

All persons wishing to address the Board must complete a speaker's card, stating their name and the agenda item (including "Open Forum") they wish to address. The Committee may take action on items not on the agenda only if findings pursuant to the Sunshine Ordinance and Brown Act are made that the matter is urgent or an emergency.

Oakland Police and Fire Retirement Board and committee meetings are held in wheelchair accessible facilities. Contact the Retirement Unit, 150 Frank Ogawa Plaza, Suite 3349 or call (510) 238-7295 for additional information.



AGENDA

AUDIT COMMITTEE MEMBERS

John C. Speakman
Chairman

Adam Benson
Member

Vacant
Member

**In the event a quorum of the Board participates in the Committee meeting, the meeting is noticed as a Special Meeting of the Board; however, no final Board action can be taken. In the event that the Audit Committee does not reach quorum, this meeting is noticed as an informational meeting between staff and the Chair of the Audit Committee.*

REGULAR MEETING of the AUDIT / OPERATIONS COMMITTEE of the OAKLAND POLICE AND FIRE RETIREMENT SYSTEM ("PFRS")

Wednesday, February 26, 2020 – 9:30 am
One Frank H. Ogawa Plaza, Hearing Room 1
Oakland, California 94612

- - - ORDER OF BUSINESS - - -

- | | | |
|----|---------------------------------|--|
| 1. | Subject:
From: | PFRS Audit Committee Meeting Minutes
Staff of the PFRS Board |
| | Recommendation: | APPROVE January 29, 2020 Audit Committee meeting minutes. |
| 2. | Subject:
From: | Administrative Expenses Report
Staff of the PFRS Board |
| | Recommendation: | ACCEPT an informational report regarding PFRS administrative expenses from July 1, 2019 through December 31, 2019. |
| 3. | Subject:
From: | Mid-Cycle PFRS Administrative Budget for Fiscal Years 2019 through 2021
Staff of the PFRS Board |
| | Recommendation: | RECOMMEND BOARD APPROVAL of the Mid-Cycle PFRS Administrative Budget for Fiscal Years 2019 through 2021. |
| 4. | Subject:
From: | Purchase of iPad Tablets to replace PFRS Staff and Board Member Binders at PFRS Committee and Board Meetings
Staff of the PFRS Board |
| | Recommendation: | RECOMMEND BOARD APPROVAL of the Purchase of iPad Tablets to replace PFRS Staff and Board Member Binders at PFRS Committee and Board Meetings. |

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
REGULAR AUDIT COMMITTEE MEETING
FEBRUARY 26, 2020

ORDER OF BUSINESS, continued

5. **Subject:** **Resolution No. 7089 – Authorization for Travel and Reimbursement of Travel-related Expenses for PFRS Plan Administrator David Jones**
From: Staff of the PFRS Board
-
- Recommendation:** **RECOMMEND BOARD APPROVAL** of Resolution No. 7089 – Resolution approving request of Oakland Police and Fire Retirement System Plan Administrator David Jones to attend the Government Investment Officer's Association 2020 Annual Conference from March 18, 2020 to March 20, 2020 in Las Vegas, Nevada and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Two Thousand Dollars (\$2,000.00).
6. **Subject:** **Resolution No. 7090 – Authorization for Travel and Reimbursement of Travel-related Expenses for PFRS Trustee Adam Benson**
From: Staff of the PFRS Board
-
- Recommendation:** **RECOMMEND BOARD APPROVAL** of Resolution No. 7090 – Resolution approving request of Oakland Police and Fire Retirement System Trustee Adam Benson to attend the Government Investment Officer's Association 2020 Annual Conference from March 18, 2020 to March 20, 2020 in Las Vegas, Nevada and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Two Thousand Dollars (\$2,000.00).
7. **Subject:** **Resolution No. 7091 – Authorization for Travel and Reimbursement of Travel-related Expenses for PFRS Trustee Adam Benson**
From: Staff of the PFRS Board
-
- Recommendation:** **RECOMMEND BOARD APPROVAL** of Resolution No. 7091 – Resolution approving request of Oakland Police and Fire Retirement System Trustee Adam Benson to attend the 2020 Pension Bridge Conference from April 14, 2020 to April 15, 2020 in San Francisco, California and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Two Hundred Dollars (\$200.00).

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
REGULAR AUDIT COMMITTEE MEETING
FEBRUARY 26, 2020

ORDER OF BUSINESS, continued

8. **Subject:** Resolution No. 7092 – Authorization for Travel and Reimbursement of Travel-related Expenses for PFRS Investment Officer Teir Jenkins
-
- From:** Staff of the PFRS Board
-
- Recommendation:** **RECOMMEND BOARD APPROVAL** of Resolution No. 7092 – Resolution approving request of Oakland Police and Fire Retirement System Staff Member Teir Jenkins to attend the 2020 Pension Bridge Conference from April 14, 2020 to April 15, 2020 in San Francisco, California and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Five Hundred Dollars (\$500.00).
9. **Subject:** Resolution No. 7093 – Authorization for Travel and Reimbursement of Travel-related Expenses for PFRS Trustee R. Steven Wilkinson
-
- From:** Staff of the PFRS Board
-
- Recommendation:** **RECOMMEND BOARD APPROVAL** of Resolution No. 7093 – Resolution approving request of Oakland Police and Fire Retirement System Trustee R. Steven Wilkinson to attend the 2020 Pension Bridge Conference from April 14, 2020 to April 15, 2020 in San Francisco, California and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Five Hundred Dollars (\$500.00).
10. **Subject:** Resolution No. 7094 – Authorization for Travel and Reimbursement of Travel-related Expenses for PFRS Plan Administrator David Jones
-
- From:** Staff of the PFRS Board
-
- Recommendation:** **RECOMMEND BOARD APPROVAL** of Resolution No. 7094 – Resolution approving request of Oakland Police and Fire Retirement System Plan Administrator David Jones to attend the 2020 Pension Bridge Conference from April 14, 2020 to April 15, 2020 in San Francisco, California and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Five Hundred Dollars (\$500.00).

11. REVIEW OF PENDING AUDIT AGENDA ITEMS

12. OPEN FORUM

13. FUTURE SCHEDULING

AN AUDIT/OPERATIONS COMMITTEE MEETING of the Oakland Police and Fire Retirement System ("PFRS") was held on Wednesday, January 29, 2020 in Hearing Room 1, One Frank Ogawa Plaza, Oakland, California.

Committee Members Present: • John C. Speakman, Chairman
• Adam Benson, Member

Additional Attendees: • David Jones, Plan Administrator
• Teir Jenkins, Staff Member
• Jennifer Logue, PFRS Legal Counsel

The Meeting was called to order at 9:33 am.

1. **PFRS Audit Committee Meeting Minutes** – Member Benson made a motion to approve the October 30, 2019 Audit Committee meeting minutes, second by Chairman Speakman. Motion passed.

[SPEAKMAN – Y/ BENSON – Y]
(AYES: 2 / NOES: 0 / ABSTAIN: 0)

2. **PFRS Financial Statements as of, and for, the year ended June 30, 2019** – Guian Chhim, Senior Manager, Macias Gini & O'Connell presented the Audit Committee with the report of the results audit of the PFRS Financial Statements for the year ended June 30, 2019. The Audit Committee and staff discussed the results of the financial audit.

MOTION: Member Benson made a motion to recommend Board approval of the Report of the PFRS Financial Statements for the year ended June 30, 2019, second by Chairman Speakman. Motion passed.

[SPEAKMAN – Y/ BENSON – Y]
(AYES: 2 / NOES: 0 / ABSTAIN: 0)

3. **Administrative Expenses Report** – Teir Jenkins presented an informational report of the PFRS administrative expenditures through November 30, 2019.

MOTION: Member Benson made a motion to accept the administrative expenses report, second by Chairman Speakman. Motion passed.

[SPEAKMAN – Y/ BENSON – Y]
(AYES: 2 / NOES: 0 / ABSTAIN: 0)

4. **Annual Report for Fiscal Year ending June 30, 2019** – Investment Officer Teir Jenkins presented the Audit Committee with the PFRS Annual Report for the year ended June 30, 2019. Mr. Jenkins reviewed the various sections of the Annual Report. The Committee commended the PFRS staff for its work in creating the Annual Report.

MOTION: Member Benson made a motion to recommend Board approval for the printing and publishing of the PFRS Annual Report for the year ended June 30, 2019, second by Chairman Speakman. Motion passed.

[SPEAKMAN – Y/ BENSON – Y]
(AYES: 2 / NOES: 0 / ABSTAIN: 0)

5. **Resolution No. 7084 – Wilkinson Travel** – Member Benson made a motion to recommend Board approval of Resolution No. 7084 ratifying the Board President's approval of Oakland Police and Fire Retirement System Board Member R. Steven Wilkinson's request to attend the Markets Group's California Institutional Forum on December 4, 2019 in Santa Rosa, California and authorizing reimbursement of the cost for attendance in the amount of Sixty-five Dollars, second by Chairman Speakman. Motion passed.

[SPEAKMAN – Y/ BENSON – Y]
(AYES: 2 / NOES: 0 / ABSTAIN: 0)

6. **Resolution No. 7085 – Wilkinson Travel** – Member Benson made a motion to recommend Board approval of Resolution No. 7085 ratifying the Board President's approval of Oakland Police and Fire Retirement System Board Member R. Steven Wilkinson's request to attend the 2019 Opal Alternative Investing Summit from December 4, 2019 through December 6, 2019 in Dana Point, California and authorizing reimbursement of the costs for attendance in the amount of Three Hundred Thirty-two Dollars, second by Chairman Speakman. Motion passed.

[SPEAKMAN – Y/ BENSON – Y]
(AYES: 2 / NOES: 0 / ABSTAIN: 0)

7. **Resolution No. 7086 – Jones Travel** – Member Benson made a motion to recommend Board approval of Resolution No. 7086 approving request of Oakland Police and Fire Retirement System Plan Administrator David Jones to attend the 2020 California Association of Public Retirement Systems Administrators' Roundtable on February 7, 2020 in Costa Mesa, California and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Seven Hundred Dollars, second by Chairman Speakman. Motion passed.

[SPEAKMAN – Y/ BENSON – Y]
(AYES: 2 / NOES: 0 / ABSTAIN: 0)

8. **Resolution No. 7087 – Wilkinson Travel** – Member Benson made a motion to recommend Board approval of Resolution No. 7087 approving request of Oakland Police and Fire Retirement System Board Member R. Steven Wilkinson to attend the 2020 California Association of Public Retirement Systems General Assembly from March 7, 2020 to March 10, 2020 in Rancho Mirage, California and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Two Thousand dollars, second by Chairman Speakman. Motion passed.

[SPEAKMAN – Y/ BENSON – Y]
(AYES: 2 / NOES: 0 / ABSTAIN: 0)

9. **Audit Committee Pending Agenda Items** – Plan Administrator David Jones reported that the Ad Hoc Committee will meet following the Board meeting. Also, Mr. Jones reported that the Management Audit matter would be brought back to the Audit Committee for discussion in March 2020.

10. **Open Forum** – No Report.

11. **Future Scheduling** – The next Audit Committee was scheduled for Wednesday, February 26, 2020.

The Meeting Adjourned at 9:53 am.

JOHN C. SPEAKMAN, COMMITTEE CHAIRMAN

DATE

DRAFT

Table 1

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM

Administrative Budget Spent to Date (Preliminary)

As of December 31, 2019

	Approved Budget	December 2019	FYTD	Remaining	Percent Remaining
Internal Administrative Costs					
PFRS Staff Salaries	\$ 1,134,000	\$ 95,258	\$ 548,415	\$ 585,585	51.6%
Board Travel Expenditures	52,500	2,888	6,402	46,098	87.8%
Staff Training	20,000	-	125	19,875	99.4%
Staff Training - Tuition Reimbursement	7,500	-	-	7,500	100.0%
Annual Report & Duplicating Services	4,000	-	-	4,000	100.0%
Board Hospitality	3,600	-	995	2,605	72.4%
Payroll Processing Fees	40,000	-	-	40,000	100.0%
Miscellaneous Expenditures	40,000	2,817	8,568	31,432	78.6%
Internal Service Fees (ISF)	77,000	-	68,990	8,011	10.4%
Contract Services Contingency	50,000	-	1,200	48,800	97.6%
Office Construction Costs*	5,128	-	-	5,128	100.0%
Internal Administrative Costs Subtotal :	\$ 1,433,728	\$ 100,963	\$ 634,694	\$ 799,034	55.7%
Actuary and Accounting Services					
Audit	\$ 45,000	\$ 11,754	\$ 33,200	\$ 11,800	26.2%
Actuary	46,500	5,695	19,036	27,464	59.1%
Actuary and Accounting Subtotal:	\$ 91,500	\$ 17,449	\$ 52,236	\$ 39,264	42.9%
Legal Services					
City Attorney Salaries	\$ 188,000	\$ 13,531	\$ 68,944	\$ 119,056	63.3%
Legal Contingency	150,000	4,760	5,455	144,546	96.4%
Legal Services Subtotal:	\$ 338,000	\$ 18,291	\$ 74,399	\$ 263,601	78.0%
Investment Services					
Money Manager Fees	\$ 1,349,000	\$ 10,710	\$ 296,942	\$ 1,052,058	78.0%
Custodial Fee	124,000	-	29,125	94,875	76.5%
Investment Consultant (Meketa)	100,000	25,000	50,000	50,000	50.0%
Investment Subtotal:	\$ 1,573,000	\$ 35,710	\$ 376,067	\$ 1,196,933	76.1%
Total Operating Budget	\$ 3,436,228	\$ 172,413	\$ 1,137,395	\$ 2,298,833	66.90%

*Carry Forward from FY 2018-2019

Table 2

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM

Cash in Treasury (Fund 7100) - Preliminary

As of December 31, 2019

	December 2019
Beginning Cash as of 11/30/2019	\$ 6,696,492
Additions:	
City Pension Contribution - December	\$ 3,617,417
Investment Draw (Incoming Wire) - 12/1/2019	1,000,000
Misc. Receipts	798
Total Additions:	<u>\$ 4,618,215</u>
Deductions:	
Pension Payment (November Pension Paid on 12/1/2019)	(4,533,222)
Expenditures Paid	(241,455)
Total Deductions	<u>\$ (4,774,676)</u>
 Ending Cash Balance as of 12/31/2019*	 <u><u>\$ 6,540,030</u></u>

** On 1/1/2020, December pension payment of appx \$4,577,000 will be made leaving a cash balance of \$1,963,000*

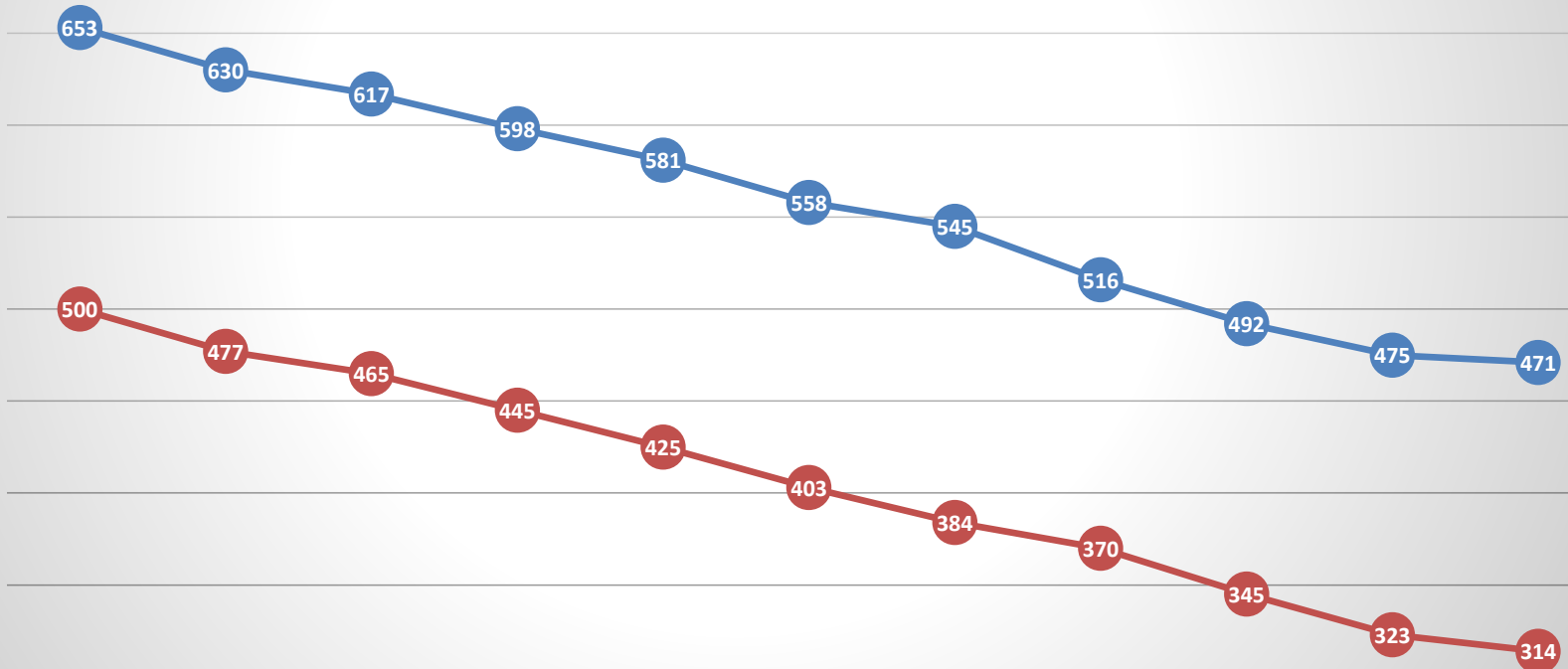
Table 3
CITY OF OAKLAND POLICE AND FIRE RETIREMENT SYSTEM

Census
As of December 31, 2019

COMPOSITION	POLICE	FIRE	TOTAL
Retired Member:			
Retiree	345	197	542
Beneficiary	126	117	243
<i>Total Retired Members</i>	471	314	785
<i>Total Membership:</i>	471	314	785

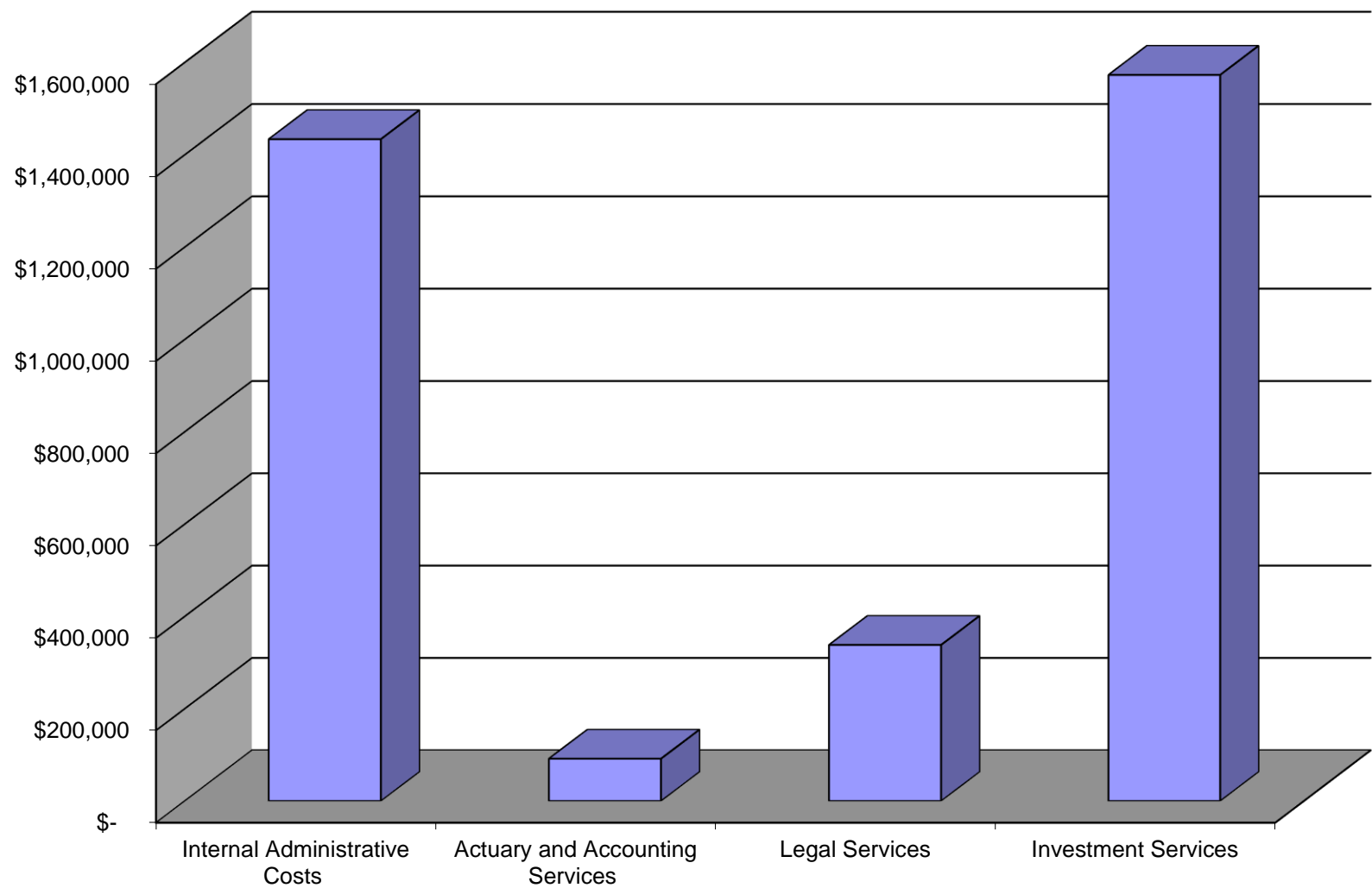
COMPOSITION	POLICE	FIRE	TOTAL
Retired Member:			
Service Retirement	312	162	474
Disability Retirement	145	139	284
Death Allowance	14	13	27
<i>Total Retired Members:</i>	471	314	785
<i>Total Membership as of December 31, 2019:</i>	471	314	785
<i>Total Membership as of June 30, 2019:</i>	475	323	798
<i>Annual Difference:</i>	-4	-9	-13

Oakland Police and Fire Retirement System Pension Plan Membership Count As of December 31, 2019 (FY 2010 - FY 2020)

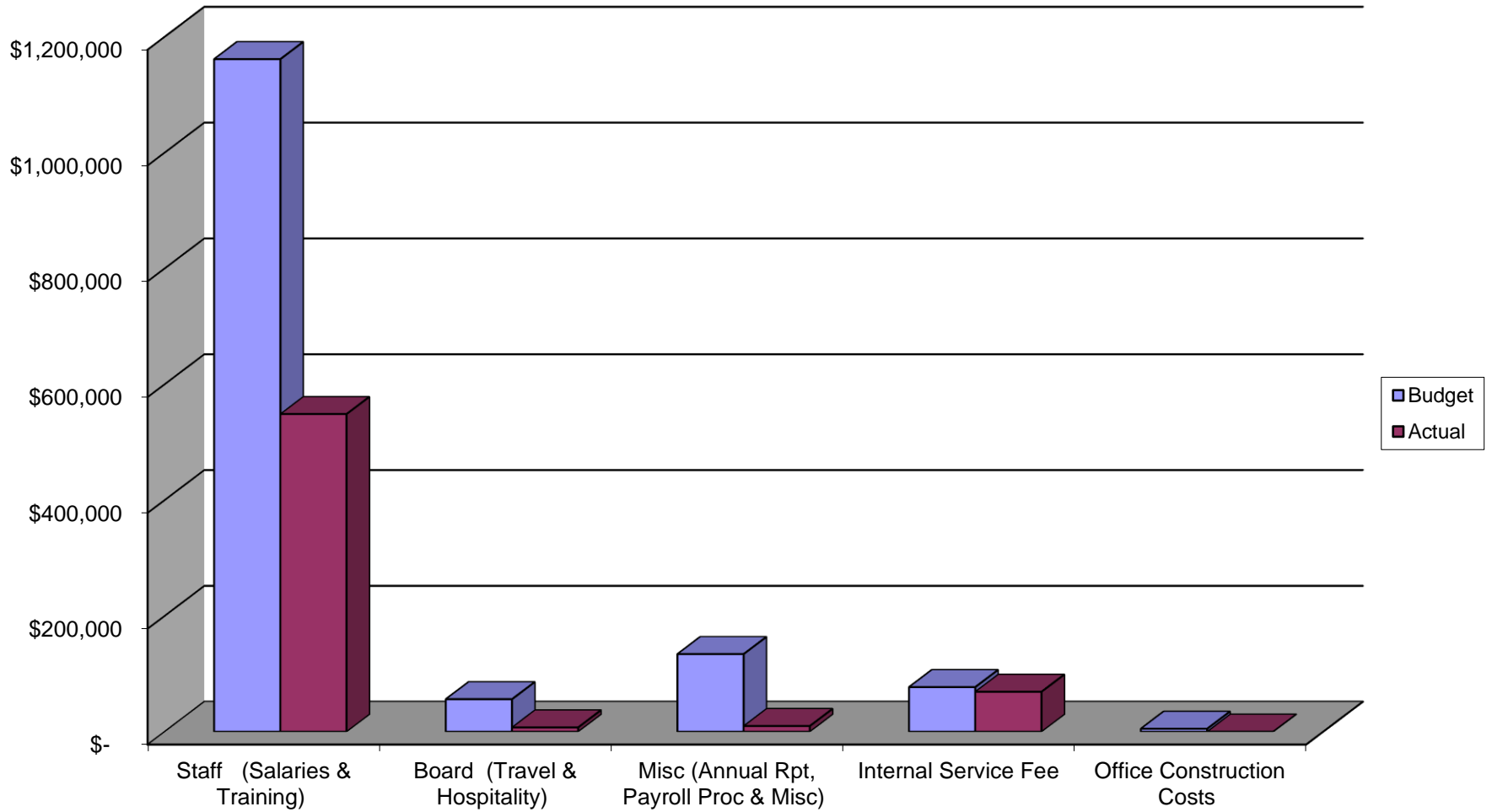


	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020 FYTD
Police	653	630	617	598	581	558	545	516	492	475	471
Fire	500	477	465	445	425	403	384	370	345	323	314
Total	1153	1107	1082	1043	1006	961	929	886	837	798	785

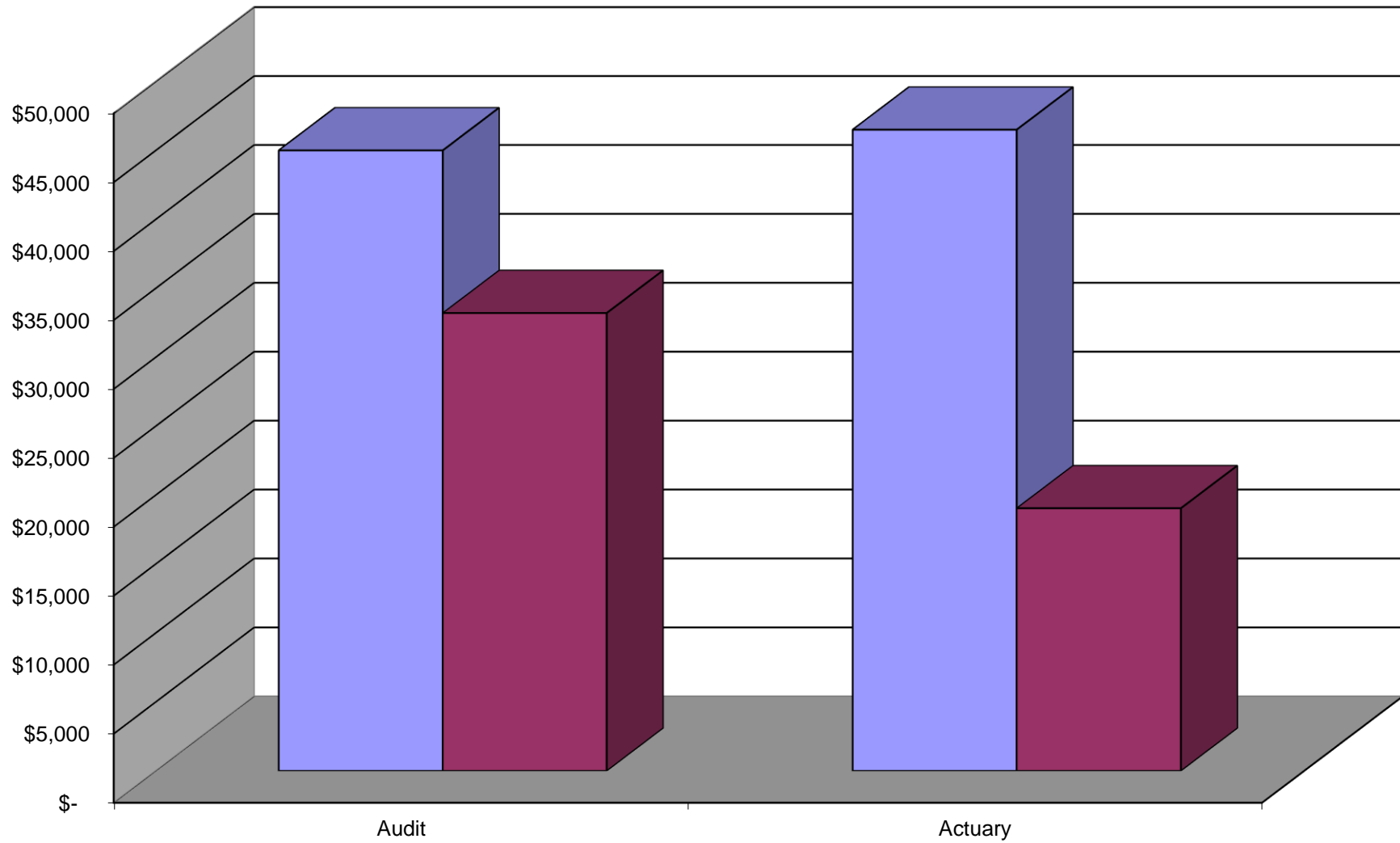
OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
Approved Budget
FY 2019-2020



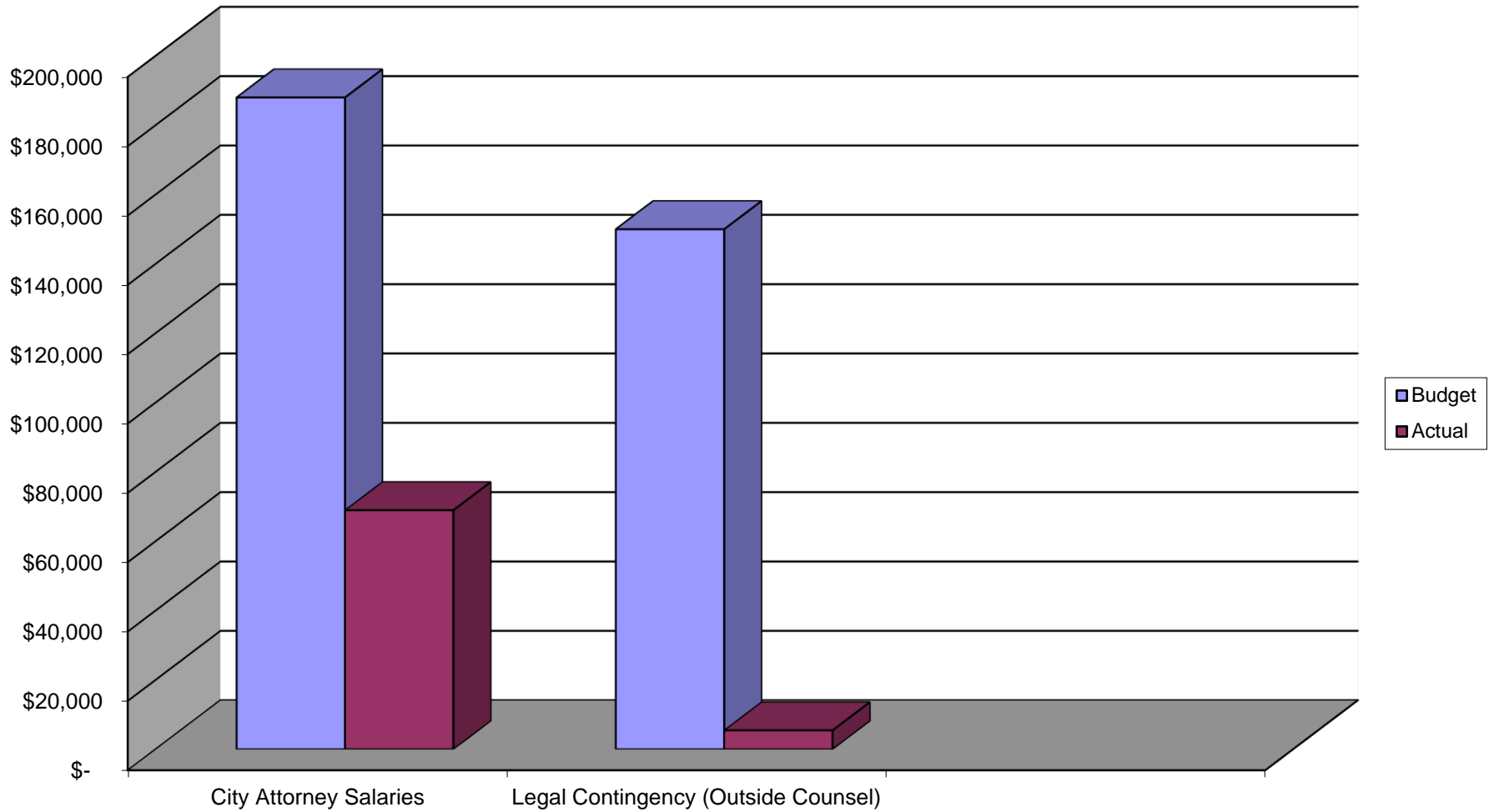
OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
Budget vs Actual as of December 31, 2019
Internal Administrative Costs



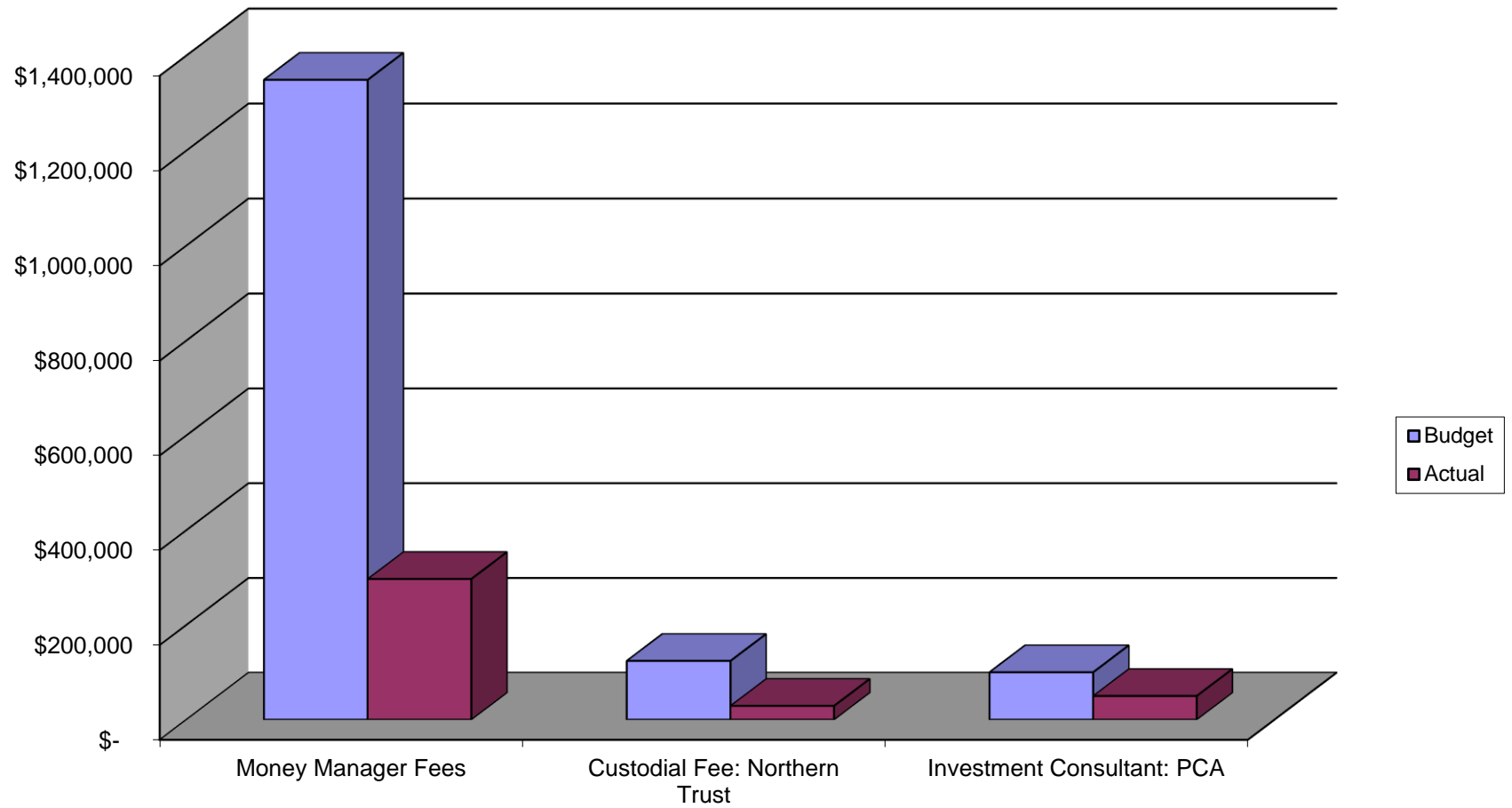
OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
Budget vs. Actual as of December 31, 2019
Actuary and Accounting Services



OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
Budget vs. Actual as of December 31, 2019
Legal Services



OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
Budget vs. Actual as of December 31, 2019
Investment Services





AGENDA REPORT

TO: Oakland Police and Fire
Retirement Board

FROM: David Jones
Plan Administrator

SUBJECT: Proposed Changes to the Mid-
Year Administrative Budgets for
FY 2019/2020 and FY 2020/2021

DATE: February 18, 2020

RECOMMENDATION

Staff has analyzed the Oakland Police and Fire Retirement System (PFRS) previously approved budgets for Fiscal Year 2019/2020 and Fiscal Year 2020/2021 and is recommending some adjustments to the budgeted line items. Staff recommends that the Board approve the reallocations for FY 2019/2020 and FY 2020/2021 as attached in **Table 1**. The proposed budget changes are cost neutral and will not change the overall approved annual budgets.

BACKGROUND

At their February 27, 2019 Board meeting, the Oakland Police and Fire Retirement System Board ("PFRS Board") approved a 2-year PFRS Administrative Staff Budget for FY 2019/2020 and FY 2020/2021. The Board approved an overall annual budget of \$3,436,228 in FY 2019/2020 and \$3,512,100 in FY 2020/2021.

PROPOSED CHANGES

Staff recommends proposed changes to the FY 2019/2020 and FY 2020/2021 budgets as shown on **Table 1**. The new proposed change reallocates budgeted funds to accurately reflect actual costs within the specified line items. The proposed changes do not result to a change to the overall budget. The total approved annual budgets are less than 1.0% of the Plan's existing investment portfolio.

KEY CHANGES

Staff costs are projected to increase by \$15,000 in FY 2019/2020 and \$25,000 in FY 2020/2021. These increases are mostly due to projected increases in the City of Oakland staff fringe benefits costs and approved staff cost of living adjustments. Internal Service Fees ("ISF") are required costs for all City of Oakland funds. These costs are associated with city-wide services such as special setup, facilities general support, city accounting services, city purchasing services, and IT support. The PFRS' share of the ISF costs are projected to increase from \$77,000 to \$85,000 in FY 2019/2020 and from \$79,000 to \$88,000 in FY 2020/2021.

PFRS Audit Committee Meeting
February 26, 2020

Oakland Police and Fire Retirement Board

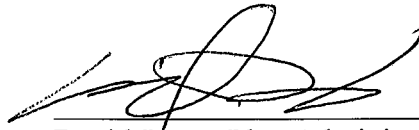
Subject: Proposed Changes to the Mid-Year Administrative Budgets for FY 2019/2020 and FY 2020/2021

Date: February 18, 2020

Page 2

Staff proposes off-setting the proposed budget increases with projected savings in Money Manager Fees. The main reason for this projected savings is the approved use of temporary Exchange Traded Funds (ETFs) during the transition of assets. ETFs often charge less fees than the active investment managers.

Respectfully submitted,



David Jones, Plan Administrator
Oakland Police and Fire Retirement System

Attachments (1):

Table 1: Proposed Administrative Budget Changes for FY 2019/2020 and FY 2020/2021

Table 1

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
Proposed Mid-Cycle Administrative Budget Changes
FY 2019-2020 and FY 2020-2021

	Approved Budgets		Proposed Changes		Proposed Revised Budgets	
	FY 2019-2020	FY 2020-2021	FY 2019-2020	FY 2020-2021	FY 2019-2020	FY 2020-2021
Internal Administrative Costs						
PFRS Staff Salaries	\$ 1,134,000	\$ 1,175,000	\$ 15,000	\$ 25,000	\$ 1,149,000	\$ 1,200,000
Board Travel Expenditures	52,500	52,500	-	-	52,500	52,500
Staff Training	20,000	20,000	-	-	20,000	20,000
Staff Training - Tuition Reimbursement	7,500	7,500	-	-	7,500	7,500
Annual Report & Duplicating Services	4,000	4,000	-	-	4,000	4,000
Board Hospitality	3,600	3,600	-	-	3,600	3,600
Payroll Processing Fees	40,000	40,000	-	-	40,000	40,000
Miscellaneous Expenditures	40,000	40,000	-	-	40,000	40,000
Internal Service Fees (ISF)	77,000	79,000	8,000	9,000	85,000	88,000
Contract Services Contingency	50,000	50,000	-	-	50,000	50,000
Office Construction Costs*	5,128	-	-	-	5,128	-
Internal Administrative Subtotal :	\$ 1,433,728	\$ 1,471,600	\$ 23,000	\$ 34,000	\$ 1,456,728	\$ 1,505,600
Actuary and Accounting Services						
Audit	\$ 45,000	\$ 45,000	\$ -	\$ -	\$ 45,000	\$ 45,000
Actuary	46,500	46,500	-	-	46,500	46,500
Actuary and Accounting Subtotal:	\$ 91,500	\$ 91,500	\$ -	\$ -	\$ 91,500	\$ 91,500
Legal Services						
City Attorney Salaries	\$ 188,000	\$ 188,000	\$ -	\$ -	\$ 188,000	\$ 188,000
Legal Contingency	150,000	150,000	-	-	150,000	150,000
Legal Services Subtotal:	\$ 338,000	\$ 338,000	\$ -	\$ -	\$ 338,000	\$ 338,000
Investment Services						
Money Manager Fees	\$ 1,349,000	\$ 1,387,000	\$ (23,000)	\$ (34,000)	\$ 1,326,000	\$ 1,353,000
Custodial Fee: (Northern Trust)	124,000	124,000	-	-	124,000	124,000
Investment Consultant (Meketa)	100,000	100,000	-	-	100,000	100,000
Investment Services Subtotal:	\$ 1,573,000	\$ 1,611,000	\$ (23,000)	\$ (34,000)	\$ 1,550,000	\$ 1,577,000
			-	-		
Total Operating Budget	\$ 3,436,228	\$ 3,512,100	\$ -	\$ -	\$ 3,436,228	\$ 3,512,100



A G E N D A R E P O R T

TO: Oakland Police and Fire
Retirement Board

FROM: David Jones

SUBJECT: Purchase of iPad Tablets to replace PFRS
Staff and Board Member Binders at PFRS
Committee and Board Meetings

DATE: February 18, 2020

SUMMARY

The staff of the PFRS Board was directed to report and recommend the cost of the purchase of iPad Tablets for Board and staff use to replace the printing of agenda material used at PFRS Committee and Board meetings.

BACKGROUND

At the October 2019 Board meeting, the PFRS Board approved the purchase of an iPad Tablet to be used to test the replacement of the Board Meeting Binders. Staff presented a Board member with the iPad Tablet to test its use during the January 2020 Board meeting in place of using the regular PFRS Board binder. Staff reported that a typical binder used for a Board member contained between 200 to 500 pages of printed material and the preparation of each binder for each meeting took the better part of a day to prepare due the printing of each binder's material.

At the conclusion of the Board meeting, the Board discussed the ease of use and convenience of the iPad Tablet in place of the binder. The Board agreed that the use of the iPad Tablet was preferable to the agenda material presented in the binders for Committee and Board meetings. Staff was instructed to research the cost and delivery of providing iPad Tablets to the PFRS board and report its findings to the Audit Committee at its February 26, 2020 meeting for Board consideration. Staff was asked to review the availability and cost of purchasing 'refurbished' models if the savings was significant.

ANALYSIS

The purchase of all City of Oakland technology equipment is made through the City of Oakland Information Technology Department (ITD). The cost of purchasing a new iPad Tablet with the following specifications is **\$1,087.04**:

- Apple iPad Pro (3rd Generation) Wi-Fi only Tablet – 12.9” – 64GB Storage iOS 12 – Space Gray

The additional cost of a protective case varies; the cost of the case for iPad #1 was **\$65.54**.

Estimated cost of iPad with case: @ **\$1,155.00**

Oakland Police and Fire Retirement Board

Subject: Purchase of iPad Tablets to replace PFRS Staff and Board Member Binders at PFRS Committee and Board Meetings

Date: February 18, 2020

Page 2

The estimated cost to purchase eight (8) additional iPad Tablets with cases (one for each board member and two for staff) is \$9,300.00.

Staff reviewed the possibility of purchasing comparable refurbished models and found a savings of \$50 - 100 per unit when they were available. However, the condition of the refurbished models was not guaranteed to be good. Also, depending on the ITD equipment purchase policy, the purchase of refurbished equipment may be limited.

RECOMMENDATION

Staff recommend that the PFRS board approve the purchase of eight (8) iPad Tablets with cases to replace the printing of agenda material used at PFRS Committee and Board meetings for an estimated cost of \$9,300.00.

Respectfully submitted,



David Jones, Plan Administrator
Oakland Police and Fire Retirement System

For questions please contact Teir Jenkins, Investment Officer, at 510-238-6481.

Attachments (if any):

1. None



MEMORANDUM

TO: Oakland Police & Fire
Retirement Board

FROM: Teir Jenkins

SUBJECT: Authorization and
Reimbursement of Board/Staff
Travel/Education Expenses

DATE: February 18, 2020

David Jones, Staff member of the Oakland Police and Fire Retirement System board, requests authorization for reimbursement of travel and/or board education related funds for the event detailed below. Staff has verified that budgeted funds are available for this Staff member to be reimbursed.

Staff recommends the reimbursement of travel/education funds for the event below be approved by board motion.

Travel / Education Event: Gov't Investment Officer's Assn 2020 Annual Conference

Event Location: Park MGM Hotel, Las Vegas, NV

Event Date: March 18, 2020 to March 20, 2020

Estimated Event Expense*: \$ 2,000.00 (estimated)

Notes: _____

* If enrollment, registration or admission expenses are required, the fund will process a check in advance and pay vendor directly; all other board-approved reimbursements will be made upon delivery of receipts to staff by the traveling party. Cancellation of event attendance requires return of all reimbursed funds paid to attendee to the fund.

Respectfully submitted,

Teir Jenkins, Investment Manager
Oakland Police and Fire Retirement System

For questions please contact David Low, Administrative Assistant, at 510-238-7295.

Attachments (if any):

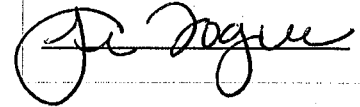
Resolution #7089

Government Investment Officer's Association 2020 Annual Conf Agenda

OAKLAND POLICE AND FIRE RETIREMENT BOARD
CITY OF OAKLAND, CALIFORNIA

RESOLUTION No. 7089

Approved as to
Form and Legality



ON MOTION OF MEMBER _____ SECONDED BY MEMBER _____

RESOLUTION APPROVING REQUEST OF OAKLAND POLICE AND FIRE RETIREMENT SYSTEM PLAN ADMINISTRATOR DAVID JONES TO ATTEND THE GOVERNMENT INVESTMENT OFFICER'S ASSOCIATION 2020 ANNUAL CONFERENCE FROM MARCH 18, 2020 TO MARCH 20, 2020 IN LAS VEGAS, NEVADA AND FOR REIMBURSEMENT OF REGISTRATION FEES AND TRAVEL-RELATED EXPENSES IN AN AMOUNT NOT TO EXCEED TWO THOUSAND DOLLARS (\$2,000.00)

WHEREAS, the Oakland Police and Fire Retirement System (PFRS) Education and Travel Policy ("Travel Policy") requires that PFRS Board members and staff obtain prior Board approval of all education and travel-related expenses that will be reimbursed by PFRS; and

WHEREAS, PFRS Plan Administrator David Jones would like to attend the Government Investment Officer's Association 2020 Annual Conference ("the Conference") in Las Vegas, NV from March 18, 2020 to March 20, 2020; and

WHEREAS, in compliance with the Travel Policy, Plan Administrator Jones has submitted documentation showing that registration fees and estimated travel-related expenses to attend the Conference will be Two Thousand Dollars (\$2,000.00); now, therefore, be it

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IN BOARD MEETING, CITY HALL, OAKLAND, CA FEBRUARY 26, 2020

PASSED BY THE FOLLOWING VOTE:

AYES: **BENSON, GODFREY, NICHELINI, SPEAKMAN, WILKINSON
AND PRESIDENT JOHNSON**

NOES:

ABSTAIN:

ABSENT:

ATTEST: _____
PRESIDENT

ATTEST: _____
SECRETARY



GIOA PRELIMINARY CONFERENCE AGENDA 2020



Tuesday, March 17, 2020

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CONFERENCE CONCLUDES

SEE YOU NEXT YEAR AT THE PARK MGM!
MARCH 24-26, 2021



GIOA PRELIMINARY CONFERENCE AGENDA 2020



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Capital
Markets



Thank you Platinum Sponsors!



Thank you Gold Sponsors!



STIFEL



Thank you Exhibitors!





MEMORANDUM

TO: Oakland Police & Fire
Retirement Board

FROM: David Jones

SUBJECT: Authorization and
Reimbursement of Board/Staff
Travel/Education Expenses

DATE: February 18, 2020

Adam Benson, Board member of the Oakland Police and Fire Retirement System board, requests authorization for reimbursement of travel and/or board education related funds for the event detailed below. Staff has verified that budgeted funds are available for this Board member to be reimbursed.

Staff recommends the reimbursement of travel/education funds for the event below be approved by board motion.

Travel / Education Event: Gov't Investment Officer's Assn 2020 Annual Conference

Event Location: Park MGM Hotel, Las Vegas, NV

Event Date: March 18, 2020 to March 20, 2020

Estimated Event Expense*: \$ 2,000.00 (estimated)

Notes: _____

* If enrollment, registration or admission expenses are required, the fund will process a check in advance and pay vendor directly; all other board-approved reimbursements will be made upon delivery of receipts to staff by the traveling party. Cancellation of event attendance requires return of all reimbursed funds paid to attendee to the fund.

Respectfully submitted,

David Jones, Plan Administrator
Oakland Police and Fire Retirement System

For questions please contact David Low, Administrative Assistant, at 510-238-7295.

Attachments (if any):

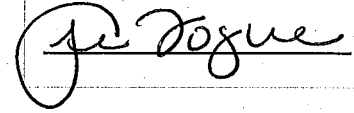
Resolution #7090

Government Investment Officer's Association 2020 Annual Conf Agenda

OAKLAND POLICE AND FIRE RETIREMENT BOARD
CITY OF OAKLAND, CALIFORNIA

Approved as to
Form and Legality

RESOLUTION No. 7090



ON MOTION OF MEMBER _____ SECONDED BY MEMBER _____

RESOLUTION APPROVING REQUEST OF OAKLAND POLICE AND FIRE RETIREMENT SYSTEM TRUSTEE ADAM BENSON TO ATTEND THE GOVERNMENT INVESTMENT OFFICER'S ASSOCIATION 2020 ANNUAL CONFERENCE FROM MARCH 18, 2020 TO MARCH 20, 2020 IN LAS VEGAS, NEVADA AND FOR REIMBURSEMENT OF REGISTRATION FEES AND TRAVEL-RELATED EXPENSES IN AN AMOUNT NOT TO EXCEED TWO THOUSAND DOLLARS (\$2,000.00)

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STIFEL



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MEMORANDUM

TO: Oakland Police & Fire
Retirement Board

FROM: David Jones

SUBJECT: Authorization and
Reimbursement of Board/Staff
Travel/Education Expenses

DATE: February 18, 2020

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Staff recommends the reimbursement of travel/education funds for the event below be approved by board motion.

Travel / Education Event: 2020 Pension Bridge

Event Location: Westin St. Francis Hotel, San Francisco, CA

Event Date: April 14, 2020 to April 15, 2020

Estimated Event Expense*: \$ 200.00 (estimated)

Notes: _____

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Oakland Police and Fire Retirement System

For questions please contact David Low, Administrative Assistant, at 510-238-7295.

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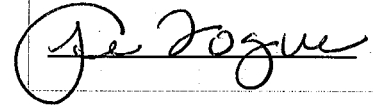
Resolution #7091

2020 Pension Bridge Agenda

OAKLAND POLICE AND FIRE RETIREMENT BOARD
CITY OF OAKLAND, CALIFORNIA

RESOLUTION No. 7091

Approved as to
Form and Legality



ON MOTION OF MEMBER _____ SECONDED BY MEMBER _____

RESOLUTION APPROVING REQUEST OF OAKLAND POLICE AND FIRE RETIREMENT SYSTEM TRUSTEE ADAM BENSON TO ATTEND THE 2020 PENSION BRIDGE CONFERENCE FROM APRIL 14, 2020 TO APRIL 15, 2020 IN SAN FRANCISCO, CALIFORNIA AND FOR REIMBURSEMENT OF REGISTRATION FEES AND TRAVEL-RELATED EXPENSES IN AN AMOUNT NOT TO EXCEED TWO HUNDRED DOLLARS (\$200.00)

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WHEREAS, PFRS Trustee Adam Benson would like to attend the 2020 Pension Bridge Conference ("the Conference") in San Francisco, CA from April 14, 2020 to April 15, 2020; and

WHEREAS, in compliance with the Travel Policy, Trustee Benson has submitted documentation showing that registration fees and estimated travel-related expenses to attend the Conference will be Two Hundred Dollars (\$200.00); now, therefore, be it

RESOLVED: That Trustee Adam Benson's request to attend the 2020 Pension Bridge Conference in San Francisco, CA from April 14, 2020 to April 15, 2020 at an estimated cost of Two Hundred Dollars (\$200.00) is approved; and be it

FURTHER RESOLVED: That the PFRS Board authorizes reimbursement of registration fees and travel-related expenses in an amount not to exceed Two Hundred Dollars (\$200.00) for Trustee Benson's attendance at the 2020 Pension Bridge Conference.

IN BOARD MEETING, CITY HALL, OAKLAND, CA FEBRUARY 26, 2020

PASSED BY THE FOLLOWING VOTE:

AYES: **GODFREY, NICHELINI, SPEAKMAN, WILKINSON
AND PRESIDENT JOHNSON**

NOES:

ABSTAIN: **BENSON**

ABSENT:

ATTEST: _____
PRESIDENT

ATTEST: _____
SECRETARY



**PENSION
BRIDGE**

**THE ANNUAL
2020**

APRIL 14TH & 15TH, 2020

WESTIN ST. FRANCIS HOTEL
SAN FRANCISCO

**CELEBRATING
15 YEARS**

THE PENSION BRIDGE ANNUAL

April 14th & 15th, 2020 | Westin St. Francis Hotel, San Francisco

The Pension Bridge Annual Conference provides the highest level of education and networking to the institutional investment community. A mix of Public Funds, Corporate Funds, Foundations, Endowments, Union Funds, Taft-Hartley Funds, Family Offices, Sovereign Wealth Funds, Consultants and Investment Managers will come together for this exclusive event.

The Pension Bridge Annual provides the industry's only controlled attendance structured event. This helps Pension Bridge to maintain the best conference ratio in the industry. **There will be approximately 250 Pension Fund Representatives and Non-Discretionary Consultants in attendance. We have allowed for only 110 Investment Manager Firms.** This better than 2:1 ratio, combined with participation from the most influential industry figures, creates a more enjoyable environment for all.

OUR EVENT FOCUS

The focus at 2020's event will be capital preservation while identifying the key reward drivers for generating consistent returns. Learn from the experts about the most important trends, challenges, opportunities and strategies to attack the long-awaited cycle contraction that will shape our industry for the immediate and long-term future. We remain in a challenging investment environment that is fully valued with a high-risk profile. The Pension Bridge Annual will uncover various structural transformations and investment ideas that will be beneficial for long-term fiscal sustainability.

We will also focus on climate change and technological innovation which will both continue to have a transformational impact not only on markets and investments, but on every aspect of our lives.

THE PENSION BRIDGE ANNUAL HAS TWO GOALS IN MIND

First is to provide the **highest level of education** with the top speaker faculty. This highly regarded group will bring forth influential insights and concepts. The second goal is to help **build relationships** between the pension plans, consultants and investment managers. We have provided the best possible environment for this event which is designed to be conducive for networking. We will cap off the event with a fun and enjoyable networking outing necessary for maintaining relationships and connecting with your peers and prospective business contacts.

We look forward to a strong event and a very productive one from both an educational and relationship perspective. We have structured this conference in a manner that will be most beneficial for you. We hope that you will join us to be amongst your industry peers to learn about the most up-to-date insights, investment strategies and trends.

KEY QUESTIONS WE WILL ADDRESS






- What are the Best Strategies and Approaches for Downside Protection during a Period of Market Stress?
- Managing Drawdown Risk, Liquidity Risk, Leverage Risk and More
- Addressing Climate Change Impact, Risks and Investment Opportunities
- Which Hedge Fund Strategies will provide the Best Downside Protection during the Next Market Downturn?
- How can a Multi-Asset Approach help you Manage Drawdown Risk?
- Benefiting from Risk Parity for the Downturn and Understanding its Hidden Drawbacks
- Where can you find Pockets of Opportunity and Relative Value in the Credit Space?
- Incorporating Artificial Intelligence into Investment Decision-Making and Portfolio Management
- What are the Investment Implications of Disruptive Change and how can you Benefit?
- Developing a Cybersecurity Risk Management Strategy—Staff Education and Best Practices
- Biggest Risks of Late Cycle Investing in Private Equity and how to Navigate Successfully
- Which Socio/Demographic Trends you can Benefit from in Real Estate? Most Resilient Sectors?
- Distressed Opportunities in BBB-Rated Bonds, Corporate Debt, European Debt and More
- Best Opportunities and Greatest Risks for Unconstrained Fixed Income
- The Advantages of Fixed Income Factor Investing as a Credit Diversifier
- Will China's Debt Problem and Tariffs Cause a Hard Landing?
- Currency Risk – to Hedge or Not to Hedge?
- Most Promising Areas for Impact Investing in Emerging and Developed Markets
- How Alternative Risk Premia can show Little or No Correlation to a 60/40 or Hedge Fund Portfolio
- Most Attractive Sectors and Geographies in Infrastructure while taking Interest Rates into Consideration
- Insights from Impactful CIOs on Risks, Allocations, Positioning for the Downturn and More

In addition to the listed themes above, we will be covering many more challenging issues that are crucial to the investment decision making process during these uncertain economic times. We will learn from the best about how to adapt in our industry which is always evolving and transforming.

TUESDAY, APRIL 14TH

 7:00 AM – BREAKFAST	6
8:00 AM – OPENING REMARKS	6
8:05 AM – KEYNOTE SPEAKER	6
8:35 AM – KEYNOTE SPEAKER – MACROECONOMIC VIEW	6
9:05 AM – ARTIFICIAL INTELLIGENCE IN ASSET MANAGEMENT AND BENEFITING FROM DISRUPTIVE INNOVATION INVESTMENT	7
 9:55 AM – REFRESHMENT BREAK	8
10:25 AM – ASSET ALLOCATION AND RISK MANAGEMENT	8
11:15 AM – RISK MITIGATING STRATEGIES	9
11:50 AM – RISK PARITY	9
 12:25 PM – LUNCH	10
1:35 PM – UNCONSTRAINED FIXED INCOME	10
2:20 PM – FIXED INCOME FACTOR INVESTING	11
 2:50 PM – REFRESHMENT BREAK	11
3:20 PM – CLIMATE CHANGE IMPACT, RISKS AND OPPORTUNITIES IN THE INVESTMENT PROCESS	11
4:05 PM – CYBERSECURITY	12
4:20 PM – IMPACT INVESTING	13
 4:50 PM – COCKTAIL RECEPTION	13
6:05 PM – COCKTAIL RECEPTION CONCLUDES	13

WEDNESDAY, APRIL 15TH

 7:00 AM – BREAKFAST	14
8:00 AM – EMERGING MARKETS	14
8:40 AM – CURRENCY RISK – TO HEDGE OR NOT TO HEDGE?	15
8:55 AM – MULTI-ASSET INVESTING	15
9:25 AM – ALTERNATIVE RISK PREMIA	16
 10:00 AM – REFRESHMENT BREAK	16
10:30 AM – HEDGE FUNDS	16
11:20 AM – CREDIT STRATEGIES	17
12:05 PM – DISTRESSED INVESTING – OPPORTUNISTIC AND SPECIAL SITUATIONS	18
 12:40 PM – LUNCH	19
1:45 PM – REAL ESTATE	19
2:30 PM – INFRASTRUCTURE	20
 3:05 PM – REFRESHMENT BREAK	20
3:30 PM – PRIVATE EQUITY	21
4:15 PM – CIO ROUNDTABLE	21
5:05 PM – CONFERENCE CONCLUDES	22
5:05 PM – WRISTBANDS FOR NETWORKING EVENT HANDED OUT IN THE CONFERENCE ROOM	22
 5:45 PM – 8:45 PM WINE TASTING AND DINNER NETWORKING EVENT	23



7:00 AM – BREAKFAST

JENNISON ASSOCIATES

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8:00 AM – OPENING REMARKS

8:05 AM – KEYNOTE SPEAKER

SPEAKER:

David Villa, CFA, Chief Investment Officer, **Executive Director, State of Wisconsin Investment Board, (SWIB)**

8:35 AM – KEYNOTE SPEAKER – MACROECONOMIC VIEW

- Would you say we have an Everything Bubble or is it Isolated?
- Corporate Debt Growth for Financial Engineering – Outlook for Defaults
- Are we seeing a Bubble in BBB Bonds? What will happen to BBB during the Upcoming Recession?
- Algos and Passive Investment as a Market Risk
- Which Country's High Debt and Risks pose the Biggest Threat? Does that put the EU and Euro at Risk?
- China – Tariffs, Slower Growth, Debt Levels, Leverage and Real Estate Bubble
- Japan's Demographics and Debt – what might be the Far-Reaching Effects?
- What Countries have the Most Unfavorable Demographics Globally?
- Which are the Shakier Emerging Market Countries that have High Debt that can be Hurt by a Strong Dollar?
- What are your Expectations for Inflation/Deflation?
- How do you think about Derivatives Risk?
- What are your Expectations for Equities and Bonds?
- Where have you seen the Most Speculative Excess or Froth in the Markets?
- What is the Single Largest Risk Factor? Next Black Swan?
- What is the Likelihood that the Equity/Bond Correlation will Shift During the Next Extended Equity Decline?
- What are the Most Appealing Investments in this Environment?

SPEAKER:

James Grant, Founder, **Grant's Interest Rate Observer**

9:05 AM – ARTIFICIAL INTELLIGENCE IN ASSET MANAGEMENT AND BENEFITING FROM DISRUPTIVE INNOVATION INVESTMENT

(A) ARTIFICIAL INTELLIGENCE

- Why should AI be on a Plan Sponsor's Radar?
- What are the most Impactful Ways that Artificial intelligence and Machine Learning will Transform the Financial Services Industry and Investment Decision Making Process? What are the Long-Term Implications for Investment Professionals?
- Where is the Technology being Deployed? How can CIOs use Technology to Improve their Research and Portfolio Management Processes?
- What are the Most Widely-Adopted Techniques, Models and Algorithms in Recent A.I. Advancements that you use? How do you Incorporate these Solutions?
- Is Data Quality your Biggest Barrier to the Adoption and Deployment of Machine Learning?
- What are the Industries in China that will Benefit from their Recent Artificial Intelligence Patent Surge?
- What are your Most Useful Technology Tips that may help to Boost Future Returns?
- What is a Concrete Example of how a Highly Configurable System can make life easier for Asset Owners?
- How can A.I. result in Better Executions, Lower Transaction Costs and Faster Investment of New Cash Flows for Fixed Income? Have you Integrated this Technology Yet?
- How will Robotics take Operational Efficiency to the Next Level?
- How can Investors Truly Evaluate a Manager who claims to use A.I.? What are the Risks you need to know?

(B) INVESTMENT IMPLICATIONS OF DISRUPTIVE CHANGE

- How will Blockchain Transform the Capital Markets? How Impactful and Disruptive will Blockchain Technology be?
- What Industries can Benefit from Blockchain and how should you Invest in this Innovation for Strong Returns?
- What are the Possible Threats to Blockchain Development? What are Regulatory Issues and Potential Risks Arising from the New Technology?
- Where do you see Opportunities in Frictionless Value Transfer?
- Impact from Autonomous Vehicles and Mobility as a Service, (MaaS) – Who are the Potential Winners?
- Where will the Opportunities be in Life Sciences and Genome Editing?
- Do you see Battery Storage in the Energy Space as an Investment Opportunity for Outsized Returns?
- Which Industries will Benefit the Most from 3D Printing?
- Which Industries do you see the Biggest Opportunity for Internet of Things? What are some Examples of IoT for Smart Cities? Healthcare Sector?
- What are the Obstacles to Success in these Disruptive Technologies?

MODERATOR:

David Hunter, Executive Director, Chief Investment Officer, **North Dakota Retirement & Investment Office; North Dakota State Investment Board**

SPEAKERS:

Mark Steed, Chief Investment Officer, **Arizona Public Safety Personnel Retirement System Trust, (PSPRS)**

Ben Mohr, CFA, Director of Fixed Income, **Marquette Associates**



9:55 AM – REFRESHMENT BREAK

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10:25 AM – ASSET ALLOCATION AND RISK MANAGEMENT

(A) ASSET ALLOCATION

- Is the Asset Allocation Decision Primarily Return Focused or Risk Focused or Balanced?
- Do you experience a Stumbling Point of Staying Committed to a Risk Allocation-Based Approach in an Environment where Balance and Diversification have Not Kept Up with Equity-Centric Approaches over the past 10+ Years?
- Is a Static Asset Allocation Policy a Problem for Risk Management? Have you considered Economic Regime-Based or Dynamic Asset Allocation as an Enhancement? Is this Feasible?
- What has Worked and Not Worked in your Asset Allocation relative to Expectations?
- Has the Risk of a Large Drawdown Impacted your Asset Allocation?
- What Changes are you making in your Asset Allocation, if any? What were your most Recent Changes?
- Do you expect to meet your Actuarial Targets in the Short/Long Term?

(B) RISK MANAGEMENT

- What Risks are you Most Concerned about Today and how are you addressing them?
- How do you Manage Drawdown Risk in a Portfolio with High Equity Factor Risks? Are we still too Over-Reliant on Equities?
- Understanding Asset Class Correlation and Behavior Risk when Correlations Change
- How does Stress Testing or Scenario Analysis factor into your Process? Does Illiquidity Risk play an Important Role?
- How do you Manage Leverage Risks?
- From a Risk Perspective, What Keeps You Up at Night?

(C) RISK CULTURE

- Describe your Risk Culture and how it's Evolved – how well is Risk Management Integrated into your Investment Decision-Making Process?
- What Challenges do you have in Ensuring a Robust Risk Management Practice at your Organization?
- How do you Communicate your Risk Tolerances with your Board and Managers? How Frequently?
- How do Staff Utilize Risk Reports for Investment Decision Making? Are Risk Reports Useful for Macro Decisions such as Tactical Allocations?
- What should Boards/Organizations Consider when Building a Risk Culture?

SPEAKERS:

Andrew Palmer, Chief Investment Officer, **Maryland State Retirement and Pension System**

11:15 AM – RISK MITIGATING STRATEGIES

- Understanding Tail Risk Frequency, Severity and Impact
- Understanding the Value of Risk Mitigating Strategies – why is it Important to Improve your Risk/Return Profile Now? What Risks should be Hedged?
- Why should this be its Own Bucket or Asset Class? What Type of Allocation is Warranted?
- What are the Different Asset Classes and Strategies of Risk Mitigating Strategies? Expectations for each Approach?
- What are the Merits of an Option Overlay Strategy In Lieu of Owning a Tail Risk Hedge?
- What are the Trend or Momentum Following Strategies that you Prefer for Downside Protection?
- Why is Global Macro the Ideal Hedge Fund Allocation for Diversification and Decreasing the Depth of Drawdowns?
- How has Managed Futures Performed During Periods of Market Stress or Crisis Events?
- Long Duration U.S. Treasuries as a Diversifier in Extreme Market Conditions
- Building a Tactical Portfolio using Futures to Reduce Tail Losses and Enjoy Larger Gains
- Put Options as Insurance
- Using Information from the Derivatives Markets to assess Stress Points – where we are seeing Tail Risks Building?
- Systematic Risk Premia Allocations and Systematic Multi-Strategy Funds – does it Enhance Performance Outcomes? Are Short Track Records and Wide Variations in Products Concerning for Trend Risk Premia?
- Are there Alternative Ways to Deal with Equity Risk? How Defensive are these Strategies?
- Cost of Implementation as an Obstacle – how do you Minimize it?

11:50 AM – RISK PARITY

- How can Risk Parity Lower your Risk Profile?
- Does Risk Parity Make Sense Now if we Expect Low Market Returns in the Future?
- How did Risk Parity Perform during the last Financial Crisis Compared to other Asset Mix Models? Would you Expect Similar or Different Results for the Upcoming Downturn?
- What are the Hidden Risks and Drawbacks of Risk Parity Portfolios?
- Do you worry about a Correlation Shift when Bonds could Become Less Likely to Protect against a Large Drawdown in Equities?
- Is there an Over-Reliance on Bonds with Current Valuations? Should we be Worried about Leverage or Leveraging the Inappropriate Assets?
- Commodities Role in Risk Parity and Expectations
- Active vs. Passive – what are the Advantages and Disadvantages of Each?
- Leverage and Illiquidity Do Not Mix – any Approaches to Avoid this Combination?
- What Progress have we seen towards Adopting an Appropriate Benchmark? Any Implementable Indexes?

- Thoughts on Measuring Expected Tail Loss Rather Than Volatility for Tail Risk Parity? Can it be More Effective?
- How do Investors Bucket the Risk Parity Strategy within the Asset Allocation Framework?
- How should Investors think about Differences in Forecasting Volatility when Selecting a Manager?

MODERATOR:

Steven J. Foresti, Chief Investment Officer, **Wilshire Consulting**



12:25 PM – LUNCH

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1:35 PM – UNCONSTRAINED FIXED INCOME

- Assessing the Current Environment – where we are in the Cycle for Rates and Credit?
- Why might a Plan Sponsor want to consider Unconstrained Funds as Opposed To using a Collection of Fixed Income Funds that focus on Specific Strategies such as Core, Investment Grade, High Yield, Etc?
- With the Proliferation of Products which are Diverse, what is the Return Objective?
- What are your Best Ideas/Opportunities in today's Bond Market?
- How do you Approach Portfolio Construction with the Need for Increased Disaggregation of Alpha Sources?
- Where do you see the Greatest Risks and what might be the Trigger Points that Enhance that Potential?
- How do you Benchmark and Define Success for Unconstrained Fixed Income Strategies?
- With Non-Linearity of Risk Correlations and Volatility Not Being Stable through time, how are you Taking Advantage of Current Market Dislocations?
- How Important is Liquidity Management? Should Investors think about Transparency of Positioning in Unconstrained Fixed Income?
- What are the Implications of Reduced Liquidity? Have you Increased your Use of Bond ETFs to offer Enhanced Liquidity? If so, what were some Other Reasons for this Decision?
- Using Structured Products, Swaps and Derivatives to Create Alpha and Hedge Volatility
- What are your Expectations and Outlook for Corporate Debt? Do you see a Disaster in the Making with the Huge Growth of BBB Bonds and the Inverted Yield Curve?
- Do you view Bank Loans as a Hedge in Rising Rate Environment?
- How will Trump's GSE Reform Impact the MBS Market?
- Understanding how to Select Managers – Multi-Sector, Multi-Region, Multi-Currency Skill Set or Duration Range Targets?

MODERATOR:

Amy Hsiang, CFA, CAIA, Investment Manager Research, **RVK**

SPEAKER:

Jonathan Lieber, Director of Fixed Income, **New York State Common Retirement Fund - Office of the State Comptroller**

2:20 PM – FIXED INCOME FACTOR INVESTING

- With Active Fixed Income Managers Beating the Index by taking on More Credit Risk (Highly Correlated to Equities), how can Factors in Fixed Income (Value, Momentum, Carry, Defensive), offer hope for Outperformance that's Uncorrelated to Equity Markets?
- Explain your Systematic Process for your Multi-Factor Model and how it's a Credit Diversifier
- What are the Factors and Features that help you to Target the Precise Outcomes you need?
- Why Factor Investing/Factor ETFs Over Passive Fixed Income ETFs? What are the Advantages? Disadvantages?
- Is it Possible to Obtain Stable Alpha Without taking Additional Risk?
- If you are Identifying Hidden Risks in a Bond Portfolio such as Unintended Overweights in Interest Rate or Credit Risk, what are the Other Strategic Allocations for True Drivers of Returns?
- How does the Cost Compare?
- What are the Biggest Challenges to Widespread Factor Adoption in Debt Markets?
- What should you be Looking for in a Manager?

MODERATOR:

Scottie D. Beville, Senior Investment Officer - Global Income Strategies, **Teachers' Retirement System of the State of Illinois**



2:50 PM – REFRESHMENT BREAK

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3:20 PM – CLIMATE CHANGE IMPACT, RISKS AND OPPORTUNITIES IN THE INVESTMENT PROCESS

(A) MANAGING CLIMATE RISK

- What are the Catastrophic Consequences of a Global Temperature Rise of 2 Degrees Celsius, (3.6 Degrees Fahrenheit) and how do we Create a Sense of Urgency to Address this Major World Problem?
- How will Climate Change Affect Developed and Emerging Markets Differently?
- What are some Examples of Climate-Related Risks Across Asset Classes?
- Understanding the Impacts of Climate Change on Real Estate Investments and Lending
- With Increasing Water-Related Risks, what will be the Credit Implications and the Impact on Credit Ratings?
- What are the Options for Reducing Portfolio-Wide Exposure to Climate-Related Risks?
- What Sources of CO2 Emissions are Investors Not Focused On?
- How do you Hedge Climate Risk?

(B) STRATEGIES AND IMPLEMENTATION

- Where do you see the Best Opportunities in Smart Cities, Green Buildings, Decarbonizing Technologies, Electric Vehicles, Water, Renewable Energy, Battery Storage, and other Appealing Sectors?

- What are the Various Approaches and Models to Narrowing the Financing Gap for Investing in these Sector Opportunities?
- How do you Assess the Opportunities in Public-Private Partnerships?
- What's Behind the Rise in Green Bond Issuance and what is the Growth Potential? Is China, Europe, U.S. or Other Region Most Attractive for this Green Investment?
- Do we have Early Results of the Performance of a Low Carbon Stock Program Versus a Broader Market Segment on a Long-Term Basis?

(C) GOVERNANCE AND FIDUCIARY DUTY

- Push for Greater Transparency - what are some Questions you should be asking your Investment Managers about their Climate Risk Assessment during the Investment Process?
- What are some Examples of Different Climate-Related Metrics that are available?
- FSB Taskforce on Climate-Related Financial Disclosure, (TCFD) - will this be the Industry Standard for Climate-Related Financial Reporting?
- Are Board Processes in place to Assess the Risks and Opportunities?
- How can Boards Incorporate Climate Change into Investment Beliefs and Policies?

MODERATOR:

Alex Bernhardt, Principal, U.S. Responsible Investment Leader, **Mercer**

SPEAKER:

Travis Antoniono, Investment Officer, Sustainable Investment & Stewardship Strategies, **California State Teachers' Retirement System, (CalSTRS)**

4:05 PM – CYBERSECURITY

- What are the Greatest Cybersecurity Threats and Challenges Organizations are currently facing? Specific Risk Areas?
- Overview of Types of Cybersecurity Attacks – Phishing, Botnet Hackers, Wire Transfer Fraud, Vendor Payment Fraud, Compromised Business E-mails, Attempts to Steal Healthcare Information, etc. Where will Future Attacks come from?
- What is an Interesting or Extreme Cyber Attack Example you've come across for a Pension Plan? An Investment Manager?
- Developing a Cybersecurity Risk Management Strategy – what are the Critical Components?
- How should you approach Staff Education about Cybersecurity Risk and Best Practices?
- Should the Board Hire a Third Party to Perform an Independent Analysis?
- As a Pension Plan, Endowment, Foundation or Family Office LP, what Cybersecurity Questions should you ask in your Due Diligence of your Investment Managers?
- Will it become Common for Pension Plans' Responsibility to start at the Request for Proposal (RFP) Stage by providing Details for Data Protection and Privacy Provisions?
- Importance of a PE Firm's Approach to Cybersecurity Enterprise Risk for M&A
- What Precautions can you take to Avoid Phishing and who within the Organization is being Targeted? How Often can your PE Portfolio Companies be Phished?
- Should Plan Sponsors have Cybersecurity Insurance Coverage? What is typically Covered in a Policy?

SPEAKER:

Benjamin Taylor, Senior Vice President, **Callan**

4:20 PM – IMPACT INVESTING

- How do you Define Impact at your Organization?
- The Role of UN's Sustainable Development Goals in Impact Investing Strategy
- Will Investors Abandon this Space during the Next Recession? When and How will it Become Mainstream?
- What are some Attractive Opportunities for Impact Investing in Emerging Markets? Developed Markets?
- What are the Latest Trends in Impact Investment Globally?
- Investing in Technology for Social Impact
- What are the Top Challenges for Investors?
- What are the Biggest Areas Risks of Impact Investing Projects?
- Why is Private Equity Particularly Well-Suited for Impact Investing?
- What are some of the Socially Impact Bonds or Municipal Impact Bonds you've Invested in?
- Do you find it Difficult to Measure the Impact of Public Market Investments? How do you Measure Impact in the Bond Market?
- How are Big Data and Advanced Analytics used as Tools to Improve the Measurement of Impact?
- How should Impact Investors think about Reporting? Have you Embraced the Need for Disclosure with Sustainability Accounting Standards Board, (SASB)?
- What Evidence have we seen that Impact Investments will Reap Healthy Returns?
- What should you look for in Public/Private Impact Managers?
- Do Larger Firms have an Advantage in this Space?

MODERATOR:

Bert W. Feuss, Senior Vice President, Investments, **Silicon Valley Community Foundation**

SPEAKERS:

Stacie Olivares-Castain, Board Member, **California Public Employees' Retirement System, (CalPERS)**

Kristine Pelletier, Partner, **NEPC**

 **4:50 PM – COCKTAIL RECEPTION**

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6:05 PM – COCKTAIL RECEPTION CONCLUDES



7:00 AM – BREAKFAST

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8:00 AM – EMERGING MARKETS

- Macro Environment and Recent Developments, (Central Banks, Dollar, Commodity Prices, etc.)—how does that affect your Investments?
- As the Growth Advantage in EM begins to Fade, what should you be looking for to Focus on Economic Progress and Development?
- What Effect do the Tariffs have on your Outlook for China and other Emerging Markets? Any Markets that are More Insulated?
- How Concerned are you about China's Debt Problem? Is a Hard Landing Likely or Unlikely?
- What would be the Effects on Emerging Markets if we see a Recession in the U.S.? Instability in the Eurozone? Slowdown in China?
- How do Valuations look Relative to Risk in Different Regions?
- What are the Key LP Concerns and Challenges in Particular Regions?
- Which Country do you see Favorable Demographic Trends such as a Growing Middle Class, Urbanization, Promising Consumer Buying Behavior and Economic/Fiscal Reforms?
- Are there Any EM Countries to Avoid with High Debt, Growing Inflation or a Currency Crisis?
- Which Markets in Frontier Countries can you Profit from Strong Growth and Access a Lower Correlation? What are the Complexities of Investing in these Frontier Markets?
- Given the Current Environment, will Emerging Markets Outperform Developed Markets? What are your Returns Expectations for Particular Regions?
- What can be done to Mitigate Currency Risks?
- The Case for Emerging Markets Corporate Debt
- What Metrics are you using to Determine Relative Value in Sovereign Bonds?
- Public vs. Private Emerging Markets – Benefits and Drawbacks of each
- Active vs. Passive Debate
- What is an Appropriate Long-Term Allocation to Emerging Markets? What should that Allocation look like, (Public Equity, Fixed Income, Private Equity, Frontier Markets, Alternatives, etc.)?
- Choosing an Emerging Markets Fund or Manager – should you be Investing by Region, Country or Sector?

MODERATOR:

Craig Chaikin, CFA, Senior Consultant, **Segal Marco Advisors**

8:40 AM – CURRENCY RISK – TO HEDGE OR NOT TO HEDGE?

- What are the Factors Driving Currencies Today?
- What is the Impact of China Devaluing the Yuan?
- What is the Annual Impact on Returns for a Portfolio that is Hedged vs. Unhedged? Long Term Impact?
- What has Changed that Enables One's Ability to Manage Hedging and Reduce Risk for both Developed Markets and Emerging Markets?
- How does Dynamic Hedging Reduce Risk and Capture some of the Return?
- How do Active Currency Overlay Strategies take the Currency Exposures Inherent in International Investments and Manage them Separately?
- Benefits of Extracting Alpha from Currency Markets – Uncorrelated Alpha and Accessed Without the Need for Funding
- Is there an Optimum Currency Hedge Ratio for a Plan?
- What are the most Common Reasons Asset Owners give for Not Actively Managing Currency? Are these Reasons Valid or Not?
- Hedging Costs – how should this factor into your Decision?

8:55 AM – MULTI-ASSET INVESTING

- What are the Differences Between Multi-Asset Funds and Hedge Funds? What are the Advantages and Disadvantages of Choosing Multi-Asset Funds over Hedge Funds?
- How can a Multi-Asset Approach help you Manage Drawdown Risk? What Strategies should be used based on Experience from the Financial Crisis?
- Do you believe Downside Protection with Multi-Asset Strategies are as Effective as Managers Claim?
- How do you Devise Effective Asset Allocation Strategies? What Stress Scenarios do you Consider?
- Do Most Multi-Asset Portfolios need to be Restructured to Thrive in Today's Environment? If so, how?
- How can Factor Analysis be used to Mitigate Risk and Improve Multi-Asset Portfolios?
- How Worrisome is the Reliance on Stable Correlation Relationships with No Certainty those Relationships will Persist?
- Is Excessive Leverage a Concern?
- How do you go about the Right Balance of Public and Private Equity when building the best Multi-Asset Portfolio for you?
- How have Returns been and how do you Measure Performance?
- How do Multi-Asset Managers Differentiate Themselves in this Crowded Field?

STAND ALONE SPEAKER:

Pam Chan, CFA, Managing Director, Chief Investment Officer and Global Head of the Alternative Solutions Group ("ASG"), **BlackRock**

PRESENTED BY: **BLACKROCK®**

9:25 AM – ALTERNATIVE RISK PREMIA

- Understanding Alternative Risk Premia – how does it Differ from Smart Beta? From Alpha?
- Risk Premia to Choose From – Momentum, Value, Carry, Other
- How can a Multiple Market Neutral Alternative Risk Premia Combined in a Single Portfolio show Low or No Correlation to a 60/40 or Hedge Fund Portfolio?
- Explain the Potential Benefits – Diversification, Liquid, Transparent, Efficient, Systematic Exposure
- Lower Fees – what are the Typical Fees Investors can Expect?
- What are the Different Ways you can Use and Implement Alternative Risk Premia?
- What are the Biggest Risks?
- Do you Worry about the Fallout if Correlations Change over Time?
- How Concerning is Crowding and do you see it as having a Negative Impact on Performance?
- How should Investors determine which Alternative Risk Premia Strategies Best Meet their Objectives?
- How should you Approach Manager Selection?
- With these Funds being Relatively New, how Battle-Tested are they? What are the Early Signs of Performance during the Shorter-Term Market Corrections we've seen?

STAND ALONE SPEAKER:

Aneet Chachra, CFA, Portfolio Manager, Diversified Alternatives, **Janus Henderson Investors**

PRESENTED BY: **Janus Henderson**
INVESTORS



10:00 AM – REFRESHMENT BREAK

SPONSORED BY:



DEER PATH
CAPITAL MANAGEMENT, LP

10:30 AM – HEDGE FUNDS

(A) STATE OF THE INDUSTRY AND PORTFOLIO CONSTRUCTION OPTIONS

- With Difficult Investment Conditions Pushing Many Seasoned Firms and Legendary Investors Out of the Business, does this mean some Strategies have Stopped Working? What do you see as the Reasons or Forces at Play?
- How do you Approach the Current Industry Dynamics? How is your Firm Evolving and Staying Competitive?
- If there was a Hedge Fund Strategy you would Invest in over the next Few Years, which one would it be and why? Which Strategies will have the Best Performance? Any Strategies to Avoid?
- What sort of Downside Protection, Drawdown or Return Range do you expect we'll see from each of the Different Hedge Fund Strategies during the Next Market Downturn?
- Are there any Overcrowded Trades that should be Avoided when this Cycle Turns?

- Any Trades you like when the Next Downturn Bottoms? Any Specific Sector that will Emerge as a Leader?
- Would you Invest in Hedge Funds Over Multi-Asset Strategy Funds for the Next Downturn and if so, why?
- What does Crisis Risk Offset mean? Which Low Correlated Strategies do you find Most Attractive?
- What is the Future of Long-Short Equity Hedge Funds and is the Struggle Here to Stay? With Return Dispersion Remaining High among Long-Shot Equity Hedge Funds, what Differentiates Managers that have been able to Outperform?
- What is the Future of Quantitative Funds as far as Performance goes? Does it Concern you that many Historical Stock Market Tendencies have Backfired and what might be the Reason Why?
- Do you find Opportunities within the Global Macro Space Attractive and if so, why?
- Managed Futures – Diversification and Performance during Periods of Market Stress or Crisis Events. How much can it Decrease the Depth of Portfolio Drawdowns and Volatility?
- What is the Future of the Fund of Funds Space? Where will Fees be? What will it take to Stay Competitive?
- Do Smaller Hedge Funds Outperform? If so, why? How do Emerging Managers Differentiate Themselves in the Quest for Institutional Capital?
- Liquid Hedge Fund Products such as UCITS, 40 Act and Hedge Fund Replication – are they a Viable Alternative and Under what Circumstances? How has their Performance and the Lower Fees Fared Relative to Hedge Funds?

(B) IMPLEMENTATION CONCERNS

- As an LP, how do you think about the Role of Hedge Funds in your Portfolio?
- What Trends do you see developing in Liquidity Provisions for Hedge Funds? How do you Assess the Tradeoff Between Fees and Liquidity?
- What is an Appropriate Fee Structure for Hedge Funds? How do you Ensure Payment for Alpha, Alignment of Interest and Not Overpaying for Underperformance?
- Any Recent Trends you've seen for Institutions as far as Fees, Transparency, Customization, Increased Partnership, etc.? Will the 1 or 30 Model developed by Albourne and TRS Texas Catch On?
- As an Investor, do you Negotiate the Frequency of Performance Fee Crystallization with your Managers so that it Doesn't Lead to Hidden and Higher Costs?
- How often should Operations Due Diligence be Reviewed/Updated?
- What is your View on Absolute Return Co-Investments?
- What is the Role of Separate Managed Accounts? What are the Benefits? Are they Better than Commingled Funds?

MODERATOR:

Dr. John Claisse, CEO, **Albourne**

SPEAKER:

Derek Drummond, CAIA, Portfolio Manager – Funds Alpha, **State of Wisconsin Investment Board, (SWIB)**

11:20 AM – CREDIT STRATEGIES

- Current State of the Credit Market
- What will be the Catalyst that will cause Credit Spreads to Widen and Defaults to Rise?

- Where are Managers finding Pockets of Opportunity? Where is the Relative Value?
- What Subsectors of Credit are Most Attractive given the Valuations? Any Areas you are Avoiding?
- Do you see Investors being more willing to Trade Liquidity for Yield and should that be of Concern?
- Is it possible to see a High Yield Meltdown with a Lack of Liquidity? Understanding the Corporate Debt Risk Factors and Strong Correlation to Equities
- BBB Risk of a Mass Move to High Yield – how concerned should we be?
- Do you believe ETFs pose a Systematic Risk in Market Turmoil with Exacerbated Volatility?
- Is Direct Lending in a Bubble and how would you Position for that?
- What Sub-Sectors are you Favoring and Avoiding in the Middle Market Direct Lending Space?
- How can Opportunistic Credit fit into the Direct Lending Ecosystem?
- Outlook and Considerations for Structured – Are CLOs Safer than Pre-Crisis?
- Can Securitized Credit Weather Market Turbulence? How has it Performed During Previous Credit Events? Is there a Lower Correlation to Broader Fixed Income Sectors?
- Bank Loans Overview
- How will the Subprime Loans in Autos Play Out?
- Opportunities and Risks for Europe and Asia
- How much should Plan Sponsors be Allocating to Credit? What is the Optimal Structure to a Credit Portfolio?
- Should Multi-Asset Credit Strategies be a Tactical Asset Allocation with Dynamic Management for Pension Plans? If so, why?
- How do we Develop Return and Risk Expectation for this Asset Class?
- How do we Benchmark Performance?

MODERATOR:

Sylvia Owens, Global Private Credit Strategist, **Aksia**

12:05 PM – DISTRESSED INVESTING – OPPORTUNISTIC AND SPECIAL SITUATIONS

- How are you Positioning your Portfolio relative to where we are in the Credit Cycle? Any Trends you're seeing?
- What are your Expectations for Default Rates going forward?
- Which Sectors, Strategies and Geographies will create the Best Opportunities? Any Areas that should be Avoided?
- Will the Froth in Direct Lending provide a Distressed Opportunity?
- How Big a Role do you Expect Corporate Debt to Play and the Huge Growth of BBB-Rated Bonds?
- How Concerning is the Debt Piled up by Corporations for their Share Buybacks?
- Will the Prevalent Covenant-Lite Deals create Problems during the Next Cycle?
- What are the Opportunities and Risks in Europe? Any Countries, Sectors or Types of Deals that Stand Out?
- What is the Size and Scope of the Issues facing the European Banking Sector?
- Do you see Opportunities in Asia or Elsewhere Globally?

- What is your View on Leverage, (Fund-Level, BDC Changes, Asset-Level, Securitization Market)?
- Do you worry about a Liquidity Problem in ETFs and other Structured Credit Vehicles if there is Credit Event?
- How will the Different Implementation Approaches affect Expected Returns? Control vs. Non-Control? Private vs. Public?
- What are the Pros and Cons of the Various Structures, (Hedge Fund Side Pockets, Evergreen Structures, Contingent Funds, Traditional Drawdown Structures)?
- Where are LPs Spending the Bulk of their Time during Due Diligence?
- What Skill Sets/Characteristics should Pension Plans look for in a Distressed Manager? What Questions should LPs Ask?

MODERATOR:

Raelan Lambert, Managing Director & Head of Global Private Debt, **Mercer Alternatives**

12:40 PM – LUNCH

SPONSORED BY:



1:45 PM – REAL ESTATE

- How Significant a Drop in Pricing and Returns are you expecting? Does it depend on Sector and Location?
- What Strategies do you see as the Biggest Risks and the Biggest Rewards/Relative Value?
- Are there Resilient Sectors?
- What Niche Property Types will be Defensive in a Downturn?
- Are you Making Pivots or Tilts to Take Advantage of Macro Trends? Socio/Demographic Trends such as the Aging Population?
- How will Real Estate Debt Perform in the Next Recession?
- How do you View the Risk Profile of Core vs. Non-Core? Returns Expectations?
- What is the Biggest Threat to Commercial in the next few years for this Fully Priced Market?
- Where are the Most Crowded Trades?
- Asia and European Real Estate Outlook – Opportunities and Investment Trends
- What Real Estate Technology Trends/Disruption are you Watching Most Closely?
- Will Co-Investments become more Common?
- Current State of the Real Estate Secondary Market
- Do you like REITS as a More Liquid form of Real Estate? If so, any Region or Property Type that you like for REITS?

MODERATOR:

Chae Hong, Partner, **The Townsend Group, an Aon Company**

SPEAKER:

Anthony Breault, Senior Real Estate Investment Officer, **Oregon State Treasury**

2:30 PM – INFRASTRUCTURE

- State of the Infrastructure Markets
- With Low Interest Rates, Abundant Capital Flowing and High Valuations, is there Enough Supply to Meet Capital Demand?
- If Interest Rates Rise in the coming years, what would be the Implications for Valuations and Liquidity Options for Existing Infrastructure Assets?
- Is Leverage a Concern?
- If the S&P were to enter a Multi-Year Correction (let's say 30%), how much of a Decline can we Expect from Infrastructure Portfolios? What Impact would this Type of Portfolio Drawdown have on Infrastructure Allocations? What Opportunities would this provide Investors?
- As an LP, what are your Program Objectives, (Defensive, Low Correlation, Inflation Protection, Yield, etc)?
- Which Sectors are Most Attractive and why?
- Which Geographies are Most Appealing? Developed or Emerging Economies?
- What are the Biggest Challenges/Risks facing Infrastructure Investors today?
- Listed vs. Unlisted – which do you Favor in a Volatile Market for Downside Protection? Do Rising Interest Rates Favor Either?
- Are you seeing Growth in Opportunities for Public-Private Partnerships across the U.S.?
- How have GPs Adopted ESG Principles and what are the Remaining Challenges? How do you Approach ESG as an Energy Investor?
- What are your Views on the Future Potential for Technology to Disrupt Infrastructure and what can Investors do to Avoid or Take Advantage of it?
- Thoughts on Battery Storage for Renewables?
- How have Tax Credits of Renewables Impacted the Industry over the Past Decade and how will the Phase-out of Subsidies affect the Industry?
- What Sectors within Renewables or Alternative Forms of Energy do you find Attractive? Will the Best Opportunities be in the U.S. or Emerging Markets?
- What are the Advantages and Challenges for LPs to Invest in infrastructure through Fund Commitments vs. Investing Directly as a Co-Investor or Deal Leader like many of the Large Plans?
- What are the Similarities and Differences Between Infrastructure Assets and Private Equity Investments with the Blurring of Definitions over the past few years?

MODERATOR:

Todd Lapenna, CFA, CAIA, Partner, Infrastructure & Real Assets, **StepStone Group**

SPEAKER:

Bert Clark, President and Chief Executive Officer, **Investment Management Corporation of Ontario, (IMCO)**

3:05 PM – REFRESHMENT BREAK

SPONSORED BY: **CALAMOS**
INVESTMENTS

3:30 PM – PRIVATE EQUITY

- When it comes to the Concerns of Late Cycle, Dry Powder, Cheap and Plentiful Leverage and High Multiples, what should Investors be Focused On over the Next few Years to Successfully Navigate the Environment?
- Should LPs expect Lower Returns Going Forward? Will Private Equity Outperform Public Markets?
- With the Growing Size of the PE Market, do you believe the Industry can put the Excess Dry Power Capital to Work Responsibly?
- Where are your Most Optimistic Returns Going Forward as far as Sector, Geography or Niche Strategy? What's your Biggest Worry?
- What Lower or Non-Correlation Investments Stand Out that are Independent of the Economy and can Withstand a Multi-Year Market Downturn?
- Are you Seeking Investments with a Subscription Model for Greater Visibility of Revenues and Less Volatility? If so, what Recurring Revenue Metrics do you look for?
- Does it Concern you that Subscription Lines of Credit have Distorted IRR? Will we Trend towards LPs Dictating the Format and Usage of Subscription Lines?
- What are your Views on GP-Led Restructurings? What are the Pitfalls that LPs need to be Aware of?
- What are your Views on Fund to Fund Sales?
- How have Trade Tensions with China Impacted Existing Portfolio Companies and your Investment Decision-Making? How are you preparing for a Scenario Where Tensions and Tariffs Persist?
- Given all the Concerns, how are you Positioning your Portfolio within Buyouts? What do the Long Duration Vehicles Mean for Investors?
- What are the Biggest Risks to be aware of for Investing in the Ultra-Competitive Growth Equity Space?
- How are you playing the Co-Investment Frenzy? What will happen to Co-Investments in a Down Market?
- Venture Capital Winners – Limited Access to the Top Few VCs that Generate the Bulk of the Industry's Returns? What's the Best Approach to this Challenge?
- Issues, Outlook and Opportunities for European PE
- How do you think about ESG Issues and Integration when making Individual Investment Decisions and as a Firm?
- From an LP Perspective, what does not work in Fundraising? What does it take to Stand Out?

MODERATOR:

Paul R. Yett, Managing Director, **Hamilton Lane**

SPEAKERS:

Stephen J. Neel, Deputy Chief Investment Officer, Alternative and Private Market Investments, **New Mexico Educational Retirement Board**

Julia Winterson, Senior Director, Alternative Investments, **CommonSpirit Health**

4:15 PM – CIO ROUNDTABLE

(A) RISKS, ALLOCATIONS AND MACRO-BASED DECISIONS

- In this Fully-Valued Environment, how are you Balancing the Risk of a Large Drawdown with your Return Goals? Has it Impacted your Asset Allocation?

- Which De-Risking Strategies or Investments with a Low/Non-Correlation have you Allocated to?
- What Hedge Fund Strategies are you Investing in? Will those Strategies provide a Cushion for the next Market Downturn? How do you use them to Reduce Risk?
- What are your thoughts on Passive Equity Investing and its Performance vs. Active for the Next Major Downturn? Any Market Liquidity Concerns? Where are you using Passive and Active Management and why?
- How are you Viewing Emerging Markets Broadly and what do you feel is the proper EM Allocation? Any Geographic Regions, Countries or Sectors that Interest You?
- Have you made Long-Term Cash Flow Investments through Partnerships and Co-Investment Structures?

(B) ALIGNMENT OF INTERESTS

- What Changes or Trends have you noticed in Fee Structures/Terms and your Bargaining Power? Has your Fund Size been an Advantage or Disadvantage?
- Do You and Your Investment Departments have the Authority to be a Dynamic, Tactical and Active Investor in Response to Extreme Economic Conditions?
- Are you able to Leverage your Portfolio to Generate Liquidity to Take Advantage of a Market Dislocation in an Economic Downturn?
- How can you Overcome Governance Hurdles so that you can Effectively Partner with Outside Providers, bring a Portion of the Investment Management In-House and provide Incentive-Based Compensation?
- Have you Taken Steps to Address Diversity within your Investment Programs or your Organization's Staff?
- Do you have Processes or Policies in place to Assess the Risks of Climate Change?
- Have you Addressed Cybersecurity Protection for your Plan? How have you Educated the Staff about the Risks and Taken Steps for Protection with Investment Managers?
- Any Important Lessons Learned that you can Share from your Individual Plan Experiences?
- What Keeps You Up at Night?

MODERATOR:

Stephen Cummings, CFA, Global Investments Officer, Head of North America Investment Consulting, **Aon Investment Consulting**

SPEAKERS:

Robert M. Maynard, Chief Investment Officer, **Public Employee Retirement System of Idaho, (PERSI)**

John D. Skjervem, CFA, Chief Investment Officer, **Oregon State Treasury; Oregon Investment Council**

Craig Husting, CFA, Chief Investment Officer, **Public School & Education Employee Retirement Systems of Missouri, (PSRS/PEERS)**

Dominic Garcia, Chief Investment Officer, **Public Employees Retirement Association of New Mexico, (PERA)**

5:05 PM – CONFERENCE CONCLUDES

5:05 PM – WRISTBANDS FOR NETWORKING EVENT HANDED OUT IN THE CONFERENCE ROOM

Attendees must be present to attend event



5:45 PM – 8:45 PM WINE TASTING AND DINNER NETWORKING EVENT

Hosted by Pension Bridge – Join our group at for a wine tasting and dinner at the Press Club, located just a few blocks from Westin St. Francis. Meet your industry peers in great setting as California Wine Country comes to the heart of the city. Experience the finest winemakers with new and rare vintages. We'll have a fun wine tasting reception, followed by a tasteful dinner with the highest quality organic ingredients. Pension Bridge will utilize the 9000 square feet of the award winning “Best Restaurant Design” event space for networking for our high quality conference group.

REGISTRATION

TO REGISTER OR RECEIVE MORE INFORMATION ABOUT THE 2020 PENSION BRIDGE ANNUAL:

BOCA RATON OFFICE CONTACT

Brett Semel
(561) 455-2729
bsemel@pensionbridge.com

NEW YORK OFFICE CONTACT

Andrew Blake
(516) 818-7989
ablake@pensionbridge.com

ABOUT PENSION BRIDGE

We are an innovative company offering educational conferences of the highest quality. Our objective is to provide an education to the institutional investment community while providing an impressive speaker faculty in a setting that is conducive to great networking. We help institutional money managers connect with Pension Funds and Consultants across the country in a fun, enjoyable atmosphere. Our events can act as a stepping stone to a successful financial relationship or simply help build the investment education.

Our management team's unique skills, operating experience, and industry relationships help to make our events the main attraction in the industry. We pride ourselves on being there to cater to our clients' wants and needs. Our ratio of plan sponsor to investment manager allows our events to be the most desirable and accommodating in the conference industry. Pension Bridge is known for its strength, stability, relationships and operational excellence.



MEMORANDUM

TO: Oakland Police & Fire
Retirement Board

FROM: David Jones

SUBJECT: Authorization and
Reimbursement of Board/Staff
Travel/Education Expenses

DATE: February 18, 2020

R. Steven Wilkinson, Board member of the Oakland Police and Fire Retirement System board, requests authorization for reimbursement of travel and/or board education related funds for the event detailed below. Staff has verified that budgeted funds are available for this Board member to be reimbursed.

Staff recommends the reimbursement of travel/education funds for the event below be approved by board motion.

Travel / Education Event: 2020 Pension Bridge

Event Location: Westin St. Francis Hotel, San Francisco, CA

Event Date: April 14, 2020 to April 15, 2020

Estimated Event Expense*: \$ 500.00 (estimated)

Notes: _____

* If enrollment, registration or admission expenses are required, the fund will process a check in advance and pay vendor directly; all other board-approved reimbursements will be made upon delivery of receipts to staff by the traveling party. Cancellation of event attendance requires return of all reimbursed funds paid to attendee to the fund.

Respectfully submitted,

David Jones, Plan Administrator
Oakland Police and Fire Retirement System

For questions please contact David Low, Administrative Assistant, at 510-238-7295.


Attachments (if any):

Resolution #7092

2020 Pension Bridge Agenda

OAKLAND POLICE AND FIRE RETIREMENT BOARD
CITY OF OAKLAND, CALIFORNIA

Approved as to
Form and Legality



RESOLUTION No. 7092

ON MOTION OF MEMBER _____ SECONDED BY MEMBER _____

RESOLUTION APPROVING REQUEST OF OAKLAND POLICE AND FIRE RETIREMENT SYSTEM STAFF MEMBER TEIR JENKINS TO ATTEND THE 2020 PENSION BRIDGE CONFERENCE FROM APRIL 14, 2020 TO APRIL 15, 2020 IN SAN FRANCISCO, CALIFORNIA AND FOR REIMBURSEMENT OF REGISTRATION FEES AND TRAVEL-RELATED EXPENSES IN AN AMOUNT NOT TO EXCEED FIVE HUNDRED DOLLARS (\$500.00)

WHEREAS, the Oakland Police and Fire Retirement System (PFRS) Education and Travel Policy ("Travel Policy") requires that PFRS Board members and staff obtain prior Board approval of all education and travel-related expenses that will be reimbursed by PFRS; and

WHEREAS, PFRS Staff Member Teir Jenkins would like to attend the 2020 Pension Bridge Conference ("the Conference") in San Francisco, CA from April 14, 2020 to April 15, 2020; and

WHEREAS, in compliance with the Travel Policy, Staff Member Jenkins has submitted documentation showing that registration fees and estimated travel-related expenses to attend the Conference will be Five Hundred Dollars (\$500.00); now, therefore, be it

RESOLVED: That Staff Member Teir Jenkins's request to attend the 2020 Pension Bridge Conference in San Francisco, CA from April 14, 2020 to April 15, 2020 at an estimated cost of Five Hundred Dollars (\$500.00) is approved; and be it

FURTHER RESOLVED: That the PFRS Board authorizes reimbursement of registration fees and travel-related expenses in an amount not to exceed Five Hundred Dollars (\$500.00) for Staff Member Jenkins's attendance at the 2020 Pension Bridge Conference.

IN BOARD MEETING, CITY HALL, OAKLAND, CA FEBRUARY 26, 2020

PASSED BY THE FOLLOWING VOTE:

AYES: **BENSON, GODFREY, NICHELINI, SPEAKMAN, WILKINSON
AND PRESIDENT JOHNSON**

NOES:

ABSTAIN:

ABSENT:

ATTEST: _____
PRESIDENT

ATTEST: _____
SECRETARY



**PENSION
BRIDGE**

**THE ANNUAL
2020**

APRIL 14TH & 15TH, 2020

WESTIN ST. FRANCIS HOTEL
SAN FRANCISCO

**CELEBRATING
15 YEARS**

THE PENSION BRIDGE ANNUAL

April 14th & 15th, 2020 | Westin St. Francis Hotel, San Francisco

The Pension Bridge Annual Conference provides the highest level of education and networking to the institutional investment community. A mix of Public Funds, Corporate Funds, Foundations, Endowments, Union Funds, Taft-Hartley Funds, Family Offices, Sovereign Wealth Funds, Consultants and Investment Managers will come together for this exclusive event.

