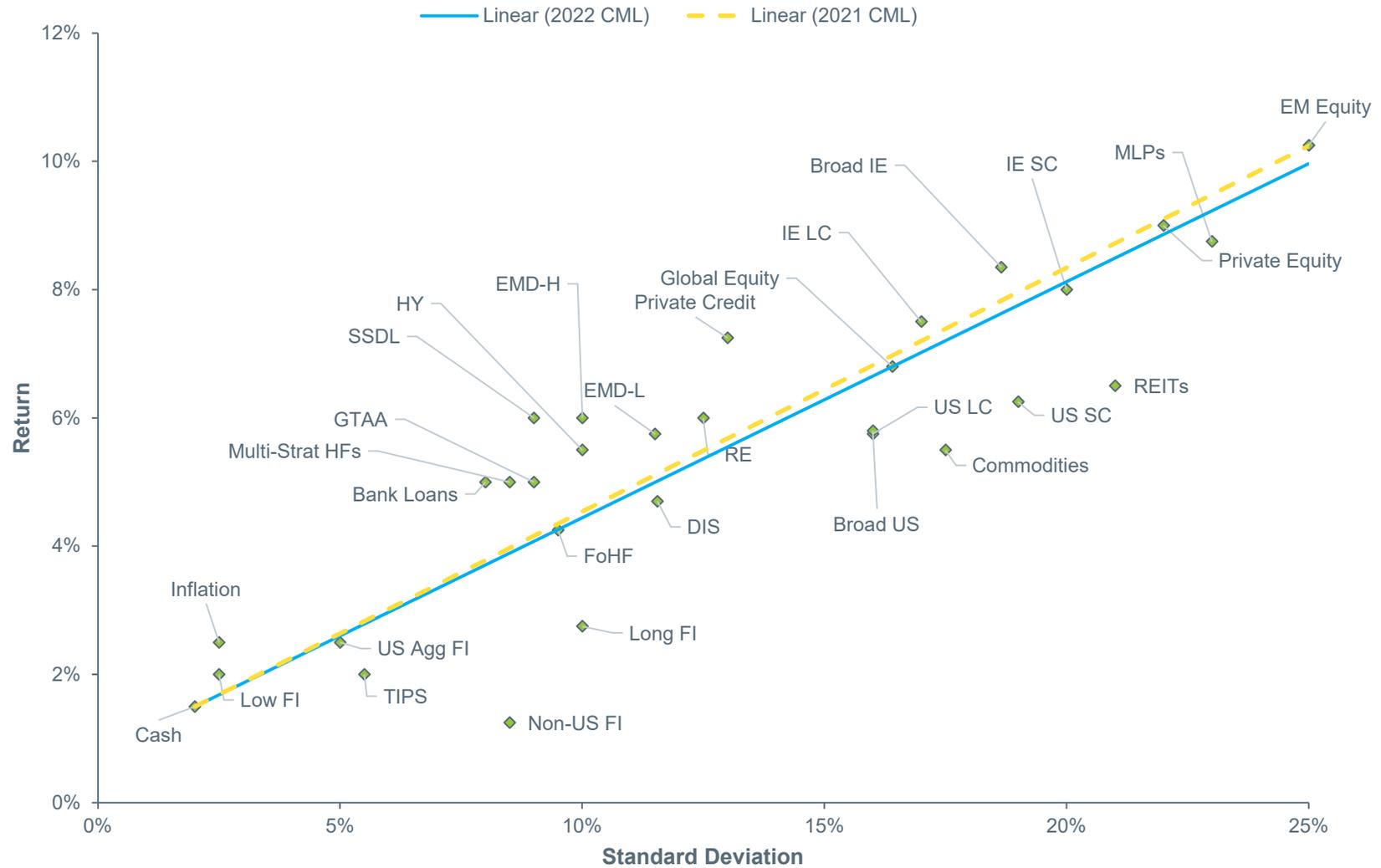


- The US inflation assumption increased by 50 bps as market expectations for inflation have elevated, particularly across the short to medium term – as outlined in the table shown above.
- While the supply of money has drastically increased in 2020 -2021, the velocity remains at very depressed levels – as outlined in the graph shown. We are closely monitoring these and many other offsetting impacts on inflation expectations.
- Cash assumption was held constant.