The Pension Bridge Annual provides the industry's only controlled attendance structured event. This helps Pension Bridge to maintain the best conference ratio in the industry. **There will be approximately 250 Pension Fund Representatives and Non-Discretionary Consultants in attendance. We have allowed for only 110 Investment Manager Firms.** This better than 2:1 ratio, combined with participation from the most influential industry figures, creates a more enjoyable environment for all.

OUR EVENT FOCUS

The focus at 2020's event will be capital preservation while identifying the key reward drivers for generating consistent returns. Learn from the experts about the most important trends, challenges, opportunities and strategies to attack the long-awaited cycle contraction that will shape our industry for the immediate and long-term future. We remain in a challenging investment environment that is fully valued with a high-risk profile. The Pension Bridge Annual will uncover various structural transformations and investment ideas that will be beneficial for long-term fiscal sustainability.

We will also focus on climate change and technological innovation which will both continue to have a transformational impact not only on markets and investments, but on every aspect of our lives.

THE PENSION BRIDGE ANNUAL HAS TWO GOALS IN MIND

First is to provide the **highest level of education** with the top speaker faculty. This highly regarded group will bring forth influential insights and concepts. The second goal is to help **build relationships** between the pension plans, consultants and investment managers. We have provided the best possible environment for this event which is designed to be conducive for networking. We will cap off the event with a fun and enjoyable networking outing necessary for maintaining relationships and connecting with your peers and prospective business contacts.

We look forward to a strong event and a very productive one from both an educational and relationship perspective. We have structured this conference in a manner that will be most beneficial for you. We hope that you will join us to be amongst your industry peers to learn about the most up-to-date insights, investment strategies and trends.

KEY QUESTIONS WE WILL ADDRESS






- What are the Best Strategies and Approaches for Downside Protection during a Period of Market Stress?
- Managing Drawdown Risk, Liquidity Risk, Leverage Risk and More
- Addressing Climate Change Impact, Risks and Investment Opportunities
- Which Hedge Fund Strategies will provide the Best Downside Protection during the Next Market Downturn?
- How can a Multi-Asset Approach help you Manage Drawdown Risk?
- Benefiting from Risk Parity for the Downturn and Understanding its Hidden Drawbacks
- Where can you find Pockets of Opportunity and Relative Value in the Credit Space?
- Incorporating Artificial Intelligence into Investment Decision-Making and Portfolio Management
- What are the Investment Implications of Disruptive Change and how can you Benefit?
- Developing a Cybersecurity Risk Management Strategy—Staff Education and Best Practices
- Biggest Risks of Late Cycle Investing in Private Equity and how to Navigate Successfully
- Which Socio/Demographic Trends you can Benefit from in Real Estate? Most Resilient Sectors?
- Distressed Opportunities in BBB-Rated Bonds, Corporate Debt, European Debt and More
- Best Opportunities and Greatest Risks for Unconstrained Fixed Income
- The Advantages of Fixed Income Factor Investing as a Credit Diversifier
- Will China's Debt Problem and Tariffs Cause a Hard Landing?
- Currency Risk – to Hedge or Not to Hedge?
- Most Promising Areas for Impact Investing in Emerging and Developed Markets
- How Alternative Risk Premia can show Little or No Correlation to a 60/40 or Hedge Fund Portfolio
- Most Attractive Sectors and Geographies in Infrastructure while taking Interest Rates into Consideration
- Insights from Impactful CIOs on Risks, Allocations, Positioning for the Downturn and More

In addition to the listed themes above, we will be covering many more challenging issues that are crucial to the investment decision making process during these uncertain economic times. We will learn from the best about how to adapt in our industry which is always evolving and transforming.

TUESDAY, APRIL 14TH

 7:00 AM – BREAKFAST	6
8:00 AM – OPENING REMARKS	6
8:05 AM – KEYNOTE SPEAKER	6
8:35 AM – KEYNOTE SPEAKER – MACROECONOMIC VIEW	6
9:05 AM – ARTIFICIAL INTELLIGENCE IN ASSET MANAGEMENT AND BENEFITING FROM DISRUPTIVE INNOVATION INVESTMENT	7
 9:55 AM – REFRESHMENT BREAK	8
10:25 AM – ASSET ALLOCATION AND RISK MANAGEMENT	8
11:15 AM – RISK MITIGATING STRATEGIES	9
11:50 AM – RISK PARITY	9
 12:25 PM – LUNCH	10
1:35 PM – UNCONSTRAINED FIXED INCOME	10
2:20 PM – FIXED INCOME FACTOR INVESTING	11
 2:50 PM – REFRESHMENT BREAK	11
3:20 PM – CLIMATE CHANGE IMPACT, RISKS AND OPPORTUNITIES IN THE INVESTMENT PROCESS	11
4:05 PM – CYBERSECURITY	12
4:20 PM – IMPACT INVESTING	13
 4:50 PM – COCKTAIL RECEPTION	13
6:05 PM – COCKTAIL RECEPTION CONCLUDES	13

WEDNESDAY, APRIL 15TH

 7:00 AM – BREAKFAST	14
8:00 AM – EMERGING MARKETS	14
8:40 AM – CURRENCY RISK – TO HEDGE OR NOT TO HEDGE?	15
8:55 AM – MULTI-ASSET INVESTING	15
9:25 AM – ALTERNATIVE RISK PREMIA	16
 10:00 AM – REFRESHMENT BREAK	16
10:30 AM – HEDGE FUNDS	16
11:20 AM – CREDIT STRATEGIES	17
12:05 PM – DISTRESSED INVESTING – OPPORTUNISTIC AND SPECIAL SITUATIONS	18
 12:40 PM – LUNCH	19
1:45 PM – REAL ESTATE	19
2:30 PM – INFRASTRUCTURE	20
 3:05 PM – REFRESHMENT BREAK	20
3:30 PM – PRIVATE EQUITY	21
4:15 PM – CIO ROUNDTABLE	21
5:05 PM – CONFERENCE CONCLUDES	22
5:05 PM – WRISTBANDS FOR NETWORKING EVENT HANDED OUT IN THE CONFERENCE ROOM	22
 5:45 PM – 8:45 PM WINE TASTING AND DINNER NETWORKING EVENT	23



7:00 AM – BREAKFAST

JENNISON ASSOCIATES

SPONSORED BY:



8:00 AM – OPENING REMARKS

8:05 AM – KEYNOTE SPEAKER

SPEAKER:

David Villa, CFA, Chief Investment Officer, **Executive Director, State of Wisconsin Investment Board, (SWIB)**

8:35 AM – KEYNOTE SPEAKER – MACROECONOMIC VIEW

- Would you say we have an Everything Bubble or is it Isolated?
- Corporate Debt Growth for Financial Engineering – Outlook for Defaults
- Are we seeing a Bubble in BBB Bonds? What will happen to BBB during the Upcoming Recession?
- Algos and Passive Investment as a Market Risk
- Which Country's High Debt and Risks pose the Biggest Threat? Does that put the EU and Euro at Risk?
- China – Tariffs, Slower Growth, Debt Levels, Leverage and Real Estate Bubble
- Japan's Demographics and Debt – what might be the Far-Reaching Effects?
- What Countries have the Most Unfavorable Demographics Globally?
- Which are the Shakier Emerging Market Countries that have High Debt that can be Hurt by a Strong Dollar?
- What are your Expectations for Inflation/Deflation?
- How do you think about Derivatives Risk?
- What are your Expectations for Equities and Bonds?
- Where have you seen the Most Speculative Excess or Froth in the Markets?
- What is the Single Largest Risk Factor? Next Black Swan?
- What is the Likelihood that the Equity/Bond Correlation will Shift During the Next Extended Equity Decline?
- What are the Most Appealing Investments in this Environment?

SPEAKER:

James Grant, Founder, **Grant's Interest Rate Observer**

9:05 AM – ARTIFICIAL INTELLIGENCE IN ASSET MANAGEMENT AND BENEFITING FROM DISRUPTIVE INNOVATION INVESTMENT

(A) ARTIFICIAL INTELLIGENCE

- Why should AI be on a Plan Sponsor's Radar?
- What are the most Impactful Ways that Artificial intelligence and Machine Learning will Transform the Financial Services Industry and Investment Decision Making Process? What are the Long-Term Implications for Investment Professionals?
- Where is the Technology being Deployed? How can CIOs use Technology to Improve their Research and Portfolio Management Processes?
- What are the Most Widely-Adopted Techniques, Models and Algorithms in Recent A.I. Advancements that you use? How do you Incorporate these Solutions?
- Is Data Quality your Biggest Barrier to the Adoption and Deployment of Machine Learning?
- What are the Industries in China that will Benefit from their Recent Artificial Intelligence Patent Surge?
- What are your Most Useful Technology Tips that may help to Boost Future Returns?
- What is a Concrete Example of how a Highly Configurable System can make life easier for Asset Owners?
- How can A.I. result in Better Executions, Lower Transaction Costs and Faster Investment of New Cash Flows for Fixed Income? Have you Integrated this Technology Yet?
- How will Robotics take Operational Efficiency to the Next Level?
- How can Investors Truly Evaluate a Manager who claims to use A.I.? What are the Risks you need to know?

(B) INVESTMENT IMPLICATIONS OF DISRUPTIVE CHANGE

- How will Blockchain Transform the Capital Markets? How Impactful and Disruptive will Blockchain Technology be?
- What Industries can Benefit from Blockchain and how should you Invest in this Innovation for Strong Returns?
- What are the Possible Threats to Blockchain Development? What are Regulatory Issues and Potential Risks Arising from the New Technology?
- Where do you see Opportunities in Frictionless Value Transfer?
- Impact from Autonomous Vehicles and Mobility as a Service, (MaaS) – Who are the Potential Winners?
- Where will the Opportunities be in Life Sciences and Genome Editing?
- Do you see Battery Storage in the Energy Space as an Investment Opportunity for Outsized Returns?
- Which Industries will Benefit the Most from 3D Printing?
- Which Industries do you see the Biggest Opportunity for Internet of Things? What are some Examples of IoT for Smart Cities? Healthcare Sector?
- What are the Obstacles to Success in these Disruptive Technologies?

MODERATOR:

David Hunter, Executive Director, Chief Investment Officer, **North Dakota Retirement & Investment Office; North Dakota State Investment Board**

SPEAKERS:

Mark Steed, Chief Investment Officer, **Arizona Public Safety Personnel Retirement System Trust, (PSPRS)**

Ben Mohr, CFA, Director of Fixed Income, **Marquette Associates**



9:55 AM – REFRESHMENT BREAK

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10:25 AM – ASSET ALLOCATION AND RISK MANAGEMENT

(A) ASSET ALLOCATION

- Is the Asset Allocation Decision Primarily Return Focused or Risk Focused or Balanced?
- Do you experience a Stumbling Point of Staying Committed to a Risk Allocation-Based Approach in an Environment where Balance and Diversification have Not Kept Up with Equity-Centric Approaches over the past 10+ Years?
- Is a Static Asset Allocation Policy a Problem for Risk Management? Have you considered Economic Regime-Based or Dynamic Asset Allocation as an Enhancement? Is this Feasible?
- What has Worked and Not Worked in your Asset Allocation relative to Expectations?
- Has the Risk of a Large Drawdown Impacted your Asset Allocation?
- What Changes are you making in your Asset Allocation, if any? What were your most Recent Changes?
- Do you expect to meet your Actuarial Targets in the Short/Long Term?

(B) RISK MANAGEMENT

- What Risks are you Most Concerned about Today and how are you addressing them?
- How do you Manage Drawdown Risk in a Portfolio with High Equity Factor Risks? Are we still too Over-Reliant on Equities?
- Understanding Asset Class Correlation and Behavior Risk when Correlations Change
- How does Stress Testing or Scenario Analysis factor into your Process? Does Illiquidity Risk play an Important Role?
- How do you Manage Leverage Risks?
- From a Risk Perspective, What Keeps You Up at Night?

(C) RISK CULTURE

- Describe your Risk Culture and how it's Evolved – how well is Risk Management Integrated into your Investment Decision-Making Process?
- What Challenges do you have in Ensuring a Robust Risk Management Practice at your Organization?
- How do you Communicate your Risk Tolerances with your Board and Managers? How Frequently?
- How do Staff Utilize Risk Reports for Investment Decision Making? Are Risk Reports Useful for Macro Decisions such as Tactical Allocations?
- What should Boards/Organizations Consider when Building a Risk Culture?

SPEAKERS:

Andrew Palmer, Chief Investment Officer, **Maryland State Retirement and Pension System**

11:15 AM – RISK MITIGATING STRATEGIES

- Understanding Tail Risk Frequency, Severity and Impact
- Understanding the Value of Risk Mitigating Strategies – why is it Important to Improve your Risk/Return Profile Now? What Risks should be Hedged?
- Why should this be its Own Bucket or Asset Class? What Type of Allocation is Warranted?
- What are the Different Asset Classes and Strategies of Risk Mitigating Strategies? Expectations for each Approach?
- What are the Merits of an Option Overlay Strategy In Lieu of Owning a Tail Risk Hedge?
- What are the Trend or Momentum Following Strategies that you Prefer for Downside Protection?
- Why is Global Macro the Ideal Hedge Fund Allocation for Diversification and Decreasing the Depth of Drawdowns?
- How has Managed Futures Performed During Periods of Market Stress or Crisis Events?
- Long Duration U.S. Treasuries as a Diversifier in Extreme Market Conditions
- Building a Tactical Portfolio using Futures to Reduce Tail Losses and Enjoy Larger Gains
- Put Options as Insurance
- Using Information from the Derivatives Markets to assess Stress Points – where we are seeing Tail Risks Building?
- Systematic Risk Premia Allocations and Systematic Multi-Strategy Funds – does it Enhance Performance Outcomes? Are Short Track Records and Wide Variations in Products Concerning for Trend Risk Premia?
- Are there Alternative Ways to Deal with Equity Risk? How Defensive are these Strategies?
- Cost of Implementation as an Obstacle – how do you Minimize it?

11:50 AM – RISK PARITY

- How can Risk Parity Lower your Risk Profile?
- Does Risk Parity Make Sense Now if we Expect Low Market Returns in the Future?
- How did Risk Parity Perform during the last Financial Crisis Compared to other Asset Mix Models? Would you Expect Similar or Different Results for the Upcoming Downturn?
- What are the Hidden Risks and Drawbacks of Risk Parity Portfolios?
- Do you worry about a Correlation Shift when Bonds could Become Less Likely to Protect against a Large Drawdown in Equities?
- Is there an Over-Reliance on Bonds with Current Valuations? Should we be Worried about Leverage or Leveraging the Inappropriate Assets?
- Commodities Role in Risk Parity and Expectations
- Active vs. Passive – what are the Advantages and Disadvantages of Each?
- Leverage and Illiquidity Do Not Mix – any Approaches to Avoid this Combination?
- What Progress have we seen towards Adopting an Appropriate Benchmark? Any Implementable Indexes?

- Thoughts on Measuring Expected Tail Loss Rather Than Volatility for Tail Risk Parity? Can it be More Effective?
- How do Investors Bucket the Risk Parity Strategy within the Asset Allocation Framework?
- How should Investors think about Differences in Forecasting Volatility when Selecting a Manager?

MODERATOR:

Steven J. Foresti, Chief Investment Officer, **Wilshire Consulting**



12:25 PM – LUNCH

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1:35 PM – UNCONSTRAINED FIXED INCOME

- Assessing the Current Environment – where we are in the Cycle for Rates and Credit?
- Why might a Plan Sponsor want to consider Unconstrained Funds as Opposed To using a Collection of Fixed Income Funds that focus on Specific Strategies such as Core, Investment Grade, High Yield, Etc?
- With the Proliferation of Products which are Diverse, what is the Return Objective?
- What are your Best Ideas/Opportunities in today's Bond Market?
- How do you Approach Portfolio Construction with the Need for Increased Disaggregation of Alpha Sources?
- Where do you see the Greatest Risks and what might be the Trigger Points that Enhance that Potential?
- How do you Benchmark and Define Success for Unconstrained Fixed Income Strategies?
- With Non-Linearity of Risk Correlations and Volatility Not Being Stable through time, how are you Taking Advantage of Current Market Dislocations?
- How Important is Liquidity Management? Should Investors think about Transparency of Positioning in Unconstrained Fixed Income?
- What are the Implications of Reduced Liquidity? Have you Increased your Use of Bond ETFs to offer Enhanced Liquidity? If so, what were some Other Reasons for this Decision?
- Using Structured Products, Swaps and Derivatives to Create Alpha and Hedge Volatility
- What are your Expectations and Outlook for Corporate Debt? Do you see a Disaster in the Making with the Huge Growth of BBB Bonds and the Inverted Yield Curve?
- Do you view Bank Loans as a Hedge in Rising Rate Environment?
- How will Trump's GSE Reform Impact the MBS Market?
- Understanding how to Select Managers – Multi-Sector, Multi-Region, Multi-Currency Skill Set or Duration Range Targets?

MODERATOR:

Amy Hsiang, CFA, CAIA, Investment Manager Research, **RVK**

SPEAKER:

Jonathan Lieber, Director of Fixed Income, **New York State Common Retirement Fund - Office of the State Comptroller**

2:20 PM – FIXED INCOME FACTOR INVESTING

- With Active Fixed Income Managers Beating the Index by taking on More Credit Risk (Highly Correlated to Equities), how can Factors in Fixed Income (Value, Momentum, Carry, Defensive), offer hope for Outperformance that's Uncorrelated to Equity Markets?
- Explain your Systematic Process for your Multi-Factor Model and how it's a Credit Diversifier
- What are the Factors and Features that help you to Target the Precise Outcomes you need?
- Why Factor Investing/Factor ETFs Over Passive Fixed Income ETFs? What are the Advantages? Disadvantages?
- Is it Possible to Obtain Stable Alpha Without taking Additional Risk?
- If you are Identifying Hidden Risks in a Bond Portfolio such as Unintended Overweights in Interest Rate or Credit Risk, what are the Other Strategic Allocations for True Drivers of Returns?
- How does the Cost Compare?
- What are the Biggest Challenges to Widespread Factor Adoption in Debt Markets?
- What should you be Looking for in a Manager?

MODERATOR:

Scottie D. Beville, Senior Investment Officer - Global Income Strategies, **Teachers' Retirement System of the State of Illinois**



2:50 PM – REFRESHMENT BREAK

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3:20 PM – CLIMATE CHANGE IMPACT, RISKS AND OPPORTUNITIES IN THE INVESTMENT PROCESS

(A) MANAGING CLIMATE RISK

- What are the Catastrophic Consequences of a Global Temperature Rise of 2 Degrees Celsius, (3.6 Degrees Fahrenheit) and how do we Create a Sense of Urgency to Address this Major World Problem?
- How will Climate Change Affect Developed and Emerging Markets Differently?
- What are some Examples of Climate-Related Risks Across Asset Classes?
- Understanding the Impacts of Climate Change on Real Estate Investments and Lending
- With Increasing Water-Related Risks, what will be the Credit Implications and the Impact on Credit Ratings?
- What are the Options for Reducing Portfolio-Wide Exposure to Climate-Related Risks?
- What Sources of CO2 Emissions are Investors Not Focused On?
- How do you Hedge Climate Risk?

(B) STRATEGIES AND IMPLEMENTATION

- Where do you see the Best Opportunities in Smart Cities, Green Buildings, Decarbonizing Technologies, Electric Vehicles, Water, Renewable Energy, Battery Storage, and other Appealing Sectors?

- What are the Various Approaches and Models to Narrowing the Financing Gap for Investing in these Sector Opportunities?
- How do you Assess the Opportunities in Public-Private Partnerships?
- What's Behind the Rise in Green Bond Issuance and what is the Growth Potential? Is China, Europe, U.S. or Other Region Most Attractive for this Green Investment?
- Do we have Early Results of the Performance of a Low Carbon Stock Program Versus a Broader Market Segment on a Long-Term Basis?

(C) GOVERNANCE AND FIDUCIARY DUTY

- Push for Greater Transparency - what are some Questions you should be asking your Investment Managers about their Climate Risk Assessment during the Investment Process?
- What are some Examples of Different Climate-Related Metrics that are available?
- FSB Taskforce on Climate-Related Financial Disclosure, (TCFD) - will this be the Industry Standard for Climate-Related Financial Reporting?
- Are Board Processes in place to Assess the Risks and Opportunities?
- How can Boards Incorporate Climate Change into Investment Beliefs and Policies?

MODERATOR:

Alex Bernhardt, Principal, U.S. Responsible Investment Leader, **Mercer**

SPEAKER:

Travis Antoniono, Investment Officer, Sustainable Investment & Stewardship Strategies, **California State Teachers' Retirement System, (CalSTRS)**

4:05 PM – CYBERSECURITY

- What are the Greatest Cybersecurity Threats and Challenges Organizations are currently facing? Specific Risk Areas?
- Overview of Types of Cybersecurity Attacks – Phishing, Botnet Hackers, Wire Transfer Fraud, Vendor Payment Fraud, Compromised Business E-mails, Attempts to Steal Healthcare Information, etc. Where will Future Attacks come from?
- What is an Interesting or Extreme Cyber Attack Example you've come across for a Pension Plan? An Investment Manager?
- Developing a Cybersecurity Risk Management Strategy – what are the Critical Components?
- How should you approach Staff Education about Cybersecurity Risk and Best Practices?
- Should the Board Hire a Third Party to Perform an Independent Analysis?
- As a Pension Plan, Endowment, Foundation or Family Office LP, what Cybersecurity Questions should you ask in your Due Diligence of your Investment Managers?
- Will it become Common for Pension Plans' Responsibility to start at the Request for Proposal (RFP) Stage by providing Details for Data Protection and Privacy Provisions?
- Importance of a PE Firm's Approach to Cybersecurity Enterprise Risk for M&A
- What Precautions can you take to Avoid Phishing and who within the Organization is being Targeted? How Often can your PE Portfolio Companies be Phished?
- Should Plan Sponsors have Cybersecurity Insurance Coverage? What is typically Covered in a Policy?

SPEAKER:

Benjamin Taylor, Senior Vice President, **Callan**

4:20 PM – IMPACT INVESTING

- How do you Define Impact at your Organization?
- The Role of UN's Sustainable Development Goals in Impact Investing Strategy
- Will Investors Abandon this Space during the Next Recession? When and How will it Become Mainstream?
- What are some Attractive Opportunities for Impact Investing in Emerging Markets? Developed Markets?
- What are the Latest Trends in Impact Investment Globally?
- Investing in Technology for Social Impact
- What are the Top Challenges for Investors?
- What are the Biggest Areas Risks of Impact Investing Projects?
- Why is Private Equity Particularly Well-Suited for Impact Investing?
- What are some of the Socially Impact Bonds or Municipal Impact Bonds you've Invested in?
- Do you find it Difficult to Measure the Impact of Public Market Investments? How do you Measure Impact in the Bond Market?
- How are Big Data and Advanced Analytics used as Tools to Improve the Measurement of Impact?
- How should Impact Investors think about Reporting? Have you Embraced the Need for Disclosure with Sustainability Accounting Standards Board, (SASB)?
- What Evidence have we seen that Impact Investments will Reap Healthy Returns?
- What should you look for in Public/Private Impact Managers?
- Do Larger Firms have an Advantage in this Space?

MODERATOR:

Bert W. Feuss, Senior Vice President, Investments, **Silicon Valley Community Foundation**

SPEAKERS:

Stacie Olivares-Castain, Board Member, **California Public Employees' Retirement System, (CalPERS)**

Kristine Pelletier, Partner, **NEPC**

 **4:50 PM – COCKTAIL RECEPTION**

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6:05 PM – COCKTAIL RECEPTION CONCLUDES



7:00 AM – BREAKFAST

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8:00 AM – EMERGING MARKETS

- Macro Environment and Recent Developments, (Central Banks, Dollar, Commodity Prices, etc.)—how does that affect your Investments?
- As the Growth Advantage in EM begins to Fade, what should you be looking for to Focus on Economic Progress and Development?
- What Effect do the Tariffs have on your Outlook for China and other Emerging Markets? Any Markets that are More Insulated?
- How Concerned are you about China's Debt Problem? Is a Hard Landing Likely or Unlikely?
- What would be the Effects on Emerging Markets if we see a Recession in the U.S.? Instability in the Eurozone? Slowdown in China?
- How do Valuations look Relative to Risk in Different Regions?
- What are the Key LP Concerns and Challenges in Particular Regions?
- Which Country do you see Favorable Demographic Trends such as a Growing Middle Class, Urbanization, Promising Consumer Buying Behavior and Economic/Fiscal Reforms?
- Are there Any EM Countries to Avoid with High Debt, Growing Inflation or a Currency Crisis?
- Which Markets in Frontier Countries can you Profit from Strong Growth and Access a Lower Correlation? What are the Complexities of Investing in these Frontier Markets?
- Given the Current Environment, will Emerging Markets Outperform Developed Markets? What are your Returns Expectations for Particular Regions?
- What can be done to Mitigate Currency Risks?
- The Case for Emerging Markets Corporate Debt
- What Metrics are you using to Determine Relative Value in Sovereign Bonds?
- Public vs. Private Emerging Markets – Benefits and Drawbacks of each
- Active vs. Passive Debate
- What is an Appropriate Long-Term Allocation to Emerging Markets? What should that Allocation look like, (Public Equity, Fixed Income, Private Equity, Frontier Markets, Alternatives, etc.)?
- Choosing an Emerging Markets Fund or Manager – should you be Investing by Region, Country or Sector?

MODERATOR:

Craig Chaikin, CFA, Senior Consultant, **Segal Marco Advisors**

8:40 AM – CURRENCY RISK – TO HEDGE OR NOT TO HEDGE?

- What are the Factors Driving Currencies Today?
- What is the Impact of China Devaluing the Yuan?
- What is the Annual Impact on Returns for a Portfolio that is Hedged vs. Unhedged? Long Term Impact?
- What has Changed that Enables One's Ability to Manage Hedging and Reduce Risk for both Developed Markets and Emerging Markets?
- How does Dynamic Hedging Reduce Risk and Capture some of the Return?
- How do Active Currency Overlay Strategies take the Currency Exposures Inherent in International Investments and Manage them Separately?
- Benefits of Extracting Alpha from Currency Markets – Uncorrelated Alpha and Accessed Without the Need for Funding
- Is there an Optimum Currency Hedge Ratio for a Plan?
- What are the most Common Reasons Asset Owners give for Not Actively Managing Currency? Are these Reasons Valid or Not?
- Hedging Costs – how should this factor into your Decision?

8:55 AM – MULTI-ASSET INVESTING

- What are the Differences Between Multi-Asset Funds and Hedge Funds? What are the Advantages and Disadvantages of Choosing Multi-Asset Funds over Hedge Funds?
- How can a Multi-Asset Approach help you Manage Drawdown Risk? What Strategies should be used based on Experience from the Financial Crisis?
- Do you believe Downside Protection with Multi-Asset Strategies are as Effective as Managers Claim?
- How do you Devise Effective Asset Allocation Strategies? What Stress Scenarios do you Consider?
- Do Most Multi-Asset Portfolios need to be Restructured to Thrive in Today's Environment? If so, how?
- How can Factor Analysis be used to Mitigate Risk and Improve Multi-Asset Portfolios?
- How Worrisome is the Reliance on Stable Correlation Relationships with No Certainty those Relationships will Persist?
- Is Excessive Leverage a Concern?
- How do you go about the Right Balance of Public and Private Equity when building the best Multi-Asset Portfolio for you?
- How have Returns been and how do you Measure Performance?
- How do Multi-Asset Managers Differentiate Themselves in this Crowded Field?

STAND ALONE SPEAKER:

Pam Chan, CFA, Managing Director, Chief Investment Officer and Global Head of the Alternative Solutions Group ("ASG"), **BlackRock**

PRESENTED BY: **BLACKROCK®**

9:25 AM – ALTERNATIVE RISK PREMIA

- Understanding Alternative Risk Premia – how does it Differ from Smart Beta? From Alpha?
- Risk Premia to Choose From – Momentum, Value, Carry, Other
- How can a Multiple Market Neutral Alternative Risk Premia Combined in a Single Portfolio show Low or No Correlation to a 60/40 or Hedge Fund Portfolio?
- Explain the Potential Benefits – Diversification, Liquid, Transparent, Efficient, Systematic Exposure
- Lower Fees – what are the Typical Fees Investors can Expect?
- What are the Different Ways you can Use and Implement Alternative Risk Premia?
- What are the Biggest Risks?
- Do you Worry about the Fallout if Correlations Change over Time?
- How Concerning is Crowding and do you see it as having a Negative Impact on Performance?
- How should Investors determine which Alternative Risk Premia Strategies Best Meet their Objectives?
- How should you Approach Manager Selection?
- With these Funds being Relatively New, how Battle-Tested are they? What are the Early Signs of Performance during the Shorter-Term Market Corrections we've seen?

STAND ALONE SPEAKER:

Aneet Chachra, CFA, Portfolio Manager, Diversified Alternatives, **Janus Henderson Investors**

PRESENTED BY: **Janus Henderson**
INVESTORS



10:00 AM – REFRESHMENT BREAK

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10:30 AM – HEDGE FUNDS

(A) STATE OF THE INDUSTRY AND PORTFOLIO CONSTRUCTION OPTIONS

- With Difficult Investment Conditions Pushing Many Seasoned Firms and Legendary Investors Out of the Business, does this mean some Strategies have Stopped Working? What do you see as the Reasons or Forces at Play?
- How do you Approach the Current Industry Dynamics? How is your Firm Evolving and Staying Competitive?
- If there was a Hedge Fund Strategy you would Invest in over the next Few Years, which one would it be and why? Which Strategies will have the Best Performance? Any Strategies to Avoid?
- What sort of Downside Protection, Drawdown or Return Range do you expect we'll see from each of the Different Hedge Fund Strategies during the Next Market Downturn?
- Are there any Overcrowded Trades that should be Avoided when this Cycle Turns?

- Any Trades you like when the Next Downturn Bottoms? Any Specific Sector that will Emerge as a Leader?
- Would you Invest in Hedge Funds Over Multi-Asset Strategy Funds for the Next Downturn and if so, why?
- What does Crisis Risk Offset mean? Which Low Correlated Strategies do you find Most Attractive?
- What is the Future of Long-Short Equity Hedge Funds and is the Struggle Here to Stay? With Return Dispersion Remaining High among Long-Shot Equity Hedge Funds, what Differentiates Managers that have been able to Outperform?
- What is the Future of Quantitative Funds as far as Performance goes? Does it Concern you that many Historical Stock Market Tendencies have Backfired and what might be the Reason Why?
- Do you find Opportunities within the Global Macro Space Attractive and if so, why?
- Managed Futures – Diversification and Performance during Periods of Market Stress or Crisis Events. How much can it Decrease the Depth of Portfolio Drawdowns and Volatility?
- What is the Future of the Fund of Funds Space? Where will Fees be? What will it take to Stay Competitive?
- Do Smaller Hedge Funds Outperform? If so, why? How do Emerging Managers Differentiate Themselves in the Quest for Institutional Capital?
- Liquid Hedge Fund Products such as UCITS, 40 Act and Hedge Fund Replication – are they a Viable Alternative and Under what Circumstances? How has their Performance and the Lower Fees Fared Relative to Hedge Funds?

(B) IMPLEMENTATION CONCERNS

- As an LP, how do you think about the Role of Hedge Funds in your Portfolio?
- What Trends do you see developing in Liquidity Provisions for Hedge Funds? How do you Assess the Tradeoff Between Fees and Liquidity?
- What is an Appropriate Fee Structure for Hedge Funds? How do you Ensure Payment for Alpha, Alignment of Interest and Not Overpaying for Underperformance?
- Any Recent Trends you've seen for Institutions as far as Fees, Transparency, Customization, Increased Partnership, etc.? Will the 1 or 30 Model developed by Albourne and TRS Texas Catch On?
- As an Investor, do you Negotiate the Frequency of Performance Fee Crystallization with your Managers so that it Doesn't Lead to Hidden and Higher Costs?
- How often should Operations Due Diligence be Reviewed/Updated?
- What is your View on Absolute Return Co-Investments?
- What is the Role of Separate Managed Accounts? What are the Benefits? Are they Better than Commingled Funds?

MODERATOR:

Dr. John Claisse, CEO, **Albourne**

SPEAKER:

Derek Drummond, CAIA, Portfolio Manager – Funds Alpha, **State of Wisconsin Investment Board, (SWIB)**

11:20 AM – CREDIT STRATEGIES

- Current State of the Credit Market
- What will be the Catalyst that will cause Credit Spreads to Widen and Defaults to Rise?

- Where are Managers finding Pockets of Opportunity? Where is the Relative Value?
- What Subsectors of Credit are Most Attractive given the Valuations? Any Areas you are Avoiding?
- Do you see Investors being more willing to Trade Liquidity for Yield and should that be of Concern?
- Is it possible to see a High Yield Meltdown with a Lack of Liquidity? Understanding the Corporate Debt Risk Factors and Strong Correlation to Equities
- BBB Risk of a Mass Move to High Yield – how concerned should we be?
- Do you believe ETFs pose a Systematic Risk in Market Turmoil with Exacerbated Volatility?
- Is Direct Lending in a Bubble and how would you Position for that?
- What Sub-Sectors are you Favoring and Avoiding in the Middle Market Direct Lending Space?
- How can Opportunistic Credit fit into the Direct Lending Ecosystem?
- Outlook and Considerations for Structured – Are CLOs Safer than Pre-Crisis?
- Can Securitized Credit Weather Market Turbulence? How has it Performed During Previous Credit Events? Is there a Lower Correlation to Broader Fixed Income Sectors?
- Bank Loans Overview
- How will the Subprime Loans in Autos Play Out?
- Opportunities and Risks for Europe and Asia
- How much should Plan Sponsors be Allocating to Credit? What is the Optimal Structure to a Credit Portfolio?
- Should Multi-Asset Credit Strategies be a Tactical Asset Allocation with Dynamic Management for Pension Plans? If so, why?
- How do we Develop Return and Risk Expectation for this Asset Class?
- How do we Benchmark Performance?

MODERATOR:

Sylvia Owens, Global Private Credit Strategist, **Aksia**

12:05 PM – DISTRESSED INVESTING – OPPORTUNISTIC AND SPECIAL SITUATIONS

- How are you Positioning your Portfolio relative to where we are in the Credit Cycle? Any Trends you're seeing?
- What are your Expectations for Default Rates going forward?
- Which Sectors, Strategies and Geographies will create the Best Opportunities? Any Areas that should be Avoided?
- Will the Froth in Direct Lending provide a Distressed Opportunity?
- How Big a Role do you Expect Corporate Debt to Play and the Huge Growth of BBB-Rated Bonds?
- How Concerning is the Debt Piled up by Corporations for their Share Buybacks?
- Will the Prevalent Covenant-Lite Deals create Problems during the Next Cycle?
- What are the Opportunities and Risks in Europe? Any Countries, Sectors or Types of Deals that Stand Out?
- What is the Size and Scope of the Issues facing the European Banking Sector?
- Do you see Opportunities in Asia or Elsewhere Globally?

- What is your View on Leverage, (Fund-Level, BDC Changes, Asset-Level, Securitization Market)?
- Do you worry about a Liquidity Problem in ETFs and other Structured Credit Vehicles if there is Credit Event?
- How will the Different Implementation Approaches affect Expected Returns? Control vs. Non-Control? Private vs. Public?
- What are the Pros and Cons of the Various Structures, (Hedge Fund Side Pockets, Evergreen Structures, Contingent Funds, Traditional Drawdown Structures)?
- Where are LPs Spending the Bulk of their Time during Due Diligence?
- What Skill Sets/Characteristics should Pension Plans look for in a Distressed Manager? What Questions should LPs Ask?

MODERATOR:

Raelan Lambert, Managing Director & Head of Global Private Debt, **Mercer Alternatives**

12:40 PM – LUNCH

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1:45 PM – REAL ESTATE

- How Significant a Drop in Pricing and Returns are you expecting? Does it depend on Sector and Location?
- What Strategies do you see as the Biggest Risks and the Biggest Rewards/Relative Value?
- Are there Resilient Sectors?
- What Niche Property Types will be Defensive in a Downturn?
- Are you Making Pivots or Tilts to Take Advantage of Macro Trends? Socio/Demographic Trends such as the Aging Population?
- How will Real Estate Debt Perform in the Next Recession?
- How do you View the Risk Profile of Core vs. Non-Core? Returns Expectations?
- What is the Biggest Threat to Commercial in the next few years for this Fully Priced Market?
- Where are the Most Crowded Trades?
- Asia and European Real Estate Outlook – Opportunities and Investment Trends
- What Real Estate Technology Trends/Disruption are you Watching Most Closely?
- Will Co-Investments become more Common?
- Current State of the Real Estate Secondary Market
- Do you like REITS as a More Liquid form of Real Estate? If so, any Region or Property Type that you like for REITS?

MODERATOR:

Chae Hong, Partner, **The Townsend Group, an Aon Company**

SPEAKER:

Anthony Breault, Senior Real Estate Investment Officer, **Oregon State Treasury**

2:30 PM – INFRASTRUCTURE

- State of the Infrastructure Markets
- With Low Interest Rates, Abundant Capital Flowing and High Valuations, is there Enough Supply to Meet Capital Demand?
- If Interest Rates Rise in the coming years, what would be the Implications for Valuations and Liquidity Options for Existing Infrastructure Assets?
- Is Leverage a Concern?
- If the S&P were to enter a Multi-Year Correction (let's say 30%), how much of a Decline can we Expect from Infrastructure Portfolios? What Impact would this Type of Portfolio Drawdown have on Infrastructure Allocations? What Opportunities would this provide Investors?
- As an LP, what are your Program Objectives, (Defensive, Low Correlation, Inflation Protection, Yield, etc)?
- Which Sectors are Most Attractive and why?
- Which Geographies are Most Appealing? Developed or Emerging Economies?
- What are the Biggest Challenges/Risks facing Infrastructure Investors today?
- Listed vs. Unlisted – which do you Favor in a Volatile Market for Downside Protection? Do Rising Interest Rates Favor Either?
- Are you seeing Growth in Opportunities for Public-Private Partnerships across the U.S.?
- How have GPs Adopted ESG Principles and what are the Remaining Challenges? How do you Approach ESG as an Energy Investor?
- What are your Views on the Future Potential for Technology to Disrupt Infrastructure and what can Investors do to Avoid or Take Advantage of it?
- Thoughts on Battery Storage for Renewables?
- How have Tax Credits of Renewables Impacted the Industry over the Past Decade and how will the Phase-out of Subsidies affect the Industry?
- What Sectors within Renewables or Alternative Forms of Energy do you find Attractive? Will the Best Opportunities be in the U.S. or Emerging Markets?
- What are the Advantages and Challenges for LPs to Invest in infrastructure through Fund Commitments vs. Investing Directly as a Co-Investor or Deal Leader like many of the Large Plans?
- What are the Similarities and Differences Between Infrastructure Assets and Private Equity Investments with the Blurring of Definitions over the past few years?

MODERATOR:

Todd Lapenna, CFA, CAIA, Partner, Infrastructure & Real Assets, **StepStone Group**

SPEAKER:

Bert Clark, President and Chief Executive Officer, **Investment Management Corporation of Ontario, (IMCO)**

3:05 PM – REFRESHMENT BREAK

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INVESTMENTS

3:30 PM – PRIVATE EQUITY

- When it comes to the Concerns of Late Cycle, Dry Powder, Cheap and Plentiful Leverage and High Multiples, what should Investors be Focused On over the Next few Years to Successfully Navigate the Environment?
- Should LPs expect Lower Returns Going Forward? Will Private Equity Outperform Public Markets?
- With the Growing Size of the PE Market, do you believe the Industry can put the Excess Dry Power Capital to Work Responsibly?
- Where are your Most Optimistic Returns Going Forward as far as Sector, Geography or Niche Strategy? What's your Biggest Worry?
- What Lower or Non-Correlation Investments Stand Out that are Independent of the Economy and can Withstand a Multi-Year Market Downturn?
- Are you Seeking Investments with a Subscription Model for Greater Visibility of Revenues and Less Volatility? If so, what Recurring Revenue Metrics do you look for?
- Does it Concern you that Subscription Lines of Credit have Distorted IRR? Will we Trend towards LPs Dictating the Format and Usage of Subscription Lines?
- What are your Views on GP-Led Restructurings? What are the Pitfalls that LPs need to be Aware of?
- What are your Views on Fund to Fund Sales?
- How have Trade Tensions with China Impacted Existing Portfolio Companies and your Investment Decision-Making? How are you preparing for a Scenario Where Tensions and Tariffs Persist?
- Given all the Concerns, how are you Positioning your Portfolio within Buyouts? What do the Long Duration Vehicles Mean for Investors?
- What are the Biggest Risks to be aware of for Investing in the Ultra-Competitive Growth Equity Space?
- How are you playing the Co-Investment Frenzy? What will happen to Co-Investments in a Down Market?
- Venture Capital Winners – Limited Access to the Top Few VCs that Generate the Bulk of the Industry's Returns? What's the Best Approach to this Challenge?
- Issues, Outlook and Opportunities for European PE
- How do you think about ESG Issues and Integration when making Individual Investment Decisions and as a Firm?
- From an LP Perspective, what does not work in Fundraising? What does it take to Stand Out?

MODERATOR:

Paul R. Yett, Managing Director, **Hamilton Lane**

SPEAKERS:

Stephen J. Neel, Deputy Chief Investment Officer, Alternative and Private Market Investments, **New Mexico Educational Retirement Board**

Julia Winterson, Senior Director, Alternative Investments, **CommonSpirit Health**

4:15 PM – CIO ROUNDTABLE

(A) RISKS, ALLOCATIONS AND MACRO-BASED DECISIONS

- In this Fully-Valued Environment, how are you Balancing the Risk of a Large Drawdown with your Return Goals? Has it Impacted your Asset Allocation?

- Which De-Risking Strategies or Investments with a Low/Non-Correlation have you Allocated to?
- What Hedge Fund Strategies are you Investing in? Will those Strategies provide a Cushion for the next Market Downturn? How do you use them to Reduce Risk?
- What are your thoughts on Passive Equity Investing and its Performance vs. Active for the Next Major Downturn? Any Market Liquidity Concerns? Where are you using Passive and Active Management and why?
- How are you Viewing Emerging Markets Broadly and what do you feel is the proper EM Allocation? Any Geographic Regions, Countries or Sectors that Interest You?
- Have you made Long-Term Cash Flow Investments through Partnerships and Co-Investment Structures?

(B) ALIGNMENT OF INTERESTS

- What Changes or Trends have you noticed in Fee Structures/Terms and your Bargaining Power? Has your Fund Size been an Advantage or Disadvantage?
- Do You and Your Investment Departments have the Authority to be a Dynamic, Tactical and Active Investor in Response to Extreme Economic Conditions?
- Are you able to Leverage your Portfolio to Generate Liquidity to Take Advantage of a Market Dislocation in an Economic Downturn?
- How can you Overcome Governance Hurdles so that you can Effectively Partner with Outside Providers, bring a Portion of the Investment Management In-House and provide Incentive-Based Compensation?
- Have you Taken Steps to Address Diversity within your Investment Programs or your Organization's Staff?
- Do you have Processes or Policies in place to Assess the Risks of Climate Change?
- Have you Addressed Cybersecurity Protection for your Plan? How have you Educated the Staff about the Risks and Taken Steps for Protection with Investment Managers?
- Any Important Lessons Learned that you can Share from your Individual Plan Experiences?
- What Keeps You Up at Night?

MODERATOR:

Stephen Cummings, CFA, Global Investments Officer, Head of North America Investment Consulting, **Aon Investment Consulting**

SPEAKERS:

Robert M. Maynard, Chief Investment Officer, **Public Employee Retirement System of Idaho, (PERSI)**

John D. Skjervem, CFA, Chief Investment Officer, **Oregon State Treasury; Oregon Investment Council**

Craig Husting, CFA, Chief Investment Officer, **Public School & Education Employee Retirement Systems of Missouri, (PSRS/PEERS)**

Dominic Garcia, Chief Investment Officer, **Public Employees Retirement Association of New Mexico, (PERA)**

5:05 PM – CONFERENCE CONCLUDES

5:05 PM – WRISTBANDS FOR NETWORKING EVENT HANDED OUT IN THE CONFERENCE ROOM

Attendees must be present to attend event



5:45 PM – 8:45 PM WINE TASTING AND DINNER NETWORKING EVENT

Hosted by Pension Bridge – Join our group at for a wine tasting and dinner at the Press Club, located just a few blocks from Westin St. Francis. Meet your industry peers in great setting as California Wine Country comes to the heart of the city. Experience the finest winemakers with new and rare vintages. We'll have a fun wine tasting reception, followed by a tasteful dinner with the highest quality organic ingredients. Pension Bridge will utilize the 9000 square feet of the award winning “Best Restaurant Design” event space for networking for our high quality conference group.

REGISTRATION

TO REGISTER OR RECEIVE MORE INFORMATION ABOUT THE 2020 PENSION BRIDGE ANNUAL:

BOCA RATON OFFICE CONTACT

Brett Semel
(561) 455-2729
bsemel@pensionbridge.com

NEW YORK OFFICE CONTACT

Andrew Blake
(516) 818-7989
ablake@pensionbridge.com

ABOUT PENSION BRIDGE

We are an innovative company offering educational conferences of the highest quality. Our objective is to provide an education to the institutional investment community while providing an impressive speaker faculty in a setting that is conducive to great networking. We help institutional money managers connect with Pension Funds and Consultants across the country in a fun, enjoyable atmosphere. Our events can act as a stepping stone to a successful financial relationship or simply help build the investment education.

Our management team's unique skills, operating experience, and industry relationships help to make our events the main attraction in the industry. We pride ourselves on being there to cater to our clients' wants and needs. Our ratio of plan sponsor to investment manager allows our events to be the most desirable and accommodating in the conference industry. Pension Bridge is known for its strength, stability, relationships and operational excellence.



MEMORANDUM

TO: Oakland Police & Fire
Retirement Board

FROM: David Jones

SUBJECT: Authorization and
Reimbursement of Board/Staff
Travel/Education Expenses

DATE: February 18, 2020

Teir Jenkins, Staff member of the Oakland Police and Fire Retirement System board, requests authorization for reimbursement of travel and/or board education related funds for the event detailed below. Staff has verified that budgeted funds are available for this Staff member to be reimbursed.

Staff recommends the reimbursement of travel/education funds for the event below be approved by board motion.

Travel / Education Event: 2020 Pension Bridge

Event Location: Westin St. Francis Hotel, San Francisco, CA

Event Date: April 14, 2020 to April 15, 2020

Estimated Event Expense*: \$ 500.00 (estimated)

Notes: _____

* If enrollment, registration or admission expenses are required, the fund will process a check in advance and pay vendor directly; all other board-approved reimbursements will be made upon delivery of receipts to staff by the traveling party. Cancellation of event attendance requires return of all reimbursed funds paid to attendee to the fund.

Respectfully submitted,

David Jones, Plan Administrator
Oakland Police and Fire Retirement System

For questions please contact David Low, Administrative Assistant, at 510-238-7295.

Attachments (if any):

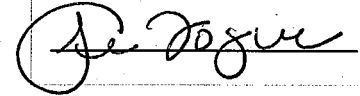
Resolution #7093

2020 Pension Bridge Agenda

OAKLAND POLICE AND FIRE RETIREMENT BOARD
CITY OF OAKLAND, CALIFORNIA

Approved as to
Form and Legality

RESOLUTION No. 7093



ON MOTION OF MEMBER _____ SECONDED BY MEMBER _____

RESOLUTION APPROVING REQUEST OF OAKLAND POLICE AND FIRE RETIREMENT SYSTEM TRUSTEE R. STEVEN WILKINSON TO ATTEND THE 2020 PENSION BRIDGE CONFERENCE FROM APRIL 14, 2020 TO APRIL 15, 2020 IN SAN FRANCISCO, CALIFORNIA AND FOR REIMBURSEMENT OF REGISTRATION FEES AND TRAVEL-RELATED EXPENSES IN AN AMOUNT NOT TO EXCEED FIVE HUNDRED DOLLARS (\$500.00)

WHEREAS, the Oakland Police and Fire Retirement System (PFRS) Education and Travel Policy ("Travel Policy") requires that PFRS Board members and staff obtain prior Board approval of all education and travel-related expenses that will be reimbursed by PFRS; and

WHEREAS, PFRS Trustee R. Steven Wilkinson would like to attend the 2020 Pension Bridge Conference ("the Conference") in San Francisco, CA from April 14, 2020 to April 15, 2020; and

WHEREAS, in compliance with the Travel Policy, Trustee Wilkinson has submitted documentation showing that registration fees and estimated travel-related expenses to attend the Conference will be Five Hundred Dollars (\$500.00); now, therefore, be it

RESOLVED: That Trustee R. Steven Wilkinson's request to attend the 2020 Pension Bridge Conference in San Francisco, CA from April 14, 2020 to April 15, 2020 at an estimated cost of Five Hundred Dollars (\$500.00) is approved; and be it

FURTHER RESOLVED: That the PFRS Board authorizes reimbursement of registration fees and travel-related expenses in an amount not to exceed Five Hundred Dollars (\$500.00) for Trustee Wilkinson's attendance at the 2020 Pension Bridge Conference.

IN BOARD MEETING, CITY HALL, OAKLAND, CA FEBRUARY 26, 2020

PASSED BY THE FOLLOWING VOTE:

AYES: **BENSON, GODFREY, NICHELINI, SPEAKMAN,
AND PRESIDENT JOHNSON**

NOES:

ABSTAIN: **WILKINSON**

ABSENT:

ATTEST: _____
PRESIDENT

ATTEST: _____
SECRETARY



**PENSION
BRIDGE** | THE ANNUAL
2020

APRIL 14TH & 15TH, 2020

WESTIN ST. FRANCIS HOTEL
SAN FRANCISCO

CELEBRATING
15 YEARS

THE PENSION BRIDGE ANNUAL

April 14th & 15th, 2020 | Westin St. Francis Hotel, San Francisco

The Pension Bridge Annual Conference provides the highest level of education and networking to the institutional investment community. A mix of Public Funds, Corporate Funds, Foundations, Endowments, Union Funds, Taft-Hartley Funds, Family Offices, Sovereign Wealth Funds, Consultants and Investment Managers will come together for this exclusive event.

The Pension Bridge Annual provides the industry's only controlled attendance structured event. This helps Pension Bridge to maintain the best conference ratio in the industry. **There will be approximately 250 Pension Fund Representatives and Non-Discretionary Consultants in attendance. We have allowed for only 110 Investment Manager Firms.** This better than 2:1 ratio, combined with participation from the most influential industry figures, creates a more enjoyable environment for all.

OUR EVENT FOCUS

The focus at 2020's event will be capital preservation while identifying the key reward drivers for generating consistent returns. Learn from the experts about the most important trends, challenges, opportunities and strategies to attack the long-awaited cycle contraction that will shape our industry for the immediate and long-term future. We remain in a challenging investment environment that is fully valued with a high-risk profile. The Pension Bridge Annual will uncover various structural transformations and investment ideas that will be beneficial for long-term fiscal sustainability.

We will also focus on climate change and technological innovation which will both continue to have a transformational impact not only on markets and investments, but on every aspect of our lives.

THE PENSION BRIDGE ANNUAL HAS TWO GOALS IN MIND

First is to provide the **highest level of education** with the top speaker faculty. This highly regarded group will bring forth influential insights and concepts. The second goal is to help **build relationships** between the pension plans, consultants and investment managers. We have provided the best possible environment for this event which is designed to be conducive for networking. We will cap off the event with a fun and enjoyable networking outing necessary for maintaining relationships and connecting with your peers and prospective business contacts.

We look forward to a strong event and a very productive one from both an educational and relationship perspective. We have structured this conference in a manner that will be most beneficial for you. We hope that you will join us to be amongst your industry peers to learn about the most up-to-date insights, investment strategies and trends.

KEY QUESTIONS WE WILL ADDRESS






- What are the Best Strategies and Approaches for Downside Protection during a Period of Market Stress?
- Managing Drawdown Risk, Liquidity Risk, Leverage Risk and More
- Addressing Climate Change Impact, Risks and Investment Opportunities
- Which Hedge Fund Strategies will provide the Best Downside Protection during the Next Market Downturn?
- How can a Multi-Asset Approach help you Manage Drawdown Risk?
- Benefiting from Risk Parity for the Downturn and Understanding its Hidden Drawbacks
- Where can you find Pockets of Opportunity and Relative Value in the Credit Space?
- Incorporating Artificial Intelligence into Investment Decision-Making and Portfolio Management
- What are the Investment Implications of Disruptive Change and how can you Benefit?
- Developing a Cybersecurity Risk Management Strategy—Staff Education and Best Practices
- Biggest Risks of Late Cycle Investing in Private Equity and how to Navigate Successfully
- Which Socio/Demographic Trends you can Benefit from in Real Estate? Most Resilient Sectors?
- Distressed Opportunities in BBB-Rated Bonds, Corporate Debt, European Debt and More
- Best Opportunities and Greatest Risks for Unconstrained Fixed Income
- The Advantages of Fixed Income Factor Investing as a Credit Diversifier
- Will China's Debt Problem and Tariffs Cause a Hard Landing?
- Currency Risk – to Hedge or Not to Hedge?
- Most Promising Areas for Impact Investing in Emerging and Developed Markets
- How Alternative Risk Premia can show Little or No Correlation to a 60/40 or Hedge Fund Portfolio
- Most Attractive Sectors and Geographies in Infrastructure while taking Interest Rates into Consideration
- Insights from Impactful CIOs on Risks, Allocations, Positioning for the Downturn and More

In addition to the listed themes above, we will be covering many more challenging issues that are crucial to the investment decision making process during these uncertain economic times. We will learn from the best about how to adapt in our industry which is always evolving and transforming.

TUESDAY, APRIL 14TH

 7:00 AM – BREAKFAST	6
8:00 AM – OPENING REMARKS	6
8:05 AM – KEYNOTE SPEAKER	6
8:35 AM – KEYNOTE SPEAKER – MACROECONOMIC VIEW	6
9:05 AM – ARTIFICIAL INTELLIGENCE IN ASSET MANAGEMENT AND BENEFITING FROM DISRUPTIVE INNOVATION INVESTMENT	7
 9:55 AM – REFRESHMENT BREAK	8
10:25 AM – ASSET ALLOCATION AND RISK MANAGEMENT	8
11:15 AM – RISK MITIGATING STRATEGIES	9
11:50 AM – RISK PARITY	9
 12:25 PM – LUNCH	10
1:35 PM – UNCONSTRAINED FIXED INCOME	10
2:20 PM – FIXED INCOME FACTOR INVESTING	11
 2:50 PM – REFRESHMENT BREAK	11
3:20 PM – CLIMATE CHANGE IMPACT, RISKS AND OPPORTUNITIES IN THE INVESTMENT PROCESS	11
4:05 PM – CYBERSECURITY	12
4:20 PM – IMPACT INVESTING	13
 4:50 PM – COCKTAIL RECEPTION	13
6:05 PM – COCKTAIL RECEPTION CONCLUDES	13

WEDNESDAY, APRIL 15TH

 7:00 AM – BREAKFAST	14
8:00 AM – EMERGING MARKETS	14
8:40 AM – CURRENCY RISK – TO HEDGE OR NOT TO HEDGE?	15
8:55 AM – MULTI-ASSET INVESTING	15
9:25 AM – ALTERNATIVE RISK PREMIA	16
 10:00 AM – REFRESHMENT BREAK	16
10:30 AM – HEDGE FUNDS	16
11:20 AM – CREDIT STRATEGIES	17
12:05 PM – DISTRESSED INVESTING – OPPORTUNISTIC AND SPECIAL SITUATIONS	18
 12:40 PM – LUNCH	19
1:45 PM – REAL ESTATE	19
2:30 PM – INFRASTRUCTURE	20
 3:05 PM – REFRESHMENT BREAK	20
3:30 PM – PRIVATE EQUITY	21
4:15 PM – CIO ROUNDTABLE	21
5:05 PM – CONFERENCE CONCLUDES	22
5:05 PM – WRISTBANDS FOR NETWORKING EVENT HANDED OUT IN THE CONFERENCE ROOM	22
 5:45 PM – 8:45 PM WINE TASTING AND DINNER NETWORKING EVENT	23



7:00 AM – BREAKFAST

JENNISON ASSOCIATES

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8:00 AM – OPENING REMARKS

8:05 AM – KEYNOTE SPEAKER

SPEAKER:

David Villa, CFA, Chief Investment Officer, **Executive Director, State of Wisconsin Investment Board, (SWIB)**

8:35 AM – KEYNOTE SPEAKER – MACROECONOMIC VIEW

- Would you say we have an Everything Bubble or is it Isolated?
- Corporate Debt Growth for Financial Engineering – Outlook for Defaults
- Are we seeing a Bubble in BBB Bonds? What will happen to BBB during the Upcoming Recession?
- Algos and Passive Investment as a Market Risk
- Which Country's High Debt and Risks pose the Biggest Threat? Does that put the EU and Euro at Risk?
- China – Tariffs, Slower Growth, Debt Levels, Leverage and Real Estate Bubble
- Japan's Demographics and Debt – what might be the Far-Reaching Effects?
- What Countries have the Most Unfavorable Demographics Globally?
- Which are the Shakier Emerging Market Countries that have High Debt that can be Hurt by a Strong Dollar?
- What are your Expectations for Inflation/Deflation?
- How do you think about Derivatives Risk?
- What are your Expectations for Equities and Bonds?
- Where have you seen the Most Speculative Excess or Froth in the Markets?
- What is the Single Largest Risk Factor? Next Black Swan?
- What is the Likelihood that the Equity/Bond Correlation will Shift During the Next Extended Equity Decline?
- What are the Most Appealing Investments in this Environment?

SPEAKER:

James Grant, Founder, **Grant's Interest Rate Observer**

9:05 AM – ARTIFICIAL INTELLIGENCE IN ASSET MANAGEMENT AND BENEFITING FROM DISRUPTIVE INNOVATION INVESTMENT

(A) ARTIFICIAL INTELLIGENCE

- Why should AI be on a Plan Sponsor's Radar?
- What are the most Impactful Ways that Artificial intelligence and Machine Learning will Transform the Financial Services Industry and Investment Decision Making Process? What are the Long-Term Implications for Investment Professionals?
- Where is the Technology being Deployed? How can CIOs use Technology to Improve their Research and Portfolio Management Processes?
- What are the Most Widely-Adopted Techniques, Models and Algorithms in Recent A.I. Advancements that you use? How do you Incorporate these Solutions?
- Is Data Quality your Biggest Barrier to the Adoption and Deployment of Machine Learning?
- What are the Industries in China that will Benefit from their Recent Artificial Intelligence Patent Surge?
- What are your Most Useful Technology Tips that may help to Boost Future Returns?
- What is a Concrete Example of how a Highly Configurable System can make life easier for Asset Owners?
- How can A.I. result in Better Executions, Lower Transaction Costs and Faster Investment of New Cash Flows for Fixed Income? Have you Integrated this Technology Yet?
- How will Robotics take Operational Efficiency to the Next Level?
- How can Investors Truly Evaluate a Manager who claims to use A.I.? What are the Risks you need to know?

(B) INVESTMENT IMPLICATIONS OF DISRUPTIVE CHANGE

- How will Blockchain Transform the Capital Markets? How Impactful and Disruptive will Blockchain Technology be?
- What Industries can Benefit from Blockchain and how should you Invest in this Innovation for Strong Returns?
- What are the Possible Threats to Blockchain Development? What are Regulatory Issues and Potential Risks Arising from the New Technology?
- Where do you see Opportunities in Frictionless Value Transfer?
- Impact from Autonomous Vehicles and Mobility as a Service, (MaaS) – Who are the Potential Winners?
- Where will the Opportunities be in Life Sciences and Genome Editing?
- Do you see Battery Storage in the Energy Space as an Investment Opportunity for Outsized Returns?
- Which Industries will Benefit the Most from 3D Printing?
- Which Industries do you see the Biggest Opportunity for Internet of Things? What are some Examples of IoT for Smart Cities? Healthcare Sector?
- What are the Obstacles to Success in these Disruptive Technologies?

MODERATOR:

David Hunter, Executive Director, Chief Investment Officer, **North Dakota Retirement & Investment Office; North Dakota State Investment Board**

SPEAKERS:

Mark Steed, Chief Investment Officer, **Arizona Public Safety Personnel Retirement System Trust, (PSPRS)**

Ben Mohr, CFA, Director of Fixed Income, **Marquette Associates**



9:55 AM – REFRESHMENT BREAK

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10:25 AM – ASSET ALLOCATION AND RISK MANAGEMENT

(A) ASSET ALLOCATION

- Is the Asset Allocation Decision Primarily Return Focused or Risk Focused or Balanced?
- Do you experience a Stumbling Point of Staying Committed to a Risk Allocation-Based Approach in an Environment where Balance and Diversification have Not Kept Up with Equity-Centric Approaches over the past 10+ Years?
- Is a Static Asset Allocation Policy a Problem for Risk Management? Have you considered Economic Regime-Based or Dynamic Asset Allocation as an Enhancement? Is this Feasible?
- What has Worked and Not Worked in your Asset Allocation relative to Expectations?
- Has the Risk of a Large Drawdown Impacted your Asset Allocation?
- What Changes are you making in your Asset Allocation, if any? What were your most Recent Changes?
- Do you expect to meet your Actuarial Targets in the Short/Long Term?

(B) RISK MANAGEMENT

- What Risks are you Most Concerned about Today and how are you addressing them?
- How do you Manage Drawdown Risk in a Portfolio with High Equity Factor Risks? Are we still too Over-Reliant on Equities?
- Understanding Asset Class Correlation and Behavior Risk when Correlations Change
- How does Stress Testing or Scenario Analysis factor into your Process? Does Illiquidity Risk play an Important Role?
- How do you Manage Leverage Risks?
- From a Risk Perspective, What Keeps You Up at Night?

(C) RISK CULTURE

- Describe your Risk Culture and how it's Evolved – how well is Risk Management Integrated into your Investment Decision-Making Process?
- What Challenges do you have in Ensuring a Robust Risk Management Practice at your Organization?
- How do you Communicate your Risk Tolerances with your Board and Managers? How Frequently?
- How do Staff Utilize Risk Reports for Investment Decision Making? Are Risk Reports Useful for Macro Decisions such as Tactical Allocations?
- What should Boards/Organizations Consider when Building a Risk Culture?

SPEAKERS:

Andrew Palmer, Chief Investment Officer, **Maryland State Retirement and Pension System**

11:15 AM – RISK MITIGATING STRATEGIES

- Understanding Tail Risk Frequency, Severity and Impact
- Understanding the Value of Risk Mitigating Strategies – why is it Important to Improve your Risk/Return Profile Now? What Risks should be Hedged?
- Why should this be its Own Bucket or Asset Class? What Type of Allocation is Warranted?
- What are the Different Asset Classes and Strategies of Risk Mitigating Strategies? Expectations for each Approach?
- What are the Merits of an Option Overlay Strategy In Lieu of Owning a Tail Risk Hedge?
- What are the Trend or Momentum Following Strategies that you Prefer for Downside Protection?
- Why is Global Macro the Ideal Hedge Fund Allocation for Diversification and Decreasing the Depth of Drawdowns?
- How has Managed Futures Performed During Periods of Market Stress or Crisis Events?
- Long Duration U.S. Treasuries as a Diversifier in Extreme Market Conditions
- Building a Tactical Portfolio using Futures to Reduce Tail Losses and Enjoy Larger Gains
- Put Options as Insurance
- Using Information from the Derivatives Markets to assess Stress Points – where we are seeing Tail Risks Building?
- Systematic Risk Premia Allocations and Systematic Multi-Strategy Funds – does it Enhance Performance Outcomes? Are Short Track Records and Wide Variations in Products Concerning for Trend Risk Premia?
- Are there Alternative Ways to Deal with Equity Risk? How Defensive are these Strategies?
- Cost of Implementation as an Obstacle – how do you Minimize it?

11:50 AM – RISK PARITY

- How can Risk Parity Lower your Risk Profile?
- Does Risk Parity Make Sense Now if we Expect Low Market Returns in the Future?
- How did Risk Parity Perform during the last Financial Crisis Compared to other Asset Mix Models? Would you Expect Similar or Different Results for the Upcoming Downturn?
- What are the Hidden Risks and Drawbacks of Risk Parity Portfolios?
- Do you worry about a Correlation Shift when Bonds could Become Less Likely to Protect against a Large Drawdown in Equities?
- Is there an Over-Reliance on Bonds with Current Valuations? Should we be Worried about Leverage or Leveraging the Inappropriate Assets?
- Commodities Role in Risk Parity and Expectations
- Active vs. Passive – what are the Advantages and Disadvantages of Each?
- Leverage and Illiquidity Do Not Mix – any Approaches to Avoid this Combination?
- What Progress have we seen towards Adopting an Appropriate Benchmark? Any Implementable Indexes?

- Thoughts on Measuring Expected Tail Loss Rather Than Volatility for Tail Risk Parity? Can it be More Effective?
- How do Investors Bucket the Risk Parity Strategy within the Asset Allocation Framework?
- How should Investors think about Differences in Forecasting Volatility when Selecting a Manager?

MODERATOR:

Steven J. Foresti, Chief Investment Officer, **Wilshire Consulting**



12:25 PM – LUNCH

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1:35 PM – UNCONSTRAINED FIXED INCOME

- Assessing the Current Environment – where we are in the Cycle for Rates and Credit?
- Why might a Plan Sponsor want to consider Unconstrained Funds as Opposed To using a Collection of Fixed Income Funds that focus on Specific Strategies such as Core, Investment Grade, High Yield, Etc?
- With the Proliferation of Products which are Diverse, what is the Return Objective?
- What are your Best Ideas/Opportunities in today's Bond Market?
- How do you Approach Portfolio Construction with the Need for Increased Disaggregation of Alpha Sources?
- Where do you see the Greatest Risks and what might be the Trigger Points that Enhance that Potential?
- How do you Benchmark and Define Success for Unconstrained Fixed Income Strategies?
- With Non-Linearity of Risk Correlations and Volatility Not Being Stable through time, how are you Taking Advantage of Current Market Dislocations?
- How Important is Liquidity Management? Should Investors think about Transparency of Positioning in Unconstrained Fixed Income?
- What are the Implications of Reduced Liquidity? Have you Increased your Use of Bond ETFs to offer Enhanced Liquidity? If so, what were some Other Reasons for this Decision?
- Using Structured Products, Swaps and Derivatives to Create Alpha and Hedge Volatility
- What are your Expectations and Outlook for Corporate Debt? Do you see a Disaster in the Making with the Huge Growth of BBB Bonds and the Inverted Yield Curve?
- Do you view Bank Loans as a Hedge in Rising Rate Environment?
- How will Trump's GSE Reform Impact the MBS Market?
- Understanding how to Select Managers – Multi-Sector, Multi-Region, Multi-Currency Skill Set or Duration Range Targets?

MODERATOR:

Amy Hsiang, CFA, CAIA, Investment Manager Research, **RVK**

SPEAKER:

Jonathan Lieber, Director of Fixed Income, **New York State Common Retirement Fund - Office of the State Comptroller**

2:20 PM – FIXED INCOME FACTOR INVESTING

- With Active Fixed Income Managers Beating the Index by taking on More Credit Risk (Highly Correlated to Equities), how can Factors in Fixed Income (Value, Momentum, Carry, Defensive), offer hope for Outperformance that's Uncorrelated to Equity Markets?
- Explain your Systematic Process for your Multi-Factor Model and how it's a Credit Diversifier
- What are the Factors and Features that help you to Target the Precise Outcomes you need?
- Why Factor Investing/Factor ETFs Over Passive Fixed Income ETFs? What are the Advantages? Disadvantages?
- Is it Possible to Obtain Stable Alpha Without taking Additional Risk?
- If you are Identifying Hidden Risks in a Bond Portfolio such as Unintended Overweights in Interest Rate or Credit Risk, what are the Other Strategic Allocations for True Drivers of Returns?
- How does the Cost Compare?
- What are the Biggest Challenges to Widespread Factor Adoption in Debt Markets?
- What should you be Looking for in a Manager?

MODERATOR:

Scottie D. Beville, Senior Investment Officer - Global Income Strategies, **Teachers' Retirement System of the State of Illinois**



2:50 PM – REFRESHMENT BREAK

SPONSORED BY: 

3:20 PM – CLIMATE CHANGE IMPACT, RISKS AND OPPORTUNITIES IN THE INVESTMENT PROCESS

(A) MANAGING CLIMATE RISK

- What are the Catastrophic Consequences of a Global Temperature Rise of 2 Degrees Celsius, (3.6 Degrees Fahrenheit) and how do we Create a Sense of Urgency to Address this Major World Problem?
- How will Climate Change Affect Developed and Emerging Markets Differently?
- What are some Examples of Climate-Related Risks Across Asset Classes?
- Understanding the Impacts of Climate Change on Real Estate Investments and Lending
- With Increasing Water-Related Risks, what will be the Credit Implications and the Impact on Credit Ratings?
- What are the Options for Reducing Portfolio-Wide Exposure to Climate-Related Risks?
- What Sources of CO2 Emissions are Investors Not Focused On?
- How do you Hedge Climate Risk?

(B) STRATEGIES AND IMPLEMENTATION

- Where do you see the Best Opportunities in Smart Cities, Green Buildings, Decarbonizing Technologies, Electric Vehicles, Water, Renewable Energy, Battery Storage, and other Appealing Sectors?

- What are the Various Approaches and Models to Narrowing the Financing Gap for Investing in these Sector Opportunities?
- How do you Assess the Opportunities in Public-Private Partnerships?
- What's Behind the Rise in Green Bond Issuance and what is the Growth Potential? Is China, Europe, U.S. or Other Region Most Attractive for this Green Investment?
- Do we have Early Results of the Performance of a Low Carbon Stock Program Versus a Broader Market Segment on a Long-Term Basis?

(C) GOVERNANCE AND FIDUCIARY DUTY

- Push for Greater Transparency - what are some Questions you should be asking your Investment Managers about their Climate Risk Assessment during the Investment Process?
- What are some Examples of Different Climate-Related Metrics that are available?
- FSB Taskforce on Climate-Related Financial Disclosure, (TCFD) - will this be the Industry Standard for Climate-Related Financial Reporting?
- Are Board Processes in place to Assess the Risks and Opportunities?
- How can Boards Incorporate Climate Change into Investment Beliefs and Policies?

MODERATOR:

Alex Bernhardt, Principal, U.S. Responsible Investment Leader, **Mercer**

SPEAKER:

Travis Antoniono, Investment Officer, Sustainable Investment & Stewardship Strategies, **California State Teachers' Retirement System, (CalSTRS)**

4:05 PM – CYBERSECURITY

- What are the Greatest Cybersecurity Threats and Challenges Organizations are currently facing? Specific Risk Areas?
- Overview of Types of Cybersecurity Attacks – Phishing, Botnet Hackers, Wire Transfer Fraud, Vendor Payment Fraud, Compromised Business E-mails, Attempts to Steal Healthcare Information, etc. Where will Future Attacks come from?
- What is an Interesting or Extreme Cyber Attack Example you've come across for a Pension Plan? An Investment Manager?
- Developing a Cybersecurity Risk Management Strategy – what are the Critical Components?
- How should you approach Staff Education about Cybersecurity Risk and Best Practices?
- Should the Board Hire a Third Party to Perform an Independent Analysis?
- As a Pension Plan, Endowment, Foundation or Family Office LP, what Cybersecurity Questions should you ask in your Due Diligence of your Investment Managers?
- Will it become Common for Pension Plans' Responsibility to start at the Request for Proposal (RFP) Stage by providing Details for Data Protection and Privacy Provisions?
- Importance of a PE Firm's Approach to Cybersecurity Enterprise Risk for M&A
- What Precautions can you take to Avoid Phishing and who within the Organization is being Targeted? How Often can your PE Portfolio Companies be Phished?
- Should Plan Sponsors have Cybersecurity Insurance Coverage? What is typically Covered in a Policy?

SPEAKER:

Benjamin Taylor, Senior Vice President, **Callan**

4:20 PM – IMPACT INVESTING

- How do you Define Impact at your Organization?
- The Role of UN's Sustainable Development Goals in Impact Investing Strategy
- Will Investors Abandon this Space during the Next Recession? When and How will it Become Mainstream?
- What are some Attractive Opportunities for Impact Investing in Emerging Markets? Developed Markets?
- What are the Latest Trends in Impact Investment Globally?
- Investing in Technology for Social Impact
- What are the Top Challenges for Investors?
- What are the Biggest Areas Risks of Impact Investing Projects?
- Why is Private Equity Particularly Well-Suited for Impact Investing?
- What are some of the Socially Impact Bonds or Municipal Impact Bonds you've Invested in?
- Do you find it Difficult to Measure the Impact of Public Market Investments? How do you Measure Impact in the Bond Market?
- How are Big Data and Advanced Analytics used as Tools to Improve the Measurement of Impact?
- How should Impact Investors think about Reporting? Have you Embraced the Need for Disclosure with Sustainability Accounting Standards Board, (SASB)?
- What Evidence have we seen that Impact Investments will Reap Healthy Returns?
- What should you look for in Public/Private Impact Managers?
- Do Larger Firms have an Advantage in this Space?

MODERATOR:

Bert W. Feuss, Senior Vice President, Investments, **Silicon Valley Community Foundation**

SPEAKERS:

Stacie Olivares-Castain, Board Member, **California Public Employees' Retirement System, (CalPERS)**

Kristine Pelletier, Partner, **NEPC**

 **4:50 PM – COCKTAIL RECEPTION**

SPONSORED BY: **P I M C O**

6:05 PM – COCKTAIL RECEPTION CONCLUDES



7:00 AM – BREAKFAST

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SHELTER GROWTH
CAPITAL PARTNERS

8:00 AM – EMERGING MARKETS

- Macro Environment and Recent Developments, (Central Banks, Dollar, Commodity Prices, etc.)—how does that affect your Investments?
- As the Growth Advantage in EM begins to Fade, what should you be looking for to Focus on Economic Progress and Development?
- What Effect do the Tariffs have on your Outlook for China and other Emerging Markets? Any Markets that are More Insulated?
- How Concerned are you about China's Debt Problem? Is a Hard Landing Likely or Unlikely?
- What would be the Effects on Emerging Markets if we see a Recession in the U.S.? Instability in the Eurozone? Slowdown in China?
- How do Valuations look Relative to Risk in Different Regions?
- What are the Key LP Concerns and Challenges in Particular Regions?
- Which Country do you see Favorable Demographic Trends such as a Growing Middle Class, Urbanization, Promising Consumer Buying Behavior and Economic/Fiscal Reforms?
- Are there Any EM Countries to Avoid with High Debt, Growing Inflation or a Currency Crisis?
- Which Markets in Frontier Countries can you Profit from Strong Growth and Access a Lower Correlation? What are the Complexities of Investing in these Frontier Markets?
- Given the Current Environment, will Emerging Markets Outperform Developed Markets? What are your Returns Expectations for Particular Regions?
- What can be done to Mitigate Currency Risks?
- The Case for Emerging Markets Corporate Debt
- What Metrics are you using to Determine Relative Value in Sovereign Bonds?
- Public vs. Private Emerging Markets – Benefits and Drawbacks of each
- Active vs. Passive Debate
- What is an Appropriate Long-Term Allocation to Emerging Markets? What should that Allocation look like, (Public Equity, Fixed Income, Private Equity, Frontier Markets, Alternatives, etc.)?
- Choosing an Emerging Markets Fund or Manager – should you be Investing by Region, Country or Sector?

MODERATOR:

Craig Chaikin, CFA, Senior Consultant, **Segal Marco Advisors**

8:40 AM – CURRENCY RISK – TO HEDGE OR NOT TO HEDGE?

- What are the Factors Driving Currencies Today?
- What is the Impact of China Devaluing the Yuan?
- What is the Annual Impact on Returns for a Portfolio that is Hedged vs. Unhedged? Long Term Impact?
- What has Changed that Enables One's Ability to Manage Hedging and Reduce Risk for both Developed Markets and Emerging Markets?
- How does Dynamic Hedging Reduce Risk and Capture some of the Return?
- How do Active Currency Overlay Strategies take the Currency Exposures Inherent in International Investments and Manage them Separately?
- Benefits of Extracting Alpha from Currency Markets – Uncorrelated Alpha and Accessed Without the Need for Funding
- Is there an Optimum Currency Hedge Ratio for a Plan?
- What are the most Common Reasons Asset Owners give for Not Actively Managing Currency? Are these Reasons Valid or Not?
- Hedging Costs – how should this factor into your Decision?

8:55 AM – MULTI-ASSET INVESTING

- What are the Differences Between Multi-Asset Funds and Hedge Funds? What are the Advantages and Disadvantages of Choosing Multi-Asset Funds over Hedge Funds?
- How can a Multi-Asset Approach help you Manage Drawdown Risk? What Strategies should be used based on Experience from the Financial Crisis?
- Do you believe Downside Protection with Multi-Asset Strategies are as Effective as Managers Claim?
- How do you Devise Effective Asset Allocation Strategies? What Stress Scenarios do you Consider?
- Do Most Multi-Asset Portfolios need to be Restructured to Thrive in Today's Environment? If so, how?
- How can Factor Analysis be used to Mitigate Risk and Improve Multi-Asset Portfolios?
- How Worrisome is the Reliance on Stable Correlation Relationships with No Certainty those Relationships will Persist?
- Is Excessive Leverage a Concern?
- How do you go about the Right Balance of Public and Private Equity when building the best Multi-Asset Portfolio for you?
- How have Returns been and how do you Measure Performance?
- How do Multi-Asset Managers Differentiate Themselves in this Crowded Field?

STAND ALONE SPEAKER:

Pam Chan, CFA, Managing Director, Chief Investment Officer and Global Head of the Alternative Solutions Group ("ASG"), **BlackRock**

PRESENTED BY: **BLACKROCK®**

9:25 AM – ALTERNATIVE RISK PREMIA

- Understanding Alternative Risk Premia – how does it Differ from Smart Beta? From Alpha?
- Risk Premia to Choose From – Momentum, Value, Carry, Other
- How can a Multiple Market Neutral Alternative Risk Premia Combined in a Single Portfolio show Low or No Correlation to a 60/40 or Hedge Fund Portfolio?
- Explain the Potential Benefits – Diversification, Liquid, Transparent, Efficient, Systematic Exposure
- Lower Fees – what are the Typical Fees Investors can Expect?
- What are the Different Ways you can Use and Implement Alternative Risk Premia?
- What are the Biggest Risks?
- Do you Worry about the Fallout if Correlations Change over Time?
- How Concerning is Crowding and do you see it as having a Negative Impact on Performance?
- How should Investors determine which Alternative Risk Premia Strategies Best Meet their Objectives?
- How should you Approach Manager Selection?
- With these Funds being Relatively New, how Battle-Tested are they? What are the Early Signs of Performance during the Shorter-Term Market Corrections we've seen?

STAND ALONE SPEAKER:

Aneet Chachra, CFA, Portfolio Manager, Diversified Alternatives, **Janus Henderson Investors**

PRESENTED BY: **Janus Henderson**
INVESTORS



10:00 AM – REFRESHMENT BREAK

SPONSORED BY:



DEER PATH
CAPITAL MANAGEMENT, LP

10:30 AM – HEDGE FUNDS

(A) STATE OF THE INDUSTRY AND PORTFOLIO CONSTRUCTION OPTIONS

- With Difficult Investment Conditions Pushing Many Seasoned Firms and Legendary Investors Out of the Business, does this mean some Strategies have Stopped Working? What do you see as the Reasons or Forces at Play?
- How do you Approach the Current Industry Dynamics? How is your Firm Evolving and Staying Competitive?
- If there was a Hedge Fund Strategy you would Invest in over the next Few Years, which one would it be and why? Which Strategies will have the Best Performance? Any Strategies to Avoid?
- What sort of Downside Protection, Drawdown or Return Range do you expect we'll see from each of the Different Hedge Fund Strategies during the Next Market Downturn?
- Are there any Overcrowded Trades that should be Avoided when this Cycle Turns?

- Any Trades you like when the Next Downturn Bottoms? Any Specific Sector that will Emerge as a Leader?
- Would you Invest in Hedge Funds Over Multi-Asset Strategy Funds for the Next Downturn and if so, why?
- What does Crisis Risk Offset mean? Which Low Correlated Strategies do you find Most Attractive?
- What is the Future of Long-Short Equity Hedge Funds and is the Struggle Here to Stay? With Return Dispersion Remaining High among Long-Shot Equity Hedge Funds, what Differentiates Managers that have been able to Outperform?
- What is the Future of Quantitative Funds as far as Performance goes? Does it Concern you that many Historical Stock Market Tendencies have Backfired and what might be the Reason Why?
- Do you find Opportunities within the Global Macro Space Attractive and if so, why?
- Managed Futures – Diversification and Performance during Periods of Market Stress or Crisis Events. How much can it Decrease the Depth of Portfolio Drawdowns and Volatility?
- What is the Future of the Fund of Funds Space? Where will Fees be? What will it take to Stay Competitive?
- Do Smaller Hedge Funds Outperform? If so, why? How do Emerging Managers Differentiate Themselves in the Quest for Institutional Capital?
- Liquid Hedge Fund Products such as UCITS, 40 Act and Hedge Fund Replication – are they a Viable Alternative and Under what Circumstances? How has their Performance and the Lower Fees Fared Relative to Hedge Funds?

(B) IMPLEMENTATION CONCERNS

- As an LP, how do you think about the Role of Hedge Funds in your Portfolio?
- What Trends do you see developing in Liquidity Provisions for Hedge Funds? How do you Assess the Tradeoff Between Fees and Liquidity?
- What is an Appropriate Fee Structure for Hedge Funds? How do you Ensure Payment for Alpha, Alignment of Interest and Not Overpaying for Underperformance?
- Any Recent Trends you've seen for Institutions as far as Fees, Transparency, Customization, Increased Partnership, etc.? Will the 1 or 30 Model developed by Albourne and TRS Texas Catch On?
- As an Investor, do you Negotiate the Frequency of Performance Fee Crystallization with your Managers so that it Doesn't Lead to Hidden and Higher Costs?
- How often should Operations Due Diligence be Reviewed/Updated?
- What is your View on Absolute Return Co-Investments?
- What is the Role of Separate Managed Accounts? What are the Benefits? Are they Better than Commingled Funds?

MODERATOR:

Dr. John Claisse, CEO, **Albourne**

SPEAKER:

Derek Drummond, CAIA, Portfolio Manager – Funds Alpha, **State of Wisconsin Investment Board, (SWIB)**

11:20 AM – CREDIT STRATEGIES

- Current State of the Credit Market
- What will be the Catalyst that will cause Credit Spreads to Widen and Defaults to Rise?

- Where are Managers finding Pockets of Opportunity? Where is the Relative Value?
- What Subsectors of Credit are Most Attractive given the Valuations? Any Areas you are Avoiding?
- Do you see Investors being more willing to Trade Liquidity for Yield and should that be of Concern?
- Is it possible to see a High Yield Meltdown with a Lack of Liquidity? Understanding the Corporate Debt Risk Factors and Strong Correlation to Equities
- BBB Risk of a Mass Move to High Yield – how concerned should we be?
- Do you believe ETFs pose a Systematic Risk in Market Turmoil with Exacerbated Volatility?
- Is Direct Lending in a Bubble and how would you Position for that?
- What Sub-Sectors are you Favoring and Avoiding in the Middle Market Direct Lending Space?
- How can Opportunistic Credit fit into the Direct Lending Ecosystem?
- Outlook and Considerations for Structured – Are CLOs Safer than Pre-Crisis?
- Can Securitized Credit Weather Market Turbulence? How has it Performed During Previous Credit Events? Is there a Lower Correlation to Broader Fixed Income Sectors?
- Bank Loans Overview
- How will the Subprime Loans in Autos Play Out?
- Opportunities and Risks for Europe and Asia
- How much should Plan Sponsors be Allocating to Credit? What is the Optimal Structure to a Credit Portfolio?
- Should Multi-Asset Credit Strategies be a Tactical Asset Allocation with Dynamic Management for Pension Plans? If so, why?
- How do we Develop Return and Risk Expectation for this Asset Class?
- How do we Benchmark Performance?

MODERATOR:

Sylvia Owens, Global Private Credit Strategist, **Aksia**

12:05 PM – DISTRESSED INVESTING – OPPORTUNISTIC AND SPECIAL SITUATIONS

- How are you Positioning your Portfolio relative to where we are in the Credit Cycle? Any Trends you're seeing?
- What are your Expectations for Default Rates going forward?
- Which Sectors, Strategies and Geographies will create the Best Opportunities? Any Areas that should be Avoided?
- Will the Froth in Direct Lending provide a Distressed Opportunity?
- How Big a Role do you Expect Corporate Debt to Play and the Huge Growth of BBB-Rated Bonds?
- How Concerning is the Debt Piled up by Corporations for their Share Buybacks?
- Will the Prevalent Covenant-Lite Deals create Problems during the Next Cycle?
- What are the Opportunities and Risks in Europe? Any Countries, Sectors or Types of Deals that Stand Out?
- What is the Size and Scope of the Issues facing the European Banking Sector?
- Do you see Opportunities in Asia or Elsewhere Globally?

- What is your View on Leverage, (Fund-Level, BDC Changes, Asset-Level, Securitization Market)?
- Do you worry about a Liquidity Problem in ETFs and other Structured Credit Vehicles if there is Credit Event?
- How will the Different Implementation Approaches affect Expected Returns? Control vs. Non-Control? Private vs. Public?
- What are the Pros and Cons of the Various Structures, (Hedge Fund Side Pockets, Evergreen Structures, Contingent Funds, Traditional Drawdown Structures)?
- Where are LPs Spending the Bulk of their Time during Due Diligence?
- What Skill Sets/Characteristics should Pension Plans look for in a Distressed Manager? What Questions should LPs Ask?

MODERATOR:

Raelan Lambert, Managing Director & Head of Global Private Debt, **Mercer Alternatives**



12:40 PM – LUNCH

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1:45 PM – REAL ESTATE

- How Significant a Drop in Pricing and Returns are you expecting? Does it depend on Sector and Location?
- What Strategies do you see as the Biggest Risks and the Biggest Rewards/Relative Value?
- Are there Resilient Sectors?
- What Niche Property Types will be Defensive in a Downturn?
- Are you Making Pivots or Tilts to Take Advantage of Macro Trends? Socio/Demographic Trends such as the Aging Population?
- How will Real Estate Debt Perform in the Next Recession?
- How do you View the Risk Profile of Core vs. Non-Core? Returns Expectations?
- What is the Biggest Threat to Commercial in the next few years for this Fully Priced Market?
- Where are the Most Crowded Trades?
- Asia and European Real Estate Outlook – Opportunities and Investment Trends
- What Real Estate Technology Trends/Disruption are you Watching Most Closely?
- Will Co-Investments become more Common?
- Current State of the Real Estate Secondary Market
- Do you like REITS as a More Liquid form of Real Estate? If so, any Region or Property Type that you like for REITS?

MODERATOR:

Chae Hong, Partner, **The Townsend Group, an Aon Company**

SPEAKER:

Anthony Breault, Senior Real Estate Investment Officer, **Oregon State Treasury**

2:30 PM – INFRASTRUCTURE

- State of the Infrastructure Markets
- With Low Interest Rates, Abundant Capital Flowing and High Valuations, is there Enough Supply to Meet Capital Demand?
- If Interest Rates Rise in the coming years, what would be the Implications for Valuations and Liquidity Options for Existing Infrastructure Assets?
- Is Leverage a Concern?
- If the S&P were to enter a Multi-Year Correction (let's say 30%), how much of a Decline can we Expect from Infrastructure Portfolios? What Impact would this Type of Portfolio Drawdown have on Infrastructure Allocations? What Opportunities would this provide Investors?
- As an LP, what are your Program Objectives, (Defensive, Low Correlation, Inflation Protection, Yield, etc)?
- Which Sectors are Most Attractive and why?
- Which Geographies are Most Appealing? Developed or Emerging Economies?
- What are the Biggest Challenges/Risks facing Infrastructure Investors today?
- Listed vs. Unlisted – which do you Favor in a Volatile Market for Downside Protection? Do Rising Interest Rates Favor Either?
- Are you seeing Growth in Opportunities for Public-Private Partnerships across the U.S.?
- How have GPs Adopted ESG Principles and what are the Remaining Challenges? How do you Approach ESG as an Energy Investor?
- What are your Views on the Future Potential for Technology to Disrupt Infrastructure and what can Investors do to Avoid or Take Advantage of it?
- Thoughts on Battery Storage for Renewables?
- How have Tax Credits of Renewables Impacted the Industry over the Past Decade and how will the Phase-out of Subsidies affect the Industry?
- What Sectors within Renewables or Alternative Forms of Energy do you find Attractive? Will the Best Opportunities be in the U.S. or Emerging Markets?
- What are the Advantages and Challenges for LPs to Invest in infrastructure through Fund Commitments vs. Investing Directly as a Co-Investor or Deal Leader like many of the Large Plans?
- What are the Similarities and Differences Between Infrastructure Assets and Private Equity Investments with the Blurring of Definitions over the past few years?

MODERATOR:

Todd Lapenna, CFA, CAIA, Partner, Infrastructure & Real Assets, **StepStone Group**

SPEAKER:

Bert Clark, President and Chief Executive Officer, **Investment Management Corporation of Ontario, (IMCO)**

3:05 PM – REFRESHMENT BREAK

SPONSORED BY: **CALAMOS**
INVESTMENTS

3:30 PM – PRIVATE EQUITY

- When it comes to the Concerns of Late Cycle, Dry Powder, Cheap and Plentiful Leverage and High Multiples, what should Investors be Focused On over the Next few Years to Successfully Navigate the Environment?
- Should LPs expect Lower Returns Going Forward? Will Private Equity Outperform Public Markets?
- With the Growing Size of the PE Market, do you believe the Industry can put the Excess Dry Power Capital to Work Responsibly?
- Where are your Most Optimistic Returns Going Forward as far as Sector, Geography or Niche Strategy? What's your Biggest Worry?
- What Lower or Non-Correlation Investments Stand Out that are Independent of the Economy and can Withstand a Multi-Year Market Downturn?
- Are you Seeking Investments with a Subscription Model for Greater Visibility of Revenues and Less Volatility? If so, what Recurring Revenue Metrics do you look for?
- Does it Concern you that Subscription Lines of Credit have Distorted IRR? Will we Trend towards LPs Dictating the Format and Usage of Subscription Lines?
- What are your Views on GP-Led Restructurings? What are the Pitfalls that LPs need to be Aware of?
- What are your Views on Fund to Fund Sales?
- How have Trade Tensions with China Impacted Existing Portfolio Companies and your Investment Decision-Making? How are you preparing for a Scenario Where Tensions and Tariffs Persist?
- Given all the Concerns, how are you Positioning your Portfolio within Buyouts? What do the Long Duration Vehicles Mean for Investors?
- What are the Biggest Risks to be aware of for Investing in the Ultra-Competitive Growth Equity Space?
- How are you playing the Co-Investment Frenzy? What will happen to Co-Investments in a Down Market?
- Venture Capital Winners – Limited Access to the Top Few VCs that Generate the Bulk of the Industry's Returns? What's the Best Approach to this Challenge?
- Issues, Outlook and Opportunities for European PE
- How do you think about ESG Issues and Integration when making Individual Investment Decisions and as a Firm?
- From an LP Perspective, what does not work in Fundraising? What does it take to Stand Out?

MODERATOR:

Paul R. Yett, Managing Director, **Hamilton Lane**

SPEAKERS:

Stephen J. Neel, Deputy Chief Investment Officer, Alternative and Private Market Investments, **New Mexico Educational Retirement Board**

Julia Winterson, Senior Director, Alternative Investments, **CommonSpirit Health**

4:15 PM – CIO ROUNDTABLE

(A) RISKS, ALLOCATIONS AND MACRO-BASED DECISIONS

- In this Fully-Valued Environment, how are you Balancing the Risk of a Large Drawdown with your Return Goals? Has it Impacted your Asset Allocation?

- Which De-Risking Strategies or Investments with a Low/Non-Correlation have you Allocated to?
- What Hedge Fund Strategies are you Investing in? Will those Strategies provide a Cushion for the next Market Downturn? How do you use them to Reduce Risk?
- What are your thoughts on Passive Equity Investing and its Performance vs. Active for the Next Major Downturn? Any Market Liquidity Concerns? Where are you using Passive and Active Management and why?
- How are you Viewing Emerging Markets Broadly and what do you feel is the proper EM Allocation? Any Geographic Regions, Countries or Sectors that Interest You?
- Have you made Long-Term Cash Flow Investments through Partnerships and Co-Investment Structures?

(B) ALIGNMENT OF INTERESTS

- What Changes or Trends have you noticed in Fee Structures/Terms and your Bargaining Power? Has your Fund Size been an Advantage or Disadvantage?
- Do You and Your Investment Departments have the Authority to be a Dynamic, Tactical and Active Investor in Response to Extreme Economic Conditions?
- Are you able to Leverage your Portfolio to Generate Liquidity to Take Advantage of a Market Dislocation in an Economic Downturn?
- How can you Overcome Governance Hurdles so that you can Effectively Partner with Outside Providers, bring a Portion of the Investment Management In-House and provide Incentive-Based Compensation?
- Have you Taken Steps to Address Diversity within your Investment Programs or your Organization's Staff?
- Do you have Processes or Policies in place to Assess the Risks of Climate Change?
- Have you Addressed Cybersecurity Protection for your Plan? How have you Educated the Staff about the Risks and Taken Steps for Protection with Investment Managers?
- Any Important Lessons Learned that you can Share from your Individual Plan Experiences?
- What Keeps You Up at Night?

MODERATOR:

Stephen Cummings, CFA, Global Investments Officer, Head of North America Investment Consulting, **Aon Investment Consulting**

SPEAKERS:

Robert M. Maynard, Chief Investment Officer, **Public Employee Retirement System of Idaho, (PERSI)**

John D. Skjervem, CFA, Chief Investment Officer, **Oregon State Treasury; Oregon Investment Council**

Craig Husting, CFA, Chief Investment Officer, **Public School & Education Employee Retirement Systems of Missouri, (PSRS/PEERS)**

Dominic Garcia, Chief Investment Officer, **Public Employees Retirement Association of New Mexico, (PERA)**

5:05 PM – CONFERENCE CONCLUDES

5:05 PM – WRISTBANDS FOR NETWORKING EVENT HANDED OUT IN THE CONFERENCE ROOM

Attendees must be present to attend event



5:45 PM – 8:45 PM WINE TASTING AND DINNER NETWORKING EVENT

Hosted by Pension Bridge – Join our group at for a wine tasting and dinner at the Press Club, located just a few blocks from Westin St. Francis. Meet your industry peers in great setting as California Wine Country comes to the heart of the city. Experience the finest winemakers with new and rare vintages. We'll have a fun wine tasting reception, followed by a tasteful dinner with the highest quality organic ingredients. Pension Bridge will utilize the 9000 square feet of the award winning “Best Restaurant Design” event space for networking for our high quality conference group.

REGISTRATION

TO REGISTER OR RECEIVE MORE INFORMATION ABOUT THE 2020 PENSION BRIDGE ANNUAL:

BOCA RATON OFFICE CONTACT

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ABOUT PENSION BRIDGE

We are an innovative company offering educational conferences of the highest quality. Our objective is to provide an education to the institutional investment community while providing an impressive speaker faculty in a setting that is conducive to great networking. We help institutional money managers connect with Pension Funds and Consultants across the country in a fun, enjoyable atmosphere. Our events can act as a stepping stone to a successful financial relationship or simply help build the investment education.

Our management team's unique skills, operating experience, and industry relationships help to make our events the main attraction in the industry. We pride ourselves on being there to cater to our clients' wants and needs. Our ratio of plan sponsor to investment manager allows our events to be the most desirable and accommodating in the conference industry. Pension Bridge is known for its strength, stability, relationships and operational excellence.



MEMORANDUM

TO: Oakland Police & Fire
Retirement Board

FROM: Teir Jenkins

SUBJECT: Authorization and
Reimbursement of Board/Staff
Travel/Education Expenses

DATE: February 18, 2020

David Jones, Staff member of the Oakland Police and Fire Retirement System board, requests authorization for reimbursement of travel and/or board education related funds for the event detailed below. Staff has verified that budgeted funds are available for this Staff member to be reimbursed.

Staff recommends the reimbursement of travel/education funds for the event below be approved by board motion.

Travel / Education Event: 2020 Pension Bridge

Event Location: Westin St. Francis Hotel, San Francisco, CA

Event Date: April 14, 2020 to April 15, 2020

Estimated Event Expense*: \$ 500.00 (estimated)

Notes: _____

* If enrollment, registration or admission expenses are required, the fund will process a check in advance and pay vendor directly; all other board-approved reimbursements will be made upon delivery of receipts to staff by the traveling party. Cancellation of event attendance requires return of all reimbursed funds paid to attendee to the fund.

Respectfully submitted,

Teir Jenkins, Investment Officer
Oakland Police and Fire Retirement System

For questions please contact David Low, Administrative Assistant, at 510-238-7295.

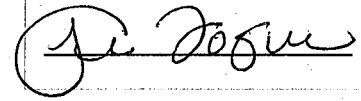
Attachments (if any):

Resolution #7094

2020 Pension Bridge Agenda

OAKLAND POLICE AND FIRE RETIREMENT BOARD
CITY OF OAKLAND, CALIFORNIA

Approved as to
Form and Legality



RESOLUTION No. 7094

ON MOTION OF MEMBER _____ SECONDED BY MEMBER _____

RESOLUTION APPROVING REQUEST OF OAKLAND POLICE AND FIRE RETIREMENT SYSTEM PLAN ADMINISTRATOR DAVID JONES TO ATTEND THE 2020 PENSION BRIDGE CONFERENCE FROM APRIL 14, 2020 TO APRIL 15, 2020 IN SAN FRANCISCO, CALIFORNIA AND FOR REIMBURSEMENT OF REGISTRATION FEES AND TRAVEL-RELATED EXPENSES IN THE AMOUNT NOT TO EXCEED FIVE HUNDRED DOLLARS (\$500.00)

WHEREAS, the Oakland Police and Fire Retirement System (PFRS) Education and Travel Policy ("Travel Policy") requires that PFRS Board members and staff obtain prior Board approval of all education and travel-related expenses that will be reimbursed by PFRS; and

WHEREAS, PFRS Plan Administrator David Jones would like to attend the 2020 Pension Bridge Conference ("the Conference") in San Francisco, CA from April 14, 2020 to April 15, 2020; and

WHEREAS, in compliance with the Travel Policy, Plan Administrator Jones has submitted documentation showing that registration fees and estimated travel-related expenses to attend the Conference will be Five Hundred Dollars (\$500.00); now, therefore, be it

RESOLVED: That Plan Administrator David Jones's request to attend the 2020 Pension Bridge Conference in San Francisco, CA from April 14, 2020 to April 15, 2020 at an estimated cost of Five Hundred Dollars (\$500.00) is approved; and be it

FURTHER RESOLVED: That the PFRS Board authorizes reimbursement of registration fees and travel-related expenses in an amount not to exceed Five Hundred Dollars (\$500.00) for Plan Administrator Jones's attendance at the 2020 Pension Bridge Conference.

IN BOARD MEETING, CITY HALL, OAKLAND, CA FEBRUARY 26, 2020

PASSED BY THE FOLLOWING VOTE:

AYES: **BENSON, GODFREY, NICHELINI, SPEAKMAN, WILKINSON
AND PRESIDENT JOHNSON**

NOES:

ABSTAIN:

ABSENT:

ATTEST: _____
PRESIDENT

ATTEST: _____
SECRETARY



**PENSION
BRIDGE**

**THE ANNUAL
2020**

APRIL 14TH & 15TH, 2020

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15 YEARS**

THE PENSION BRIDGE ANNUAL

April 14th & 15th, 2020 | Westin St. Francis Hotel, San Francisco

The Pension Bridge Annual Conference provides the highest level of education and networking to the institutional investment community. A mix of Public Funds, Corporate Funds, Foundations, Endowments, Union Funds, Taft-Hartley Funds, Family Offices, Sovereign Wealth Funds, Consultants and Investment Managers will come together for this exclusive event.

The Pension Bridge Annual provides the industry's only controlled attendance structured event. This helps Pension Bridge to maintain the best conference ratio in the industry. **There will be approximately 250 Pension Fund Representatives and Non-Discretionary Consultants in attendance. We have allowed for only 110 Investment Manager Firms.** This better than 2:1 ratio, combined with participation from the most influential industry figures, creates a more enjoyable environment for all.

OUR EVENT FOCUS

The focus at 2020's event will be capital preservation while identifying the key reward drivers for generating consistent returns. Learn from the experts about the most important trends, challenges, opportunities and strategies to attack the long-awaited cycle contraction that will shape our industry for the immediate and long-term future. We remain in a challenging investment environment that is fully valued with a high-risk profile. The Pension Bridge Annual will uncover various structural transformations and investment ideas that will be beneficial for long-term fiscal sustainability.

We will also focus on climate change and technological innovation which will both continue to have a transformational impact not only on markets and investments, but on every aspect of our lives.

THE PENSION BRIDGE ANNUAL HAS TWO GOALS IN MIND

First is to provide the **highest level of education** with the top speaker faculty. This highly regarded group will bring forth influential insights and concepts. The second goal is to help **build relationships** between the pension plans, consultants and investment managers. We have provided the best possible environment for this event which is designed to be conducive for networking. We will cap off the event with a fun and enjoyable networking outing necessary for maintaining relationships and connecting with your peers and prospective business contacts.

We look forward to a strong event and a very productive one from both an educational and relationship perspective. We have structured this conference in a manner that will be most beneficial for you. We hope that you will join us to be amongst your industry peers to learn about the most up-to-date insights, investment strategies and trends.

KEY QUESTIONS WE WILL ADDRESS






- What are the Best Strategies and Approaches for Downside Protection during a Period of Market Stress?
- Managing Drawdown Risk, Liquidity Risk, Leverage Risk and More
- Addressing Climate Change Impact, Risks and Investment Opportunities
- Which Hedge Fund Strategies will provide the Best Downside Protection during the Next Market Downturn?
- How can a Multi-Asset Approach help you Manage Drawdown Risk?
- Benefiting from Risk Parity for the Downturn and Understanding its Hidden Drawbacks
- Where can you find Pockets of Opportunity and Relative Value in the Credit Space?
- Incorporating Artificial Intelligence into Investment Decision-Making and Portfolio Management
- What are the Investment Implications of Disruptive Change and how can you Benefit?
- Developing a Cybersecurity Risk Management Strategy—Staff Education and Best Practices
- Biggest Risks of Late Cycle Investing in Private Equity and how to Navigate Successfully
- Which Socio/Demographic Trends you can Benefit from in Real Estate? Most Resilient Sectors?
- Distressed Opportunities in BBB-Rated Bonds, Corporate Debt, European Debt and More
- Best Opportunities and Greatest Risks for Unconstrained Fixed Income
- The Advantages of Fixed Income Factor Investing as a Credit Diversifier
- Will China's Debt Problem and Tariffs Cause a Hard Landing?
- Currency Risk – to Hedge or Not to Hedge?
- Most Promising Areas for Impact Investing in Emerging and Developed Markets
- How Alternative Risk Premia can show Little or No Correlation to a 60/40 or Hedge Fund Portfolio
- Most Attractive Sectors and Geographies in Infrastructure while taking Interest Rates into Consideration
- Insights from Impactful CIOs on Risks, Allocations, Positioning for the Downturn and More

In addition to the listed themes above, we will be covering many more challenging issues that are crucial to the investment decision making process during these uncertain economic times. We will learn from the best about how to adapt in our industry which is always evolving and transforming.

TUESDAY, APRIL 14TH

 7:00 AM – BREAKFAST	6
8:00 AM – OPENING REMARKS	6
8:05 AM – KEYNOTE SPEAKER	6
8:35 AM – KEYNOTE SPEAKER – MACROECONOMIC VIEW	6
9:05 AM – ARTIFICIAL INTELLIGENCE IN ASSET MANAGEMENT AND BENEFITING FROM DISRUPTIVE INNOVATION INVESTMENT	7
 9:55 AM – REFRESHMENT BREAK	8
10:25 AM – ASSET ALLOCATION AND RISK MANAGEMENT	8
11:15 AM – RISK MITIGATING STRATEGIES	9
11:50 AM – RISK PARITY	9
 12:25 PM – LUNCH	10
1:35 PM – UNCONSTRAINED FIXED INCOME	10
2:20 PM – FIXED INCOME FACTOR INVESTING	11
 2:50 PM – REFRESHMENT BREAK	11
3:20 PM – CLIMATE CHANGE IMPACT, RISKS AND OPPORTUNITIES IN THE INVESTMENT PROCESS	11
4:05 PM – CYBERSECURITY	12
4:20 PM – IMPACT INVESTING	13
 4:50 PM – COCKTAIL RECEPTION	13
6:05 PM – COCKTAIL RECEPTION CONCLUDES	13

WEDNESDAY, APRIL 15TH

 7:00 AM – BREAKFAST	14
8:00 AM – EMERGING MARKETS	14
8:40 AM – CURRENCY RISK – TO HEDGE OR NOT TO HEDGE?	15
8:55 AM – MULTI-ASSET INVESTING	15
9:25 AM – ALTERNATIVE RISK PREMIA	16
 10:00 AM – REFRESHMENT BREAK	16
10:30 AM – HEDGE FUNDS	16
11:20 AM – CREDIT STRATEGIES	17
12:05 PM – DISTRESSED INVESTING – OPPORTUNISTIC AND SPECIAL SITUATIONS	18
 12:40 PM – LUNCH	19
1:45 PM – REAL ESTATE	19
2:30 PM – INFRASTRUCTURE	20
 3:05 PM – REFRESHMENT BREAK	20
3:30 PM – PRIVATE EQUITY	21
4:15 PM – CIO ROUNDTABLE	21
5:05 PM – CONFERENCE CONCLUDES	22
5:05 PM – WRISTBANDS FOR NETWORKING EVENT HANDED OUT IN THE CONFERENCE ROOM	22
 5:45 PM – 8:45 PM WINE TASTING AND DINNER NETWORKING EVENT	23



7:00 AM – BREAKFAST

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8:00 AM – OPENING REMARKS

8:05 AM – KEYNOTE SPEAKER

SPEAKER:

David Villa, CFA, Chief Investment Officer, **Executive Director, State of Wisconsin Investment Board, (SWIB)**

8:35 AM – KEYNOTE SPEAKER – MACROECONOMIC VIEW

- Would you say we have an Everything Bubble or is it Isolated?
- Corporate Debt Growth for Financial Engineering – Outlook for Defaults
- Are we seeing a Bubble in BBB Bonds? What will happen to BBB during the Upcoming Recession?
- Algos and Passive Investment as a Market Risk
- Which Country's High Debt and Risks pose the Biggest Threat? Does that put the EU and Euro at Risk?
- China – Tariffs, Slower Growth, Debt Levels, Leverage and Real Estate Bubble
- Japan's Demographics and Debt – what might be the Far-Reaching Effects?
- What Countries have the Most Unfavorable Demographics Globally?
- Which are the Shakier Emerging Market Countries that have High Debt that can be Hurt by a Strong Dollar?
- What are your Expectations for Inflation/Deflation?
- How do you think about Derivatives Risk?
- What are your Expectations for Equities and Bonds?
- Where have you seen the Most Speculative Excess or Froth in the Markets?
- What is the Single Largest Risk Factor? Next Black Swan?
- What is the Likelihood that the Equity/Bond Correlation will Shift During the Next Extended Equity Decline?
- What are the Most Appealing Investments in this Environment?

SPEAKER:

James Grant, Founder, **Grant's Interest Rate Observer**

9:05 AM – ARTIFICIAL INTELLIGENCE IN ASSET MANAGEMENT AND BENEFITING FROM DISRUPTIVE INNOVATION INVESTMENT

(A) ARTIFICIAL INTELLIGENCE

- Why should AI be on a Plan Sponsor's Radar?
- What are the most Impactful Ways that Artificial intelligence and Machine Learning will Transform the Financial Services Industry and Investment Decision Making Process? What are the Long-Term Implications for Investment Professionals?
- Where is the Technology being Deployed? How can CIOs use Technology to Improve their Research and Portfolio Management Processes?
- What are the Most Widely-Adopted Techniques, Models and Algorithms in Recent A.I. Advancements that you use? How do you Incorporate these Solutions?
- Is Data Quality your Biggest Barrier to the Adoption and Deployment of Machine Learning?
- What are the Industries in China that will Benefit from their Recent Artificial Intelligence Patent Surge?
- What are your Most Useful Technology Tips that may help to Boost Future Returns?
- What is a Concrete Example of how a Highly Configurable System can make life easier for Asset Owners?
- How can A.I. result in Better Executions, Lower Transaction Costs and Faster Investment of New Cash Flows for Fixed Income? Have you Integrated this Technology Yet?
- How will Robotics take Operational Efficiency to the Next Level?
- How can Investors Truly Evaluate a Manager who claims to use A.I.? What are the Risks you need to know?

(B) INVESTMENT IMPLICATIONS OF DISRUPTIVE CHANGE

- How will Blockchain Transform the Capital Markets? How Impactful and Disruptive will Blockchain Technology be?
- What Industries can Benefit from Blockchain and how should you Invest in this Innovation for Strong Returns?
- What are the Possible Threats to Blockchain Development? What are Regulatory Issues and Potential Risks Arising from the New Technology?
- Where do you see Opportunities in Frictionless Value Transfer?
- Impact from Autonomous Vehicles and Mobility as a Service, (MaaS) – Who are the Potential Winners?
- Where will the Opportunities be in Life Sciences and Genome Editing?
- Do you see Battery Storage in the Energy Space as an Investment Opportunity for Outsized Returns?
- Which Industries will Benefit the Most from 3D Printing?
- Which Industries do you see the Biggest Opportunity for Internet of Things? What are some Examples of IoT for Smart Cities? Healthcare Sector?
- What are the Obstacles to Success in these Disruptive Technologies?

MODERATOR:

David Hunter, Executive Director, Chief Investment Officer, **North Dakota Retirement & Investment Office; North Dakota State Investment Board**

SPEAKERS:

Mark Steed, Chief Investment Officer, **Arizona Public Safety Personnel Retirement System Trust, (PSPRS)**

Ben Mohr, CFA, Director of Fixed Income, **Marquette Associates**



9:55 AM – REFRESHMENT BREAK

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10:25 AM – ASSET ALLOCATION AND RISK MANAGEMENT

(A) ASSET ALLOCATION

- Is the Asset Allocation Decision Primarily Return Focused or Risk Focused or Balanced?
- Do you experience a Stumbling Point of Staying Committed to a Risk Allocation-Based Approach in an Environment where Balance and Diversification have Not Kept Up with Equity-Centric Approaches over the past 10+ Years?
- Is a Static Asset Allocation Policy a Problem for Risk Management? Have you considered Economic Regime-Based or Dynamic Asset Allocation as an Enhancement? Is this Feasible?
- What has Worked and Not Worked in your Asset Allocation relative to Expectations?
- Has the Risk of a Large Drawdown Impacted your Asset Allocation?
- What Changes are you making in your Asset Allocation, if any? What were your most Recent Changes?
- Do you expect to meet your Actuarial Targets in the Short/Long Term?

(B) RISK MANAGEMENT

- What Risks are you Most Concerned about Today and how are you addressing them?
- How do you Manage Drawdown Risk in a Portfolio with High Equity Factor Risks? Are we still too Over-Reliant on Equities?
- Understanding Asset Class Correlation and Behavior Risk when Correlations Change
- How does Stress Testing or Scenario Analysis factor into your Process? Does Illiquidity Risk play an Important Role?
- How do you Manage Leverage Risks?
- From a Risk Perspective, What Keeps You Up at Night?

(C) RISK CULTURE

- Describe your Risk Culture and how it's Evolved – how well is Risk Management Integrated into your Investment Decision-Making Process?
- What Challenges do you have in Ensuring a Robust Risk Management Practice at your Organization?
- How do you Communicate your Risk Tolerances with your Board and Managers? How Frequently?
- How do Staff Utilize Risk Reports for Investment Decision Making? Are Risk Reports Useful for Macro Decisions such as Tactical Allocations?
- What should Boards/Organizations Consider when Building a Risk Culture?

SPEAKERS:

Andrew Palmer, Chief Investment Officer, **Maryland State Retirement and Pension System**

11:15 AM – RISK MITIGATING STRATEGIES

- Understanding Tail Risk Frequency, Severity and Impact
- Understanding the Value of Risk Mitigating Strategies – why is it Important to Improve your Risk/Return Profile Now? What Risks should be Hedged?
- Why should this be its Own Bucket or Asset Class? What Type of Allocation is Warranted?
- What are the Different Asset Classes and Strategies of Risk Mitigating Strategies? Expectations for each Approach?
- What are the Merits of an Option Overlay Strategy In Lieu of Owning a Tail Risk Hedge?
- What are the Trend or Momentum Following Strategies that you Prefer for Downside Protection?
- Why is Global Macro the Ideal Hedge Fund Allocation for Diversification and Decreasing the Depth of Drawdowns?
- How has Managed Futures Performed During Periods of Market Stress or Crisis Events?
- Long Duration U.S. Treasuries as a Diversifier in Extreme Market Conditions
- Building a Tactical Portfolio using Futures to Reduce Tail Losses and Enjoy Larger Gains
- Put Options as Insurance
- Using Information from the Derivatives Markets to assess Stress Points – where we are seeing Tail Risks Building?
- Systematic Risk Premia Allocations and Systematic Multi-Strategy Funds – does it Enhance Performance Outcomes? Are Short Track Records and Wide Variations in Products Concerning for Trend Risk Premia?
- Are there Alternative Ways to Deal with Equity Risk? How Defensive are these Strategies?
- Cost of Implementation as an Obstacle – how do you Minimize it?

11:50 AM – RISK PARITY

- How can Risk Parity Lower your Risk Profile?
- Does Risk Parity Make Sense Now if we Expect Low Market Returns in the Future?
- How did Risk Parity Perform during the last Financial Crisis Compared to other Asset Mix Models? Would you Expect Similar or Different Results for the Upcoming Downturn?
- What are the Hidden Risks and Drawbacks of Risk Parity Portfolios?
- Do you worry about a Correlation Shift when Bonds could Become Less Likely to Protect against a Large Drawdown in Equities?
- Is there an Over-Reliance on Bonds with Current Valuations? Should we be Worried about Leverage or Leveraging the Inappropriate Assets?
- Commodities Role in Risk Parity and Expectations
- Active vs. Passive – what are the Advantages and Disadvantages of Each?
- Leverage and Illiquidity Do Not Mix – any Approaches to Avoid this Combination?
- What Progress have we seen towards Adopting an Appropriate Benchmark? Any Implementable Indexes?

- Thoughts on Measuring Expected Tail Loss Rather Than Volatility for Tail Risk Parity? Can it be More Effective?
- How do Investors Bucket the Risk Parity Strategy within the Asset Allocation Framework?
- How should Investors think about Differences in Forecasting Volatility when Selecting a Manager?

MODERATOR:

Steven J. Foresti, Chief Investment Officer, **Wilshire Consulting**



12:25 PM – LUNCH

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1:35 PM – UNCONSTRAINED FIXED INCOME

- Assessing the Current Environment – where we are in the Cycle for Rates and Credit?
- Why might a Plan Sponsor want to consider Unconstrained Funds as Opposed To using a Collection of Fixed Income Funds that focus on Specific Strategies such as Core, Investment Grade, High Yield, Etc?
- With the Proliferation of Products which are Diverse, what is the Return Objective?
- What are your Best Ideas/Opportunities in today's Bond Market?
- How do you Approach Portfolio Construction with the Need for Increased Disaggregation of Alpha Sources?
- Where do you see the Greatest Risks and what might be the Trigger Points that Enhance that Potential?
- How do you Benchmark and Define Success for Unconstrained Fixed Income Strategies?
- With Non-Linearity of Risk Correlations and Volatility Not Being Stable through time, how are you Taking Advantage of Current Market Dislocations?
- How Important is Liquidity Management? Should Investors think about Transparency of Positioning in Unconstrained Fixed Income?
- What are the Implications of Reduced Liquidity? Have you Increased your Use of Bond ETFs to offer Enhanced Liquidity? If so, what were some Other Reasons for this Decision?
- Using Structured Products, Swaps and Derivatives to Create Alpha and Hedge Volatility
- What are your Expectations and Outlook for Corporate Debt? Do you see a Disaster in the Making with the Huge Growth of BBB Bonds and the Inverted Yield Curve?
- Do you view Bank Loans as a Hedge in Rising Rate Environment?
- How will Trump's GSE Reform Impact the MBS Market?
- Understanding how to Select Managers – Multi-Sector, Multi-Region, Multi-Currency Skill Set or Duration Range Targets?

MODERATOR:

Amy Hsiang, CFA, CAIA, Investment Manager Research, **RVK**

SPEAKER:

Jonathan Lieber, Director of Fixed Income, **New York State Common Retirement Fund - Office of the State Comptroller**

2:20 PM – FIXED INCOME FACTOR INVESTING

- With Active Fixed Income Managers Beating the Index by taking on More Credit Risk (Highly Correlated to Equities), how can Factors in Fixed Income (Value, Momentum, Carry, Defensive), offer hope for Outperformance that's Uncorrelated to Equity Markets?
- Explain your Systematic Process for your Multi-Factor Model and how it's a Credit Diversifier
- What are the Factors and Features that help you to Target the Precise Outcomes you need?
- Why Factor Investing/Factor ETFs Over Passive Fixed Income ETFs? What are the Advantages? Disadvantages?
- Is it Possible to Obtain Stable Alpha Without taking Additional Risk?
- If you are Identifying Hidden Risks in a Bond Portfolio such as Unintended Overweights in Interest Rate or Credit Risk, what are the Other Strategic Allocations for True Drivers of Returns?
- How does the Cost Compare?
- What are the Biggest Challenges to Widespread Factor Adoption in Debt Markets?
- What should you be Looking for in a Manager?

MODERATOR:

Scottie D. Beville, Senior Investment Officer - Global Income Strategies, **Teachers' Retirement System of the State of Illinois**



2:50 PM – REFRESHMENT BREAK

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3:20 PM – CLIMATE CHANGE IMPACT, RISKS AND OPPORTUNITIES IN THE INVESTMENT PROCESS

(A) MANAGING CLIMATE RISK

- What are the Catastrophic Consequences of a Global Temperature Rise of 2 Degrees Celsius, (3.6 Degrees Fahrenheit) and how do we Create a Sense of Urgency to Address this Major World Problem?
- How will Climate Change Affect Developed and Emerging Markets Differently?
- What are some Examples of Climate-Related Risks Across Asset Classes?
- Understanding the Impacts of Climate Change on Real Estate Investments and Lending
- With Increasing Water-Related Risks, what will be the Credit Implications and the Impact on Credit Ratings?
- What are the Options for Reducing Portfolio-Wide Exposure to Climate-Related Risks?
- What Sources of CO2 Emissions are Investors Not Focused On?
- How do you Hedge Climate Risk?

(B) STRATEGIES AND IMPLEMENTATION

- Where do you see the Best Opportunities in Smart Cities, Green Buildings, Decarbonizing Technologies, Electric Vehicles, Water, Renewable Energy, Battery Storage, and other Appealing Sectors?

- What are the Various Approaches and Models to Narrowing the Financing Gap for Investing in these Sector Opportunities?
- How do you Assess the Opportunities in Public-Private Partnerships?
- What's Behind the Rise in Green Bond Issuance and what is the Growth Potential? Is China, Europe, U.S. or Other Region Most Attractive for this Green Investment?
- Do we have Early Results of the Performance of a Low Carbon Stock Program Versus a Broader Market Segment on a Long-Term Basis?

(C) GOVERNANCE AND FIDUCIARY DUTY

- Push for Greater Transparency - what are some Questions you should be asking your Investment Managers about their Climate Risk Assessment during the Investment Process?
- What are some Examples of Different Climate-Related Metrics that are available?
- FSB Taskforce on Climate-Related Financial Disclosure, (TCFD) - will this be the Industry Standard for Climate-Related Financial Reporting?
- Are Board Processes in place to Assess the Risks and Opportunities?
- How can Boards Incorporate Climate Change into Investment Beliefs and Policies?

MODERATOR:

Alex Bernhardt, Principal, U.S. Responsible Investment Leader, **Mercer**

SPEAKER:

Travis Antoniono, Investment Officer, Sustainable Investment & Stewardship Strategies, **California State Teachers' Retirement System, (CalSTRS)**

4:05 PM – CYBERSECURITY

- What are the Greatest Cybersecurity Threats and Challenges Organizations are currently facing? Specific Risk Areas?
- Overview of Types of Cybersecurity Attacks – Phishing, Botnet Hackers, Wire Transfer Fraud, Vendor Payment Fraud, Compromised Business E-mails, Attempts to Steal Healthcare Information, etc. Where will Future Attacks come from?
- What is an Interesting or Extreme Cyber Attack Example you've come across for a Pension Plan? An Investment Manager?
- Developing a Cybersecurity Risk Management Strategy – what are the Critical Components?
- How should you approach Staff Education about Cybersecurity Risk and Best Practices?
- Should the Board Hire a Third Party to Perform an Independent Analysis?
- As a Pension Plan, Endowment, Foundation or Family Office LP, what Cybersecurity Questions should you ask in your Due Diligence of your Investment Managers?
- Will it become Common for Pension Plans' Responsibility to start at the Request for Proposal (RFP) Stage by providing Details for Data Protection and Privacy Provisions?
- Importance of a PE Firm's Approach to Cybersecurity Enterprise Risk for M&A
- What Precautions can you take to Avoid Phishing and who within the Organization is being Targeted? How Often can your PE Portfolio Companies be Phished?
- Should Plan Sponsors have Cybersecurity Insurance Coverage? What is typically Covered in a Policy?

SPEAKER:

Benjamin Taylor, Senior Vice President, **Callan**

4:20 PM – IMPACT INVESTING

- How do you Define Impact at your Organization?
- The Role of UN's Sustainable Development Goals in Impact Investing Strategy
- Will Investors Abandon this Space during the Next Recession? When and How will it Become Mainstream?
- What are some Attractive Opportunities for Impact Investing in Emerging Markets? Developed Markets?
- What are the Latest Trends in Impact Investment Globally?
- Investing in Technology for Social Impact
- What are the Top Challenges for Investors?
- What are the Biggest Areas Risks of Impact Investing Projects?
- Why is Private Equity Particularly Well-Suited for Impact Investing?
- What are some of the Socially Impact Bonds or Municipal Impact Bonds you've Invested in?
- Do you find it Difficult to Measure the Impact of Public Market Investments? How do you Measure Impact in the Bond Market?
- How are Big Data and Advanced Analytics used as Tools to Improve the Measurement of Impact?
- How should Impact Investors think about Reporting? Have you Embraced the Need for Disclosure with Sustainability Accounting Standards Board, (SASB)?
- What Evidence have we seen that Impact Investments will Reap Healthy Returns?
- What should you look for in Public/Private Impact Managers?
- Do Larger Firms have an Advantage in this Space?

MODERATOR:

Bert W. Feuss, Senior Vice President, Investments, **Silicon Valley Community Foundation**

SPEAKERS:

Stacie Olivares-Castain, Board Member, **California Public Employees' Retirement System, (CalPERS)**

Kristine Pelletier, Partner, **NEPC**

 **4:50 PM – COCKTAIL RECEPTION**

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6:05 PM – COCKTAIL RECEPTION CONCLUDES



7:00 AM – BREAKFAST

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8:00 AM – EMERGING MARKETS

- Macro Environment and Recent Developments, (Central Banks, Dollar, Commodity Prices, etc.)—how does that affect your Investments?
- As the Growth Advantage in EM begins to Fade, what should you be looking for to Focus on Economic Progress and Development?
- What Effect do the Tariffs have on your Outlook for China and other Emerging Markets? Any Markets that are More Insulated?
- How Concerned are you about China's Debt Problem? Is a Hard Landing Likely or Unlikely?
- What would be the Effects on Emerging Markets if we see a Recession in the U.S.? Instability in the Eurozone? Slowdown in China?
- How do Valuations look Relative to Risk in Different Regions?
- What are the Key LP Concerns and Challenges in Particular Regions?
- Which Country do you see Favorable Demographic Trends such as a Growing Middle Class, Urbanization, Promising Consumer Buying Behavior and Economic/Fiscal Reforms?
- Are there Any EM Countries to Avoid with High Debt, Growing Inflation or a Currency Crisis?
- Which Markets in Frontier Countries can you Profit from Strong Growth and Access a Lower Correlation? What are the Complexities of Investing in these Frontier Markets?
- Given the Current Environment, will Emerging Markets Outperform Developed Markets? What are your Returns Expectations for Particular Regions?
- What can be done to Mitigate Currency Risks?
- The Case for Emerging Markets Corporate Debt
- What Metrics are you using to Determine Relative Value in Sovereign Bonds?
- Public vs. Private Emerging Markets – Benefits and Drawbacks of each
- Active vs. Passive Debate
- What is an Appropriate Long-Term Allocation to Emerging Markets? What should that Allocation look like, (Public Equity, Fixed Income, Private Equity, Frontier Markets, Alternatives, etc.)?
- Choosing an Emerging Markets Fund or Manager – should you be Investing by Region, Country or Sector?

MODERATOR:

Craig Chaikin, CFA, Senior Consultant, **Segal Marco Advisors**

8:40 AM – CURRENCY RISK – TO HEDGE OR NOT TO HEDGE?

- What are the Factors Driving Currencies Today?
- What is the Impact of China Devaluing the Yuan?
- What is the Annual Impact on Returns for a Portfolio that is Hedged vs. Unhedged? Long Term Impact?
- What has Changed that Enables One's Ability to Manage Hedging and Reduce Risk for both Developed Markets and Emerging Markets?
- How does Dynamic Hedging Reduce Risk and Capture some of the Return?
- How do Active Currency Overlay Strategies take the Currency Exposures Inherent in International Investments and Manage them Separately?
- Benefits of Extracting Alpha from Currency Markets – Uncorrelated Alpha and Accessed Without the Need for Funding
- Is there an Optimum Currency Hedge Ratio for a Plan?
- What are the most Common Reasons Asset Owners give for Not Actively Managing Currency? Are these Reasons Valid or Not?
- Hedging Costs – how should this factor into your Decision?

8:55 AM – MULTI-ASSET INVESTING

- What are the Differences Between Multi-Asset Funds and Hedge Funds? What are the Advantages and Disadvantages of Choosing Multi-Asset Funds over Hedge Funds?
- How can a Multi-Asset Approach help you Manage Drawdown Risk? What Strategies should be used based on Experience from the Financial Crisis?
- Do you believe Downside Protection with Multi-Asset Strategies are as Effective as Managers Claim?
- How do you Devise Effective Asset Allocation Strategies? What Stress Scenarios do you Consider?
- Do Most Multi-Asset Portfolios need to be Restructured to Thrive in Today's Environment? If so, how?
- How can Factor Analysis be used to Mitigate Risk and Improve Multi-Asset Portfolios?
- How Worrisome is the Reliance on Stable Correlation Relationships with No Certainty those Relationships will Persist?
- Is Excessive Leverage a Concern?
- How do you go about the Right Balance of Public and Private Equity when building the best Multi-Asset Portfolio for you?
- How have Returns been and how do you Measure Performance?
- How do Multi-Asset Managers Differentiate Themselves in this Crowded Field?

STAND ALONE SPEAKER:

Pam Chan, CFA, Managing Director, Chief Investment Officer and Global Head of the Alternative Solutions Group ("ASG"), **BlackRock**

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9:25 AM – ALTERNATIVE RISK PREMIA

- Understanding Alternative Risk Premia – how does it Differ from Smart Beta? From Alpha?
- Risk Premia to Choose From – Momentum, Value, Carry, Other
- How can a Multiple Market Neutral Alternative Risk Premia Combined in a Single Portfolio show Low or No Correlation to a 60/40 or Hedge Fund Portfolio?
- Explain the Potential Benefits – Diversification, Liquid, Transparent, Efficient, Systematic Exposure
- Lower Fees – what are the Typical Fees Investors can Expect?
- What are the Different Ways you can Use and Implement Alternative Risk Premia?
- What are the Biggest Risks?
- Do you Worry about the Fallout if Correlations Change over Time?
- How Concerning is Crowding and do you see it as having a Negative Impact on Performance?
- How should Investors determine which Alternative Risk Premia Strategies Best Meet their Objectives?
- How should you Approach Manager Selection?
- With these Funds being Relatively New, how Battle-Tested are they? What are the Early Signs of Performance during the Shorter-Term Market Corrections we've seen?

STAND ALONE SPEAKER:

Aneet Chachra, CFA, Portfolio Manager, Diversified Alternatives, **Janus Henderson Investors**

PRESENTED BY: **Janus Henderson**
INVESTORS



10:00 AM – REFRESHMENT BREAK

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10:30 AM – HEDGE FUNDS

(A) STATE OF THE INDUSTRY AND PORTFOLIO CONSTRUCTION OPTIONS

- With Difficult Investment Conditions Pushing Many Seasoned Firms and Legendary Investors Out of the Business, does this mean some Strategies have Stopped Working? What do you see as the Reasons or Forces at Play?
- How do you Approach the Current Industry Dynamics? How is your Firm Evolving and Staying Competitive?
- If there was a Hedge Fund Strategy you would Invest in over the next Few Years, which one would it be and why? Which Strategies will have the Best Performance? Any Strategies to Avoid?
- What sort of Downside Protection, Drawdown or Return Range do you expect we'll see from each of the Different Hedge Fund Strategies during the Next Market Downturn?
- Are there any Overcrowded Trades that should be Avoided when this Cycle Turns?

- Any Trades you like when the Next Downturn Bottoms? Any Specific Sector that will Emerge as a Leader?
- Would you Invest in Hedge Funds Over Multi-Asset Strategy Funds for the Next Downturn and if so, why?
- What does Crisis Risk Offset mean? Which Low Correlated Strategies do you find Most Attractive?
- What is the Future of Long-Short Equity Hedge Funds and is the Struggle Here to Stay? With Return Dispersion Remaining High among Long-Shot Equity Hedge Funds, what Differentiates Managers that have been able to Outperform?
- What is the Future of Quantitative Funds as far as Performance goes? Does it Concern you that many Historical Stock Market Tendencies have Backfired and what might be the Reason Why?
- Do you find Opportunities within the Global Macro Space Attractive and if so, why?
- Managed Futures – Diversification and Performance during Periods of Market Stress or Crisis Events. How much can it Decrease the Depth of Portfolio Drawdowns and Volatility?
- What is the Future of the Fund of Funds Space? Where will Fees be? What will it take to Stay Competitive?
- Do Smaller Hedge Funds Outperform? If so, why? How do Emerging Managers Differentiate Themselves in the Quest for Institutional Capital?
- Liquid Hedge Fund Products such as UCITS, 40 Act and Hedge Fund Replication – are they a Viable Alternative and Under what Circumstances? How has their Performance and the Lower Fees Fared Relative to Hedge Funds?

(B) IMPLEMENTATION CONCERNS

- As an LP, how do you think about the Role of Hedge Funds in your Portfolio?
- What Trends do you see developing in Liquidity Provisions for Hedge Funds? How do you Assess the Tradeoff Between Fees and Liquidity?
- What is an Appropriate Fee Structure for Hedge Funds? How do you Ensure Payment for Alpha, Alignment of Interest and Not Overpaying for Underperformance?
- Any Recent Trends you've seen for Institutions as far as Fees, Transparency, Customization, Increased Partnership, etc.? Will the 1 or 30 Model developed by Albourne and TRS Texas Catch On?
- As an Investor, do you Negotiate the Frequency of Performance Fee Crystallization with your Managers so that it Doesn't Lead to Hidden and Higher Costs?
- How often should Operations Due Diligence be Reviewed/Updated?
- What is your View on Absolute Return Co-Investments?
- What is the Role of Separate Managed Accounts? What are the Benefits? Are they Better than Commingled Funds?

MODERATOR:

Dr. John Claisse, CEO, **Albourne**

SPEAKER:

Derek Drummond, CAIA, Portfolio Manager – Funds Alpha, **State of Wisconsin Investment Board, (SWIB)**

11:20 AM – CREDIT STRATEGIES

- Current State of the Credit Market
- What will be the Catalyst that will cause Credit Spreads to Widen and Defaults to Rise?

- Where are Managers finding Pockets of Opportunity? Where is the Relative Value?
- What Subsectors of Credit are Most Attractive given the Valuations? Any Areas you are Avoiding?
- Do you see Investors being more willing to Trade Liquidity for Yield and should that be of Concern?
- Is it possible to see a High Yield Meltdown with a Lack of Liquidity? Understanding the Corporate Debt Risk Factors and Strong Correlation to Equities
- BBB Risk of a Mass Move to High Yield – how concerned should we be?
- Do you believe ETFs pose a Systematic Risk in Market Turmoil with Exacerbated Volatility?
- Is Direct Lending in a Bubble and how would you Position for that?
- What Sub-Sectors are you Favoring and Avoiding in the Middle Market Direct Lending Space?
- How can Opportunistic Credit fit into the Direct Lending Ecosystem?
- Outlook and Considerations for Structured – Are CLOs Safer than Pre-Crisis?
- Can Securitized Credit Weather Market Turbulence? How has it Performed During Previous Credit Events? Is there a Lower Correlation to Broader Fixed Income Sectors?
- Bank Loans Overview
- How will the Subprime Loans in Autos Play Out?
- Opportunities and Risks for Europe and Asia
- How much should Plan Sponsors be Allocating to Credit? What is the Optimal Structure to a Credit Portfolio?
- Should Multi-Asset Credit Strategies be a Tactical Asset Allocation with Dynamic Management for Pension Plans? If so, why?
- How do we Develop Return and Risk Expectation for this Asset Class?
- How do we Benchmark Performance?

MODERATOR:

Sylvia Owens, Global Private Credit Strategist, **Aksia**

12:05 PM – DISTRESSED INVESTING – OPPORTUNISTIC AND SPECIAL SITUATIONS

- How are you Positioning your Portfolio relative to where we are in the Credit Cycle? Any Trends you're seeing?
- What are your Expectations for Default Rates going forward?
- Which Sectors, Strategies and Geographies will create the Best Opportunities? Any Areas that should be Avoided?
- Will the Froth in Direct Lending provide a Distressed Opportunity?
- How Big a Role do you Expect Corporate Debt to Play and the Huge Growth of BBB-Rated Bonds?
- How Concerning is the Debt Piled up by Corporations for their Share Buybacks?
- Will the Prevalent Covenant-Lite Deals create Problems during the Next Cycle?
- What are the Opportunities and Risks in Europe? Any Countries, Sectors or Types of Deals that Stand Out?
- What is the Size and Scope of the Issues facing the European Banking Sector?
- Do you see Opportunities in Asia or Elsewhere Globally?

- What is your View on Leverage, (Fund-Level, BDC Changes, Asset-Level, Securitization Market)?
- Do you worry about a Liquidity Problem in ETFs and other Structured Credit Vehicles if there is Credit Event?
- How will the Different Implementation Approaches affect Expected Returns? Control vs. Non-Control? Private vs. Public?
- What are the Pros and Cons of the Various Structures, (Hedge Fund Side Pockets, Evergreen Structures, Contingent Funds, Traditional Drawdown Structures)?
- Where are LPs Spending the Bulk of their Time during Due Diligence?
- What Skill Sets/Characteristics should Pension Plans look for in a Distressed Manager? What Questions should LPs Ask?

MODERATOR:

Raelan Lambert, Managing Director & Head of Global Private Debt, **Mercer Alternatives**



12:40 PM – LUNCH

SPONSORED BY:



1:45 PM – REAL ESTATE

- How Significant a Drop in Pricing and Returns are you expecting? Does it depend on Sector and Location?
- What Strategies do you see as the Biggest Risks and the Biggest Rewards/Relative Value?
- Are there Resilient Sectors?
- What Niche Property Types will be Defensive in a Downturn?
- Are you Making Pivots or Tilts to Take Advantage of Macro Trends? Socio/Demographic Trends such as the Aging Population?
- How will Real Estate Debt Perform in the Next Recession?
- How do you View the Risk Profile of Core vs. Non-Core? Returns Expectations?
- What is the Biggest Threat to Commercial in the next few years for this Fully Priced Market?
- Where are the Most Crowded Trades?
- Asia and European Real Estate Outlook – Opportunities and Investment Trends
- What Real Estate Technology Trends/Disruption are you Watching Most Closely?
- Will Co-Investments become more Common?
- Current State of the Real Estate Secondary Market
- Do you like REITS as a More Liquid form of Real Estate? If so, any Region or Property Type that you like for REITS?

MODERATOR:

Chae Hong, Partner, **The Townsend Group, an Aon Company**

SPEAKER:

Anthony Breault, Senior Real Estate Investment Officer, **Oregon State Treasury**

2:30 PM – INFRASTRUCTURE

- State of the Infrastructure Markets
- With Low Interest Rates, Abundant Capital Flowing and High Valuations, is there Enough Supply to Meet Capital Demand?
- If Interest Rates Rise in the coming years, what would be the Implications for Valuations and Liquidity Options for Existing Infrastructure Assets?
- Is Leverage a Concern?
- If the S&P were to enter a Multi-Year Correction (let's say 30%), how much of a Decline can we Expect from Infrastructure Portfolios? What Impact would this Type of Portfolio Drawdown have on Infrastructure Allocations? What Opportunities would this provide Investors?
- As an LP, what are your Program Objectives, (Defensive, Low Correlation, Inflation Protection, Yield, etc)?
- Which Sectors are Most Attractive and why?
- Which Geographies are Most Appealing? Developed or Emerging Economies?
- What are the Biggest Challenges/Risks facing Infrastructure Investors today?
- Listed vs. Unlisted – which do you Favor in a Volatile Market for Downside Protection? Do Rising Interest Rates Favor Either?
- Are you seeing Growth in Opportunities for Public-Private Partnerships across the U.S.?
- How have GPs Adopted ESG Principles and what are the Remaining Challenges? How do you Approach ESG as an Energy Investor?
- What are your Views on the Future Potential for Technology to Disrupt Infrastructure and what can Investors do to Avoid or Take Advantage of it?
- Thoughts on Battery Storage for Renewables?
- How have Tax Credits of Renewables Impacted the Industry over the Past Decade and how will the Phase-out of Subsidies affect the Industry?
- What Sectors within Renewables or Alternative Forms of Energy do you find Attractive? Will the Best Opportunities be in the U.S. or Emerging Markets?
- What are the Advantages and Challenges for LPs to Invest in infrastructure through Fund Commitments vs. Investing Directly as a Co-Investor or Deal Leader like many of the Large Plans?
- What are the Similarities and Differences Between Infrastructure Assets and Private Equity Investments with the Blurring of Definitions over the past few years?

MODERATOR:

Todd Lapenna, CFA, CAIA, Partner, Infrastructure & Real Assets, **StepStone Group**

SPEAKER:

Bert Clark, President and Chief Executive Officer, **Investment Management Corporation of Ontario, (IMCO)**

3:05 PM – REFRESHMENT BREAK

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INVESTMENTS

3:30 PM – PRIVATE EQUITY

- When it comes to the Concerns of Late Cycle, Dry Powder, Cheap and Plentiful Leverage and High Multiples, what should Investors be Focused On over the Next few Years to Successfully Navigate the Environment?
- Should LPs expect Lower Returns Going Forward? Will Private Equity Outperform Public Markets?
- With the Growing Size of the PE Market, do you believe the Industry can put the Excess Dry Power Capital to Work Responsibly?
- Where are your Most Optimistic Returns Going Forward as far as Sector, Geography or Niche Strategy? What's your Biggest Worry?
- What Lower or Non-Correlation Investments Stand Out that are Independent of the Economy and can Withstand a Multi-Year Market Downturn?
- Are you Seeking Investments with a Subscription Model for Greater Visibility of Revenues and Less Volatility? If so, what Recurring Revenue Metrics do you look for?
- Does it Concern you that Subscription Lines of Credit have Distorted IRR? Will we Trend towards LPs Dictating the Format and Usage of Subscription Lines?
- What are your Views on GP-Led Restructurings? What are the Pitfalls that LPs need to be Aware of?
- What are your Views on Fund to Fund Sales?
- How have Trade Tensions with China Impacted Existing Portfolio Companies and your Investment Decision-Making? How are you preparing for a Scenario Where Tensions and Tariffs Persist?
- Given all the Concerns, how are you Positioning your Portfolio within Buyouts? What do the Long Duration Vehicles Mean for Investors?
- What are the Biggest Risks to be aware of for Investing in the Ultra-Competitive Growth Equity Space?
- How are you playing the Co-Investment Frenzy? What will happen to Co-Investments in a Down Market?
- Venture Capital Winners – Limited Access to the Top Few VCs that Generate the Bulk of the Industry's Returns? What's the Best Approach to this Challenge?
- Issues, Outlook and Opportunities for European PE
- How do you think about ESG Issues and Integration when making Individual Investment Decisions and as a Firm?
- From an LP Perspective, what does not work in Fundraising? What does it take to Stand Out?

MODERATOR:

Paul R. Yett, Managing Director, **Hamilton Lane**

SPEAKERS:

Stephen J. Neel, Deputy Chief Investment Officer, Alternative and Private Market Investments, **New Mexico Educational Retirement Board**

Julia Winterson, Senior Director, Alternative Investments, **CommonSpirit Health**

4:15 PM – CIO ROUNDTABLE

(A) RISKS, ALLOCATIONS AND MACRO-BASED DECISIONS

- In this Fully-Valued Environment, how are you Balancing the Risk of a Large Drawdown with your Return Goals? Has it Impacted your Asset Allocation?

- Which De-Risking Strategies or Investments with a Low/Non-Correlation have you Allocated to?
- What Hedge Fund Strategies are you Investing in? Will those Strategies provide a Cushion for the next Market Downturn? How do you use them to Reduce Risk?
- What are your thoughts on Passive Equity Investing and its Performance vs. Active for the Next Major Downturn? Any Market Liquidity Concerns? Where are you using Passive and Active Management and why?
- How are you Viewing Emerging Markets Broadly and what do you feel is the proper EM Allocation? Any Geographic Regions, Countries or Sectors that Interest You?
- Have you made Long-Term Cash Flow Investments through Partnerships and Co-Investment Structures?

(B) ALIGNMENT OF INTERESTS

- What Changes or Trends have you noticed in Fee Structures/Terms and your Bargaining Power? Has your Fund Size been an Advantage or Disadvantage?
- Do You and Your Investment Departments have the Authority to be a Dynamic, Tactical and Active Investor in Response to Extreme Economic Conditions?
- Are you able to Leverage your Portfolio to Generate Liquidity to Take Advantage of a Market Dislocation in an Economic Downturn?
- How can you Overcome Governance Hurdles so that you can Effectively Partner with Outside Providers, bring a Portion of the Investment Management In-House and provide Incentive-Based Compensation?
- Have you Taken Steps to Address Diversity within your Investment Programs or your Organization's Staff?
- Do you have Processes or Policies in place to Assess the Risks of Climate Change?
- Have you Addressed Cybersecurity Protection for your Plan? How have you Educated the Staff about the Risks and Taken Steps for Protection with Investment Managers?
- Any Important Lessons Learned that you can Share from your Individual Plan Experiences?
- What Keeps You Up at Night?

MODERATOR:

Stephen Cummings, CFA, Global Investments Officer, Head of North America Investment Consulting, **Aon Investment Consulting**

SPEAKERS:

Robert M. Maynard, Chief Investment Officer, **Public Employee Retirement System of Idaho, (PERSI)**

John D. Skjervem, CFA, Chief Investment Officer, **Oregon State Treasury; Oregon Investment Council**

Craig Husting, CFA, Chief Investment Officer, **Public School & Education Employee Retirement Systems of Missouri, (PSRS/PEERS)**

Dominic Garcia, Chief Investment Officer, **Public Employees Retirement Association of New Mexico, (PERA)**

5:05 PM – CONFERENCE CONCLUDES

5:05 PM – WRISTBANDS FOR NETWORKING EVENT HANDED OUT IN THE CONFERENCE ROOM

Attendees must be present to attend event



5:45 PM – 8:45 PM WINE TASTING AND DINNER NETWORKING EVENT

Hosted by Pension Bridge – Join our group at for a wine tasting and dinner at the Press Club, located just a few blocks from Westin St. Francis. Meet your industry peers in great setting as California Wine Country comes to the heart of the city. Experience the finest winemakers with new and rare vintages. We'll have a fun wine tasting reception, followed by a tasteful dinner with the highest quality organic ingredients. Pension Bridge will utilize the 9000 square feet of the award winning “Best Restaurant Design” event space for networking for our high quality conference group.

REGISTRATION

TO REGISTER OR RECEIVE MORE INFORMATION ABOUT THE 2020 PENSION BRIDGE ANNUAL:

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AGENDA REPORT

TO: Oakland Police and Fire
Retirement Board

FROM: David Jones
Plan Administrator

SUBJECT: Audit Committee Agenda Pending List

DATE: February 18, 2020

	SUBJECT	TENTATIVE SCHEDULED MTG DATE	STATUS
1	Status Report of the Ad Hoc Committee regarding Actuarial Funding date of July 1, 2026	TBD	
2	Staff review of the 2006 Management Audit.	MAR 2020	

Respectfully submitted,

David Jones, Plan Administrator
Oakland Police and Fire Retirement System

All persons wishing to address the Board must complete a speaker's card, stating their name and the agenda item (including "Open Forum") they wish to address. The Committee may take action on items not on the agenda only if findings pursuant to the Sunshine Ordinance and Brown Act are made that the matter is urgent or an emergency.

Oakland Police and Fire Retirement Board and committee meetings are held in wheelchair accessible facilities. Contact the Retirement Unit, 150 Frank Ogawa Plaza, Suite 3349 or call (510) 238-7295 for additional information.



AGENDA

INVESTMENT COMMITTEE MEMBERS

Jaime T. Godfrey
Chairman

R. Steve Wilkinson
Member

Robert W. Nichelini
Member

**In the event a quorum of the Board participates in the Committee meeting, the meeting is noticed as a Special Meeting of the Board; however, no final Board action can be taken. In the event that the Investment Committee does not reach quorum, this meeting is noticed as an informational meeting between staff and the Chair of the Investment Committee.*

REGULAR MEETING of the INVESTMENT AND FINANCIAL MATTERS COMMITTEE of the OAKLAND POLICE AND FIRE RETIREMENT SYSTEM ("PFRS")

Wednesday, February 26, 2020 – 10:00 am
One Frank H. Ogawa Plaza, Hearing Room 1
Oakland, California 94612

- - - ORDER OF BUSINESS - - -

- | | |
|------------------------|---|
| 1. Subject: | PFRS Investment Committee Meeting Minutes |
| From: | Staff of the PFRS Board |
| <hr/> | |
| Recommendation: | APPROVE January 29, 2020 Investment Committee meeting minutes. |

- | | |
|------------------------|---|
| 2. Subject: | Prospective Active Small Cap Domestic Equities Asset Class Investment Manager Presentations |
| From: | Meketa Investment Group |
| <hr/> | |
| Recommendation: | RECEIVE presentations from the following Investment Firms regarding their qualifications to serve as the new PFRS Active Small Cap Domestic Equities Asset Class Manager for PFRS: <ol style="list-style-type: none">1. Brown Advisory, Inc.2. Phocas Financial Corp.3. Systematic Financial Management, LP4. Vaughn Nelson Investment Management |

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
REGULAR INVESTMENT COMMITTEE MEETING
FEBRUARY 26, 2020

ORDER OF BUSINESS, continued

3. **Subject:** **Selection of New Active Small Cap Domestic Equities Asset Class Investment Manager**
 From: Meketa Investment Group

Recommendation: **DISCUSS** Investment Firm Presentations, **SELECT** Investment Firm to Serve as New Active Small Cap Domestic Equities Asset Class Manager for PFRS, and **RECOMMEND BOARD APPROVAL** of Committee's Selection.
4. **Subject:** **Investment Market Overview**
 From: Meketa Investment Group

Recommendation: **ACCEPT** an informational report on the global investment markets through February 2020.
5. **Subject:** **Investment Fund Performance for the Quarter Ending December 31, 2019**
 From: Meketa Investment Group

Recommendation: **RECOMMEND BOARD APPROVAL** of Investment Fund Performance for the Quarter Ending December 31, 2019.
6. **Subject:** **Investment Manager Overview – SPI Strategies, LLC**
 From: Meketa Investment Group

Recommendation: **RECEIVE** report from Meketa regarding organizational changes at SPI Strategies, LLC, **DISCUSS** possible Board action in response to said changes, including but not limited to, termination of service agreement with SPI Strategies, LLC and transfer of PFRS assets managed by SPI Strategies, LLC to another investment manager or a comparable Exchange Traded Fund (ETF), **RECOMMEND BOARD APPROVAL** of the Committee's recommended course of action with regard to SPI Strategies, LLC
7. **Schedule of Pending Investment Committee Meeting Agenda Items**
8. **OPEN FORUM**
9. **FUTURE SCHEDULING**

AN INVESTMENT AND FINANCIAL MATTERS COMMITTEE MEETING of the Oakland Police and Fire Retirement System ("PFRS") was held January 29, 2020 in Hearing Room 1, One Frank Ogawa Plaza, Oakland, California.

Committee Members Present:

- Jaime T. Godfrey, Chairman
- R. Steven Wilkinson, Member
- Robert W. Nichelini, Member

Additional Attendees:

- David Jones, Plan Administrator
- Jennifer Logue, PFRS Legal Counsel
- Teir Jenkins, Staff Members
- David Sancewich, Meketa Investment Group
- Sean Copus, Meketa Investment Group

The meeting was called to order at 10:03 am.

1. **Approval of Investment Committee meeting minutes** – Member Nichelini made a motion approve the October 30, 2019 Investment Committee meeting minutes, second by Member Wilkinson. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

2. **Investment Manager Performance Review – Earnest Partners** – Dan Miree and Patmon Malcom from Earnest Partners presented a performance review of their firm's management of its PFRS Investment Portfolio to the Investment Committee.

MOTION: Chairman Godfrey made a motion to accept information report from Earnest Partners, second by Member Wilkinson. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

3. **Investment Manager Overview – Earnest Partners** – David Sancewich from Meketa presented its review of Earnest Partners. Mr. Sancewich said Meketa does not recommend any changes regarding Earnest Partners at this time.

MOTION: Chairman Godfrey made a motion to accept the recommendation of no action to Earnest Partners at this time by Meketa, second by Member Wilkinson. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

4. **Investment Manager Performance Review – SPI Strategies** – Steve Singleton reported that SPI Strategies, LLC had recently agreed to an acquisition of SPI Strategies. Following some discussion, Mr. Singleton presented a performance review of their firm's management of its PFRS Investment Portfolio to the Investment Committee.

MOTION: Chairman Godfrey made a motion to accept information report from SPI Strategies, second by Member Nichelini. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

5. **Investment Manager Overview – SPI Strategies** – David Sancewich from Meketa presented its review of SPI Strategies. Chairman Godfrey said a meeting with Meketa and SPI Strategies should be made to further discuss the changes with SPI Strategies and how the PFRS Investments with the firm will be managed going forward.

MOTION: Member Wilkinson made a motion to accept the review of SPI Strategies and recommend Board approval to place SPI Strategies on watch status, second by Member Godfrey. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

6. **Investment Market Overview** – Mr. Sancewich provided an informational report on the global economic factors affecting the PFRS Fund, including the impact of the Coronavirus on the world investment markets. He added that the PFRS Portfolio continues to be de-risked.

MOTION: Chairman Godfrey made a motion to accept the Investment Market Overview report, second by Member Wilkinson. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

7. **\$13.85 million Drawdown for 1st Quarter 2020 Member Allowances** – Mr. Sancewich reported that \$2 million from Northern Trust Investments, \$1 million from the Long Duration ETF and \$10.85 million from the City of Oakland will be used for the 1st quarter 2020 drawdown to pay for member retirement allowances.

MOTION: Chairman Godfrey made a motion to recommend Board approval of the 1st quarter 2020 drawdown to pay for member retirement allowances, second by Member Wilkinson. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

8. **Investment Fund Performance for the Quarter Ending September 30, 2019** – Sean Copus presented the Investment performance report of PFRS investments fund for the quarter ending September 30, 2019. He reported how PFRS Investment over- and underperformed to the investment benchmarks for this period.

MOTION: Chairman Godfrey made a motion to recommend Board approval of the PFRS Investment Fund Performance for the Quarter Ending September 30, 2019, second by Member Wilkinson. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

9. **Preliminary Investment Fund Performance for the Quarter Ending December 31, 2019** – Mr. Copus presented the Preliminary Investment performance report of PFRS investments fund for the quarter ending December 31, 2019. He reported how PFRS Investments outperformed to the investment benchmarks for this period.

MOTION: Chairman Godfrey made a motion to accept the informational report from Meketa regarding the Preliminary Investment Fund Performance for the Quarter Ending December 31, 2019, second by Member Wilkinson. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

10. **New PFRS Fixed Income Asset Class Portfolio Manager** – Mr. Sancewich presented an overview of the planned addition of a new fixed income asset class investment manager for the PFRS fund. He reported that the Meketa was prepared to release the Request for Proposal for this new investment manager.

MOTION: Chairman Godfrey made a motion to recommend Board approval of the release of the Request for Proposal for a new PFRS Fixed Income Investment Asset Manager, second by Member Wilkinson. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

11. **Northern Trust Custodian Bank Stay Protocol Consent Amendment** – Mr. Sancewich explained how the Northern Trust Custodian Bank Stay Protocol Consent Amendment is utilized and required with regard to Securities Lending actions with the Custodian Bank, the Northern Trust Company.

MOTION: Chairman Godfrey made a motion to recommend Board approval of the Northern Trust Custodian Bank Stay Protocol Consent Amendment, second by Member Wilkinson. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

12. **Selection of Investment Managers to invite to Interview for the Active Small Cap Domestic Equity Asset Class Investment Manager position** – Mr. Sancewich reported that the Meketa review of the Request for Proposal has completed and that Meketa recommends four candidates, Alliance Bernstein, Brown Advisory, Systematic, and Vaughan Nelson, to be interviewed to become the PFRFS Active Small Cap Domestic Equity Asset Class Investment Manager. He recommended that the Committee consider selecting three for interview at the next meeting. Mr. Sancewich reported Meketa's process in distilling its RFP pool to these four managers for Committee selection.

MOTION: Following Committee discussion, Member Nichelini made a motion to recommend Board approval of the following four candidates for Investment Committee interview to be the new Active Small Cap Domestic Equity Asset Class Investment

Manager for the PFRS fund: Phocus, Brown Advisory, Systematic, and Vaughan Nelson, second by Member Wilkinson. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

13. **Portfolio Manager Review for Passive International Equity and Crisis Risk Offset (Long Duration Treasury) selection** – David Sancewich reported that the Request for Proposal for a new Passive International Equity and Crisis Risk Offset (Long Duration Treasury) manager had completed with two respondents: The Northern Trust Company and Blackrock Investments. He reported that, because the Northern Trust Company already invests a significant portion of the PFRS portfolio that it be omitted from consideration for this RFP.

MOTION: Chairman Godfrey made a motion to recommend Board approval of the interview of Blackrock to be the PFRS Passive International Equity and Crisis Risk Offset (Long Duration Treasury) investment manager, second by member Nichelini. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

14. **Organizational Changes at Parametric Portfolio Associates** – Mr. Copus reported the status of the organizational changes at Parametric Portfolio Associates and recommended no changes with this manager.

MOTION: Chairman Godfrey made a motion to recommend Board approval of Meketa's recommendation of no changes with this manager due to reported managerial changes, second by member Wilkinson. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

15. **Emergency procedures for terminating or limiting trading discretion of PFRS investment managers to protect PFRS fund assets** – Plan Administrator David Jones and PFRS Legal Counsel Jennifer Logue presented a report regarding the possible need and use of emergency procedures for terminating or limiting trading discretion of PFRS investment managers to protect PFRS fund assets. The committee discussed the creation of an Ad Hoc Committee to address this matter.

MOTION: Chairman Godfrey made a motion to move this matter to the Board meeting for consideration of a recommendation for the creation of an Ad Hoc Committee address this matter, second by member Nichelini. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

16. **Resolution No. 7080 – Extension of a Professional Services Agreement with Earnest Partners** – Mr. Jenkins reported that the professional service agreement for Earnest Partners expires in March 2020 and that Resolution No. 7080 extends the service agreement for one year through March 2021.

MOTION: Member Wilkinson made a motion to recommend Board approval Resolution No. 7080, second by member Nichelini. Motion passed.

[GODFREY – Y/ NICHELINI – Y/ WILKINSON – Y]
(AYES: 3/ NOES: 0/ ABSTAIN: 0)

17. **Schedule of Pending Agenda Items** – Staff reported the agenda items scheduled for the upcoming Investment Committee meeting. Blackrock will be added to be interviewed at the March 2020 Investment Committee meeting.

18. **Open Forum** – No Report.

19. **Future Scheduling** – The next Investment Committee meeting was scheduled for February 26, 2020.

Adjournment of Meeting – The meeting adjourned at 11:29 am.

JAIME T. GODFREY, COMMITTEE CHAIRMAN

DATE

Oakland Police and Fire Retirement System

February 18, 2020

Small Cap Value
Manager Search

Interview Schedule
Wednesday, August 28, 2019

Finalist Candidate	Time
Brown	10:05 am – 10:35 am
Phocas	10:35 am – 11:05 am
Systematic	11:05 am – 11:35 am
Vaughn Nelson	11:35 am – 12:05 pm

Background

- In the third quarter of 2019, an RFP was issued on behalf of OPFRS. As a result of the RFP, Meketa received a total of 56 responses from 55 firms for the Small Cap Value mandate. Meketa evaluated the RFPs and analyzed performance, risk data, and other qualitative factors from each of the responding firms. Based on both qualitative and quantitative analysis, Meketa narrowed the field to a shortlist of eight managers.
- At the January 29, 2019 OPFRS board meeting, Meketa discussed narrowing the field to finalist candidates to present to the OPFRS Investment Committee.
- This document provides a summary of the search process and highlights four strategies for the Board's consideration.
 - Brown: Small Cap Fundamental Value
 - Phocas: Small Cap Value
 - Systematic: Small Cap Value Free Cash Flow
 - Vaughn Nelson: Small Cap Value

Introduction

Selecting strong and appropriate investment managers is a key determinant of the overall success of the Plan. Investment managers are expected to operate within a client's investment guidelines and are given a large degree of latitude to achieve the investment objective.

Manager selection is a nuanced process and requires extensive due diligence. When selecting prospective active managers, Meketa evaluates the following areas:

- Organization
- Investment Team
- Investment Philosophy
- Investment Process
- Investment Performance
- Management Fees

In addition, all managers are evaluated within the context of the Plan's overall investment policy.

Manager Candidates

Investment Manager Overview

	Brown Advisory	Phocas	Systematic	Vaughan Nelson
Firm Location	Baltimore, MD	Alameda, CA	Teaneck, NJ	Houston, TX
Firm Inception	1993	2005	1982	1970
Ownership Structure	70% employee-owned / 30% owned by Brown Advisory board members and a small group of clients and investors	100% employee-owned, including 66% minority-owned	100% owned by Affiliated Managers Group	100% owned by Natixis
Strategy Name	Small Cap Fundamental Value	Small Cap Value Equity	Small Cap Value Free Cash Flow	Small Cap Value
Strategy Inception	January 2009	May 2006	January 1993	April 1997
Assets Under Management (Strategy)	\$1.7 billion	\$742.1 million	\$2.4 billion	\$3.2 billion
Asset Under Management (Firm)	\$81.3 billion	\$905.7 million	\$2.9 billion	\$13.1 billion

Phocas

Organization

- Phocas Financial (“Phocas”) is a boutique value manager based in Alameda, CA. The firm was founded in April 2005 by William Schaff. Phocas is 100% owned by four employees. Phocas is 66% minority-owned by Mr. Schaff and Kevin Granger, both of whom are of Asian descent.
- Phocas has \$905.7 million in assets under management. The Small Cap Value strategy comprises the lion’s share of the firm’s asset base with \$742.1 million in the strategy. Capacity for Small Cap Value is approximately \$1.25 billion.

Phocas

Investment Team

- The investment team consists of three portfolio managers – William Schaff, Steve Block, and James Murray. The three portfolio managers have worked together since 1999. Messrs. Block and Murray joined Mr. Schaff at Phocas in 2005 shortly after Mr. Schaff started the firm. The three previously worked together at Bay Isle Financial, a firm Mr. Schaff founded in 1986 which was subsequently acquired by Janus. They managed a small cap value strategy while at Bay Isle.
- William Schaff is the key decision maker on the team and is in his early 60s. Mr. Schaff started in the investment industry in 1986 when he founded Bay Isle Financial, where he managed institutional equity portfolios and mutual funds, including a small cap value strategy. Mr. Schaff was President and Chief Investment Officer of Bay Isle before it became a fully owned subsidiary of Janus Capital. He subsequently started Phocas in 2005. Mr. Schaff earned his Masters' degree in Engineering from the University of California, Davis, and hold the CFA designation.
- Mr. Block has been a co-portfolio manager of the Phocas Small Cap Value product since its inception. From 1996 to 2005, he worked at Bay Isle. Prior to joining Bay Isle, he served as Senior Financial Analyst for two years in M&T Bank's corporate finance department. He also spent three years as an employee benefit plan actuarial consultant for Howard Johnson & Company. Mr. Block received his M.B.A. from the University of Michigan's Ross School of Business and his B.A. in Quantitative Economic Decision Science from University of CA San Diego.

Phocas**Investment Team (continued)**

- Mr. Murray co-manages the Phocas REIT portfolio. Given the significant weighting of REITs in the Russell 2000 Value Index, he supports the Small Cap Value strategy. From 1999 to 2005, Mr. Murray was the trader and senior REIT analyst for Bay Isle. Mr. Murray earned his B.A. degree in economics from Kenyon College. He holds the CFA designation.
- The three portfolio managers are supported by two research analysts. Justin Wallace started his career in the investment industry in 2006 and joined Phocas in 2013. Terry Cheng started in the investment industry in 2015 and joined Phocas in 2016.
- Mr. Schaff affords the experienced team significant autonomy. Mr. Murray covers the REITs sector, while Mr. Block covers Financials and parts of the Industrials sector. They each have primary say on names that go into the portfolio in these sectors. Mr. Wallace covers the Consumer Discretionary sector and Machine and Defense industries. Mr. Cheng covers Health Care and parts of the semiconductor and capital equipment industries. Mr. Schaff works in concert with other team members on decisions relating to the Technology, Consumer, and Health Care sectors. Mr. Schaff fully controls what Energy names get into the portfolio.

Phocas

Investment Philosophy

- Phocas follows a combination of a traditional value and relative value investment approach. The team will own higher quality stocks that they buy at a discount and then hold as the intrinsic value grows. Although they purchase the cheapest stocks in each industry group, they are not deep value investors. However, they will own some stocks that are mean reversion plays and that lack intrinsic value growth.
- The investment team is index aware. They believe in managing a diversified portfolio (about 100 stocks), staying relatively close to the sector weights in the Russell 2000 Value index (+/-3%) and adding value through stock selection.
- Phocas takes a long-term view and has an average total annual turnover of 40-60%.

Phocas

Investment Process

- The first step is to screen all stocks with market caps between \$250 million and \$5 billion for sufficient liquidity for a \$1.2 billion portfolio. Low profitability companies and highly leveraged companies are also eliminated. The investment team focuses on the cheapest stocks in each industry group, typically the bottom three deciles.
- The team performs due diligence on candidate companies of interest. Research includes a review of relevant filings, including 10-Ks, 10-Qs, annual reports, and earnings releases. The portfolio managers will speak with management, but do not necessarily visit the companies. They attend industry conferences to obtain insights on trends and company specific issues.
- The goal of the due diligence process is to identify companies with attractive valuations, sound or improving profitability, and low or declining debt ratios.
- Apart from price appreciation or faltering fundamentals, price targets, per se, are not used in this process. Valuations revolve around a stock's evolving decile ranking relative to its respective GICS peers.
- Although Mr. Schaff is the lead portfolio manager, he and Mr. Block jointly make investment decisions.
- Phocas targets portfolios to contain 100 holdings, within a range of 90 to 120 holdings, unequally weighted. Individual positions rarely exceed 2% of the portfolio and never exceed 5%. Individual security positions are routinely reduced when they appreciate to over 3% of portfolio value.
- Stocks are sold when, according to the same valuations used to purchase them, their decile ranking climbs three levels above their decile at the time they were purchased.

Brown Advisory

Organization

- Brown Advisory was founded in January 1993 as the investment management arm of Alex, Brown & Sons, a Baltimore-based investment bank. In 1998, Brown Advisory became an independent firm through an employee-led buyout.
- Brown Advisory is majority employee-owned. Current employees hold 70% of the company's equity. The firm's Board of Directors and a small group of clients and investors own the remaining 30%. Brown's management believes that broad equity distribution is critical to maintaining the firm's collegial culture.
- Brown manages \$81.3 billion in assets as of 12/31/2019. It has eight equity products, both value and growth, and one fixed income strategy. The firm's institutional large cap growth strategy is the most meaningful with two-thirds of the assets. The Small Cap Value strategy has \$1.7 billion in AUM.

Brown Advisory**Investment Team**

- David Schuster has been the portfolio manager of the Small Cap Fundamental Value portfolio since the strategy's inception in 1/09. He is a shareholder of the firm. Prior to joining Brown, Mr. Schuster was a managing director for the Financial Institutions Merger & Acquisition/Advisory Group of Citigroup and a managing director in the M&A practice of Lazard Freres. After earning a BSBA from Georgetown University (1992), Mr. Schuster briefly worked as an accountant at Deloitte. He also was an officer and M1A1 tank platoon leader in the United States Army.
- Michael Poggi, CFA, is the strategy's associate portfolio manager and an equity analyst. Mr. Poggi joined Brown Advisory in 2003. He covers the industrials and media sectors. He earned a BSBA from the University of Richmond (2003).
- Brown Advisory has 27 sector-focused analysts organized in a central research structure. The analysts support all the portfolio managers, both value and growth. Each strategy also has an informal "working group" that consists of a sub-set of analysts from the central research team who participate in weekly meetings to discuss new ideas and provide updates on existing holdings for the specific strategy. Each central research team member is part of 2-3 working groups. Small Cap Fundamental Value's working groups consists of five analysts who started in the investment industry between 2001 and 2011 and who joined Brown between 2011 and 2017. These individuals tend to be value-oriented and have corporate finance backgrounds. Messrs. Schuster and Poggi along with the working group cover ~95% of the portfolio. The firm also has an associate analyst program in which individuals are hired after they complete college. This program enables Brown to develop analysts internally.

Brown Advisory

Investment Philosophy

- The basic belief underlying the investment strategy is that attractive risk-adjusted returns are achievable over time by investing in companies with sustainable free cash flow and management teams that effectively allocate capital. Good capital allocators will use cash flow to enhance shareholder value.
- The investment team focuses on the inefficiencies in the small cap market that stem from a lack of analyst coverage and investor interest and result in overlooked, attractively valued investment opportunities. These valuation disconnects provide a margin of safety and potential upside in the stock. Mr. Schuster wants to make money in a stock through the closure of the valuation gap and the growth of cash flows.
- Mr. Schuster views growth in a company's cash flow as an important part of the potential total return. The team looks for companies in which the reported GAAP net income differs materially from free cash flow.
- Brown's investment team evaluates businesses the same way as a potential acquirer. They are long-term oriented with a 3-5 year investment horizon.

Brown Advisory

Investment Process

- Investment ideas come from quantitative screens, investment conferences, company visits, and the industry specific knowledge of the analysts. Ideas emanate from the analysts, and Mr. Schuster will push ideas to the team. The team also monitors corporate actions for potential investment ideas. These often present attractive investment opportunities before they become more familiar to the market.
- The investment team follows up on the best potential ideas. The primary purpose of the team's research is to understand the key attributes of each business. The focal points of their analysis are a company's ability to generate sustainable free cash flow and the effectiveness of management's capital allocation decisions.
- Multiple analysts will often perform due diligence on an idea. Analyzing and modeling financial statements, on-site visits, and reviewing market research are all important components of the research process. The team evaluates business drivers, the competitive landscape, pricing pressures from both suppliers and customers, and historic and projected uses of capital that contribute to a company's fundamental earnings power. The team also leverages the firm's extensive network of venture capital and private equity relationships, clients, directors and outside shareholders.

Brown Advisory**Investment Process (continued)**

- Mr. Schuster is heavily involved with the research process. In addition to a lot of informal interaction, he holds two formal meetings with the investment team each week. The Monday morning meeting is a review of the portfolio with company updates. The second meeting on Friday afternoon is called the After Action Review (AAR). A post-mortem is performed on all the stocks that have been sold, both winners and losers, in order to understand if the investment team was right for the right reasons or right, but for the wrong reasons (i.e. luck vs. skill).
- Mr. Schuster typically looks for an initial reward-to-risk of 2:1 when a stock is purchased. At some point, the levers a company can pull are reduced, and the valuation multiple peaks. These stocks become a source of cash. Mr. Schuster has little tolerance for disappointments. Stocks that do not meet expectations are sold quickly. Name turnover is usually about 25%, while total portfolio turnover is normally 30% to 40%.
- Risk is defined as the permanent loss of capital. When considering the purchase of a stock, Mr. Schuster will wait for a more attractive price if the possibility of capital loss is too great. He also determines common risk exposures across the portfolio.
- The portfolio is moderately concentrated and constructed using a bottom-up stock-by-stock process. The number of holdings has fluctuated between the low 50s and high 60s. The top ten positions usually comprise about 35% of the portfolio with the largest position approaching 5%. Mr. Schuster is benchmark aware, not benchmark driven. Sector weights in the portfolio can be very different from the benchmark, but if there is a large underweight compared to the index, he will re-evaluate the sector and ask the analysts if they are missing ideas in their areas of coverage.

Systematic Financial Management

Organization

- Systematic Financial Management (“Systematic”) was founded in December 1982 in Teaneck, NJ. The firm focuses on value-oriented equity strategies and offers both US and international equity products.
- Systematic is a wholly-owned affiliate of Affiliated Managers Group (“AMG”), a publicly traded global asset management company (NYSE: AMG). AMG owns stakes in 35 affiliate investment boutiques with aggregate assets under management of \$732 billion as of 9/30/2019. The company arranges revenue share agreements with its managers. AMG offers centralized business functions if desired by its affiliates, but allows investment teams autonomy in managing both their portfolios and their businesses.
- Systematic manages \$2.9 billion in assets as of 12/31/2019, including \$2.4 billion in Small Cap Value Free Cash Flow. The firm also manages a SMID Cap Value Free Cash Flow portfolio that follows the same investment approach as its Small Cap Value Free Cash Flow brethren and has \$180 million in AUM.

Systematic Financial Management

Investment Team

- Portfolio manager Kenneth Burgess leads the investment team. Mr. Burgess has spent his entire investment career at Systematic, which he joined in 1993. He has managed the Small Cap Value Free Cash Flow strategy since 1996, and he became a partner of the firm in 1997. Mr. Burgess also manages the SMID Cap Value Free Cash Flow strategy with the same investment team. Mr. Burgess studied as an undergraduate at New Hampshire College (now Southern New Hampshire University). He is a CFA Charterholder.
- Mr. Burgess is supported by a team of five analysts who joined the firm between 2004 and 2008. These individuals each cover multiple sectors. Most sectors are covered by at least one analyst. Ryan Wick joined Systematic in 2005. He began his investment career in 1999 at ABM Amro as an associate equity research analyst. Prior to joining Systematic, Mr. Wick was an equity analyst with Axe-Houghton Associates. Rick Plummer joined Systematic in 2004. He started his investment career in 1994 at Value Line, where he served as a senior industry analyst and lead editor of the firm's daily supplemental stock reports. Christopher Lippincott joined Systematic in 2008. He began his investment career in 1996 at Alexander, Wescott & Co. as an equity analyst. In 2000, he joined Keybank Capital Markets as a senior equity analyst. Prior to joining Systematic, he was a senior industry analyst at Standard & Poor's. Matthew Tangel joined Systematic in 2008. Previously, he worked at FactSet Research Systems for two years. Brian Kostka joined Systematic in 2007. Previously, he was an equity analyst with Estabrook Capital. He started his investment career in 2004 at UBS Investment Research.

Systematic Financial Management

Investment Philosophy

- Mr. Burgess believes that the value of a company is determined by the stream of cash flows that it will generate, and that the company's value will eventually be recognized by the market. He focuses the team on companies with sustainable and predictable cash flows.
- The team emphasizes companies with strong balance sheets, including low leverage, low capital intensity, and strong cash flow debt coverage. The team conducts credit-type analysis of target companies. By focusing on financial strength, Mr. Burgess is trying to avoid large detractors.
- The investment team holds businesses for the long-term to let the cash flows compound. The portfolio has an average holding period of five plus years and average annual turnover of ~20%.

Systematic Financial Management

Investment Process

- The investment process begins with a quantitative screen of the Russell 2000 index. The screen's metrics are largely cash flow and balance sheet based including price/operating cash flow, price/free cash flow, enterprise value/free cash flow, total debt to capitalization, and debt coverage.
- This quantitative screen narrows the investable universe to 400 stocks, which the team refers to as the "Research Focus List." Analysts then fundamentally analyze the target companies. They begin by reviewing the business model. They attempt to identify and understand the key business attributes in order to assess the sustainability of the business model. They also review and analyze company management and its strategy for executing the business model. Meeting with company management is a key element of the due diligence process.
- If the business model appears promising, then the analyst constructs a financial model. The model generates forecasts for revenues, expenses, margins, profitability, operating cash flow, free cash flow, and capital spending. The analyst models years 1 through 4. In year 5 and beyond, he/she tries to determine the sustainable growth rate of the cash flow. "Normalized" free cash flow is ultimately what the analyst is trying to derive.

Systematic Financial Management

Investment Process (continued)

- The team then uses this information to value the company. The analyst will value the company both by applying appropriate cash flow multiples, focusing on enterprise value to EBITDA, and using the output of the discounted cash flow (DCF) model. If a stock is trading at least at a 15% discount to the team's intrinsic value estimate, then it is eligible for inclusion in the portfolio. They will typically look for catalysts to close the valuation gap. Mr. Burgess makes final investment decisions.
- The final portfolio will hold 100 to 150 stocks. Position sizes are limited to 5% of the total portfolio.

Vaughan Nelson

Organization

- Founded in 1970, Vaughan Nelson (VN) is a Houston, Texas based asset manager. Vaughan Nelson has been wholly owned by Natixis Global Asset Management, a large French asset management company, since 1996. Natixis owns more than twenty specialized investment managers throughout the world. Natixis allows each manager to operate autonomously and to manage its own strategies while providing operational and marketing support. Each manager controls its income statement.
- The majority of the firm's \$13.1 billion in assets are in three US equity products. The Small Cap Value strategy has \$3.2 billion. The firm also manages two fixed income strategies and recently lifted out an international equity team from Advisory Research.

Vaughan Nelson**Investment Team**

- CIO and Lead PM Chris Wallis leads the Small Cap Value investment team. Mr. Wallis performs company level research, provides macroeconomic insights, and is the final decision maker for the Small Cap Value portfolio. He joined Vaughan Nelson in 1999 and started in the investment industry in 1991. Before coming to Vaughan Nelson, Mr. Wallis was an accountant at Coopers & Lybrand and an analyst at Simmons & Company. He has his CFA and is a CPA. BBA – Baylor University; MBA – Harvard Business School.
- Stephen Davis was formally named Mr. Wallis's co-PM on Small Cap Value on January 1, 2019. Prior to his formal appointment, Mr. Davis had been participating in portfolio management discussions with Mr. Wallis on an informal basis. Mr. Davis has been in the investment industry since 2005 and joined VN in 2010. Prior to VN, he was an analyst at Goldman Sachs for 4.5 years. Mr. Wallis continues to have final decision-making authority on the strategy, while Mr. Davis adds his perspective and acts as a sounding board for Mr. Wallis. Mr. Davis also runs the weekly Small Cap Value team meetings and parses out coverage responsibilities to the analysts.
- Messrs. Wallis and Davis are supported by a team of five fundamental equity analysts who joined VN between 2005 and 2018. The analysts are generalists, covering companies across sectors. These individuals support VN's three US equity strategies. The team also has a risk officer, William Wojciechowski, who prepares monthly risk packets that help the portfolio managers better understand their factor bets and measure the consistency of their philosophy and process.

Vaughan Nelson**Investment Philosophy**

- Vaughan Nelson believes that stocks can experience short-term declines in price and trade below their long-term intrinsic value due to information and liquidity inefficiencies. Mr. Wallis views the change in Return on Invested Capital (ROIC) as the key driver of stock price appreciation.
- Mr. Wallis is a flexible value manager. He looks for companies with undervalued earnings growth, companies that trade a discount to their asset value, and companies with an attractive dividend yield. Mr. Wallis believes that investing in these three categories enhances performance across different markets.
- Although the portfolio sector weights are driven by bottom-up stock selection, unlike many portfolio managers, Mr. Wallis does think about the macroeconomic environment, and his views play a role in idea generation and portfolio construction.
- The portfolio has an average holding period of approximately three years and average annual name turnover of ~30%.

Vaughan Nelson**Investment Process**

- Vaughan Nelson's investment universe comprises all stocks in the Russell 2000 Value index. Vaughan Nelson screens for companies with attractive ROE, ROA, P/B, P/E, debt-to-cap, and dividend yield. The team looks for inexpensive stocks. They also run qualitative screens that may lead them to mispriced securities, including changes in senior management or insider stock purchases. Mr. Wallis also takes a thematic approach to finding ideas and uses industry specific screens to identify perceived temporary market inefficiencies. The investment team looks for sectors that are out-of-favor and have experienced reductions in capital and capacity. Mr. Wallis also finds opportunities in cyclical industries that are trading at trough valuation levels.
- The team groups companies into one of the three categories. These are: 1) companies with undervalued earnings growth, 2) companies trading at a discount to their asset value, and 3) companies with attractive dividend yields that are inexpensive. Companies in the first category are investing in themselves at higher ROICs, and the asset utilization is improving. Undervalued assets are deeper value ideas. These companies include traditional asset plays, companies with strong franchise value, and cyclical companies. These types of companies much have catalysts in place to close the valuation gap. A small number of stocks in the portfolio fall into the undervalued dividend category. Mr. Wallis believes that the economic and credit cycle influence investment opportunities in each of the three categories. There are no pre-determined exposure ranges for each.

Vaughan Nelson**Investment Process (continued)**

- The screens produce a list of candidate companies and these ideas are prioritized by Messrs. Wallis and Davis. Ideas are assigned to the portfolio managers and analysts based on capacity. Both portfolio managers and analysts perform fundamental due diligence. Vaughan Nelson's due diligence includes financial statement analysis, meeting with management, evaluation of the company's strategy, assessment of cyclical forces and secular trends, and discussions with customers, suppliers, competitors, and other industry participants.
- Once the due diligence is completed, the analyst creates a five-year pro forma balance sheet and income statement and builds a discounted cash flow model to calculate the company's intrinsic value. He/she also formulates an investment thesis.
- Once presented with the research, Messrs. Wallis and Davis decide whether the stock should be included in the portfolio. They are absolute return oriented, and stocks need to have at least 50% appreciation potential over their three-year investment horizon. Vaughan Nelson maintains a database of all the companies they research. Companies with favorable qualities but unattractive valuations are monitored closely. Keeping track of these companies allows Vaughan Nelson to act quickly if a company's valuation becomes appealing.
- The portfolio typically holds 55-85 stocks. Positions begin between 50bps and 300bps depending on the level of conviction and the liquidity of the stock. The largest positions in the portfolio are between 2.5% and 3.0%. Annual portfolio turnover approximates 60-80%, with name turnover of ~30%.
- Positions are trimmed or sold when they are within 10% of intrinsic value, the company is facing increased competitive pressures, management makes poor decisions, or the investment thesis deteriorates.

Historical Performance, Portfolio Characteristics, and Management Fees

Historical Performance (net of fees) As of December 31, 2019

	Brown	Phocas	Systematic	Vaughan Nelson	Russell 2000 Value
Trailing Period Returns (%):					
YTD	24.3	24.3	24.6	24.9	22.4
1 Year	24.3	24.3	24.6	24.9	22.4
3 Year	6.7	3.6	9.6	4.6	4.8
5 Year	7.0	5.6	10.5	6.6	7.0
7 Year	11.2	10.9	13.5	11.1	10.1
10 Year	12.8	10.6	13.1	11.2	10.6
Calendar Year Returns (%):					
2019	24.3	24.3	24.6	24.9	22.4
2018	-13.1	-17.5	-14.8	-14.3	-12.9
2017	12.3	8.4	23.9	6.9	7.8
2016	22.4	23.2	22.9	20.3	31.7
2015	-5.4	-4.2	1.7	0.1	-7.5
2014	6.3	7.3	5.2	9.2	4.2
2013	40.9	46.2	40.4	39.2	34.5
2012	22.0	9.6	15.9	15.3	18.1
2011	2.0	-6.0	-6.5	-3.4	-5.5
2010	27.2	29.7	30.7	24.2	24.5
2009	24.6	24.4	37.7	29.3	20.6

Portfolio Characteristics As of December 31, 2019

	Brown	Phocas	Systematic	Vaughan Nelson	<i>Russell 2000 Value</i>
Price-Earnings Ratio	18.1x	15.9x	18.1x	17.6x	15.1x
Price-Book Value Ratio	1.8x	1.7x	1.8x	2.1x	1.3x
Dividend Yield	2.0%	1.7%	1.8%	1.5%	2.1%
Return On Equity	7.9%	12.3%	12.4%	12.6%	6.4%
Historical Earnings Growth	13.8%	23.4%	22.9%	23.9%	14.5%
Projected Earnings Growth	9.9%	12.6%	9.4%	13.1%	9.3%
Weighted Average Market	\$2.6 billion	\$3.1 billion	\$3.1 billion	\$3.6 billion	\$2.2 billion
Median Market Cap	\$1.4 billion	\$2.7 billion	\$1.9 billion	\$751 million	\$718 million
Market Cap > \$25 billion	---	---	---	---	---
Market Cap \$5bn - \$25bn	10.6%	18.7%	17.5%	21.9%	4.6%
Market Cap \$1bn - \$5bn	66.6%	71.1%	59.6%	74.4%	71.1%
Market Cap < \$1bn	18.7%	10.2%	20.6%	3.6%	24.2%
Cash	4.1%	---	2.3%	---	---
Number of Holdings	71	111	148	66	1,402
Active Share	95.9%	87.8%	89.9%	90.9%	---

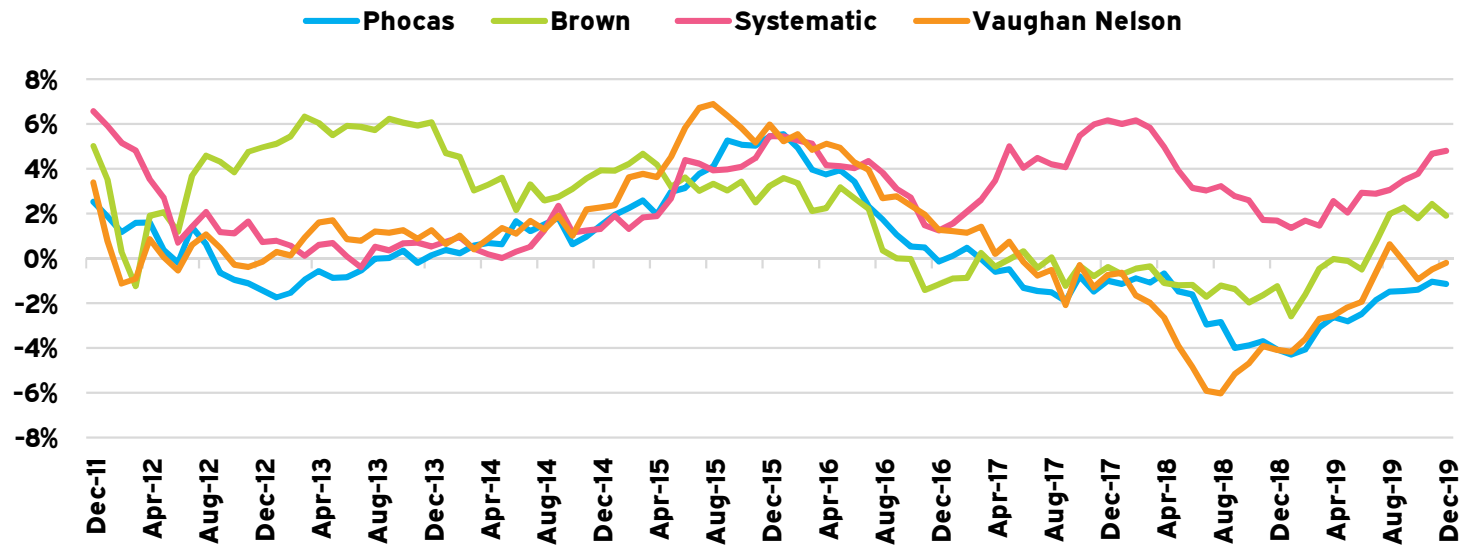
- In general, the managers tend to have slightly higher valuations than the index, but higher quality profiles, as measured by return on equity and earnings growth.
- Brown and Vaughan Nelson run more concentrated portfolios relative to Systematic and Phocas.

Common Period Returns and Risk Statistics As of December 31, 2019

	Brown	Phocas	Systematic	Vaughan Nelson	Russell 2000 Value
Performance					
Common Period Performance (%)	13.8	11.8	15.2	12.8	11.4
Best 3 Months (%)	23.1	26.8	35.3	24.6	28.9
Worst 3 Months (%)	-19.3	-20.5	-22.9	-19.4	-21.5
Risk Measures					
Standard Deviation (%)	15.5	18.2	18.5	15.8	18.6
Tracking Error (%)	6.1	3.5	4.0	5.4	0.0
Beta	0.79	0.96	0.97	0.82	1.00
Correlation to Benchmark	0.95	0.98	0.98	0.96	1.00
Semi Deviation (%)	16.1	19.7	20.3	17.5	20.7
Upside Capture (%)	85.8	96.0	106.0	87.5	100.0
Downside Capture (%)	77.0	94.9	92.9	82.9	100.0
Risk-Adjusted Performance					
Jensen's Alpha (%)	4.2	0.8	3.7	2.9	0.0
Sharpe Ratio	0.86	0.62	0.79	0.77	0.59
Information Ratio	0.39	0.11	0.93	0.24	---

- All managers outperformed the index over the common period 1/1/2009-12/31/2019, with Brown and Systematic outperforming by the widest margin.

Three-Year Rolling Excess Return (net of fees)
As of December 31, 2019



- Over the common period of 1/1/2009-12/31/2019, Systematic and Brown have outperformed the Russell 2000 Value Index in 99% and 67% of rolling three-year periods, respectively. The performances of Vaughan Nelson and Phocas have been slightly less consistent over this period, with Vaughan Nelson outperforming in 63% of the periods and Phocas beating the index in 49% of rolling three-year periods.

Historical Trailing Risk (net of fees) As of December 31, 2019

	Brown				Phocas				Systematic				Vaughan Nelson				Russell 2000 Value			
	3 Yr.	5 Yr.	7 Yr.	10 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.
Information Ratio	0.45	0.01	0.23	0.46	-0.39	-0.44	0.22	0.02	1.14	0.82	0.87	0.69	-0.04	-0.07	0.20	0.14	---	---	---	---
Tracking Error (%)	4.3	4.4	4.6	4.9	2.9	3.2	3.3	3.3	4.2	4.2	3.9	3.8	4.7	5.0	5.0	4.7	---	---	---	---
Sharpe Ratio	0.36	0.43	0.79	0.83	0.12	0.29	0.67	0.60	0.50	0.62	0.87	0.75	0.20	0.38	0.76	0.71	0.20	0.37	0.62	0.60
Standard Deviation (%)	14.0	14.0	13.3	14.8	16.4	15.8	15.1	16.8	15.7	15.2	14.7	16.8	14.4	14.6	13.7	15.0	15.9	15.9	15.2	16.8
S. D. Index (%)	15.9	15.9	15.2	16.8	15.9	15.9	15.2	16.8	15.9	15.9	15.2	16.8	15.9	15.9	15.2	16.8	15.9	15.9	15.2	16.8
Jensen's Alpha	2.2	0.8	2.4	3.4	-1.1	-1.2	1.0	0.3	4.8	3.7	3.7	2.6	0.2	0.4	2.2	1.9	---	---	---	---
Beta	0.85	0.85	0.84	0.85	1.01	0.98	0.97	0.98	0.96	0.92	0.93	0.98	0.86	0.87	0.85	0.86	1.00	1.00	1.00	1.00
Correlation Coefficient	0.97	0.96	0.96	0.96	0.98	0.98	0.98	0.98	0.96	0.96	0.97	0.98	0.96	0.95	0.95	0.96	1.00	1.00	1.00	1.00
Upside Market Capture (%)	92.2	85.4	86.0	89.1	94.5	90.5	96.7	96.1	110.8	104.7	104.9	105.0	81.9	86.0	87.9	88.5	100.0	100.0	100.0	100.0
Downside Market Capture (%)	85.7	86.1	79.5	79.7	100.1	97.1	93.3	95.8	89.9	90.2	90.3	95.0	85.3	88.5	82.1	85.6	100.0	100.0	100.0	100.0

- Brown and Vaughan Nelson have similar, lower risk profiles based on several metrics. Both have low betas that average approximately 0.85. Both protect relatively well on the downside, with Brown providing the most downside protection of all four managers. Both have uniformly lower standard deviations than the Russell 2000 Value Index.
- However, Systematic and Phocas have the lowest tracking errors, which has resulted in strong information ratios for Systematic. Phocas's lower excess returns have dampened its information ratio.
- All of the managers have higher seven and ten-year Sharpe Ratios than the benchmark with the exception of Phocas, whose 10-year information ratio matches the benchmark.

Peer Rankings (net of fees)^{1,2} As of December 31, 2019

	Brown				Phocas				Systematic				Vaughan Nelson				Russell 2000 Value			
	3 Yr.	5 Yr.	7 Yr.	10 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.
Excess Returns	25	39	28	9	69	70	35	61	9	6	3	6	51	49	30	45	---	---	---	---
Standard Deviation	12	10	8	10	54	48	50	54	40	29	32	54	15	17	13	12	43	49	49	52
Sharpe Ratio	18	23	11	5	69	69	39	61	10	7	6	13	45	35	14	18	61	59	71	81
Beta	85	84	87	85	38	44	41	36	60	70	63	38	83	79	83	82	---	---	---	---
Jensen's Alpha	24	27	14	6	71	71	42	68	10	7	7	14	49	39	15	25	66	65	81	88
Tracking Error	47	49	57	57	10	11	16	12	45	41	37	31	57	59	64	54	---	---	---	---
Information Ratio	24	39	32	13	76	83	33	60	5	2	2	3	51	48	36	48	---	---	---	---

- Brown and Systematic's 10-year excess returns rank in the top decile of the small cap value peer universe. Systematic has produced the highest excess returns compared with the other three managers and peers over all trailing periods.
- Brown and Vaughan Nelson have relatively lower standard deviations, consistently ranking in the bottom quintile of the peer universe.
- Phocas has the lowest tracking error, consistently ranking in the bottom quintile.
- Overall, Systematic has the most consistently strong risk-adjusted returns, as measured by the information and Sharpe ratio and Jensen's Alpha rankings.

¹ All characteristics are ranked high to low. A 1st percentile ranking corresponds to the highest absolute number in the peer group.

² Based on gross of fees returns.

Fees and Terms

	Brown	Phocas	Systematic	Vaughan Nelson
Investment Vehicle Type	Separate account / mutual fund	Separate account / mutual fund	Separate account	Separate account
Liquidity	Daily	Daily	Daily	Daily
All-in-Fee	0.85% (separate account) 1.15% (mutual fund)	0.95% (separate account) 0.95% (mutual fund)	0.85%	0.85%
Peer Group Percentile Rank	25th (separate account) 73rd (mutual fund)	47 th (separate account) 33 rd (mutual fund)	25 th	25 th

- Meketa was able to negotiate a 15 bps reduction in the separate account fees for Brown, Systematic, and Vaughan Nelson, from 100 bps to 85 bps. This fee structure ranks in the lowest quartile (i.e. most competitive) of the small cap value peer universe.
- Based purely on fees, Phocas' mutual fund is more favorably priced than Brown's offering.

Comparative Manager Assessment

	Brown	Phocas	Systematic	Vaughan Nelson
Organization	<ul style="list-style-type: none"> 70% employee-owned / 30% owned by small group of clients and external investors. \$81.3 billion firmwide AUM. \$1.7 billion in Small Cap Value. 	<ul style="list-style-type: none"> 100% employee owned / 66% minority-owned. \$905.7 million firmwide AUM. \$742.1 million in Small Cap Value. 	<ul style="list-style-type: none"> Wholly-owned affiliate of Affiliated Managers Group. Investment team has revenue share in place with AMG. \$2.9 billion firmwide AUM. \$2.4 billion in Small Cap Value Free Cash Flow. 	<ul style="list-style-type: none"> Owned by Natixis Global Asset Management, but operates autonomously. \$13.1 billion firmwide AUM. \$3.2 billion in Small Cap Value.
Investment Team	<ul style="list-style-type: none"> Led by PM David Schuster, who has managed the strategy since its January 2009 inception and has been with Brown since 2008. Associate PM Mike Poggi, who has been with Brown since 2003 and has worked with Mr. Schuster since 2009, supports Mr. Schuster as a sounding board. Mr. Schuster still makes final decisions. Messrs. Schuster and Poggi supported by central research team of 27 sector-focused analysts who support all of the firm's strategies. A sub-set of five analysts forms a "working group" for Small Cap Value. 	<ul style="list-style-type: none"> Led by William Schaff, who started Phocas in 2005. SCV co-managed by William Schaff and Steve Block since its 2006 inception. James Murray covers the REIT part of the portfolio and makes buy/sell decisions in that part of the strategy. PMs supported by two analysts who started in the investment industry in 2006 and 2015 and joined Phocas in 2013 and 2016. 	<ul style="list-style-type: none"> Led by PM Kenneth Burgess, who has spent his entire investment career at Systematic, which he joined in 1993. Supported by a team of five analysts of who joined the firm between 2004 and 2008. Analysts cover multiple sectors. 	<ul style="list-style-type: none"> Led by CIO Chris Wallis, who started in the investment industry in 1991 and has been at Vaughan Nelson since 1999. Co-PM Stephen Davis, who has been with Vaughan Nelson since 2010, assists Mr. Wallis leading the investment team. Supported by a team of five generalist analysts who provide ideas to the firm's three US equity strategies. A risk officer helps the PMs evaluate the portfolio's factor exposures.

Comparative Manager Assessment (Continued)

	Brown	Phocas	Systematic	Vaughan Nelson
Investment Philosophy	<ul style="list-style-type: none"> Focus on companies with sustainable free cash flow and strong management teams skilled at capital allocation. Believes that growth in cash flow is an important component of potential total return. 	<ul style="list-style-type: none"> Combination of traditional and relative value. Index aware approach. Sector weights managed closely to the index. 	<ul style="list-style-type: none"> Focus on companies with sustainable and predictable cash flows and strong balance sheets. 	<ul style="list-style-type: none"> Focus on companies with positive changes in Return on Invested Capital. Flexible value manager. Vaughan Nelson will buy companies with undervalued earnings growth, companies trading at discounts to their asset values, or companies with undervalued dividend yields.
Investment Process	<ul style="list-style-type: none"> Fundamentally driven, bottom up approach. Ideas sourced from quantitative screens, investment conferences, company visits, and industry knowledge. Fundamental analysis consists of analyzing and modeling financial statements, company visits, and reviewing market research. Portfolio will hold 50-70 stocks (69 currently). Annual turnover of ~30-40%. 	<ul style="list-style-type: none"> Fundamentally driven, bottom up approach. Ideas sourced from screens based on valuation versus peers, profitability, and leverage. Fundamental analysis consists of a review of the filings, speaking with management, and attending industry conferences. Valuation is considered relative to GICS peers. Portfolio will hold 90-120 stocks. Annual turnover of 40-60%. 	<ul style="list-style-type: none"> Fundamentally driven, bottom up approach. Ideas sourced from screens based on cash flow and balance sheet metrics. Fundamental analysis focuses on assessing the sustainability of the business model and meeting with management to assess their strategy for executing the model. A detailed financial model helps the team gauge normalized free cash flow. Portfolio will hold 100-150 stocks (147 currently). Annual turnover of ~20%. 	<ul style="list-style-type: none"> Fundamentally driven, bottom-up approach, with a top down overlay. Ideas sourced from both quantitative and qualitative screens. Some thematic hypotheses give rise to new ideas. Due diligence includes financial statement analysis, meeting with management, evaluation of the company's strategy, assessment of cyclical forces and secular trends, discussions with industry participants, and constructing financial statements. Portfolio will hold 55-85 stocks (65 currently). Annual turnover of ~60-80%.

Comparative Manager Assessment (Continued)

	Brown	Phocas	Systematic	Vaughan Nelson
Investment Performance (Common Period 1/1/2009-12/31/2019)	<ul style="list-style-type: none"> 13.8% net of fees annualized return and 2.4% excess return. Lowest beta of 0.79. Lowest downside capture of 77%. Highest risk-adjusted returns, as measured by Sharpe ratio. Highest risk-adjusted returns as measured by Jensen's alpha given low beta. 	<ul style="list-style-type: none"> 11.8% net of fees annualized returns and 0.4% excess return. Lowest tracking error of 3.5%. Lowest risk-adjusted returns as measured by information ratio. 	<ul style="list-style-type: none"> 15.2% net of fees annualized return and 3.8% excess return. Highest risk-adjusted returns, as measured by information ratio. 	<ul style="list-style-type: none"> 12.8% net of fees annualized return and 1.4% excess return. Low beta of 0.82. Relatively low downside capture of 82.9%.
Fees	0.85% (separate account) 1.15% (mutual fund)	0.95% (separate account) 0.95% (mutual fund)	0.85% (separate account)	0.85% (separate account)

Appendix

Information Ratio: This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

Sharpe Ratio: A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

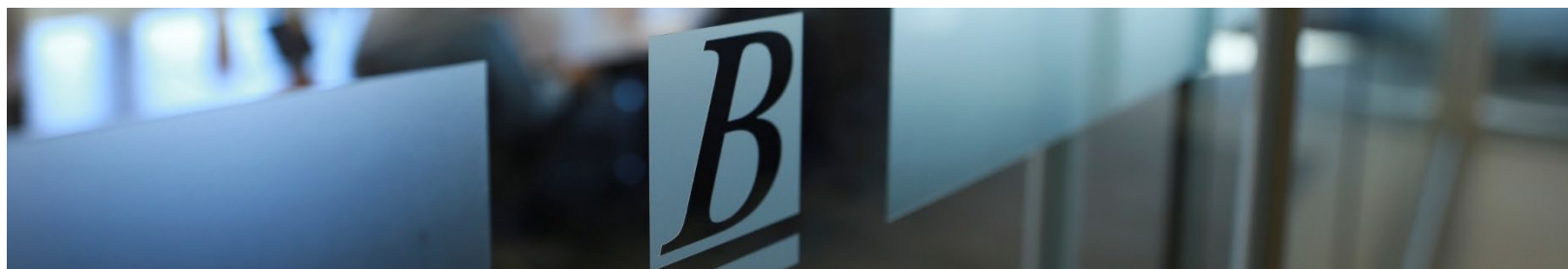
Standard Deviation: A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

Tracking Error: This statistic measures the standard deviation of excess returns relative to a benchmark. Tracking error is calculated by multiplying the standard deviation of the monthly excess returns of a portfolio relative to a benchmark by the square root of twelve in order to annualize. The higher the tracking error, the greater the volatility of excess returns relative to a benchmark.

Sources: www.businessdictionary.com
http://www.naplia.com/employeeedishonesty/Employee_Dishonesty_FAQ.shtml
[Investment Terminology](#), International Foundation of Employee Benefit Plans, 1999.
[Modern Investment Management](#), Litterman, Bob, 2003.

BROWN ADVISORY U.S. SMALL-CAP FUNDAMENTAL VALUE STRATEGY

AS OF DECEMBER 31, 2019



Independent, fundamentally driven investment management firm

FIRM

1993

Launched as an investment management arm of Alex. Brown & Sons

1998

Investment team and management-led buyout enables independence, focus and expansion

2008

Expands globally and today has clients in 37 countries

100%

Of our colleagues collectively own 70% of the firm's equity

INVESTMENT TEAM & ASSETS

47

Equity investment and research professionals

15 years

Average years of investment experience for our equity research team

\$81 billion*

In total assets under management for private clients, non-profits and institutions*

\$38 billion*

Institutionally marketed strategy assets under management*

SMALL-CAP FUNDAMENTAL VALUE

2008

Brown Advisory Small-Cap Fundamental Value strategy inception

\$1.7 billion*

Brown Advisory Small-Cap Fundamental Value Strategy assets under management

U.S. SMALL-CAP FUNDAMENTAL VALUE

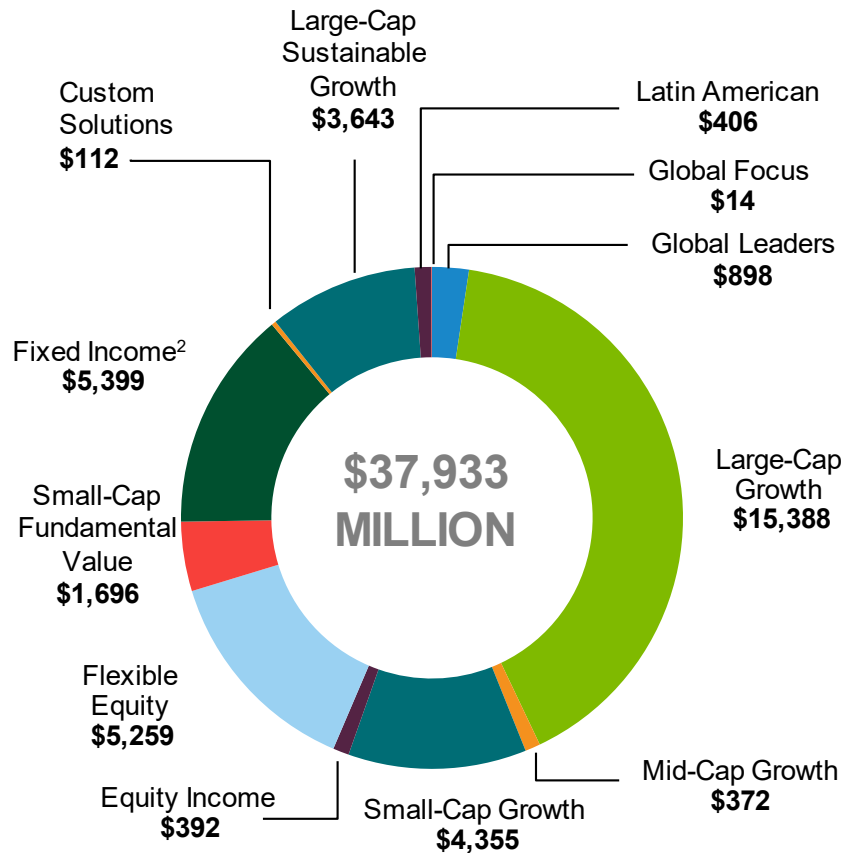
Investment Strategy

Brown Advisory

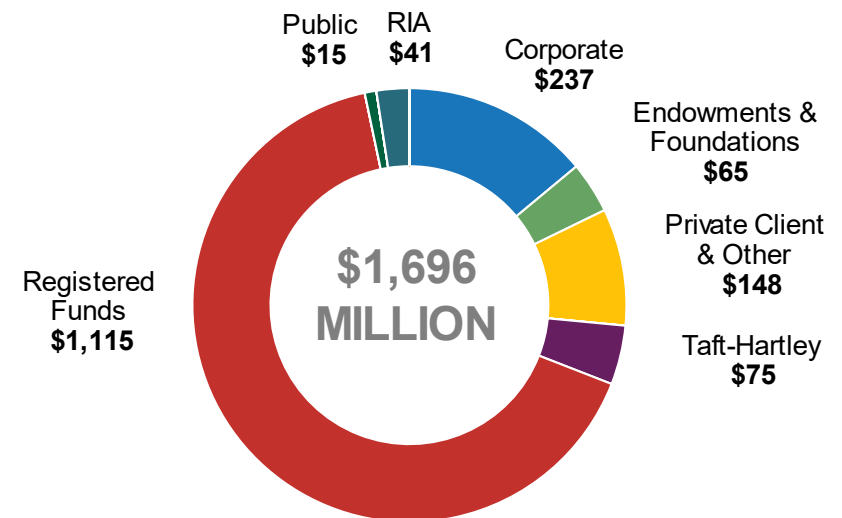
ASSET SUMMARY

As of 12/31/2019

Firmwide Institutional Strategy Assets By Strategy Breakdown¹



Small-Cap Fundamental Value Strategy Assets By Client Type Breakdown¹



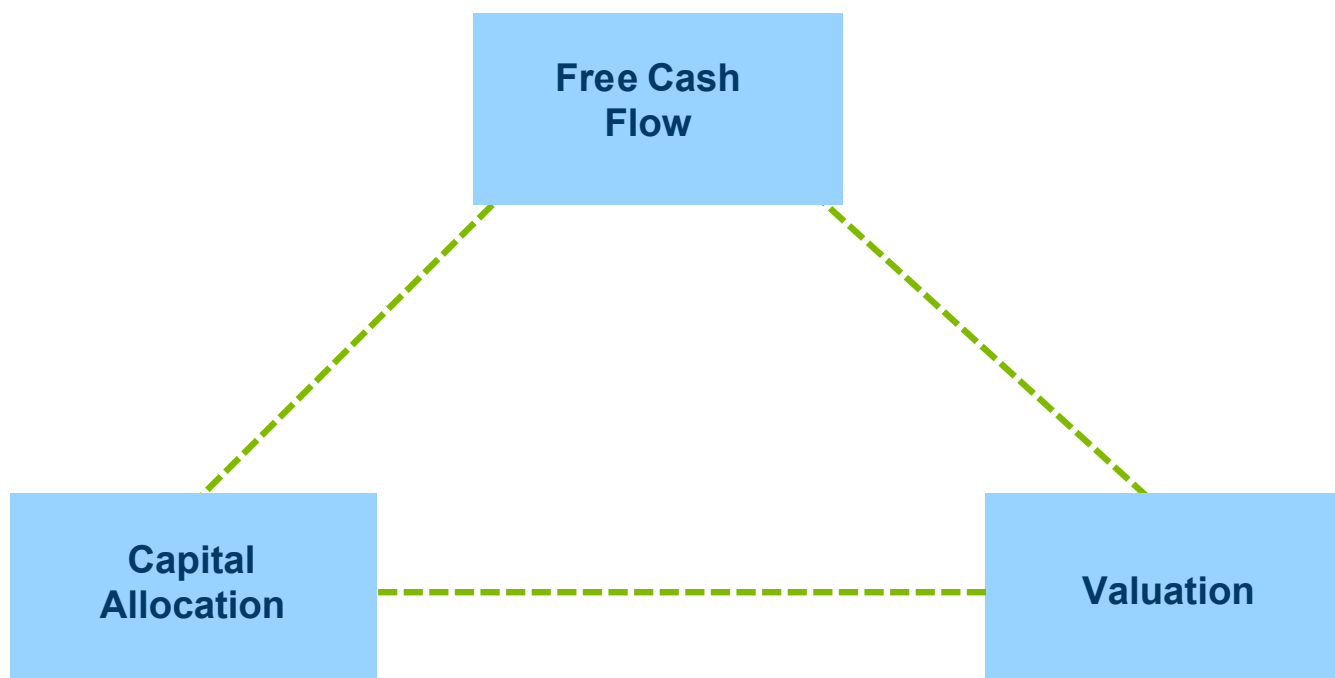
¹Numbers may not total due to rounding. Firmwide Institutional Strategy Breakdown represents assets under management in institutionally marketed strategies. ²Fixed Income strategy assets include the Core Fixed Income, Sustainable Core Fixed Income, Sustainable Short Duration, Enhanced Cash, Intermediate Income, Limited Duration, Municipal Bond, Strategic Bond and Tax-Exempt Sustainable strategies. This information is supplemental to the Brown Advisory Small-Cap Fundamental Value Composite presentation.

INTRODUCTION

- U.S. Small-Cap Fundamental Value Strategy launched in December 2008
 - Vehicles: Separate accounts and mutual fund
 - Strategy Assets: \$1.7 billion as of 12/31/2019
- Team:
 - **J. David Schuster**, *Portfolio Manager*
 - Joined Brown Advisory 2008
 - Deep analytical approach as well as broad relationships/experience in financials
 - **Mike Poggi, CFA**, *Associate Portfolio Manager/Analyst*
 - Investment experience since 2003; joined Brown Advisory 2003
 - **Brown Advisory in-house research team**
 - Sector research analysts
 - Leverage sector expertise in **energy, consumer, health care, technology, industrials/materials** and **financials**
- As an asset class, small-cap value provides compelling and attractive investment characteristics:
 - Inefficient market due to lack of Wall Street research
 - Historically high number of merger & acquisition take-outs
 - Research process takes advantage of these inherent inefficiencies

INVESTMENT PHILOSOPHY

We seek to achieve attractive risk-adjusted returns over time by investing in companies that we believe have **sustainable free cash flow** and management that demonstrates **effective capital allocation**. Our research process identifies valuation disparities overlooked by the market. These **valuation gaps** provide a margin of safety and have the potential to generate additional returns.