RVK 2022 Assumptions vs 2021

Asset Class	2021			2022			Change (2021 - 2022)		
	Nominal Return (Arith.)	Risk (St. Dev.)	Nominal Return (Geo.)	Nominal Return (Arith.)	Risk (St. Dev.)	Nominal Return (Geo.)	Nominal Return (Arith.)	Risk (St. Dev.)	Nominal Return (Geo.)
Large/Mid Cap US Equity	6.00%	16.00%	4.81%	5.75%	16.00%	4.56%	-0.25%	0.00%	-0.25%
Small Cap US Equity	6.50%	19.00%	4.84%	6.25%	19.00%	4.59%	-0.25%	0.00%	-0.25%
Broad US Equity	6.05%	16.05%	4.86%	5.80%	16.00%	4.61%	-0.25%	-0.05%	-0.25%
Devd Large/Mid Cap Int'l Equity	7.50%	17.00%	6.18%	7.50%	17.00%	6.18%	0.00%	0.00%	0.00%
Devd Small Cap Int'l Equity	8.00%	20.00%	6.19%	8.00%	20.00%	6.19%	0.00%	0.00%	0.00%
Emerging Markets Equity	10.00%	25.00%	7.26%	10.25%	25.00%	7.52%	0.25%	0.00%	0.26%
Broad International Equity	8.30%	18.80%	6.70%	8.35%	18.65%	6.78%	0.05%	-0.15%	0.08%
Global Equity	7.05%	16.60%	5.79%	6.80%	16.40%	5.56%	-0.25%	-0.20%	-0.22%
US Aggregate Fixed Income	2.00%	5.00%	1.88%	2.50%	5.00%	2.38%	0.50%	0.00%	0.50%
Non-US Devd Sovereign Fixed Income UH	1.00%	8.50%	0.64%	1.25%	8.50%	0.90%	0.25%	0.00%	0.25%
Emerging Markets Debt Hard Currency	5.00%	10.00%	4.53%	6.00%	10.00%	5.53%	1.00%	0.00%	1.00%
Emerging Markets Debt Local Currency	5.00%	11.50%	4.38%	5.75%	11.50%	5.13%	0.75%	0.00%	0.75%
TIPS	1.50%	5.50%	1.35%	2.00%	5.50%	1.85%	0.50%	0.00%	0.50%
Low Duration Fixed Income	1.50%	2.50%	1.47%	2.00%	2.50%	1.97%	0.50%	0.00%	0.50%
Long Duration Fixed Income	2.50%	10.00%	2.02%	2.75%	10.00%	2.27%	0.25%	0.00%	0.25%
High Yield	4.75%	10.00%	4.28%	5.50%	10.00%	5.03%	0.75%	0.00%	0.75%
Bank Loans	4.75%	8.00%	4.45%	5.00%	8.00%	4.70%	0.25%	0.00%	0.25%
Core Real Estate	5.75%	12.50%	5.02%	6.00%	12.50%	5.27%	0.25%	0.00%	0.25%
Global REITs	6.75%	21.00%	4.74%	6.50%	21.00%	4.49%	-0.25%	0.00%	-0.25%
MLPs	9.25%	23.00%	6.91%	8.75%	23.00%	6.40%	-0.50%	0.00%	-0.51%
Funds of Hedge Funds	4.25%	9.50%	3.82%	4.25%	9.50%	3.82%	0.00%	0.00%	0.00%
Multi-Strategy Hedge Funds	5.00%	8.50%	4.66%	5.00%	8.50%	4.66%	0.00%	0.00%	0.00%
GTAA	5.00%	9.00%	4.62%	5.00%	9.00%	4.62%	0.00%	0.00%	0.00%
Private Credit	6.75%	13.00%	5.97%	7.25%	13.00%	6.47%	0.50%	0.00%	0.50%
Senior Secured Direct Lending	5.75%	9.00%	5.37%	6.00%	9.00%	5.62%	0.25%	0.00%	0.25%
Private Equity	8.75%	22.00%	6.59%	9.00%	22.00%	6.85%	0.25%	0.00%	0.25%
Commodities	5.00%	17.50%	3.57%	5.50%	17.50%	4.08%	0.50%	0.00%	0.51%
Diversified Inflation Strategies	4.45%	11.55%	3.82%	4.70%	11.55%	4.07%	0.25%	0.00%	0.25%
US Inflation	2.00%	1.50%	1.99%	2.50%	2.50%	2.47%	0.50%	1.00%	0.48%
Cash Equivalents	1.50%	2.00%	1.48%	1.50%	2.00%	1.48%	0.00%	0.00%	0.00%

Capital Markets Line



PORTLAND

BOISE

CHICAGO

NEW YORK

Disclaimer of Warranties and Limitation of Liability - This document was prepared by RVK, Inc. (RVK) and may include information and data from some or all of the following sources: client staff; custodian banks; investment managers; specialty investment consultants; actuaries; plan administrators/record-keepers; index providers; as well as other third-party sources as directed by the client or as we believe necessary or appropriate. RVK has taken reasonable care to ensure the accuracy of the information or data, but makes no warranties and disclaims responsibility for the accuracy or completeness of information or data provided or methodologies employed by any external source. This document is provided for the client's internal use only and does not constitute a recommendation by RVK or an offer of, or a solicitation for, any particular security and it is not intended to convey any guarantees as to the future performance of the investment products, asset classes, or capital markets.



Use of Capital Market Assumptions

Jon Putnam, CIO

April 20, 2022

Use of Capital Market Assumptions

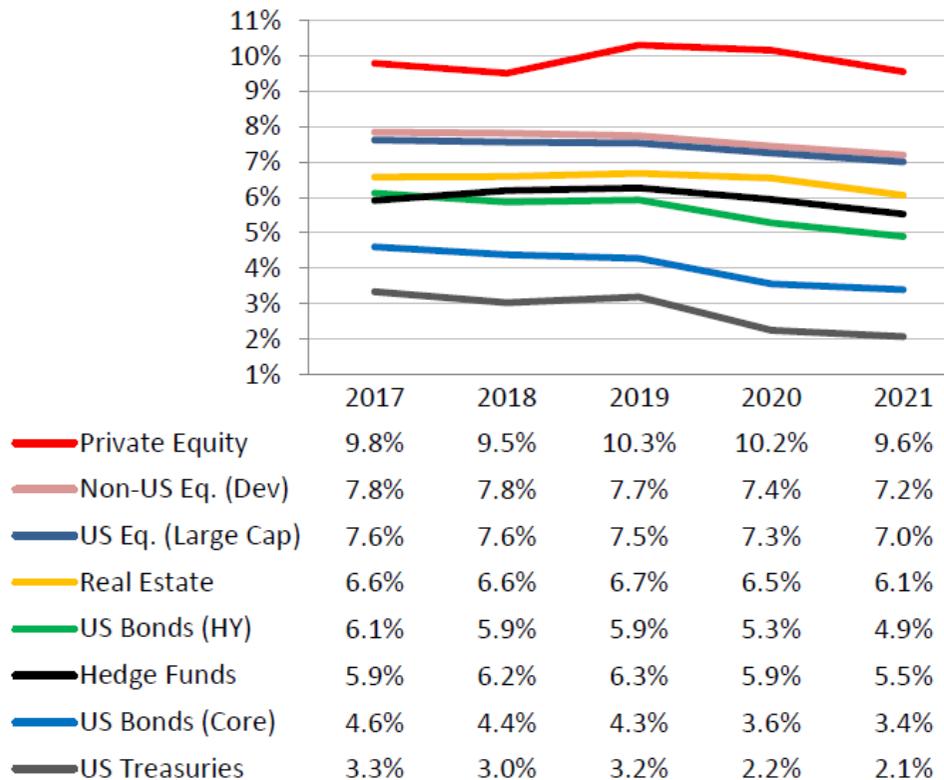
- We use capital market assumptions to help determine the optimal asset allocation for MBOI
- Opportunity to evaluate our current asset allocation and strategy
 - Assess the ability to achieve our goals given expected market conditions
- Examine the constraints of our plans
 - Return expectations
 - Risk tolerance
 - Liquidity / Cash flow requirements
- This is a very complex question with a wide range of potential outcomes. There is no “right” answer