SMALL-CAP FUNDAMENTAL VALUE INVESTMENT TEAM

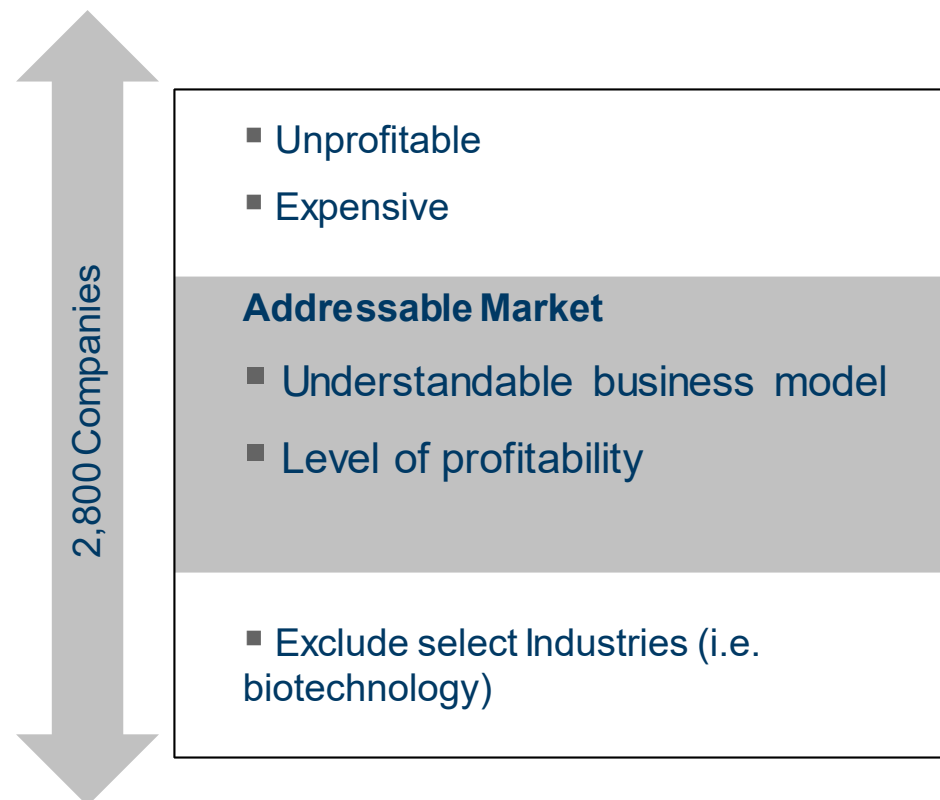
Portfolio Managers	Title	Joined Brown Advisory	Past Work Experience
J. David Schuster	Portfolio Manager	2008	<ul style="list-style-type: none"> • Lazard Frères, Managing Director • Citigroup, Managing Director • Bear Stearns, Vice President • Deloitte & Touche, CPA • U.S. Army, Officer
Michael W. Poggi, CFA	Associate Portfolio Manager Industrials, Materials & Energy Analyst	2003	<ul style="list-style-type: none"> • Brown Advisory, Research Analyst
Director of Equity Research			Past Work Experience
Eric Gordon, CFA		2008	<ul style="list-style-type: none"> • Alex. Brown Investment Management, Equity Research • Deutsche Bank Alex. Brown, Investment Banker • Merrill Lynch & Co., Equity Research • Citigroup
Select Analysts for the Strategy	Sector Coverage	Joined Brown Advisory	Past Work Experience
Emily Wachtmeister, CFA	Technology	2013	<ul style="list-style-type: none"> • Morgan Stanley, Equity Research
Dan Mooney, CFA	Consumer	2011	<ul style="list-style-type: none"> • CB Richard Ellis Investors, REIT Analyst • Barclays Capital, Investment Banker • Green Street Advisors, Equity Research • Bear Stearns, Fixed Income Research
Patrick Mahoney	Consumer	2013	<ul style="list-style-type: none"> • Oppenheimer & Co., Associate Analyst
Alex Trevino	Consumer	2016	<ul style="list-style-type: none"> • Brown Advisory, Research Analyst
Mark Kelly	Health Care	2017	<ul style="list-style-type: none"> • Equity Research, Stifel • Managing Consultant, Navigant
Kenneth Coe, CFA	Financials	2013	<ul style="list-style-type: none"> • Analyst, First Annapolis Consulting; Research, Independent Financial Econometrics Study
Sha Huang	Financials	2016	<ul style="list-style-type: none"> • Brown Advisory, Research Analyst
Supporting Analysts for the Strategy	Sector Coverage	Joined Brown Advisory	Past Work Experience
John Bond, CFA	Technology	2012	<ul style="list-style-type: none"> • Senior Analyst and Assistant Portfolio Manager, Nicusa Capital
Simon Paterson, CFA	Industrials & Materials	2011	<ul style="list-style-type: none"> • Senior Equity Analyst, MTB Investment Advisors

INVESTMENT PROCESS



Universe: 2,800 Companies

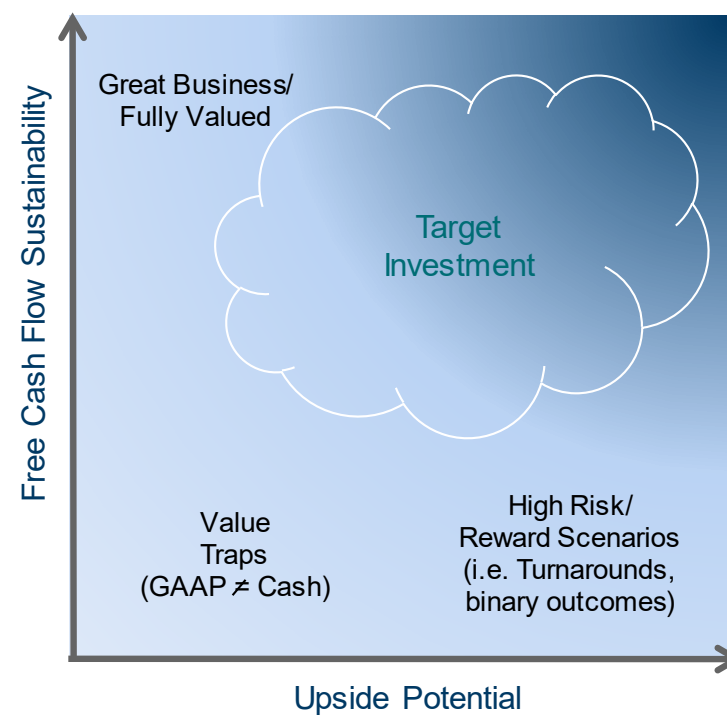
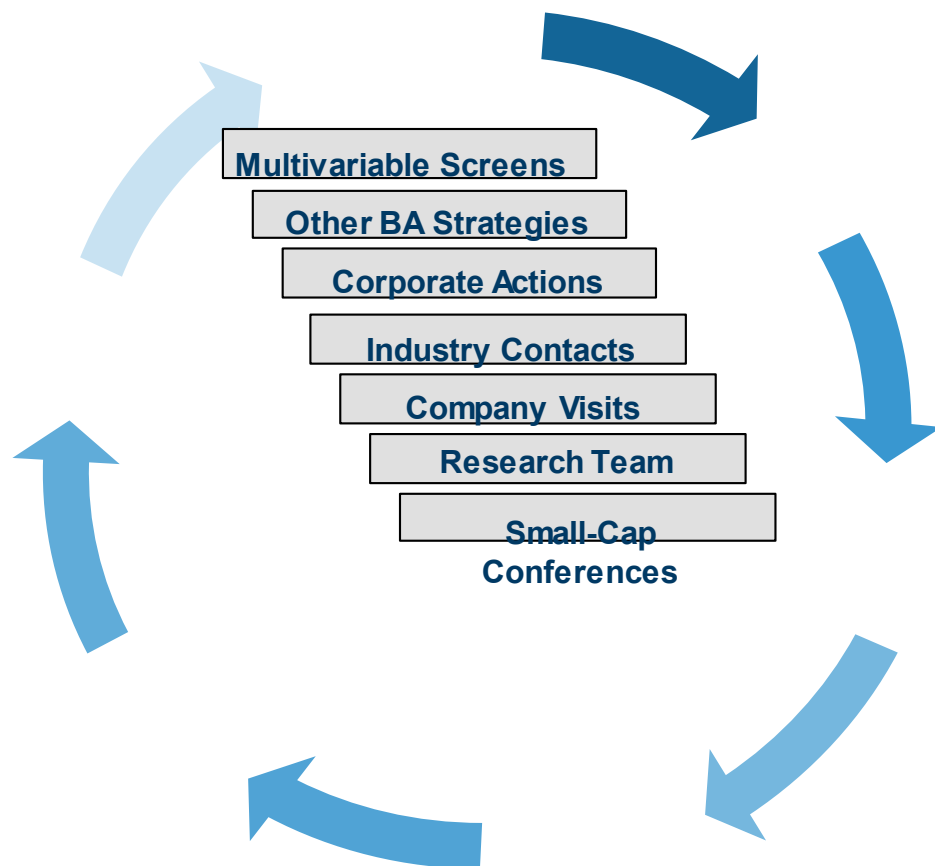
- Market capitalizations generally between \$100 million and \$4 billion
- U.S. listed (ex OTC-BB/open ended funds)



INVESTMENT PROCESS



Evaluating ideas constantly — Conducting quick financial reviews — Estimating potential upside



INVESTMENT PROCESS



The due diligence process is used to build our investment case and mitigate downside.

Review Public Documents

- Properly used, public disclosure delivers wealth of information
- Focus on income statements / balance sheets / cash flow / footnote disclosures

Management Interviews

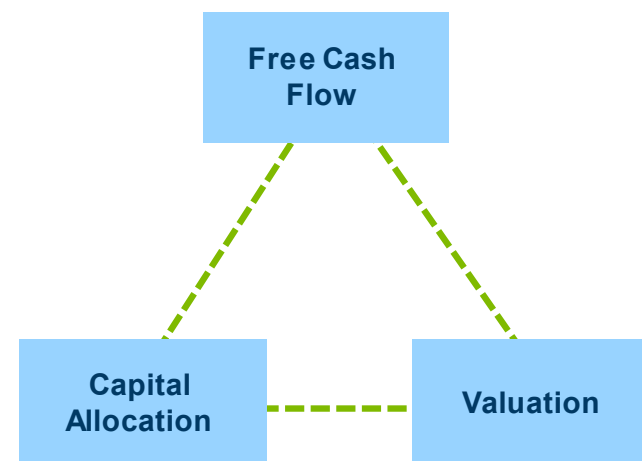
- Approach with specific questions / agenda
- Understand business economics
- Understand capital allocation philosophy

Industry Dynamics

- Understand industry dynamics – buyers / suppliers / competition / substitutes / barriers to entry
- Interview competitors / suppliers / private companies / sell-side analysts

Financial Model

- Customize each company model
- Identify business drivers
- Quantify free cash flow and its sustainability
- Develop upside target and quantify downside potential



INVESTMENT PROCESS



- Use financial models to estimate upside/total return
 - Price targets allow for comparison across holdings
 - Forces discussion regarding valuation disparity
 - Disaggregate returns between:
 - Cash flow
 - Operating performance
 - Change in multiple
- Assessment of potential downside risks
 - Impact on cash flow sustainability
 - Emphasis on current operating results vs. projected
- Concentrated portfolio creates competition for capital

INVESTMENT PROCESS



- Portfolio attributes as of 12/31/2019
 - # of equity positions: 70
 - Top 10 equity weighting: 25.1%
 - Maximum position size: 5.0%
 - Cash & equivalents: 4.1%
- Benchmark “aware,” but not benchmark driven
- Continually optimize portfolio based on upside/downside

INVESTMENT PROCESS



We generally sell stocks for three reasons:

1 Free Cash Flow Impaired

- Negative event impacting company's ability to generate free cash flow
- Reluctance to "average down" on negative news

2 Poor Capital Allocation

- Poorly executed mergers & acquisition activity
- Ill-timed capital markets transactions

3 Excessive Valuation

- Excessive valuation relative to quality of business represents a "headwind" to total return

After Action Review

- Following a sell decision, the team reviews the performance of an investment thesis to capture behavioral and analytical lessons learned. Takeaways are documented and shared internally.

PORTFOLIO ATTRIBUTES

As of 12/31/2019

PORTFOLIO ATTRIBUTES

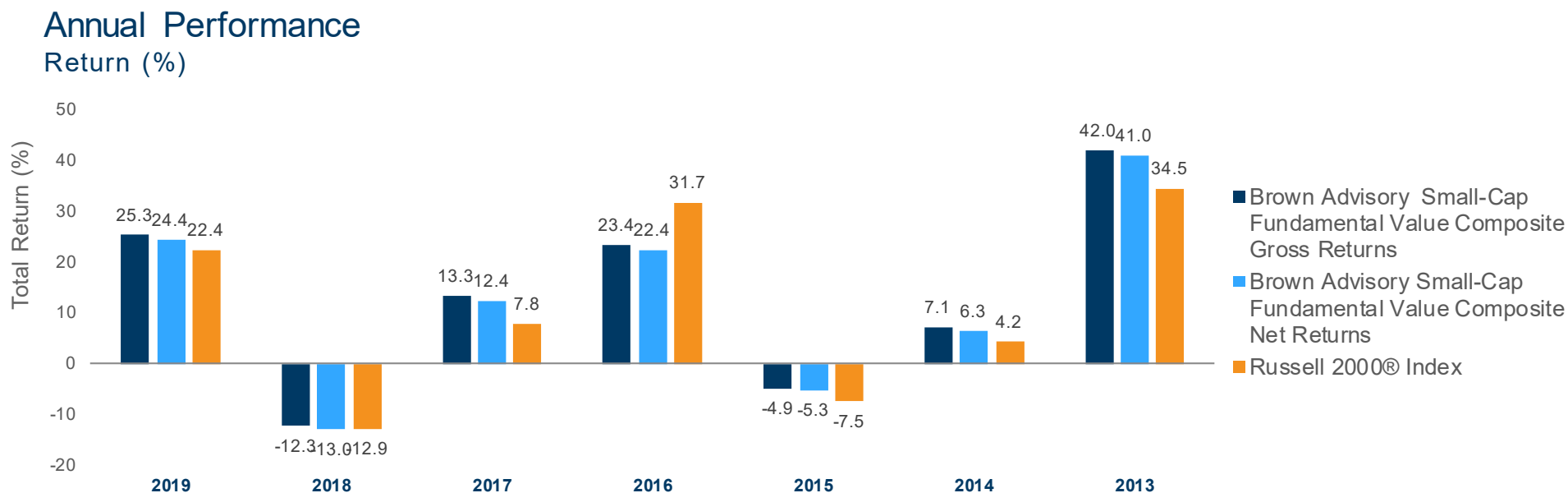
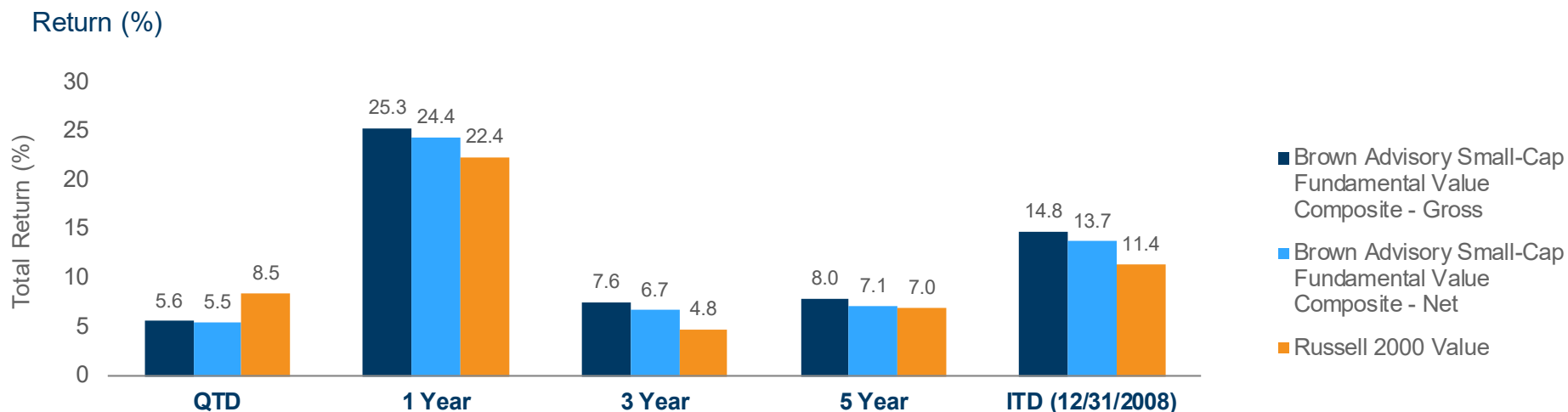
Representative Small-Cap Fundamental Value Account as of 12/31/2019

	REPRESENTATIVE SMALL-CAP FUNDAMENTAL VALUE ACCOUNT	RUSSELL 2000® VALUE INDEX
Number of Holdings	70	1,402
Market Capitalization (\$ B)		
Weighted Average	2.6	2.2
Weighted Median	2.0	2.0
Maximum	8.0	6.8
Minimum	0.2	0.0
Top 10 Equity Holdings (%)	25.1	4.9
Portfolio Turnover (3 Yr. Avg.)	33.3	--

Source: FactSet. Portfolio information is based on a representative Small-Cap Fundamental Value account and is provided as supplemental information. Please see disclosure statements at the end of this presentation for additional information. All characteristics exclude cash and cash equivalents with the exception of Top 10 equity holdings. Please see the end of this presentation for a complete list of terms and definitions.

COMPOSITE PERFORMANCE

Performance as of 12/31/2019



Note: All returns greater than one year are annualized. The composite performance shown above reflects the Small-Cap Fundamental Value Composite, managed by Brown Advisory Institutional. Brown Advisory Institutional is a GIPS compliant firm and is a division of Brown Advisory LLC. Please see the end of this presentation for a GIPS compliant presentation. Past performance is not indicative of future results.

EQUITY HOLDINGS

Representative Small-Cap Fundamental Value Account as of 12/31/2019

Top 10 Equity Holdings

TOP 10 EQUITY HOLDINGS	% OF PORTFOLIO
Nexstar Media Group, Inc.	2.9
Eagle Materials, Inc.	2.9
Extended Stay America, Inc.	2.7
Albany International Corp. Cl A	2.7
Virtus Investment Partners, Inc.	2.5
GCI Liberty, Inc. Cl A	2.5
Essential Properties Realty Trust, Inc.	2.5
Echostar Corp.	2.2
McGrath RentCorp	2.2
Kadant, Inc.	2.1
Total	25.1%

Source: FactSet. The information provided in this material is not intended to be and should not be considered to be a recommendation or suggestion to engage in or refrain from a particular course of action or to make or hold a particular investment or pursue a particular investment strategy, including whether or not to buy, sell, or hold any of the securities mentioned. It should not be assumed that investments in such securities have been or will be profitable. References to specific securities are for illustrative purposes only and do not represent all of the securities purchased, sold or recommended for advisory clients. Portfolio information is based on a representative Small-Cap Fundamental Value account and is provided as supplemental information. Cash and cash equivalents of 4.1% are included but not shown in the top 10 equity holdings featured above. Please see disclosure statement at the end of this presentation for additional information. Figures in chart may not total due to rounding.

PORTFOLIO HOLDINGS

Representative Small-Cap Fundamental Value Account as of 12/31/2019

CASH (%)	
Cash & Equivalents	4.1
Total Portfolio	4.1
Total % of Russell 2000® Value Index	0.0

CONSUMER DISCRETIONARY (%)	
Extended Stay America, Inc.	2.7
Regis Corporation	1.8
Denny's Corporation	1.6
Designer Brands Inc. Class A	1.6
Murphy USA, Inc.	1.6
Dick's Sporting Goods, Inc.	1.5
Hudson Ltd. Class A	1.4
Core-Mark Holding Company, Inc.	1.3
Kontoor Brands, Inc.	1.3
Century Casinos, Inc.	0.3
Culp, Inc.	0.2
Total Portfolio	15.2
Total % of Russell 2000® Value Index	9.7

CONSUMER STAPLES (%)	
Spectrum Brands Holdings, Inc.	1.4
Total Portfolio	1.4
Total % of Russell 2000® Value Index	2.7

ENERGY (%)	
REX American Resources Corporation	1.0
Solaris Oilfield Infrastructure, Inc. Class A	0.3
Natural Gas Services Group, Inc.	0.2
Total Portfolio	1.5
Total % of Russell 2000® Value Index	5.8

REAL ESTATE (%)	
Essential Properties Realty Trust, Inc.	2.5
Xenia Hotels & Resorts, Inc.	1.8
Landmark Infrastructure Partners LP	0.3
Consolidated-Tomoka Land Co.	0.2
Total Portfolio	4.8
Total % of Russell 2000® Value Index	10.9

FINANCIALS (%)	
Virtus Investment Partners, Inc.	2.5
Assurant, Inc.	2.1
Pacific Premier Bancorp, Inc.	1.9
MFA Financial, Inc.	1.8
Ameris Bancorp	1.8
TriState Capital Holdings, Inc.	1.8
National General Holdings Corp.	1.8
Primerica, Inc.	1.7
Washington Federal, Inc.	1.7
UMB Financial Corporation	1.7
OceanFirst Financial Corp.	1.6
Ares Capital Corporation	1.5
Triumph Bancorp, Inc.	1.4
Barings BDC, Inc.	1.4
Renasant Corporation	1.3
Waddell & Reed Financial, Inc. Class A	1.0
Central Pacific Financial Corp.	0.9
Veritex Holdings, Inc.	0.9
Peapack-Gladstone Financial Corporation	0.8
South Mountain Merger Corp Units Cons of 1 Sh + 1/2 Wt	0.7
National Bank Holdings Corporation Class A	0.5
WesBanco, Inc.	0.4
Howard Bancorp, Inc.	0.4
Alerus Financial Corporation	0.3
Total Portfolio	31.4
Total % of Russell 2000® Value Index	30.4

MATERIALS (%)	
Eagle Materials Inc.	2.9
Neenah Inc	0.4
Total Portfolio	3.3
Total % of Russell 2000® Value Index	4.7

UTILITIES(%)	
Star Group LP	0.7
Total Portfolio	0.7
Total % of Russell 2000® Value Index	5.9

INFORMATION TECHNOLOGY (%)	
EchoStar Corporation Class A	2.2
Cardtronics plc Class A	1.9
Cabot Microelectronics Corporation	1.9
MAXIMUS, Inc.	1.7
CTS Corporation	0.6
PC Connection, Inc.	0.6
Total Portfolio	8.9
Total % of Russell 2000® Value Index	9.3

COMMUNICATION SERVICES (%)	
Nexstar Media Group, Inc. Class A	2.9
GCI Liberty, Inc. Class A	2.5
Total Portfolio	5.4
Total % of Russell 2000® Value Index	2.2

INDUSTRIALS (%)	
Albany International Corp. Class A	2.7
McGrath RentCorp	2.2
Kadant Inc.	2.1
Mueller Water Products, Inc. Class A	2.1
Deluxe Corporation	1.8
Simpson Manufacturing Co., Inc.	1.7
MRC Global Inc.	1.4
Federal Signal Corporation	1.3
KAR Auction Services, Inc.	1.1
CRA International, Inc.	1.1
Continental Building Products, Inc.	1.0
Viad Corp	0.5
Lydall, Inc.	0.4
Nesco Holdings Inc	0.1
Total Portfolio	19.5
Total % of Russell 2000® Value Index	13.1

HEALTH CARE (%)	
Magellan Health, Inc.	2.1
Providence Service Corporation	1.6
Total Portfolio	3.7
Total % of Russell 2000® Value Index	5.4

Source: FactSet. The information provided in this material is not intended to be and should not be considered to be a recommendation or suggestion to engage in or refrain from a particular course of action or to make or hold a particular investment or pursue a particular investment strategy, including whether or not to buy, sell, or hold any of the securities mentioned. It should not be assumed that investments in such securities have been or will be profitable. References to specific securities are for illustrative purposes only and do not represent all of the securities purchased, sold or recommended for advisory clients. Sectors diversification includes cash and cash equivalents. Sectors are based on the Global Industry Classification Standard (GICS) classification system. Portfolio information is based on a representative Small-Cap Fundamental Value account and is provided as supplemental information. Numbers may not total due to rounding. Please see disclosure statement at the end of this presentation for additional information.

APPENDIX

EMBRACING THE “NEGLECT”

As of 12/31/2019

Sell-Side Analyst Coverage as of December 31, 2019

- There are 965 companies in the Russell 2000® Index with five or fewer analysts covering them. 155 companies have no analyst coverage at all.
- This presents an opportunity to differentiate through our research process.

	No Coverage	Under 5	5-9	10-19	20+
S&P 500 Index	0	11	44	239	211
S&P 400 Index	10	57	142	171	20
S&P 600 Index	19	250	261	60	11
Russell 1000® Index	9	67	189	474	258
Russell 2500® Index	163	869	930	480	57
Russell 2000® Index	155	810	779	234	17

Neglected



Overanalyzed

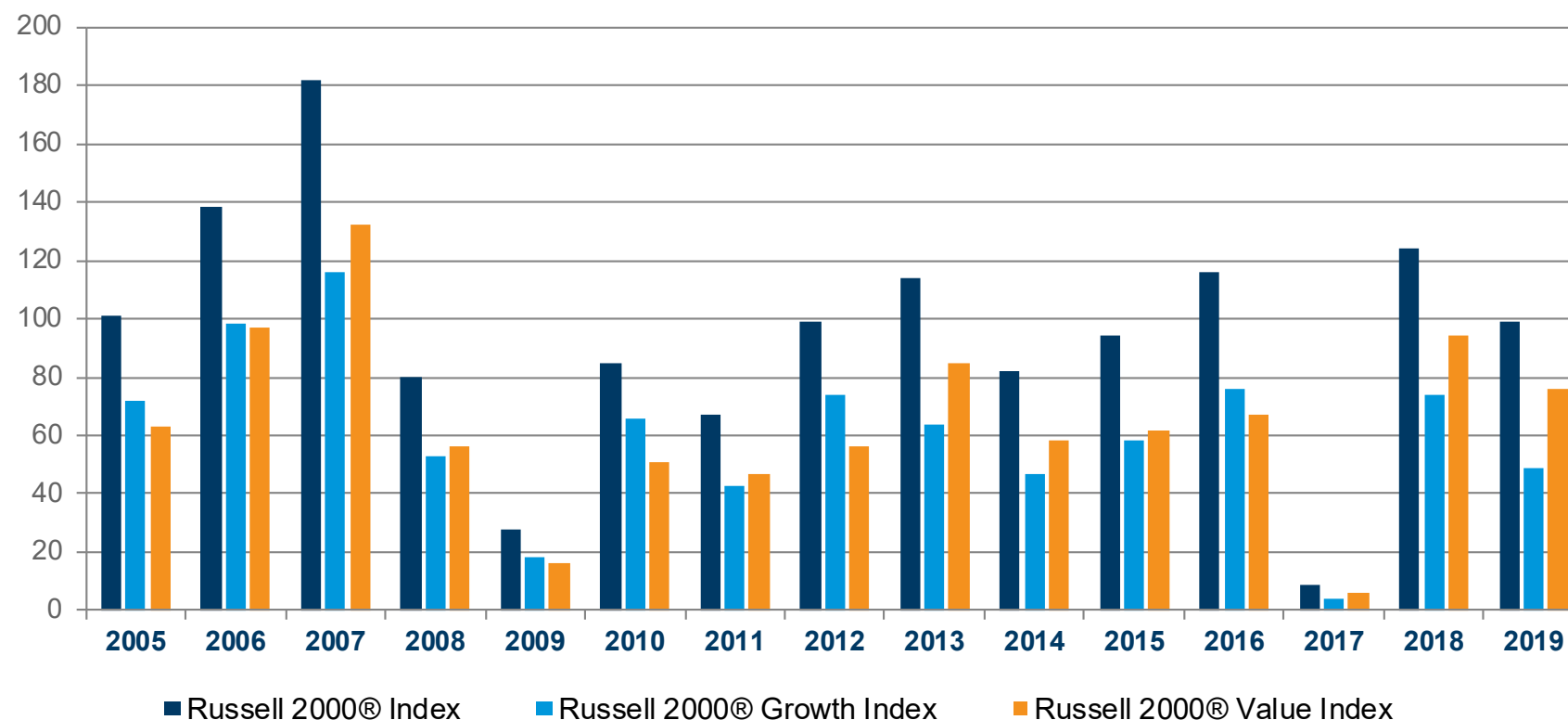


M&A TAKE-OUTS

- Over the past 15 calendar years, 1,418 companies have been removed from the Russell 2000® Index due to mergers and acquisitions activity.

Number of Companies Removed from Russell 2000® Indices

12/31/2005 – 12/31/2019



Source: Credit Suisse. Chart represents the number of companies that have been removed from the Russell 2000® Index, Russell 2000® Growth Index and the Russell 2000® Value Index over the past 15 years due to mergers and acquisitions. The Russell 2000® Growth Index and Russell 2000® Value Index are subsets of the Russell 2000® Index. Please see the disclosures at the end of the presentation for more information.

SMALL-CAP FUNDAMENTAL VALUE FEE SCHEDULE

- Institutional Separate Account Management Fee Schedule

Fee (Basis Points)	Investment Amount
85	On entire Small Cap Value Mandate

Note: For a full description of fees, please see the firm's Form ADV Part 2A.

Sub-advisory and other fees will be negotiated on a case-by-case basis.

Brown Advisory

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- Impact Assessment & Reporting, Millennium Challenge Corporation
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- Portfolio Manager, Findlay Park Latin American Fund. Merged into Brown Advisory Latin American Fund on 30th April 2018. Analyst, Foreign and Colonial Investment Trust.
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- Investment experience since 1986; Joined Brown Advisory 1992

Our independent Board of Directors provides objective guidance and insights.

WILLIAM C. BAKER*

Will is a director of Brown Advisory Incorporated and Brown Investment Advisory & Trust Company. He is president and CEO of the Chesapeake Bay Foundation. He is a trustee of Johns Hopkins Medicine, the Open Society Institute — Baltimore and the Clayton Baker Trust. He also serves as an emeritus board member of the Baltimore Community Foundation, a director of the Central Maryland Transportation Alliance, a member of the UMBC Board of Visitors and an honorary board member of the Garden Club of America. He is a founding director of the Greater Washington Board of Trade's Green Committee and the Living Classrooms Foundation.

HOWARD E. COX JR.

Howard is a director of Brown Advisory Incorporated. He is a special limited partner with Greylock Partners. In addition to his past Greylock Partners directorships, he is a past director of the Boston Globe, former director of the Foundation Board of Forum of Young Global Leaders, former director of the Population Council, former director of Partners HealthCare's investment committee, former director of the Kleberg Foundation's investment committee and the past chair of the National Venture Capital Association. He is director emeritus of Stryker (NYSE: SYK), a director for the Defense Business Board, and an executive committee member and board member of In-Q-Tel. Howard is an investment committee member of the Dana-Farber Cancer Institute, the Brookings Institution and the Museum of Fine Arts. He also serves as advisory trustee of various Fidelity mutual funds. Howard serves on various advisory boards for the Harvard Business School, Harvard Kennedy School, Harvard Medical School and Harvard T.H. Chan School of Public Health. He is president of the Clermont Foundation.

MATTHEW CUTTS

Matthew is a director of Brown Advisory Incorporated. He is a partner at Squire Patton Boggs LLP where he serves as co-chair of the Strategic Advocacy Public Policy Group, chair of the Tax and Financial Services Public Policy Group and as a member of the firm's Recruitment Committee. He has an extensive background in corporate litigation and spends a majority of his time advocating on federal tax policy. Matthew serves on the Federal City Council Board as Vice President and as Chairman of the Langston Initiative Project — a non-profit created to redevelop DC's publicly owned golf courses. He also serves on the board of the Ron Brown Scholar Program Steering Committee. Matthew is an Aspen Institute's Socrates Program Scholar. He was formally a member of Presidential Candidate Barack Obama's Mid-Atlantic Finance Committee and Mayor Adrian M. Fenty's Transition team and served as chair of the Washington, DC's Sports and Entertainment Commission, overseeing the capital construction of the Washington National's baseball stadium.

JOHN O. DOWNING

John is the vice chairman of the board of directors of Brown Advisory Incorporated, and a co-founder of CDK|Brown Advisory, a predecessor firm focused on hedge fund advisory solutions. Prior to founding CDK in 2002, he spent 19 years at Goldman Sachs & Co., where he was a general partner from 1992 to 2000 and served on the firm's Commitments and Credit Committees. During his last 10 years at Goldman Sachs, he ran European Equity Capital Markets and subsequently was one of several senior partners in the Global Equity Capital Markets group in New York. John is on the Investment Committee of Hotchkiss School, is a director of the Medical University of South Carolina Foundation and has served on several other endowment boards including Vanderbilt University. Additionally, John is the co-founder and board member of Vermont 99 Foods.

ROBERT J. FLANAGAN

Bob is a director of Brown Advisory Incorporated and serves as chair of the governance committee. He is president of Clark Enterprises and oversees the acquisition, management and development of new investment opportunities. He is also managing director of CNF Investments and serves on the boards of Eagle Oil & Gas Co, Svelte Medical Systems and Vascular Therapies. He is a director of the A. James & Alice B. Clark Foundation. Bob is also a member of the board of advisors of Georgetown University's McDonough School of Business. He was chair of the board of directors of Washington, D.C.'s Federal City Council, Martek Biosciences Corporation (NASDAQ: MATK) and Sagent Pharmaceuticals (NASDAQ: SGNT). Bob also was treasurer, secretary and a member of the board of directors of the Baltimore Orioles.

BENJAMIN H. GRISWOLD IV*

Ben is a partner of Brown Advisory and serves as a senior advisor. He is a director of Brown Advisory Incorporated, where he serves as chair of the investment committee, and is the chair of Brown Investment Advisory & Trust Company. Ben graduated from Princeton University and served as an artillery officer in the U.S. Army before receiving his MBA from Harvard. He joined Alex. Brown & Sons and became a partner of the firm in 1972, was elected director and vice chair of the board in 1984, and became chair of the board in 1987. Ben was a former director of the New York Stock Exchange and Stanley Black & Decker Inc. He is currently nonexecutive chair of W.P. Carey & Co. LLC and is a member of Flowers Foods (lead director), Signal Hill Capital and Deutsche Bank's Americas advisory boards. He is trustee emeritus of the Johns Hopkins University.

Our independent Board of Directors provides objective guidance and insights.

MICHAEL D. HANKIN*

Mike is a partner, a member of the Executive Team and serves as president and chief executive officer. He is a director of both Brown Advisory Incorporated and Brown Investment Advisory & Trust Company. As chair of the Baltimore Healthy Harbor Project and executive committee member of the Baltimore Waterfront Partnership and Management Authority, he has challenged the city to achieve a goal of making Baltimore's Inner Harbor swimmable and fishable by 2020. He is a trustee of the Johns Hopkins University, trustee and vice chair of Johns Hopkins Medicine and chair of the board of managers of the Johns Hopkins University Applied Physics Lab. He also serves as president of Land Preservation Trust, is a trustee of the Center for Large Landscape Conservation, and is a director for the National Steeplechase Association and Associated Black Charities. Mike also serves on the board of directors of Stanley Black & Decker Inc. and on the boards of directors of three private companies, Tate Engineering Services, Inc., The Wills Group, Inc. and 1251 Capital Group, Inc. Mike earned a B.A. and M.A. from Emory University in 1979 where he graduated Summa Cum Laude and Phi Beta Kappa, and he received a J.D. from The University of Virginia School of Law in 1982.

BEATRICE H.M. HOLLOND

Bea is a director of Brown Advisory Incorporated. She is the chair of the U.K. Pearson's family investment office, chair of Millbank Investment Management and deputy chair of Millbank Financial Services. Bea also serves as the chair of Keystone Investment Trust, nonexecutive director and chair of the audit committee at Henderson Smaller Companies Investment Trust, senior independent director at Templeton Emerging Markets Investment Trust, independent director at M&G Group Limited, nonexecutive director of Telecom Plus and nonexecutive director of Foreign & Colonial Investment Trust. Bea remains involved at her alma mater, serving as chair of the investment committee and as an advisory fellow at Pembroke College at Oxford University. Additionally, Bea serves as a board member of the Soho Theatre Company in London, as trustee and as investment committee member of the Esmée Fairbairn Foundation and as a member of the finance advisory group of Salisbury Cathedral.

KATHERINE B. KALIN

Katherine is a director of Brown Advisory Incorporated. She has more than 25 years experience as a senior executive in the healthcare and professional services industries. Katherine's healthcare industry expertise spans diagnostics, medical devices and pharmaceuticals. Most recently, she led corporate strategy at Celgene for five years. She also held leadership roles in marketing, sales, strategy and new business development at Johnson & Johnson. Prior to that, Katherine was a partner at McKinsey and Company, where she negotiated and led consulting assignments, operating as a strategic advisor to senior executives. She also served as a manager in corporate finance at Nomura International in the U.K. and Japan. Her international work experience includes Asia, Europe and North America. Katherine also serves as a board member for Clinical Genomics Technologies and Primari Analytics.

GLENN R. MARTIN*

Glennie is a director of both Brown Advisory Incorporated and Brown Investment Advisory & Trust Company. She is the president of Clay County Port and of Universal Sales Corporation. Glennie serves as trustee for the Women's Hospital Foundation, the Missionary Emergency Foundation and the Richard S. Reynolds Foundation.

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Bob is a director of Brown Advisory Incorporated and serves as chair of the finance committee. He is vice chair and a senior advisor at Credit Suisse (NYSE: CS) and chair of investment banking in the Americas. Bob serves as the vice chair of the Ann & Robert H. Lurie Children's Hospital of Chicago, chair of the Lurie Children's Foundation, chair of the board of the UCLA Anderson School of Management, trustee of the Museum of Science and Industry of Chicago and a member of the Economic Club and the Commercial Club of Chicago. Bob also serves as trustee emeritus of his alma mater, Princeton University, and of the Princeton University Investment Company.

Our independent Board of Directors provides objective guidance and insights.

CHARLES E. NOELL III

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Wally is a director of Brown Advisory Incorporated and Brown Investment Advisory & Trust Company. He is a senior advisor at Cushman & Wakefield. He also serves as president, investment committee member and board member for the France-Merrick Foundation and as a trustee of Johns Hopkins Medicine. He is the chair of the Hippodrome Foundation and of the National Advisory Council of the Johns Hopkins University School of Nursing. Wally is a trustee emeritus of the Johns Hopkins University, the Baltimore Community Foundation and the Stulman Foundation. Wally is a board member of Dome Corporation and Central Maryland Transportation Alliance. Wally is a director and chair of finance and the investment committee for Baltimore Life Insurance Company.

DISCLOSURES

Index Definitions

An investor cannot invest directly into an index.

The S&P 400 Index provides investors with a benchmark for mid-sized companies. The index covers over 7% of the U.S. equity market, and seeks to remain an accurate measure of mid-sized companies, reflecting the risk and return characteristics of the broader mid-cap universe on an on-going basis. Standard & Poor's, S&P®, and S&P 500® are registered trademarks of Standard & Poor's Financial Services LLC ("S&P"), a subsidiary of S&P Global Inc.

The S&P 500® Index represents the large-cap segment of the U.S. equity markets and consists of approximately 500 leading companies in leading industries of the U.S. economy. Criteria evaluated include: market capitalization, financial viability, liquidity, public float, sector representation, and corporate structure. An index constituent must also be considered a U.S. company. Standard & Poor's, S&P®, and S&P 500® are registered trademarks of Standard & Poor's Financial Services LLC ("S&P"), a subsidiary of S&P Global Inc.

The S&P 600 Index covers approximately 3% of the domestic equities market. Measuring the small cap segment of the market that is typically renowned for poor trading liquidity and financial instability, the index is designed to be an efficient portfolio of companies that meet specific inclusion criteria to ensure that they are investable and financially viable. Standard & Poor's, S&P®, and S&P 500® are registered trademarks of Standard & Poor's Financial Services LLC ("S&P"), a subsidiary of S&P Global Inc.

The Russell 1000® Index measures the performance of the large-cap segment of the U.S. equity universe. It is a subset of the Russell 3000® Index and includes approximately 1000 of the largest securities based on a combination of their market cap and current index membership. The Russell 1000 represents approximately 92% of the U.S. market. The Russell 1000 Index is constructed to provide a comprehensive and unbiased barometer for the large-cap segment and is completely reconstituted annually to ensure new and growing equities are reflected. The Russell 1000® Index and Russell® are trademarks/service marks of the London Stock Exchange Group companies.

The Russell 2000® Index measures the performance of the small-cap segment of the U.S. equity universe. The Russell 2000 is a subset of the Russell 3000® Index representing approximately 10% of the total market capitalization of that index. It includes approximately 2000 of the smallest securities based on a combination of their market cap and current index membership. The Russell 2000 Index is constructed to provide a comprehensive and unbiased small-cap barometer and is completely reconstituted annually to ensure larger stocks do not distort the performance and characteristics of the true small-cap opportunity set. The Russell 2000® Index and Russell® are trademarks/service marks of the London Stock Exchange Group companies.

The Russell 2000® Growth Index measures the performance of the small-cap growth segment of the U.S. equity universe. It includes those Russell 2000 Index companies with higher price-to-value ratios and higher forecasted growth values. The Russell 2000 Growth Index is constructed to provide a comprehensive and unbiased barometer for the small-cap growth segment. The Index is completely reconstituted annually to ensure larger stocks do not distort the performance and characteristics of the true small-cap opportunity set and that the represented companies continue to reflect growth characteristics. The Russell 2000® Growth Index and Russell® are trademarks/service marks of the London Stock Exchange Group companies.

The Russell 2000® Value Index measures the performance of the small-cap value segment of the U.S. equity universe. It includes those Russell 2000® Index companies with lower price-to-book ratios and lower forecasted growth values. The Russell 2000® Value Index is constructed to provide a comprehensive and unbiased barometer for the small-cap value segment. The Index is completely reconstituted annually to ensure new and growing equities are included and that the represented companies continue to reflect value characteristics. The Russell 2000® Value Index and Russell® are trademarks/service marks of the London Stock Exchange Group companies.

The Russell 2500® Index measures the performance of the small to mid-cap segment of the U.S. equity universe, commonly referred to as "mid" cap. The Russell 2500 is a subset of the Russell 3000® Index. It includes approximately 2500 of the smallest securities based on a combination of their market cap and current index membership. The Russell 2500® Index is constructed to provide a comprehensive and unbiased barometer for the small to mid-cap segment. The Index is completely reconstituted annually to ensure larger stocks do not distort the performance and characteristics of the true small to mid-cap opportunity set. The Russell 2500® Index and Russell® are trademarks/service marks of the London Stock Exchange Group companies.

TERMS AND DEFINITIONS

Representative Account Calculations

The views expressed are those of the author and Brown Advisory as of the date referenced and are subject to change at any time based on market or other conditions. These views are not intended to be and should not be relied upon as investment advice and are not intended to be a forecast of future events or a guarantee of future results. Past performance is not a guarantee of future performance and you may not get back the amount invested. The information provided in this material is not intended to be and should not be considered to be a recommendation or suggestion to engage in or refrain from a particular course of action or to make or hold a particular investment or pursue a particular investment strategy, including whether or not to buy, sell, or hold any of the securities mentioned. It should not be assumed that investments in such securities have been or will be profitable. To the extent specific securities are mentioned, they have been selected by the author on an objective basis to illustrate views expressed in the commentary and do not represent all of the securities purchased, sold or recommended for advisory clients. The information contained herein has been prepared from sources believed reliable but is not guaranteed by us as to its timeliness or accuracy, and is not a complete summary or statement of all available data. This piece is intended solely for our clients and prospective clients, is for informational purposes only, and is not individually tailored for or directed to any particular client or prospective client.

As of December 31, 2019, Brown Advisory had approximately \$81.3 billion in client assets for the following entities: Brown Advisory LLC, Brown Investment Advisory & Trust Company, Brown Advisory Securities LLC, Brown Advisory Ltd., Brown Advisory Trust Company of Delaware, LLC, Brown Advisory Investment Solutions Group, LLC, Meritage Capital, LLC, NextGen Venture Partners LLC and Signature Family Wealth, LLC. Total strategy assets include accounts that are excluded from the composite. These assets include (1) single strategy assets of balanced accounts, (2) accounts that do not meet the composite minimum market value requirement and (3) accounts with restrictive guidelines

All financial statistics and ratios are calculated using information from FactSet as of the report date unless otherwise noted. FactSet® is a registered trademark of FactSet Research Systems, Inc.

The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and Standard & Poor's. "Global Industry Classification Standard (GICS)", "GICS" and "GICS Direct" are service marks of Standard & Poor's and MSCI. "GICS" is a trademark of MSCI and Standard & Poor's.

Market Capitalization refers to the aggregate value of a company's publicly-traded stock. Statistics are calculated as follows: **Weighted Average**: the average of each holding's market cap, weighted by its relative position size in the portfolio (in such a weighting scheme, larger positions have a greater influence on the calculation); **Weighted Median**: the value at which half the portfolio's market capitalization weight falls above and half falls below; **Maximum** and **Minimum**: the market caps of the largest and smallest companies, respectively, in the portfolio.

Dividend Yield is the ratio of a stock's projected annual dividend payment per share for the fiscal year currently in progress, divided by the stock's price.

Portfolio Turnover is the ratio of the lesser of the portfolio's aggregate purchases or sales during a given period, divided by the average value of the portfolio during that period, calculated on a monthly basis. Portfolio turnover is provided for a three-year trailing period.

All of the above ratios for a portfolio are expressed as a weighted average of the relevant ratios of each portfolio holding, EXCEPT for P/E ratios, which are expressed as a weighted harmonic average.

SMALL-CAP FUNDAMENTAL VALUE COMPOSITE

Year	Composite Total Gross Returns (%)	Composite Total Net Returns (%)	Benchmark Returns (%)	Composite 3-Yr Annualized Standard Deviation (%)	Benchmark 3-Yr Annualized Standard Deviation (%)	Portfolios in Composite at End of Year	Composite Dispersion (%)	Composite Assets (\$USD Millions)*	GIPS Firm Assets (\$USD Millions)*
2018	-12.3	-13.1	-12.9	13.4	15.8	41	0.2	1,334	30,529
2017	13.3	12.4	7.8	12.2	14.0	47	0.3	1,806	33,155
2016	23.4	22.4	31.7	13.0	15.5	46	0.3	1,660	30,417
2015	-4.6	-5.3	-7.5	12.3	13.5	45	0.2	1,186	43,746
2014	7.1	6.3	4.2	10.7	12.8	41	0.4	1,002	44,772
2013	42.0	41.0	34.5	14.1	15.8	32	0.3	693	40,739
2012	23.0	21.9	18.1	17.7	19.9	13	0.1	269	26,794
2011	2.9	1.9	-5.5	20.6	26.1	9	0.6	190	19,962
2010	28.3	26.7	24.5	NA	NA	Five or fewer	N/A	61	16,859
2009	25.7	24.0	20.6	NA	NA	Five or fewer	N/A	30	11,058

Brown Advisory Institutional claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Brown Advisory Institutional has been independently verified for the periods from January 1, 1993 through December 31, 2018. The Verification reports are available upon request. Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. Verification does not ensure the accuracy of any specific composite presentation. GIPS® is a registered trademark owned by CFA Institute.

- *For the purpose of complying with the GIPS standards, the firm is defined as Brown Advisory Institutional, the Institutional and Balanced Institutional asset management divisions of Brown Advisory. As of July 1, 2016, the firm was redefined to exclude the Brown Advisory Private Client division, due to an evolution of the three distinct business lines.
- The Small-Cap Fundamental Value Composite includes all discretionary portfolios invested in the Small Cap Fundamental Value Strategy. The strategy invests primarily in U.S. smaller market capitalization equities that generate high levels of free cash flow and are currently undervalued by the market. The minimum account market value required for composite inclusion is \$1.5 million.
- This composite was created in 2009.
- The benchmark is the Russell 2000® Value Index. The Russell 2000® Value Index measures the performance of the small-cap value segment of the U.S. equity universe. It includes those Russell 2000® Index companies with lower price-to-book ratios and lower forecasted growth values. The Russell 2000® Value Index is constructed to provide a comprehensive and unbiased barometer for the small-cap value segment. The Index is completely reconstituted annually to ensure new and growing equities are included and that the represented companies continue to reflect value characteristics. The Russell 2000® Value Index and Russell® are trademarks/service marks of the London Stock Exchange Group companies. An investor cannot invest directly into an index. Benchmark returns are not covered by the report of the independent verifiers.
- The composite dispersion presented is an equal-weighted standard deviation of portfolio returns calculated for the accounts in the composite for the entire calendar year period. The composite dispersion is not applicable (N/A) for periods where there were five or fewer accounts in the composite for the entire period.
- Gross-of-fees performance returns are presented before management fees but after all trading commissions, and gross of foreign withholding taxes (if applicable). Net-of-fee performance returns reflect the deduction of actual management fees and all trading commissions. Other expenses can reduce returns to investors. The standard management fee schedule is as follows: 1.00% on the first \$25 million; 0.90% on the next \$25 million; 0.80% on the next \$50 million; and 0.70% on the balance over \$100 million. Further information regarding investment advisory fees is described in Part II A of the firm's form ADV. Actual fees paid by accounts in the composite may differ from the current fee schedule.
- The three-year annualized ex-post standard deviation measures the variability of the composite (using gross returns) and the benchmark for the 36-month period ended on December 31. The 3 year annualized standard deviation is not presented as of December 31, 2009 and December 31, 2010 because 36 month returns for the composite were not available (N/A).
- Valuations and performance returns are computed and stated in U.S. Dollars. All returns reflect the reinvestment of income and other earnings.
- A complete list of composite descriptions, policies for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request.
- Past performance is not indicative of future results.
- This piece is provided for informational purposes only and should not be construed as a research report, a recommendation or suggestion to engage in or refrain from a particular course of action or to make or hold a particular investment or pursue a particular investment strategy, including whether or not to buy, sell or hold any of the securities mentioned, including any mutual fund managed by Brown Advisory.



City of Oakland

Police and Fire Retirement System



Steve Block, CFA
William D. Forsyth, CFA

Small Cap Value
DATA AS OF DECEMBER 31, 2019

Firm Profile

100%
employee
owned

20+
years as a stable
investment team

\$906M
assets under
management¹

Phocas Financial Corporation ("Phocas") was founded in 2005 and is 100% employee-owned, including all portfolio managers and senior staff members. Phocas employs a team-managed approach. The Small Cap Value portfolio managers have been a stable investment team since 1996, formerly managing institutional investor assets together at Bay Isle Financial Corporation.



¹ As of December 31, 2019

Key Professionals



William Schaff, CFA
CEO, Portfolio Manager

Portfolio management start: 1986
Phocas Financial start: 2005
1986-2005 President & CIO, Bay Isle Financial
MS Engineering, University of California – Davis



Steve Block, CFA
Portfolio Manager

Portfolio management start: 1996
Phocas Financial start: 2005
1996-2005 Sr. Portfolio Manager, Bay Isle Financial
MBA Accounting & Finance, University of Michigan
Ross School of Business



James Murray, CFA
Portfolio Manager

Portfolio management start: 2005
Phocas Financial start: 2005
1999-2005 Analyst & Trader, Bay Isle Financial
1995-1999 Tax Division, Charles Schwab
BA Economics, Kenyon College



Frances Chiu
Chief Compliance Officer

Industry start: 1994
Phocas Financial start: 2009
2006-2008 CCO, Ashfield Capital
1999-2006 Founder, SEComp
1994-2000 Compliance Admin., Symphony Asset Mgmt.
BS Business, San Francisco State University



Justin Wallace, CFA
Research Analyst

Industry start: 2005
Phocas Financial start: 2013
2010-2012 Associate, Crestline Investors
2005-2010 Senior Analyst, Trugent Capital
BBA, Texas Christian University



Terry Cheng
Research Analyst

Industry start: 2015
Phocas Financial start: 2016
2015-2016 Chief Economist, Senior Analyst,
Financial Navigator Student-Managed Investment Fund
BA Corporate Accounting & Finance,
San Jose State University

Investment Philosophy

ACTIVE MANAGEMENT WORKS IN INEFFICIENT MARKETS

Small cap stocks are illiquid and increasingly under-followed, creating the potential for consistent and substantial outperformance.

VALUATION & FINANCIAL STATEMENT ANALYSIS

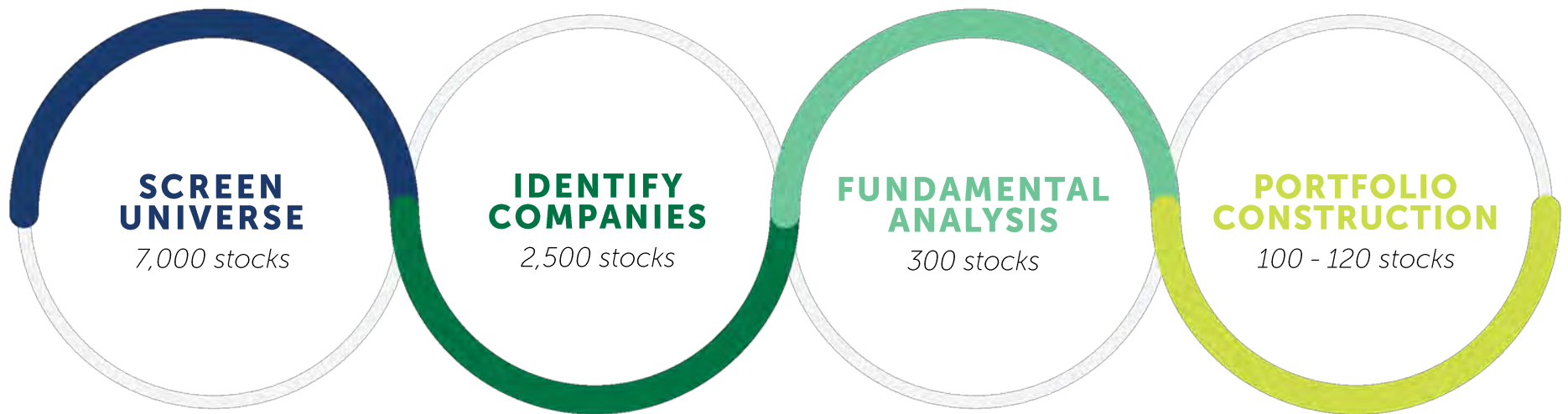
Our strengths include stock valuation and financial statement analysis rather than macroeconomic forecasting. We strive to add performance through security selection rather than sector rotation.



STOCK SELECTION

Stocks that are less expensive than their GICS peers yet have reasonable profitability and debt levels relative to their peers are strong candidates for outperforming their peer group.

Investment Process



- Market cap between \$250MM - \$5B.
- Sufficient liquidity for a \$1B portfolio.

- Identify companies that concurrently exhibit low valuation, sound/improving profitability, and low/declining debt levels.
- Valuation metrics unique for different sectors.
- See page 20 for screening criteria examples.

Financial Analysis

- Statement analysis.
- Proprietary modeling.

Management Quality

- Track record.
- Governance.
- M&A history, prospects.

Business & Industry Trends

- Current environment.
- Short-term concerns.
- Long-term prospects.

- Significantly less expensive than peers.
- Fundamentally attractive relative to its valuation.
- Broadly diversified across 24 GICS groups.
- 1% average position.

INVESTMENT PROCESS

Sell Discipline

1

Take profits if valuation increases within its specific GIC group by three deciles.

2

Mandatory review if price falls 25% below purchase price.

3

Outright reduction or sale if price performance falls 50% below peer group.

4

Sell or reduce if management loses focus or deviates from strategy.

5

Positions that appreciate above 3% of portfolio are reduced.

INVESTMENT PROCESS

Risk Controls

1

Representation
in all major
sectors as
reflected in the
Russell 2000®
Value Index.

2

Sector
weightings*
generally +/-
300 bps of
Russell 2000®
Value Index.

3

Financial
sector
generally +/-
600 bps of
Russell 2000®
Value Index.

4

Valuations
premised not
on target price,
but rather stock's
decile ranking
relative to peers.

5

Diversified
portfolio
of typically
100-120
companies.

*Those sectors having a weight equal or greater than 5% of the benchmark.

Phocas Advantage

DISCIPLINE

Embracing a patient, value oriented approach means rigorous and intensive bottom-up fundamental analysis aiming to capture value in mispriced securities. We search for companies that trade at discounts to their GLCS peer group.

RESEARCH

Using proprietary tools and research models that account for quantitative and qualitative factors, we seek the management teams and strategies we believe will deliver the best risk-adjusted returns to shareholders, while maintaining price and value discipline.

BALANCE

We don't try to hit home runs. Our goal is to deliver returns that exceed our benchmark, after fees, without assuming the risk inherent in swinging for the fences. We believe our emphasis on fundamental investment value enables us to serve our clients well over the long term.

APPENDIX

Small Cap Value

Our disciplined approach utilizes proprietary, industry-specific screens to isolate approximately 300 companies that incorporate:

- **Sufficient liquidity;**
- **Low valuation;**
- **Sound/improving profitability; and**
- **Low or declining debt.**

We then set valuations relative to peers for each candidate stock using internal valuation models that focus on:

- **Financial analysis;**
- **Quality of management; and**
- **Business and industry trends.**

We build diversified portfolios of stocks with discounted absolute and relative valuations and stronger fundamentals than those being recognized by the market.

KEY DIFFERENTIATORS

One of our competitive advantages is our strength in analyzing financial companies, including REITs.

40%

of the benchmark is allocated to Financial and REIT sectors.

For banks, we utilize a **proprietary valuation model called “liquidation value”** that we believe is a much better predictor of future stock performance than book value.

For REITs, we have pioneered a three-pronged valuation model based on “adjusted funds from operations,” net asset value and cash flows.

Given the combined sizes of these two sectors in the benchmark, successful investment in the Financials and REIT sectors should provide a greater probability of delivering alpha to our investors.

PORTFOLIO CHARACTERISTICS & HOLDINGS

Portfolio Characteristics*

	Phocas	R2V
Price/Earnings Ratio (fwd)	16.6	17.2
Price/Book Ratio	2.23	1.76
Free Cash Flow Yield	7.5%	7.3%
ROE	12.0%	10.9%
Debt-to-Total Capital+	34%	34%
Number of Stocks	112	1,402
Market Cap (\$bn; wtd avg)	\$3.10	\$2.18
Market Cap (\$bn; median)	\$2.96	\$1.98
Turnover	37%	
Yield	1.67%	2.09%

Top 10 Holdings

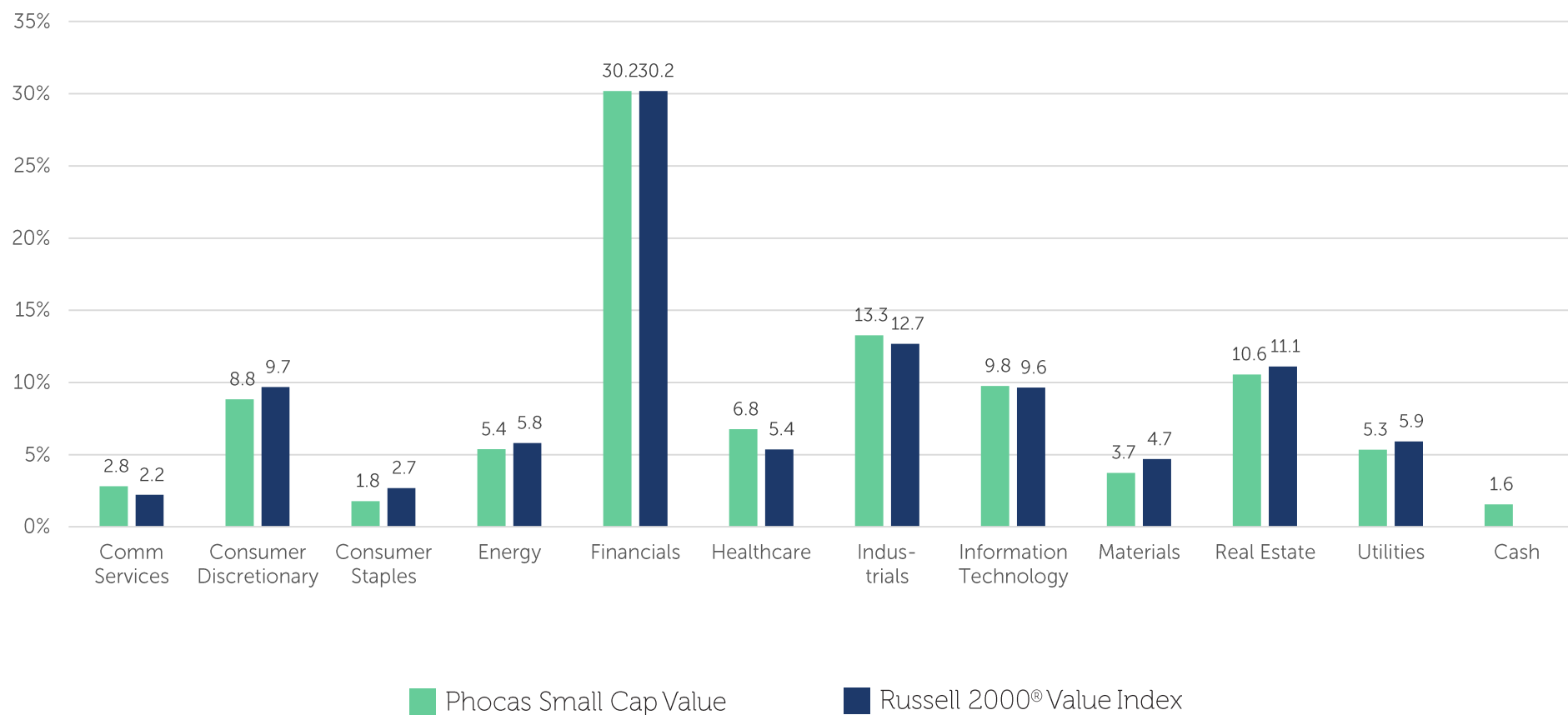
ONE MAIN HOLDINGS	2.33%
NEXSTAR BROADCASTING	2.31%
TOPBUILD CORP	1.83%
META FINANCIAL GROUP, INC.	1.68%
ATLANTIC UNION BANKSHARES	1.58%
ATKORE INTERNATIONAL GROUP INC.	1.56%
SKYWEST INC	1.56%
FNB CORP	1.53%
REXFORD INDUSTRIAL REALTY	1.53%
INDEPENDENCE REALTY TRUST, INC.	1.52%

* Source: Factset, 12/31/19;

+Excludes companies in the Financial sector.

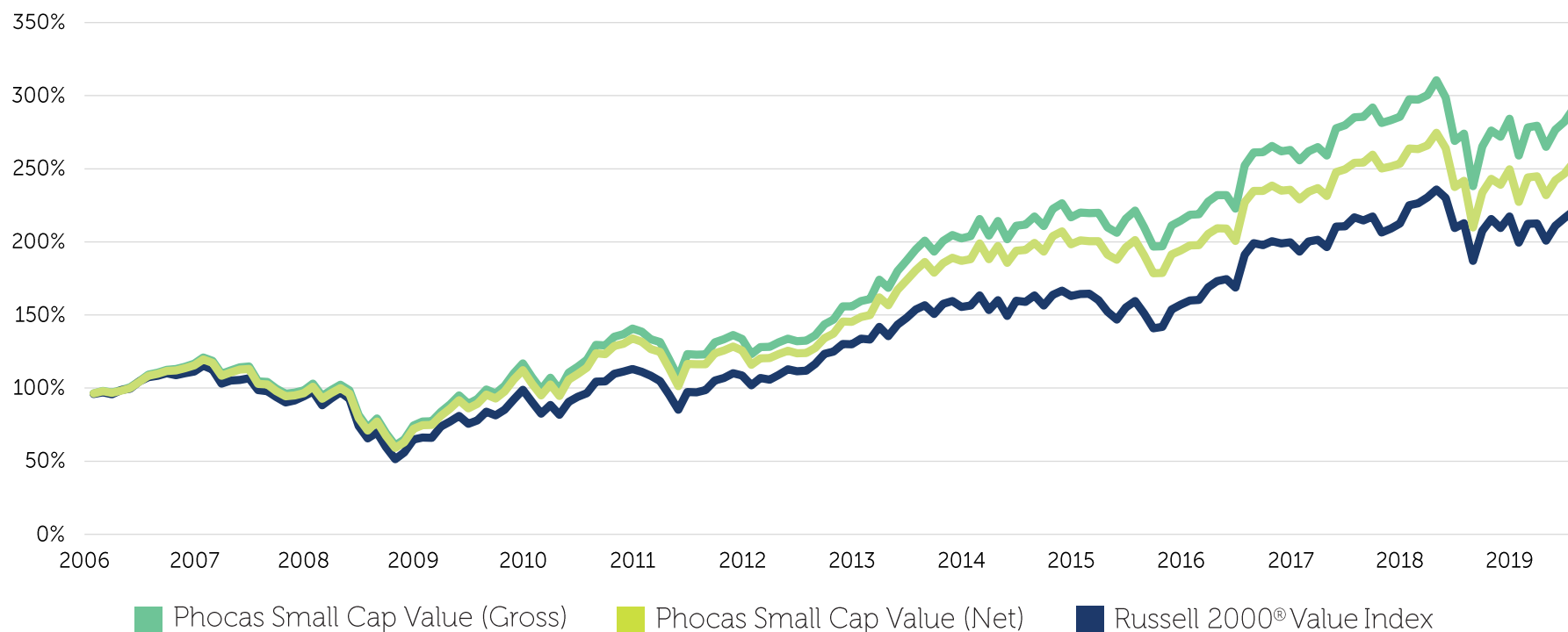
^Portfolio holdings and composition are subject to change. This information should not be considered a recommendation to purchase or sell any particular security. It should not be assumed that any of the securities holdings listed were or will be profitable, or that investment recommendations or decisions that we make in the future will be profitable. A complete list of holdings for the past twelve months is available upon written request.

SECTOR WEIGHTINGS



* Portfolio holdings and composition are subject to change. This information should not be considered a recommendation to purchase or sell any particular security. It should not be assumed that any of the securities holdings listed were or will be profitable, or that investment recommendations or decisions that we make in the future will be profitable. Historical sector weights may change due to stock reclassification. Totals may not sum to 100% due to rounding.

PERFORMANCE

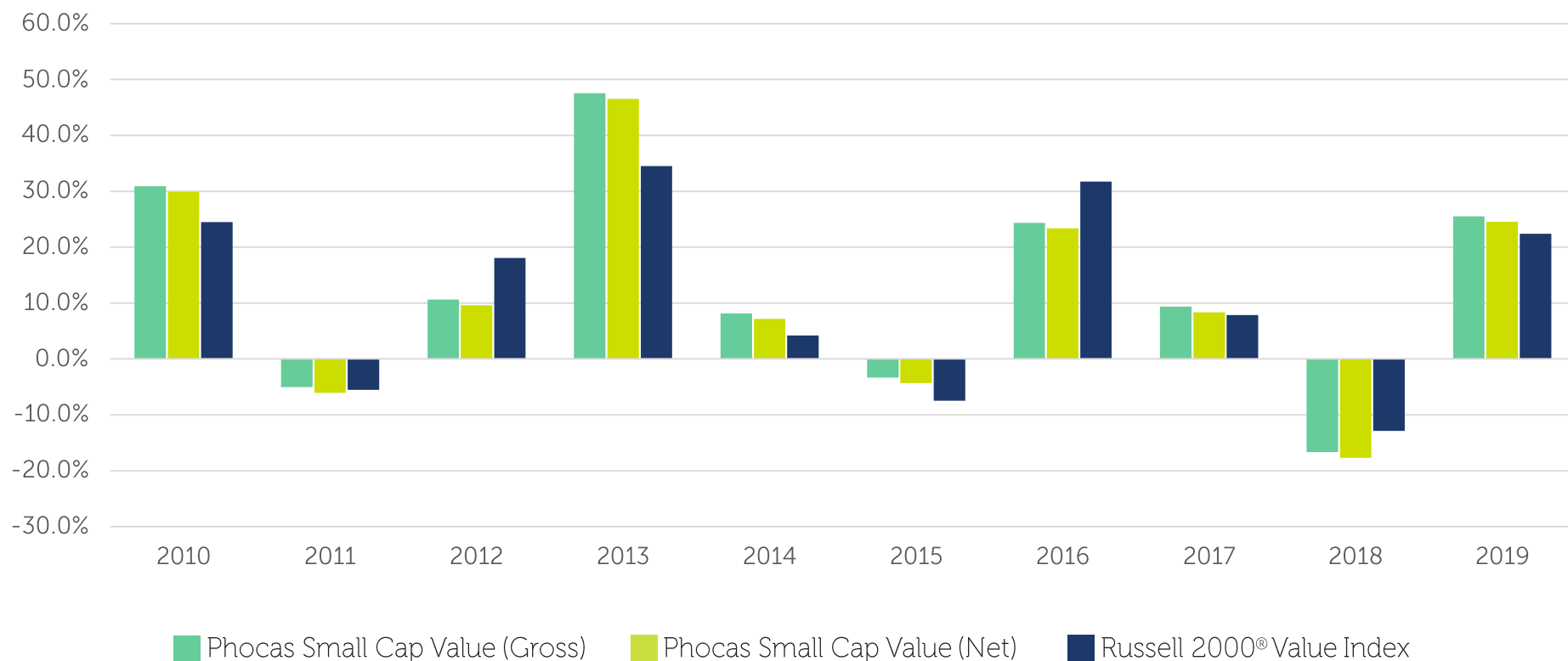


Annualized Returns (%)	YTD	1 Year	3 Year	5 Year	7 Year	10 Year	Since Inception
Phocas Small Cap Value (Gross)	25.52%	25.52%	4.58%	6.58%	11.88%	11.67%	8.33%
Phocas Small Cap Value (Net)	24.52%	24.52%	3.58%	5.58%	10.88%	10.67%	7.33%
Russell 2000® Value Index	22.39%	22.39%	4.77%	6.99%	10.13%	10.56%	6.24%

* Please see important disclosures on Page 21 hereof. Data presented reflects past performance, which is no guarantee of future results. Gross performance shown does not reflect the reinvestment of dividends, but includes the deduction of transaction costs, and excludes the deduction of investment management fees. Net performance shown reflects the deduction of annual investment management fees of 1.00% of assets under management. Performance returns may reflect the effect of material economic and market factors not anticipated by Phocas. Clients' returns will be reduced by advisory fees and other expenses incurred in the management of the client's account. Figures rounded to one decimal place. 14

PERFORMANCE – CALENDAR YEAR

Calendar Year Returns (%)

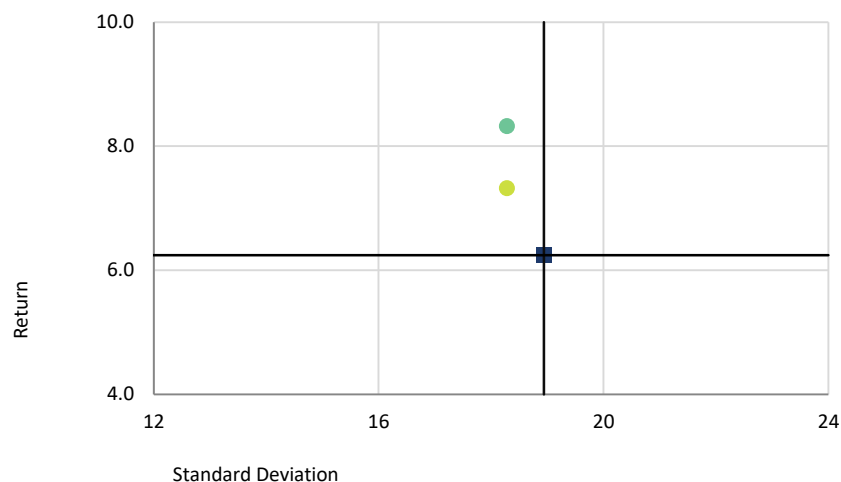


	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Phocas Small Cap Value (Gross)	30.9%	-5.0%	10.6%	47.5%	8.1%	-3.3%	24.3%	9.4%	-16.7%	25.5%
Phocas Small Cap Value (Net)	29.9%	-6.0%	9.6%	46.5%	7.1%	-4.3%	23.3%	8.4%	-17.7%	24.5%
Russell 2000® Value Index	24.5%	-5.5%	18.1%	34.5%	4.2%	-7.5%	31.7%	7.8%	-12.9%	22.4%

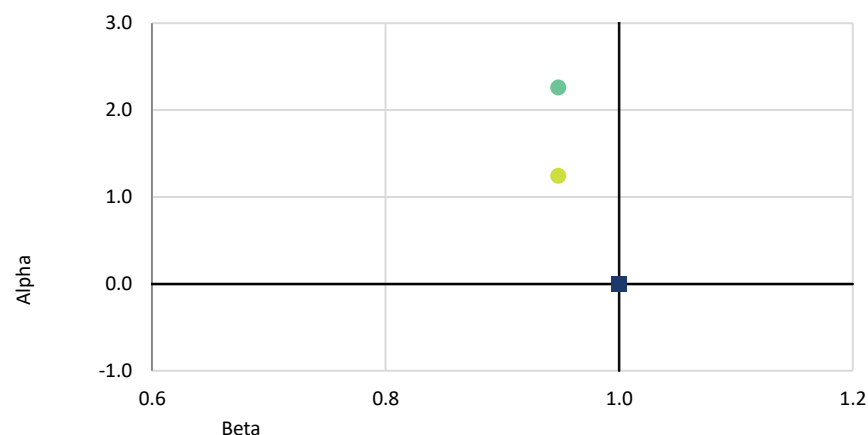
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PORTFOLIO STATISTICS

Risk/Reward 5/1/06 – 12/31/19



Efficiency (Beta/Alpha) 5/1/06 – 12/31/19



■ Phocas Small Cap Value (Gross) ■ Phocas Small Cap Value (Net)

■ Russell 2000® Value Index

Portfolio Statistics*	Phocas	R2V
Cumulative Return (%)	204.86	136.01
Annualized Return (%)	8.61	6.57
Alpha	2.22	0.00
Sharpe	0.41	0.29
Information Ratio	0.57	-
Up Period (%)	32.7	33.0
Down Period (%)	-18.2	-19.9
Correlation	0.98	1.00
Standard Deviation	18.29	18.95
Beta	0.95	1.00
Active Share (%)	87.8	100.0
Upside Capture Ratio	97.1	100.0
Downside Capture Ratio	98.3	100.0

* Source: Factset's SPAR, 12/31/19; Time Period: 5/1/06 – 12/31/19

TEAM BIOGRAPHIES

WILLIAM SCHAFF, CFA | CEO, PortfolioManager

Mr. Schaff has been a co-portfolio manager of the Phocas Small Cap Value product since its inception, and he co-manages the Phocas U.S. Equity REIT portfolios for twenty years (1986 to 2005). Mr. Schaff managed institutional equity portfolios and mutual funds for Bay Isle Financial, LLC ("Bay Isle"), Janus Capital Group, Berger LLC, and the Undiscovered Managers organization. Mr. Schaff was President and Chief Investment Officer of Bay Isle before it became a fully-owned subsidiary of Janus Capital Management, and was President of Bay Isle and Portfolio Manager at Janus Capital Management. Over that time, he developed a strong performance track record. Mr. Schaff earned his Masters' degree in Engineering from the University of California, Davis. He also holds the Chartered Financial Analyst designation, and is a member of the Security Analysts of San Francisco. Mr. Schaff served as Trustee and Chairperson of the investment committee of Alameda County Employees' Retirement Association from 1998 to 2003. He is a past President of the Alameda Unified School Board.

STEVE BLOCK, CFA | PortfolioManager

Mr. Block has been a co-portfolio manager of the Phocas Small Cap Value product since its inception. From 1996 to 2005, he was an institutional portfolio manager at Bay Isle where he managed institutional equity portfolios for Bay Isle, Berger LLC, and Janus Capital Group. Prior to joining Bay Isle, Mr. Block served as Senior Financial Analyst for two years in M&T Bank's corporate finance department. He also spent three years as an employee benefit plan Actuarial Consultant for Howard Johnson & Company. Mr. Block received his M.B.A. from the University of Michigan's Ross School of Business in accounting and finance. He received his B.A. in Quantitative Economic Decision Science from University of California, San Diego. Mr. Block also holds the Chartered Financial Analyst designation, and is a member of the Security Analysts of San Francisco.

JAMES MURRAY, CFA | Portfolio Manager

Mr. Murray co-manages the Phocas Financial Corporation's REIT and Equity Income portfolios and given the significant weighting of REITs in the Russell 2000 Value Index, supports the Phocas Small Cap Value strategy. From 1999 to 2005, James was the Trader and Senior REIT Analyst for Bay Isle Financial Institutional REIT portfolios and mutual fund. Mr. Murray brings strong analytical and quantitative skills to the research team and portfolio management process, with particularly strong expertise in modeling real estate companies. Prior to that, he spent four years at Charles Schwab, where he supervised that firm's Tax and Dividend Departments. Mr. Murray earned his B.A. degree in Economics from Kenyon College. He holds the Chartered Financial Analyst designation, and is a member of the Security Analysts of San Francisco.

KEVIN GRANGER | Principal

Mr. Granger is a Principal at Phocas Financial Corporation. Prior to joining the firm, Mr. Granger was the Director of Research at Leading Edge Investment Advisors, a manager-of-managers for institutional investors. He was also a generalist investment analyst at General Motors Asset Management, working as the sole investment analyst covering small cap growth stocks. He was also a multi-sector investment analyst at Dresdner Bank and Value Line Publishing, where he authored reports on companies in diverse industries as aerospace, capital equipment, commercial banking, computer services, defense, food, insurance, integrated oil, media, specialty chemicals, and tire and rubber. Mr. Granger began his financial services career as a mergers and acquisitions analyst at Lehman Brothers. Mr. Granger earned his B.A. in Economics from Yale University.

TEAM BIOGRAPHIES

JUSTIN WALLACE, CFA | Research Analyst

Mr. Wallace brings a decade of financial services experience to bear at Phocas Financial Corporation. He focuses his efforts on the consumer and industrial economic sectors. He commenced his investment industry career at AXA Advisors, and then joined Trugent Capital, a hedge fund focused on public equities. At Trugent Capital, Mr. Wallace was responsible for conducting primary research, proprietary modeling, and general equity analysis to recommend and following paired trades as a generalist analyst. He was also responsible for executing trades using a variety of trading systems and platforms. Mr. Wallace graduated from Texas Christian University, where he earned his Bachelor of Business Administration degrees in Marketing and Entrepreneurial Management. He holds the Chartered Financial Analyst designation, and is a member of the Security Analysts of San Francisco.

TERRY CHENG | Research Analyst

Mr. Cheng started his investment career with Phocas Financial in 2016 and covers the health care economic sector. Mr. Cheng received his Bachelor of Science degree in Business Administration with an emphasis in Corporate Accounting and Finance from San Jose State University in December 2016. He has passed CFA Level 1.

FRANCES CHIU | Chief Compliance Officer

Ms. Chiu has more than a decade of investment adviser compliance experience. She commenced her investment industry career at Wells Fargo Nikko Investment Advisors before joining Symphony Asset Management, where she was Compliance Administrator. Ms. Chiu subsequently worked at investment managers including BARRA, and Ashfield Capital Partners. As one of the first employees of Symphony Asset Management, she is equipped with an intense understanding of compliance functions and operations at growing investment managers. Over Ms. Chiu's career, she has developed detailed awareness of the Investment Advisers Act of 1940 and the Investment Company Act of 1940. Ms. Chiu is a Notary Public and earned her B.S. in Business Administration with an emphasis on Computer Information Systems from San Francisco State University.

CATHLEEN BRIGHT | Trader

Ms. Bright has over 20 years of experience in investment management specializing in algorithmic and portfolio trading, trading system development and implementation and institutional client relationship management. Prior to joining Phocas Financial, she was the global trading and operations manager at Advisor Partners. Prior to that, Cathleen was a portfolio trader at Mellon Capital Management where she was responsible for day-to-day trading activity for highly complex multi-layered global trades.

PEER SCREENING CRITERIA EXAMPLES

SECTOR	GROUP	Primary Multiple	Decile Limit	Secondary Multiple	Decile Limit	Profitability Measure	Decile Limit	Debt Limit
Consumer Discretionary	<i>Consumer Services</i>	FCF Yield	3	None	N/A	ROIC	7	1.25 x median
Financials	<i>Banks</i>	P/LV	3	P/E	3	None	N/A	None
Industrials	<i>Capital Goods</i>	P/B	3	None	N/A	None	N/A	1.50 x median
Health Care	<i>Equipment</i>	FCF Yield	5	None	N/A	ROIC	5	None
Utilities	<i>Utilities</i>	P/B	2	P/S	2	None	N/A	2.0 x median

Phocas' small cap value screen filters the U.S. small cap stock universe for companies that fall in the lower deciles of various valuation metrics relative to GICS peer groups. Debt levels and profitability metrics may additionally be used to further filter the stock universe.

COMPOSITE REVIEW *as of 12/31/19*

Year Ended 12/31	Gross Returns (%)	Net Return (%)	Benchmark Return (%)	Number of Portfolios	Dispersion (%)	Market Value (\$MM)	Non-fee Paying Portfolios (%)	Firm Assets (%)	Total Firm Assets (\$MM)
2007	-5.7%	-6.7%	-9.8%	11	0.10	102.9	0	47%	219.2
2008	-24.0%	-25.0%	-28.9%	15	0.08	139.7	0	41%	340.0
2009	25.1%	24.1%	20.6%	16	0.14	198.0	0	44%	450.0
2010	30.9%	29.9%	24.5%	15	0.23	260.8	0	38%	679.7
2011	-5.0%	-6.0%	-5.5%	16	0.10	279.6	0	26%	1,094.1
2012	10.6%	9.6%	18.1%	18	0.15	350.9	0	35%	1,010.1
2013	47.5%	46.5%	34.5%	19	0.27	481.7	0	40%	1,207.3
2014	8.1%	7.1%	4.2%	18	0.20	483.0	0	37%	1,290.1
2015	-3.3%	-4.3%	-7.5%	23	0.10	602.0	0	41%	1,290.1
2016	24.3%	23.3%	31.7%	23	0.09	906.0	0	54%	1,690.5
2017	9.4%	8.4%	7.8%	17	0.23	879.1	0	70%	1,263.5
2018	-16.7%	-17.7%	-12.9%	15	0.07	648.8	0	68%	959.5
2019	25.5%	24.5%	22.4%	14	0.23	665.4	0	73%	905.8

COMPOSITE DISCLOSURES *as of 12/31/19*

Phocas Financial Corporation (the "Company" or "Phocas"), a registered investment advisor, was established in 2005. The Company provides asset management services focused on providing competitive returns using a specialized small cap value investment approach.

The various composites include all assets of all portfolios when the Company has discretionary investment authority. The Company's composites exclude assets from portfolios that have not been fully invested into the portfolios designated investment strategy, or whose values are less than \$250,000. Once a portfolio has met the above criteria, it is included in the respective composite in the following month. Portfolios that change investment strategies are transferred to other composites in the first full monthly reporting period that the portfolios are managed under the new strategy. The history of terminated portfolios is included in the composites for all periods prior to termination.

The Phocas Small Cap Value composite contains all assets under management from discretionary portfolios that are fully invested in the Company's Small Cap Value investment strategy. The composite was created in May 2006.

The Company calculates quarterly composite returns using a GIPS Compliant Rate of Return formula using the Modified Dietz Methodology. Portfolio returns are calculated monthly. The composite calculations weight portfolio returns for the size of each portfolio using beginning of the month values. Actual returns are calculated on a full accrual method and are net of all transaction costs. Performance shown includes the reinvestment of income dividends as well as realized capital gains, and is calculated using United States dollars. Leverage is not used in equity composite accounts.

Gross performance shown does not reflect the reinvestment of dividends, but includes the deduction of transaction costs, and excludes the deduction of investment management fees. Net performance shown reflects the deduction of annual investment management fees of 1.00% of assets under management. Performance returns may reflect the effect of material economic and market factors not anticipated by Phocas. Descriptions of fees are described in Phocas Financial Corporation's Form ADV, Part 2, as well as below.

Security transactions are recognized on a trade date basis. Interest income is recognized on an accrual basis. Dividend income is recognized upon the date of declaration. The market value of each portfolio is determined monthly and represents the sum of the portfolio's total assets, including accrued interest, cash and cash equivalents, short-term investments and securities valued at current market prices. Returns are denominated in U.S. dollars.

Composite dispersion measures represent the consistency of the Company's composite performance with respect to the individual portfolio returns within a composite. The dispersion of returns is measured as the asset-weighted standard deviation of the returns within the composite. Dispersion only includes those portfolios that have been included in the composite for the entire year. This eliminates any inaccuracies created by annualizing partial year returns. Composite dispersion is not presented for periods with five or fewer accounts because they are not considered statistically representative.

Past performance is not indicative of future results, and investing in securities may result in a loss of principal. Other methods may produce different results and the results for individual portfolios and for different periods may vary depending on market conditions and the composition of the portfolio. Care should be used when comparing these results to those published by other investment advisers, other investment vehicles and unmanaged indices due to possible differences in calculation methods.

Firm assets and performance results are calculated and expressed in U.S. dollars.

Fees are based upon a percentage of assets. The standard fee for equities is based on the following fee schedule. Fees are billed in arrears each quarter. Not all clients are billed based on the standard fee schedule: 1.00% (100 basis points) on all mandates.

The following example reflects the effect of investment advisory fees on returns: if an account was charged a 1% annual management fee and \$1,000,000 was invested and achieved a 10% annual return, the balance in the account would grow to \$1,331,000 and \$1,610,510 after three and five years, respectively, gross of fees. Net of fees the account would grow to \$1,291,468 and \$1,531,579 after three and five years, respectively.

The primary benchmark is the Russell 2000® Value Index as it relates closely to the Strategy. This Index measures the performance of approximately 1300 small capitalization stocks.

This material is intended for use in one-on-one presentations only. This material should only be presented to sophisticated investors.

Kenneth Burgess, CFA
Portfolio Manager

Steven C. Shaw
Senior Vice President

February 26, 2020
Small Cap Value Free Cash Flow



Police and Fire Retirement System

Our mission is to provide clients with above benchmark long-term investment results and client service that consistently surpasses expectations.

Exclusive Focus in Managing Small and Mid Cap Equities

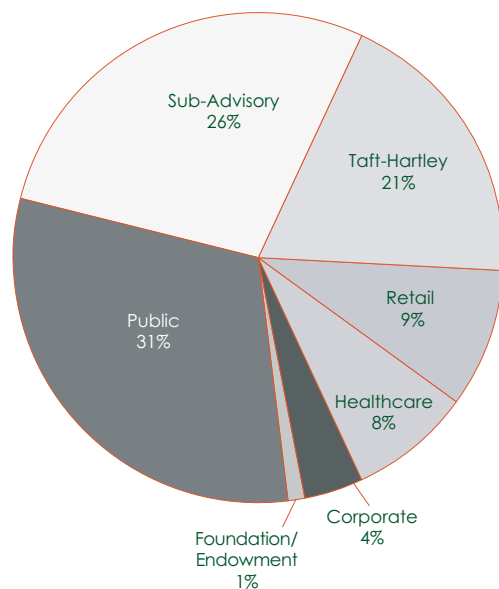
Overview

- ▶ \$2.6 Billion in Assets Under Management
- ▶ 25+ Years Experience
- ▶ Institutional and Private Client Base
- ▶ Affiliate of Affiliated Managers Group, Inc.

Investment Strategy

Our strategy seeks to invest in high-quality, undervalued companies with superior financial strength, strong free cash flows and lower relative levels of debt that we believe will outperform over full market cycles.

Client Distribution*



* Percentage based upon total assets under management.

Portfolio Offerings

Portfolio	Inception
Small Cap Value FCF	1993
SMID Cap Value FCF	2010

Corporate

Atmos Energy
Gundersen Lutheran Employees' Retirement Plan
Mercy Medical Center
Oshkosh Truck Corp.
University of Akron Operating Fund

Sub-Advisory

Transamerica Asset Management, Inc.

Foundation/Endowment

Dillard University Endowment
Moose International, Inc.
Sister M. Athanasia Gurry Trust Fund of the Sisters of St. Joseph

Public

City of Winston-Salem
Gwinnett County Board of Education Retirement
Los Angeles County Employees Retirement Association
Missouri Education Pension Trust
Orange County Employees Retirement System
Public School Retirement System of St. Louis
Sonoma County Employees Retirement

Taft-Hartley

Heating, Piping & Refrigeration Pension
IBEW Local 124
International Brotherhood of Teamsters
Ironworkers Local Union No. 167 Pension Plan
Laborers' District Council for Baltimore
Laborers' Local 231
Laborers' Pension Fund
San Francisco Culinary Bartender and Service Employees
U.A. Plumbers & Steamfitters Local 22 Pension Fund
United Mine Workers
United Scenic Artists Local 829
Washington Metro Area Transit Authority Transit Police
Western Washington Glaziers Retirement Trust
Western Washington Laborers
Western Pennsylvania Teamsters and Employers Pension Fund

Other

Catholic Diocese of Dallas
Lay Employees Retirement Plan of the Diocese of Arlington
Providence St. Joseph Health

Representative Client List as of December 31, 2019. Inclusion in this list does not represent a recommendation or endorsement of Systematic's products and/or services. Clients listed herein may be invested in other Systematic managed investment capabilities and, as such, are not exclusively representative of the product(s) discussed herein. Clients included in this list are the institutional clients which have provided written consent to Systematic to be named in marketing materials.

Name	Title	Research Focus	Years Investment Experience	Year Joined Systematic
Kenneth W. Burgess, CFA	CIO / Portfolio Manager Senior Equity Analyst Quantitative Analyst	Generalist	27	1993
W. Ryan Wick, CFA	Assistant Portfolio Manager Senior Equity Analyst	Generalist	21	2005
Rick Plummer, CFA	Assistant Portfolio Manager Senior Equity Analyst	Communication Services Financials Information Technology Real Estate	26	2004
Brian D. Kostka, CFA	Assistant Portfolio Manager Senior Equity Analyst	Communication Services Consumer Health Care Industrials	21	2007
Christopher Lippincott, CFA	Senior Equity Analyst	Consumer Industrials Materials Information Technology	24	2008
Matthew Tangel, CFA	Senior Equity Analyst Quantitative Analyst	Energy Financials Materials Real Estate Utilities	15	2008

Operational Team

Trading Professionals

Name	Title	Function	Years Investment Experience	Year Joined Systematic
Roger Chang	Head Trader	Equity Trading	24	1996
Melissa Reformato	Trader	Equity Trading	19	2001

Operations and Compliance Professionals

Name	Title	Function	Years Investment Experience	Year Joined Systematic
Karen E. Kohler	Chief Operating Officer Chief Compliance Officer	Firm Management Compliance Oversight	34	2006
Michele Egeberg	Compliance Manager	Compliance Oversight	34	1986
Cynthia Greenidge	Compliance Administrator	Compliance Administration	19	2001
William Skayhan	Operations Manager	Operations Oversight	25	2006
Thomas Poutre	Controller	Finance	25	2015

Don't Sacrifice Quality When Investing in Smaller Companies

Systematic Strives to:

- ▶ Invest in the Healthiest Small Cap Companies
- ▶ Invest in Companies Possessing Tremendous Financial Flexibility
- ▶ Significantly Reduce Financial Risk & Solvency Concerns
- ▶ Avoid Speculative Situations and Focus on Proven Business Models
- ▶ Avoid Problems Associated with Accrual Accounting
- ▶ Provide Superior Risk-Adjusted Returns

Strong Operating Cash Flow

Strong Free Cash Flow

Limited Financial Leverage

Strong Debt Coverage

Identify

Universe Screening

Initial Universe

Small Caps generally consistent with market cap range of Russell 2000® Index

Quantitative Model

- Low P/OCF
- Low P/FCF
- Low EV/FCF
- Low Total Debt/Cap
- Strong Debt Coverage

200 Stock Research Focus List

Analyze

Fundamental Research

Review the Business Model

- Validate liquidity position
- Understand and identify key business attributes
- Review management and corporate strategy
- Assess sustainability of the business model

Forecast Financial Results

- Revenues and expenses
- Margins and profitability
- Operating cash flow
- Capital spending
- Free cash flow

Assess Company Valuation

- Identify appropriate cash flow multiples
- Perform DCF analysis

Execute

Portfolio Construction

100-150 Securities

- P/E in line or lower than Index
- P/FCF lower than Index
- EV/FCF lower than Index
- Debt coverage substantially better than Index

Risk Control

Investments continuously monitored

Prudently diversified

Max position size 5%

Market cap sensitive

Sell Discipline

High valuation

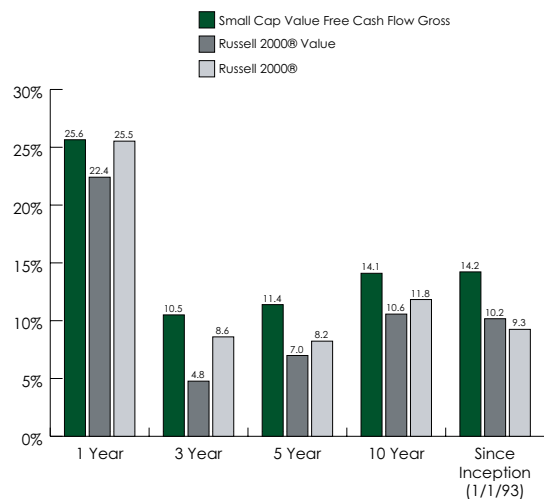
Deterioration in financial strength

Position size/Market cap

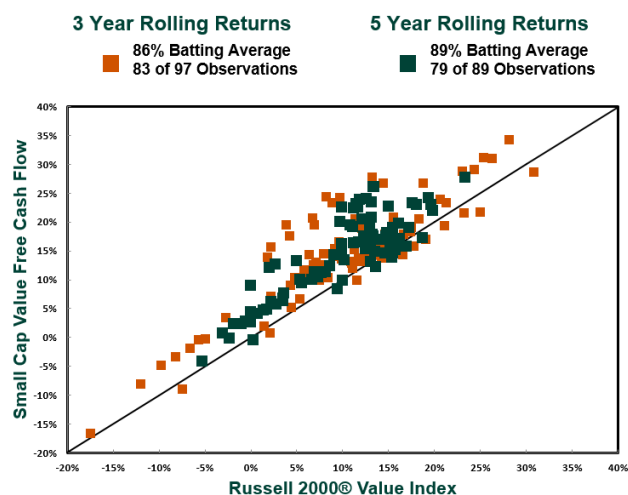
Opportunity cost

Small Cap Value Free Cash Flow Composite

Annualized Returns



Rolling 3 and 5 Year Returns vs. Russell 2000® Value



Investment Results

Period	Small Cap Value Free Cash Flow	Russell 2000® Value	Russell 2000®
2019	25.6	22.4	25.5
2018	-14.1	-12.9	-11.0
2017	25.0	7.8	14.6
2016	23.9	31.7	21.3
2015	2.6	-7.5	-4.4
2014	6.1	4.2	4.9
2013	41.6	34.5	38.8
2012	16.9	18.1	16.4
2011	-5.7	-5.5	-4.2
2010	31.8	24.5	26.9
2009	38.9	20.5	27.2
2008	-32.7	-28.9	-33.8
2007	-3.2	-9.8	-1.6
2006	16.2	23.5	18.4
2005	8.2	4.7	4.6
2004	19.1	22.3	18.3
2003	39.6	46.0	47.3
2002	-8.4	-11.4	-20.5
2001	21.7	14.0	2.5
2000	28.4	22.8	-3.0
1999	12.3	-1.5	21.3
1998	13.0	-6.5	-2.5
1997	38.7	31.8	22.4
1996	30.1	21.4	16.5
1995	24.8	25.8	28.4
1994	1.1	-1.6	-1.8
1993	23.7	23.9	18.9

All Data as of December 31, 2019. All returns are gross of fees. Benchmark Source: FactSet. Past performance is not indicative of future performance. Information shown represents the Small Cap Value Free Cash Flow Composite, is supplemental and is intended for information purposes only. The Annual Composite Disclosure at the end of this book is an integral part of this presentation and contains requisite net of fee performance data and related disclosures. Systematic is the source of data unless otherwise indicated.

Consultants may only use the gross of fee data presented herein in one-on-one presentations with prospective institutional clients of Systematic. Any presentation to such prospective clients must also include the important disclosures noted above. Presentation to any other party is strictly prohibited.

Performance results noted herein are gross of fees and do not reflect the deduction of investment advisory fees. The Client's return will be reduced by the investment advisory fees and other expenses the client may incur in the management of its investment account. Systematic's investment advisory fees are more fully described in the Firm's Form ADV Part 2A. As an example, the net of fee return for our Small Cap Value Free Cash Flow strategy for the year ending 2019 would have been 24.5%, versus gross return of 25.6%, based on the highest fee of 1.0% charged for this product.

Small Cap Value Free Cash Flow Composite

Portfolio Statistics (Since Inception 1/1/93)

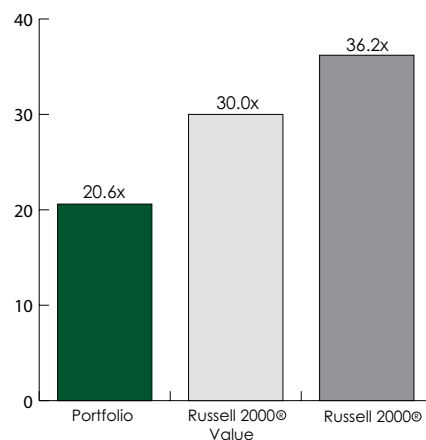
Small Cap Value Free Cash Flow vs.	Annualized Alpha	Annual Standard Deviation*	Correlation	Portfolio Beta	Information Ratio	Tracking Error	Up Capture	Down Capture
Russell 2000® Value	4.1%	18.6%	0.94	0.97	0.66	6.18	114%	88%
Russell 2000®	5.4%	18.6%	0.93	0.89	0.70	7.12	107%	75%

* vs. Russell 2000® Value of 18.1%; vs. Russell 2000® of 19.4%

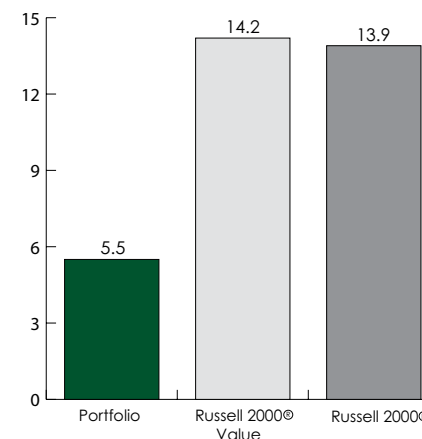
Portfolio Characteristics

	Weighted Avg. Mkt. Cap	Weighted Avg. Enterprise Value	Price to Forward Earnings	EV/EBITDA	EV/Free Cash Flow	Price/Free Cash Flow	Return on Equity	Years to Cover Total Debt	Active Share vs. Benchmark
Small Cap Value Free Cash Flow	\$3.1 b	\$4.0 b	14.8x	10.9x	20.6x	16.3x	10.4%	5.5	--
Russell 2000® Value	\$2.1 b	\$3.3 b	13.8x	10.6x	30.0x	17.9x	6.7%	14.2	90%
Russell 2000®	\$2.4 b	\$3.3 b	15.4x	13.3x	36.2x	24.9x	5.9%	13.9	92%

EV/Free Cash Flow



Years to Cover Total Debt



All Data as of December 31, 2019. All returns are gross of fees. Benchmark Source: FactSet. Past performance is not indicative of future performance. Information shown represents the Small Cap Value Free Cash Flow Composite, is supplemental and is intended for information purposes only. The Annual Composite Disclosure at the end of this book is an integral part of this presentation and contains requisite net of fee performance data and related disclosures. Systematic is the source of data unless otherwise indicated.

Performance results noted herein are gross of fees and do not reflect the deduction of investment advisory fees. The Client's return will be reduced by the investment advisory fees and other expenses the client may incur in the management of its investment advisory account. Systematic's investment advisory fees are more fully described in the Firm's Form ADV Part 2A. As an example, the net of fee return for our Small Cap Value Free Cash Flow strategy for the calendar year ending 2019 would have been 24.5% versus the gross return of 25.6%, based on the highest fee of 1.0% charged for this product.

Consultants may only use the gross of fee data presented herein in one-on-one presentations with prospective institutional clients of Systematic. Any presentation to such prospective clients must also include the important disclosures noted above. Presentation to any other party is strictly prohibited.

Small Cap Value Free Cash Flow Composite

Sector	Portfolio	Russell 2000® Value	Russell 2000®
Communication Services	1.1%	2.2%	2.3%
MSG Networks Inc.			
Consumer Discretionary	14.1%	9.7%	10.8%
Abercrombie & Fitch Co. American Eagle Outfitters, Inc. American Public Education, Inc. Bloomin' Brands, Inc. Caleres, Inc. Capri Holdings Limited Churchill Downs Incorporated Dana Incorporated Deckers Outdoor Corporation Ethan Allen Interiors Inc. Foot Locker, Inc. Gentex Corporation Helen of Troy Limited K12 Inc. LaZBoy Incorporated Mastercraft Boat Holdings, Inc. Revolve Group, Inc. Steven Madden, Ltd. Stoneridge, Inc. Turtle Beach Corp. Urban Outfitters, Inc. Visteon Corporation Williams-Sonoma, Inc. ZAGG Inc.			
Consumer Staples	1.2%	2.7%	3.0%
Sanderson Farms, Inc. Spectrum Brands Holdings, Inc. Village Super Market, Inc.			
Energy	3.2%	5.8%	3.2%
Delek US Holdings Inc. Diamondback Energy, Inc. Helmerich & Payne, Inc. Magnolia Oil & Gas Corp. REX American Resources Corp.			
Financials	20.8%	30.2%	17.7%
Atlantic Union Bankshares Corp. Bank of Princeton Berkshire Hills Bancorp, Inc. Dime Community Bancshares, Inc. Evans Bancorp, Inc. First Citizens BancShares, Inc. First Community Bankshares Inc. Hanmi Financial Corporation Hope Bancorp, Inc. Lakeland Bancorp, Inc. Legg Mason, Inc. OceanFirst Financial Corp. People's United Financial, Inc. Piper Jaffray Companies Provident Financial Services, Inc. Sandy Spring Bancorp, Inc. Selective Insurance Group, Inc. Sterling Bancorp Stifel Financial Corp. TrustCo Bank Corp NY Umpqua Holdings Corporation United Community Banks, Inc. United Fire Group, Inc. Washington Federal, Inc. Washington Trust Bancorp, Inc. Webster Financial Corporation Western Alliance Bancorp			
Health Care	5.4%	5.3%	18.2%
AMN Healthcare Services, Inc. AngioDynamics, Inc. BioDelivery Sciences International Cross Country Healthcare, Inc. Encompass Health Corporation Jazz Pharmaceuticals Meridian Bioscience, Inc. Omnicell, Inc. OraSure Technologies, Inc.			