MBOI Asset Allocation Process

- MBOI annually reviews its asset allocation ranges
- Staff gathers market information from a variety of credible sources
- Senior staff individually suggest changes to asset allocation based on economic data, market expectations and their experience
- Internal debate among senior staff over different views
- RVK runs mean variance optimization based on a range of scenarios and capital market assumptions
- Meet with RVK in Portland to discuss potential changes to asset allocation ranges
- CIO recommends changes to asset allocation ranges in October and board votes on any changes in November

Capital Market Assumptions

Average Expected Returns (20-Year Horizon)

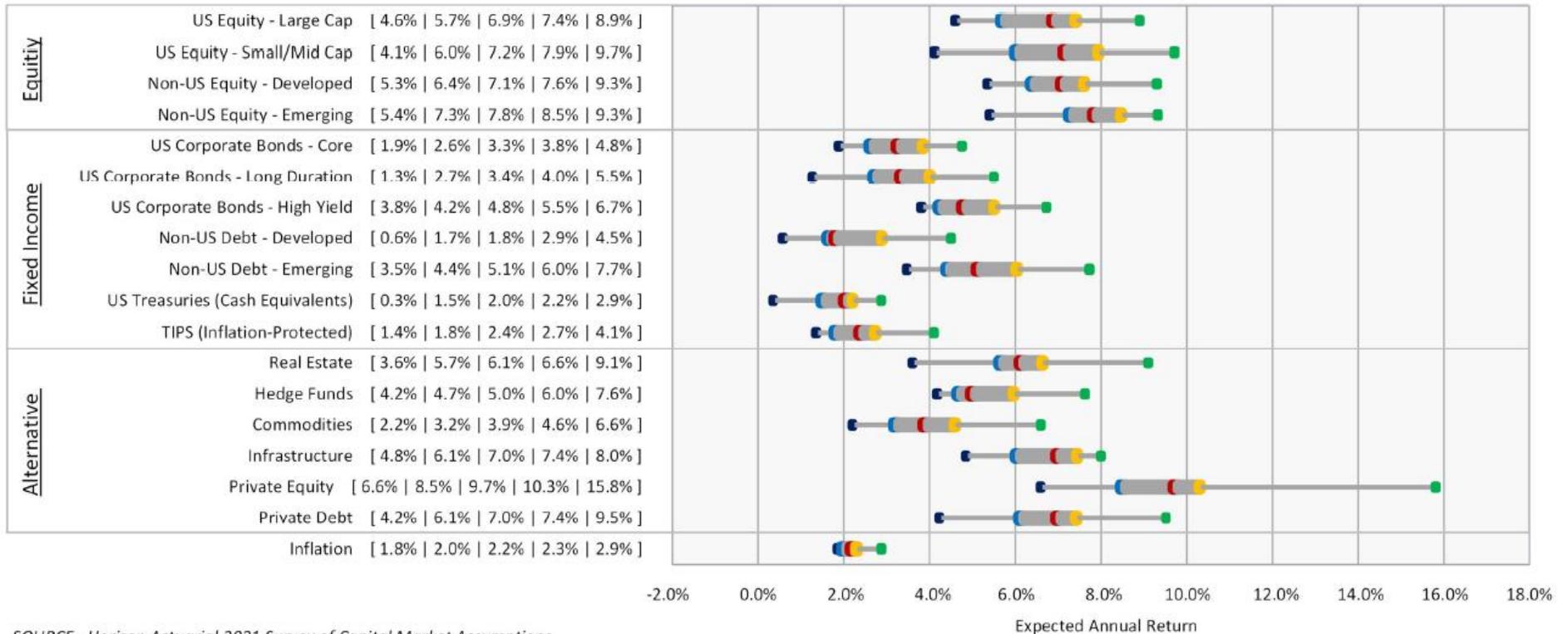


Source: Horizon Actuarial Services, LLC
Survey of Capital Market Assumptions 2021

- Evidence suggests the combination of multiple, independent judgments is often more accurate than a single expert
- MBOI reviews RVK assumptions and a broader set of capital market assumptions
- The 2021 Horizon survey compiled CMA's from 39 asset managers and consultants, including RVK
- There are significant differences in expected returns / risk among participants

Capital Market Assumptions

2021 Survey: Expected Returns by Asset Class (20-Year Horizon)



SOURCE: Horizon Actuarial 2021 Survey of Capital Market Assumptions

Expected returns are annualized over 20 years (geometric), based on a subset of 24 advisors who provided longer term assumptions.

Summary

- Asset allocation and the use of capital market assumptions is an iterative, annual process that steers decision making
- Complex process with a range of potential outcomes
- Staff and RVK work together to develop the best possible result
- Asset allocation ranges provide a guidepost for the day-to-day management of the portfolios

Montana Domestic Equities

Asset Class Review

Presented by:
Jason Brent, CFA, CAIA
Steve Strong

Date:
April 20, 2022

Domestic Equities

Contents

- Domestic Equities Asset Class Overview 3
- Asset Class Structure 4
- Investment Vehicle Characteristics 5
- Sources of Tracking Error 6
- Due Diligence & Ongoing Research 7
- Exposure By Investment Vehicle Type 8
- Exposure By Market Cap 9
- Performance 10

Domestic Equities

- Approved Pension Plan Allocation Range of 24%–36%
- Montana Public Retirement Plans Investment Policy

Statement allows for:

- *Domestic equity securities and derivatives held in separate accounts, commingled funds, limited partnerships, or LLCs*
- *Exchange-Traded Funds (ETFs)*
- *Cash*
- Constraints
 - *Percentage in small cap equities shall not exceed +10% above the benchmark weight in small caps*
 - *Percentage in passive/indexed strategies shall be greater than 45%*
- Asset class benchmark is the MSCI USA Investable Market Index

Domestic Equities

Asset Class Structure

- 100% indexed/passive investments
 - *US equity market efficiency*
 - *Cost savings*
 - *More efficient use of internal resources*
- Index Funds
 - *Separately-managed accounts (large caps)*
 - *Commingled funds (small caps)*
- Exchange-Traded Funds (ETFs)
 - *All-cap, large-cap, and small-cap ETFs*

Domestic Equities

Investment Vehicle Characteristics

- Separately-managed accounts (SMAs)
 - *Lowest cost option*
 - *Better securities lending arrangement vs. commingled funds*
 - *More frequent data access vs. commingled funds*
- Commingled funds
 - *Cost-effective means to access benefits of scale*
 - *Securities lending revenue split with the manager*
- Exchange-Traded Funds (ETFs)
 - *Indexed investment vehicle that trades like a stock on an exchange*
 - *Quicker access to liquidity than SMAs or commingled funds*

Domestic Equities

Sources of Tracking Error

- Tracking error
 - *Measures the difference between an investment's returns and those of its benchmark*
- Manager tracking error
 - *Management fees*
 - *Securities lending*
 - *Securities litigation*
 - *Securities mis-weights*
- Allocation tracking error
 - *Active risk from over- or underweight to small caps*