Sector	Portfolio	Russell 2000® Value	Russell 2000®
Industrials	21.3%	12.7%	15.8%
Acuity Brands, Inc. Aerojet Rocketdyne Holdings, Inc. Altra Industrial Motion Corp. AMERCO American Woodmark Corporation ASGN Inc. Columbus McKinnon Corporation Comfort Systems USA, Inc. Continental Building Products, Inc. Cubic Corporation Curtiss-Wright Corporation Douglas Dynamics, Inc. Elbit Systems Ltd. EMCOR Group, Inc. FTI Consulting, Inc. Gencor Industries, Inc. Gibraltar Industries, Inc. Granite Construction Incorporated Heidrick & Struggles International HNI Corporation ICF International, Inc. Insteel Industries, Inc. Knoll, Inc. LSI Industries Inc. Masonite International Corp. Miller Industries, Inc. Mueller Industries, Inc. Oshkosh Corp. PGT Innovations, Inc. Regal Beloit Corp. Tetra Tech, Inc. Watts Water Technologies, Inc.			
Information Technology	14.7%	9.7%	13.6%
AXT, Inc. Brooks Automation, Inc. Coherent, Inc. Cohu, Inc. Daktronics, Inc. Entegris, Inc. Harmonic, Inc. KBR, Inc. KVH Industries, Inc. Leidos Holdings, Inc. LogMeIn, Inc. MagnaChip Semiconductor Corp. MaxLinear Inc. Methode Electronics, Inc. MKS Instruments, Inc. NETGEAR, Inc. OSI Systems, Inc. Qorvo, Inc. Silicon Motion Technology Corp. Tower Semiconductor Ltd. Universal Display Corporation Vishay Intertechnology, Inc.			
Materials	5.3%	4.7%	3.9%
Chase Corporation Commercial Metals Company Domtar Corporation Huntsman Corporation Kaiser Aluminum Corporation Mercer International Inc. Methanex Corporation P. H. Glatfelter Company Schnitzer Steel Industries, Inc. Trinseo SA U.S. Concrete, Inc.			
Real Estate	9.3%	11.1%	7.8%
Apple Hospitality REIT Inc. Brandywine Realty Trust Chatham Lodging Trust Community Healthcare Trust, Inc. DiamondRock Hospitality Co. Lexington Realty Trust Newmark Group, Inc. OUTFRONT Media Inc. Physicians Realty Trust Piedmont Office Realty Trust, Inc. Sabra Health Care REIT, Inc. Summit Hotel Properties, Inc.			
Utilities	1.6%	5.9%	3.7%
NorthWestern Corporation			

Recession (2000-2002)

- ▶ Three year flight to quality

Low Quality Environment Created (2003 – 2006)

- ▶ Massive injection of liquidity by Federal Reserve
- ▶ Rapid rise in subprime mortgages
- ▶ Easy availability of credit
- ▶ Fed raises rates from 1.00% to 5.25% in effort to slow expansion

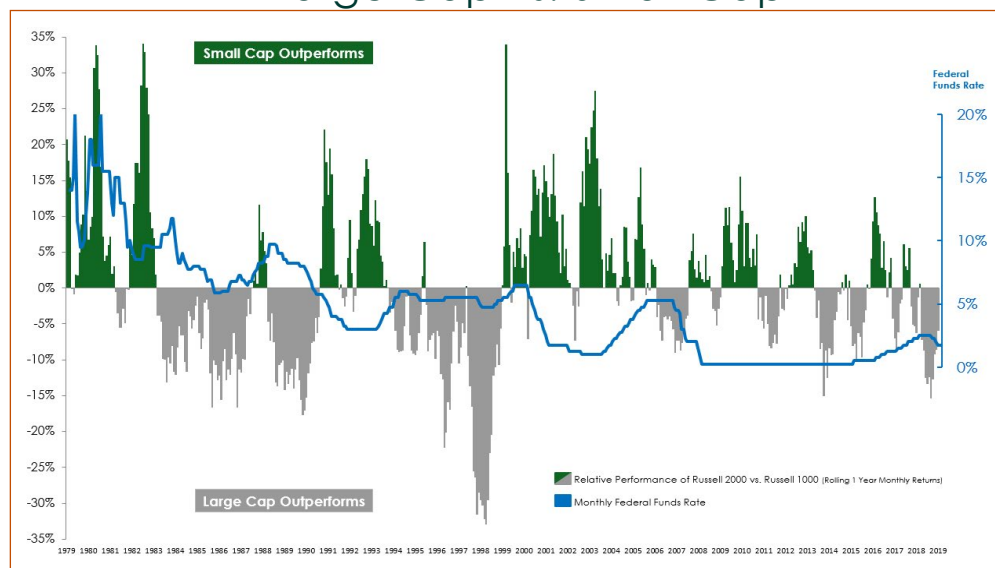
After Effects of Easy Monetary Policy (2007 – 2008)

- ▶ Housing sector bubble pops
- ▶ Lenders tighten underwriting standards
- ▶ Subprime mortgage market collapses
- ▶ Credit quality weakens across the board
- ▶ Capital markets freeze
- ▶ Fed repeatedly cuts rates
- ▶ Government bail-out of financial system begins along with massive QE
- ▶ Stress tests foster stabilization
- ▶ Vastly improved financial strength puts U.S. in strong position

Current Environment

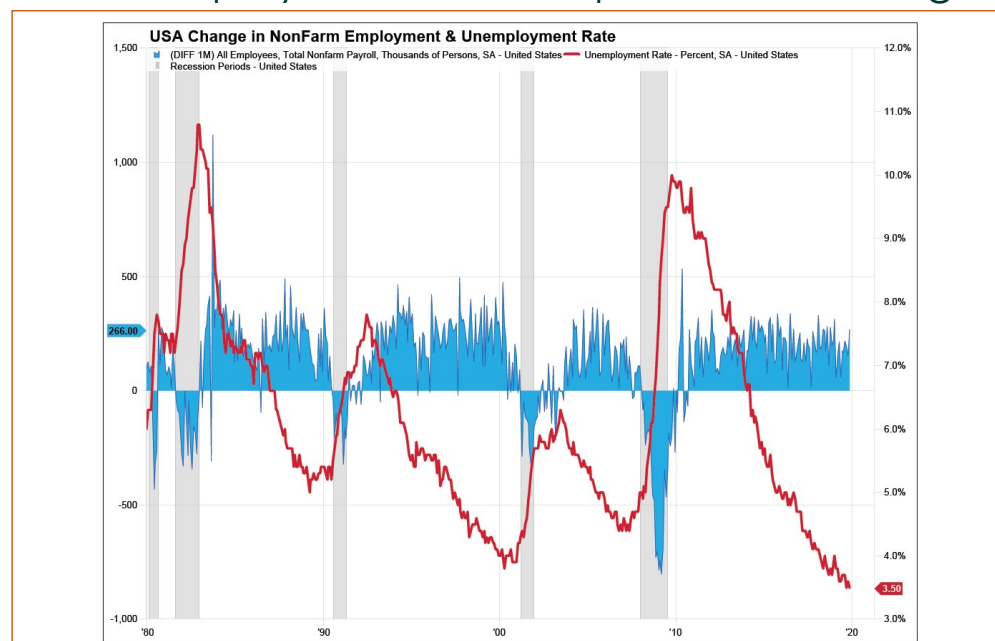
- ▶ After a two year run of consistent rate hikes, balance sheet reduction and global trade issues, economic activity has slowed
- ▶ The Fed has now reversed course providing additional accommodation to the system

Market Leadership Large Cap vs. Small Cap



Source: FactSet and the Frank Russell Company

While the Industrial Economy Has Weakened The Employment Backdrop Remains Strong



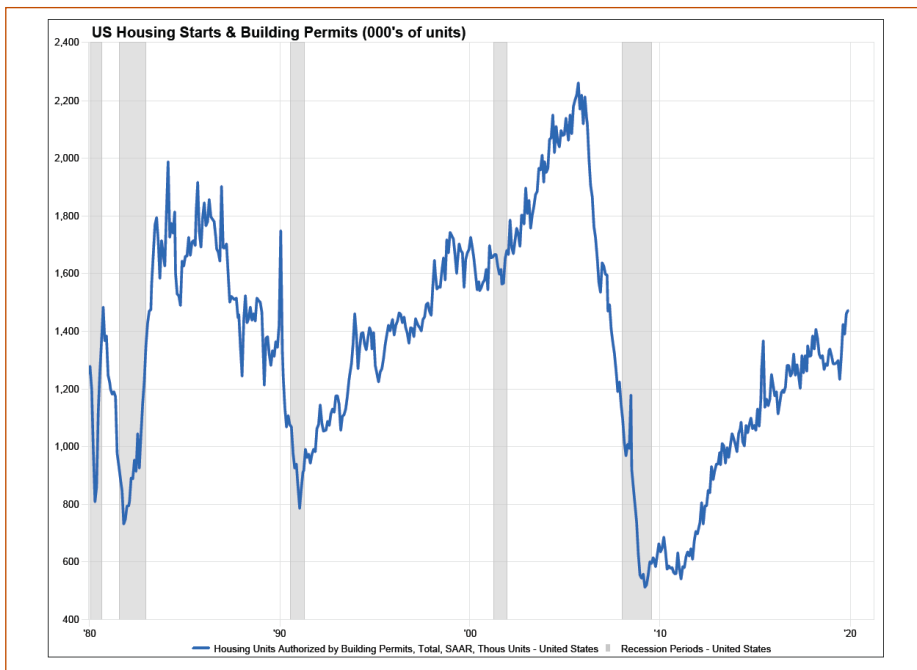
Source: FactSet

Long-Term Rates Remain at Historic Lows

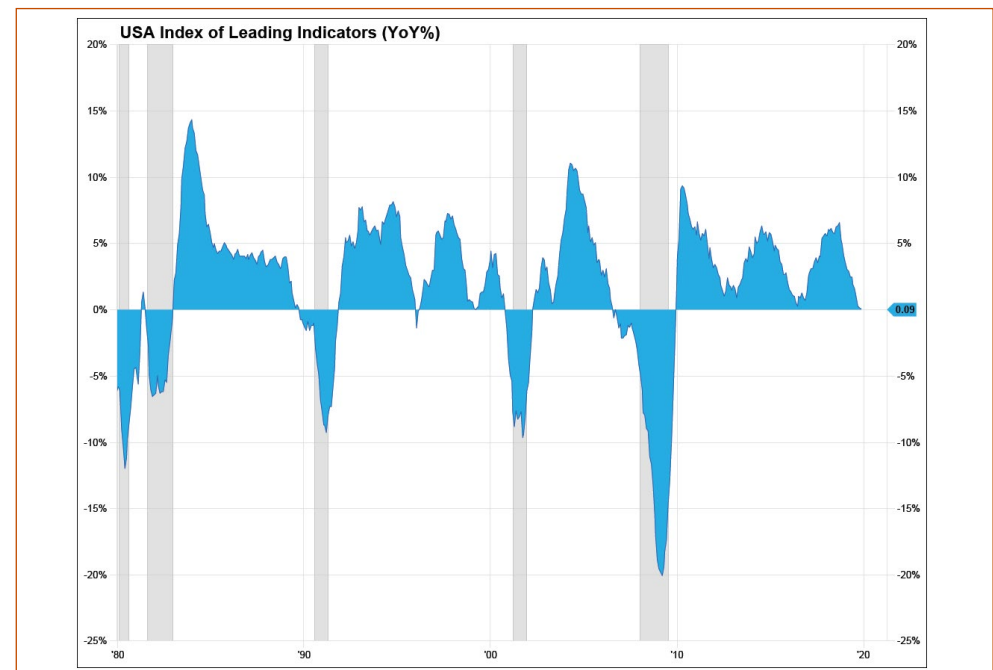


Source: FactSet

Recent Economic Data Begins to Show the Effects of a More Accommodative Fed

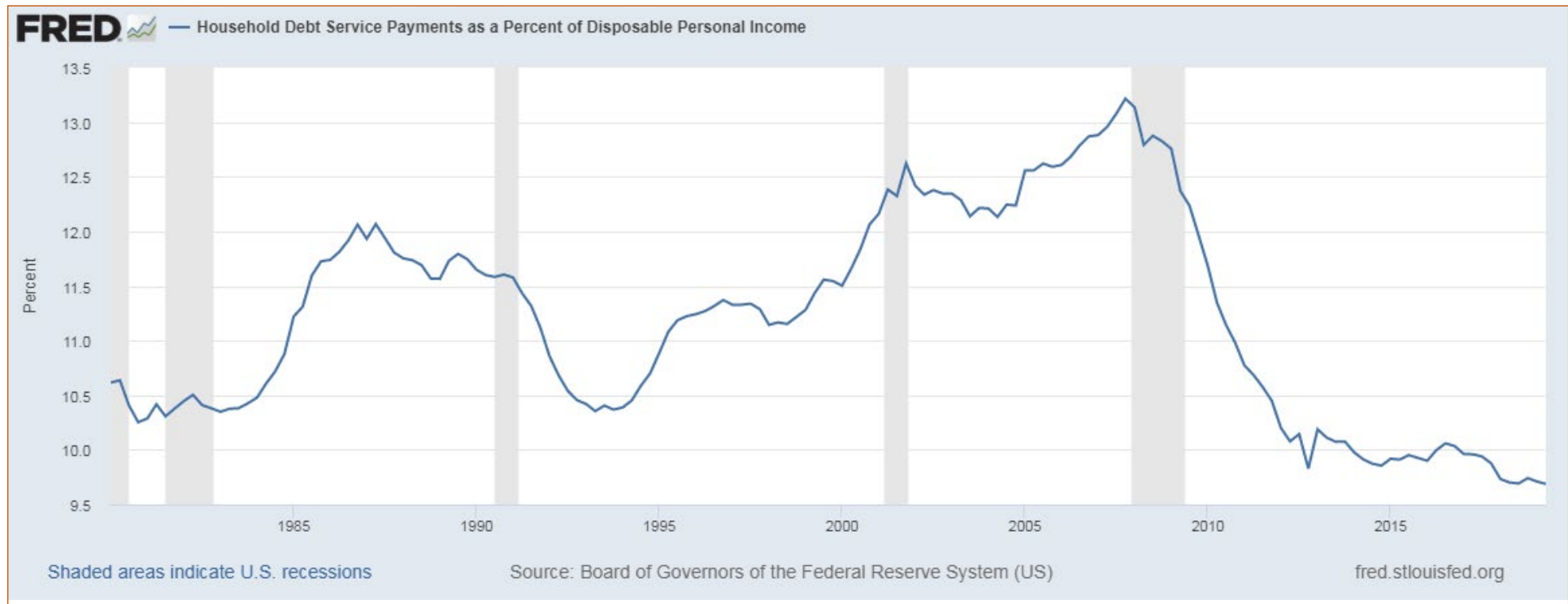


Source: FactSet



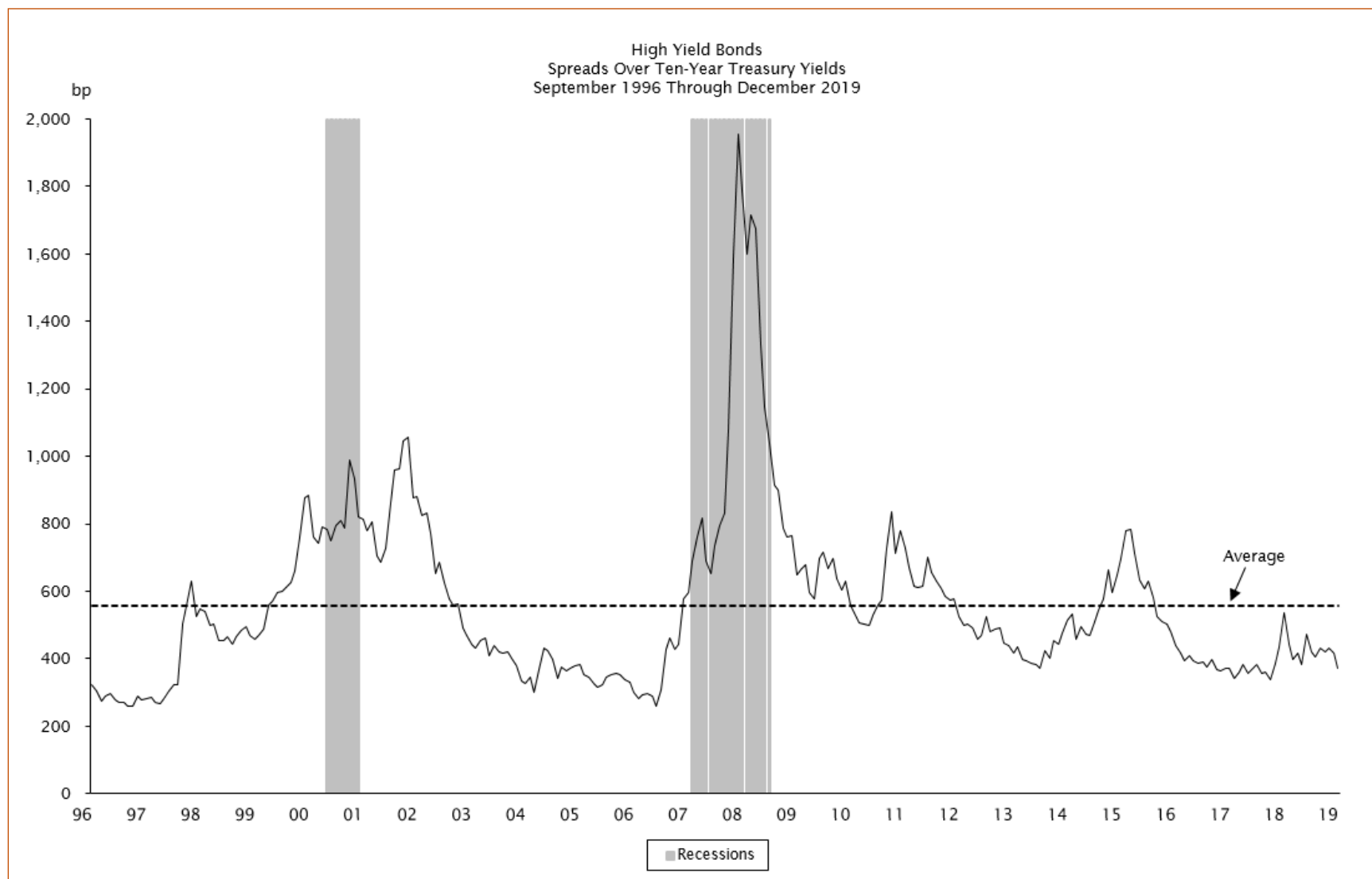
Source: FactSet

Household Debt Service Payments as a Percent of Disposable Personal Income



January 1, 1980 thru April 1, 2019 (Updated September 30, 2019).
Seasonally Adjusted Annual Rate. Quarterly Frequency.
Shaded areas indicate US recessions.

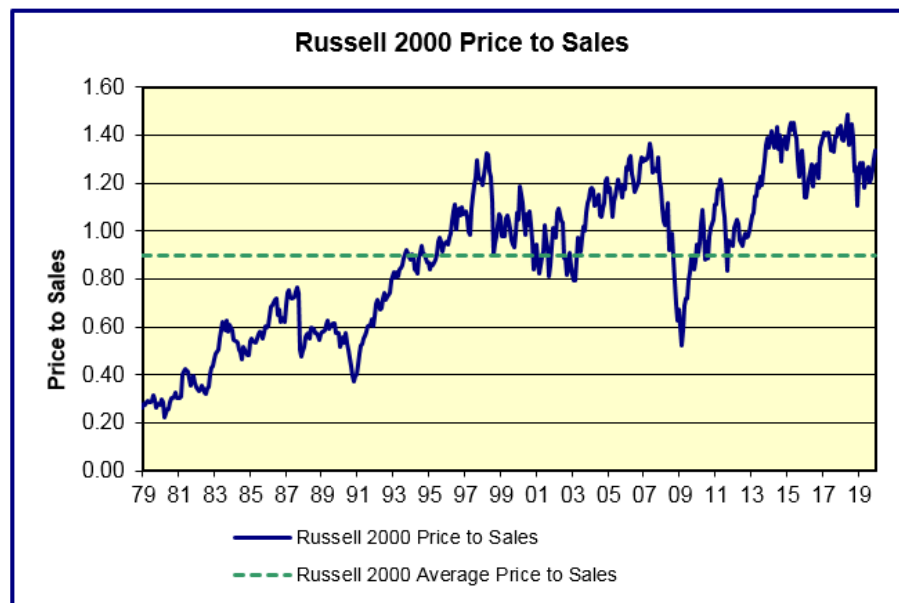
High Yield Spreads Have Moved Back Down



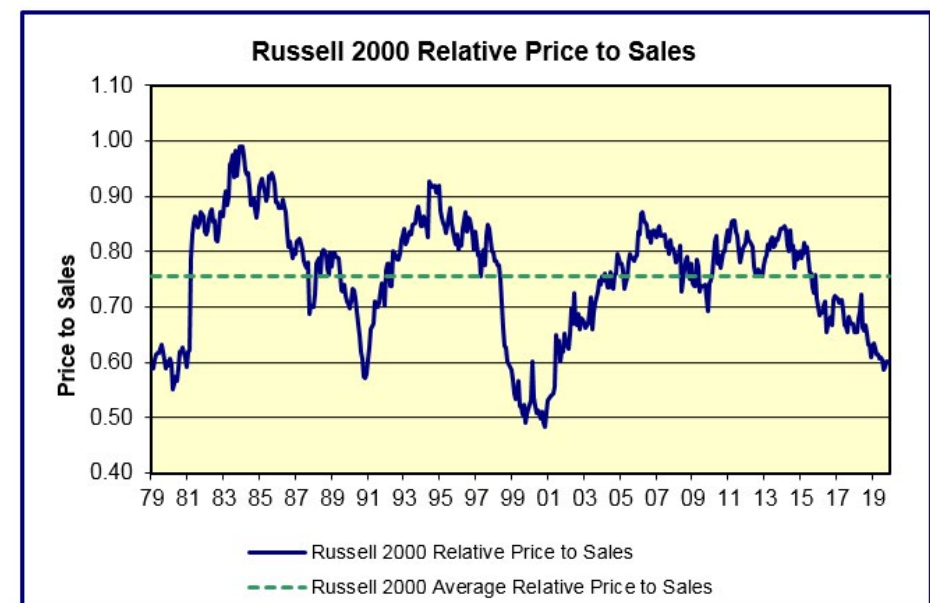
Source: FactSet, National Bureau of Economic Research. As of December 31, 2019.

Historical Small Cap Valuations

Russell 2000® Price to Sales



Russell 2000® Relative Price to Sales



Small Cap Value Free Cash Flow Composite Disclosure

Systematic Financial Management, L.P. ("Systematic") is an independently managed investment advisory firm and is an affiliate of Affiliated Managers Group, Inc. Systematic claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with GIPS® standards. Systematic has been independently verified for periods from January 1, 1993 through December 31, 2018. Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS® standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. The Small Cap Value Free Cash Flow Composite has been examined for the periods January 1, 1993 through December 31, 2018. The verification and performance examination reports are available upon request.

1. The performance results presented below reflect the Small Cap Value Free Cash Flow Composite performance from its January 1, 1993 inception. Prior to April 1, 2007, this composite was called Small Cap Value - Free Cash Flow Commission Composite.

2. Systematic's Small Cap Value Free Cash Flow Composite represents all fully discretionary, unrestricted institutional and retail commission managed accounts, including those accounts no longer with the firm. This composite represents 89% of the firm's Small Cap Value Free Cash Flow commission assets under management of \$2,180 million, and 86% of the firm's total Small Cap Value Free Cash Flow assets under management of \$2,248 million. Systematic's Small Cap Value Free Cash Flow Composite was created January 1, 1993 and seeks to invest in high quality small cap companies (U.S. Equity, REITs, ADRs and foreign securities traded on U.S. markets) which possess superior financial strength, evidenced by strong cash flow characteristics and strong debt coverage ratios generally consistent with the market capitalization range of the Russell 2000® Index. Systematic's Small Cap Value Free Cash Flow Composite is measured against the Russell 2000® Value Index for comparison purposes. When comparing the performance of a manager to its benchmark(s), please note that the manager's holdings and portfolio characteristics may differ from those of the benchmark(s). A complete list and description of Systematic's composites is available upon request.

3. All fee-paying discretionary portfolios are included in firm composites; no non-fee paying, non-discretionary portfolios or proprietary portfolios are included in firm composites. The minimum account size for inclusion into this composite is \$50,000. Prior to January 1, 2009, the minimum account size for inclusion was \$100,000. Composite policy requires the temporary exclusion of any portfolio incurring a client-initiated restriction of greater than two securities such as limitations on foreign issuers or socially responsible investments. A portfolio will re-enter the composite when the restriction no longer applies. Additionally, composite policy requires the temporary removal of any portfolio with client initiated tax-loss selling. The temporary removal of such accounts occur at the beginning of the month in which the tax-loss selling was initiated and will re-enter the composite the first full month after tax loss restrictions no longer apply. As of 4/1/2014, Systematic no longer has a significant cash flow policy. From January 1, 2012 until March 31, 2014, composite policy required the temporary exclusion of any portfolio incurring a client initiated significant cash flow of 10% or more of portfolio assets based on the portfolio's market value prior to the cash flow. The temporary removal of such accounts occurred at the beginning of the month in which the significant cash flow occurred and the accounts re-enter the composite according to the firm's policy defining the grace period for new accounts, which is the first full month after the cash flow. For the period April 1, 2007 to December 31, 2011 composite policy did not address significant cash flows. For the period July 1, 2002 through April 1, 2007, composite policy required the temporary exclusion of any portfolio incurring a client initiated significant cash flows of 10% or more of portfolio assets. The temporary removal of such accounts occurred at the beginning of the quarter in which the significant cash flow occurred and the accounts re-entered the composite according to the firm's policy defining the grace period for new accounts, which is the first full quarter after the cash flow. Policies for valuing portfolios, calculating performance and preparing compliant presentations are available upon request.

4. The benchmark is the Russell 2000® Value Index. The Russell 2000® Value Index measures the performance of small-cap value segment of the U.S. equity universe. It includes those Russell 2000® Index companies with lower price-to-book ratios and lower forecasted growth values. The Russell 2000® Value Index is constructed to provide a comprehensive and unbiased barometer for the small-cap value segment. The Index is completely reconstituted annually to ensure larger stocks do not distort the performance and characteristics of the true small-cap opportunity set and that the represented companies continue to reflect value characteristics. Index results assume the reinvestment of dividends paid on the stocks constituting the index. The index does not incur fees or expenses. FTSE Russell is the source and owner of the Russell Index data contained or reflected in this material and all trademarks and copyrights related thereto. The presentation may contain confidential information and unauthorized use, disclosure, copying, dissemination or redistribution is strictly prohibited. This is a presentation of Systematic Financial Management, L.P. FTSE Russell is not responsible for the formatting or configuration of this material or for any inaccuracy in Systematic's presentation thereof. An investment cannot be made directly in an index.

5. Composite returns are shown before US tax and the deduction of custody fees. The composite and benchmark returns are reported gross of foreign withholding taxes on dividends, interest and capital gains. Performance results for Small Cap Value Free Cash Flow Composite are based on U.S. dollar returns. Securities are priced using end-of-day market prices obtained from Interactive Data (IDC). No subjective unobservable inputs are used for valuing portfolio investments. There is no material difference between the composites' valuation hierarchy and the recommended hierarchy in the GIPS Valuation Principles. Systematic's pricing and fair valuation policy is available upon request.

6. As December 31, 2019, the 3-year annualized ex-post standard deviation of monthly returns equals 15.53% for the Composite versus 15.68% for the Russell 2000® Value Index. Dispersion in the annual rates of return for the composite is measured using the equal-weighted standard deviation method. Dispersion for this composite is calculated using accounts in the composite for the entire duration of each period shown.

7. Returns are presented gross and net of management fees and include the reinvestment of all income. Net of fee performance was calculated using the highest management fee of 1.00%. The management fee is as follows: 1.00% of the first \$25 million; 0.75% of the next \$50 million; and 0.60% over \$75 million. Actual investment advisory fees incurred by clients may vary.

8. Past performance is not indicative of future performance.

Reporting Currency:	US Dollar
Reporting Date:	December 31, 2019
Benchmark:	Russell 2000® Value Index
Composite Inception Date:	January 1, 1993

	Systematic Return Gross of Fees	Systematic Return Net of Fees	Russell 2000® Value
Annualized			
1 Year	25.65%	24.47%	22.41%
3 Year	10.50%	9.43%	4.77%
5 Year	11.39%	10.31%	6.99%
10 Year	14.10%	13.00%	10.57%
Since Inception	14.22%	13.11%	10.17%

Year End	Composite Gross	Composite Net	Russell 2000® Value
2019*	25.65%	24.47%	22.41%
2018	-14.05%	-14.95%	-12.87%
2017	24.95%	23.78%	7.84%
2016	23.87%	22.70%	31.74%
2015	2.62%	1.60%	-7.46%
2014	6.05%	5.00%	4.22%
2013	41.55%	40.26%	34.51%
2012	16.90%	15.78%	18.05%
2011	-5.70%	-6.66%	-5.49%
2010	31.82%	30.57%	24.50%
2009	38.89%	37.57%	20.57%
2008	-32.68%	-33.42%	-28.92%
2007	-3.20%	-4.18%	-9.79%
2006	16.21%	15.09%	23.49%
2005	8.23%	7.17%	4.70%
2004	19.11%	17.97%	22.25%
2003	39.59%	38.31%	46.03%
2002	-8.40%	-9.34%	-11.42%
2001	21.70%	20.54%	14.03%
2000	28.43%	27.23%	22.83%
1999	12.30%	11.21%	-1.48%
1998	12.98%	11.87%	-6.46%
1997	38.65%	37.37%	31.78%
1996	30.09%	28.87%	21.38%
1995	24.83%	23.65%	25.75%
1994	1.13%	0.13%	-1.55%

Year End	Total Firm Assets (millions)	Composite Market Value (millions)	% of Firm Assets	Number of Accounts	Composite Dispersion	3 Year Standard Deviation- Composite	3 Year Standard Deviation- Benchmark
2019*	2,676	1,942	73%	30	0.4%	15.53%	15.71%
2018	3,436	1,376	40%	58	0.3%	14.81%	15.76%
2017	5,280	1,413	27%	50	0.5%	12.65%	13.97%
2016	6,584	1,276	19%	49	0.4%	14.40%	15.50%
2015	9,438	1,130	12%	48	0.6%	13.02%	13.46%
2014	13,858	1,329	10%	47	0.7%	13%	13%
2013	14,004	1,388	10%	49	0.9%	17%	16%
2012	11,579	946	8%	56	0.7%	21%	20%
2011	11,010	899	8%	58	0.5%	27%	26%
2010	9,545	524	5%	57	1.0%		
2009	7,685	417	5%	61	1.9%		
2008	6,138	326	5%	67	0.8%		
2007	9,578	879	9%	62	0.7%		
2006	8,760	1,015	12%	94	1.1%		
2005	7,068	1,128	16%	107	0.6%		
2004	7,008	1,377	20%	89	1.4%		
2003	6,577	1,313	20%	107	2.6%		
2002	4,472	848	19%	91	0.9%		
2001	4,195	975	23%	102	1.5%		
2000	3,209	840	26%	77	2.3%		
1999	1,747	224	13%	62	1.2%		
1998	1,221	21	2%	36	0.7%		
1997	1,148	13	1%	16	1.5%		
1996	612	9	1%	13	N/A		
1995	1,395	12	<1%	Five or fewer	N/A		
1994	1,330	7	<1%	Five or fewer	N/A		
1993	1,123	5	<1%	Five or fewer	N/A		

N/A – Information is not statistically meaningful.
* Preliminary & pending verification for 2019

This presentation, which is for informational purposes only, sets forth an overview of Systematic's management of the Firm's Small Cap Value Free Cash Flow Equity strategy and its related portfolio characteristics and statistical outcomes as of December 31, 2019. The portfolio statistics and characteristics contained herein are based on or derived from third party sources and are supplemental information only. We believe those sources to be accurate and reliable however, we are not responsible for errors by them on which we reasonably rely. In some cases, the data presented has been prepared by Systematic based on our internal analysis of financial data, public filings or was obtained through our fundamental research efforts.

Information about portfolio holdings mentioned herein (and their respective weights) is as of the date indicated and is shown for illustrative purposes only. The portfolio is actively managed, therefore, the holdings represented herein may not be current. Each investor's portfolio is individually managed and may vary from the information shown in terms of portfolio holdings, characteristics and performance. Portfolio holdings and the securities mentioned herein should not be considered recommendations to buy or sell any particular security, nor should information contained herein be relied upon as investment advice or to represent or predict portfolio investment or individual stock performance. Actual holdings and percentage allocation in individual client portfolios may vary and are subject to change. It should not be assumed that any of the holdings discussed were, or will be, profitable, or that the investment decisions we make in the future will be profitable. The following information is available upon request: (1) information describing the methodology for the portfolio's (a) strong and poor performers data, (b) additions and reductions data, and (2) a complete list of securities held, and their weight, in the portfolio during the past year.

The holdings of the strategy may differ significantly from the securities that comprise the index shown. The index has been selected to represent what Systematic believes is an appropriate index to which the strategy's performance is compared. The index presented represents unmanaged portfolios whose characteristics differ from the composite portfolios; however, they tend to represent the investment environment existing during the time periods shown. The returns of the index do not include any transaction costs, management fees or other costs. An investment cannot be made directly in an index.

The companies held in the portfolio have been classified in accordance with S&P/MSCI GICS. The Global Industry Classification Standard ("GICS") was developed by and is the exclusive property and service mark of MSCI Inc. ("MSCI") and Standard & Poor's Financial Services LLC ("S&P"), and is licensed for use by Systematic "as such".



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City of Oakland Police & Fire Retirement System

Presented by:

Chris Wallis, CFA - CEO/CIO - Lead Portfolio Manager, Small Cap Value

George Holewyne - Manager, Institutional Marketing/Client Service

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INTRODUCTION

Table of Contents

1	Why Vaughan Nelson
2	Firm Overview
3	Investment Process
4	Risk Management
5	Analytics and Performance

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WHY VAUGHAN NELSON

WHY VAUGHAN NELSON

What Makes Us Different

We believe investing is about
offsetting future obligations
not just having market exposure.



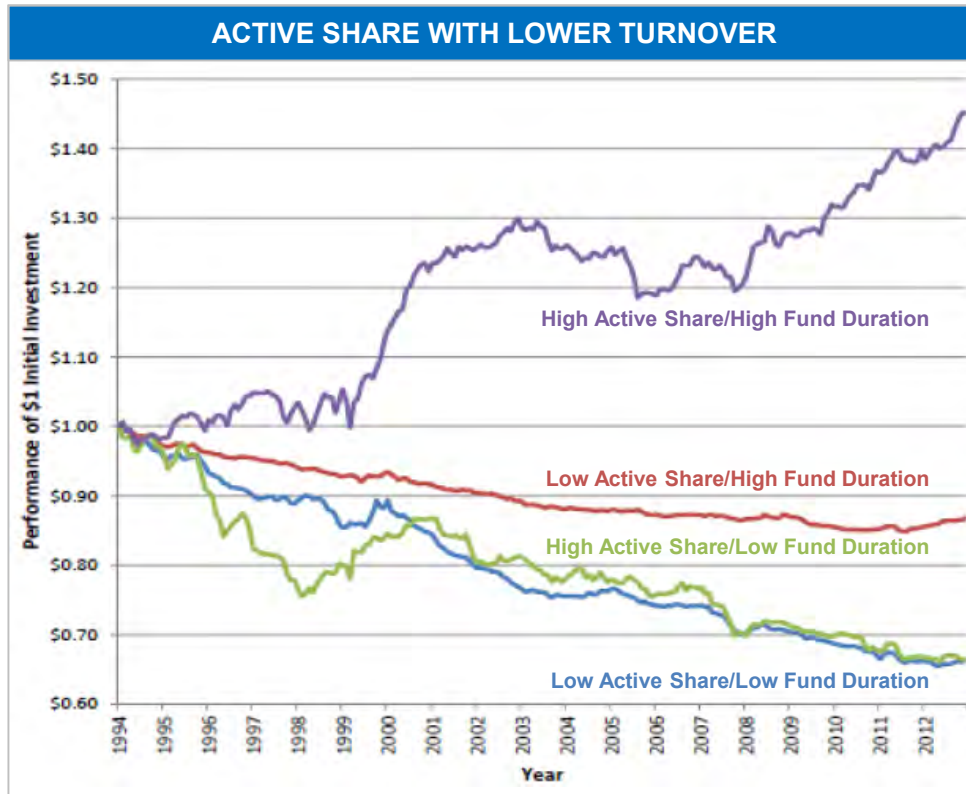
We focus on a targeted return. We seek investments which we believe to have the ability to generate a 50% return over three years.



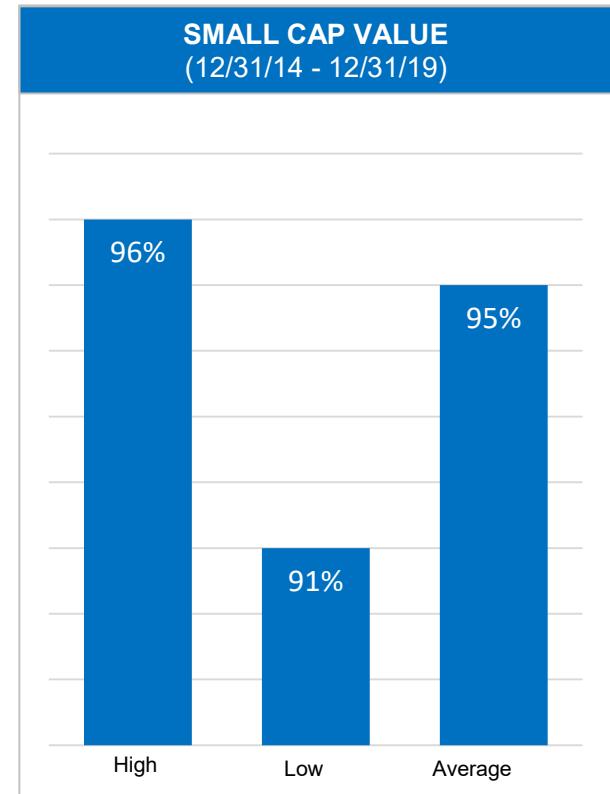
We trade time for value. A longer time horizon allows us to exploit short term volatility and poor short-term price discovery.

WHY VAUGHAN NELSON

High Active Share Portfolios



Source: Patient Capital Outperformance: The Investment Skill of High Active Share Managers Who Trade Infrequently, by Martijn Cremers, University of Notre Dame and Ankur Pareek Rutgers Business School, September 2014.



Source: FactSet

WHY VAUGHAN NELSON

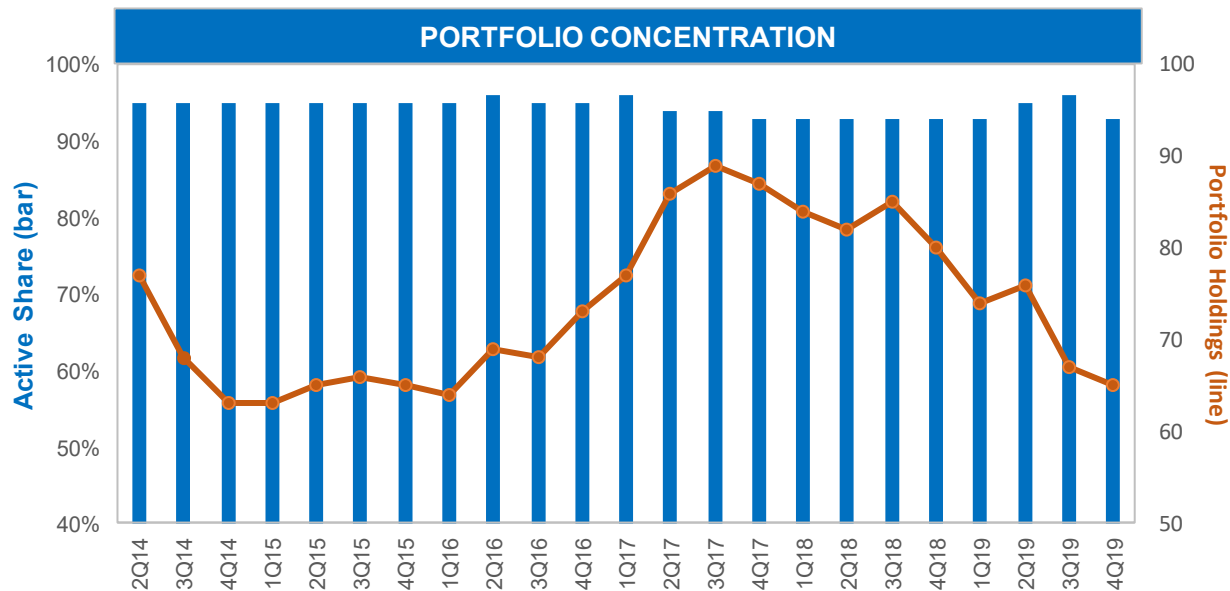
Small Cap Value Concentration and Active Share

► Small Cap Value typically holds between 55 and 85 names

- Risk procedures ensure Small Cap Value's factor diversification is comparable to broad market indices

► Benefits of concentration

- Portfolio reflects high conviction idea generation
- Companies with strong positive risk/reward asymmetry
- What you own is as important as what you do not
- High active share is an output of the process



FIRM OVERVIEW

FIRM OVERVIEW



ORGANIZATION

Founded 1970

\$13.1* billion under management as of 12/31/19

Equity and fixed income strategies



PEOPLE

44 employees

17 investment team professionals

10 Chartered Financial Analyst designations

2 Ph.D.s

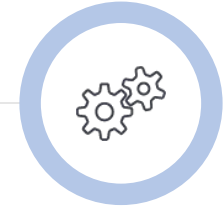


PHILOSOPHY

Temporary inefficiencies and time arbitrage create long-term opportunities

Targeted return focus

Concentrated, high-conviction, high-active share



PROCESS

Stock selection driven by targeted return objective, not benchmark construction

Rigorous, bottom-up fundamental analysis

Construct of the macro environment in effort to minimize macro uncertainty

* Number includes assets where Vaughan Nelson Investment Management does not have full unconditional trading authority. The assets consist of model portfolio relationships with third party platforms and totaled \$1.7 billion as of December 31, 2019.

FIRM OVERVIEW

Equity Strategies

SMALL CAP VALUE

- Benchmark against the Russell 2000® Value Index
- Generally 55 to 85 positions

SELECT

- Benchmark against the Russell 3000® Index and S&P 500 Index
- Generally 20 to 40 positions

VALUE OPPORTUNITY

- Benchmark against the Russell Midcap® Value Index and Russell 2500™ Value Index
- Generally 55 to 75 positions

INTERNATIONAL SMALL CAP

- Benchmark against the MSCI EAFE Small Cap Index
- Generally 60 to 80 positions

EMERGING MARKETS

- Benchmark against the MSCI Emerging Markets SMID Index
- Generally 60 to 80 positions

FIRM OVERVIEW

Representative List of Institutional Clients

NON-PROFIT	Board of Higher Education, United Methodist Church
	Hamill Foundation
	Houston Grand Opera
	Methodist Hospital
	Roman Catholic Diocese of Orange
	Santa Barbara Museum of Art
	Santa Clara University
	Texas Medical Association
	The Community Foundation of Louisville
	Trull Foundation
PUBLIC	University of Dallas
	Wortham Foundation
	Austin Fire Fighters Relief and Retirement Fund
	Cobb County Employees' Retirement System
	Florida State Board of Administration
CORPORATE	Gwinnett County Public Employees Retirement System
	Montana Board of Investments
	Teacher Retirement System of Texas
	Baxter International
	Bristol-Myers Squibb
	Hess Corporation
	Principal Financial Group
	Stewart Title

Vaughan Nelson Equity Team Public/CA AUM Breakdown	
Total Equity Team Public Clients	\$1.2 Billion
Public Client (account range)	\$3 Million - \$500 Million
California SMA Clients	\$420 Million
Vaughan Nelson Clients on Natixis MPA San Francisco Platform	\$1.7 Billion

It is not known whether the listed clients approve or disapprove of the advisor or the advisory services provided. This is a list of institutional clients whose investment management is a matter of public record, selected because it was believed that their names would be recognized by prospective clients, without regard to performance-based criteria.

FIRM OVERVIEW

Equity Investment Team

Portfolio Manager	Title	Primary Strategy Management	Investment Experience	Joined Firm
Scott Weber , CFA	Lead Senior Portfolio Manager	Select	24 years	2003
Dennis Alff , CFA	Lead Senior Portfolio Manager	Value Opportunity	23 years	2006
Chad Fargason , Ph.D.	Senior Portfolio Manager	Value Opportunity	20 years	2013
Stephen Davis , CFA	Portfolio Manager	Small Cap Value	15 years	2010
Chris Wallis , CFA, CPA	CEO, CIO, Lead Senior Portfolio Manager	Small Cap Value	28 years	1999
Marco Priani , CFA, CPA	Senior Portfolio Manager	International Small Cap, Emerging Markets	19 Years	2019
Kevin Ross , CFA	Senior Portfolio Manager	International Small Cap, Emerging Markets	14 Years	2019

Research Professional	Title	Investment Experience	Joined Firm
Benjamin Carrier , CFA	Equity Analyst	6 years	2016
Keith Cioci	Equity Analyst	11 years	2018
James Eisenman , CFA, CPA	Vice President, Equity Investments	18 years	2005
Tyler Fry , CFA	Equity Analyst	6 years	2016
Adam Rich , CFA	Vice President, Equity Investments	10 years	2016
William Wojciechowski , Ph.D.	Manager, Portfolio & Risk Analytics	18 years	2007

FIRM OVERVIEW

Investment Team Biographies

INVESTMENTS

Dennis Alff, CFA

Senior Portfolio Manager - Equity Investments
M.B.A., Harvard Business School, 1998
B.S., United States Military Academy, 1993
23 years investment management and research experience

Benjamin Carrier, CFA

Equity Analyst
B.B.A., Baylor University, 2014, *cum laude*
6 years financial analysis and accounting experience

Keith Cioci

Equity Analyst
M.P.A., B.B.A., University of Texas, 2008
11 years financial analysis experience

Stephen Davis, CFA

Portfolio Manager - Equity Investments
B.A., Rice University, 2005, *cum laude*
15 years investment management and research experience

James Eisenman, CFA, CPA

Vice President - Equity Investments
B.B.A., Ohio State University, 2002
M.A.cc, Ohio State University, 2002
18 years financial services and accounting experience

Charles Ellis

Portfolio Manager - Fixed Income Investments
B.B.A., Texas Tech University, 1973
45 years investment management and research experience

Chad Fargason, Ph.D.

Senior Portfolio Manager
Ph.D., Duke University, 1998
M.A., Duke University, 1996
B.A., Rice University, 1994
20 years investment and research experience

Tyler Fry, CFA

Equity Analyst
B.B.A., Southern Methodist University, 2014
B.S., Southern Methodist University, 2014
6 years investment management and financial analysis experience

Blanca Garza

Portfolio Manager and Trader - Fixed Income Investments
M.B.A., University of Saint Thomas, 1996
B.A., University of Houston-University Park, 1989
27 years investment management and research experience

INVESTMENTS

Michael Hanna

Senior Portfolio Manager – Fixed Income Investments
M.B.A., Rice University, 2005
B.A., University of Texas, 1997
20 years investment management and analytical experience

Steven Henriksen

Senior Portfolio Manager/Director - Fixed Income Investments
B.A., Louisiana State University, 1978
37 years investment management and research experience

Marco Priani, CFA, CPA, FRM

Senior Portfolio Manager – International Investments
M.B.A., The University of Chicago-Graduate School of Business, 2005
M.S.L., Northwestern University School of Law, 2006
M.S.F., Universidad del CEMA, 1999
J.D., Universidad de Buenos Aires – School of Law, magna cum laude, 1987
19 years investment management / financial analysis experience

Adam Rich, CFA

Vice President - Equity Investments
B.S., Brigham Young University, 2010
10 years investment management and research experience

Kevin Ross, CFA

Senior Portfolio Manager - International Investments
M.B.A., The University of Chicago Booth School of Business, 2014
B.S., Washington University Olin School of Business, 2006
14 years investment management and research experience

Chris Wallis, CFA, CPA

CEO and CIO
M.B.A., Harvard Business School, 1998
B.B.A., Baylor University, 1991
28 years investment management / financial analysis and accounting experience

Scott Weber, CFA

Senior Portfolio Manager - Equity Investments
M.B.A., Tulane University, 1997
B.S., The University of the South, 1994
24 years investment management and financial analysis experience

William Wojciechowski, Ph.D.

Manager, Portfolio & Risk Analytics
Ph.D., Rice University, 2001
M.A., Rice University, 1999
M.S., West Virginia University, 1996
B.S., Carnegie Mellon University, 1992
18 years investment management and financial analysis experience

INVESTMENT PROCESS

INVESTMENT PROCESS

Three Ways to Achieve 50% Return Over Three Years

1 Undervalued Earnings Growth

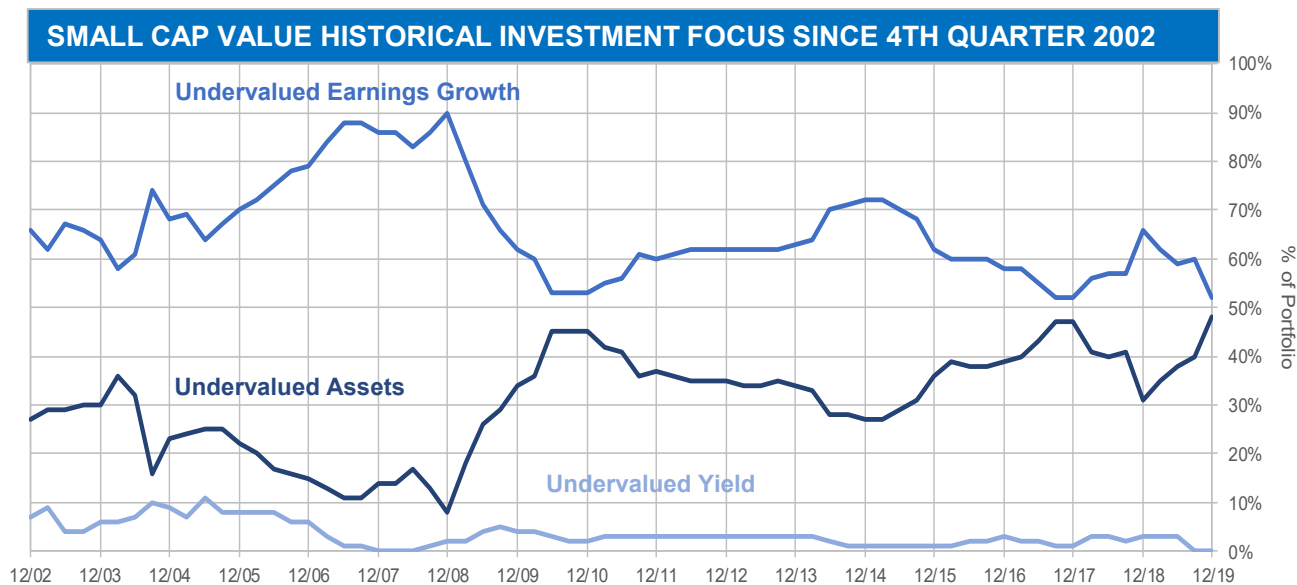
- Future redeployment of capital is not reflected in current valuation

2 Undervalued Asset

- Asset priced at a significant discount
- Identified catalyst to close valuation gap

3 Undervalued Dividend Yield

- High secure dividend yield, typically +10%



Weightings as of 12/31/19.

INVESTMENT PROCESS

Undervalued Earnings Growth

► Undervalued Earnings Growth observed characteristics

- Earnings growth from prior investments and redeployment of future earnings is not reflected in the current valuation
 - Management team with strong capital allocation track record
 - Earn same to higher rate of return on redeployed earnings avoiding multiple compression
 - Redeployment can be organic or inorganic
 - End markets have sufficient growth to absorb capital deployed without escalating competitive pressures
 - Management understands limit of reinvestment and has other means and willingness to return excess cash to shareholders
 - Corporate hurdle rates for projects are not in conflict with Vaughan Nelson's return objective

► Identifying Undervalued Earnings Growth

- Maintain a database of target companies across sectors
- Track insider buying and management changes

► Buy signals

- Downside price volatility creates attractive entry point relative to future intrinsic value
- Stock price has been "marking time" as earnings grow and compress multiple
- Structural change in end market or supply chain dynamics creating positive inflection in ROIC, earnings growth, or reinvestment opportunities
- New management team alters capital allocation strategy

► Sell signals

- Market prices in excessive growth
- Increasing competitive pressures
- Poor capital allocation decisions

INVESTMENT PROCESS

Undervalued Assets

► Undervalued Assets observed characteristics

- Cyclical industries at trough valuations with identifiable industry inflection
- Corporate asset and/or balance sheet restructuring
- End markets are stable to improving across cycles, not in secular decline
- Underlying return characteristics and competitive dynamics are stable to improving avoiding “value traps”

► Identifying Undervalued Assets

- Track spin-offs, insider buying, and large shareholder return plans
- Track cyclical sectors to identify downturns and ultimate recoveries
- Track management changes
- Track structural shifts in supply changes and industry dynamics

► Buy signals

- Confidence in catalyst and valuation support

► Sell signals

- Catalyst realized
- Thesis invalidated

INVESTMENT PROCESS

Undervalued Yield

► Undervalued Yield observed characteristics

- Dividend Yield is approximately 10% or greater
- Dividend is stable and recurring
- Balance sheet not being liquidated to pay the dividend
- Stable industry dynamics
- Typically occur in a deteriorating credit environment where levered investors are forced to de-risk portfolio and liquidate holdings. Typical examples are Mortgage REITs, Business Development Company (“BDC”), and corporate MLP

► Identifying Undervalued Yield

- Monitor companies with yields in excess of 10%

► Buy signals

- Valuations reach return hurdle and fundamentals are stabilizing

► Sell signals

- Valuation has recovered
- Thesis was invalidated

INVESTMENT PROCESS

Valuation Model

Key Considerations

- Competitive Position
- Capital Discipline
- Sources of Cash
 - From Operations
 - Debt Financing
 - Equity Financing
- Uses of Cash
 - Reinvestment
 - Expansion
 - Debt Reduction
 - Share Repurchase
 - Dividends
 - Compare valuations with historic levels

XYZ	Historical							Forecast				
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Balance Sheet Inputs												
Operating Cash	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
DSOs	43.7	44.1	54.2	47.9	49.9	57.0	67.3	67.3	67.3	67.3	67.3	67.3
Days Inventory	3.3	6.4	7.4	6.5	6.4	13.4	9.3	9.3	9.3	9.3	9.3	9.3
Other current assets	5.8%	6.0%	7.7%	6.5%	3.9%	6.1%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Capex	9,402.0	9,076.0	9,813.0	11,488.0	13,548.0	12,795.0	13,315.0	13,313.0	13,313.0	13,313.0	13,313.0	13,313.0
Maintenance Capex								7,546.3	7,965.9	8,355.0	8,715.7	9,050.2
Historical Growth of Gross PPE								5.0%	5.0%	5.0%	5.0%	5.0%
Depreciation	2,600.0	5,800.0	6,900.0	9,200.0	8,300.0	8,200.0	9,300.0	9,893.2	10,443.3	10,953.3	11,426.3	11,864.8
Asset Life	8.4	4.9	5.7	5.4	7.4	9.2	9.7	9.7	9.7	9.7	9.7	9.7
Acquisition Capex								0.0	0.0	0.0	0.0	0.0
Percentage Split								40.0%	40.0%	40.0%	40.0%	40.0%
Multiple of Sales								1.25x	1.25x	1.25x	1.25x	1.25x
Year split								100.0%	100.0%	100.0%	100.0%	100.0%
Intangibles		397.0	3,002.0	251.0	(389.0)	(605.0)	(8,015.0)	0.0	0.0	0.0	0.0	0.0
Other Assets	62.6%	65.2%	73.1%	73.3%	83.6%	89.6%	72.6%	72.6%	72.6%	72.6%	72.6%	72.6%
Days Payable	87.9	76.1	97.9	91.1	103.5	126.3	124.5	124.5	124.5	124.5	124.5	124.5
Other Current Liabilities	11.1%	12.5%	14.7%	14.8%	14.1%	14.6%	15.1%	15.1%	15.1%	15.1%	15.1%	15.1%
Other Liabilities	3.5%	3.7%	4.1%	5.6%	6.1%	5.1%	17.9%	17.9%	17.9%	17.9%	17.9%	17.9%
Deferred taxes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Minority Interest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Capital Structure												
Net Cash Flow	0.0	18,177.0	(7,469.0)	27,024.0	35,354.0	16,426.0	1,420.0	0.0	0.0	0.0	0.0	0.0
ST Debt (paydown)/issuance	0.0	6,308.0	4,691.0	606.0	6,868.0	2,275.0	0.0	0.0	0.0	0.0	0.0	0.0
LT Debt (paydown)/issuance	16,960.0	12,027.0	24,476.0	21,964.0	21,780.0	(3,472.0)	0.0	0.0	0.0	0.0	0.0	0.0
Common share (buy back)/issuance							0.0	0.0	0.0	0.0	0.0	0.0
Average Price							189.1	0.0	0.0	0.0	0.0	0.0
Number of Shares							0.0	0.0	0.0	0.0	0.0	0.0
Cost of Capital							15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Preferred (buy back)/issuance							0.0	0.0	0.0	0.0	0.0	0.0
Income Statement Inputs												
Revenues	155,971	170,866	183,244	231,283	214,226	228,572	265,805	279,099	293,054	307,707	323,093	339,247
Overall Revenue growth		9.5%	7.2%	26.2%	(7.4%)	6.7%	16.3%	5.0%	5.0%	5.0%	5.0%	5.0%
Organic growth								5.0%	5.0%	5.0%	5.0%	5.0%
Acquired Growth								0.0%	0.0%	0.0%	0.0%	0.0%
COGS % of Revenues	54.3%	58.8%	57.1%	57.0%	56.8%	57.9%	58.1%	58.1%	58.1%	58.1%	58.1%	58.1%
SG&A % of Revenues	6.5%	6.1%	6.2%	5.9%	5.9%	6.2%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%
R&D	2.2%	2.6%	3.3%	3.5%	4.7%	5.1%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%
Rent	0.3%	0.4%	0.4%	0.3%	0.4%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Interest expense	0.0%	1.6%	1.5%	1.5%	1.9%	2.3%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%
Interest earned	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Non-operating Inc/Exp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tax Rate	26.0%	27.4%	26.7%	29.0%	27.2%	27.3%	19.7%	25.0%	25.0%	25.0%	25.0%	25.0%
Minority Interest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Preferred Dividends	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Common Dividends	6.2%	30.4%	29.0%	24.7%	29.0%	30.4%	25.2%	25.2%	25.2%	25.2%	25.2%	25.2%
Gross Margin	43.6%	37.2%	38.6%	38.5%	38.6%	38.0%	38.4%	38.3%	38.3%	38.3%	38.3%	38.4%
Operating Margin	34.6%	28.1%	28.7%	28.8%	27.6%	26.3%	26.7%	26.7%	26.7%	26.7%	26.7%	26.7%
EBITDA Margin	36.7%	32.1%	33.1%	33.3%	32.1%	30.4%	30.2%	30.2%	30.2%	30.2%	30.2%	30.2%
EPS	6.04	5.25	5.87	7.64	7.23	7.99	10.89	10.69	11.24	11.82	12.45	13.12
Reality Checks												
Asset efficiency	0.89	0.83	0.79	0.80	0.67	0.61	0.73	0.68	0.63	0.60	0.57	0.54
Operating asset efficiency	1.07	1.03	0.90	0.94	0.85	0.76	0.86	0.86	0.86	0.86	0.86	0.86
Debt to equity	0.0%	13.7%	31.6%	54.0%	67.9%	86.3%	106.8%	77.8%	60.5%	49.1%	40.9%	34.8%
Net to Gross	70.6%	58.2%	52.9%	45.6%	44.1%	45.0%	45.7%	46.5%	46.9%	46.9%	46.7%	46.2%
Net PPE growth		7.4%	31.4%	7.1%	13.2%	17.3%	(1.2%)	8.3%	6.4%	5.0%	3.8%	2.8%
Operating Margin (segments basis)												
EPS Growth		-13.0%	11.8%	30.1%	-5.4%	10.5%	36.2%	-1.8%	5.1%	5.2%	5.3%	5.4%
Incremental/Decremental		-40.0%	37.4%	29.1%	44.6%	7.0%	29.6%	25.8%	26.3%	26.7%	27.2%	27.5%

All positions and data are hypothetical.

INVESTMENT PROCESS

Sample DuPont Analysis

XYZ	Forecast											
Dupont Analysis	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
ROE	10.7%	16.9%	34.8%	50.0%	43.5%	35.4%	28.8%	24.8%	21.5%	18.6%	17.2%	19.0%
ROA	7.5%	12.4%	24.9%	38.3%	31.8%	27.4%	22.3%	19.6%	17.3%	15.2%	14.3%	16.0%
Net Margin	3.3%	5.4%	11.3%	18.0%	16.2%	16.5%	13.9%	13.3%	12.7%	12.1%	12.1%	13.0%
Gross Margin	36.7%	40.2%	46.7%	52.6%	52.5%	52.0%	48.7%	47.8%	46.8%	45.6%	45.6%	46.0%
EBIT	5.7%	8.9%	18.8%	29.6%	26.2%	15.5%	22.2%	21.1%	20.1%	18.9%	18.8%	19.0%
Interest Burden	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	-0.2%	-0.3%	-0.4%	-0.6%	-0.7%	1.0%
Tax Burden	2.2%	3.5%	7.5%	12.0%	10.6%	10.0%	8.5%	8.1%	7.8%	7.4%	7.4%	75.0%
Asset Efficiency	2.27	2.30	2.20	2.13	1.90	1.66	1.61	1.48	1.36	1.26	1.18	1.20
Days Sales Outstanding	20.54	18.72	18.24	21.66	25.12	27.47	30.15	31.67	31.96	32.23	32.11	33.10
Days Inventory Outstanding	73.18	80.21	75.39	59.01	68.42	73.24	72.95	78.13	78.74	79.24	79.65	80.20
Sales to Net PPE	48.34	47.29	62.56	104.08	130.16	128.00	91.92	66.27	55.41	49.56	47.09	48.50
Sales to Net PPE + Intangibl	4.78	5.47	8.50	15.80	24.42	30.45	30.26	28.07	26.73	25.80	25.68	26.90
Days Payables Outstanding	26.83	30.82	39.65	45.14	38.48	38.10	42.23	45.29	45.69	46.03	46.30	46.80
Assets to Equity	142.6%	136.9%	140.0%	130.6%	137.0%	129.0%	129.0%	126.3%	124.0%	122.1%	120.4%	122.4%
Debt to Equity	13.5%	1.7%	1.0%	0.4%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%
Borrowing cost	6.0%	12.1%	7.2%	14.7%	16.5%	7.5%	-331.6%	-457.7%	-769.3%	-1122.1%	-1500.2%	-1300.8%

All positions and data are hypothetical.

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RISK MANAGEMENT

RISK MANAGEMENT

Sector allocation offers an insufficient window into a portfolio's diversification and risk profile. Vaughan Nelson focuses on factor exposure, which provides a granular view of a portfolio's positioning and biases.

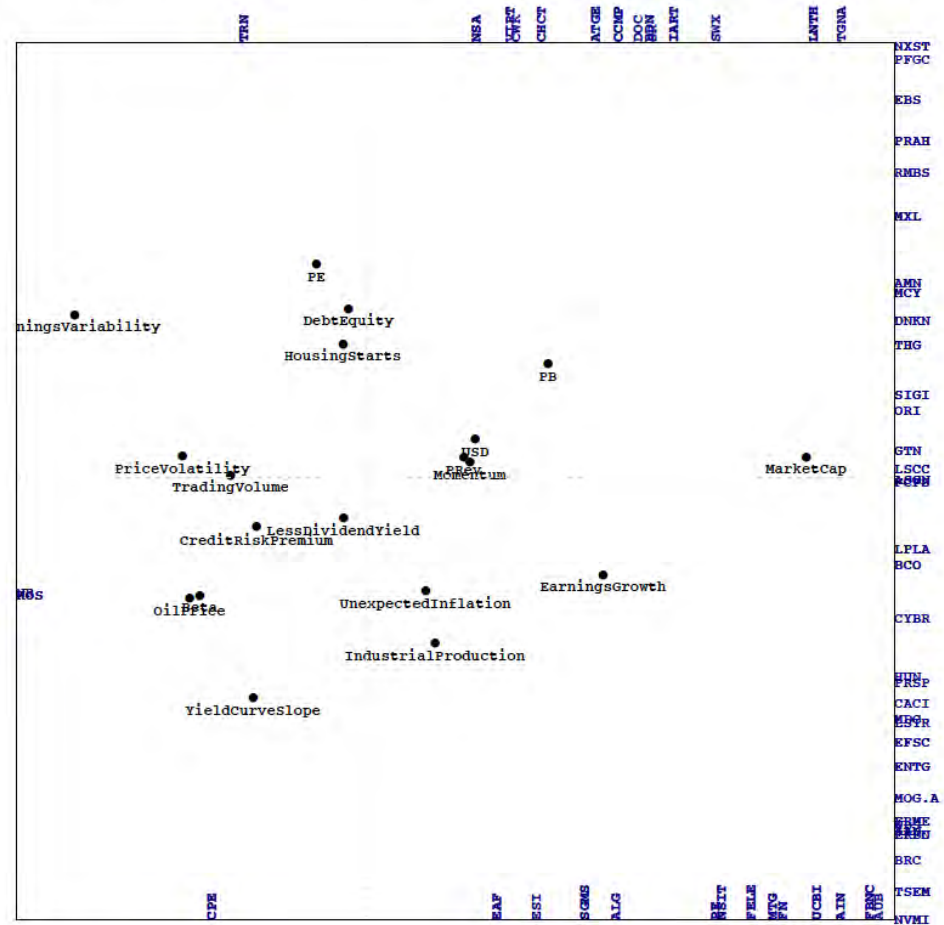
Vaughan Nelson's factor-based risk analysis demonstrates our very high active share portfolios maintain a factor mosaic similar to the universes against which we compete.

RISK MANAGEMENT

Factor Exposure Determines Diversification

A larger number of positions does not equate to greater diversification.

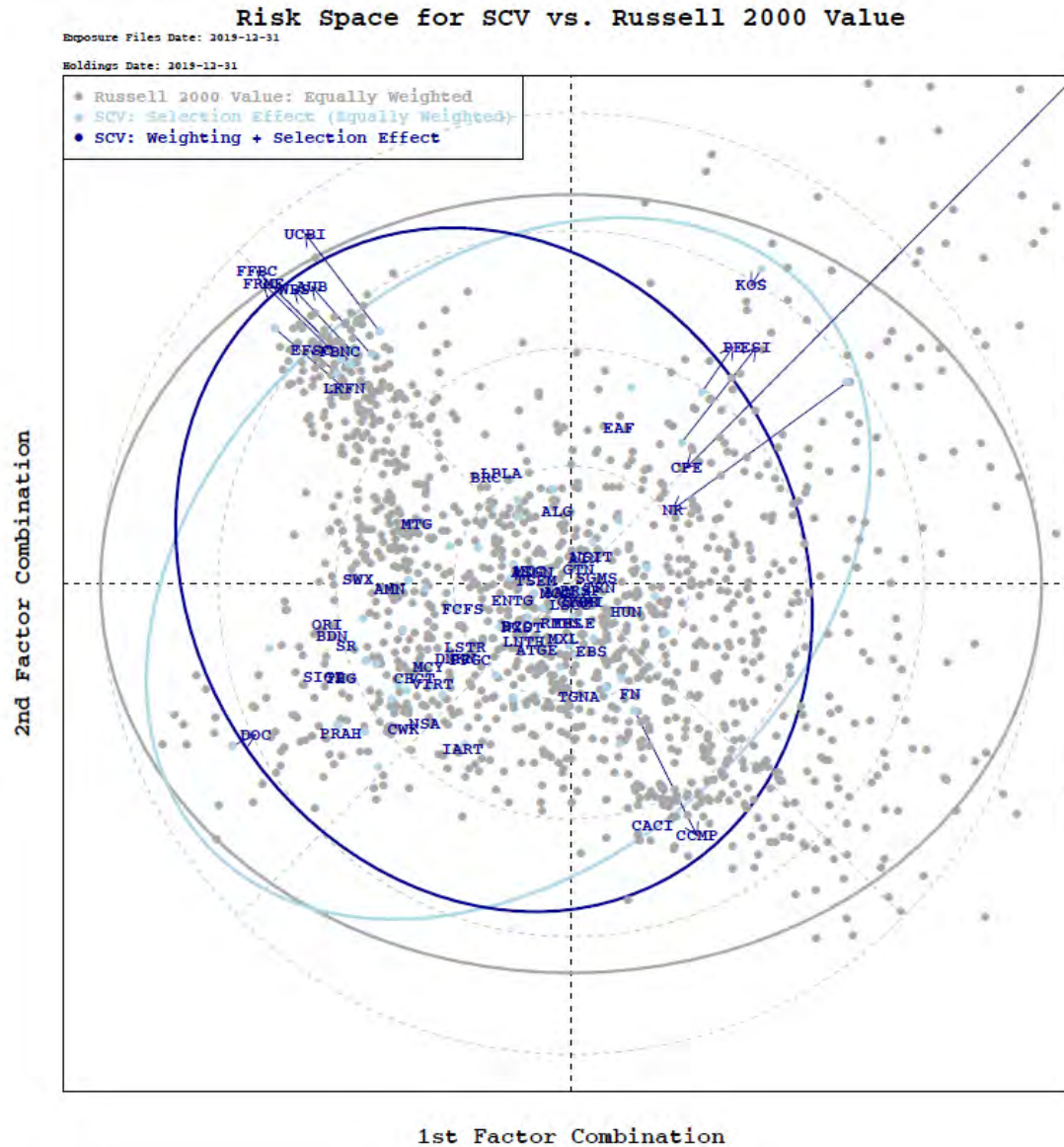
Virtual Independent Instruments: SCV = 15, Russell 2000 Value = 17



As of 12/31/19.

Source: Northfield Information Services

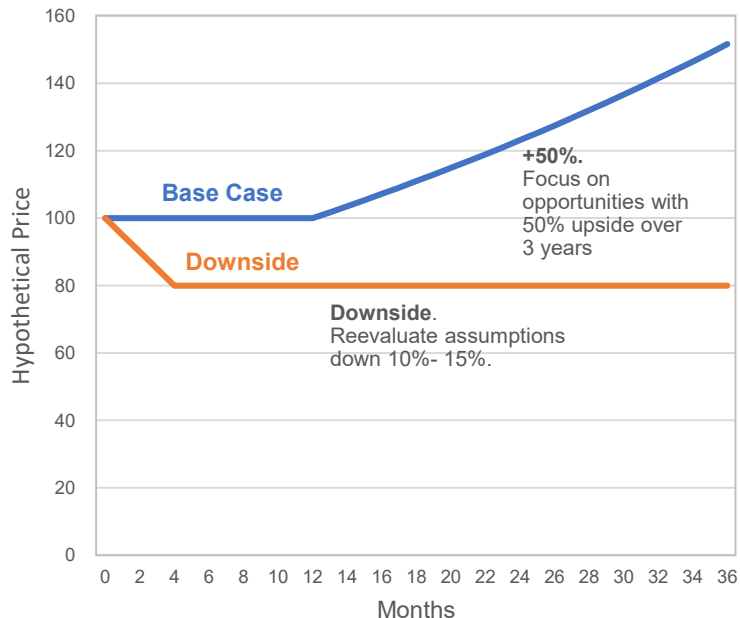
RISK MANAGEMENT



RISK MANAGEMENT

Security Level

Asymmetric Investment Profile



► Opportunities with asymmetric returns

- Generally seek securities with 50% upside with no greater than 10%-15% downside
- Construct downside scenarios
- Reevaluate assumptions if stock reaches downside scenario

► Incorporating opposing views

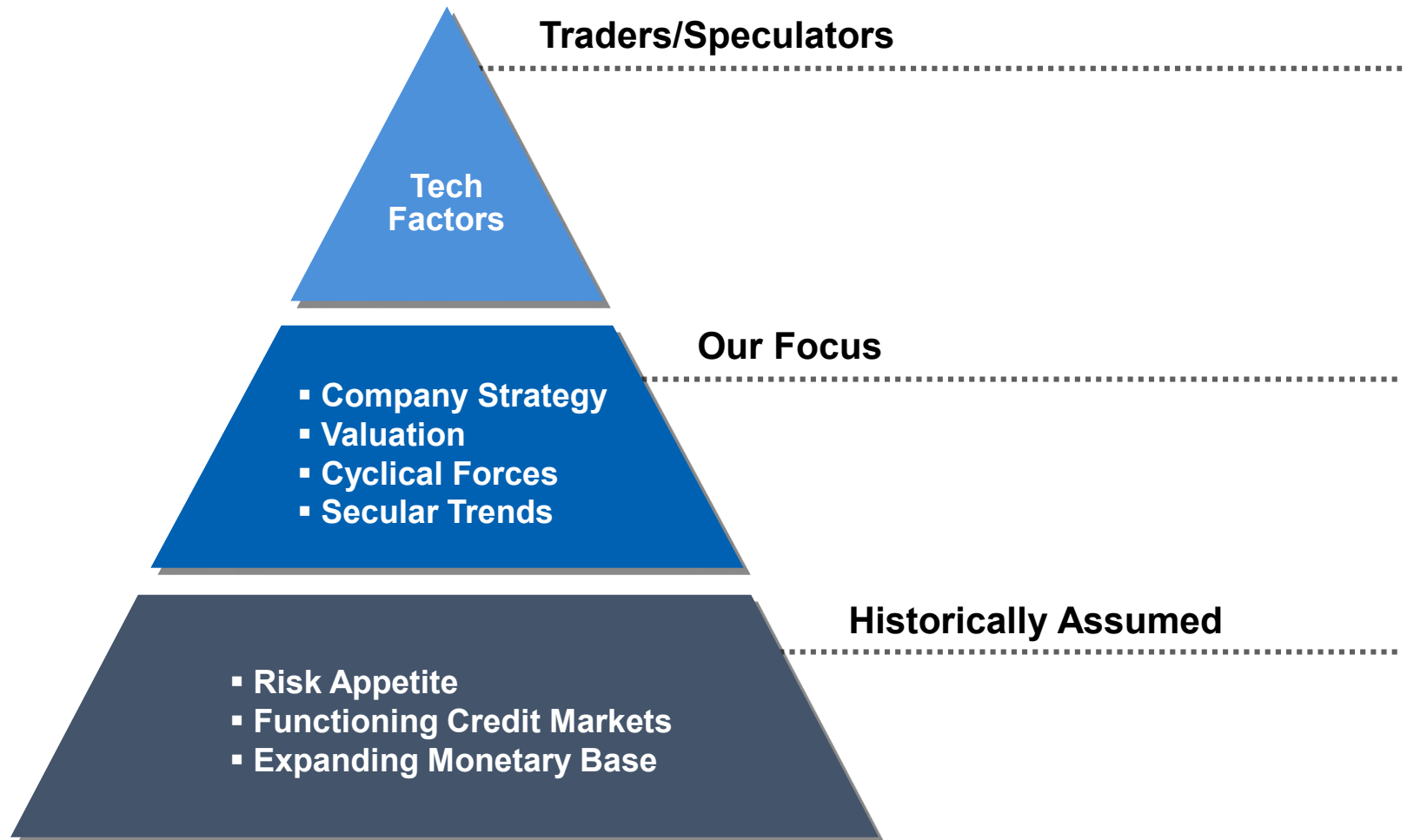
- Integrate differing articles/research on the company
- Pre-assigned team member to present short investment thesis (red team process)

► Quick to recognize mistakes

- Avoid anchoring bias
 - Openness and willingness to recognize a misstep and move forward

RISK MANAGEMENT

Actively Monitor Liquidity and Credit



ANALYTICS AND PERFORMANCE

ANALYTICS AND PERFORMANCE

Top Ten Holdings as of 12/31/19

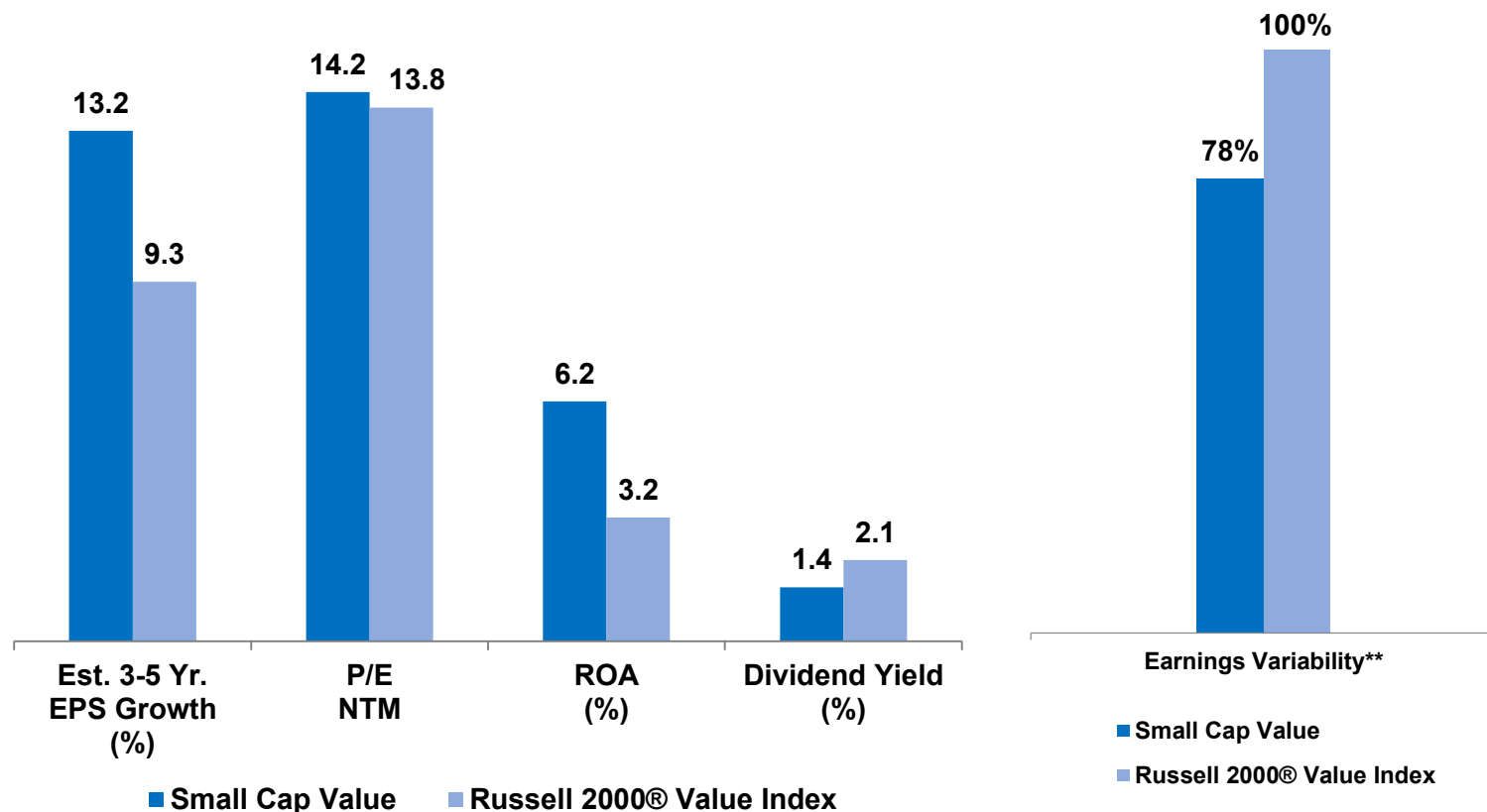
Company	Percent of Total Portfolio*
CACI International Class A	3.53%
Cabot Microelectronics	3.08%
Nexstar Media Group Class A	2.64%
Element Solutions	2.61%
MGIC Investment	2.56%
Brady Corp. Class A	2.44%
TEGNA	2.44%
Entegris	2.43%
Landstar System	2.29%
First Financial Bancorp	2.17%

* Excludes 0.67% cash and 4.84% Russell 2000 Value iShares.
Source: FactSet

There is no assurance that any securities discussed herein will remain in an account portfolio at the time you review this Profile or securities sold have not been re-purchased. The securities discussed do not represent an account's entire portfolio and, in the aggregate, may represent only a small percentage of an account's portfolio holdings. It should not be assumed that any of the security transactions or holdings discussed were or will prove to be profitable or that the investment recommendations or decisions made in the future will be profitable or will equal the investment performance of the securities discussed herein. These holdings are supplemental information to the Small Cap Value compliant presentation.

ANALYTICS AND PERFORMANCE

Portfolio Characteristics as of 12/31/19



These portfolio characteristics are supplemental information to the Small Cap Value compliant presentation.
Data as of 1/8/20 for 12/31/19.
Source: FactSet

** The numerical value one minus the R-squared statistic for a trend line of the most recent five years of fiscal year earnings per share. Earnings variability of the Small Cap Value portfolio is 0.43 versus 0.55 for the Russell 2000® Value Index (12/31/14 to 12/31/19). Source: FactSet

ANALYTICS AND PERFORMANCE

Portfolio Characteristics as of 12/31/19

	Small Cap Value	Russell 2000® Value
Beta*	0.87	1.00
Sharpe Ratio*	0.45	0.38
Information Ratio*	0.11	N/A
R-Square*	0.90	1.00
Std. Deviation*	14.48%	15.74%

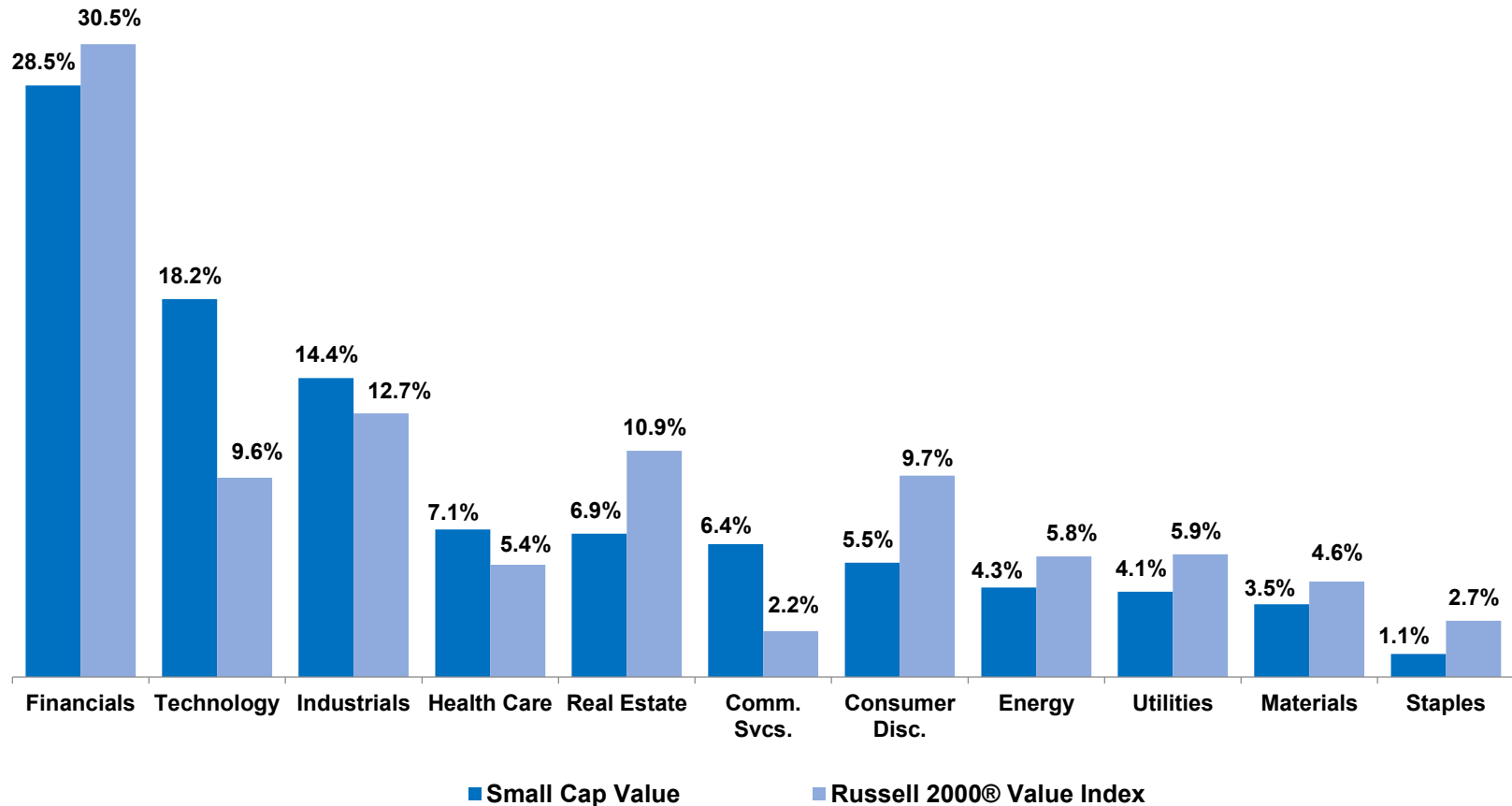
* Annualized 5-years ending 12/31/19.

These portfolio characteristics are supplemental information to the Small Cap Value compliant presentation.

Source: FactSet

ANALYTICS AND PERFORMANCE

Sector Allocation as of 12/31/19

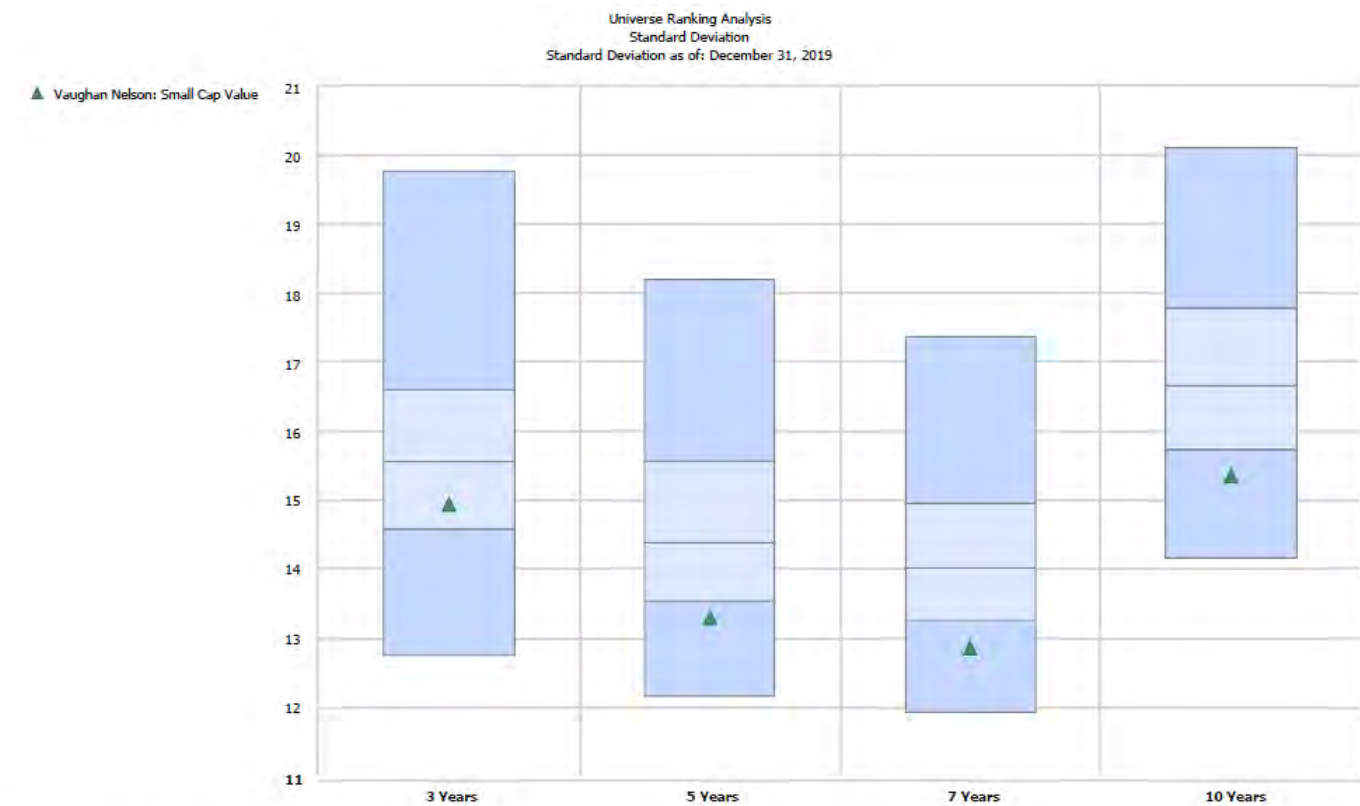


* Excludes 0.67% cash and 4.84% Russell 2000 Value iShares.

These sector allocations are supplemental information to the Small Cap Value compliant presentation.

Source: FactSet S&P GICS

ANALYTICS AND PERFORMANCE



Universe: eVestment US Small Cap Value Equity

	VT	RM	3 Years		5 Years		7 Years		10 Years	
				Rk		Rk		Rk		Rk
5th percentile			12.74		12.15		11.91		14.15	
25th percentile			14.57		13.52		13.24		15.72	
Median			15.55		14.37		14.00		16.65	
75th percentile			16.59		15.56		14.94		17.77	
95th percentile			19.76		18.19		17.36		20.10	
# of Observations			233		222		214		197	
▲ Vaughan Nelson	SA	GF	14.92	33	13.28	19	12.84	15	15.33	20

Results displayed in USD using Spot Rate (SR).

ANALYTICS AND PERFORMANCE

Small Cap Value Composite Returns

► Investment Objective

- Long-term capital appreciation through investments in small capitalization companies with a focus on a targeted return

► Investment Focus

- Companies within the market capitalization range of the Russell 2000® Value Index at time of purchase
- Companies earnings a positive return on capital, valued at a discount to their asset value or with an attractive dividend yield
- Companies that have the potential for 50% returns over a three-year investment horizon

As of 12/31/19	1 Year	3 Years	5 Years	7 Years	10 Years	Since 12/31/99
Small Cap Value	26.0%	5.5%	7.5%	12.1%	12.2%	13.8%
Russell 2000® Value Index	22.4%	4.8%	7.0%	10.1%	10.6%	9.4%

As of 1/31/20 (preliminary)	YTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since 12/31/99
Small Cap Value	-2.1%	11.7%	4.6%	7.9%	10.8%	12.3%	13.6%
Russell 2000® Value Index	-5.4%	4.4%	3.1%	6.7%	8.4%	10.3%	9.1%

All returns are presented gross-of-fees and all periods longer than 12 months are annualized.

Source: FactSet

See next page for detailed composite information.

Small Capitalization Value: GIPS® Composite, Notes and Disclosures

January 1, 2010 through December 31, 2019

Year	Composite (Gross)	Benchmark	Number of Portfolios	Dispersion at End-of-Period (Std Dev)	Composite Assets at End-of-Period (\$MM-USD)	Total Firm Assets (ex. model assets) (\$MM-USD)	Entity Assets ⁺ (\$MM-USD)	Std Dev Composite (3-Yr Annlzd)	Std Dev Benchmark (3-Yr Annlzd)
2019	25.95%	22.39%	72	0.35%	2,712	11,346	13,064	14.18%	15.68%
2018	-13.59%	-12.86%	87	0.38%	2,663	10,078	11,425	14.15%	15.76%
2017	7.77%	7.84%	101	0.21%	3,780	11,675	13,172	12.78%	13.97%
2016	21.37%	31.74%	109	0.86%	3,944	11,572	12,912	13.69%	15.50%
2015	0.99%	-7.47%	102	0.18%	3,135	11,316	12,469	12.12%	13.46%
2014	10.12%	4.22%	95	0.16%	3,783	9,943	11,057	10.76%	12.79%
2013	40.39%	34.52%	100	0.36%	3,933	9,243	10,258	14.48%	15.82%
2012	16.26%	18.05%	96	0.28%	2,902	7,273	8,071	17.60%	19.89%
2011	-2.54%	-5.50%	102	0.19%	2,801	6,876	7,667	20.89%	26.05%
2010	25.20%	24.50%	111	0.31%	3,133	7,050	7,965	22.91%	28.37%

* Number includes assets where Vaughan Nelson Investment Management does not have full unconditional trading authority. The assets consist of model portfolio relationships with third party platforms and totaled \$1.7 billion as of December 31, 2019. This information is presented as supplemental information to the Small Capitalization Value compliant presentation.

NOTES:

COMPOSITE DESCRIPTION. This composite is comprised of all fee paying, discretionary Small Capitalization Value portfolios in excess of \$1 million under management. Small Capitalization Value is defined as a company within the market capitalization range of Russell 2000® Value Index at time of initial purchase. The benchmark is the Russell 2000® Value Index. The Russell 2000® Value Index measures the performance of small-cap value segment of the U.S. equity universe. It includes those Russell 2000 companies with lower price-to-book ratios and lower forecasted growth values. The Russell 2000® Value Index is constructed to provide a comprehensive and unbiased barometer for the small-cap value segment. The Index is completely reconstituted annually to ensure larger stocks do not distort the performance and characteristics of the true small-cap opportunity set and that the represented companies continue to reflect value characteristics. Frank Russell Company ("Russell") is the source and owner of Russell Index data contained herein. Any further dissemination of the data is strictly prohibited. Russell is not responsible for any inaccuracy in this presentation. The composite creation date is April 1997.

FIRM DEFINITION. Vaughan Nelson Investment Management ("Vaughan Nelson") is an equity, fixed-income and balanced portfolio investment manager. Vaughan Nelson is defined as an independent investment advisory firm and is affiliated with Natixis Investment Managers.

FEES. Small Capitalization Value Fee Schedule: 1.00% on the first \$25 million, .85% on the next \$25 million, .75% on the remainder.

OTHER NOTES. Performance results are presented before management fees. Results for the full historical period are time weighted. Accounts have been valued daily and portfolio returns have been weighted by using beginning-of-month market values plus daily weighted cash flow. Inception date is April 1997. The dispersion calculation is based on a dollar-weighted average of portfolios within the composite for the entire period. The dispersion percent of N/A indicates that the number of portfolios for the entire year were equal to five or fewer or periods of less than one year. The benchmark source is FactSet. The valuation source is Intercontinental Exchange (ICE) through Advent Software. Benchmark returns are not covered by the report of independent verifiers.

DISCLOSURES:

BASIS OF PRESENTATION. The attached information and index performance has been developed internally and/or obtained from sources, which Vaughan Nelson believes to be reliable; however, Vaughan Nelson does not guarantee the accuracy, adequacy or completeness of such information, nor does it guarantee the appropriateness of any strategy referred to for any particular investor. This document is provided for informational purposes only and should not be construed as advice or a recommendation for purchase or sale of securities. Past performance is not indicative of future results. The strategy is managed by Chris Wallis and Stephen Davis from 12/31/18, Chris Wallis, Scott Weber, Dennis Alff, and Chad Fargason from 9/30/13; and Chris Wallis and Scott Weber from 6/30/04.

COMPOSITE NOTES. The composite for each investment strategy has specific criteria in terms of minimum portfolio size, tax status, and discretion. Portfolios meeting the stated criteria are added to the composite as of the first full quarter of investment in that composite's style. Similarly, accounts are removed from the composite after the last full quarter of management under the composite style. A complete list and description of composites is available upon request. The composite results portrayed reflect the reinvestment of dividends, capital gains, and other earnings when appropriate.

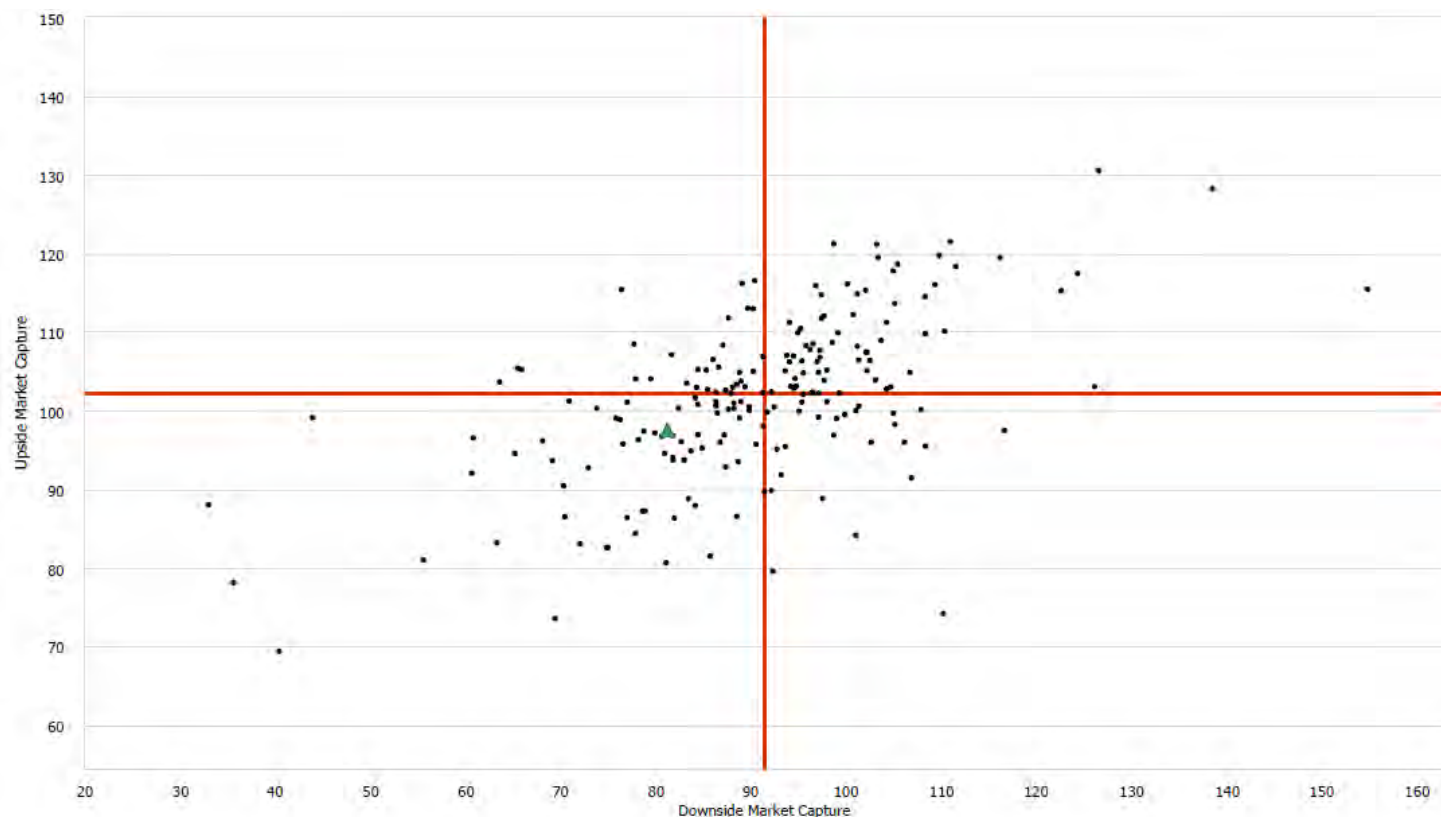
CALCULATION METHODOLOGY. The composite performance results are time-weighted total return net of commissions and transaction costs. Valuations and returns are expressed in U.S. dollars. Vaughan Nelson consistently values all portfolios each month on a trade date basis. Additional information regarding policies for valuing portfolios, calculating performance, and preparing compliant presentations is available upon request. No composite accounts hold foreign denominated securities.

COMPLIANT STATEMENT. Vaughan Nelson claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS® Standards. Vaughan Nelson has been independently verified for the periods 12/31/97 through 9/30/19. Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS® standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS® standards. The Small Capitalization Value composite has been examined for the periods 1/1/01 to 12/31/18. The verification and performance examination reports are available upon request.

PERFORMANCE DISCLOSURE. For returns presented gross of fees, results were calculated prior to a deduction for investment management fees. Client returns will be reduced by Vaughan Nelson's investment management fees. The fee schedule is disclosed in Part 2A of Form ADV filed with the Securities and Exchange Commission. Over a period of years, deductions for annual investment management fees will reduce the compounding effect on portfolio growth. For example, assuming a 5% annual return for five years and application of the maximum annual fee of 1.00 %, a total gross return of 27.63% and a total net return of 21.67% would be generated.

Model year-end portfolio totals were as follows: 2019 - \$1.7 billion, 2018 - \$1.3 billion; 2017 - \$1.5 billion; 2016 - \$1.3 billion, 2015 - \$1.2 billion, 2014 - \$1.1 billion, 2013 - \$1.0 billion, 2012 - \$798 million, 2011 - \$791 million, 2010 - \$915 million.

ANALYTICS AND PERFORMANCE



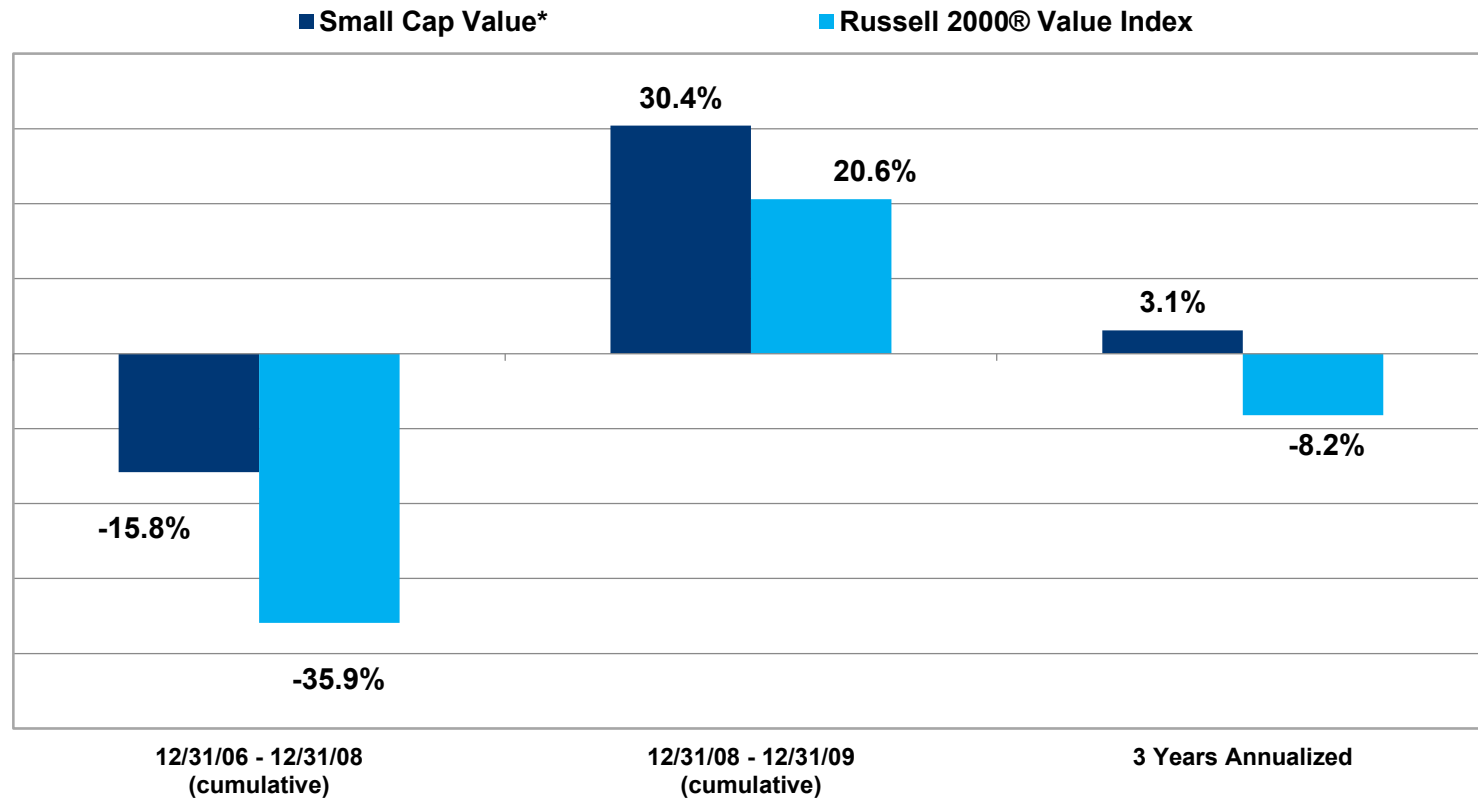
Universe: eVestment US Small Cap Value Equity

10 Years As Of December 31, 2019

	Upside Market Capture	Downside Market Capture
▲ Vaughan Nelson	97.53	81.21
+ US Small Cap Value Equity	102.23	91.39
Results displayed in USD using Spot Rate (SR).		Russell 2000 Value

ANALYTICS AND PERFORMANCE

Downside Protection with Upside Participation



* Composite returns, gross-of-fees
Source: FactSet

ANALYTICS AND PERFORMANCE

Target Returns in Various Market Environments

Trough to Peak

	Small Cap Value Composite	Russell 2000® Value Index
12/31/1999 to 12/31/2006	21.20%	16.21%

Peak to Peak

	Small Cap Value Composite	Russell 2000® Value Index
9/30/2006 to 9/30/2018	11.40%	7.23%

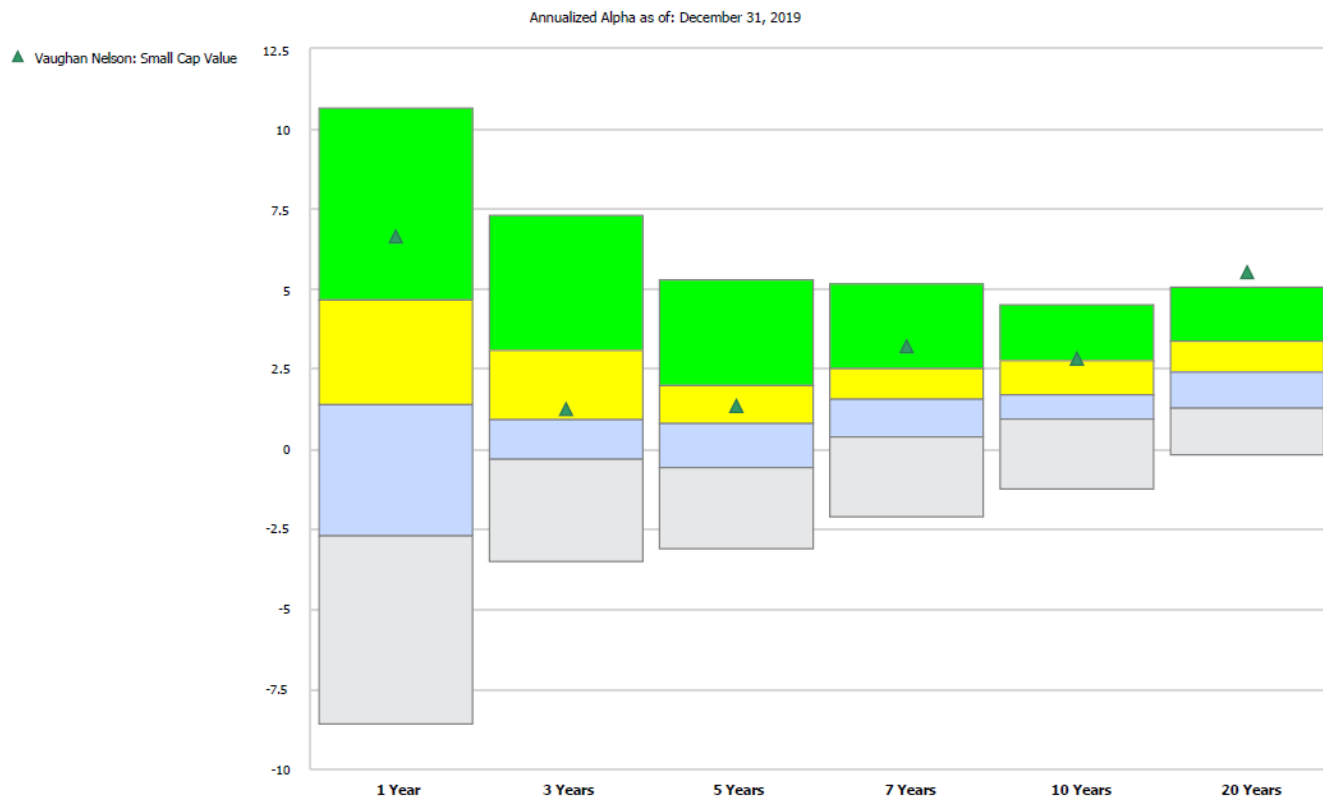
Trough to Peak

	Small Cap Value Composite	Russell 2000® Value Index
12/31/2008 to 12/31/2019	13.71%	11.44%

	Small Cap Value Composite	Russell 2000® Value Index
12/31/1999 to 12/31/2016	15.35%	10.25%

Source: FactSet

ANALYTICS AND PERFORMANCE



Universe: eVestment US Small Cap Value Equity

	1 Year		3 Years		5 Years		7 Years		10 Years		20 Years	
		Rk		Rk		Rk		Rk		Rk		Rk
5th percentile	10.65		7.29		5.28		5.15		4.50		5.05	
25th percentile	4.65		3.08		1.98		2.51		2.76		3.37	
Median	1.38		0.92		0.79		1.55		1.69		2.40	
75th percentile	-2.72		-0.32		-0.58		0.37		0.93		1.27	
95th percentile	-8.59		-3.52		-3.12		-2.12		-1.25		-0.18	
# of Observations	245		241		230		221		204		106	
▲ Vaughan Nelson	6.63	14	1.24	46	1.35	37	3.21	15	2.82	23	5.52	4

Results displayed in USD using Spot Rate (SR).

Russell 2000 Value

Source: eVestment

ANALYTICS AND PERFORMANCE

Manager Performance Consistency 3 Year Rolling



Universe: eVestment US Small Cap Value Equity

As Of December 31, 2019

	# of Observations	# Outperform Benchmark	% Outperform Benchmark
▲ Vaughan Nelson	80	73	91.25%
† US Small Cap Value Equity	---	---	---
— Russell 2000 Value	---	---	---

Rolling three-year periods starting April 1997 to December 2019, calculated quarterly.

Source: eVestment

Capital Markets Outlook & Risk Metrics

As of January 31, 2020

Capital Markets Outlook

Takeaways

- In a reverse from calendar year 2019, most risk-oriented markets produced slight drawdowns in January 2020. Several of the themes that have dominated recent years also returned in a material way as US equity markets fared better than Non-US equity markets, growth outperformed value, and large caps bested small caps. Long US Treasury bonds produced some of the strongest performance as they generated nearly a 7% return over the month.
- While it is still too early to determine the economic impacts, the viral outbreak of the coronavirus was designated as one of the reasons behind the recent market selloff.
- The US yield curve flattened in January as the long end of the curve declined by roughly 30 basis points whereas the short end of the curve remained relatively stable. As a reminder, the Federal Reserve lowered rates three times in 2019 but have since indicated a pause. The current target federal funds rate is 1.50-1.75%.
- Due in part to strong returns across nearly all asset classes in 2019, most practitioner's long-term, forward-looking returns are lower as of early-2020 when compared to early-2019 capital market assumptions.
- US equity markets remain expensive whereas non-US equity markets remain reasonably valued relative to their histories. US credit and emerging markets debt spreads remain reasonably valued relative to their histories, although the richness of US high yield has recently increased (i.e., is now more expensive).

Capital Markets Outlook

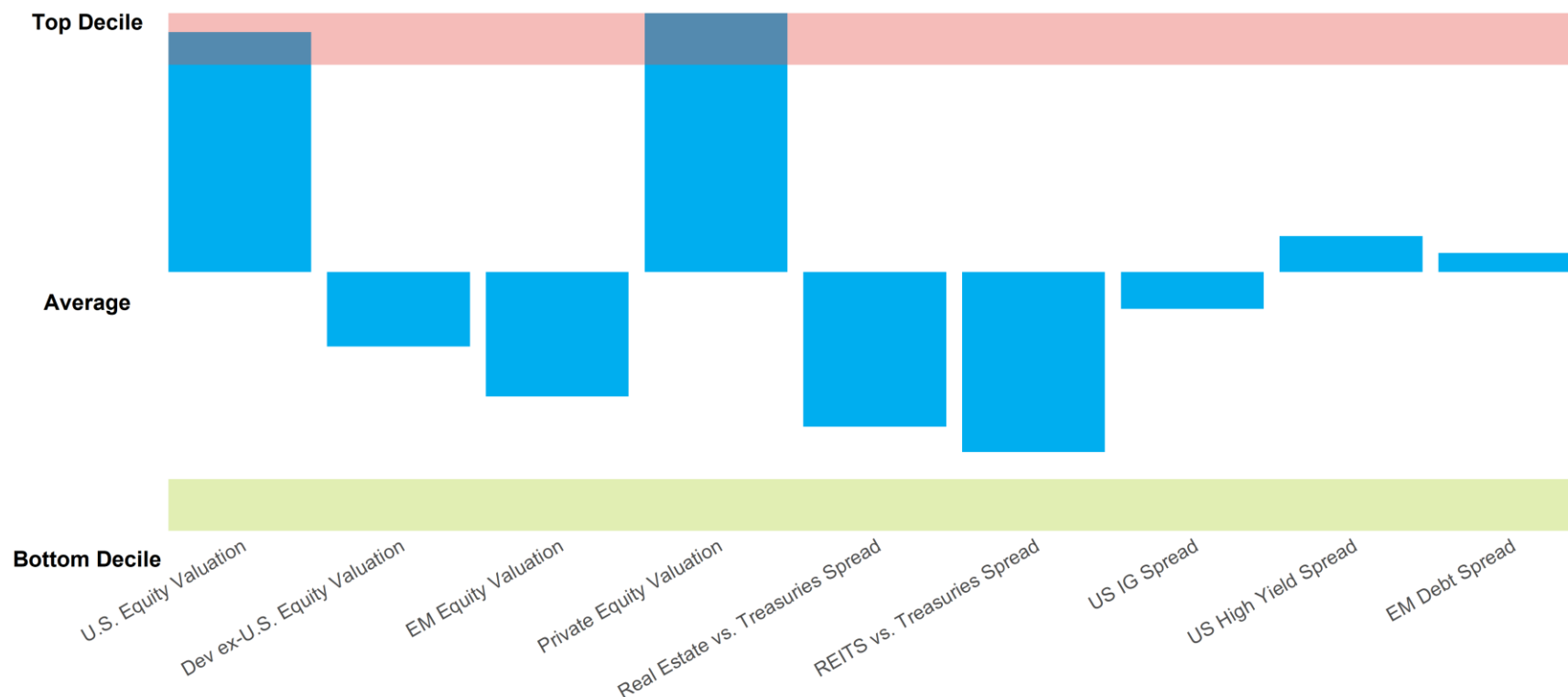
Takeaways

- Relative to their counterparts (growth and large cap), value and small cap equities continue to remain attractive from a valuation perspective.
- Although implied equity market volatility¹ remained at relatively low levels (~12-14) throughout most of January, the VIX Index did jump to near its long-term average (~19) at month-end.
- The Market Sentiment Indicator² stayed green at month end.

¹ As measured by VIX Index.

² See Appendix for the rationale for selection and calculation methodology used for the risk metrics.

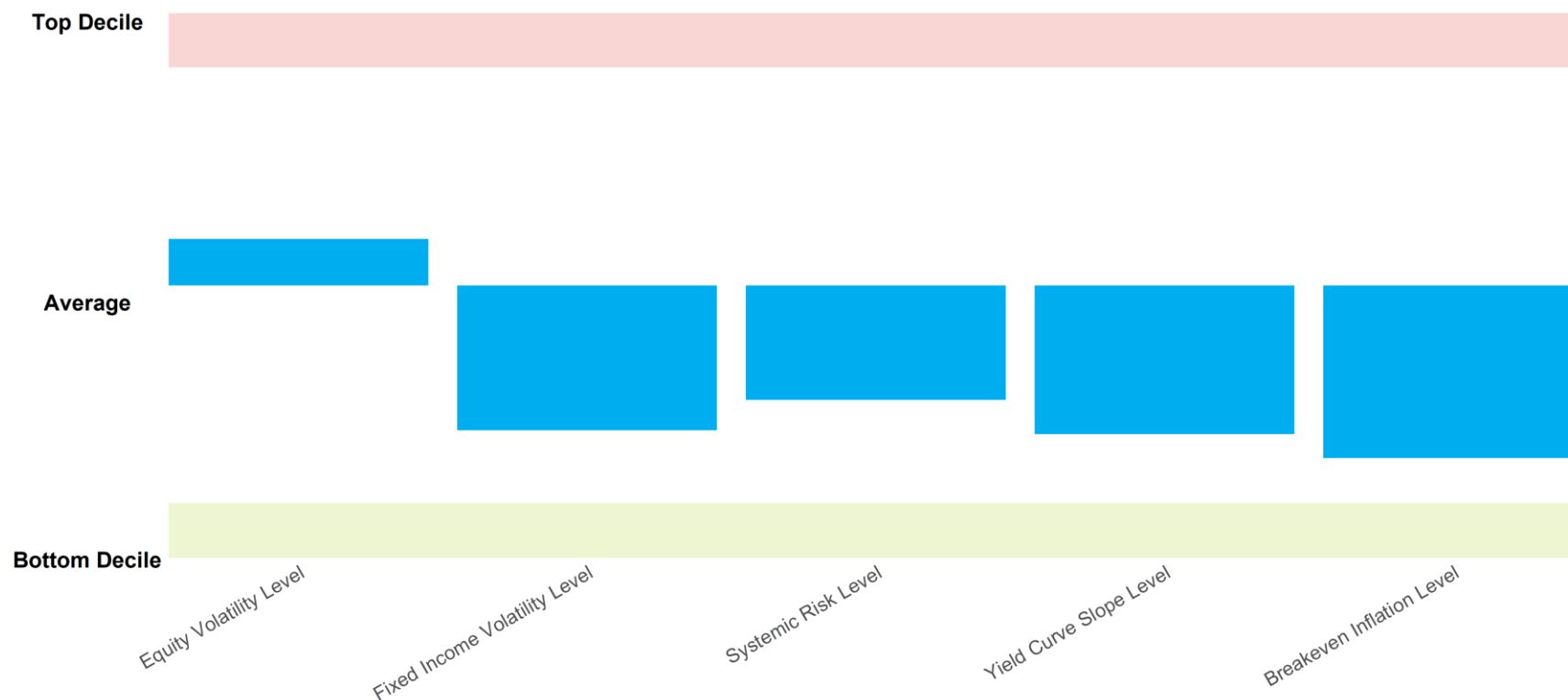
Risk Overview/Dashboard (1) (As of January 31, 2020)¹



- Dashboard (1) summarizes the current state of the different valuation metrics per asset class relative to their own history.

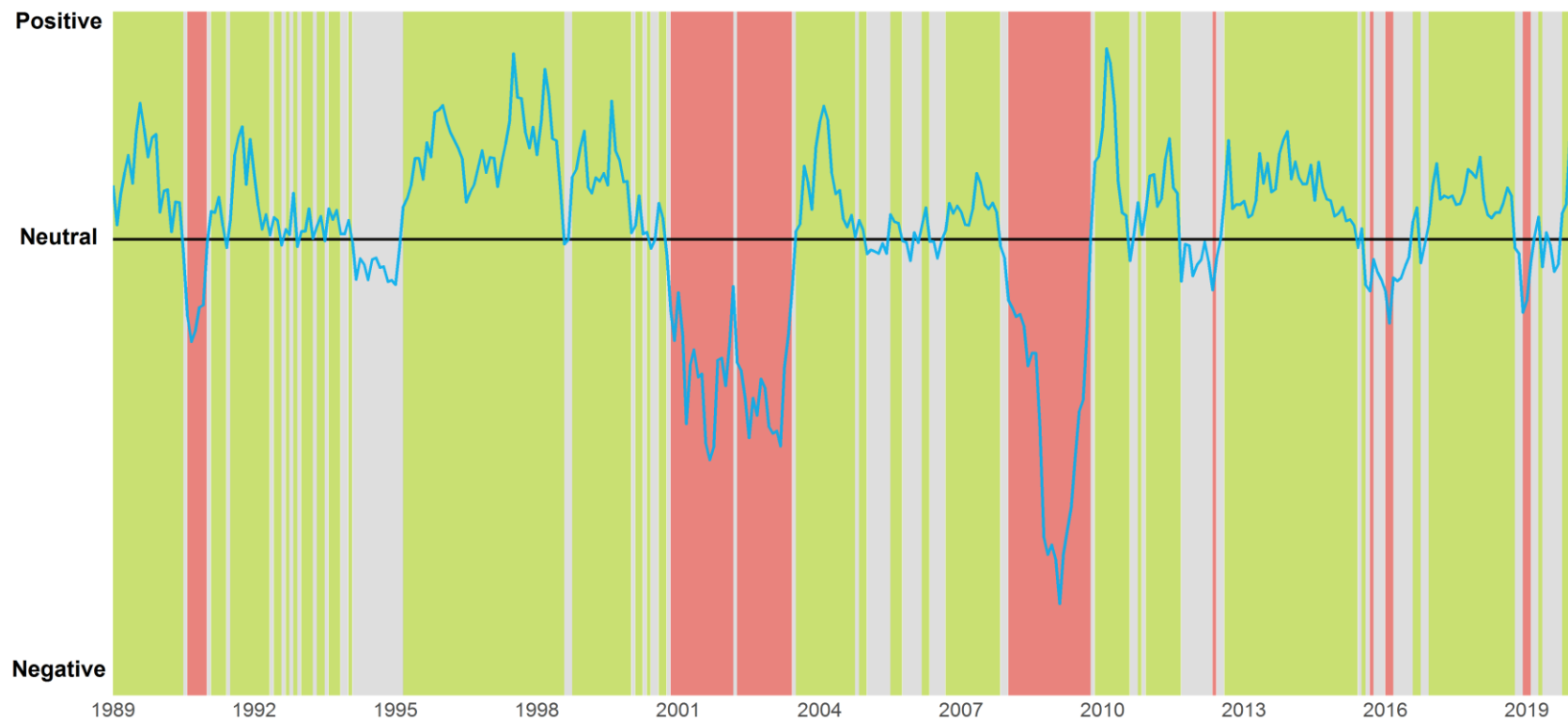
¹ With the exception of Private Equity Valuation, that is YTD as of December 31, 2019.

Risk Overview/Dashboard (2) (As of January 31, 2019)

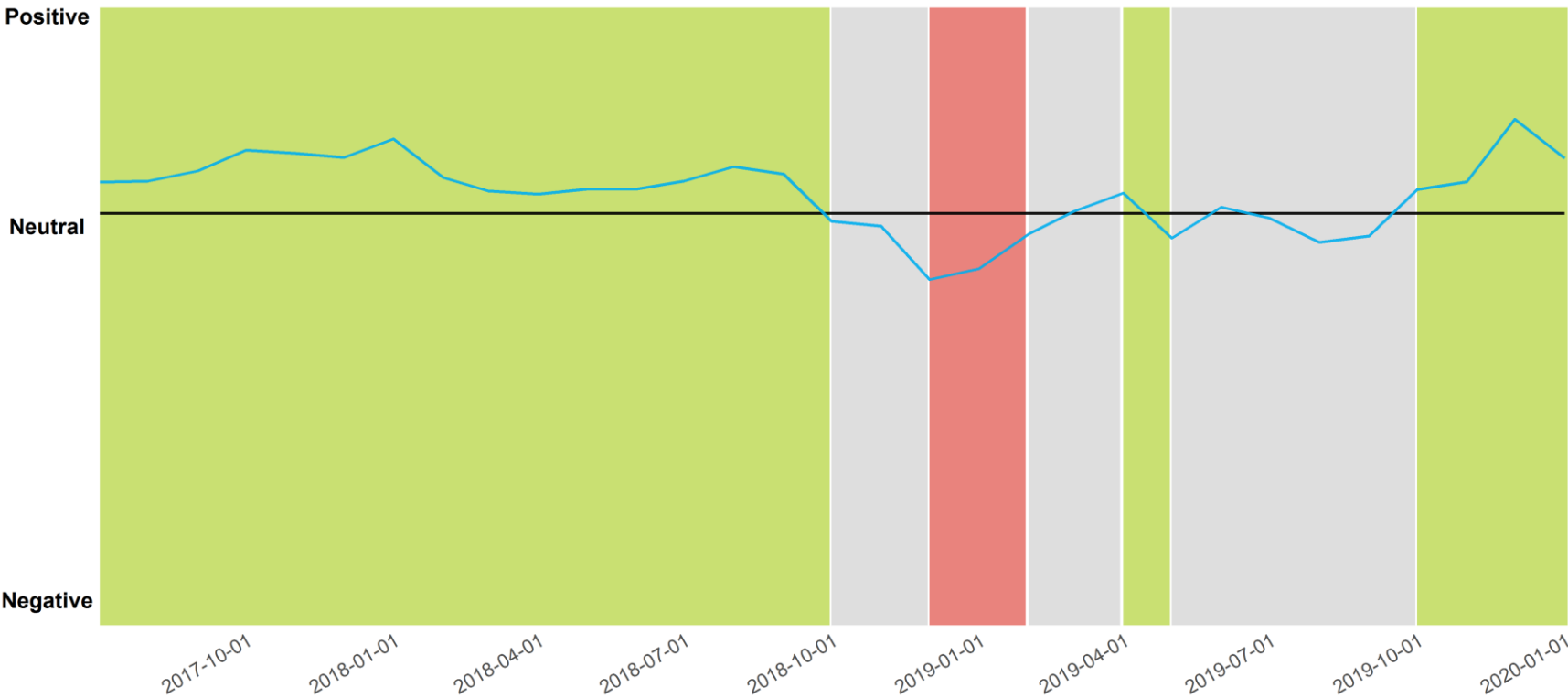


- Dashboard (2) shows how the current level of each indicator compares to its respective history.

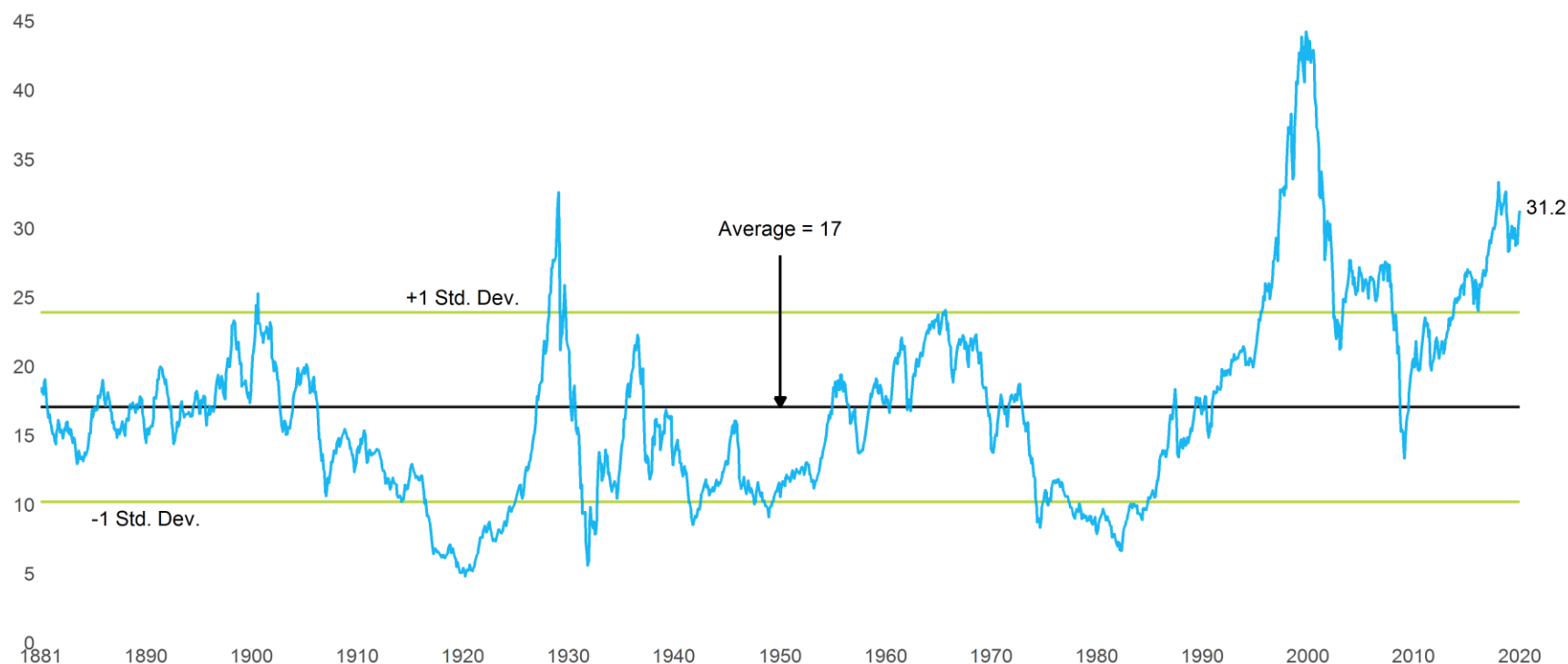
Market Sentiment Indicator (All History) (As of January 31, 2020)



Market Sentiment Indicator (Last Three Years)
(As of January 31, 2020)



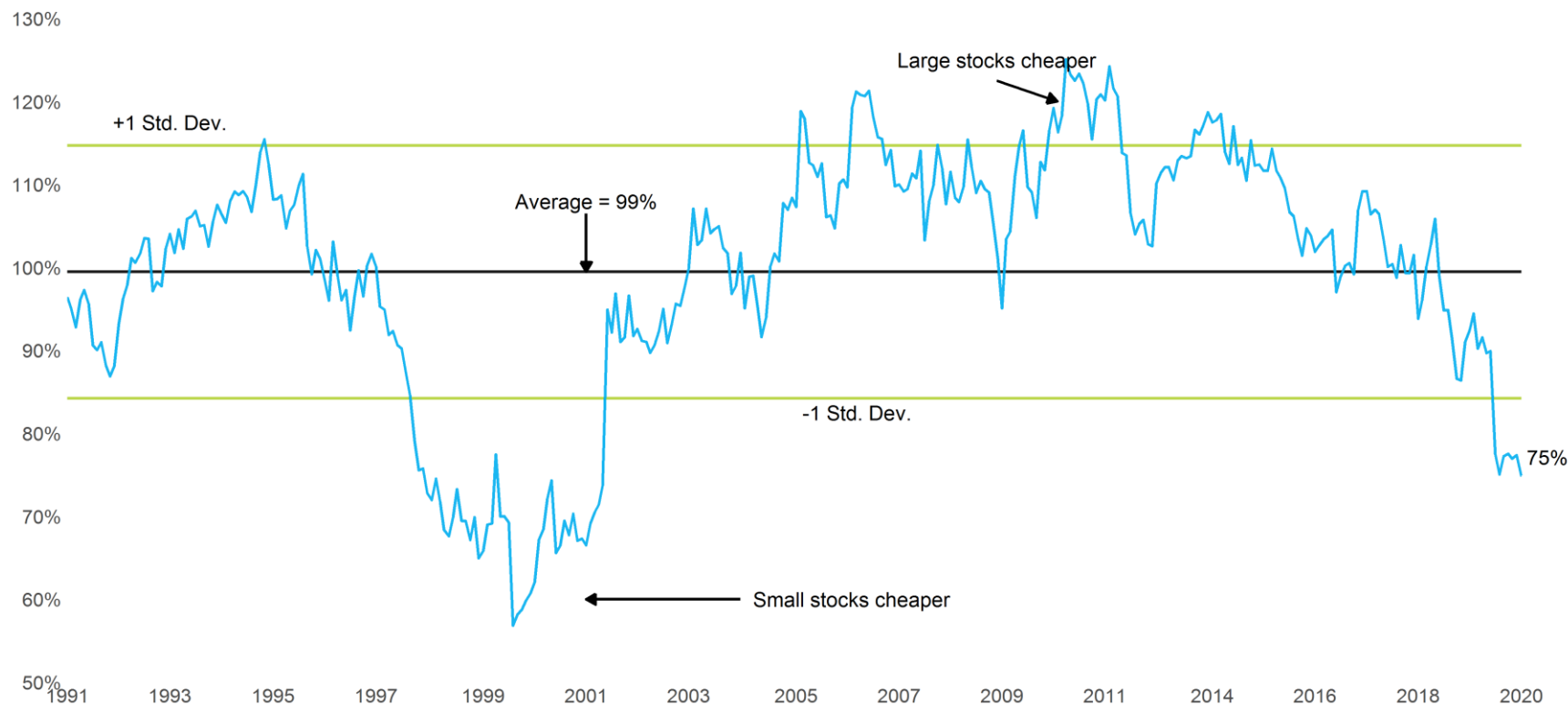
US Equity Cyclically Adjusted P/E¹ (As of January 31, 2020)



- This chart details one valuation metric for US equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

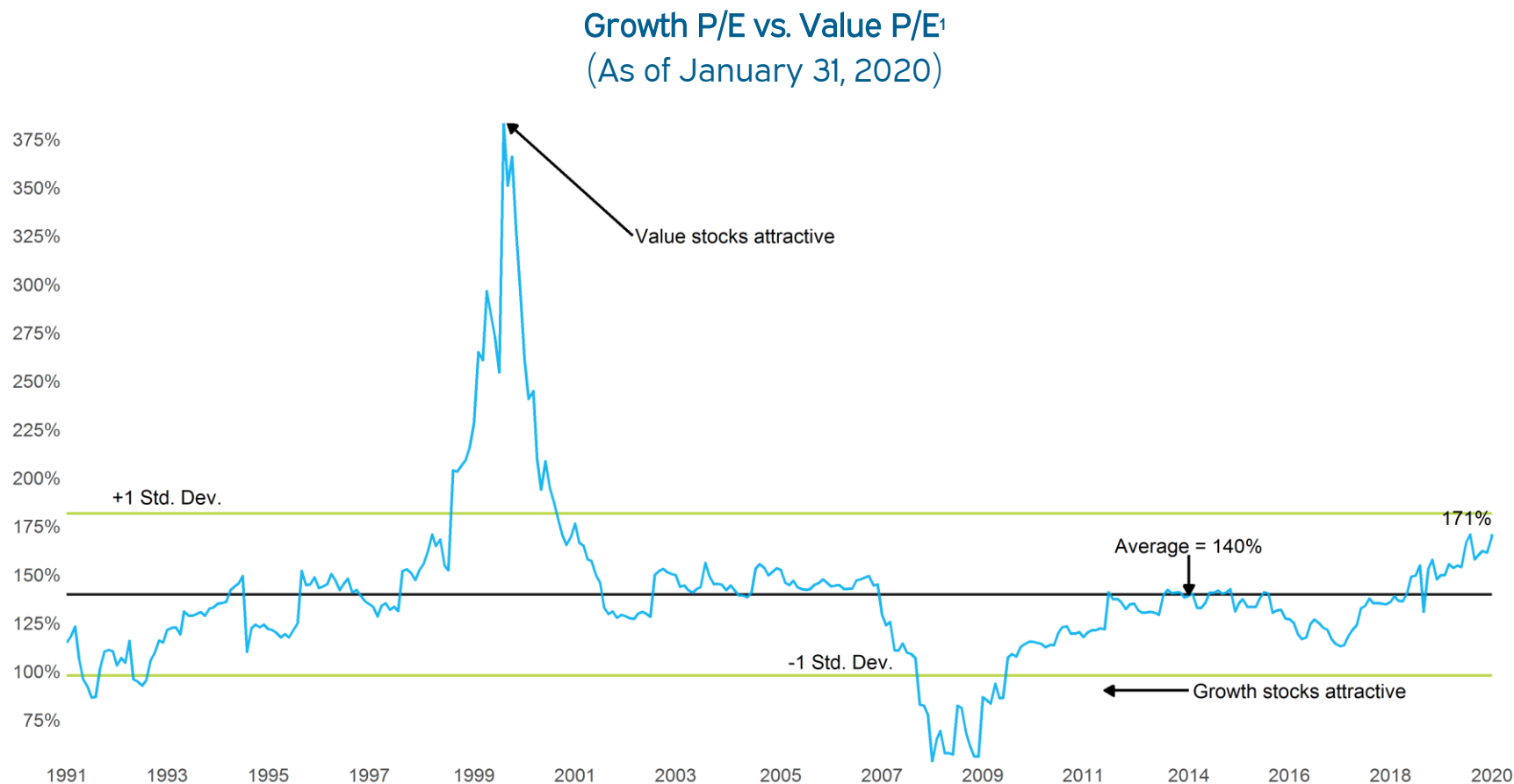
¹ US Equity Cyclically Adjusted P/E on S&P 500 Index – Source: Robert Shiller, Yale University and Meketa Investment Group.

Small Cap P/E vs. Large Cap P/E¹ (As of January 31, 2020)



- This chart compares the relative attractiveness of small cap US equities vs. large cap US equities on a valuation basis. A higher (lower) figure indicates that large cap (small cap) is more attractive.

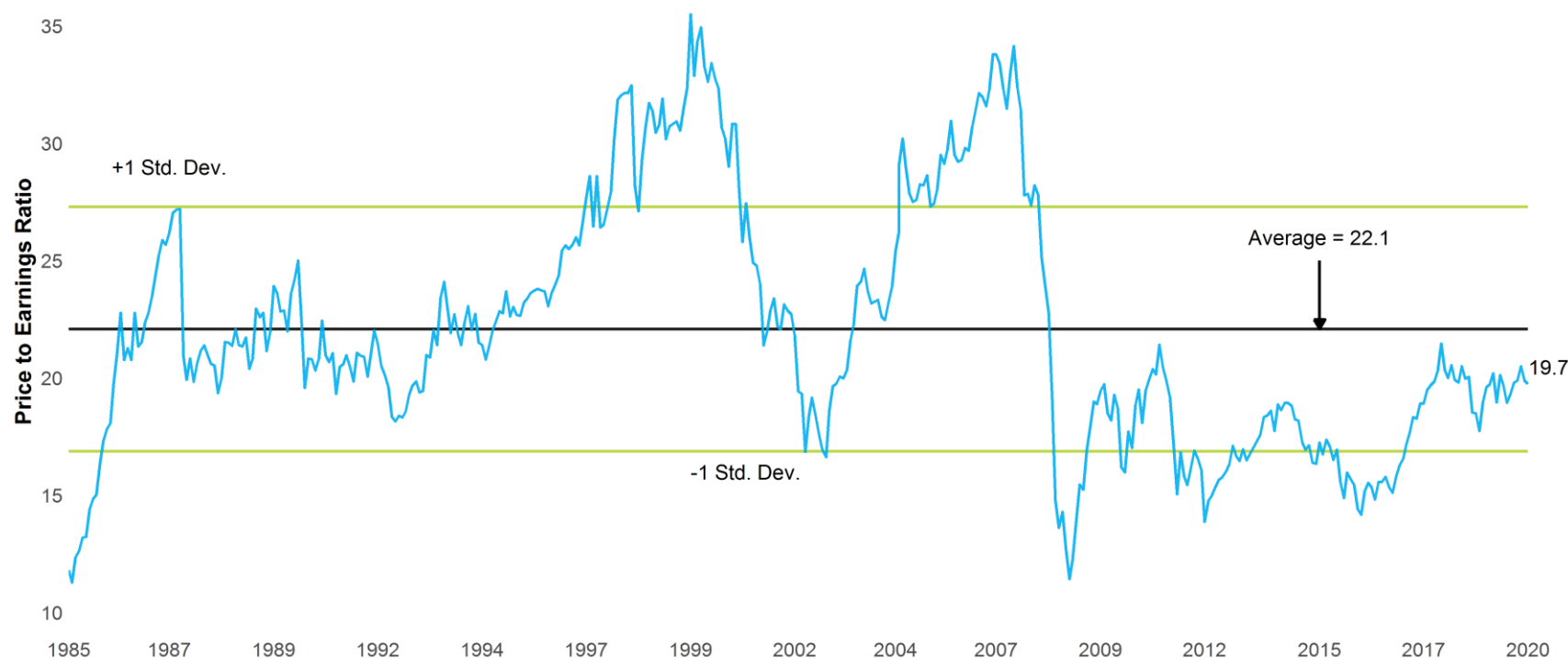
¹ Small Cap P/E (Russell 2000 Index) vs. Large Cap P/E (Russell 1000 Index) - Source: Russell Investments. Earnings figures represent 12-month "as reported" earnings.



- This chart compares the relative attractiveness of US growth equities vs. US value equities on a valuation basis. A higher (lower) figure indicates that value (growth) is more attractive.

¹ Growth P/E (Russell 3000 Growth Index) vs. Value (Russell 3000 Value Index) P/E - Source: Bloomberg, MSCI, and Meketa Investment Group. Earnings figures represent 12-month "as reported" earnings.

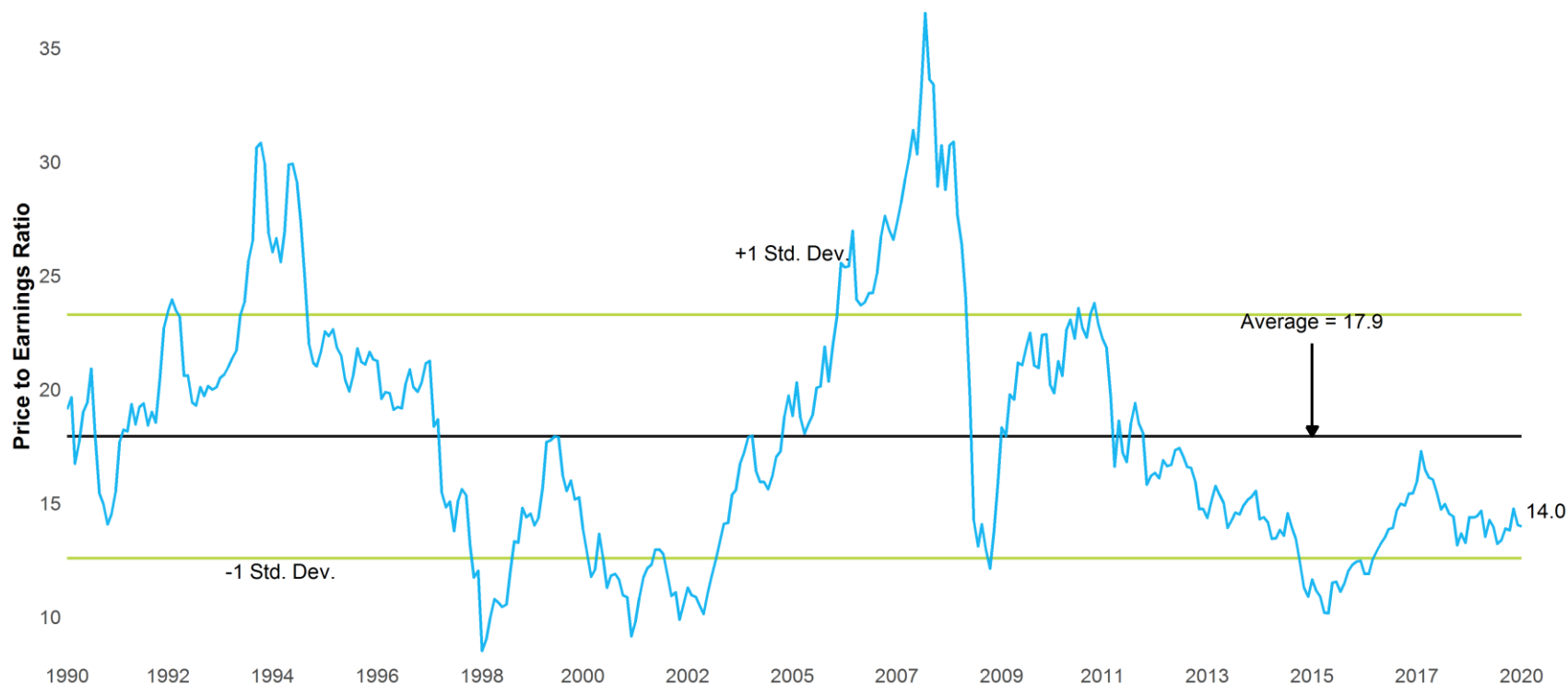
Developed International Equity Cyclically Adjusted P/E¹ (As of January 31, 2020)



- This chart details one valuation metric for developed international equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

¹ Developed International Equity (MSCI EAFE ex Japan Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years.

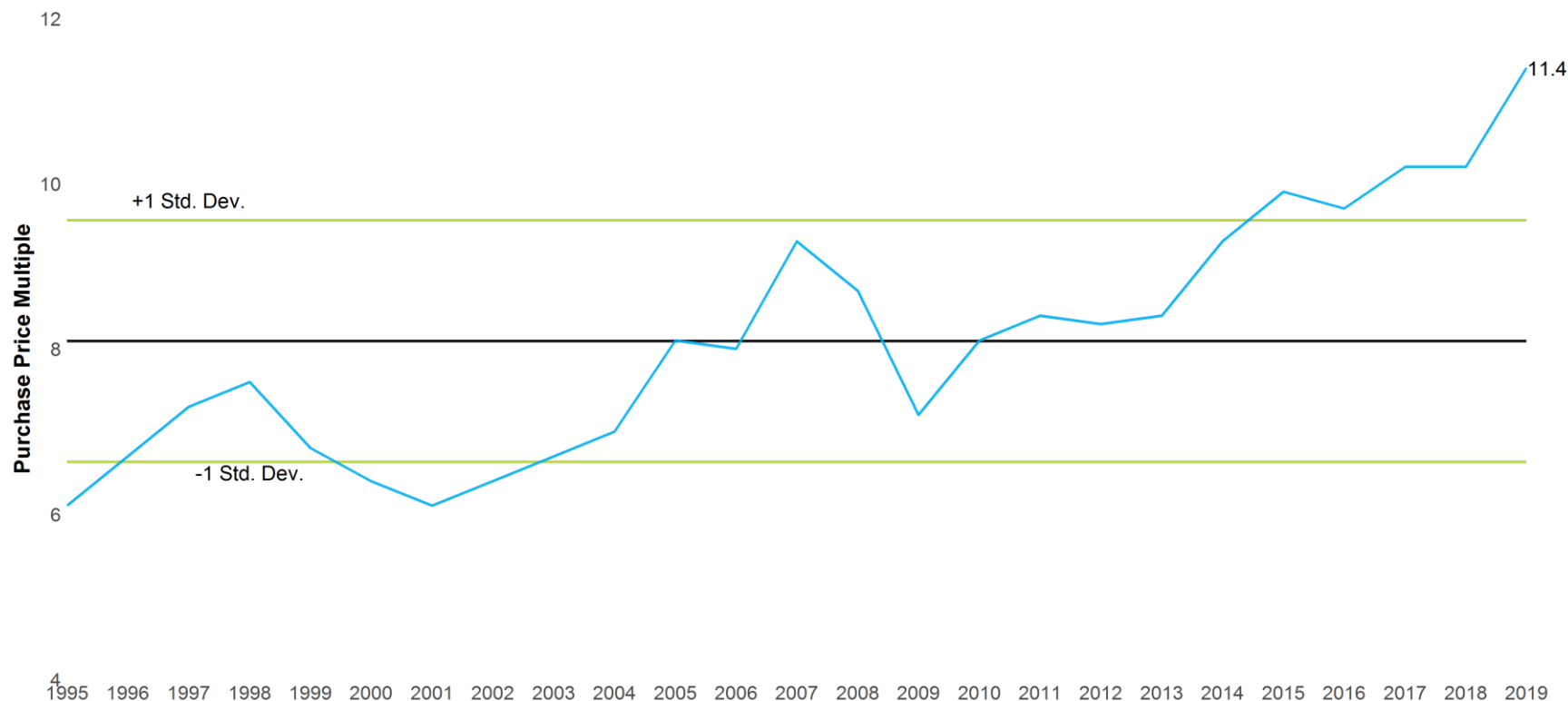
Emerging Market Equity Cyclically Adjusted P/E¹ (As of December 31, 2019)



- This chart details one valuation metric for emerging markets equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

¹ Emerging Market Equity (MSCI Emerging Markets Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years.

Private Equity Multiples¹ (As of November 30, 2019)²

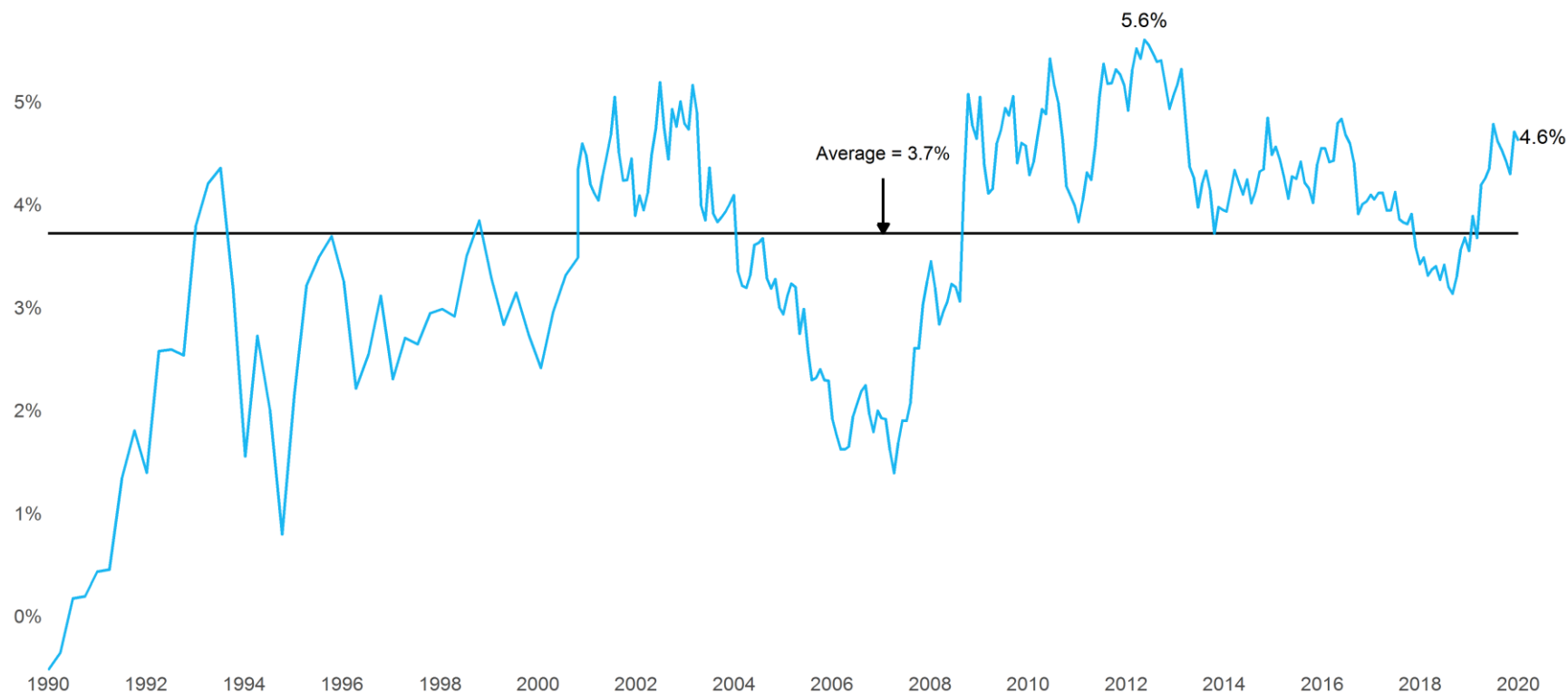


- This chart details one valuation metric for the private equity market. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

¹ Private Equity Multiples – Source: S&P LCD Average EBITDA Multiples Paid in All LBOs.

² Annual figures, except for 2019 (YTD).

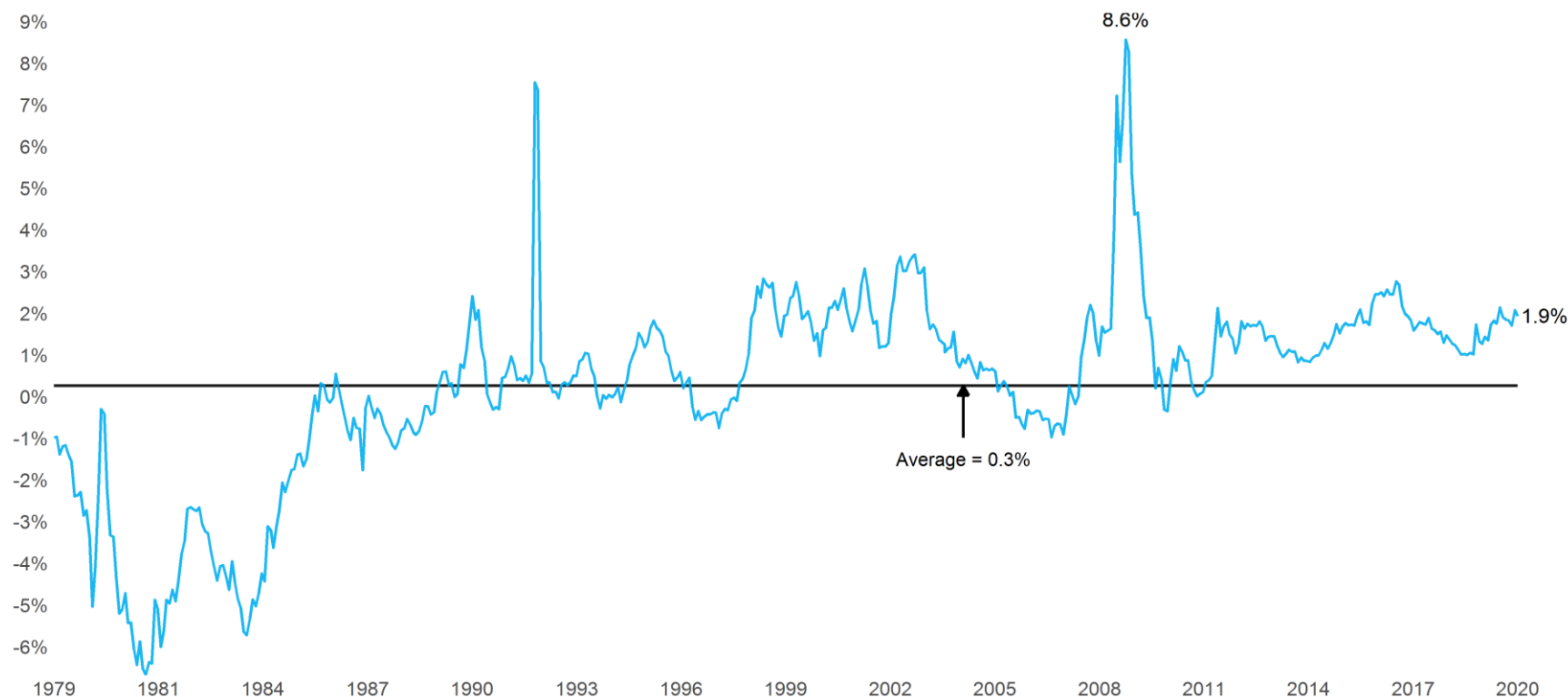
Core Real Estate Spread vs. Ten-Year Treasury¹ (As of January 31, 2020)



- This chart details one valuation metric for the private core real estate market. A higher (lower) figure indicates cheaper (more expensive) valuation.

¹ Core Real Estate Spread vs. Ten-Year Treasury – Source: Real Capital Analytics, US Treasury, Bloomberg, and Meketa Investment Group. Core Real Estate is proxied by weighted sector transaction based indices from Real Capital Analytics and Meketa Investment Group.

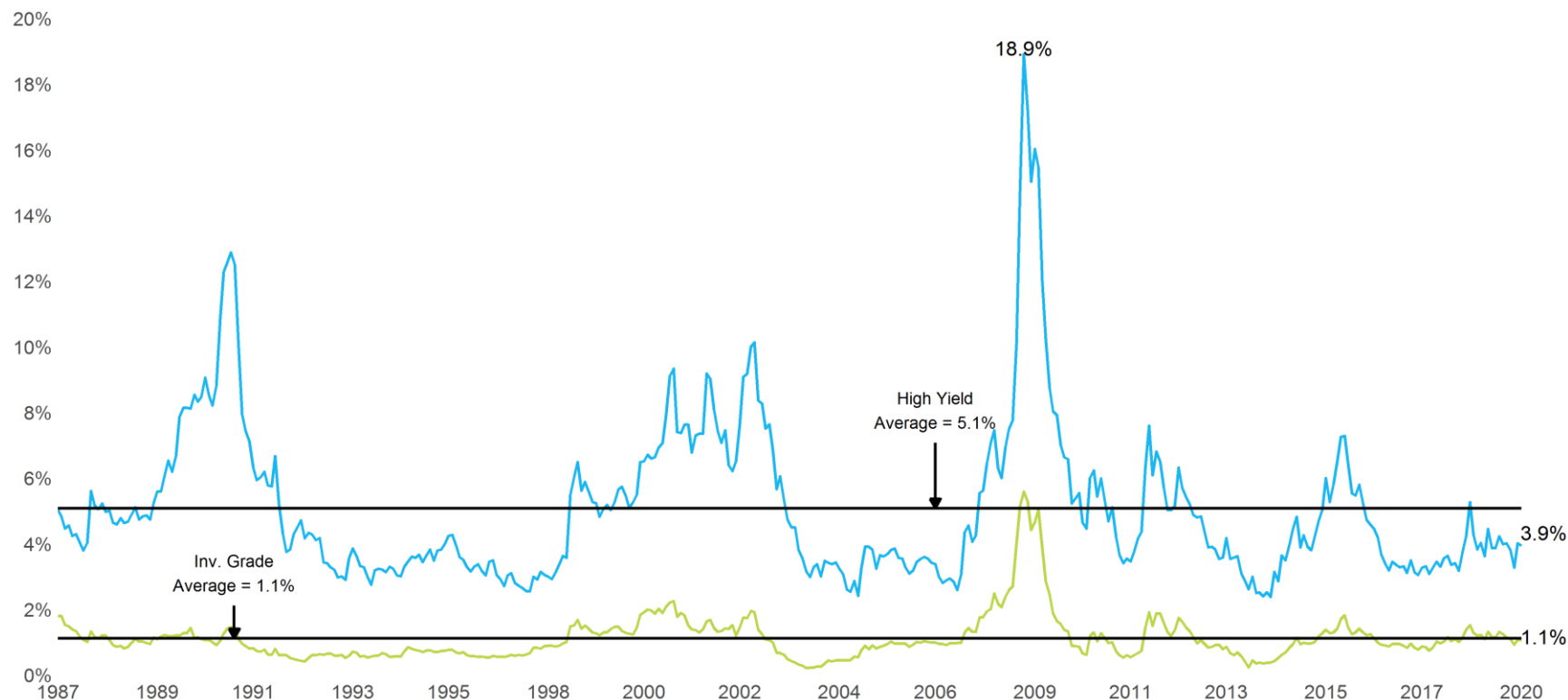
REITs Dividend Yield Spread vs. Ten-Year Treasury¹ (As of January 31, 2020)



- This chart details one valuation metric for the public REITs market. A higher (lower) figure indicates cheaper (more expensive) valuation.

¹ REITs Dividend Yield Spread vs. Ten-Year Treasury – Source: NAREIT, US Treasury. REITs are proxied by the yield for the NAREIT Equity index.

Credit Spreads¹ (As of January 31, 2020)



- This chart details one valuation metric for the US credit markets. A higher (lower) figure indicates cheaper (more expensive) valuation relative to history.

¹ Credit Spreads – Source: Barclays Capital. High Yield is proxied by the Barclays High Yield index and Investment Grade Corporates are proxied by the Barclays US Corporate Investment Grade index.

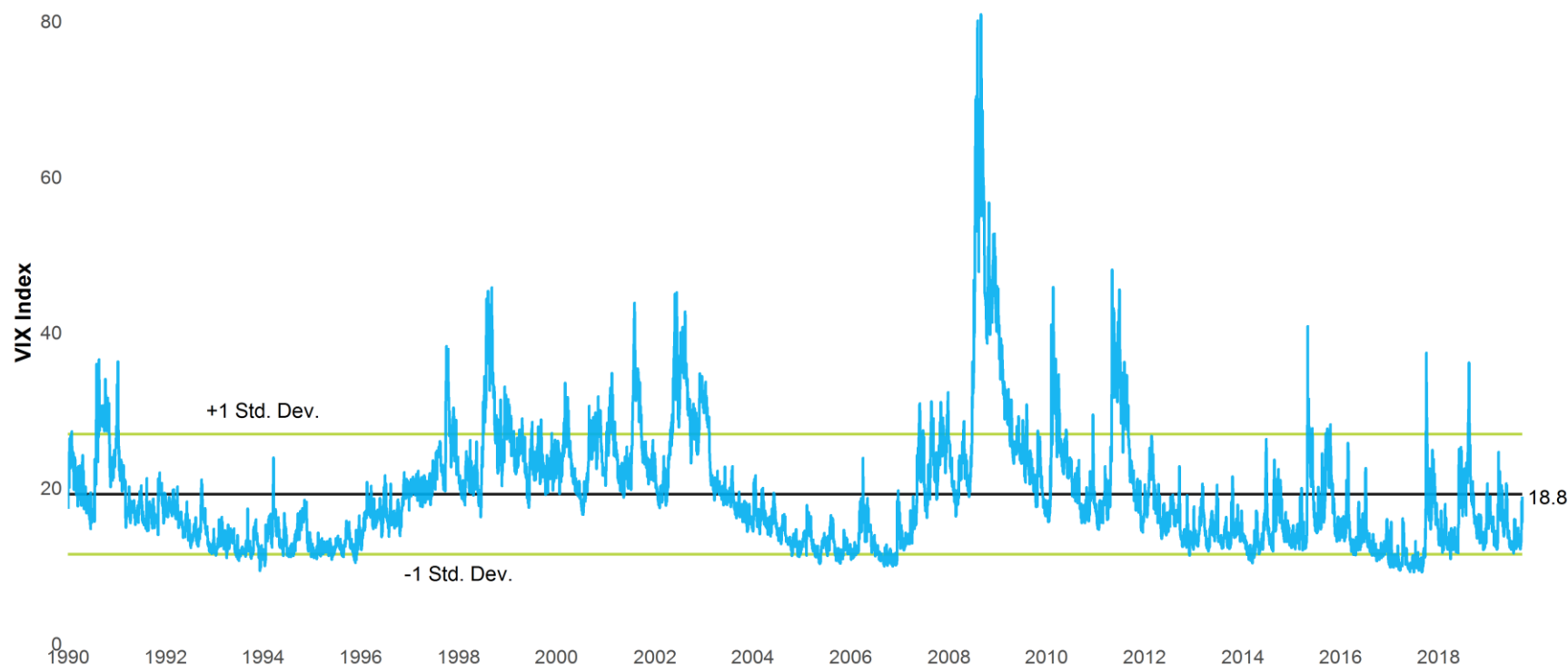
Emerging Market Debt Spreads¹ (As of January 31, 2020)



- This chart details one valuation metric for the EM debt markets. A higher (lower) figure indicates cheaper (more expensive) valuation relative to history.

¹ EM Spreads – Source: Bloomberg. Option Adjusted Spread (OAS) for the Bloomberg Barclays EM USD Aggregate Index.

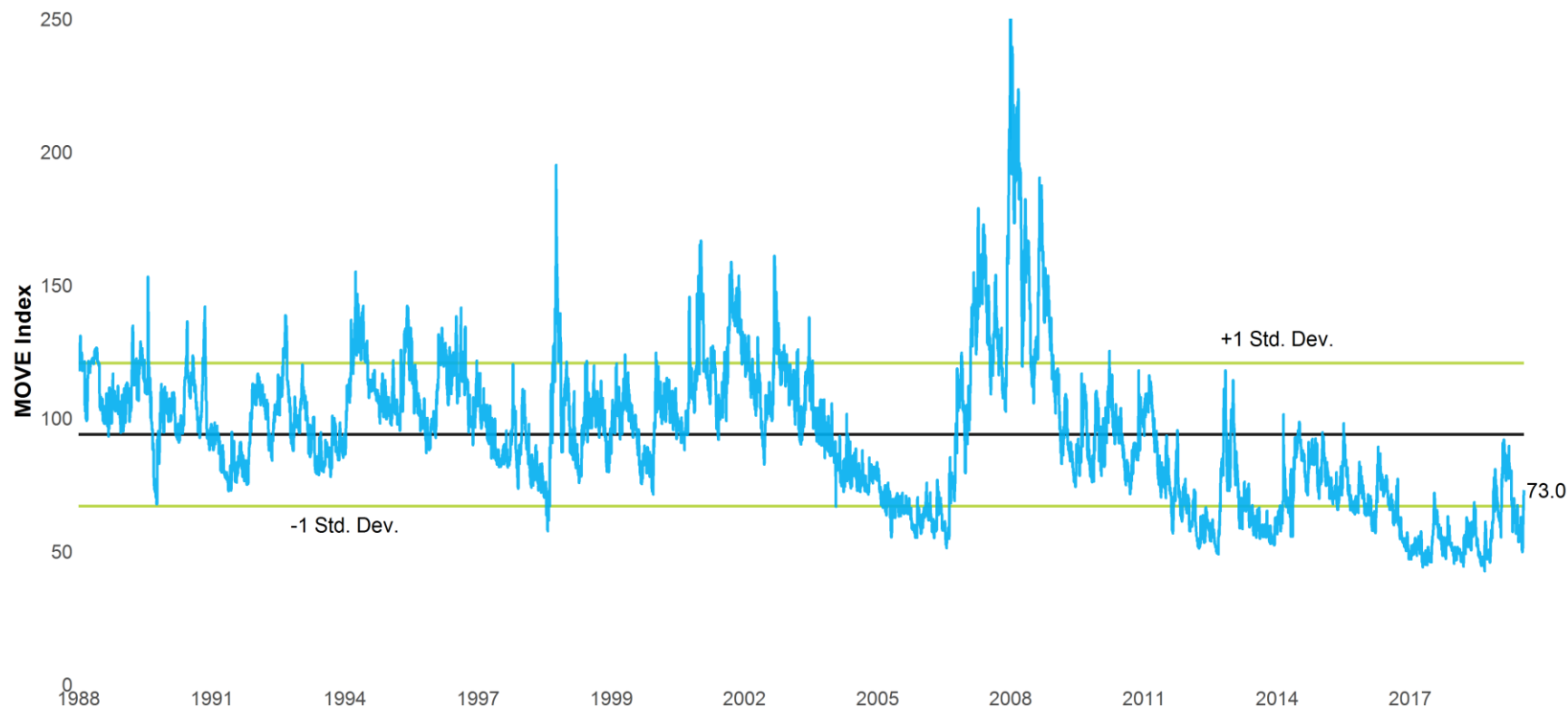
Equity Volatility¹ (As of January 31, 2020)



- This chart details historical implied equity market volatility. This metric tends to increase during times of stress/fear and while declining during more benign periods.

¹ Equity Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by VIX Index, a Measure of implied option volatility for US equity markets.

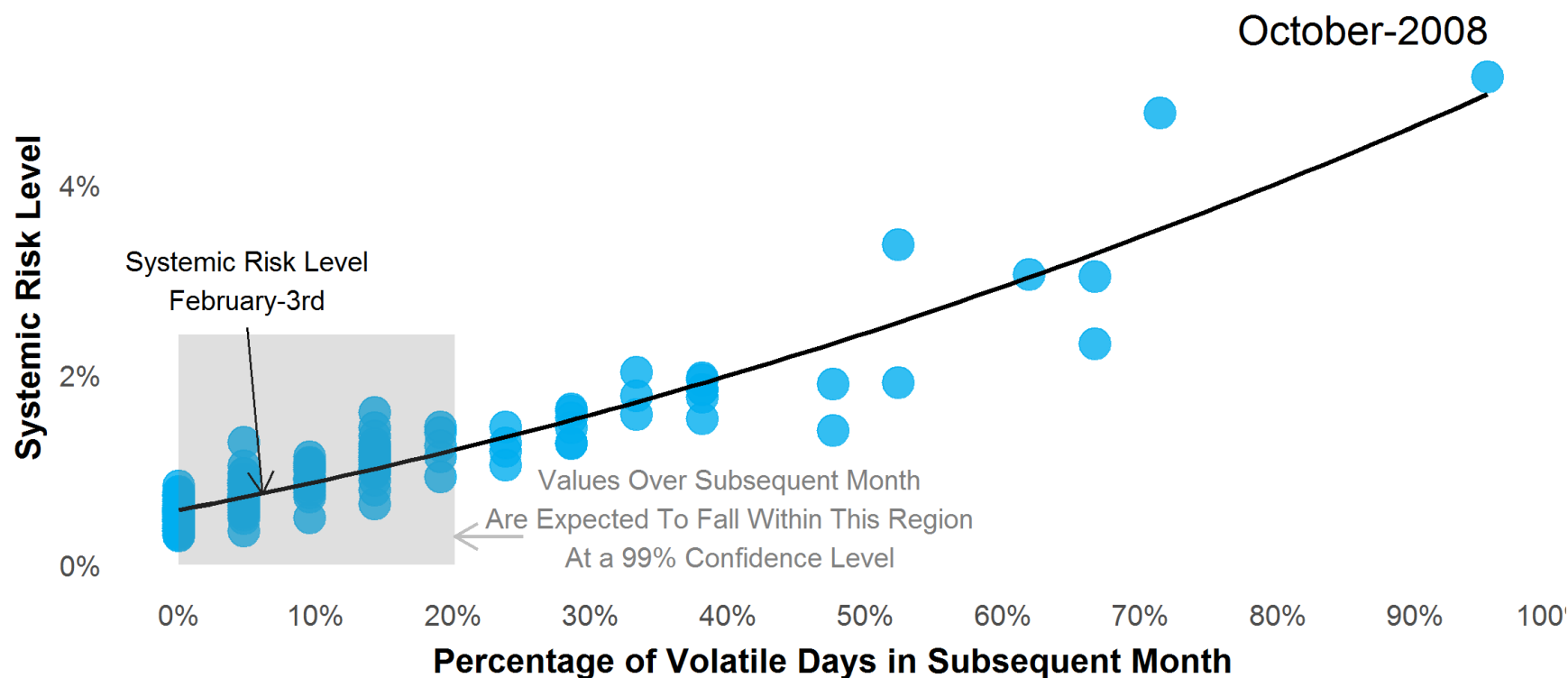
Fixed Income Volatility¹ (As of January 31, 2020)



- This chart details historical implied fixed income market volatility. This metric tends to increase during times of stress/fear and while declining during more benign periods.

¹ Fixed Income Volatility – Source: Bloomberg, and Meketa Investment Group. Fixed Income Volatility proxied by MOVE Index, a Measure of implied option volatility for US Treasury markets.

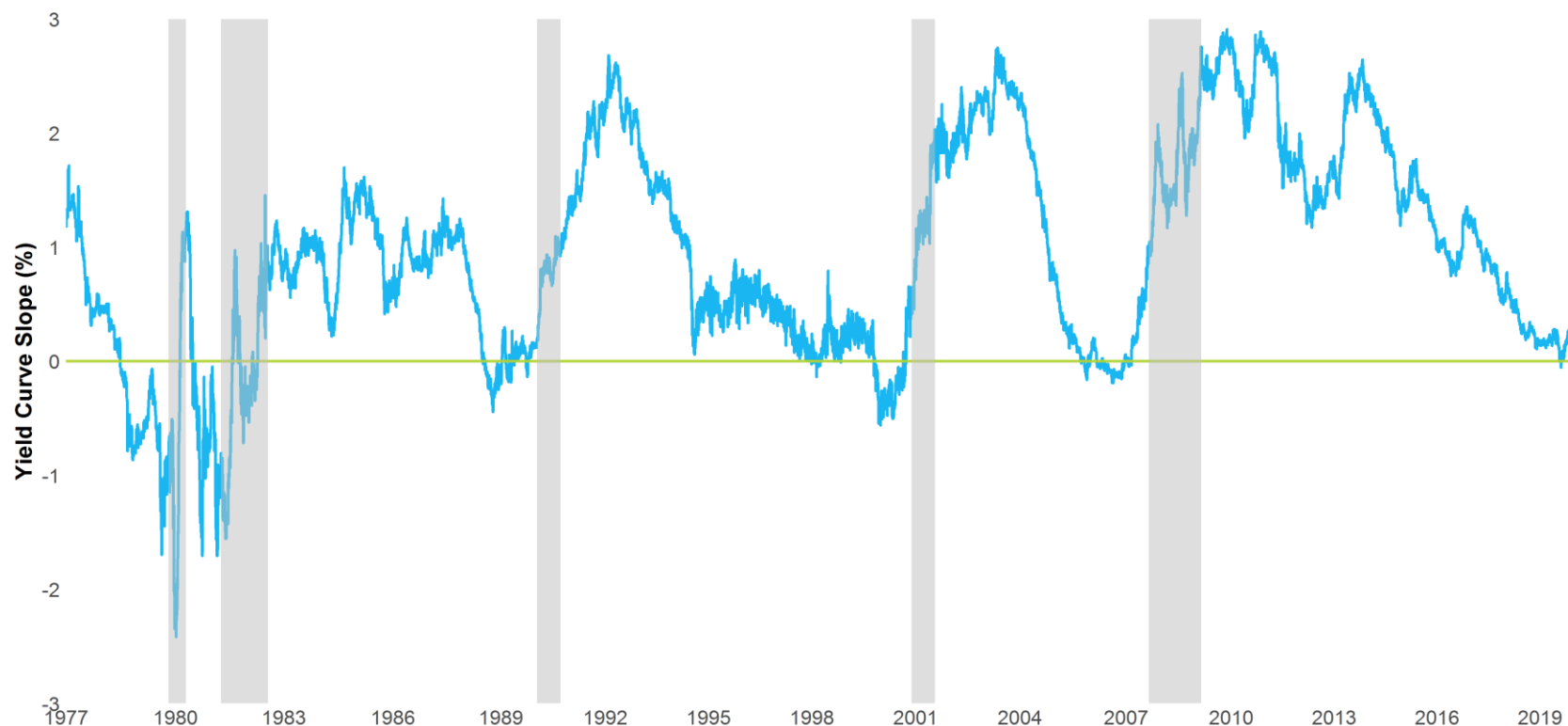
Systemic Risk and Volatile Market Days¹ (As of February 3, 2020)



- Systemic Risk is a measure of 'System-wide' risk, which indicates herding type behavior.

¹ Source: Meketa Investment Group. Volatile days are defined as the top 10 percent of realized turbulence, which is a multivariate distance between asset returns.

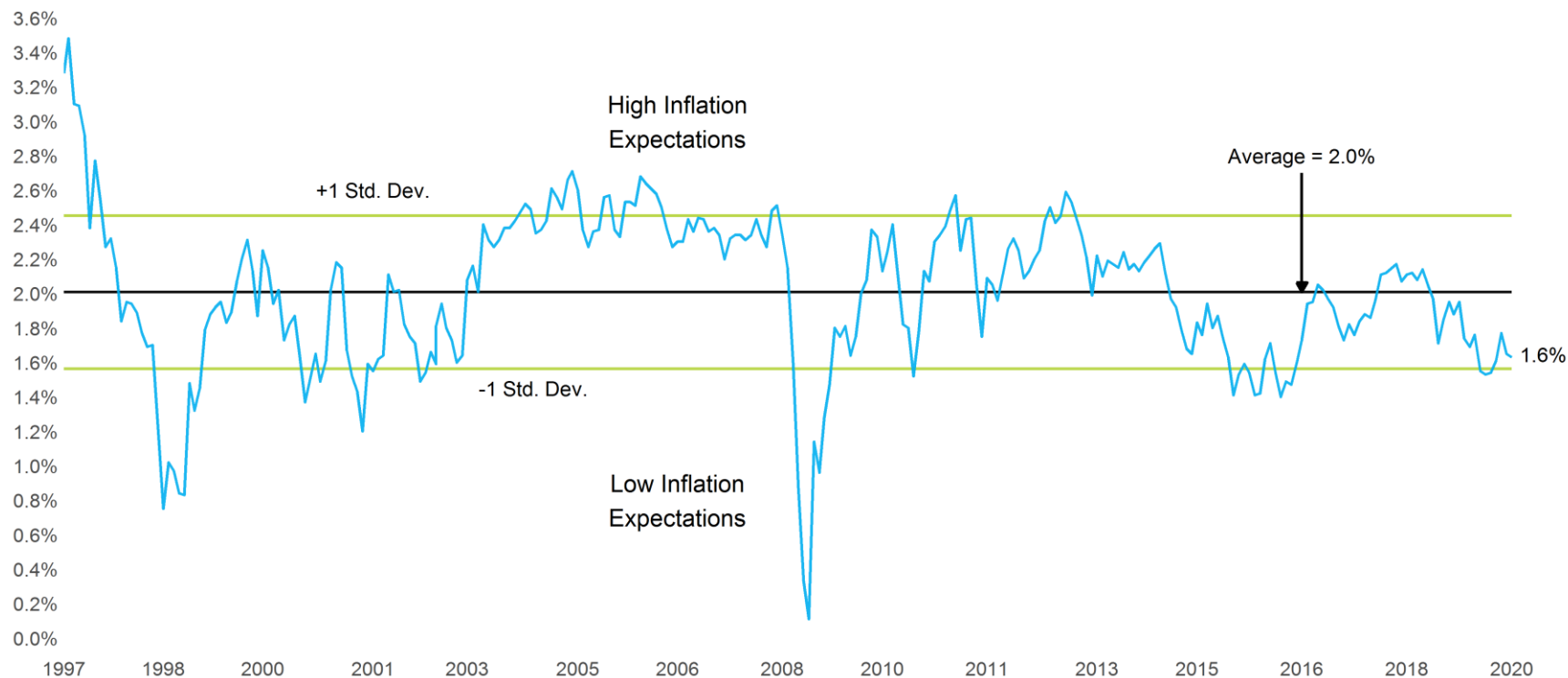
Yield Curve Slope (Ten Minus Two)¹
(As of January 31, 2020)



- This chart details the historical difference in yields between ten-year and two-year US Treasury bonds/notes. A higher (lower) figure indicates a steeper (flatter) yield curve slope.

¹ Yield Curve Slope (Ten Minus Two) – Source: Bloomberg, and Meketa Investment Group. Yield curve slope is calculated as the difference between the 10-Year US Treasury Yield and 2-Year US Treasury Yield.

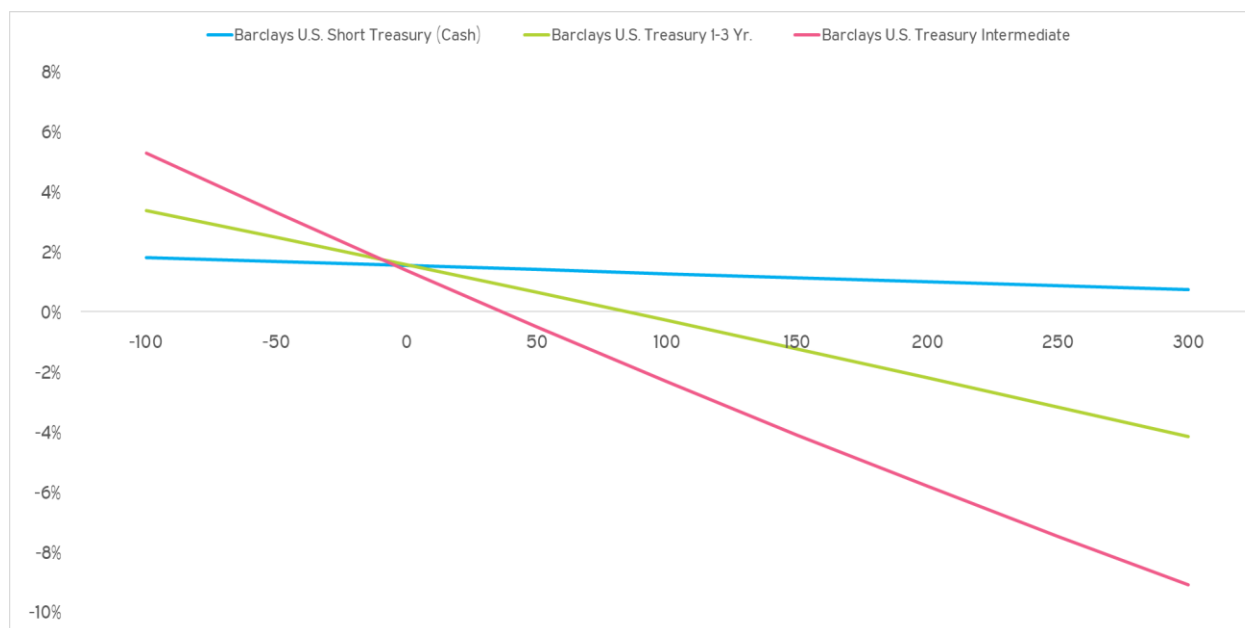
Ten-Year Breakeven Inflation¹ (As of January 31, 2020)



- This chart details the difference between nominal and inflation-adjusted US Treasury bonds. A higher (lower) figure indicates higher (lower) inflation expectations.

¹ Ten-Year Breakeven Inflation – Source: US Treasury and Federal Reserve. Inflation is measured by the Consumer Price Index (CPI-U NSA).

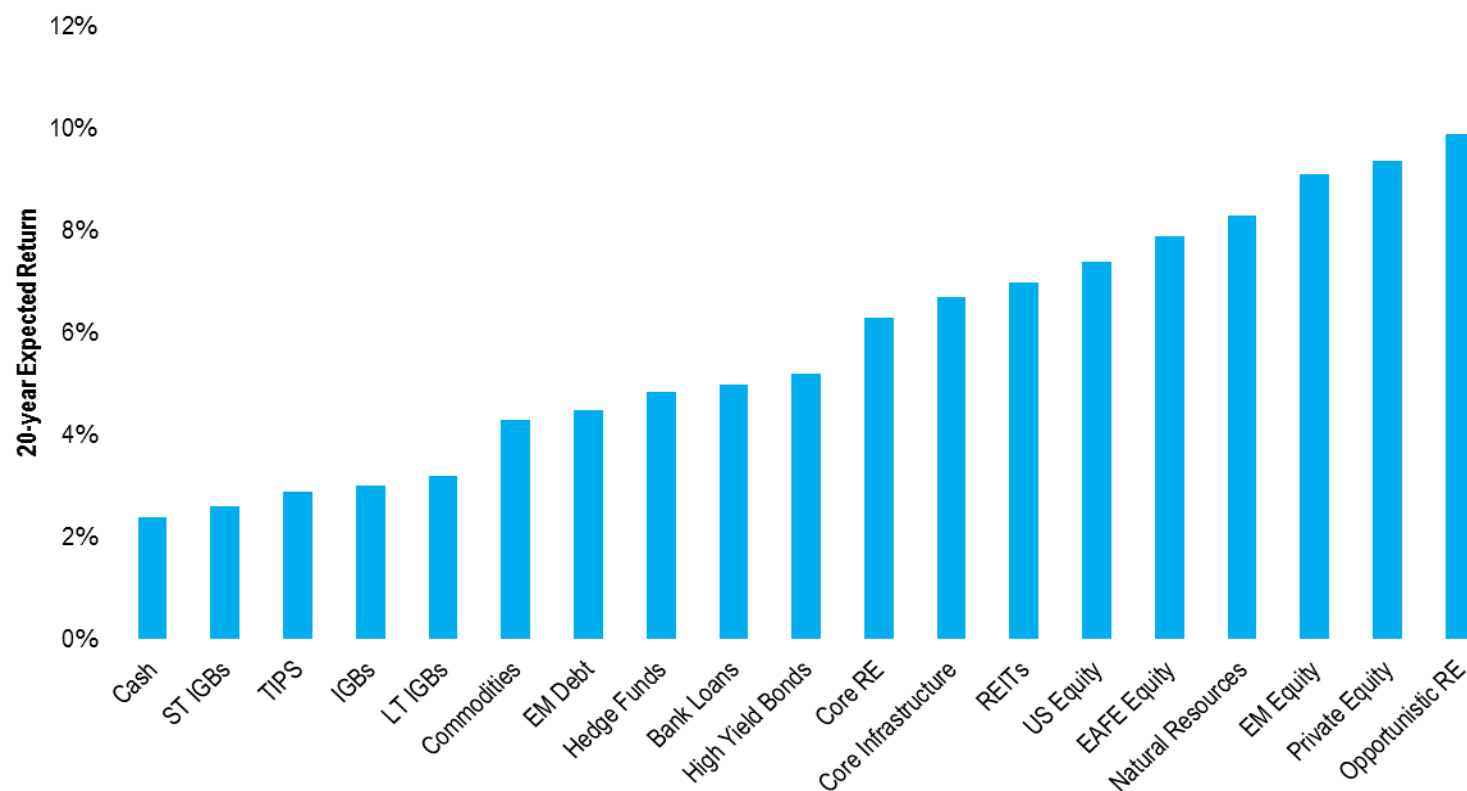
Total Return Given Changes in Interest Rates (bps)¹ (As of January 31, 2020)



	Total Return for Given Changes in Interest Rates (bps)									Statistics	
	-100	-50	0	50	100	150	200	250	300	Duration	YTW
Barclays US Short Treasury (Cash)	1.8%	1.7%	1.5%	1.4%	1.3%	1.1%	1.0%	0.9%	0.7%	0.27	1.54%
Barclays US Treasury 1-3 Yr.	3.4%	2.5%	1.6%	0.6%	-0.3%	-1.2%	-2.2%	-3.2%	-4.2%	1.83	1.57%
Barclays US Treasury Intermediate	5.3%	3.3%	1.4%	-0.5%	-2.3%	-4.1%	-5.8%	-7.5%	-9.1%	3.81	1.37%
Barclays US Treasury Long	22.5%	11.7%	2.0%	-6.7%	-14.2%	-20.8%	-26.2%	-30.6%	-33.9%	18.35	1.98%

¹ Data represents the expected total return from a given change in interest rates (shown in basis points) over a 12-month period assuming a parallel shift in rates. Source: Bloomberg, and Meketa Investment Group.

Long-Term Outlook – 20-Year Annualized Expected Returns¹



- This chart details Meketa’s long-term forward-looking expectations for total returns across asset classes.

¹ Source: Meketa Investment Group’s 2020 Annual Asset Study.

Appendix

Data Sources and Explanations¹

- US Equity Cyclically Adjusted P/E on S&P 500 Index – Source: Robert Shiller and Yale University.
- Small Cap P/E (Russell 2000 Index) vs. Large Cap P/E (Russell 1000 Index) – Source: Russell Investments. Earnings figures represent 12-month “as reported” earnings.
- Growth P/E (Russell 3000 Growth Index) vs. Value (Russell 3000 Value Index) P/E – Source: Bloomberg, MSCI, and Meketa Investment Group. Earnings figures represent 12-month “as reported” earnings.
- Developed International Equity (MSCI EAFE ex Japan Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years.
- Emerging Market Equity (MSCI Emerging Markets Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years.
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- Core Real Estate Spread vs. Ten-Year Treasury – Source: Real Capital Analytics, US Treasury, Bloomberg, and Meketa Investment Group. Core Real Estate is proxied by weighted sector transaction based indices from Real Capital Analytics and Meketa Investment Group.
- REITs Dividend Yield Spread vs. Ten-Year Treasury – Source: NAREIT, US Treasury. REITs are proxied by the yield for the NAREIT Equity index.

¹ All Data as of December 31, 2019 unless otherwise noted.

Appendix

Data Sources and Explanations¹

- Credit Spreads – Source: Barclays Capital. High Yield is proxied by the Barclays High Yield index and Investment Grade Corporates are proxied by the Barclays US Corporate Investment Grade index.
- EM Debt Spreads – Source: Bloomberg, and Meketa Investment Group. Option Adjusted Spread (OAS) for the Bloomberg Barclays EM USD Aggregate Index.
- Equity Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by VIX Index, a Measure of implied option volatility for US equity markets.
- Fixed Income Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by MOVE Index, a Measure of implied option volatility for US Treasury markets.
- Systemic Risk and Volatile Market Days – Source: Meketa Investment Group. Volatile days are defined as the top 10 percent of realized turbulence, which is a multivariate distance between asset returns.
- Systemic Risk, which measures risk across markets, is important because the more contagion of risk that exists between assets, the more likely it is that markets will experience volatile periods.
- Yield Curve Slope (Ten Minus Two) – Source: Bloomberg, and Meketa Investment Group. Yield curve slope is calculated as the difference between the 10-Year US Treasury Yield and 2-Year US Treasury Yield.
- Ten-Year Breakeven Inflation – Source: US Treasury and Federal Reserve. Inflation is measured by the Consumer Price Index (CPI-U NSA).

¹ All Data as of December 31, 2019 unless otherwise noted.

Meketa Market Sentiment Indicator Explanation, Construction and Q&A

Meketa has created the MIG Market Sentiment Indicator (MIG-MSI) to complement our valuation-focused Risk Metrics. This measure of sentiment is meant to capture significant and persistent shifts in long-lived market trends of economic growth risk, either towards a risk-seeking trend or a risk-aversion trend.

This appendix explores:

- What is the Meketa Market Sentiment Indicator?
- How do I read the indicator graph?
- How is the Meketa Market Sentiment Indicator constructed?
- What do changes in the indicator mean?

Meketa has created a market sentiment indicator for monthly publication (the MIG-MSI – see below) to complement Meketa's Risk Metrics.

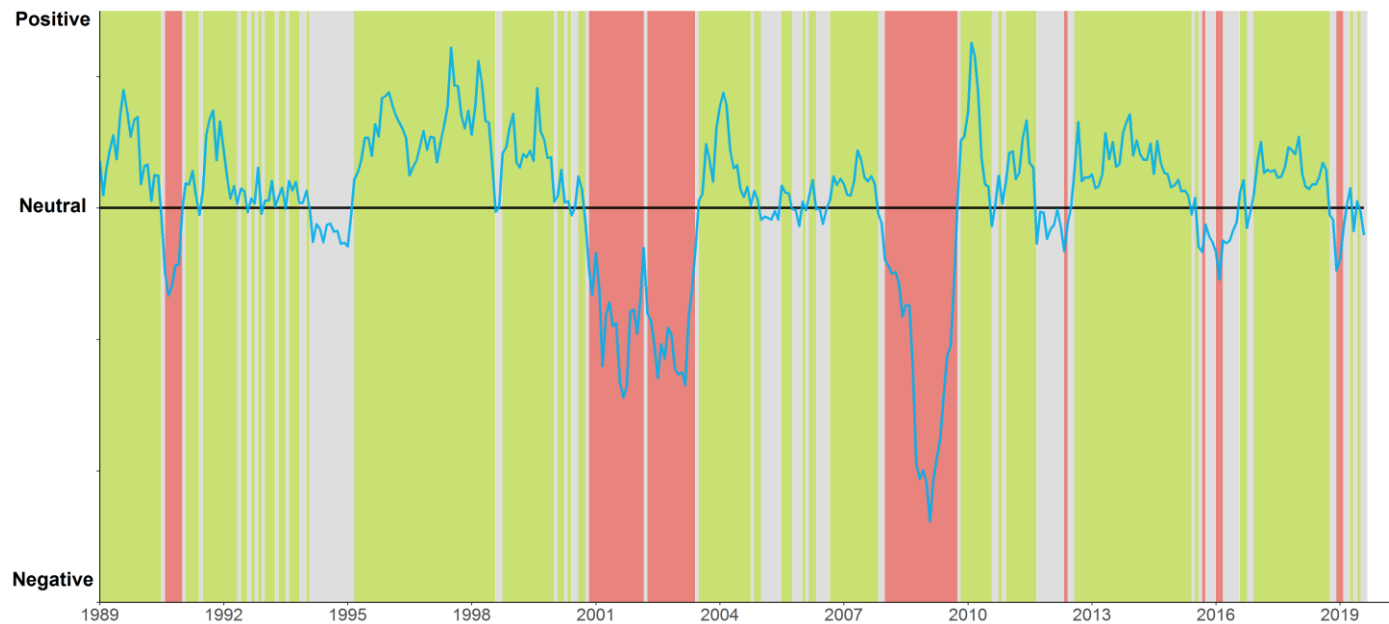
- Meketa's Risk Metrics, which rely significantly on standard market measures of relative valuation, often provide valid early signals of increasing long-term risk levels in the global investment markets. However, as is the case with numerous valuation measures, the Risk Metrics may convey such risk concerns long before a market corrections take place. The MIG-MSI helps to address this early-warning bias by measuring whether the markets are beginning to acknowledge key Risk Metrics trends, and / or indicating non-valuation based concerns. Once the MIG-MSI indicates that the market sentiment has shifted, it is our belief that investors should consider significant action, particularly if confirmed by the Risk Metrics. Importantly, Meketa believes the Risk Metrics and MIG-MSI should always be used in conjunction with one another and never in isolation. The questions and answers below highlight and discuss the basic underpinnings of the Meketa MIG-MSI:

What is the Meketa Market Sentiment Indicator (MIG-MSI)?

- The MIG-MSI is a measure meant to gauge the market's sentiment regarding economic growth risk. Growth risk cuts across most financial assets, and is the largest risk exposure that most portfolios bear. The MIG-MSI takes into account the momentum (trend over time, positive or negative) of the economic growth risk exposure of publicly traded stocks and bonds, as a signal of the future direction of growth risk returns; either positive (risk seeking market sentiment), or negative (risk averse market sentiment).

How do I read the Meketa Market Sentiment Indicator graph?

- Simply put, the MIG-MSI is a color-coded indicator that signals the market's sentiment regarding economic growth risk. It is read left to right chronologically. A green indicator on the MIG-MSI indicates that the market's sentiment towards growth risk is positive. A gray indicator indicates that the market's sentiment towards growth risk is neutral or inconclusive. A red indicator indicates that the market's sentiment towards growth risk is negative. The black line on the graph is the level of the MIG-MSI. The degree of the signal above or below the neutral reading is an indication the signal's current strength.
- Momentum as we are defining it is the use of the past behavior of a series as a predictor of its future behavior.



How is the Meketa Market Sentiment Indicator (MIG-MSI) Constructed?

- The MIG-MSI is constructed from two sub-elements representing investor sentiment in stocks and bonds:
 - Stock return momentum: Return momentum for the S&P 500 Equity Index (trailing 12-months)
 - Bond yield spread momentum: Momentum of bond yield spreads (excess of the measured bond yield over the identical duration US Treasury bond yield) for corporate bonds (trailing 12-months) for both investment grade bonds (75% weight) and high yield bonds (25% weight).
 - Both measures are converted to Z-scores and then combined to get an “apples to apples” comparison without the need of re-scaling.
- The black line reading on the graph is calculated as the average of the stock return momentum measure and the bonds spread momentum measure.¹ The color reading on the graph is determined as follows:
 - If both stock return momentum and bond spread momentum are positive = GREEN (positive)
 - If one of the momentum indicators is positive, and the other negative = GRAY (inconclusive)
 - If both stock return momentum and bond spread momentum are negative = RED (negative)

¹ Momentum as we are defining it is the use of the past behavior of a series as a predictor of its future behavior.

“Time Series Momentum” Moskowitz, Ooi, Pedersen, August 2010. <http://pages.stern.nyu.edu/~lpederse/papers/TimeSeriesMomentum.pdf>

What does the Meketa Market Sentiment Indicator (MIG-MSI) mean? Why might it be useful?

- There is strong evidence that time series momentum is significant and persistent. In particular, across an extensive array of asset classes, the sign of the trailing 12-month return (positive or negative) is indicative of future returns (positive or negative) over the next 12-month period. The MIG-MSI is constructed to measure this momentum in stocks and corporate bond spreads. A reading of green or red is agreement of both the equity and bond measures, indicating that it is likely that this trend (positive or negative) will continue over the next 12 months. When the measures disagree, the indicator turns gray. A gray reading does not necessarily mean a new trend is occurring, as the indicator may move back to green, or into the red from there. The level of the reading (black line) and the number of months at the red or green reading, gives the user additional information on which to form an opinion, and potentially take action.

Oakland Police and Fire Retirement System

Q4 2019

Quarterly Report

1. Total Portfolio Summary
2. World Markets Fourth Quarter of 2019
3. Capital Markets Outlook & Risk Metrics
 - Meketa Market Sentiment Indicator
4. Total Portfolio Review
5. Manager Monitoring / Probation List
6. Individual Manager Performance
7. Disclaimer, Glossary, and Notes

Total Portfolio Summary

TOTAL PORTFOLIO SUMMARY

As of December 31, 2019, the City of Oakland Police and Fire Retirement System (OPFRS) portfolio had an aggregate value of \$408.2 million. This represents a \$20.4 million increase in investment value and (\$3.5) million in benefit payments over the quarter. During the previous one-year period, the OPFRS Total Portfolio increased in value by \$72.3 million and withdrew (\$14.1) million for benefit payments.

Asset Allocation Trends

The asset allocation targets (see table on page 52) reflect those as of December 31, 2019. Target weightings reflect the interim phase (CRO = 10%) of the Plan's previously approved asset allocation (effective 5/31/2017).

With respect to policy targets, the portfolio ended the latest quarter **overweight Covered Calls, Cash, Domestic Equity and International Equity, while underweight Fixed Income and Crisis Risk Offset.**

Recent Investment Performance

During the most recent quarter, the OPFRS Total Portfolio generated an absolute return of 5.3%, gross of fees, outperforming its policy benchmark by 40 basis points. The portfolio outperformed its benchmark by 1.5% and 1.1% over the 1- and 3-year periods, respectively, and outperformed by 50 basis points over the 5-year period.

The Total Portfolio outperformed the Median fund's return over the most recent quarter. The Total Portfolio outperformed the Median fund over the 1-, 3- and 5-year periods by 2.0%, 1.5% and 1.2% respectively. Performance differences with respect to the Median Fund continue to be attributed largely to differences in asset allocation.

	Quarter	Fiscal Year	1 Year	3 Year	5 Year
Total Portfolio ¹	5.3	7.0	21.1	10.9	8.3
Policy Benchmark ²	4.9	6.4	19.6	9.8	7.8
Excess Return	0.4	0.6	1.5	1.1	0.5
Reference: Median Fund ³	5.3	6.2	19.1	9.4	7.1
Reference: Total Net of Fees ⁴	5.2	6.8	20.8	10.6	8.0

¹ Gross of Fees. Performance since 2005 includes securities lending.

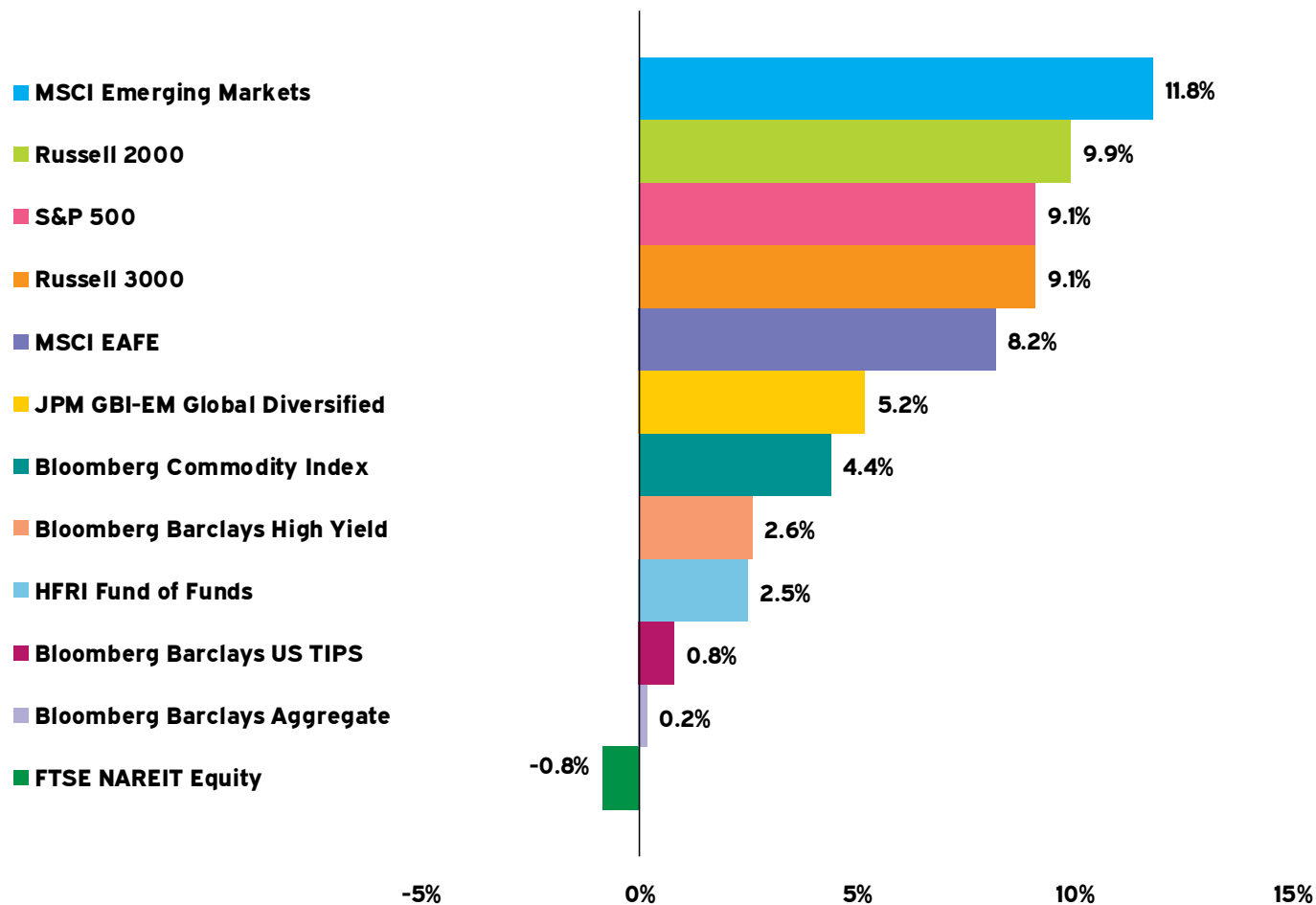
² Evolving Policy Benchmark consists of 40% Russell 3000, 12% MSCI ACWI ex U.S., 33% Bbg BC Universal, 5% CBOE BXM, 6.7% SG Multi Asset Risk Premia, 3.3% Bbg BC Long Treasury

³ Investment Metrics < \$1 Billion Public Plan Universe.

⁴ Longer-term (>1 year) Net of fee returns are estimated based on OPFRS manager fee schedule (approximately 34 bps)

The World Markets Fourth Quarter of 2019

The World Markets¹ Fourth Quarter of 2019



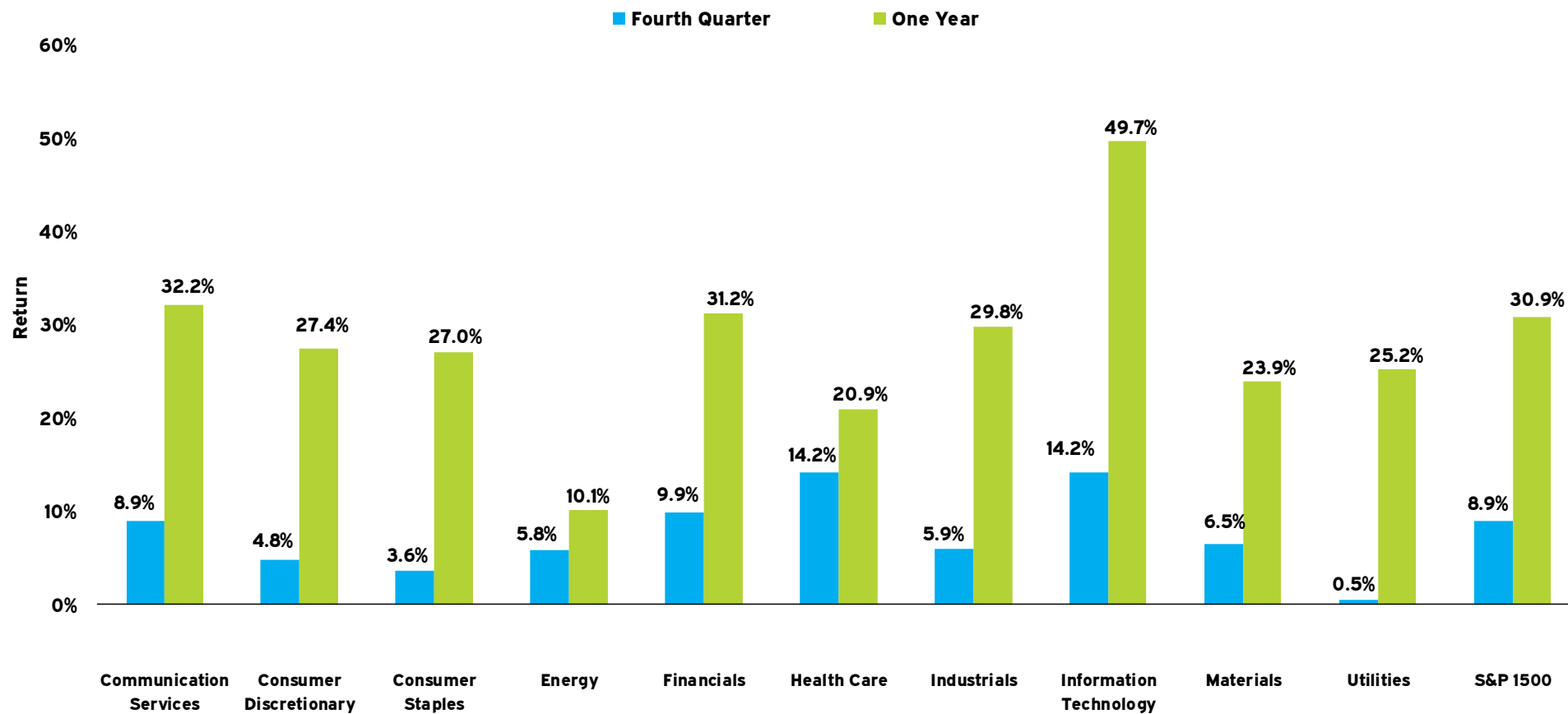
¹ Source: InvestorForce.

Index Returns¹

	4Q19 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
Domestic Equity					
S&P 500	9.1	31.5	15.3	11.7	13.6
Russell 3000	9.1	31.0	14.6	11.2	13.4
Russell 1000	9.0	31.4	15.0	11.5	13.5
Russell 1000 Growth	10.6	36.4	20.5	14.6	15.2
Russell 1000 Value	7.4	26.5	9.7	8.3	11.8
Russell MidCap	7.1	30.5	12.1	9.3	13.2
Russell MidCap Growth	8.2	35.5	17.4	11.6	14.2
Russell MidCap Value	6.4	27.1	8.1	7.6	12.4
Russell 2000	9.9	25.5	8.6	8.2	11.8
Russell 2000 Growth	11.4	28.5	12.5	9.3	13.0
Russell 2000 Value	8.5	22.4	4.8	7.0	10.6
Foreign Equity					
MSCI ACWI (ex. US)	8.9	21.5	9.9	5.5	5.0
MSCI EAFE	8.2	22.0	9.6	5.7	5.5
MSCI EAFE (Local Currency)	5.2	21.7	7.7	6.7	7.2
MSCI EAFE Small Cap	11.5	25.0	10.9	8.9	8.7
MSCI Emerging Markets	11.8	18.4	11.6	5.6	3.7
MSCI Emerging Markets (Local Currency)	9.5	18.1	11.5	7.5	6.1
Fixed Income					
Bloomberg Barclays Universal	0.5	9.3	4.3	3.4	4.1
Bloomberg Barclays Aggregate	0.2	8.7	4.0	3.0	3.7
Bloomberg Barclays US TIPS	0.8	8.4	3.3	2.6	3.4
Bloomberg Barclays High Yield	2.6	14.3	6.4	6.1	7.6
JPM GBI-EM Global Diversified	5.2	13.5	7.0	2.8	2.7
Other					
FTSE NAREIT Equity	-0.8	26.0	8.1	7.2	11.9
Bloomberg Commodity Index	4.4	7.7	-0.9	-3.9	-4.7
HFRI Fund of Funds	2.5	7.8	3.7	2.2	2.8

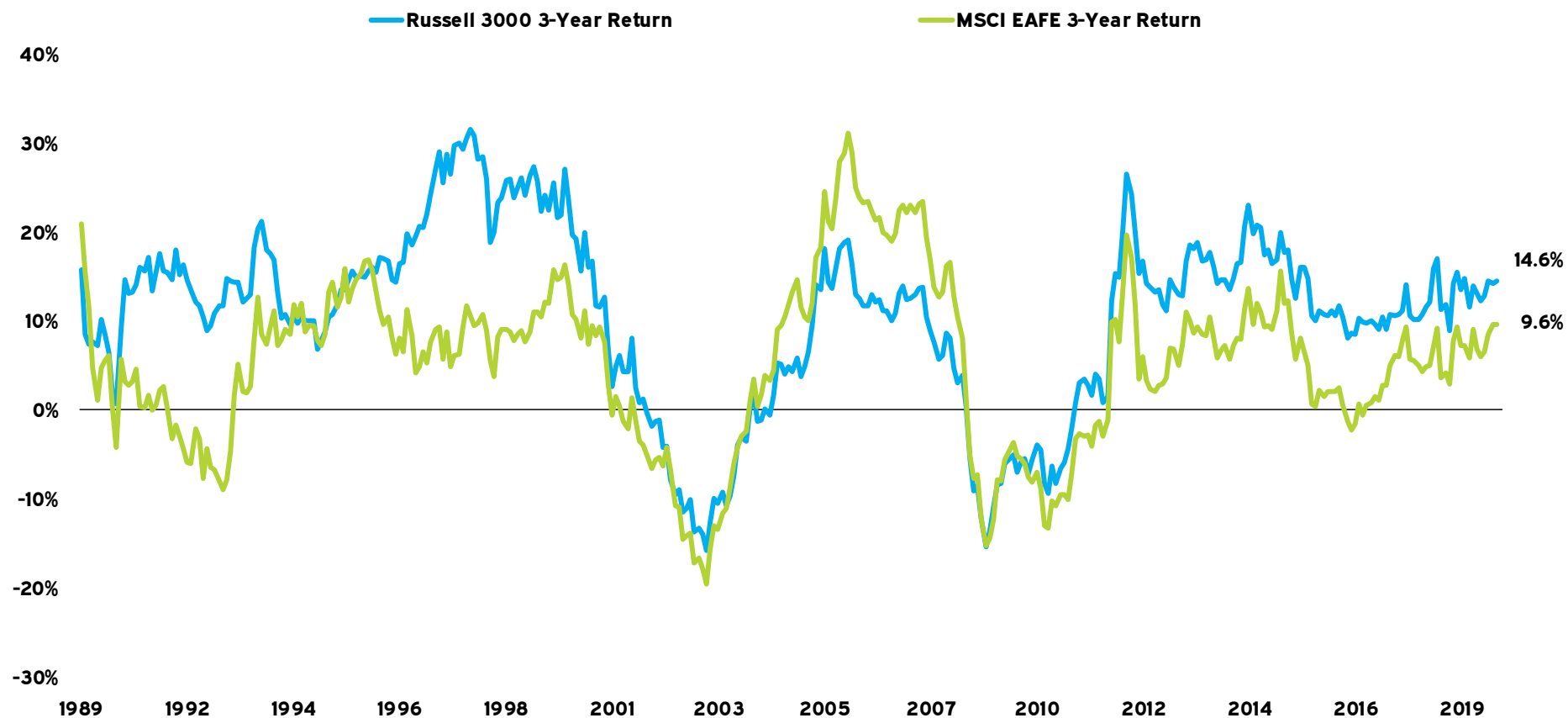
¹ Source: InvestorForce.

S&P Sector Returns¹



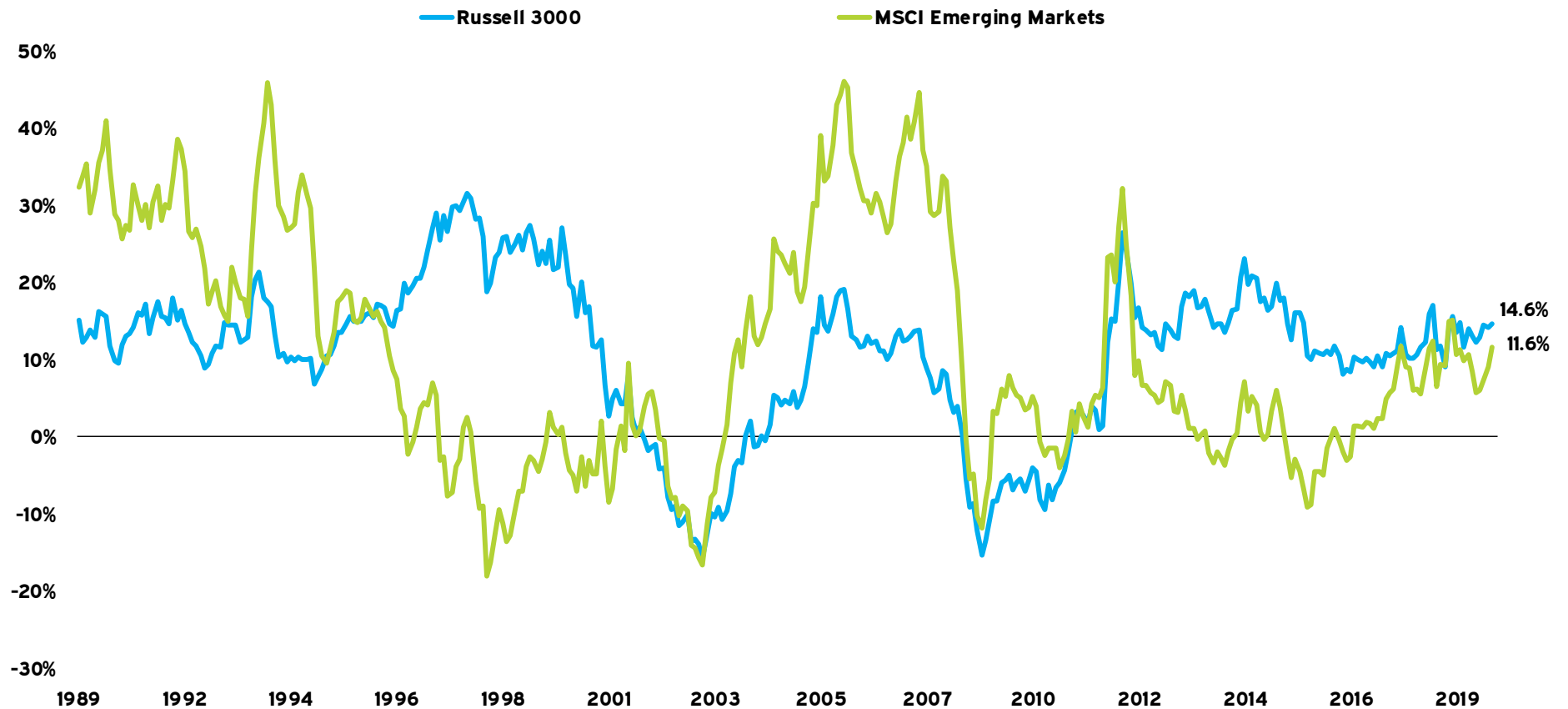
¹ Source: InvestorForce. Represents S&P 1500 (All Cap) data.