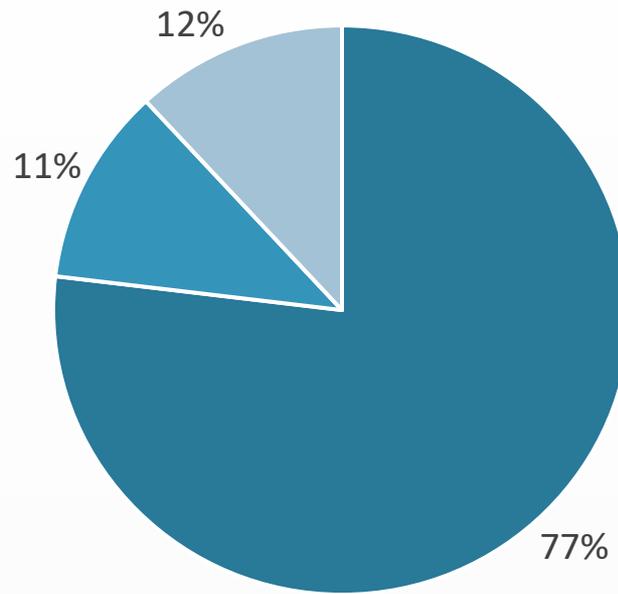
Domestic Equities

Due Diligence & Ongoing Research

- Same manager evaluation framework as with former active managers
 - *Investment guidelines, manager scorecards, quarterly review process, quantitative analysis, and onsite visits*
- Tools
 - *FactSet*
 - *Bloomberg*
 - *Trading platform puts brokers in competition for ETF trades, ensuring best execution*
 - *eVestment*
 - *Manager online trading platforms*
 - *Facilitates contributions and redemptions from our separately-managed accounts and index funds*