US and Developed Market Foreign Equity Rolling Three-Year Returns¹



¹ Source: InvestorForce.

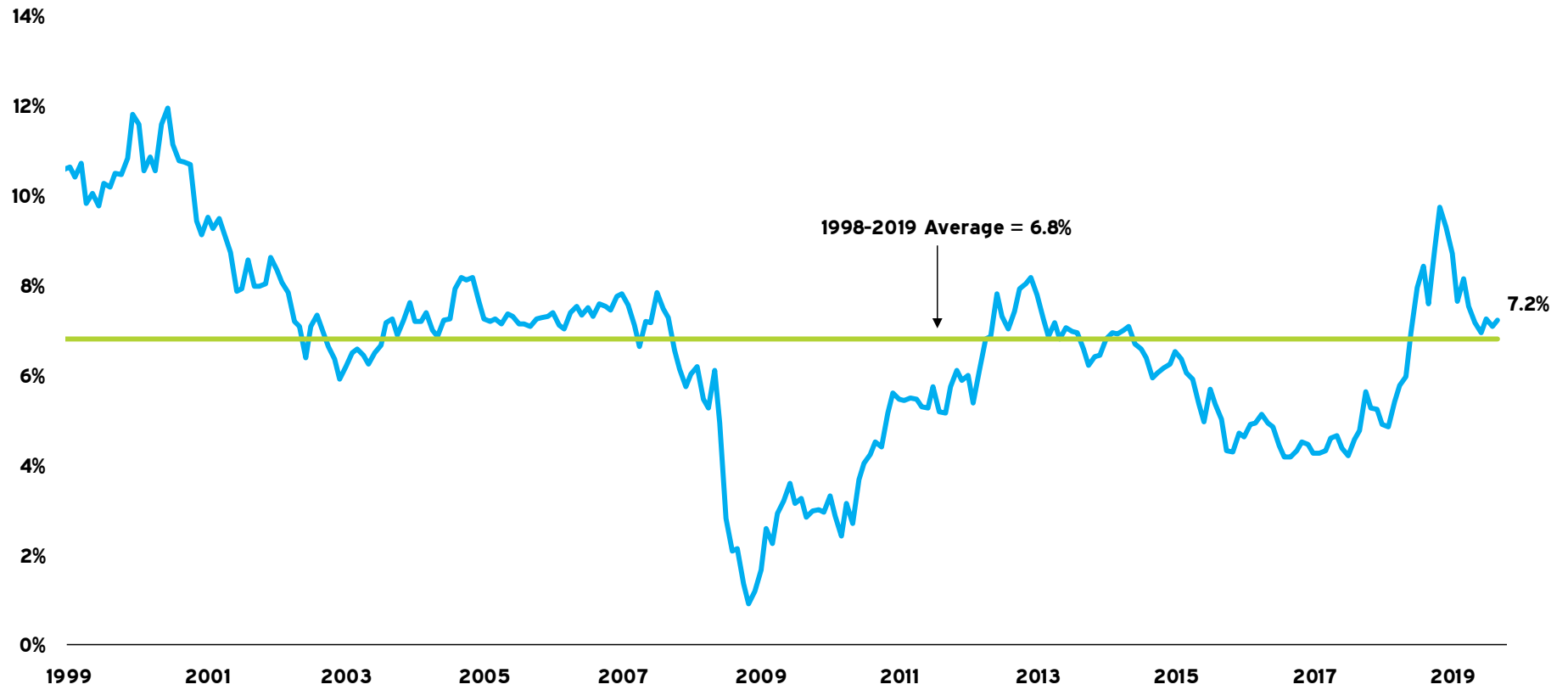
US and Emerging Market Equity Rolling Three-Year Returns¹



¹ Source: InvestorForce.

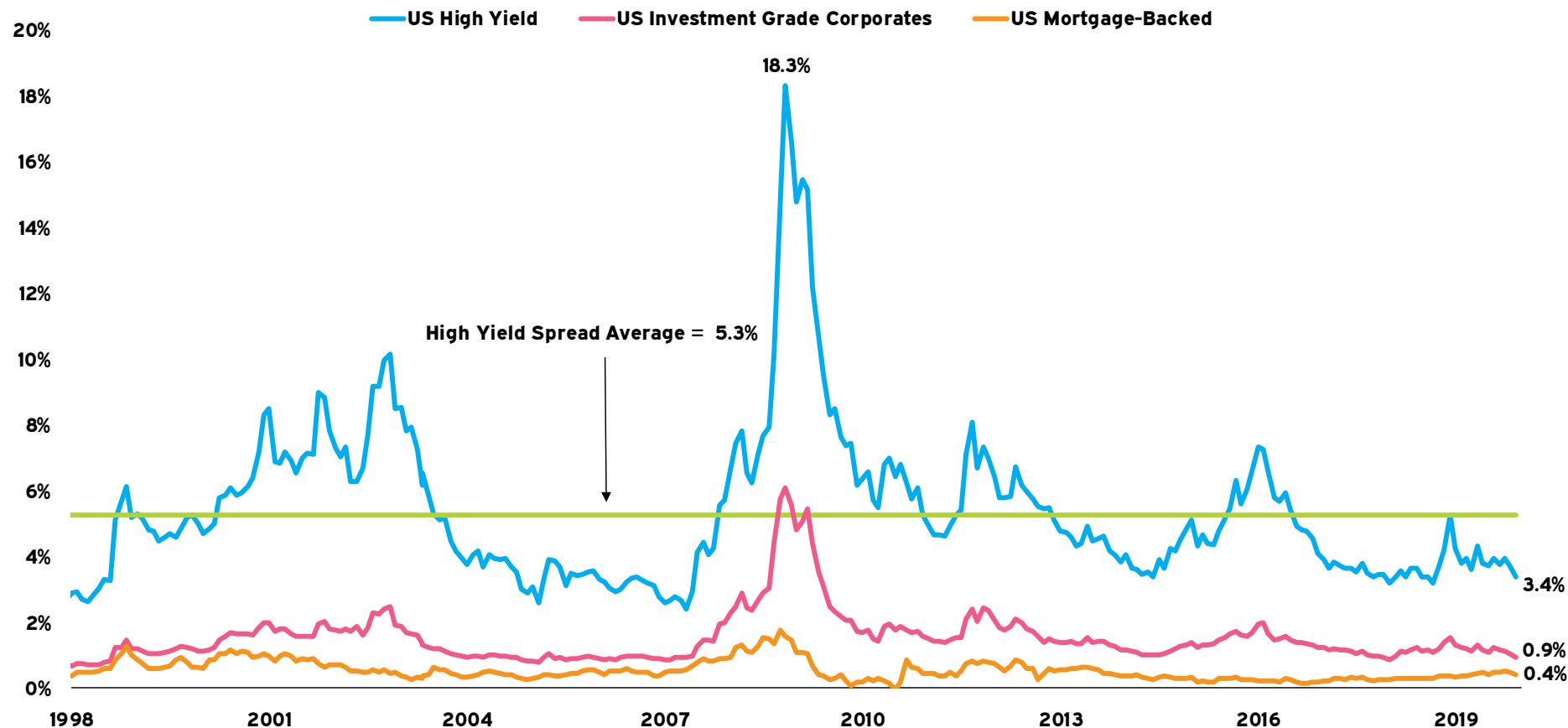
Rolling Ten-Year Returns: 65% Stocks and 35% Bonds¹

— 65% Stocks (MSCI ACWI) / 35% Bonds (Bloomberg Barclays Aggregate) 10-Year Rolling Return



¹ Source: InvestorForce.

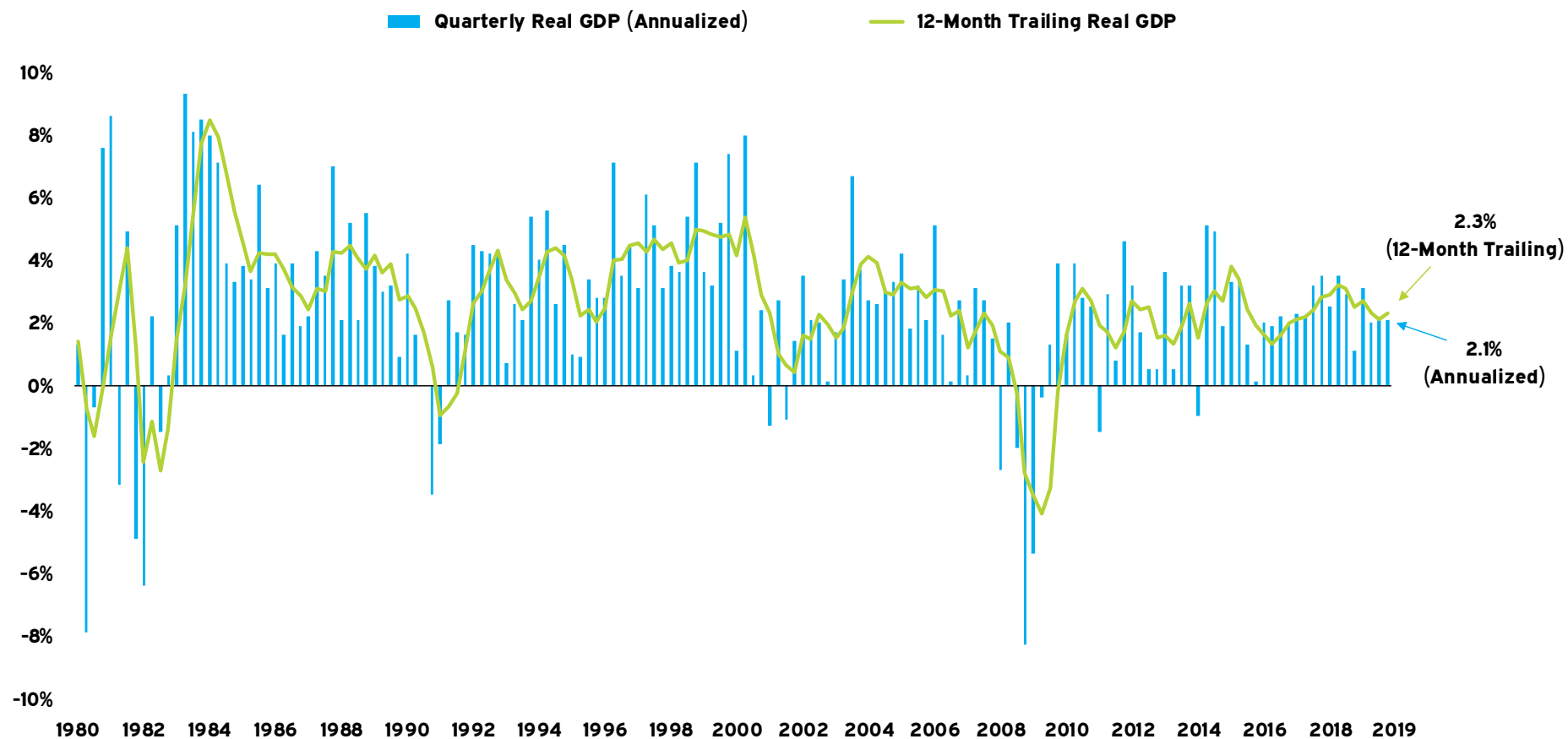
Credit Spreads vs. US Treasury Bonds^{1,2}



¹ Source: Barclays Live. Data represents the OAS.

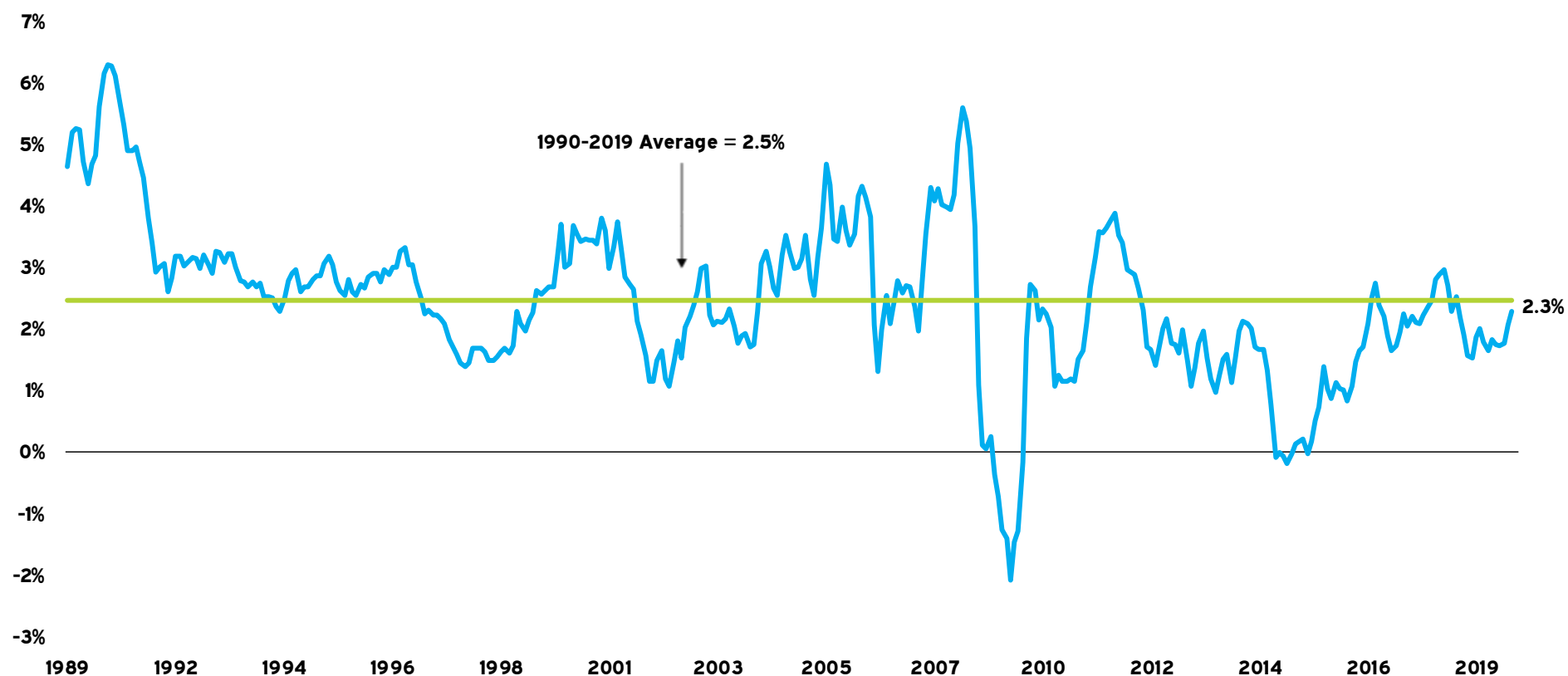
² The median high yield spread was 4.7% from 1997-2019.

US Real Gross Domestic Product (GDP) Growth¹



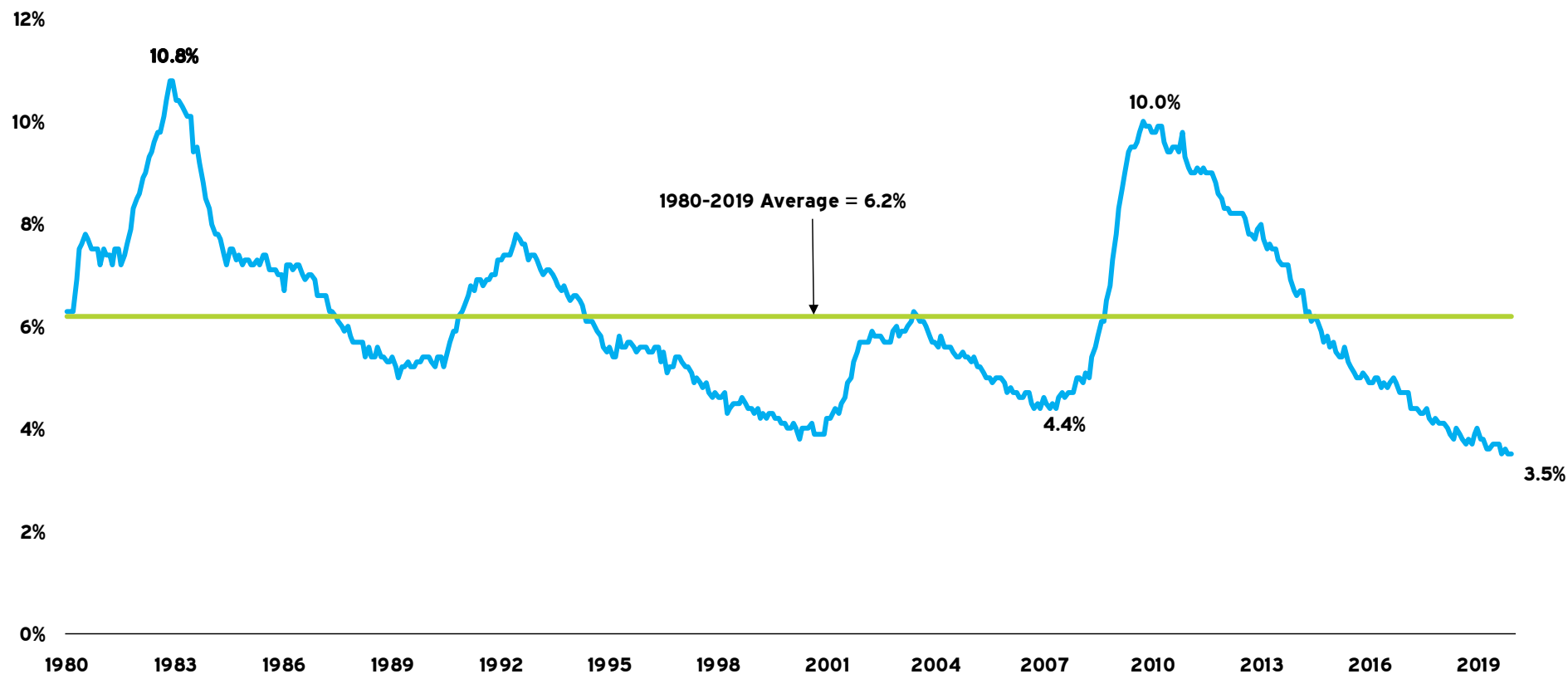
¹ Source: Bureau of Economic Analysis. Data is as of Q4 2019 and represents the first estimate.

US Inflation (CPI) Trailing Twelve Months¹



¹ Source: Bureau of Labor Statistics. Data is non-seasonally adjusted CPI, which may be volatile in the short-term. Data is as of December 31, 2019.

US Unemployment¹



¹ Source: Bureau of Labor Statistics. Data is as of December 31, 2019.

Capital Markets Outlook & Risk Metrics

As of December 31, 2019

Capital Markets Outlook

Takeaways

- December capped off a historically strong year for most risk-oriented markets. Global equity markets generally produced gains in the 2-4% range during the month, with full calendar year returns ending up approximately in the 18-32% range.
- With the exception of long-term interest rates (which ticked up during the month), the yield curve remained relatively stable in December. On a trailing one-year basis, however, interest rates declined by a material margin as the Federal Reserve lowered rates three times in 2019. From a performance perspective, broad investment grade bonds produced one-year returns in the high single-digits whereas long US Treasury bonds generated a return of nearly 15% for the year.
- Due in part to strong returns across nearly all asset classes in 2019, investors should anticipate that long-term, forward-looking returns will be lower as of early-2020 when compared to early-2019 capital market assumptions.
- US equity markets remain expensive whereas non-US equity markets remain reasonably valued relative to their histories. US credit and emerging markets debt spreads remain reasonably valued relative to their histories, although the richness of US high yield has recently increased (i.e., is now more expensive).
- Relative to their counterparts (growth and large cap), value and small cap equities continue to remain attractive from a valuation perspective.

Capital Markets Outlook

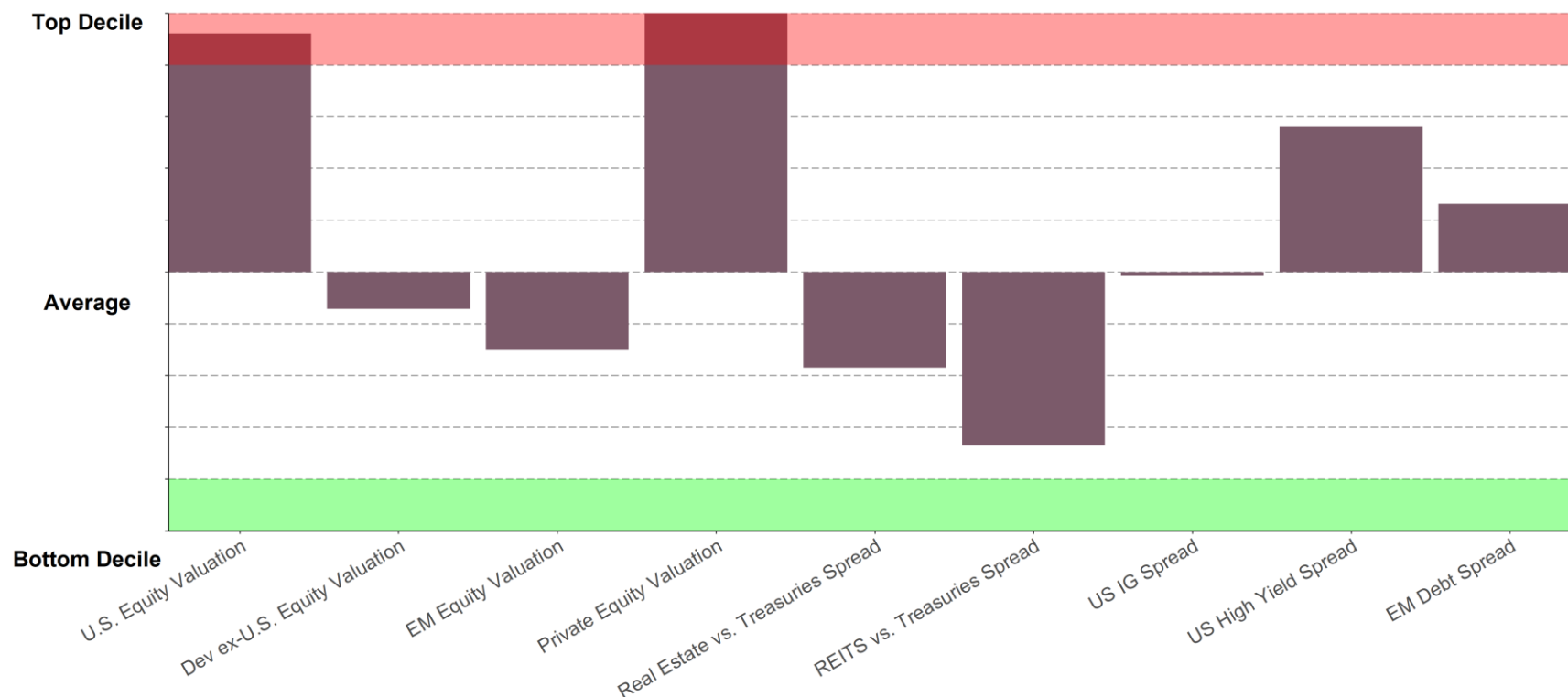
Takeaways

- Implied equity market volatility¹ remained at relatively low levels throughout December, generally staying in the 12-16 range throughout the entire month (the historical average is ~19).
- The Market Sentiment Indicator² stayed green at month end.

¹ As measured by VIX Index.

² See Appendix for the rationale for selection and calculation methodology used for the risk metrics.

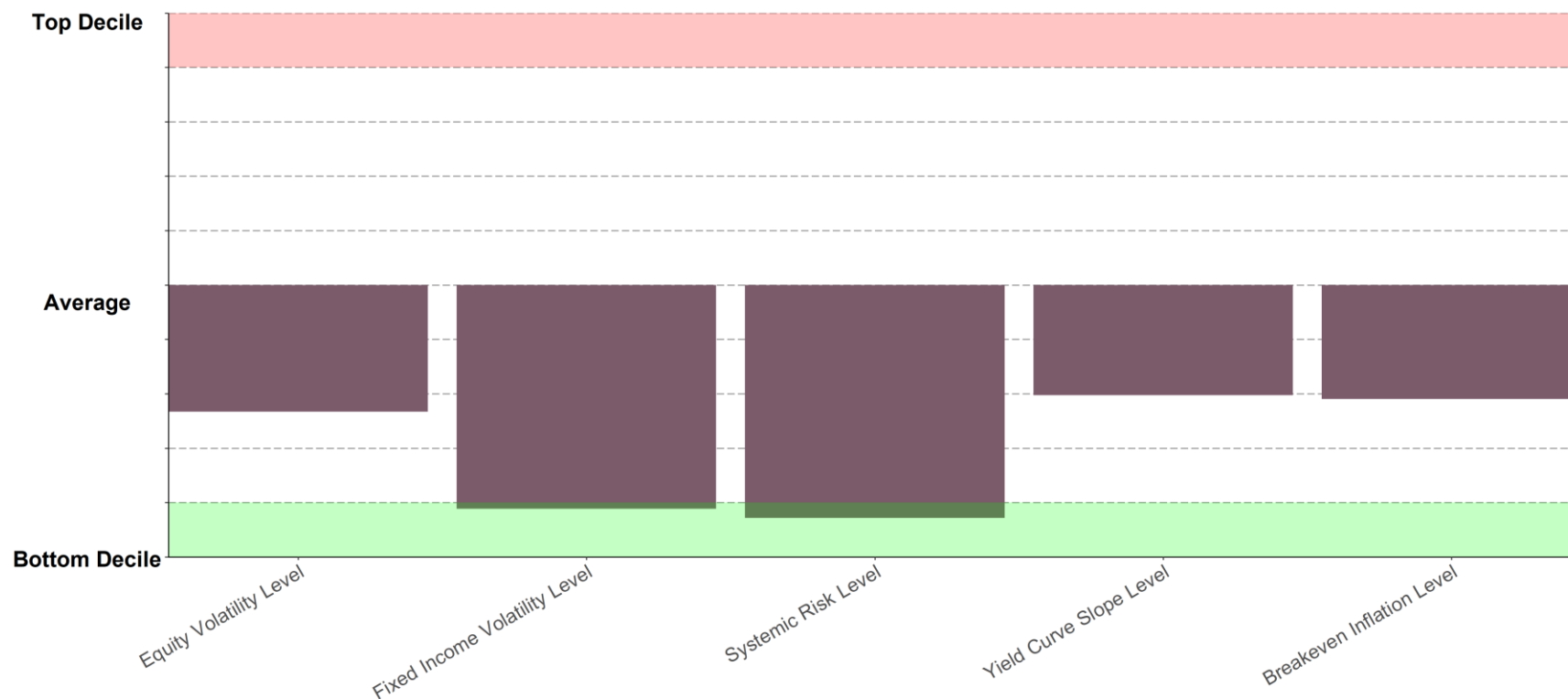
Risk Overview/Dashboard (1) (As of December 31, 2019)¹



- Dashboard (1) summarizes the current state of the different valuation metrics per asset class relative to their own history.

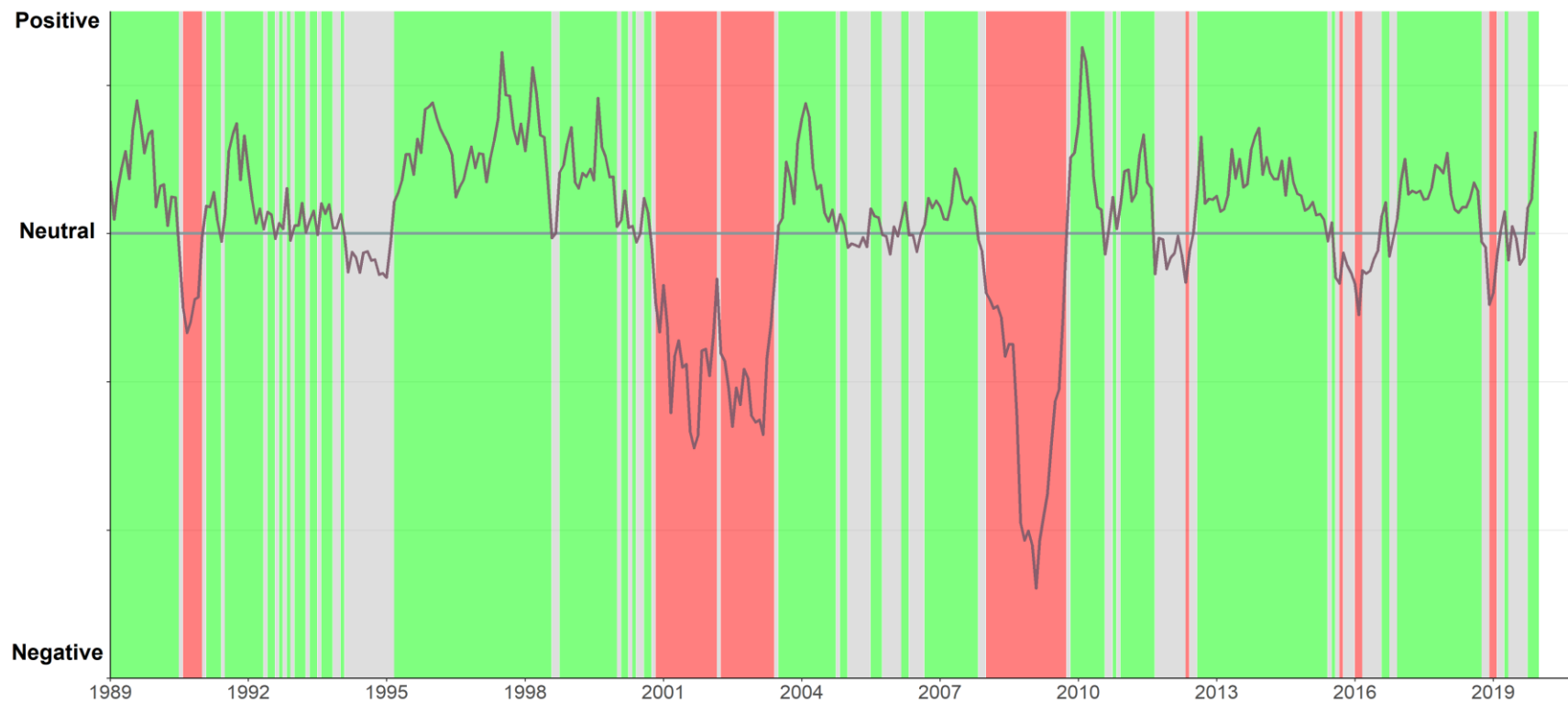
¹ With the exception of Private Equity Valuation, that is YTD as of November 30, 2019.

Risk Overview/Dashboard (2) (As of December 31, 2019)

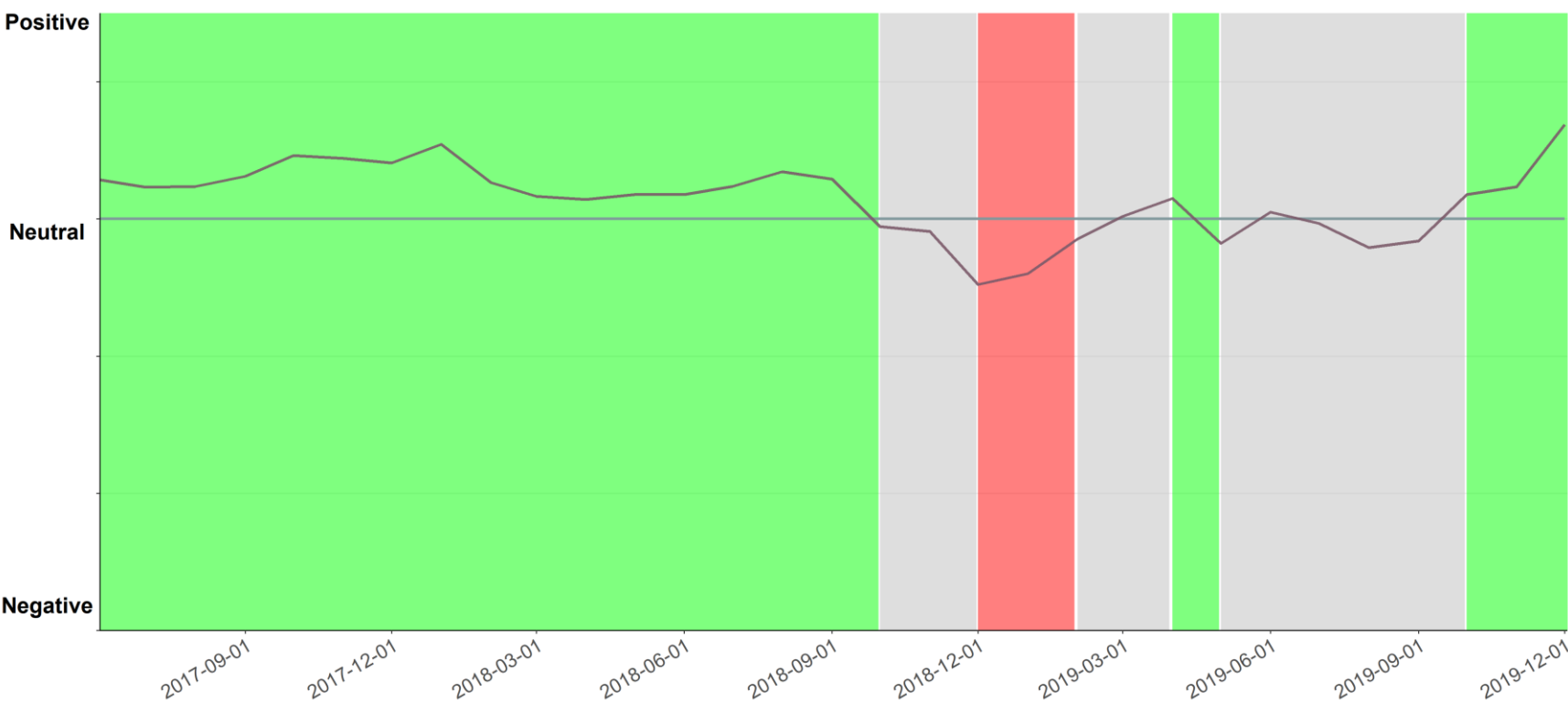


- Dashboard (2) shows how the current level of each indicator compares to its respective history.

Market Sentiment Indicator (All History) (As of December 31, 2019)



Market Sentiment Indicator (Last Three Years)
(As of December 31, 2019)



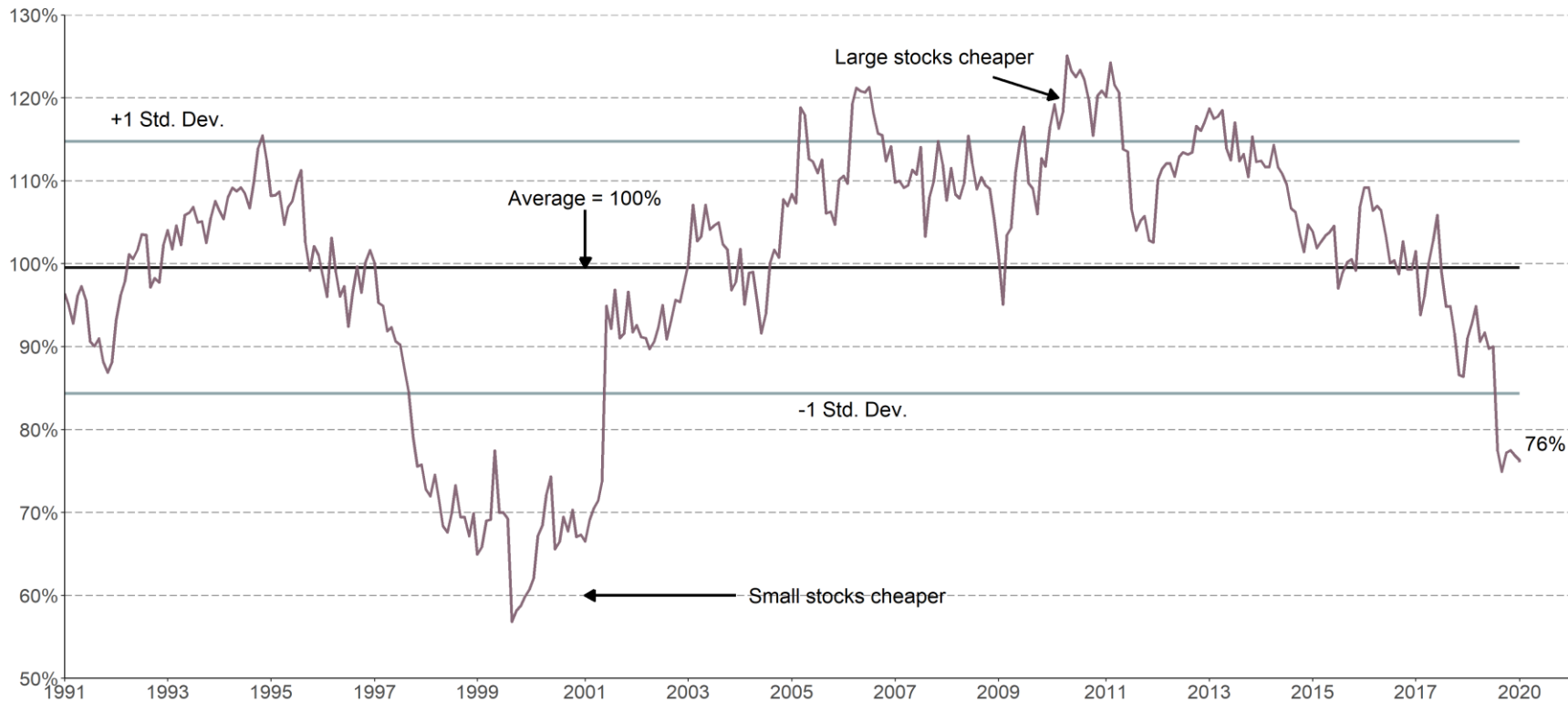
US Equity Cyclically Adjusted P/E¹ (As of December 31, 2019)



- This chart details one valuation metric for US equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

¹ US Equity Cyclically Adjusted P/E on S&P 500 Index – Source: Robert Shiller, Yale University and Meketa Investment Group.

Small Cap P/E vs. Large Cap P/E¹ (As of December 31, 2019)



- This chart compares the relative attractiveness of small cap US equities vs. large cap US equities on a valuation basis. A higher (lower) figure indicates that large cap (small cap) is more attractive.

¹ Small Cap P/E (Russell 2000 Index) vs. Large Cap P/E (Russell 1000 Index) - Source: Russell Investments. Earnings figures represent 12-month "as reported" earnings.

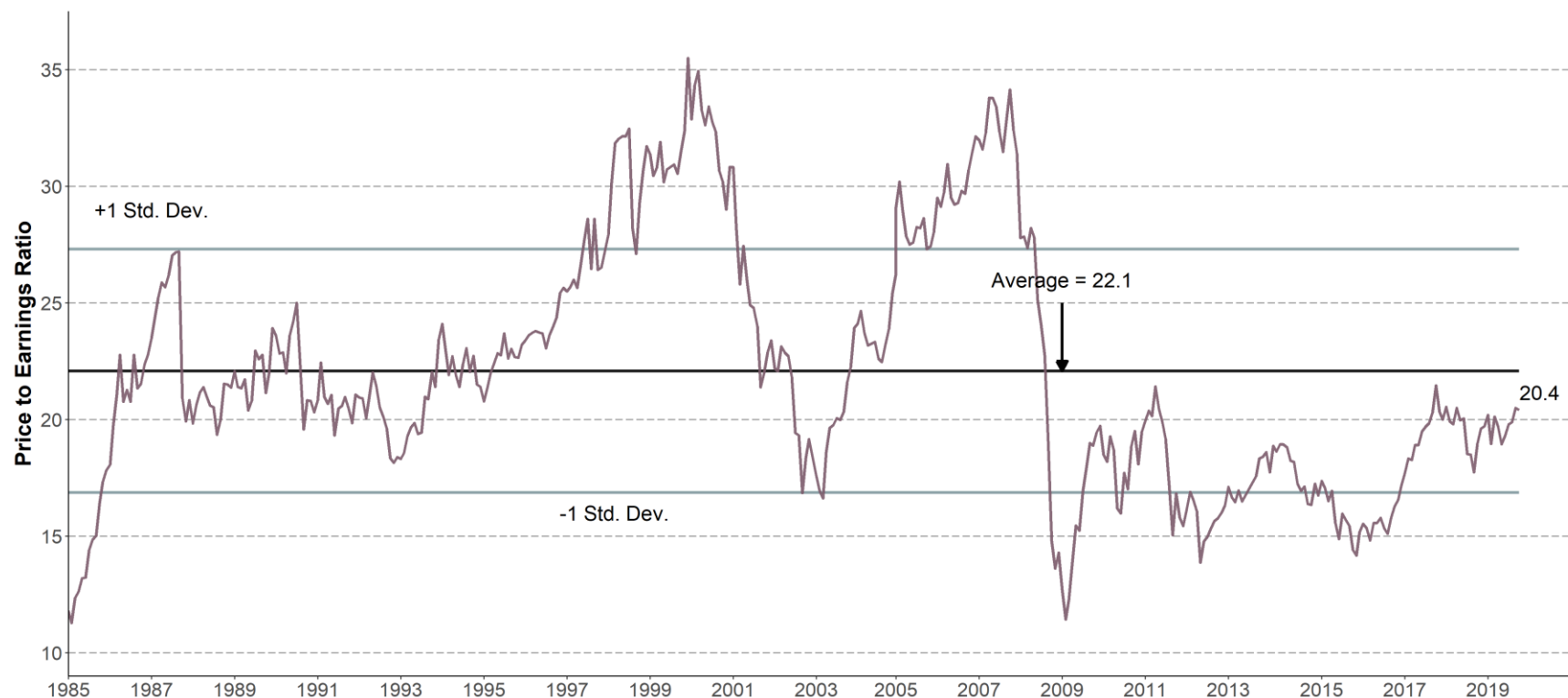
Growth P/E vs. Value P/E¹ (As of December 31, 2019)



- This chart compares the relative attractiveness of US growth equities vs. US value equities on a valuation basis. A higher (lower) figure indicates that value (growth) is more attractive.

¹ Growth P/E (Russell 3000 Growth Index) vs. Value (Russell 3000 Value Index) P/E - Source: Bloomberg, MSCI, and Meketa Investment Group. Earnings figures represent 12-month "as reported" earnings.

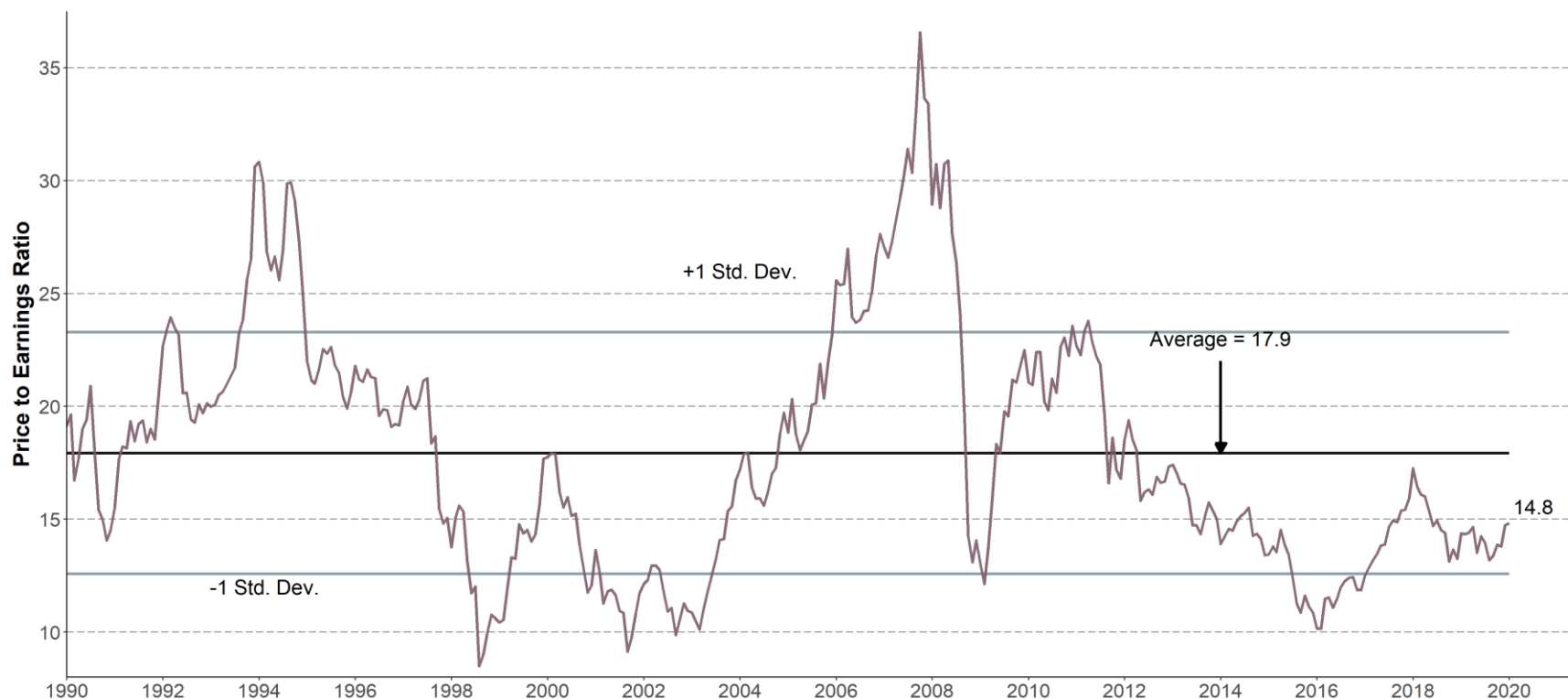
Developed International Equity Cyclically Adjusted P/E¹ (As of December 31, 2019)



- This chart details one valuation metric for developed international equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

¹ Developed International Equity (MSCI EAFE ex Japan Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years.

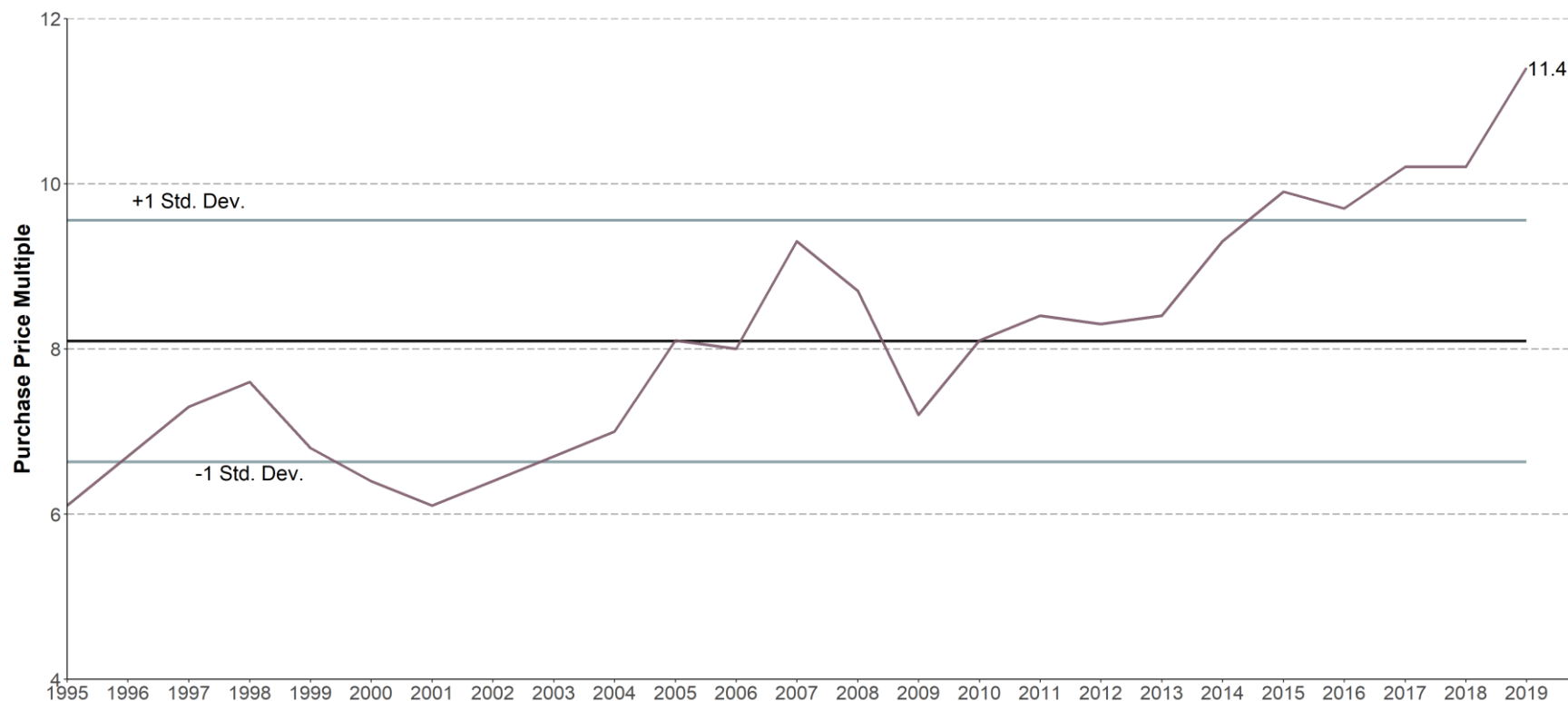
Emerging Market Equity Cyclically Adjusted P/E¹ (As of December 31, 2019)



- This chart details one valuation metric for emerging markets equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

¹ Emerging Market Equity (MSCI Emerging Markets Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years.

Private Equity Multiples¹ (As of November 30, 2019)²

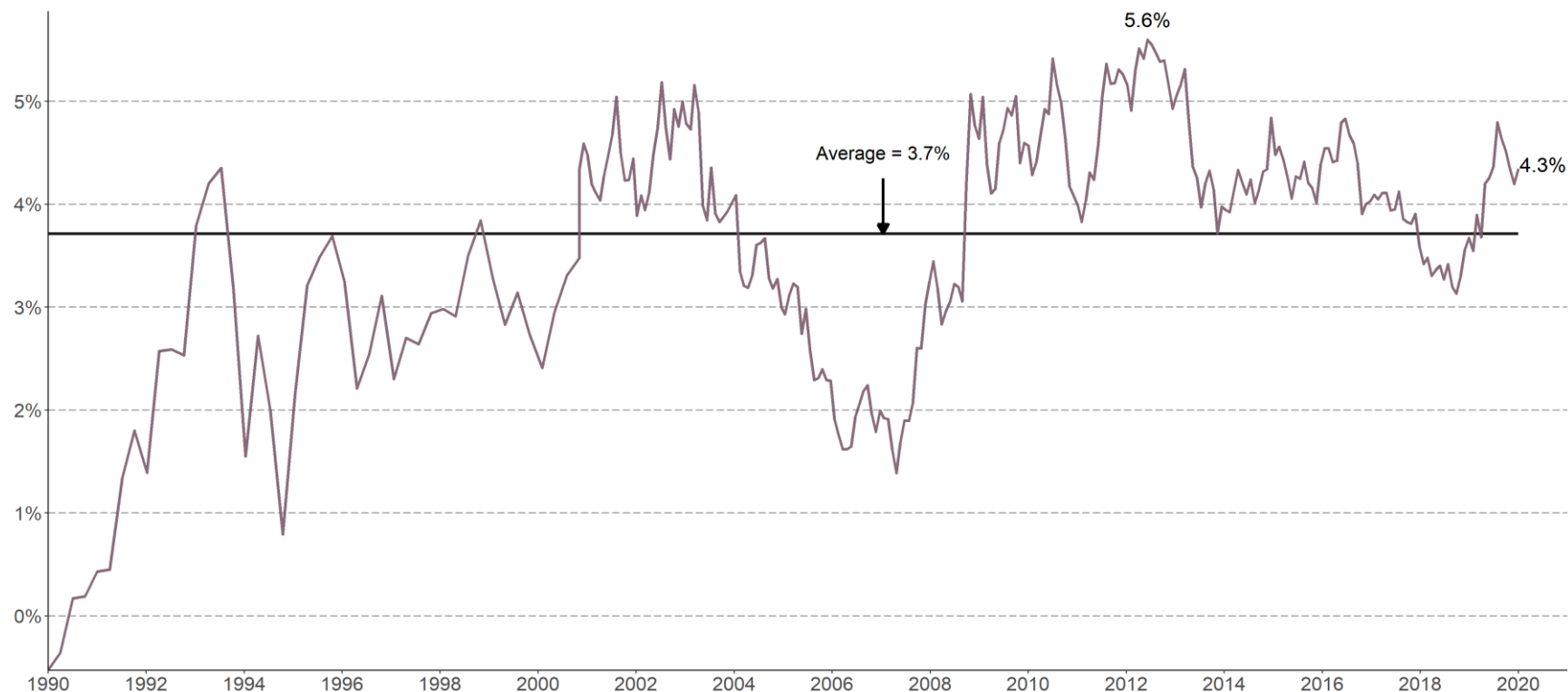


- This chart details one valuation metric for the private equity market. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

¹ Private Equity Multiples – Source: S&P LCD Average EBITDA Multiples Paid in All LBOs.

² Annual figures, except for 2019 (YTD).

Core Real Estate Spread vs. Ten-Year Treasury¹ (As of December 31, 2019)



- This chart details one valuation metric for the private core real estate market. A higher (lower) figure indicates cheaper (more expensive) valuation.

¹ Core Real Estate Spread vs. Ten-Year Treasury – Source: Real Capital Analytics, US Treasury, Bloomberg, and Meketa Investment Group. Core Real Estate is proxied by weighted sector transaction based indices from Real Capital Analytics and Meketa Investment Group.

REITs Dividend Yield Spread vs. Ten-Year Treasury¹ (As of December 31, 2019)



- This chart details one valuation metric for the public REITs market. A higher (lower) figure indicates cheaper (more expensive) valuation.

¹ REITs Dividend Yield Spread vs. Ten-Year Treasury – Source: NAREIT, US Treasury. REITs are proxied by the yield for the NAREIT Equity index.

Credit Spreads¹ (As of December 31, 2019)



- This chart details one valuation metric for the US credit markets. A higher (lower) figure indicates cheaper (more expensive) valuation relative to history.

¹ Credit Spreads – Source: Barclays Capital. High Yield is proxied by the Barclays High Yield index and Investment Grade Corporates are proxied by the Barclays US Corporate Investment Grade index.

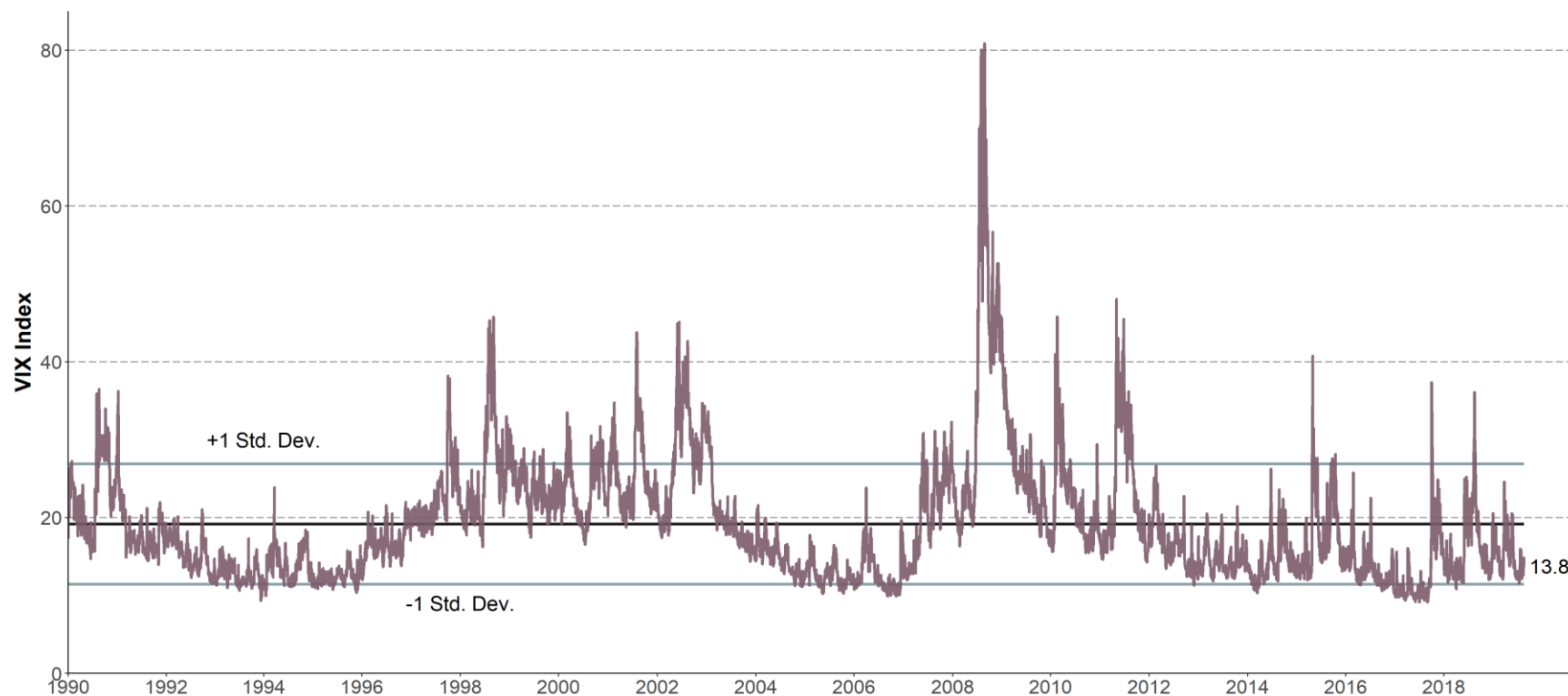
Emerging Market Debt Spreads¹ (As of December 31, 2019)



- This chart details one valuation metric for the EM debt markets. A higher (lower) figure indicates cheaper (more expensive) valuation relative to history.

¹ EM Spreads – Source: Bloomberg. Option Adjusted Spread (OAS) for the Bloomberg Barclays EM USD Aggregate Index.

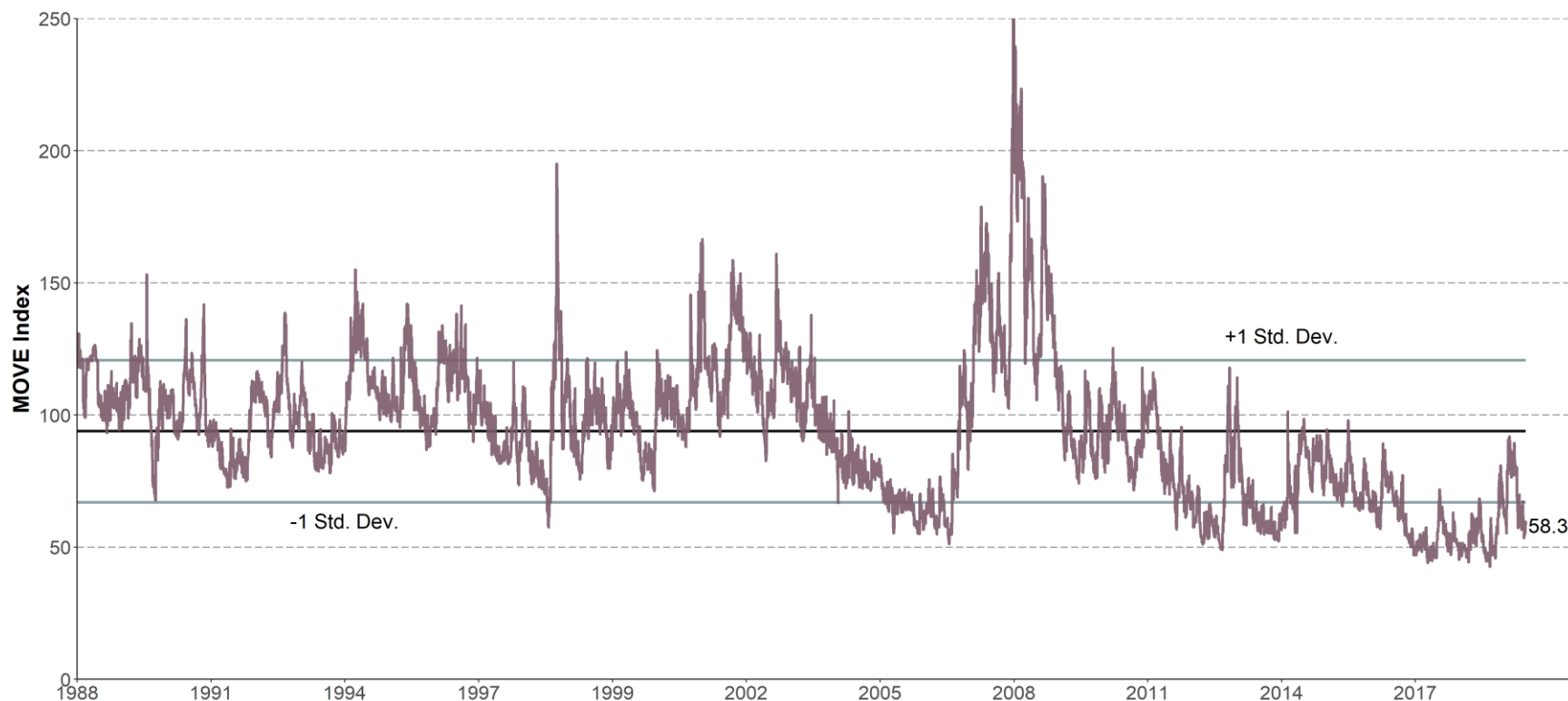
Equity Volatility¹ (As of December 31, 2019)



- This chart details historical implied equity market volatility. This metric tends to increase during times of stress/fear and while declining during more benign periods.

¹ Equity Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by VIX Index, a Measure of implied option volatility for US equity markets.

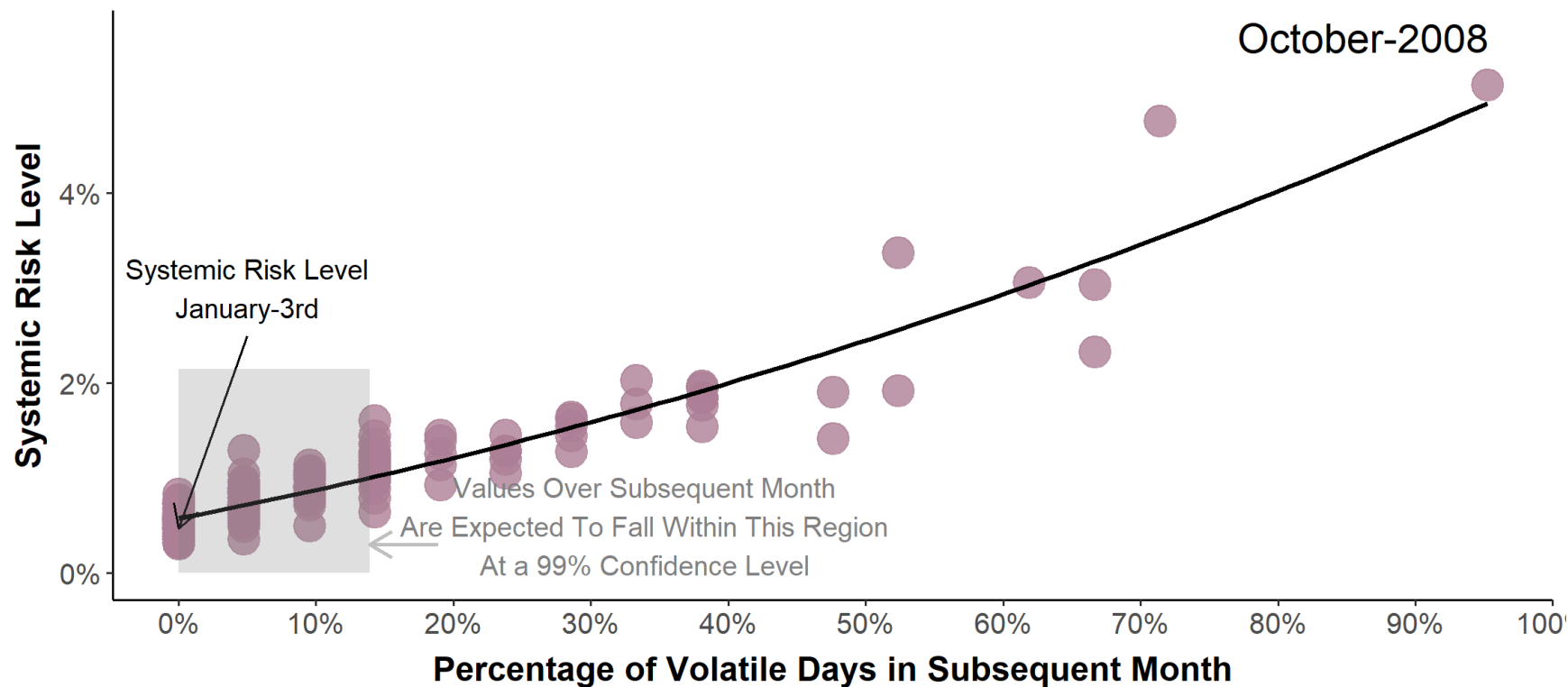
Fixed Income Volatility¹ (As of December 31, 2019)



- This chart details historical implied fixed income market volatility. This metric tends to increase during times of stress/fear and while declining during more benign periods.

¹ Fixed Income Volatility – Source: Bloomberg, and Meketa Investment Group. Fixed Income Volatility proxied by MOVE Index, a Measure of implied option volatility for US Treasury markets.

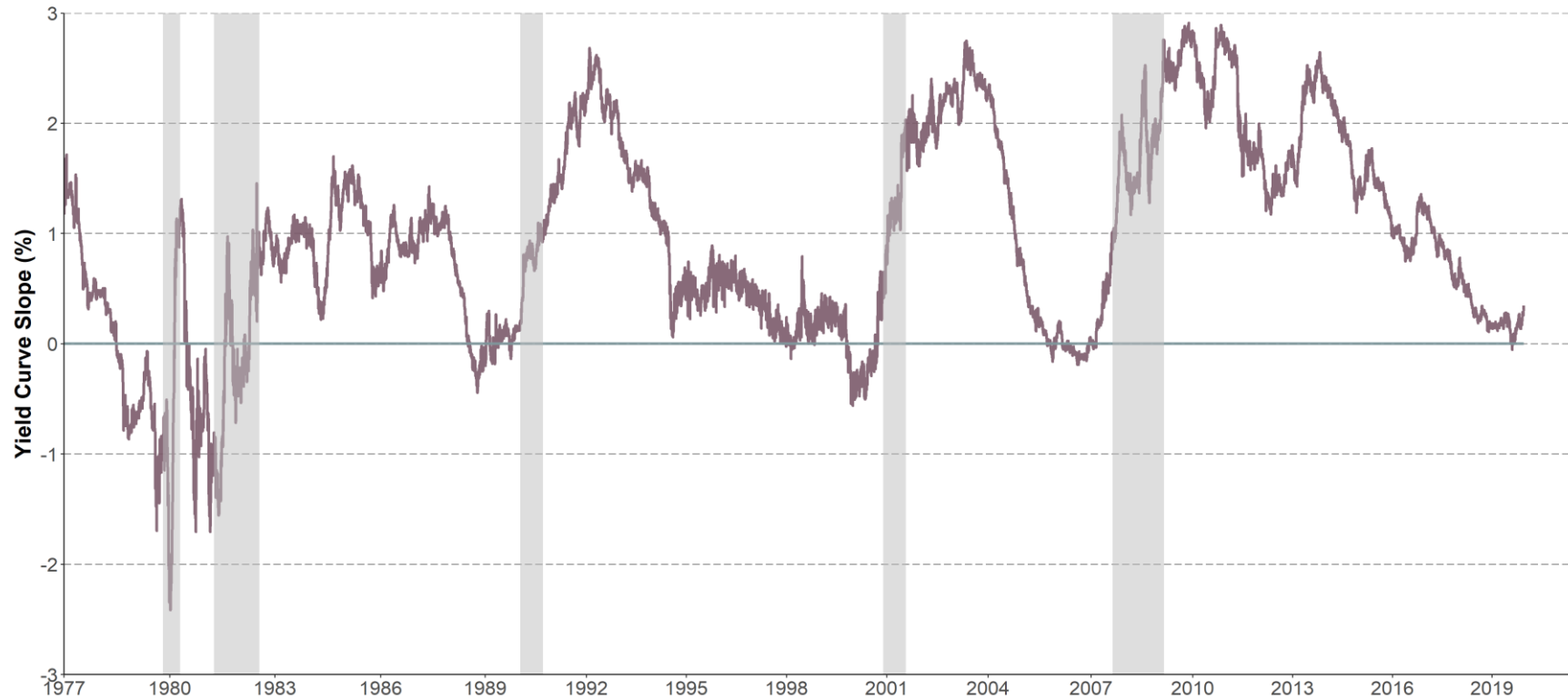
Systemic Risk and Volatile Market Days¹ (As of January 3, 2020)



- Systemic Risk is a measure of 'System-wide' risk, which indicates herding type behavior.

¹ Source: Meketa Investment Group. Volatile days are defined as the top 10 percent of realized turbulence, which is a multivariate distance between asset returns.

Yield Curve Slope (Ten Minus Two)¹
(As of December 31, 2019)



- This chart details the historical difference in yields between ten-year and two-year US Treasury bonds/notes. A higher (lower) figure indicates a steeper (flatter) yield curve slope.

¹ Yield Curve Slope (Ten Minus Two) – Source: Bloomberg, and Meketa Investment Group. Yield curve slope is calculated as the difference between the 10-Year US Treasury Yield and 2-Year US Treasury Yield.

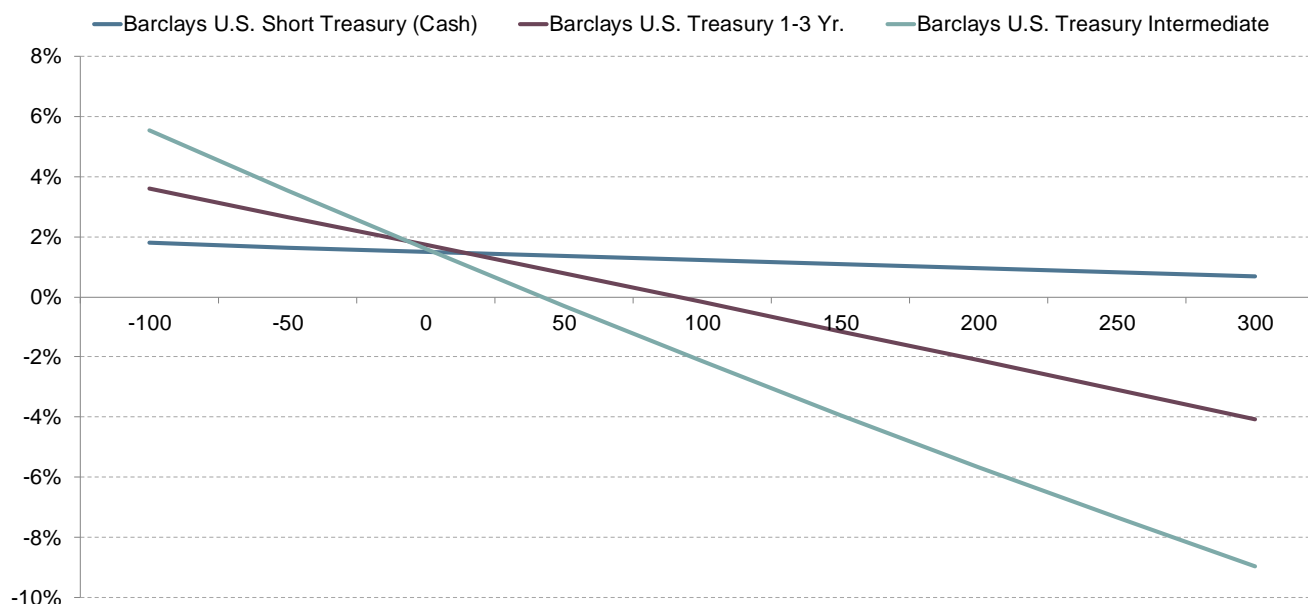
Ten-Year Breakeven Inflation¹ (As of December 31, 2019)



- This chart details the difference between nominal and inflation-adjusted US Treasury bonds. A higher (lower) figure indicates higher (lower) inflation expectations.

¹ Ten-Year Breakeven Inflation – Source: US Treasury and Federal Reserve. Inflation is measured by the Consumer Price Index (CPI-U NSA).

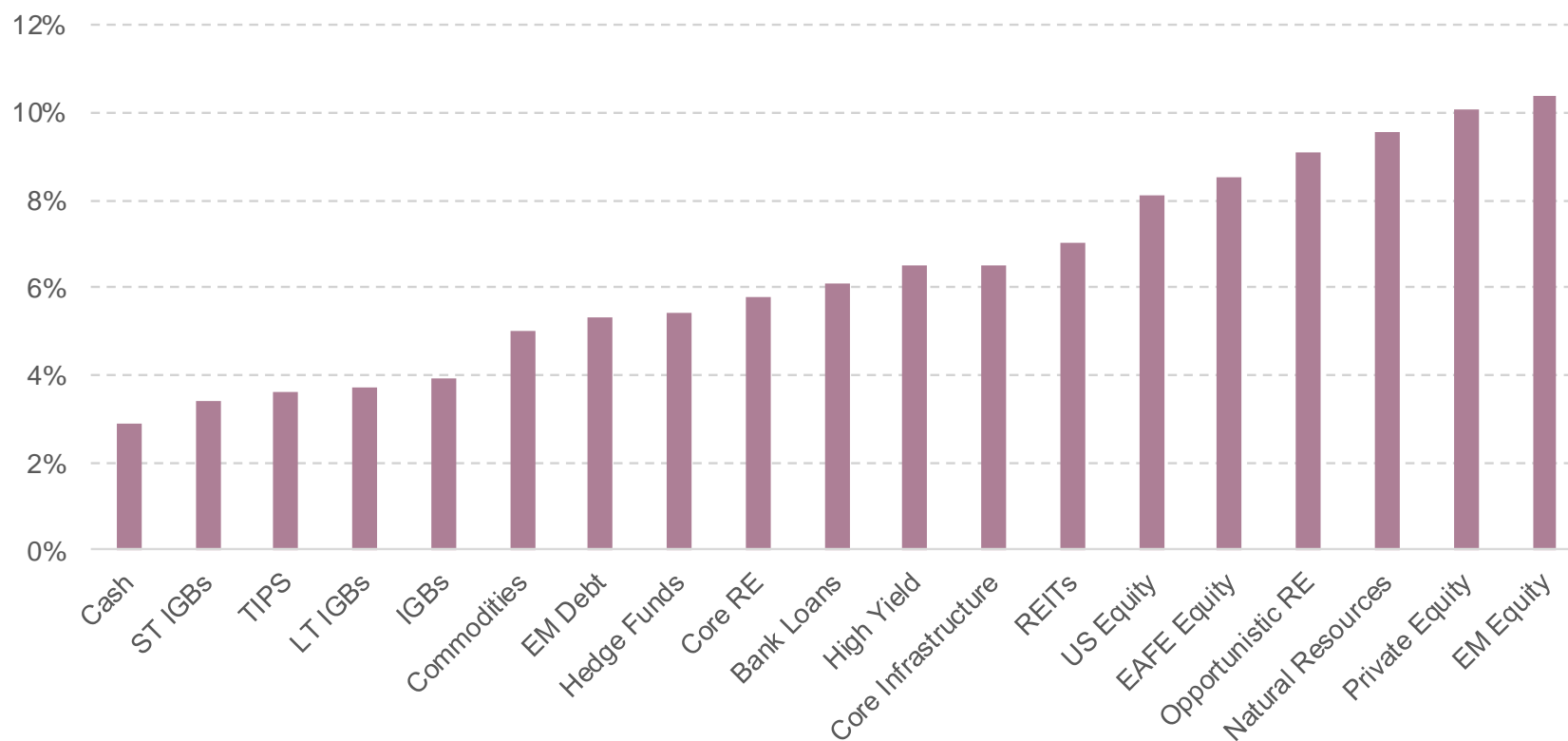
Total Return Given Changes in Interest Rates (bps)¹ (As of December 31, 2019)



	Total Return for Given Changes in Interest Rates (bps)									Statistics	
	-100	-50	0	50	100	150	200	250	300	Duration	YTW
Barclays US Short Treasury (Cash)	1.9%	1.8%	1.7%	1.5%	1.4%	1.2%	1.1%	1.0%	0.8%	0.7%	0.28
Barclays US Treasury 1-3 Yr.	4.5%	3.6%	2.7%	1.7%	0.8%	-0.2%	-1.1%	-2.1%	-3.1%	-4.1%	1.89
Barclays US Treasury Intermediate	7.6%	5.6%	3.6%	1.6%	-0.3%	-2.1%	-3.9%	-5.7%	-7.3%	-9.0%	3.85
Barclays US Treasury Long	34.1%	22.4%	11.8%	2.2%	-6.3%	-13.9%	-20.3%	-25.7%	-30.1%	-33.4%	18.15

¹ Data represents the expected total return from a given change in interest rates (shown in basis points) over a 12-month period assuming a parallel shift in rates. Source: Bloomberg, and Meketa Investment Group.

Long-Term Outlook – 20-Year Annualized Expected Returns¹



- This chart details Meketa's long-term forward-looking expectations for total returns across asset classes.

¹ Source: Meketa Investment Group's 2019 Annual Asset Study.

Appendix

Data Sources and Explanations¹

- US Equity Cyclically Adjusted P/E on S&P 500 Index – Source: Robert Shiller and Yale University.
- Small Cap P/E (Russell 2000 Index) vs. Large Cap P/E (Russell 1000 Index) – Source: Russell Investments. Earnings figures represent 12-month “as reported” earnings.
- Growth P/E (Russell 3000 Growth Index) vs. Value (Russell 3000 Value Index) P/E – Source: Bloomberg, MSCI, and Meketa Investment Group. Earnings figures represent 12-month “as reported” earnings.
- Developed International Equity (MSCI EAFE ex Japan Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years.
- Emerging Market Equity (MSCI Emerging Markets Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years.
- Private Equity Multiples – Source: S&P LCD Average EBITDA Multiples Paid in All LBOs
- Core Real Estate Spread vs. Ten-Year Treasury – Source: Real Capital Analytics, US Treasury, Bloomberg, and Meketa Investment Group. Core Real Estate is proxied by weighted sector transaction based indices from Real Capital Analytics and Meketa Investment Group.
- REITs Dividend Yield Spread vs. Ten-Year Treasury – Source: NAREIT, US Treasury. REITs are proxied by the yield for the NAREIT Equity index.

¹ All Data as of December 31, 2019 unless otherwise noted.

Appendix

Data Sources and Explanations¹

- Credit Spreads – Source: Barclays Capital. High Yield is proxied by the Barclays High Yield index and Investment Grade Corporates are proxied by the Barclays US Corporate Investment Grade index.
- EM Debt Spreads – Source: Bloomberg, and Meketa Investment Group. Option Adjusted Spread (OAS) for the Bloomberg Barclays EM USD Aggregate Index.
- Equity Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by VIX Index, a Measure of implied option volatility for US equity markets.
- Fixed Income Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by MOVE Index, a Measure of implied option volatility for US Treasury markets.
- Systemic Risk and Volatile Market Days – Source: Meketa Investment Group. Volatile days are defined as the top 10 percent of realized turbulence, which is a multivariate distance between asset returns.
- Systemic Risk, which measures risk across markets, is important because the more contagion of risk that exists between assets, the more likely it is that markets will experience volatile periods.
- Yield Curve Slope (Ten Minus Two) – Source: Bloomberg, and Meketa Investment Group. Yield curve slope is calculated as the difference between the 10-Year US Treasury Yield and 2-Year US Treasury Yield.
- Ten-Year Breakeven Inflation – Source: US Treasury and Federal Reserve. Inflation is measured by the Consumer Price Index (CPI-U NSA).

¹ All Data as of December 31, 2019 unless otherwise noted.

Meketa Market Sentiment Indicator

Explanation, Construction and Q&A

Meketa has created the MIG Market Sentiment Indicator (MIG-MSI) to complement our valuation-focused Risk Metrics. This measure of sentiment is meant to capture significant and persistent shifts in long-lived market trends of economic growth risk, either towards a risk-seeking trend or a risk-aversion trend.

This appendix explores:

- What is the Meketa Market Sentiment Indicator?
- How do I read the indicator graph?
- How is the Meketa Market Sentiment Indicator constructed?
- What do changes in the indicator mean?

Meketa has created a market sentiment indicator for monthly publication (the MIG-MSI – see below) to complement Meketa's Risk Metrics.

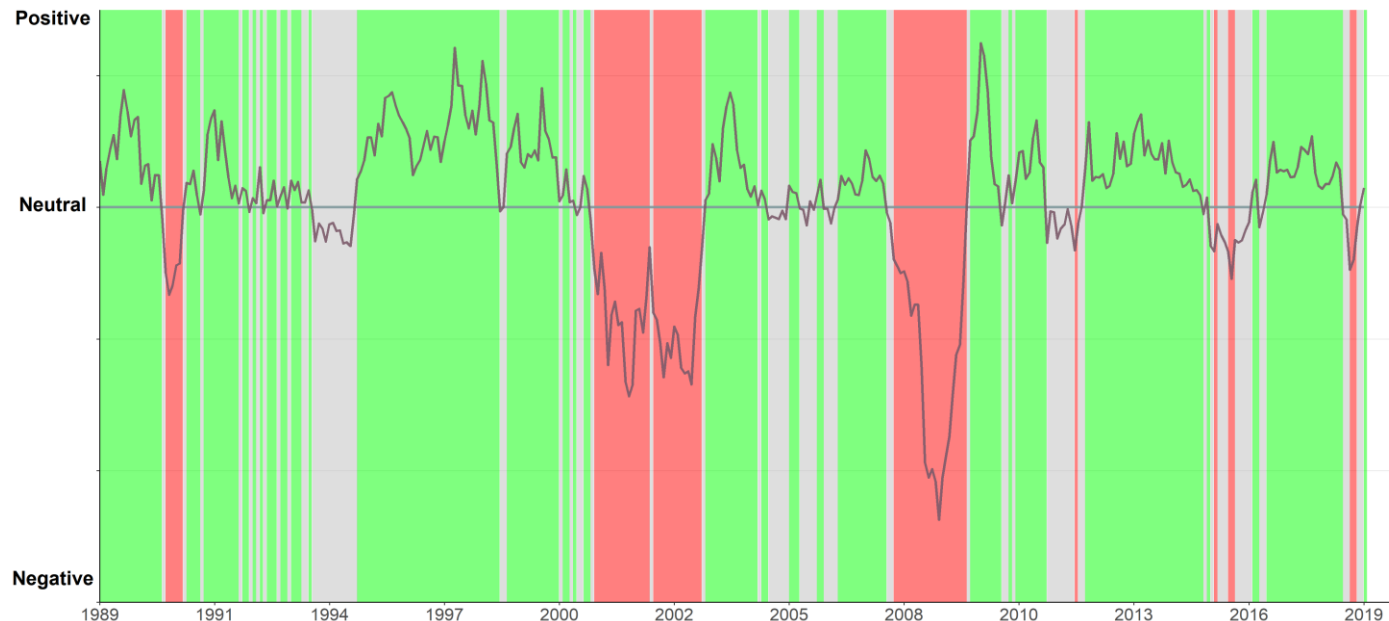
- Meketa's Risk Metrics, which rely significantly on standard market measures of relative valuation, often provide valid early signals of increasing long-term risk levels in the global investment markets. However, as is the case with numerous valuation measures, the Risk Metrics may convey such risk concerns long before a market corrections take place. The MIG-MSI helps to address this early-warning bias by measuring whether the markets are beginning to acknowledge key Risk Metrics trends, and / or indicating non-valuation based concerns. Once the MIG-MSI indicates that the market sentiment has shifted, it is our belief that investors should consider significant action, particularly if confirmed by the Risk Metrics. Importantly, Meketa believes the Risk Metrics and MIG-MSI should always be used in conjunction with one another and never in isolation. The questions and answers below highlight and discuss the basic underpinnings of the Meketa MIG-MSI:

What is the Meketa Market Sentiment Indicator (MIG-MSI)?

- The MIG-MSI is a measure meant to gauge the market's sentiment regarding economic growth risk. Growth risk cuts across most financial assets, and is the largest risk exposure that most portfolios bear. The MIG-MSI takes into account the momentum (trend over time, positive or negative) of the economic growth risk exposure of publicly traded stocks and bonds, as a signal of the future direction of growth risk returns; either positive (risk seeking market sentiment), or negative (risk averse market sentiment).

How do I read the Meketa Market Sentiment Indicator graph?

- Simply put, the MIG-MSI is a color-coded indicator that signals the market's sentiment regarding economic growth risk. It is read left to right chronologically. A green indicator on the MIG-MSI indicates that the market's sentiment towards growth risk is positive. A gray indicator indicates that the market's sentiment towards growth risk is neutral or inconclusive. A red indicator indicates that the market's sentiment towards growth risk is negative. The black line on the graph is the level of the MIG-MSI. The degree of the signal above or below the neutral reading is an indication the signal's current strength.
- Momentum as we are defining it is the use of the past behavior of a series as a predictor of its future behavior.



How is the Meketa Market Sentiment Indicator (MIG-MSI) Constructed?

- The MIG-MSI is constructed from two sub-elements representing investor sentiment in stocks and bonds:
 - Stock return momentum: Return momentum for the S&P 500 Equity Index (trailing 12-months)
 - Bond yield spread momentum: Momentum of bond yield spreads (excess of the measured bond yield over the identical duration US Treasury bond yield) for corporate bonds (trailing 12-months) for both investment grade bonds (75% weight) and high yield bonds (25% weight).
 - Both measures are converted to Z-scores and then combined to get an “apples to apples” comparison without the need of re-scaling.
- The black line reading on the graph is calculated as the average of the stock return momentum measure and the bonds spread momentum measure.¹ The color reading on the graph is determined as follows:
 - If both stock return momentum and bond spread momentum are positive = GREEN (positive)
 - If one of the momentum indicators is positive, and the other negative = GRAY (inconclusive)
 - If both stock return momentum and bond spread momentum are negative = RED (negative)

¹ Momentum as we are defining it is the use of the past behavior of a series as a predictor of its future behavior.

“Time Series Momentum” Moskowitz, Ooi, Pedersen, August 2010. <http://pages.stern.nyu.edu/~lpederse/papers/TimeSeriesMomentum.pdf>

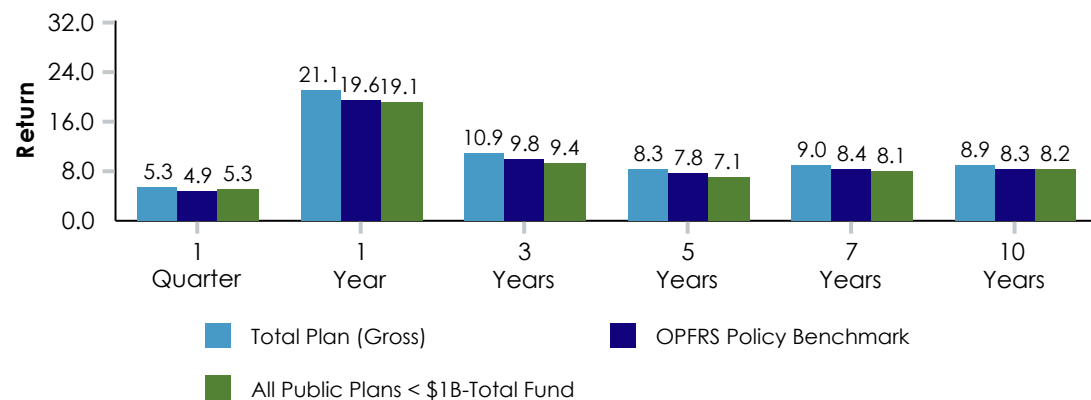
What does the Meketa Market Sentiment Indicator (MIG-MSI) mean? Why might it be useful?

- There is strong evidence that time series momentum is significant and persistent. In particular, across an extensive array of asset classes, the sign of the trailing 12-month return (positive or negative) is indicative of future returns (positive or negative) over the next 12-month period. The MIG-MSI is constructed to measure this momentum in stocks and corporate bond spreads. A reading of green or red is agreement of both the equity and bond measures, indicating that it is likely that this trend (positive or negative) will continue over the next 12 months. When the measures disagree, the indicator turns gray. A gray reading does not necessarily mean a new trend is occurring, as the indicator may move back to green, or into the red from there. The level of the reading (black line) and the number of months at the red or green reading, gives the user additional information on which to form an opinion, and potentially take action.

Total Portfolio Review

Total Portfolio Performance & Market Value As of December 31, 2019

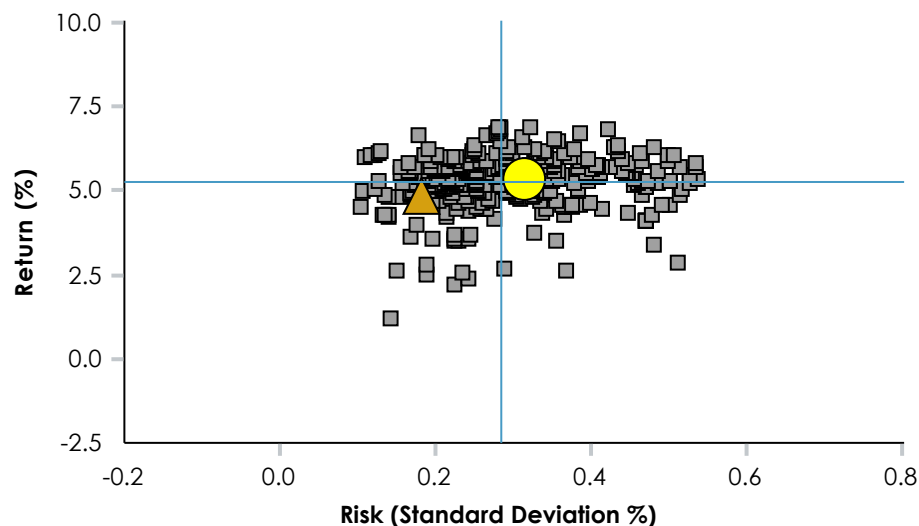
Investment Performance



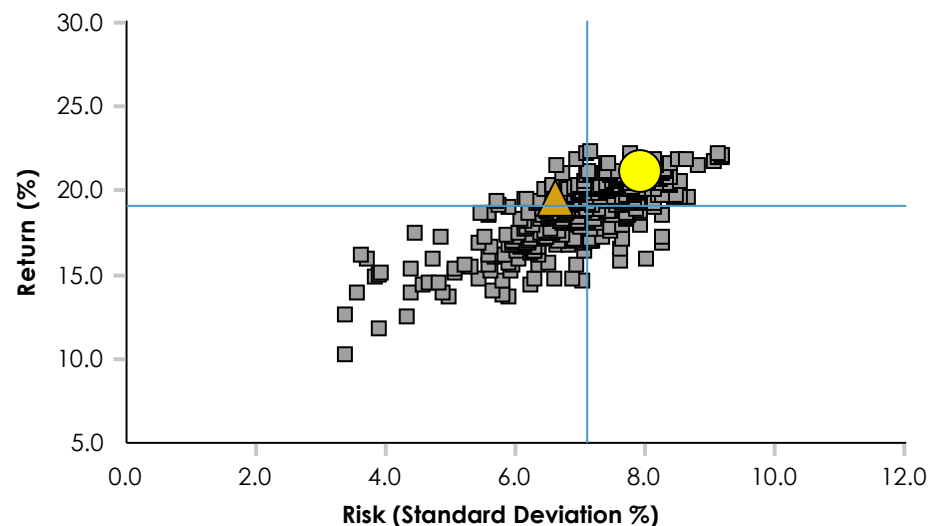
Portfolio Valuation (000's)

	1 Quarter	1 Year
OPFRS Total Plan		
Beginning Market Value	391,244	350,053
Net Contributions	-3,458	-14,139
Gain/Loss	20,440	72,312
Ending Market Value	408,227	408,227

Quarterly Risk/Return



1-Year Risk/Return



	Return	Standard Deviation
OPFRS Total Plan	5.3	0.3
OPFRS Policy Benchmark	4.9	0.2
Median	5.3	0.3

	Return	Standard Deviation
OPFRS Total Plan	21.1	7.9
OPFRS Policy Benchmark	19.6	6.6
Median	19.1	7.1

Evolving Policy Benchmark consists of 40% Russell 3000, 12% MSCI ACWI ex U.S., 33% Bbg BC Universal, 5% CBOE BXM, 6.7% SG Multi Asset Risk Premia, 3.3% Bbg BC Long Treasury

Asset Class Performance As of December 31, 2019

Investment Performance

Asset Class Performance (gross of fees)

	1 Quarter	1 Year	3 Years	5 Years	7 Years	10 Years
OPFRS Total Plan	5.3	21.1	10.9	8.3	9.0	8.9
<i>OPFRS Policy Benchmark*</i>	4.9	19.6	9.8	7.8	8.4	8.3
Excess Return	0.4	1.5	1.1	0.5	0.6	0.6
Domestic Equity	8.6	30.6	14.3	11.1	14.2	13.6
<i>Russell 3000 (Blend)**</i>	9.1	31.0	14.6	11.2	14.4	13.4
Excess Return	-0.5	-0.4	-0.3	-0.1	-0.2	0.2
International Equity	9.7	27.4	12.4	7.7	7.4	6.2
<i>MSCI ACWI Ex US (Blend)^</i>	9.0	22.1	10.4	6.0	5.9	5.4
Excess Return	0.7	5.3	2.0	1.7	1.5	0.8
Fixed Income	0.3	9.2	4.8	3.8	3.2	4.4
<i>Bloomberg Barclays Universal (Blend)^^</i>	0.5	9.3	4.3	3.4	3.0	4.1
Excess Return	-0.2	-0.1	0.5	0.4	0.2	0.3
Crisis Risk Offset	1.0	12.5	-	-	-	-
<i>SG Multi Alternative Risk Premia</i>	-0.9	3.8	-	-	-	-
Excess Return	1.9	8.7	-	-	-	-
Covered Calls	6.1	22.5	10.5	9.2	-	-
<i>CBOE BXM</i>	5.1	16.6	7.8	7.2	-	-
Excess Return	1.0	5.9	2.7	2.0	-	-
Cash	0.5	2.5	1.8	1.2	0.8	-
<i>FTSE 3 Month T-Bill</i>	0.5	2.3	1.7	1.0	0.8	-
Excess Return	0.0	0.2	0.1	0.2	0.0	-

Evolving Policy Benchmark consists of 40% Russell 3000, 12% MSCI ACWI ex U.S., 33% Bbg BC Universal, 5% CBOE BXM, 6.7% SG Multi Asset Risk Premia, 3.3% Bbg BC Long Treasury

** Domestic Equity Benchmark consists of S&P 500 thru 3/31/98, 10% R1000, 20% R1000V, 5% RMC from 4/1/98 - 12/31/04, and Russell 3000 from 1/1/05 to present

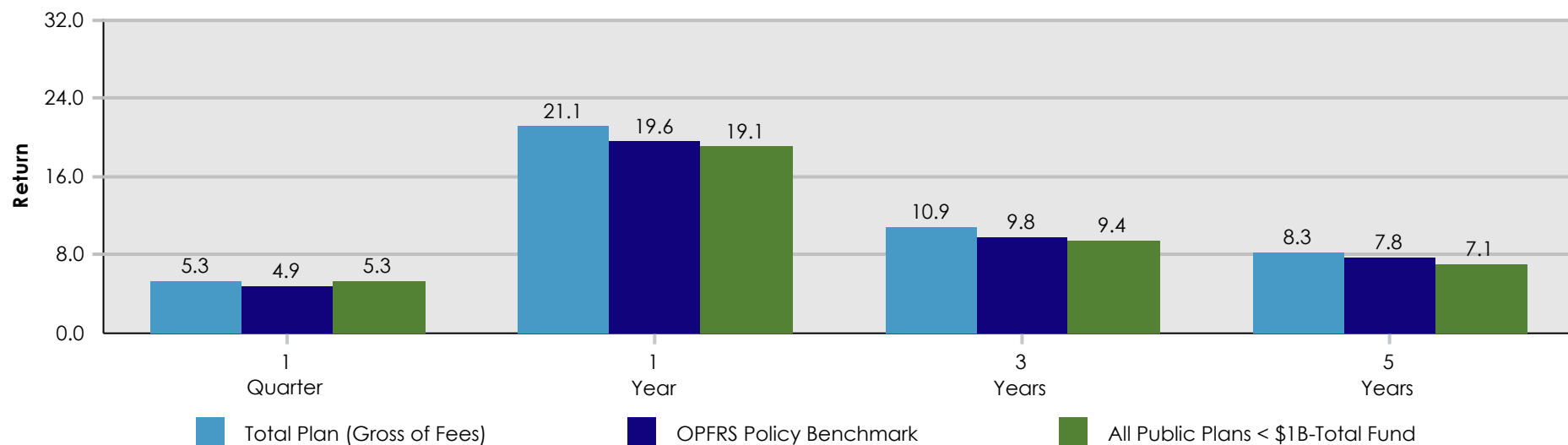
^ International Equity Benchmark consists of MSCI EAFE thru 12/31/04, and MSCI ACWI x US thereafter.

^^ Fixed Income Benchmark consists of Bbg BC Aggregate prior to 4/1/06, and Bbg BC Universal thereafter.

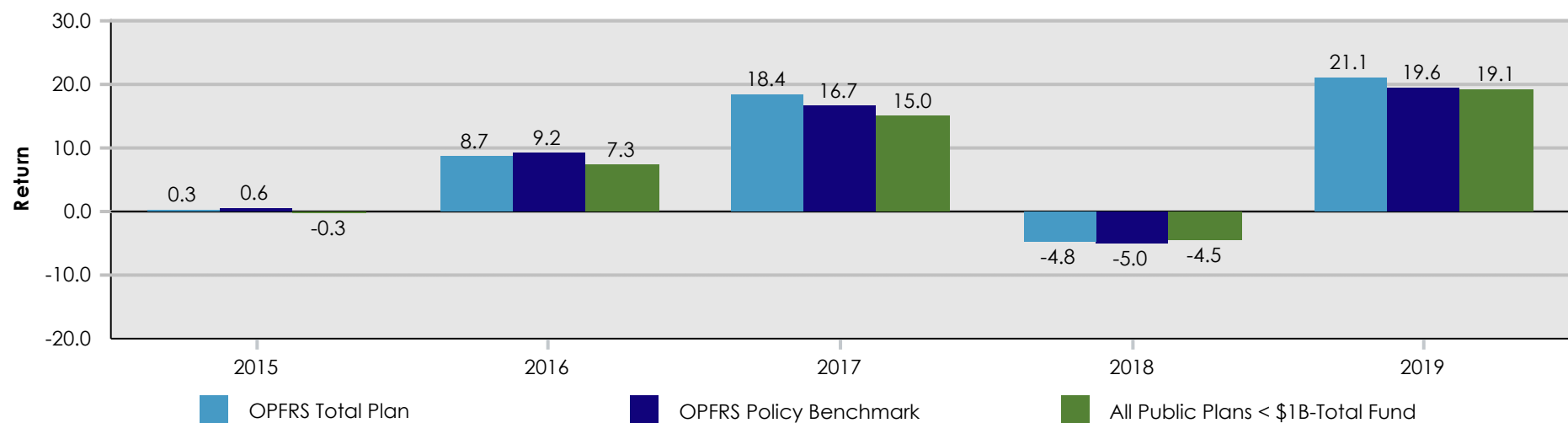
OPFRS Portfolio Relative Performance Results

As of December 31, 2019

Trailing Period Performance (annualized)



12-month Performance- As of December 31, 2019



Actual vs. Target Allocation

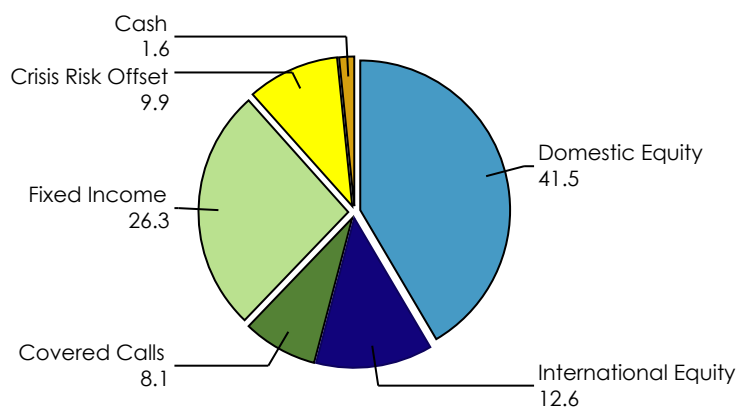
As of December 31, 2019

	Asset Allocation (\$000)	Asset Allocation (%)	Target Allocation* (%)	Variance (%)
OPFRS Total Plan	408,227	100.0	100.0	0.0
Domestic Equity	169,558	41.5	40.0	1.5
International Equity	51,328	12.6	12.0	0.6
Total Fixed Income	107,185	26.3	33.0	-6.7
Covered Calls	32,891	8.1	5.0	3.1
Crisis Risk Offset	40,606	9.9	10.0	-0.1
Cash	6,659	1.6	0.0	1.6

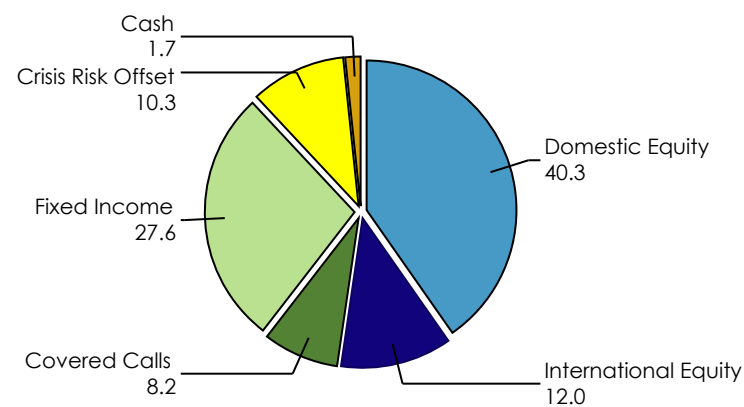
*Target weightings reflect the Plan's evolving asset allocation (effective 5/31/2017).

Actual Asset Allocation Comparison

December 31, 2019 : \$408,226,524



September 30, 2019 : \$391,243,865



Manager Monitoring / Probation List

Manager Performance - Gross of Fees

As of December 31, 2019

Domestic Equity

Manager - Style	Mkt Value (\$000)	1 Quarter	1 Year	3 Years	5 Years	Since Inception*	Inception Date
Large Cap Core							
Northern Trust Russell 1000 Index	95,888	9.0	31.4	15.1	11.5	14.3	06/2010
<i>Russell 1000 Index</i>		9.0	31.4	15.0	11.5	14.3	
Excess Return		0.0	0.0	0.1	0.0	0.0	
Mid Cap Core							
EARNEST Partners - Active	33,801	7.7 (26)	38.4 (3)	16.4 (13)	13.2 (9)	10.2 (17)	04/2006
<i>Russell Midcap Index</i>		7.1	30.5	12.1	9.3	8.9	
Excess Return		0.6	7.9	4.3	3.9	1.3	
Small Cap Value							
Vanguard Russell 2000 Value	8,524	8.4 (42)	---	---	---	8.0 (26)	08/2019
<i>Russell 2000 Value Index</i>		8.5	---	---	---	7.7	
Excess Return		-0.1	---	---	---	0.3	
Small Cap Growth							
Rice Hall James - Active	12,035	9.8 (48)	18.7 (91)	---	---	9.4 (81)	07/2017
<i>Russell 2000 Growth Index</i>		11.4	28.5	---	---	10.9	
Excess Return		-1.6	-9.8	---	---	-1.5	
Defensive Equity							
SPI - Active	19,311	7.8 (62)	---	---	---	8.3 (82)	07/2019
<i>S&P 500 Index</i>		9.1	---	---	---	10.9	
Excess Return		-1.3	---	---	---	-2.6	

Over the latest three-month period ending December 31, 2019, one of OPFRS's three active Domestic Equity managers outperformed their respective benchmarks.

OPFRS's passive Domestic Equity mandates showed mixed results compared to their respective benchmarks.

Northern Trust, the Plan's passive large cap core transition account, continues to perform in-line with its benchmark over all time periods measured. This performance is within expectations for a passive mandate.

Manager Performance - Gross of Fees

As of December 31, 2019

Domestic Equity

EARNEST Partners, the Plan's active mid cap core manager, outperformed its Russell Midcap benchmark by 0.6%, placing it in the 26th percentile of its peer group. The portfolio has also outperformed its benchmark over the 1-year period by 7.9% and continues to outperform over the 3- and 5-year periods by 4.3% and 3.9% respectively. The portfolio also ranks in the top quartile of its peer group over all time periods measured.

Vanguard Russell 2000 Value, the Plan's new passive small cap value manager, underperformed its benchmark over the recent quarter by (0.1%), placing it in the 42nd percentile of its peer group.

Rice Hall James, the Plan's active small cap growth manager, underperformed its Russell 2000 Growth benchmark over the most recent quarter by (1.6%) placing the portfolio in the 48th percentile of its peer group. The portfolio has underperformed its benchmark over the 1-year period by (9.8%).