Domestic Equities

Exposure By Vehicle Type

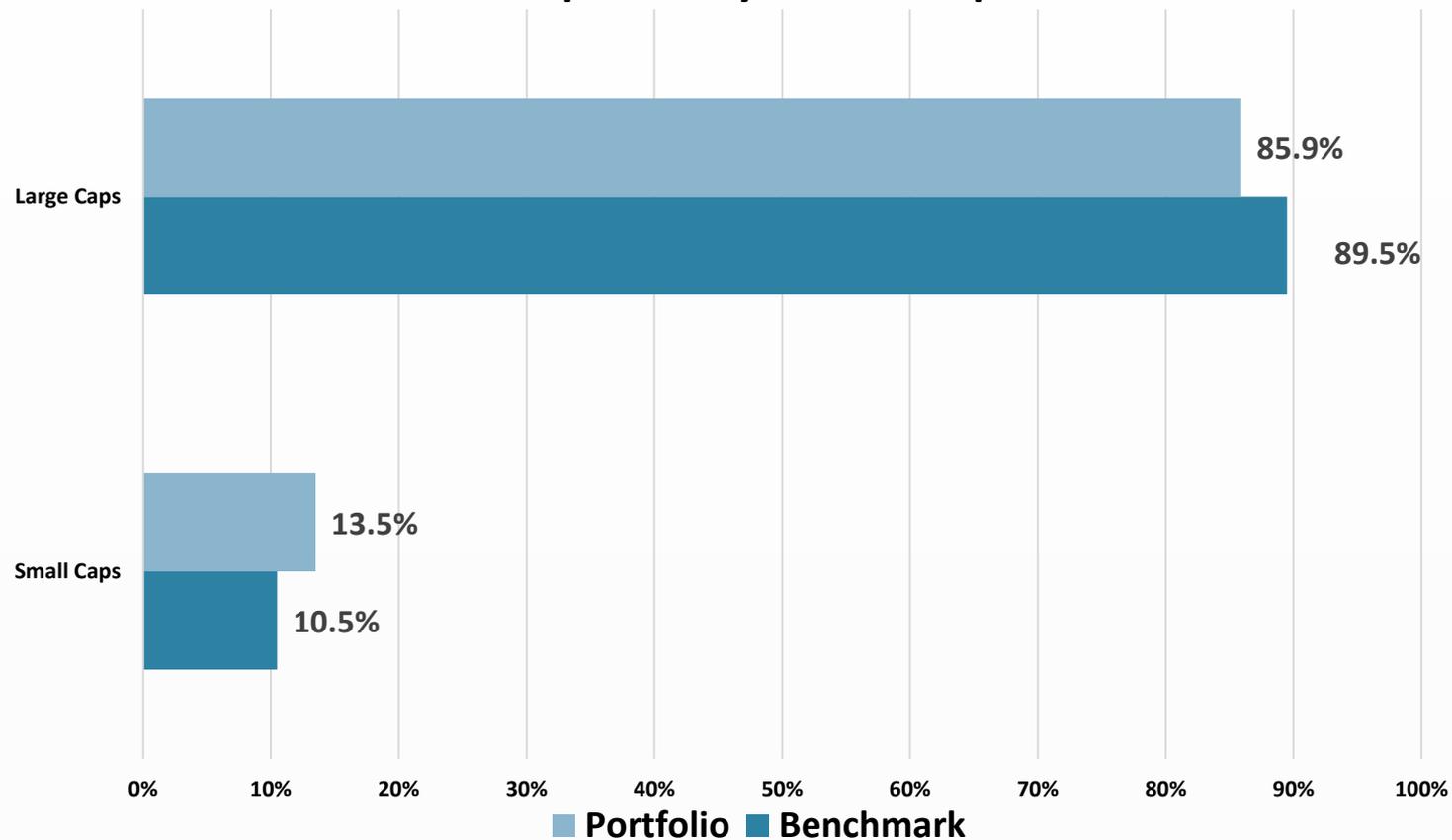


■ Separate Account Index Funds ■ Commingled Index Funds ■ ETFs

As of 3/31/2022

Domestic Equities

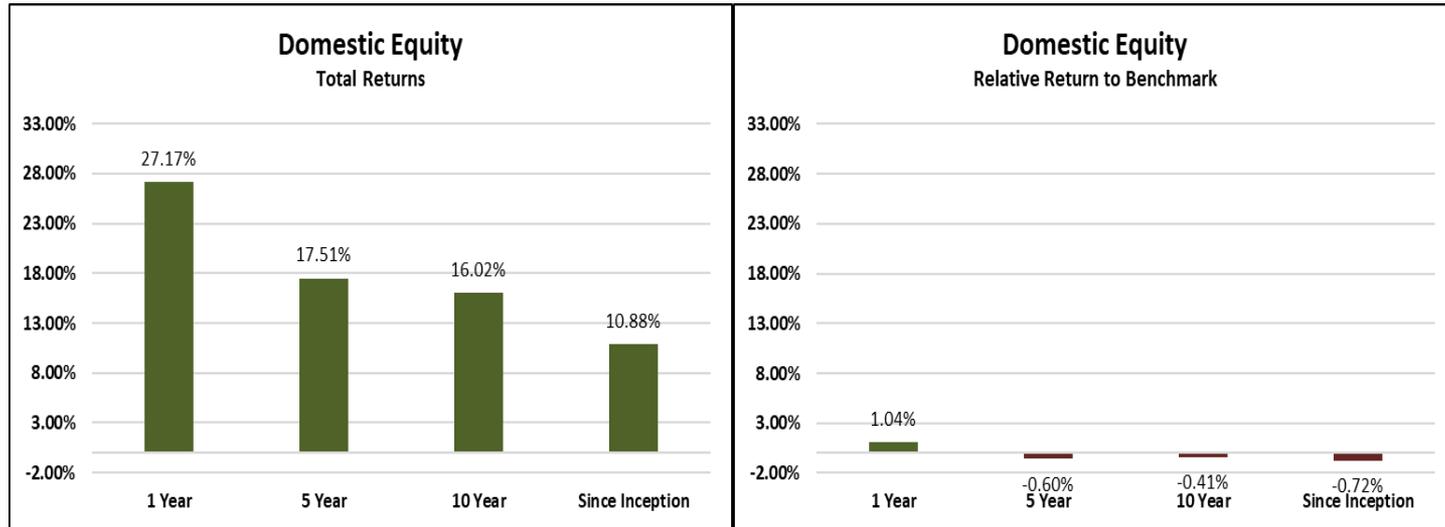
Exposure By Market Cap



As of 3/31/2022

Domestic Equities

Net Performance



Domestic Equity - Pension Asset Class (PAC) Custom Blend:

- From inception to 4/30/2017: S&P 1500 Super Composite
- 5/1/2017 to present: MSCI USA IMI, Gross
- Inception Date: 5/1/2003

	QTD	FYTD	CYTD/1 Year	3 Years	5 Years	7 Years	10 Years	2020	2019	2018	2017	2016	Since Incep.	Inception Date
Domestic Equity	9.27	9.41	27.17	25.92	17.51	14.11	16.02	20.09	30.75	-7.09	20.79	11.46	10.89	05/01/2003
Domestic Equity Custom Index	9.36	9.40	26.12	26.06	18.11	14.78	16.43	21.10	31.14	-5.20	21.05	13.03	11.61	
Difference	-0.09	0.01	1.05	-0.14	-0.60	-0.67	-0.41	-1.01	-0.39	-1.89	-0.26	-1.57	-0.72	

As of 12/31/2021