SPI, the Plan's new active Defensive Equity manager, underperformed the S&P 500 benchmark by (1.3%) over the recent quarter, placing the portfolio in the 62nd percentile of its peer group.

Manager Performance - Gross of Fees

As of December 31, 2019

International Equity

Manager - Style	Mkt Value (\$000)	1 Quarter	1 Year	3 Years	5 Years	Since Inception	Inception Date
Active Core International							
Vanguard Developed Markets	14,995	8.3	---	---	---	11.7	09/2019
<i>MSCI AC World ex USA</i>		9.0	---	---	---	11.8	
Excess Return		-0.7	---	---	---	-0.1	
Active International							
iShares MSCI ACWI exUS ETF	35,567	---	---	---	---	0.6	12/2019
<i>MSCI AC World ex USA</i>		---	---	---	---	4.4	
Excess Return		---	---	---	---	-3.8	

Over the latest three-month period, ending December 31, 2019, OPFRS terminated Fisher and Hansberger.

Vanguard Developed Markets underperformed its benchmark by (0.1%) over the quarter. Trailing returns are not available as the mandate opened in August 2019.

iShares MSCI ACWI ex US ETF, the plan's new passive international equity manager does not have a full quarter of performance. The mandate did show a since inception return of 0.6%.

Manager Performance - Gross of Fees

As of December 31, 2019

Fixed Income

Manager - Style	Mkt Value (\$000)	1 Quarter	1 Year	3 Years	5 Years	Since Inception	Inception Date
Core Fixed Income							
Ramirez	74,256	0.1 (69)	9.9 (16)	4.9 (12)	---	4.9 (12)	01/2017
<i>Blmbg. Barc. U.S. Aggregate Index</i>		0.2	8.7	4.0	---	4.0	
Excess Return		-0.1	1.2	0.9	---	0.9	
Core-Plus Fixed Income							
Reams	24,910	-0.1 (97)	8.3 (93)	4.4 (77)	3.5 (72)	5.6 (57)	02/1998
<i>Bbg Barclays Universal (Hybrid)</i>		0.5	9.3	4.3	3.4	5.0	
Excess Return		-0.6	-1.0	0.1	0.1	0.6	
High Yield / Bank Loans							
DDJ Capital	8,019	2.8 (29)	5.3 (98)	5.8 (71)	---	5.7 (65)	02/2015
<i>ICE BofAML High Yield Master II</i>		2.6	14.4	6.3	---	6.1	
Excess Return		0.2	-9.1	-0.5	---	-0.4	

Over the latest three-month period, ending December 31, 2019, two of OPFRS's three active Fixed Income managers outperformed their respective benchmarks.

Ramirez, the Plan's core fixed income manager, returned 0.1% compared to the benchmark return of 0.2% during the quarter, ranking the portfolio in the 69th percentile of its peer group. Over the 1-year period, Ramirez has outperformed its benchmark by 1.2% and ranked in the 16th percentile of its peer group. Over the 3-year period, Ramirez returned 4.9%, besting the benchmark by 0.9% and earning a ranking of 12th in its peer group.

Reams, the Plan's core plus fixed income manager, underperformed its benchmark by (0.6%) during the quarter and ranked in the 97th percentile of its peer group. Over the most recent 12-month period, Reams underperformed its benchmark by (1.0%), earning a 93rd percentile ranking. Reams did outperform its benchmark over the 3- and 5-year periods by 0.1% respectively.

DDJ, the Plan's High Yield & Bank Loan manager, returned 2.8% during the most recent quarter, outperforming the benchmark by 0.2%. A string of underperforming quarters has left DDJ trailing its benchmark by (9.1%) over the most recent 12-month period and (0.5%) over the 3-year period.

Manager Performance - Gross of Fees

As of December 31, 2019

Covered Calls

Manager - Style	Mkt Value (\$000)	1 Quarter	1 Year	3 Years	5 Years	Since Inception	Inception Date
Covered Calls Composite							
Covered Calls	32,891	6.1	22.5	10.5	9.2	8.9	04/2014
CBOE BXM		5.1	16.6	7.8	7.2	6.8	
Excess Return		1.0	5.9	2.7	2.0	2.1	
CC - Passive Allocation							
Parametric BXM	15,629	4.6	16.6	8.3	7.9	7.4	04/2014
CBOE BXM		5.1	16.6	7.8	7.2	6.8	
Excess Return		-0.5	0.0	0.5	0.7	0.6	
CC - Active Allocation							
Parametric DeltaShift	17,262	7.5	28.4	12.6	10.2	10.9	04/2014
CBOE BXM		5.1	16.6	7.8	7.2	6.8	
Excess Return		2.4	11.8	4.8	3.0	4.1	

During the latest three-month period ending December 31, 2019, OPFRS' aggregate Covered Calls portfolio outperformed its benchmark by 1.0%.

Parametric BXM Portfolio, the Plan's passive covered calls allocation underperformed its CBOE BXM index by (0.5%) over the most recent quarter. Over the most recent 1-year period the portfolio matched the benchmark and has outperformed over both the 3- and 5-year periods by 0.5% and 0.7% respectively.

Parametric Delta Shift Portfolio, the Plan's active covered calls allocation has outperformed the CBOE BXM benchmark by 2.4% over the most recent quarter and has outperformed by 11.8% over the 1-year period. The portfolio outperformed over the 3-year period by 4.8% and has earned an annualized 10.2% over the most recent 5-year period, outperforming its benchmark by 3.0%.

Manager Performance - Gross of Fees

As of December 31, 2019

Crisis Risk Offset

Manager - Style	Mkt Value (\$000)	1 Quarter	1 Year	3 Years	5 Years	Since Inception	Inception Date
Crisis Risk Offset Composite							
Crisis Risk Offset	40,606	1.0	12.5	---	---	3.4	09/2018
<i>CRO Composite Benchmark</i>		-0.9	3.8	---	---	1.8	
Excess Return		1.9	8.7	---	---	1.6	
CRO - Risk Premia / Trend Following							
Parametric S.A.R.P.	26,721	3.9	16.0	---	---	5.8	09/2018
<i>SG Multi Alternative Risk Premia</i>		-0.9	3.8	---	---	1.8	
Excess Return		4.8	12.2	---	---	4.0	
CRO - Long Duration							
Vanguard Long-Term Treasury ETF	13,885	-4.3	---	---	---	3.4	07/2019
<i>Bloomberg Barclays U.S. Gov Float Adjusted: Long</i>		-4.1	---	---	---	3.5	
Excess Return		-0.2	---	---	---	-0.1	

During the latest three-month period ending December 31, 2019, OPFRS's partially funded aggregate Crisis Risk Offset portfolio outperformed its benchmark by 1.9%.

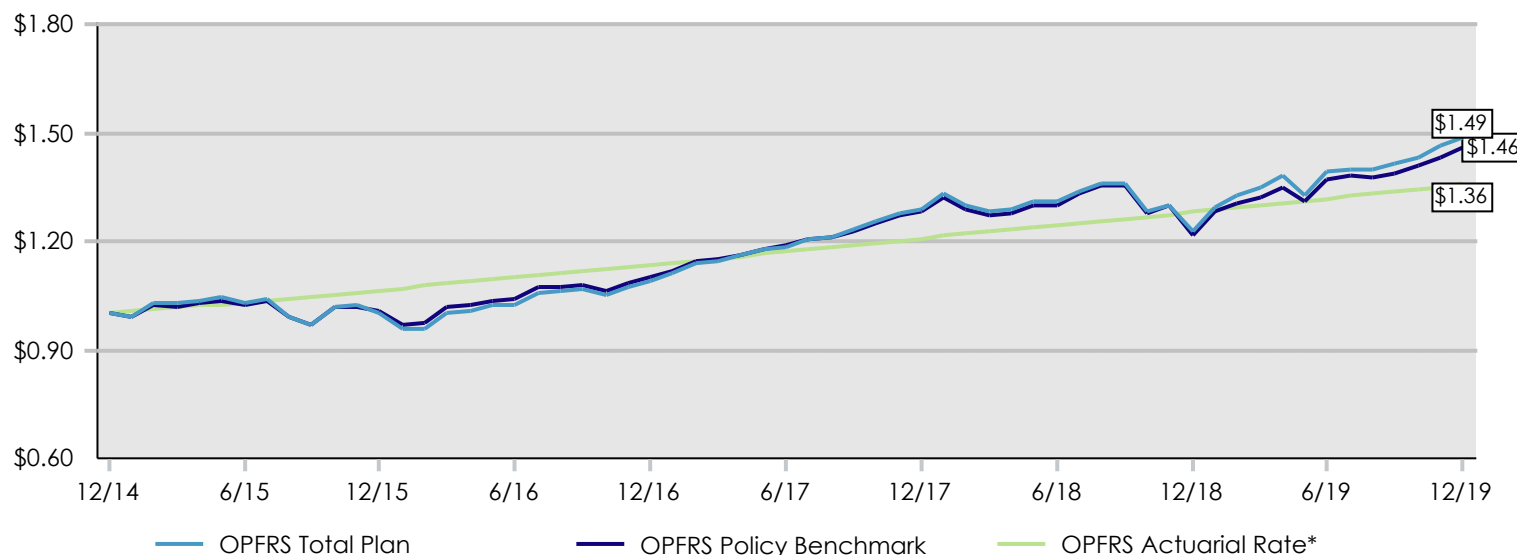
Parametric Systematic Alternative Risk Premia, the Plan's Risk Premia / Trend Following manager outperformed its benchmark by 4.8% during the quarter. The portfolio outperformed its benchmark over the 1-year period by 12.2%.

Temporary Long Duration ETF, the Plan's Long Duration allocation was funded in early June 2019 through the use of the Vanguard Long-Term Treasury ETF until a permanent manager can be selected. The portfolio underperformed its benchmark by (0.2%) over the most recent quarter.

OPFRS Total Portfolio 5-Year Performance

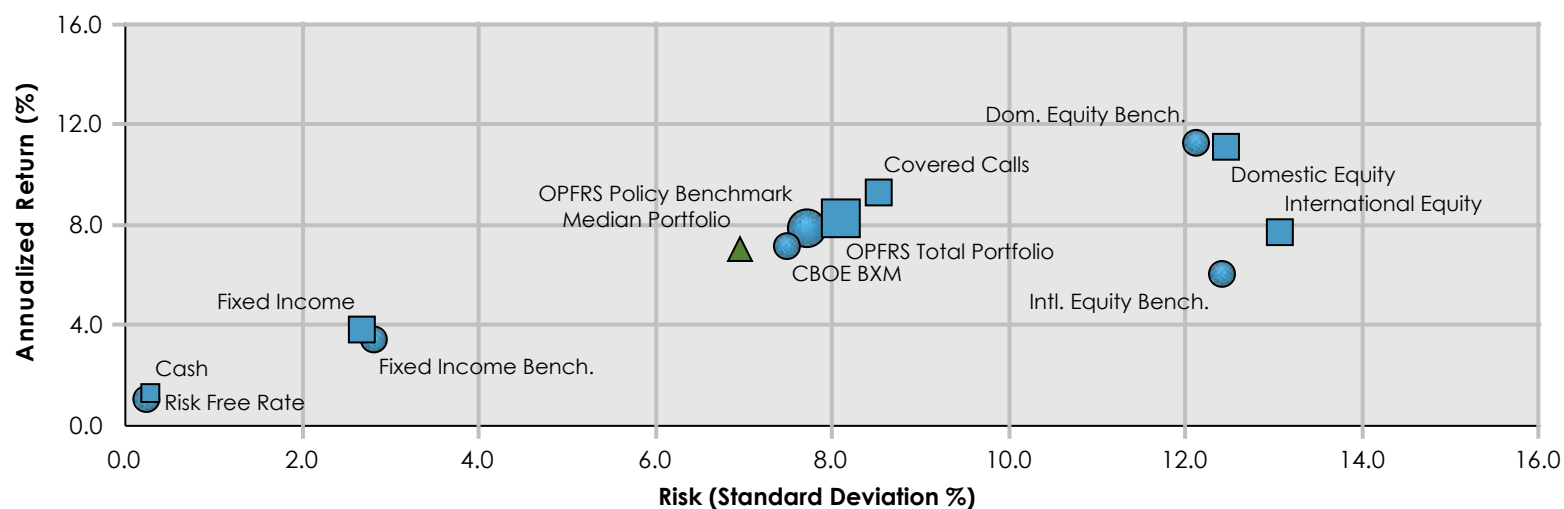
As of December 31, 2019

Growth of \$1 (5-year)

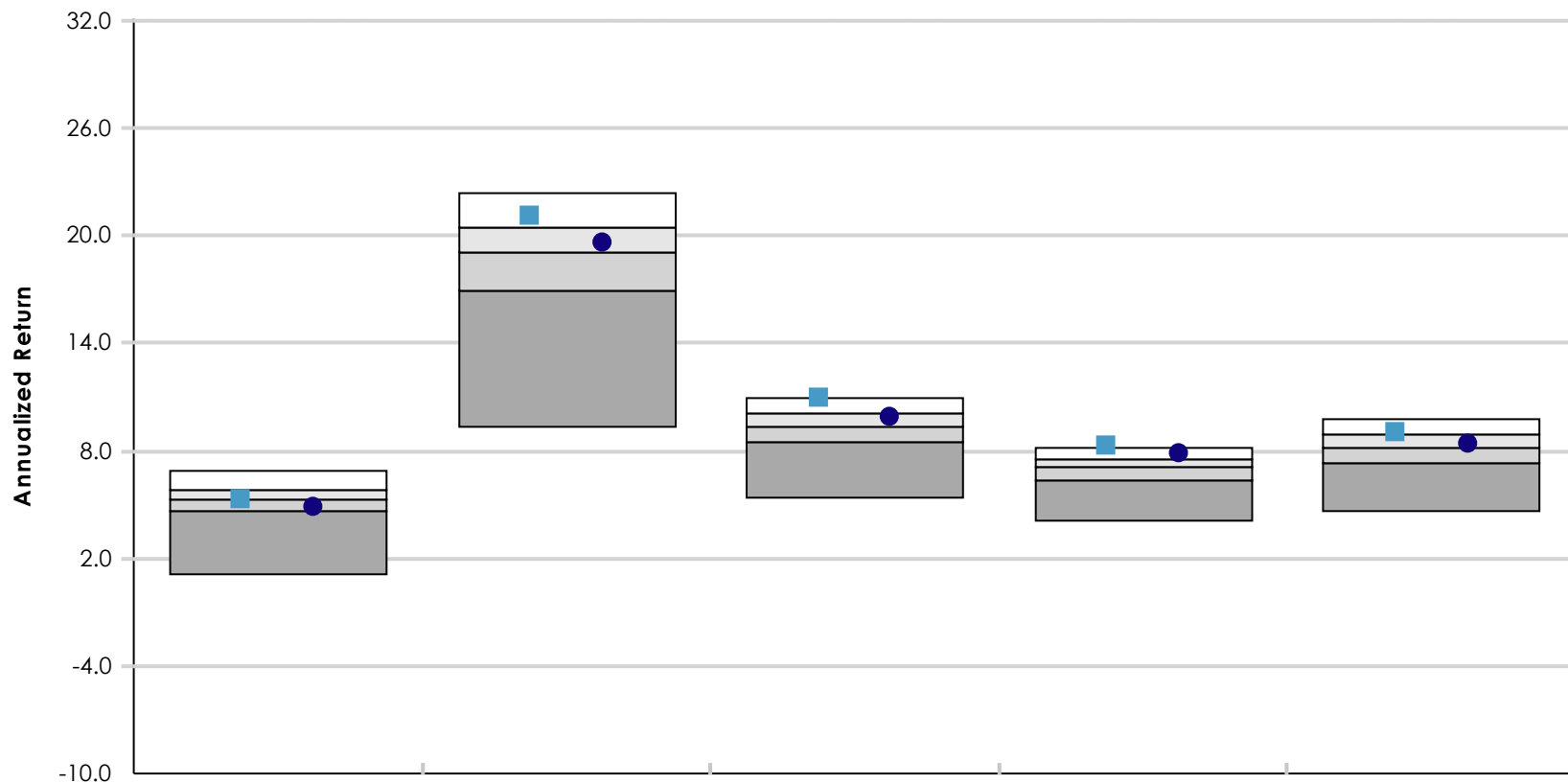


* The actuarial expected rate of return was 8% through 6/30/2009, 7.5% through 6/30/2010, 7% through 6/30/2011, 6.75% through 6/30/2014, 6.5% through 12/31/2017 and 6.0% currently

Risk/Return Performance (5-year)

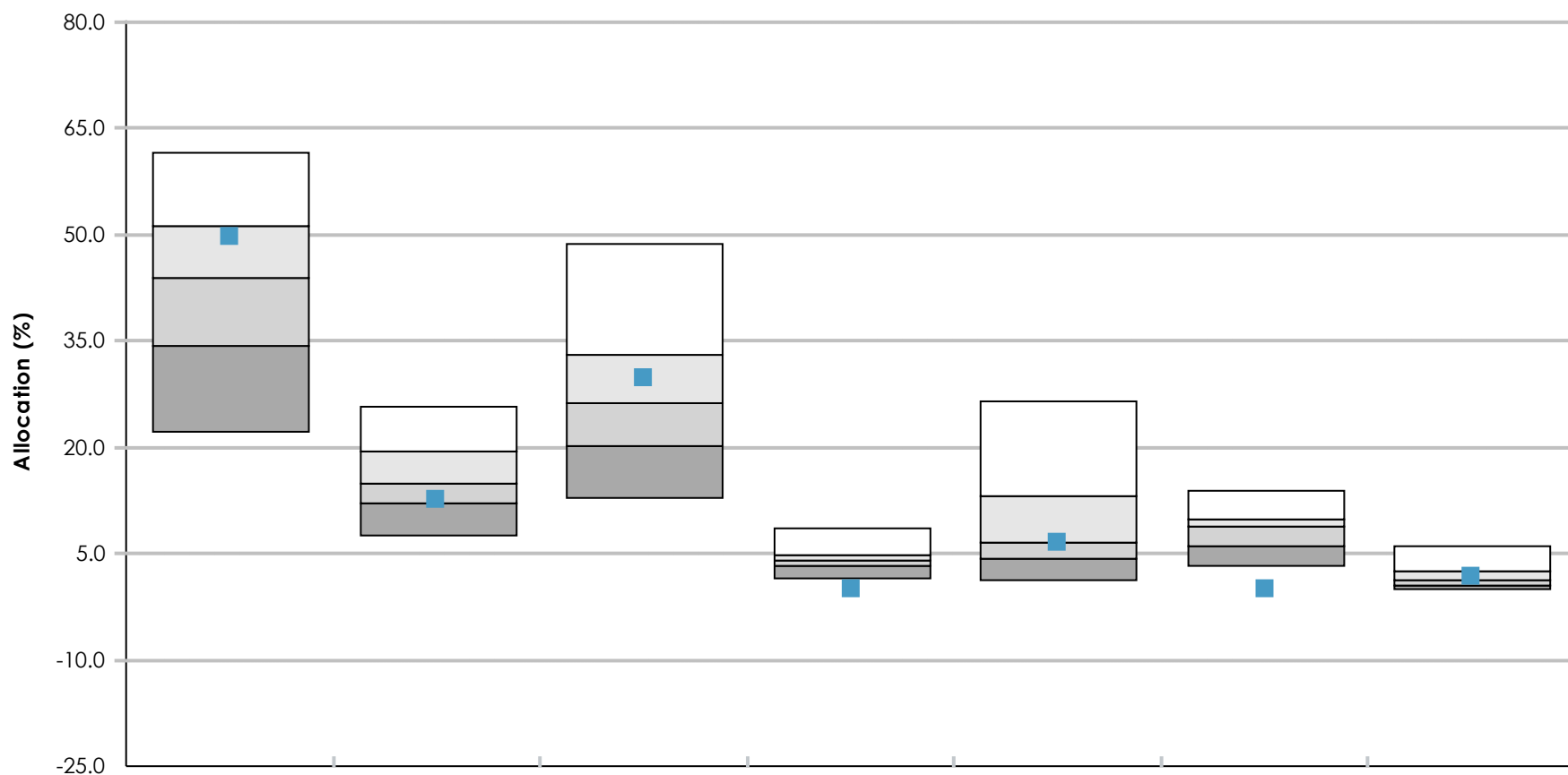


Plan Sponsor Peer Group Analysis
As of December 31, 2019



Parentheses contain percentile rankings.
 Calculation based on monthly periodicity.

**Plan Sponsor TF Asset Allocation
As of December 31, 2019**



	US Equity	Intl. Equity	US Fixed Income	Intl. Fixed Income	Alternative Inv.	Real Estate	Cash
OPFRS Total Plan	49.6 (33)	12.6 (73)	29.7 (37)	0.0	6.5 (50)	0.0	1.6 (41)
5th Percentile	61.7	25.7	48.7	8.7	26.4	14.0	5.9
1st Quartile	51.3	19.4	33.2	4.7	13.2	9.9	2.4
Median	43.9	14.9	26.4	4.0	6.5	8.8	1.4
3rd Quartile	34.3	12.2	20.1	3.2	4.3	6.0	0.5
95th Percentile	22.2	7.4	13.0	1.6	1.2	3.4	0.1
Population	551	503	506	164	126	285	380

Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

Monitoring/Probation Status

As of December 31, 2019
Return vs. Benchmark since Corrective Action

Portfolio	Status	Concern	Months Since Corrective Action	Performance [^] Since Corrective Action (Gross)	Peer Group Percentile Ranking	Date of Corrective Action*
DDJ Capital	On Watch	Performance	4	2.4	75	5/29/2019
Ice BofAML US High Yield			---	2.9		
Rice Hall James	On Watch	Performance	4	9.3	32	5/29/2019
Russell 2000 Growth	---	---	---	10.5		

[^]. Annualized performance if over one year.

* Approximate date based on when Board voted to either monitor a manager at a heightened level or place it on probation.

Investment Performance Criteria
For Manager Monitoring/Probation Status

Asset Class	Short-term (rolling 12 mth periods)	Medium-term (rolling 36 mth periods)	Long-term (60 + months)
Active Domestic Equity	Fd return < bench return – 3.5%	Fd annlzd return < bench annlzd return – 1.75% for 6 consecutive months	VRR < 0.97 for 6 consecutive months
Active International Equity	Fd return < bench return – 4.5%	Fd annlzd return < bench annlzd return – 2.0% for 6 consecutive months	VRR < 0.97 for 6 consecutive months
Passive International Equity	Tracking Error > 0.50%	Tracking Error > 0.45% for 6 consecutive months	Fd annlzd return < bench annlzd return – 0.40% for 6 consecutive months
Fixed Income	Fd return < bench return – 1.5%	Fd annlzd return < bench annlzd return – 1.0% for 6 consecutive months	VRR < 0.98 for 6 consecutive months

VRR – Value Relative Ratio – is calculated as: manager cumulative return / benchmark cumulative return.

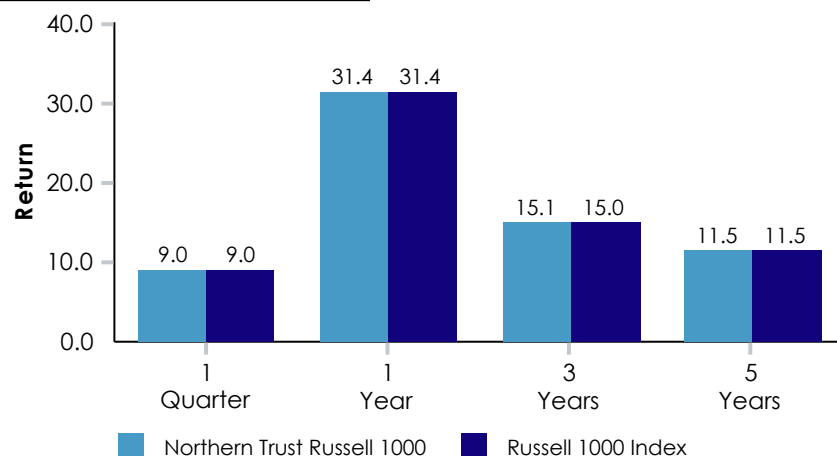
Individual Manager Performance

Northern Trust Russell 1000 - gross of fees

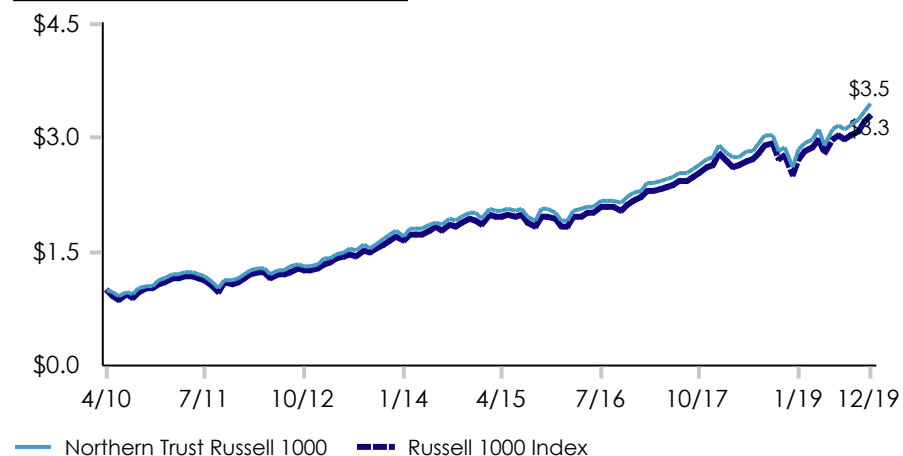
As of December 31, 2019

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Market Capture	Down Market Capture	Inception Date
Northern Trust Russell 1000	0.79	0.97	0.31	1.06	1.28	0.99	99.60	95.58	05/01/2010
Russell 1000 Index	0.00	1.00	-	1.01	0.00	1.00	100.00	100.00	05/01/2010

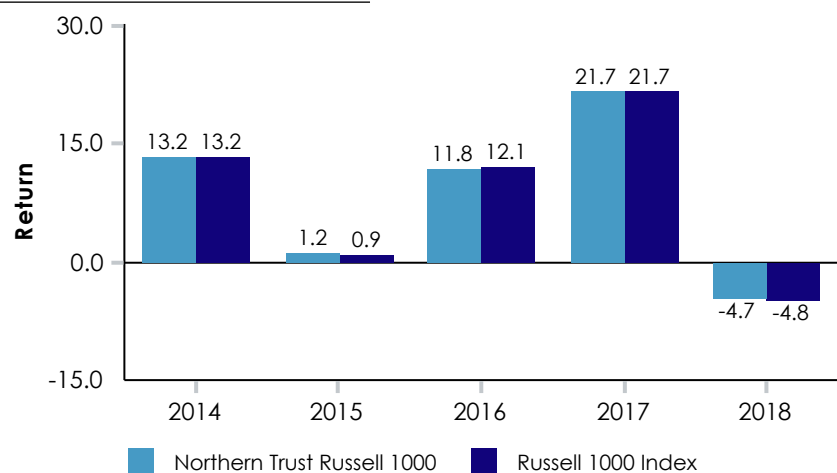
Trailing Period Performance



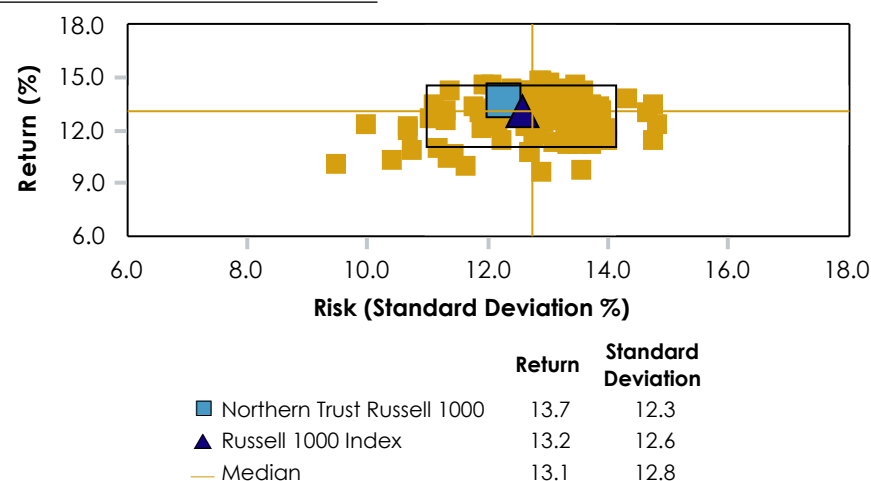
Growth of \$1 - Since Inception



Calendar Year Performance



Risk/Return - Since Inception

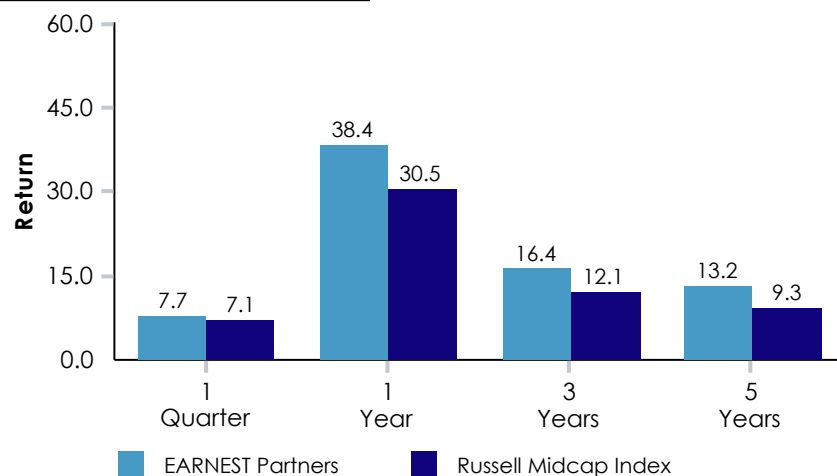


EARNEST Partners - gross of fees

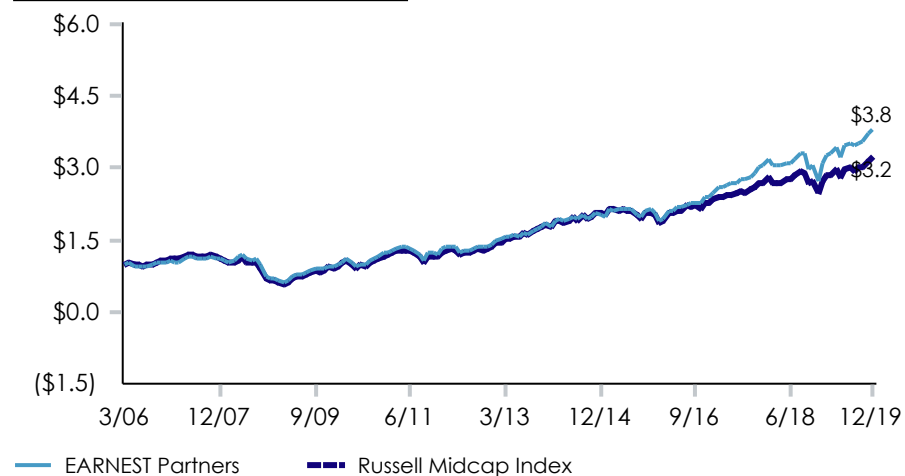
As of December 31, 2019

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Market Capture	Down Market Capture	Inception Date
EARNEST Partners	1.27	1.00	0.40	0.59	3.27	0.96	101.57	94.74	04/01/2006
Russell Midcap Index	0.00	1.00	-	0.53	0.00	1.00	100.00	100.00	04/01/2006

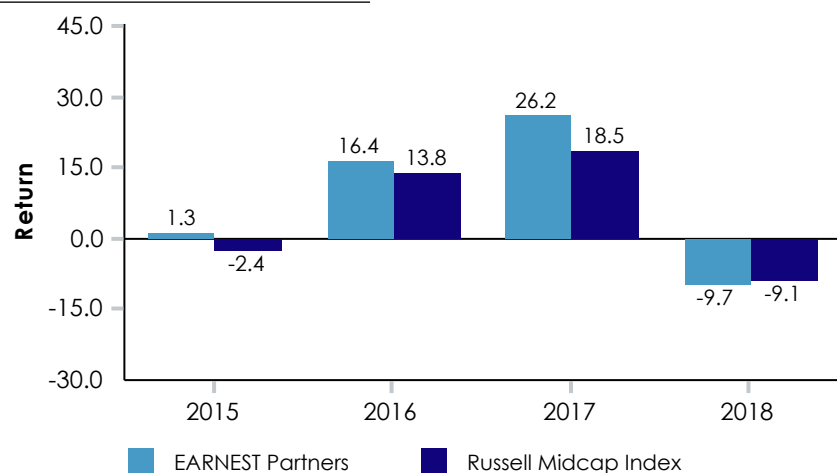
Trailing Period Performance



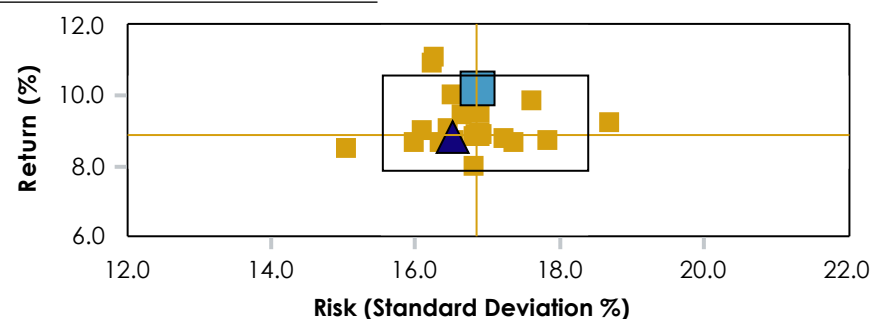
Growth of \$1 - Since Inception



Calendar Year Performance



Risk/Return - Since Inception

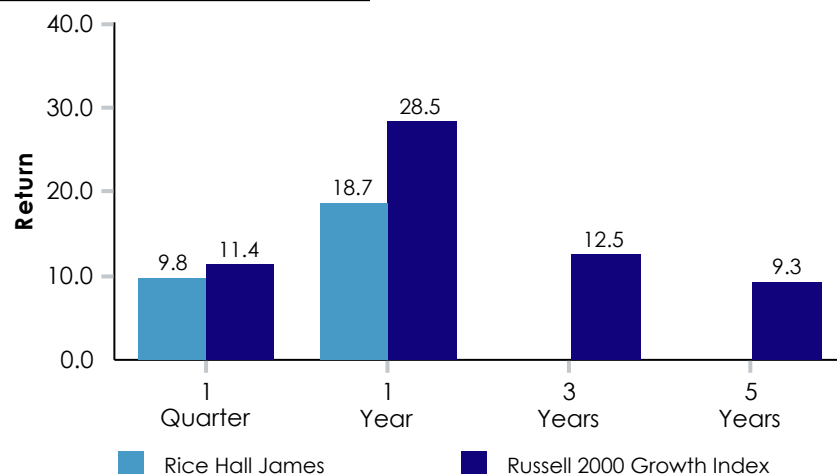


Rice Hall James - gross of fees

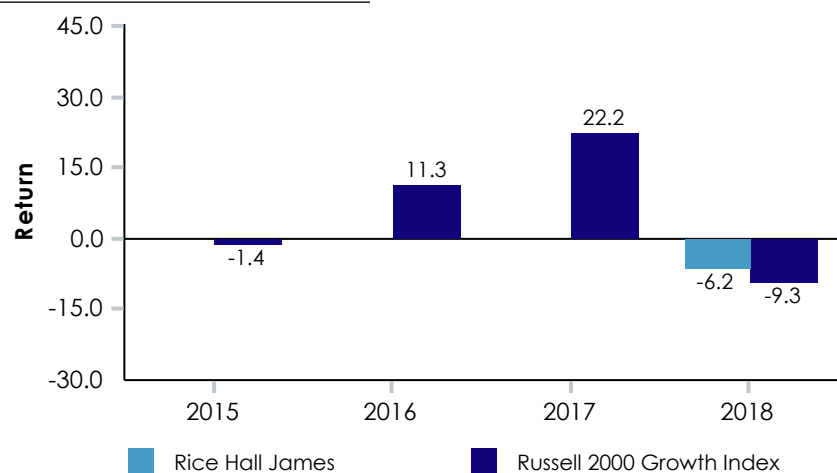
As of December 31, 2019

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Market Capture	Down Market Capture	Inception Date
Rice Hall James	-0.43	0.91	-0.31	0.51	4.74	0.93	90.99	93.20	07/01/2017
Russell 2000 Growth Index	0.00	1.00	-	0.57	0.00	1.00	100.00	100.00	07/01/2017

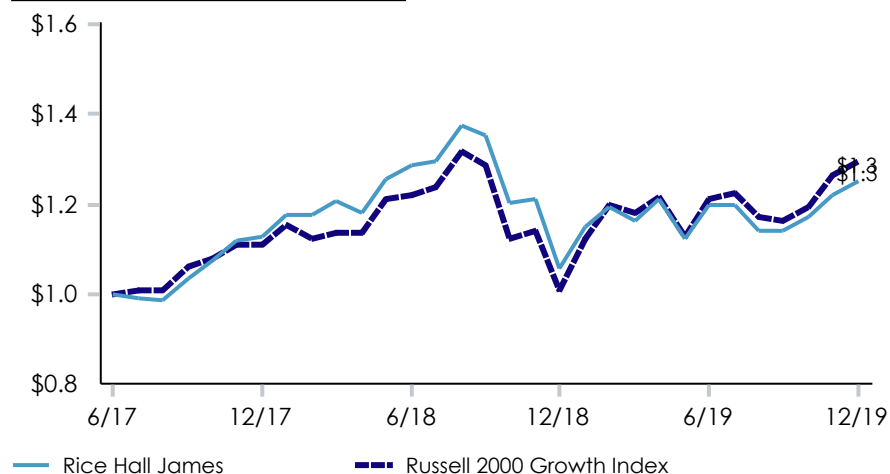
Trailing Period Performance



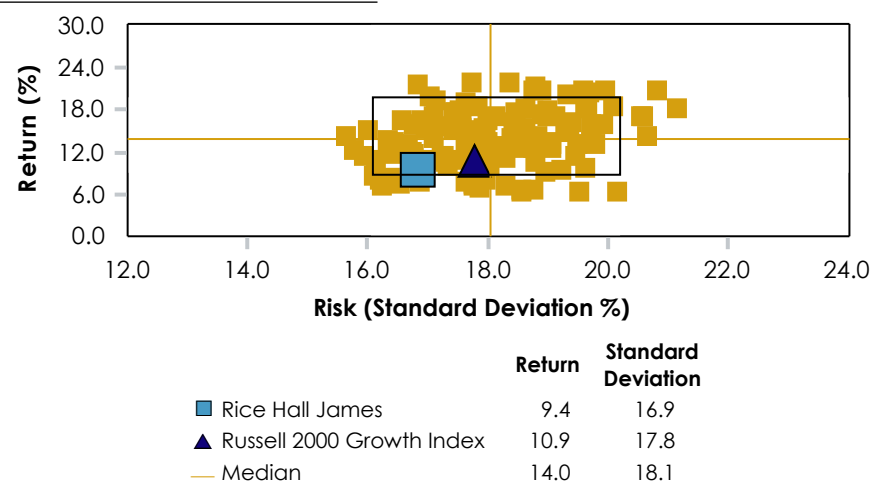
Calendar Year Performance



Growth of \$1 - Since Inception



Risk/Return - Since Inception

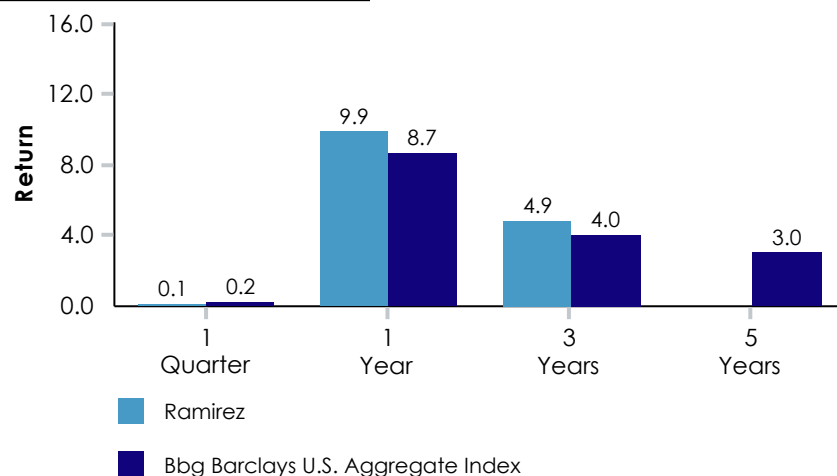


Ramirez - gross of fees

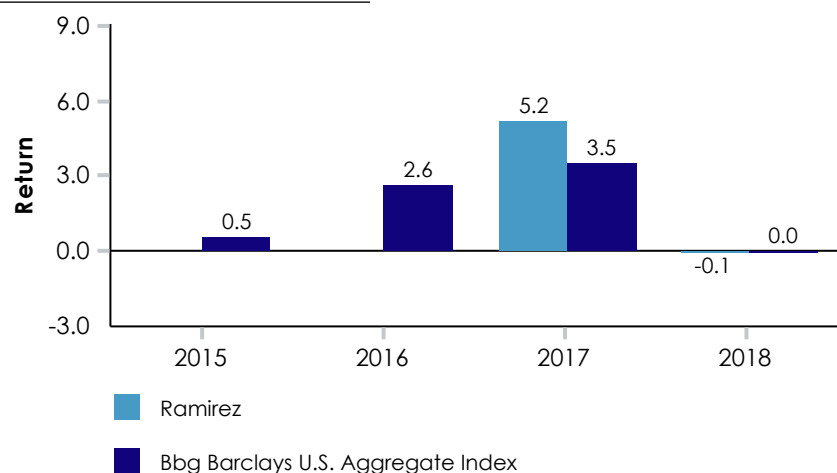
As of December 31, 2019

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Market Capture	Down Market Capture	Inception Date
Ramirez	1.03	0.95	1.38	1.16	0.61	0.96	106.46	76.99	01/01/2017
Bbg Barclays U.S. Aggregate Index	0.00	1.00	-	0.84	0.00	1.00	100.00	100.00	01/01/2017

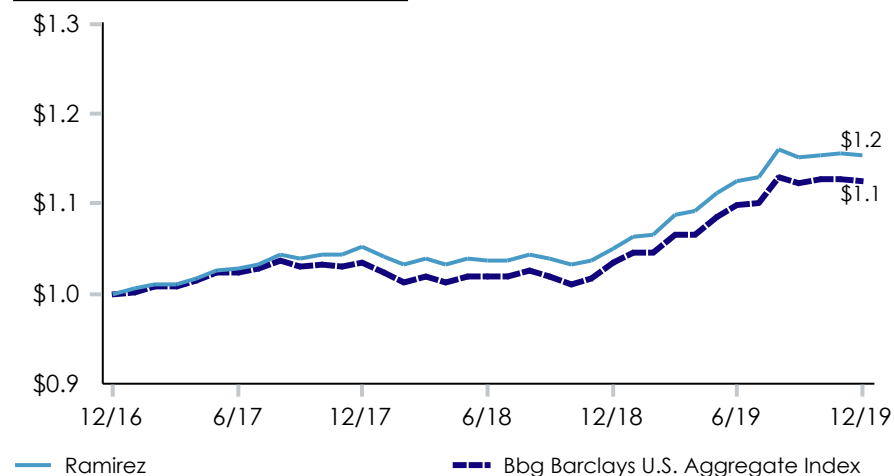
Trailing Period Performance



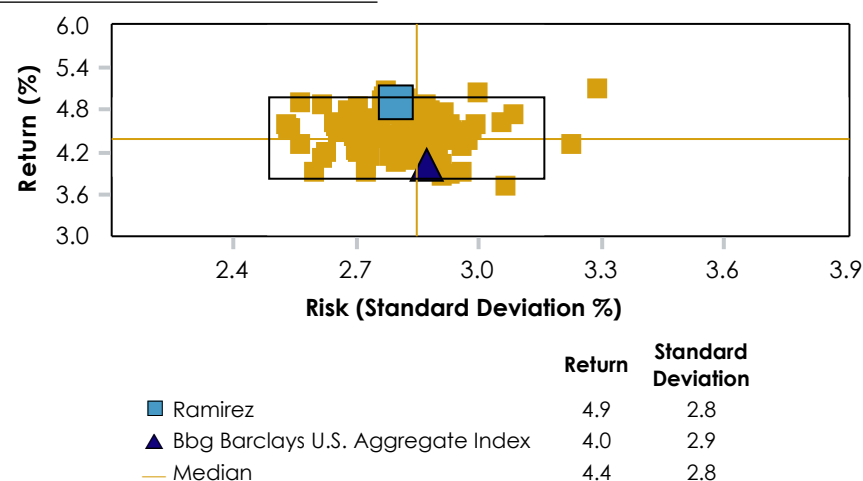
Calendar Year Performance



Growth of \$1 - Since Inception



Risk/Return - Since Inception

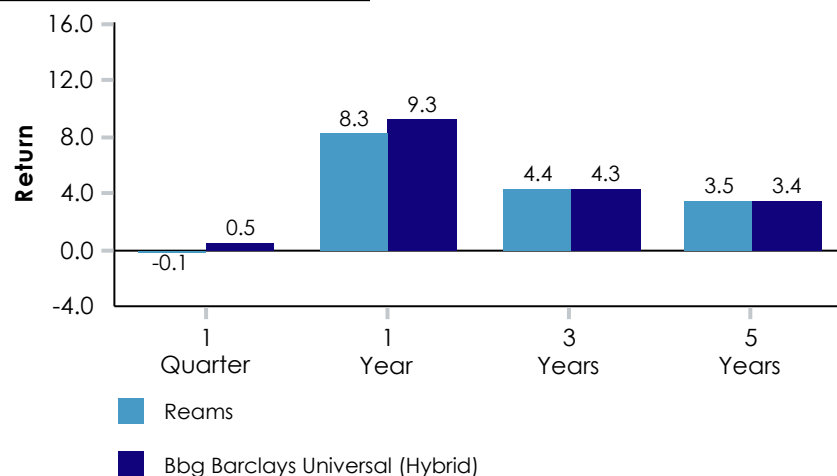


Reams - gross of fees

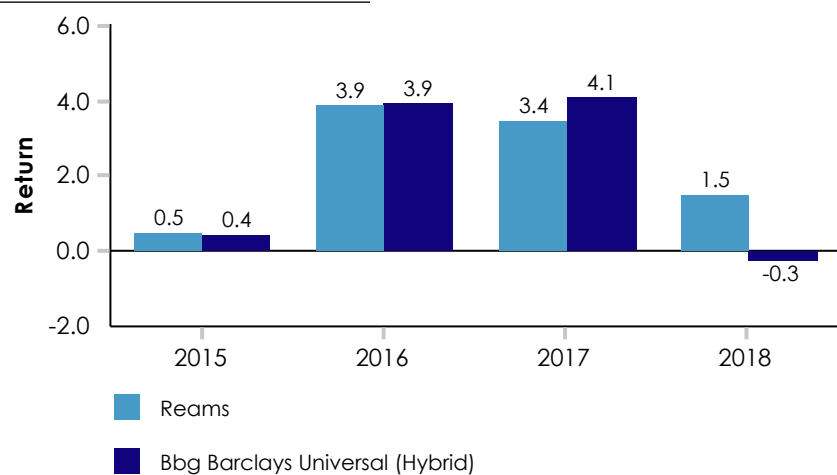
As of December 31, 2019

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Market Capture	Down Market Capture	Inception Date
Reams	0.29	1.06	0.16	0.69	3.91	0.45	109.38	103.54	02/01/1998
Bbg Barclays Universal (Hybrid)	0.00	1.00	-	0.90	0.00	1.00	100.00	100.00	02/01/1998

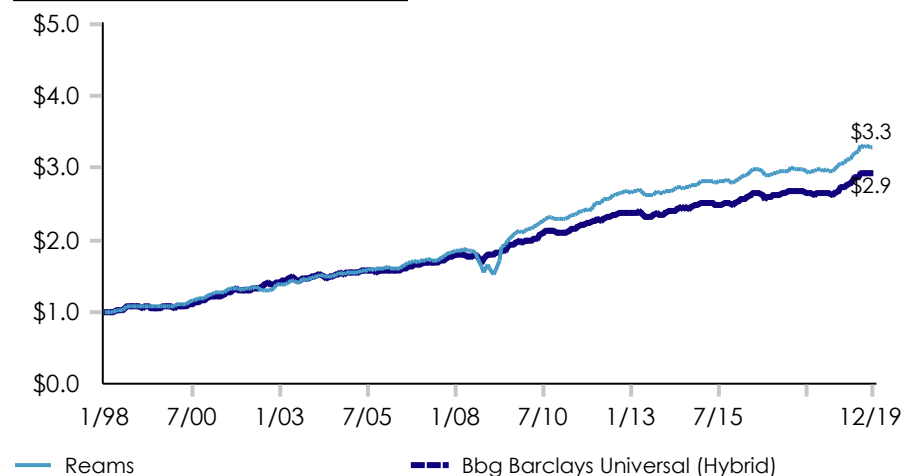
Trailing Period Performance



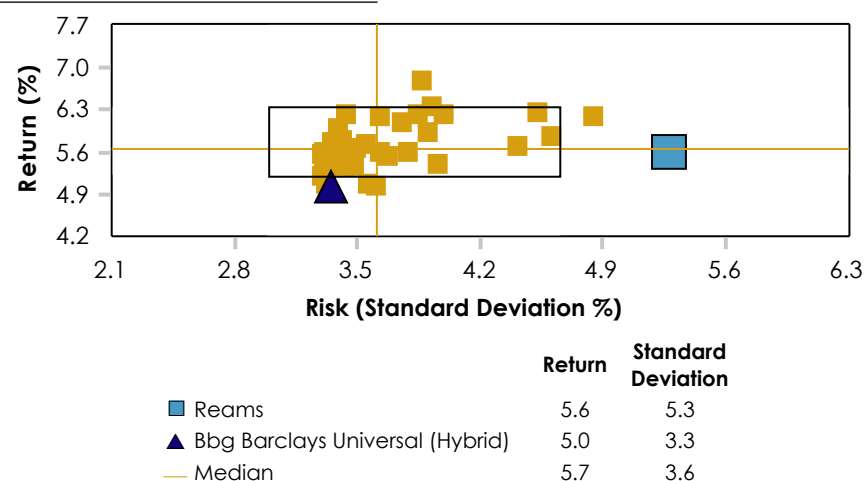
Calendar Year Performance



Growth of \$1 - Since Inception



Risk/Return - Since Inception

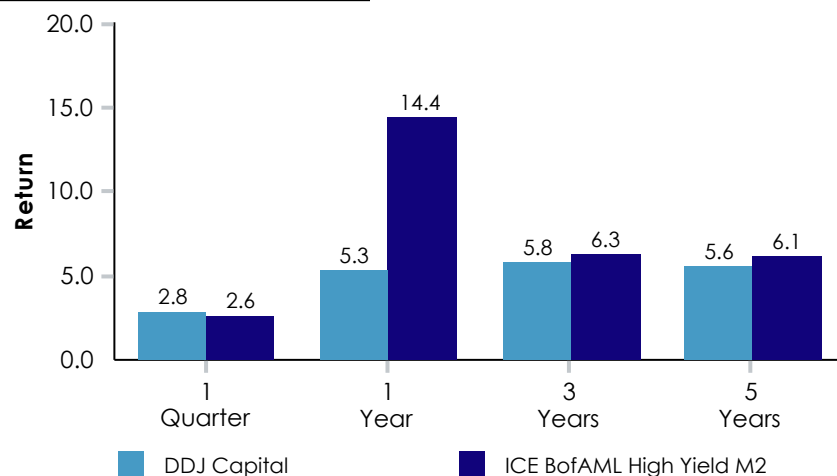


DDJ Capital - gross of fees

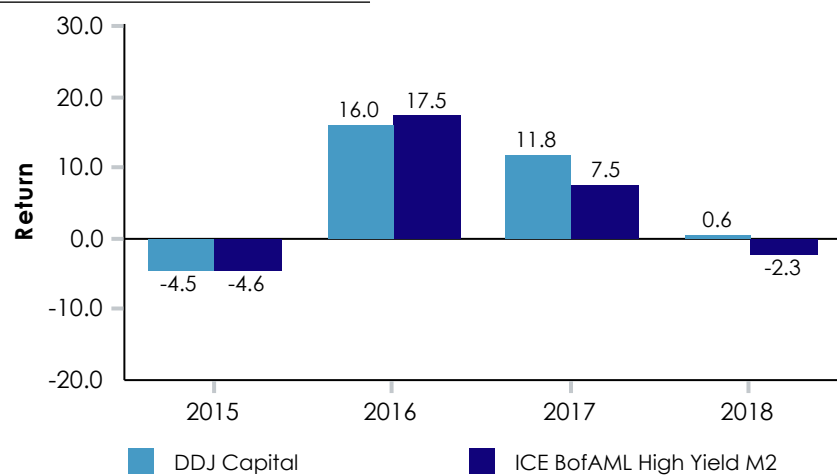
As of December 31, 2019

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Market Capture	Down Market Capture	Inception Date
DDJ Capital	1.41	0.70	-0.13	0.96	3.30	0.63	82.76	68.77	02/01/2015
ICE BofAML High Yield M2	0.00	1.00	-	0.94	0.00	1.00	100.00	100.00	02/01/2015

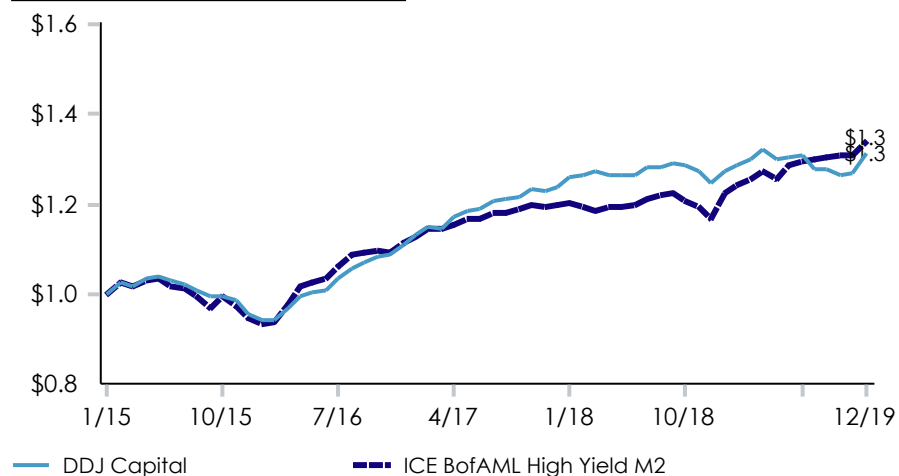
Trailing Period Performance



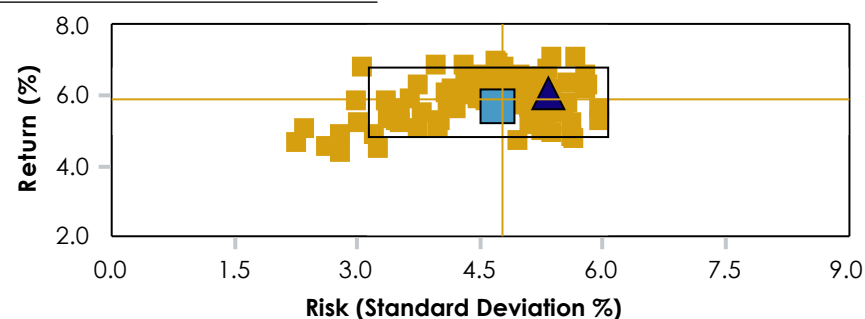
Calendar Year Performance



Growth of \$1 - Since Inception



Risk/Return - Since Inception

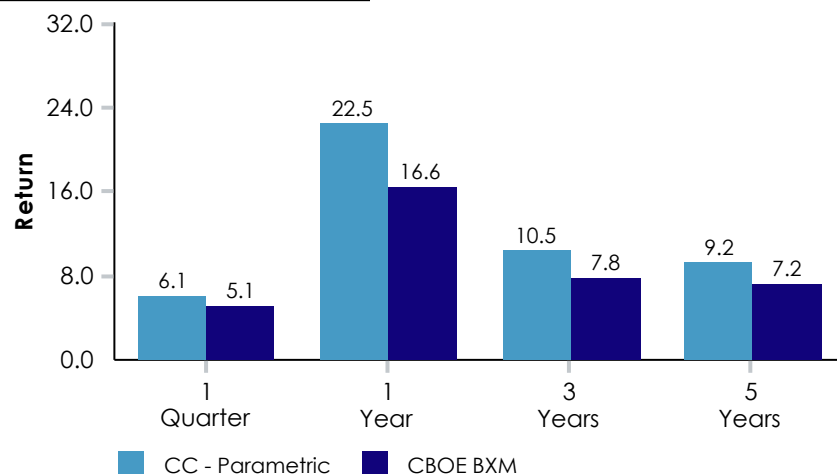


CC - Parametric - gross of fees

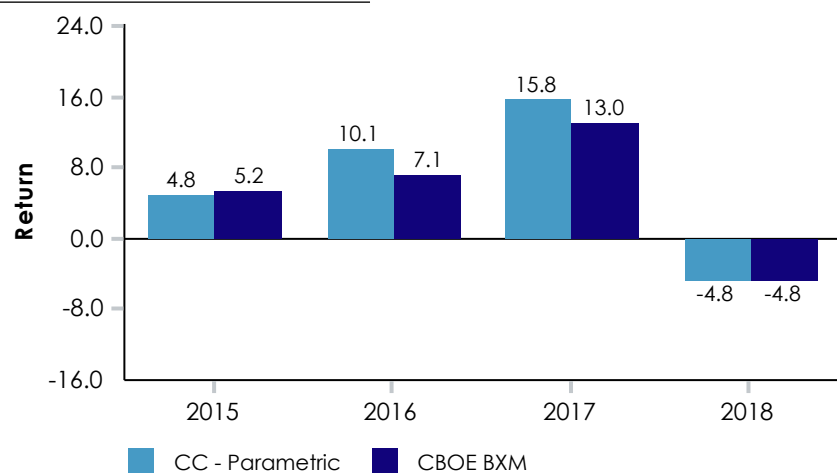
As of December 31, 2019

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Market Capture	Down Market Capture	Inception Date
CC - Parametric	1.52	1.08	0.86	0.98	2.39	0.92	120.02	109.08	04/01/2014
CBOE BXM	0.00	1.00	-	0.82	0.00	1.00	100.00	100.00	04/01/2014

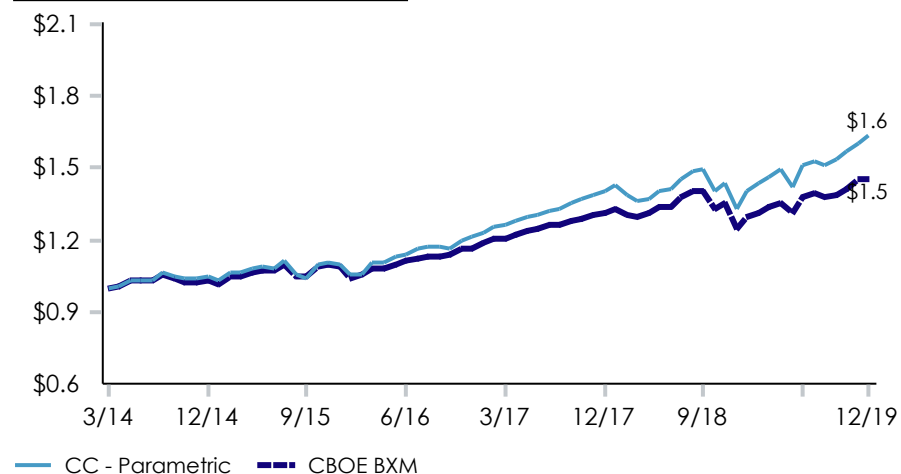
Trailing Period Performance



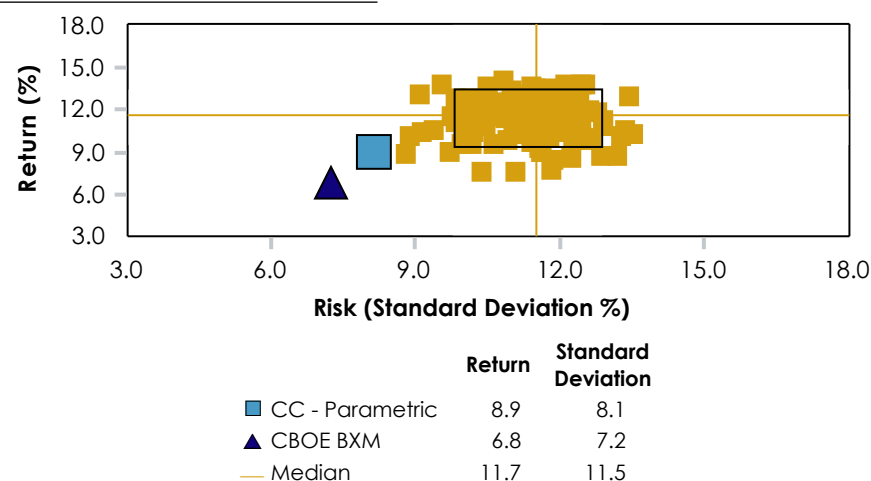
Calendar Year Performance



Growth of \$1 - Since Inception



Risk/Return - Since Inception

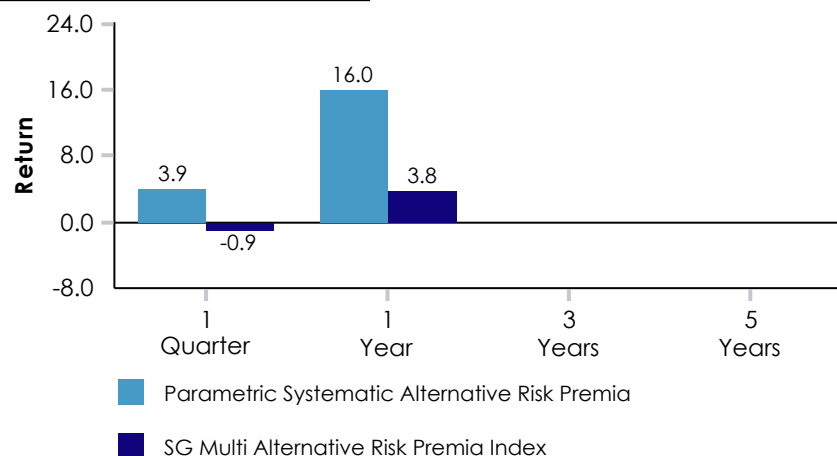


Parametric Systematic Alternative Risk Premia - gross of fees

As of December 31, 2019

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Market Capture	Down Market Capture	Inception Date
Parametric Systematic Alternative Risk Premia	3.39	2.07	0.45	0.32	10.51	0.37	253.28	195.96	08/01/2018
SG Multi Alternative Risk Premia Index	0.00	1.00	-	-0.24	0.00	1.00	100.00	100.00	08/01/2018

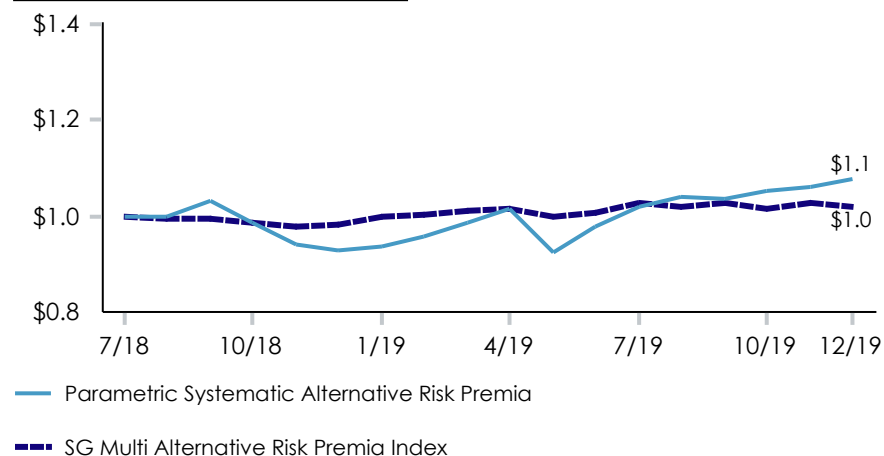
Trailing Period Performance



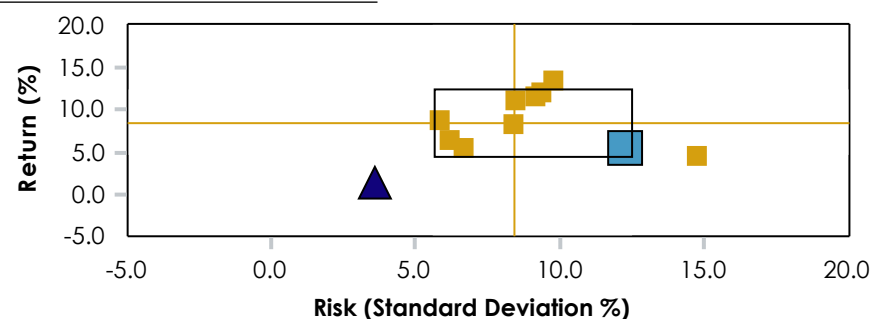
Calendar Year Performance

No data found.

Growth of \$1 - Since Inception



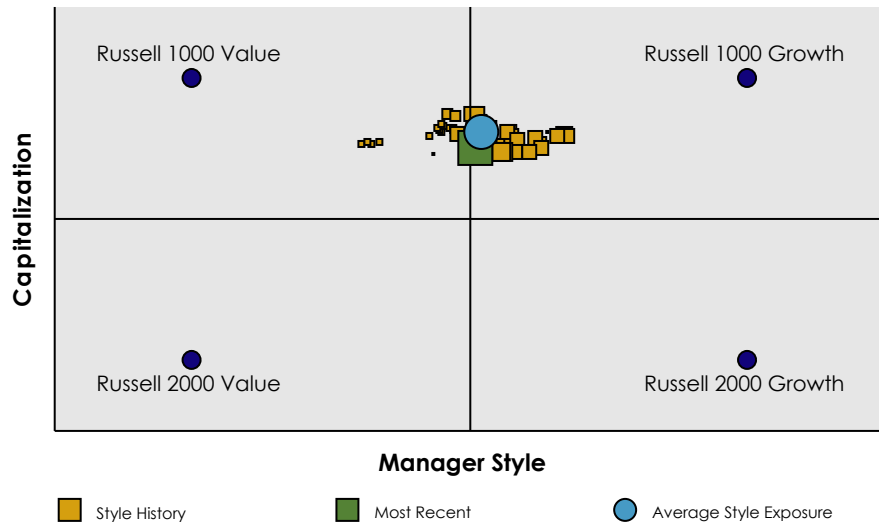
Risk/Return - Since Inception



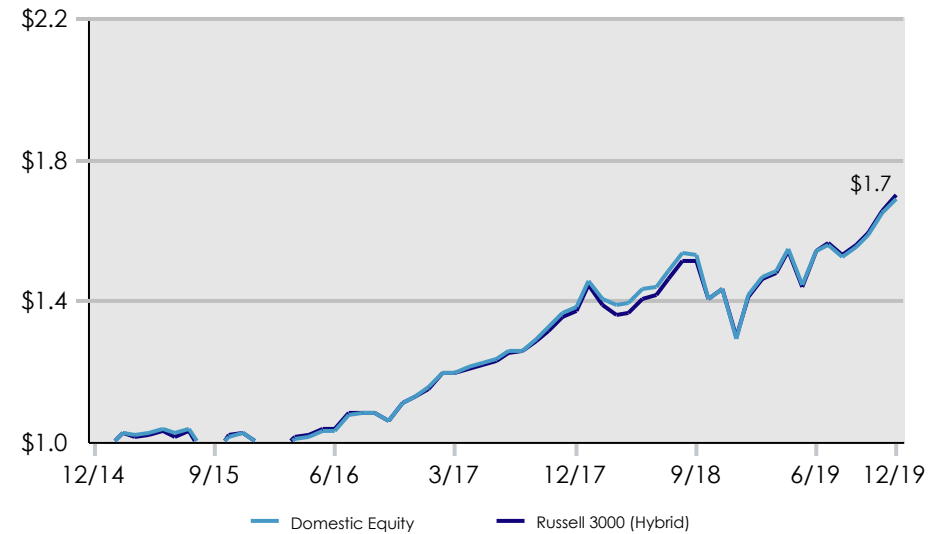
	Return	Standard Deviation
Parametric Systematic Alternative Risk Premia	5.5	12.3
SG Multi Alternative Risk Premia Index	1.3	3.6
Median	8.4	8.5

Domestic Equity Analysis As of December 31, 2019

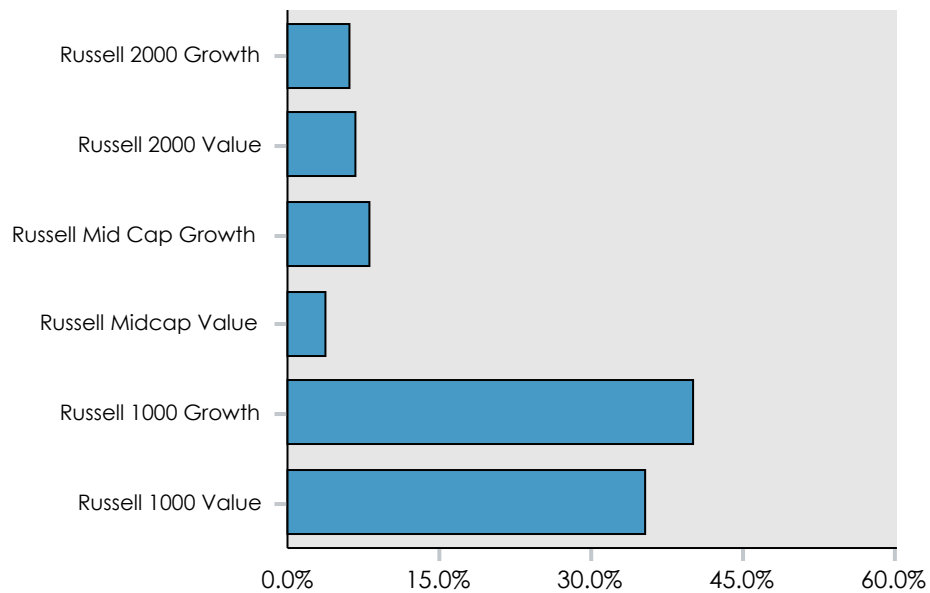
Style Map (5-Year)



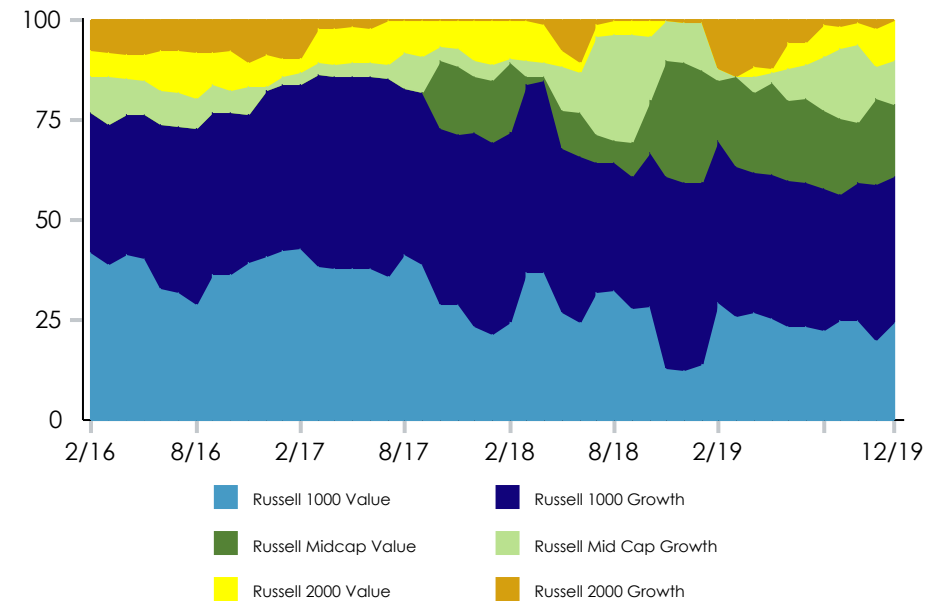
Growth of \$1 (5-Year)



Style Exposure

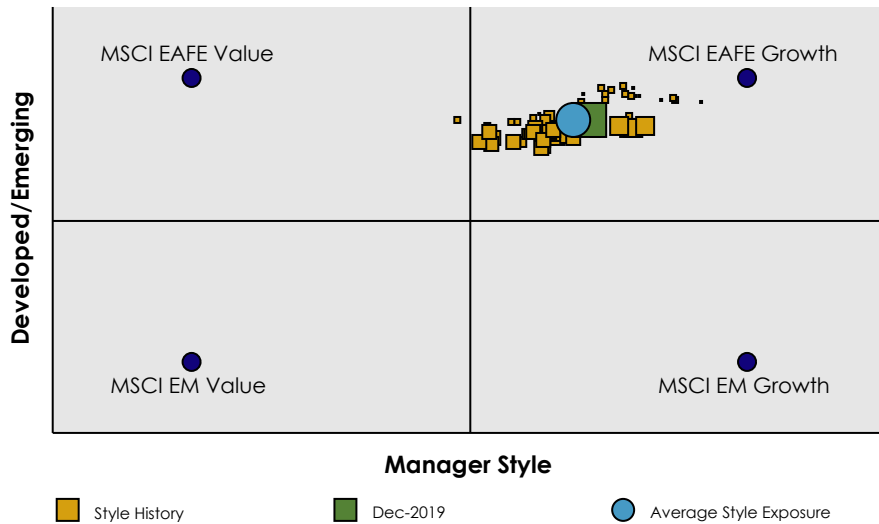


Style History (5-Year)

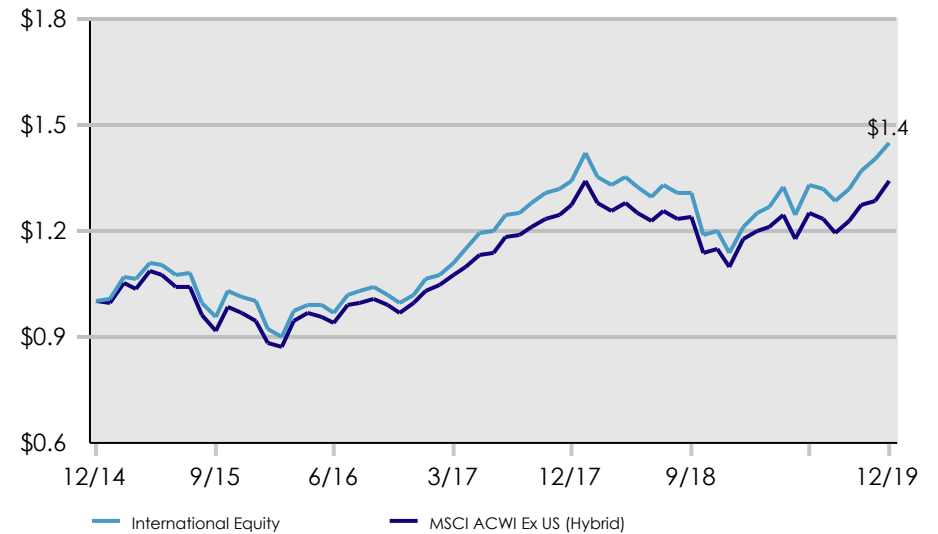


International Equity Analysis As of December 31, 2019

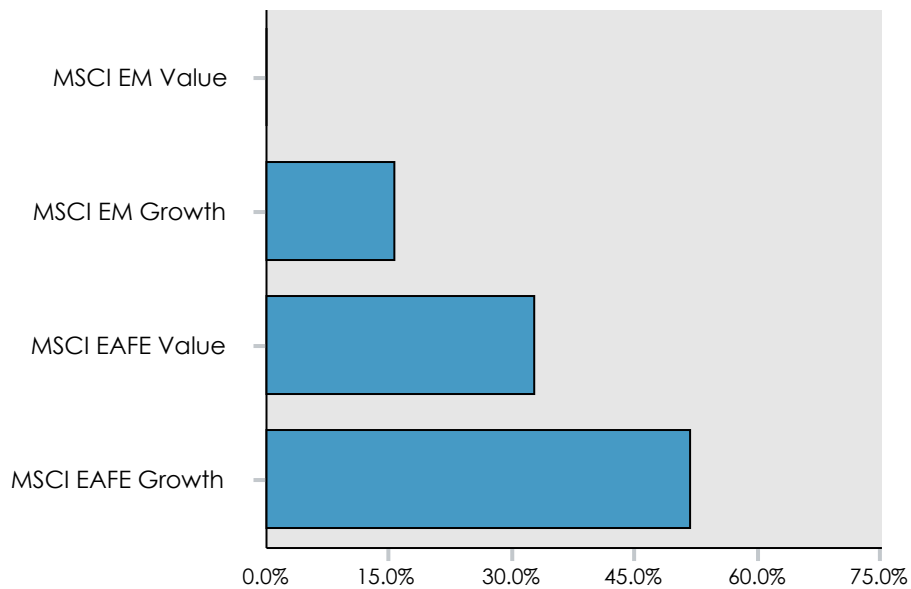
Style Map (5-Year)



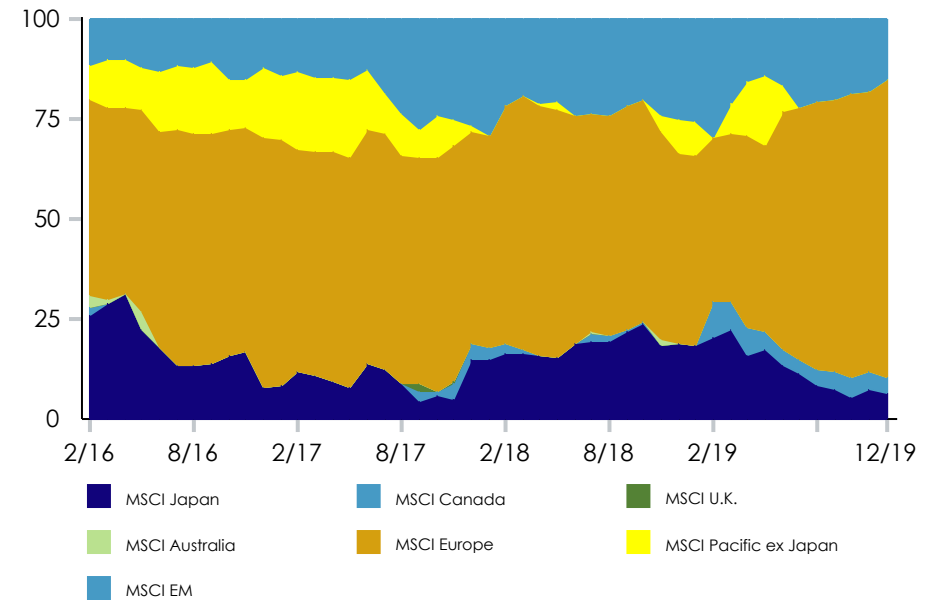
Growth of \$1 (5-Year)



Style Exposure



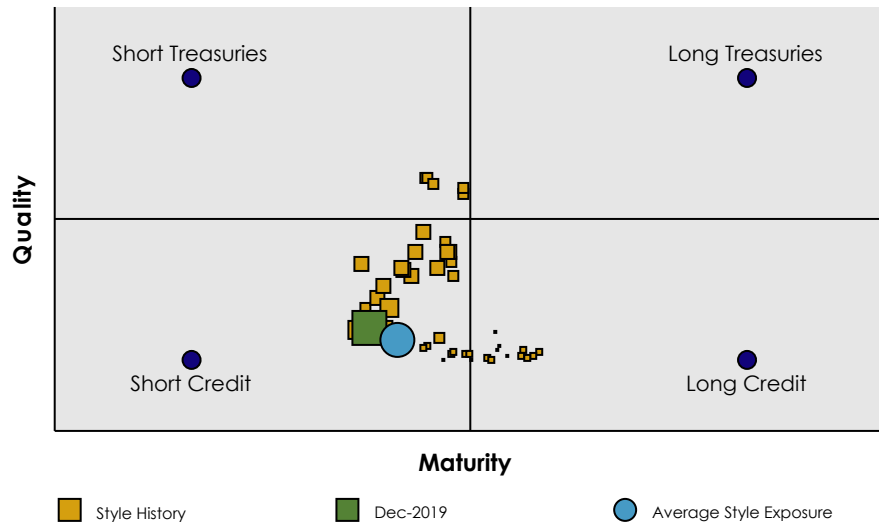
Style History (5-Year)



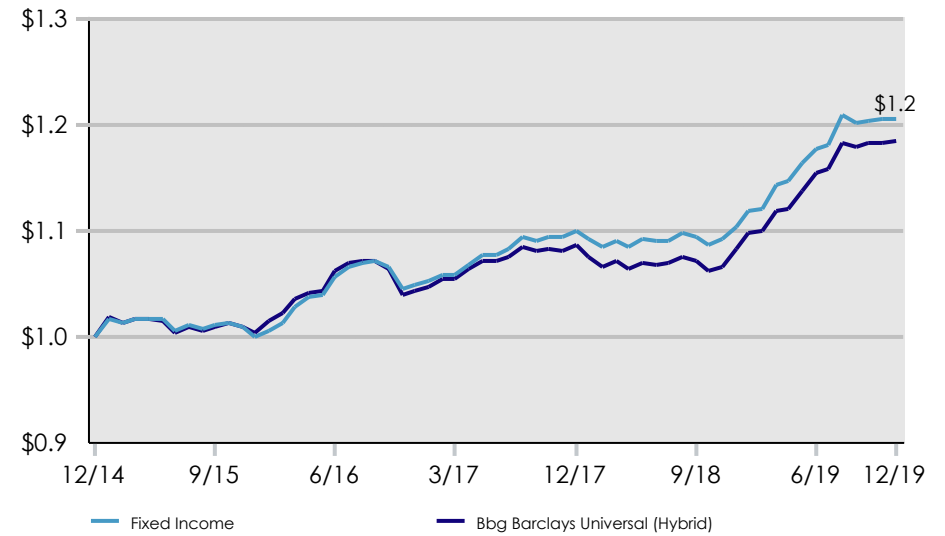
Fixed Income Analysis

As of December 31, 2019

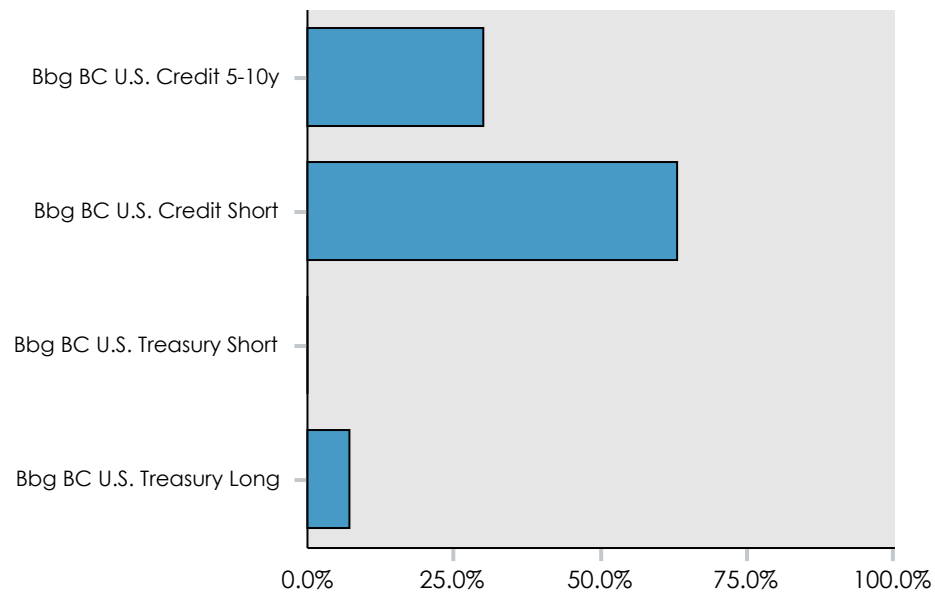
Style Map (5-Year)



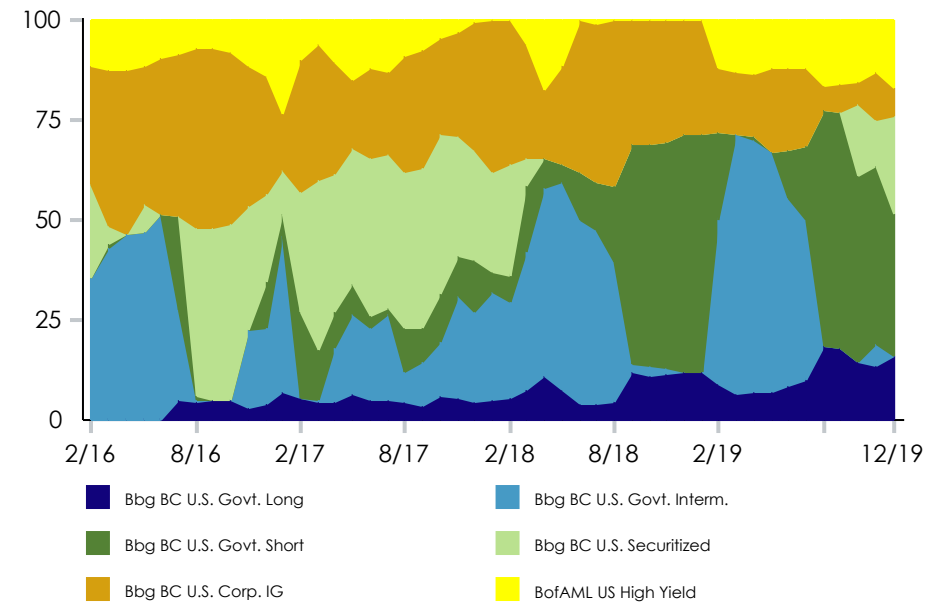
Growth of \$1 (5-Year)



Style Exposure



Style History (5-Year)



Disclaimer, Glossary, and Notes

WE HAVE PREPARED THIS REPORT (THIS "REPORT") FOR THE SOLE BENEFIT OF THE INTENDED RECIPIENT (THE "RECIPIENT").

SIGNIFICANT EVENTS MAY OCCUR (OR HAVE OCCURRED) AFTER THE DATE OF THIS REPORT AND THAT IT IS NOT OUR FUNCTION OR RESPONSIBILITY TO UPDATE THIS REPORT. ANY OPINIONS OR RECOMMENDATIONS PRESENTED HEREIN REPRESENT OUR GOOD FAITH VIEWS AS OF THE DATE OF THIS REPORT AND ARE SUBJECT TO CHANGE AT ANY TIME. ALL INVESTMENTS INVOLVE RISK. THERE CAN BE NO GUARANTEE THAT THE STRATEGIES, TACTICS, AND METHODS DISCUSSED HERE WILL BE SUCCESSFUL.

INFORMATION USED TO PREPARE THIS REPORT WAS OBTAINED FROM INVESTMENT MANAGERS, CUSTODIANS, AND OTHER EXTERNAL SOURCES. WHILE WE HAVE EXERCISED REASONABLE CARE IN PREPARING THIS REPORT, WE CANNOT GUARANTEE THE ACCURACY OF ALL SOURCE INFORMATION CONTAINED HEREIN.

CERTAIN INFORMATION CONTAINED IN THIS REPORT MAY CONSTITUTE "FORWARD - LOOKING STATEMENTS," WHICH CAN BE IDENTIFIED BY THE USE OF TERMINOLOGY SUCH AS "MAY," "WILL," "SHOULD," "EXPECT," "AIM," "ANTICIPATE," "TARGET," "PROJECT," "ESTIMATE," "INTEND," "CONTINUE" OR "BELIEVE," OR THE NEGATIVES THEREOF OR OTHER VARIATIONS THEREON OR COMPARABLE TERMINOLOGY. ANY FORWARD-LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION ARE BASED UPON CURRENT ASSUMPTIONS. CHANGES TO ANY ASSUMPTIONS MAY HAVE A MATERIAL IMPACT ON FORWARD - LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS. ACTUAL RESULTS MAY THEREFORE BE MATERIALLY DIFFERENT FROM ANY FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION.

PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

Credit Risk: Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security.)

Duration: Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

Information Ratio: This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

Jensen's Alpha: A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk. $\text{Portfolio Return} - [\text{Risk Free Rate} + \text{Beta} \times (\text{market return} - \text{Risk Free Rate})]$.

Market Capitalization: For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

Market Weighted: Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

Maturity: The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

Prepayment Risk: The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

Price-Book Value (P/B) Ratio: The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

Price-Earnings (P/E) Ratio: A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about its future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

Quality Rating: The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

Sharpe Ratio: A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

STIF Account: Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

Standard Deviation: A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

Style: The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

Tracking Error: A divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark, as defined by the difference in standard deviation.

Yield to Maturity: The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a “basis book.” For example, a 5% bond pays \$5 a year interest on each \$100 par value. To figure its current yield, divide \$5 by \$95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay \$100 for the bond that can be bought now for \$95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

$$\frac{5\% \text{ (discount)}}{5 \text{ (yrs. to maturity)}} = 1\% \text{ pro rata, plus } 5.26\% \text{ (current yield)} = 6.26\% \text{ (yield to maturity)}$$

Yield to Worst: The lowest potential yield that can be received on a bond without the issuer actually defaulting. The yield to worst is calculated by making worst-case scenario assumptions on the issue by calculating the returns that would be received if provisions, including prepayment, call, or sinking fund, are used by the issuer.

NCREIF Property Index (NPI): Measures unleveraged investment performance of a very large pool of individual commercial real estate properties acquired in the private market by tax-exempt institutional investors for investment purposes only. The NPI index is capitalization-weighted for a quarterly time series composite total rate of return.

NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE): Measures the investment performance of 28 open-end commingled funds pursuing a core investment strategy that reflects funds' leverage and cash positions. The NFI-ODCE index is equal-weighted and is reported gross and net of fees for a quarterly time series composite total rate of return.

Sources: Investment Terminology, International Foundation of Employee Benefit Plans, 1999.

The Handbook of Fixed Income Securities, Fabozzi, Frank J., 1991

The Russell Indices®, TM, SM are trademarks/service marks of the Frank Russell Company.

Throughout this report, numbers may not sum due to rounding.

Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.

MEMORANDUM

TO: Teir Jenkins, David Jones
Oakland Police and Fire Retirement System (OPFRS)
FROM: David Sancewich, Sean Copus, Sidney Kawanguzi
Meketa Investment Group
DATE: February 26, 2020
RE: SPI Strategies – Manager Update

Manager: SPI Strategies
Inception Date: June 2019
Product Name: ELROY Long Alpha Plus
Investment Strategy: Defensive Equity

OPFRS AUM (12/31/19): \$19.3 million (4.7%)
Management Fee: 50 bps (\$96,500)¹
Benchmark: S&P 500

Summary & Recommendation

On January 29, 2020, Oakland PFRS was notified by SPI strategies that all of its employees and investment software were being acquired by Carillon Tower Advisors. Upon completion of the agreement, which is scheduled to be late March 2020, SPI strategies Inc. would no longer have any active employees or investment capabilities. Currently PFRS is the only client with SPI strategies.

On February 5, 2020, Meketa, PFRS staff and investment committee chair conducted an onsite due diligence meeting in Oakland with SPI, Blaylock, and Carillon Towers to further discuss the upcoming acquisition and the details surrounding the PFRS allocation.

Meketa believes this organizational announcement is highly material and requires action on the part of the Oakland PFRS board. We will be providing additional information at the upcoming board meeting. Therefore, **Meketa recommends that Oakland PFRS select one of the following actions in regards to SPI's mandate:**

1. Retain current strategy, move forward with Carillon Towers as the new advisor.
2. Terminate SPI and reallocate assets to other OPFRS investment managers.
3. Terminate SPI and reallocate assets into comparable ETF.

¹ Estimated based on AUM as of 12/31/19.

Discussion

Annualized Investment Performance (as of 12/31/2019)

Manager	Mkt Value (\$000)	Asset Class	Quarter	1	3 YR	5 YR	Since Inception	Inception Date ²
SPI (Gross of Fees)	19,311	Defensive Eq	7.9	---	---	---	8.3	7/2019
S&P 500	--	--	9.1	---	---	---	10.9	--
Excess Return	--	--	-1.2	---	---	---	-2.6	--

As OPFRS's Defensive Equity manager, SPI's allocation has underperformed its S&P 500 benchmark over the latest quarter and since inception six months ago. Although performance has trailed its benchmark by (2.6%) since SPI began managing OPFRS assets, it is not unexpected given SPI's defensive equity mandate. It should be noted that SPI's inclusion in the OPFRS portfolio is based on its ability to provide loss protection by outperforming the benchmark during down markets. With this in mind, Meketa believes SPI's underperformance during a period where the benchmark increased by double digits is understandable.

Investment Philosophy & Process, Per Manager

SPI's Long Alpha Plus Portfolio strategy looks to achieve long term capital appreciation through consistent annual absolute returns that "go along and extend" traditional benchmarks in up markets and continue appreciation in down markets by implementing a long/short portfolio structure. The strategy runs a sector diversified concentrated long portfolio that captures alpha by focusing on stocks with a favorable combination of identifiable economic moats; expected earnings catalysts, reasonable debt, behavioral attractiveness and positive sentiment. Additionally, the strategy runs a short portfolio that exploits the "flight" behavior associated with fear. The short portfolio is composed of diversified, volatile liquid stocks.

SC/DS/AY/pq

² Inception date reflects the first full month after portfolio received initial funding.

Subject: Pending Acquisition of ELROI

To: City of Oakland Police and Fire Retirement System (“OPFRS”)

CC: Meketa Investment Group

In January 2020, Carillon Tower Advisers, Inc. (“Carillon”) signed a non-binding term sheet to acquire ELROI – a proprietary research analytics platform that allows for stock selection and portfolio construction, monitoring, and analysis – from an affiliated entity of SPI Strategies, LLC (“SPI”). In connection with the transaction, Steven Singleton and the SPI research team will become Carillon employees. He and select members of the team will continue to be based in Oakland, California, given their longstanding tenure as active members of the community.

Carillon is excited to join forces with Mr. Singleton and ELROI and has committed to ongoing investments in ELROI to enhance the system and build additional capabilities. Carillon is also committed to supporting clients which have investment relationships with Mr. Singleton and ELROI. Accordingly, Carillon and Mr. Singleton are prepared to manage your investment in *ELROI Long Alpha Plus Portfolio*. In the event that Carillon completes its acquisition of ELROI prior to the time in which OPFRS can enter into a new investment management agreement, we can continue your current investment relationship with SPI on an interim basis via a subadvisory agreement between SPI and Carillon’s affiliated manager, Eagle Asset Management, Inc. (“Eagle”). City of Oakland Police and Fire Retirement System is a highly valued client of both Carillon and Mr. Singleton and we wish to provide you the outstanding investment acumen and client service you deserve.

As background on Carillon, we are a global asset management company that combines the exceptional insight and agility of individual investment teams with the strength and stability of a full-service firm. Together with our partner affiliates – ClariVest Asset Management LLC, Cougar Global Investments, Eagle, Reams Asset Management and Scout Investments – Carillon offers a range of investment strategies and asset classes through multiple vehicles. Our focus is on risk-adjusted returns and alpha generation. We believe this lineup of institutional-class portfolio managers can help investors meet their long-term business and financial goals. Ultimately, our structure allows affiliated investment teams to focus on what they do best: managing portfolios.

We greatly appreciate your time, effort, and commitment to SPI, Mr. Singleton, and Carillon. Thank you for your consideration.

Regards,

Ed Rick

Head of Client Service at Carillon and EVP of Investments at Eagle

MEMORANDUM

TO: Oakland Police and Fire Retirement System (OPFRS)
FROM: David Sancewich, Sean Copus, CFA – Meketa Inv. Group
DATE: February 26, 2020
RE: 2020 Ongoing Strategic Investment Agenda

On an ongoing (monthly) basis, Meketa develops a list of projects that we expect to work closely with OPFRS to complete over throughout the calendar year (see table below). In an attempt to coordinate the scheduling of these tasks, this memo details a Preliminary Investment Project Agenda by calendaring and prioritizing the expected tasks and deliverables that would be required to fulfill the Agenda. Meketa welcomes any suggestions and/or modifications to the proposed timeline.

2020 Preliminary Investment Project Agenda

Expected Completion Date	Task
March 2020	<ul style="list-style-type: none">Cash Flow Report (2Q 2020)Active Fixed Income Update MemoPassive Interview: BlackRockDefensive Equity UpdateWatch Update Memo: DDJManager Update: Northern Trust RI000
April 2020	<ul style="list-style-type: none">Flash Performance (1Q2020)Active Fixed Income Finalists
May 2020	<ul style="list-style-type: none">Quarterly Performance Report (1Q 2020)Fixed Income Manager Interviews
June 2020	<ul style="list-style-type: none">Cash Flow Report (3Q 2020)Educational Item: TBDWatch Update Memo: Rice Hall & JamesManager Update: Rice Hall & James
July 2020	<ul style="list-style-type: none">Flash Performance (2Q2020)Manager Update: Ramirez

Expected Completion Date	Task
August 2020	<ul style="list-style-type: none"> Quarterly Performance Report (2Q 2020)
September 2020	<ul style="list-style-type: none"> Cash Flow Report (4Q 2020) Educational Item: TBD Thermal Coal List Update: 2020
October 2020	<ul style="list-style-type: none"> Flash Performance (3Q2020)
November 2020	<ul style="list-style-type: none"> Quarterly Performance Report (3Q 2020)
December 2020	<ul style="list-style-type: none"> Cash Flow Report (1Q 2021)

Bold are priority strategic items.

This agenda includes only major strategic items. Meketa also expects to work with the Staff and Board to complete more routine tasks and projects, as expected.

DS/SC/hs

All persons wishing to address the Board must complete a speaker's card, stating their name and the agenda item (including "Open Forum") they wish to address. The Board may take action on items not on the agenda only if findings pursuant to the Sunshine Ordinance and Brown Act are made that the matter is urgent or an emergency.

Oakland Police and Fire Retirement Board meetings are held in wheelchair accessible facilities. Contact the Retirement Unit, 150 Frank Ogawa Plaza, Suite 3349 or call (510) 238-7295 for additional information.



Retirement Unit
150 Frank H. Ogawa Plaza
Oakland, California 94612

AGENDA

RETIREMENT BOARD MEMBERS

Walter L. Johnson, Sr.
President

Jaime T. Godfrey
Vice President

Adam Benson
Member

Robert W. Nichelini
Member

Kevin R. Traylor
Member

John C. Speakman
Member

R. Steven Wilkinson
Member

REGULAR MEETING of the BOARD OF ADMINISTRATION of the OAKLAND POLICE AND FIRE RETIREMENT SYSTEM ("PFRS")

Wednesday, February 26, 2020 – 12:00 pm
One Frank H. Ogawa Plaza, Hearing Room 1
Oakland, California 94612

- - - ORDER OF BUSINESS - - -

- A. Subject: PFRS Board Meeting Minutes**
From: Staff of the PFRS Board
-
- Recommendation: APPROVE** January 29, 2020 PFRS Board meeting minutes.
- B. Subject: PFRS Actuary Valuation as of July 1, 2019**
From: Cheiron, Inc., PFRS Plan Actuary
-
- Recommendation: APPROVE** the PFRS Actuary Valuation as of July 1, 2019.
- C. AUDIT AND OPERATIONS COMMITTEE AGENDA – FEBURARY 26, 2020**
- c1. Subject: Administrative Expenses Report**
From: Staff of the PFRS Board
-
- Recommendation: ACCEPT** an informational report regarding PFRS administrative expenses from July 1, 2019 through December 31, 2019.
- c2. Subject: Mid-Cycle PFRS Administrative Budget for Fiscal Years 2019 through 2021**
From: Staff of the PFRS Board
-
- Recommendation: APPROVE** the Mid-Cycle PFRS Administrative Budget for Fiscal Years 2019 through 2021.

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
REGULAR BOARD MEETING
FEBRUARY 26, 2020

ORDER OF BUSINESS, continued

- C3. **Subject:** Purchase of iPad Tablets to replace PFRS Staff and Board Member Binders at PFRS Committee and Board Meetings
- From:** Staff of the PFRS Board
-
- Recommendation:** **APPROVE** the Purchase of iPad Tablets to replace PFRS Staff and Board Member Binders at PFRS Committee and Board Meetings.
- C4. **Subject:** Resolution No. 7089 – Authorization for Travel and Reimbursement of Travel-related Expenses for PFRS Plan Administrator David Jones
- From:** Staff of the PFRS Board
-
- Recommendation:** **APPROVE** Resolution No. 7089 – Resolution approving request of Oakland Police and Fire Retirement System Plan Administrator David Jones to attend the Government Investment Officer’s Association 2020 Annual Conference from March 18, 2020 to March 20, 2020 in Las Vegas, Nevada and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Two Thousand Dollars (\$2,000.00).
- C5. **Subject:** Resolution No. 7090 – Authorization for Travel and Reimbursement of Travel-related Expenses for PFRS Trustee Adam Benson
- From:** Staff of the PFRS Board
-
- Recommendation:** **APPROVE** Resolution No. 7090 – Resolution approving request of Oakland Police and Fire Retirement System Trustee Adam Benson to attend the Government Investment Officer’s Association 2020 Annual Conference from March 18, 2020 to March 20, 2020 in Las Vegas, Nevada and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Two Thousand Dollars (\$2,000.00).

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
REGULAR BOARD MEETING
FEBRUARY 26, 2020

ORDER OF BUSINESS, continued

- C6. **Subject:** Resolution No. 7091 – Authorization for Travel and Reimbursement of Travel-related Expenses for PFRS Trustee Adam Benson
From: Staff of the PFRS Board
-
- Recommendation:** **APPROVE** Resolution No. 7091 – Resolution approving request of Oakland Police and Fire Retirement System Trustee Adam Benson to attend the 2020 Pension Bridge Conference from April 14, 2020 to April 15, 2020 in San Francisco, California and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Two Hundred Dollars (\$200.00).
- C7. **Subject:** Resolution No. 7092 – Authorization for Travel and Reimbursement of Travel-related Expenses for PFRS Investment Officer Teir Jenkins
From: Staff of the PFRS Board
-
- Recommendation:** **APPROVE** Resolution No. 7092 – Resolution approving request of Oakland Police and Fire Retirement System Staff Member Teir Jenkins to attend the 2020 Pension Bridge Conference from April 14, 2020 to April 15, 2020 in San Francisco, California and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Five Hundred Dollars (\$500.00).
- C8. **Subject:** Resolution No. 7093 – Authorization for Travel and Reimbursement of Travel-related Expenses for PFRS Trustee R. Steven Wilkinson
From: Staff of the PFRS Board
-
- Recommendation:** **APPROVE** Resolution No. 7093 – Resolution approving request of Oakland Police and Fire Retirement System Trustee R. Steven Wilkinson to attend the 2020 Pension Bridge Conference from April 14, 2020 to April 15, 2020 in San Francisco, California and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Five Hundred Dollars (\$500.00).

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
REGULAR BOARD MEETING
FEBRUARY 26, 2020

ORDER OF BUSINESS, continued

- C9. **Subject:** Resolution No. 7094 – Authorization for Travel and Reimbursement of Travel-related Expenses for PFRS Plan Administrator David Jones
From: Staff of the PFRS Board
-
- Recommendation:** **APPROVE** Resolution No. 7094 – Resolution approving request of Oakland Police and Fire Retirement System Plan Administrator David Jones to attend the 2020 Pension Bridge Conference from April 14, 2020 to April 15, 2020 in San Francisco, California and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Five Hundred Dollars (\$500.00).
- D. **INVESTMENT & FINANCIAL MATTERS COMMITTEE AGENDA – FEBRUARY 26, 2020**
- D1. **Subject:** Selection of New Active Small Cap Domestic Equities Asset Class Investment Manager
From: Meketa Investment Group
-
- Recommendation:** **RECEIVE** Staff report summarizing presentations at the Investment Committee meeting from Investment Firms seeking to serve as PFRS’s new Small Cap Domestic Equities Asset Class Manager; **DISCUSS** and **APPROVE** Investment Committee’s recommendation for new Active Small Cap Domestic Equities Asset Class manager.
- D2. **Subject:** Investment Market Overview
From: Meketa Investment Group
-
- Recommendation:** **ACCEPT** an informational report on the global investment markets through February 2020.
- D3. **Subject:** Investment Fund Performance for the Quarter Ending December 31, 2019
From: Meketa Investment Group
-
- Recommendation:** **APPROVE** the Investment Fund Performance for the Quarter Ending December 31, 2019.

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
REGULAR BOARD MEETING
FEBRUARY 26, 2020

ORDER OF BUSINESS, continued

D4. **Subject:** Investment Manager Overview – SPI Strategies, LLC
From: Meketa Investment Group

Recommendation: **RECEIVE** report from Meketa regarding organizational changes at SPI Strategies, LLC, **DISCUSS** possible Board action in response to said changes, including but not limited to, termination of service agreement with SPI Strategies, LLC and transfer of PFRS assets managed by SPI Strategies, LLC to another investment manager or a comparable Exchange Traded Fund (ETF), **APPROVE** the Committee's recommended course of action with regard to SPI Strategies, LLC

E. NEW BUSINESS

F. OPEN FORUM

G. FUTURE SCHEDULING

A BOARD MEETING of the Oakland Police and Fire Retirement System (“PFRS”) was held on January 29, 2020 in Hearing Room 1, One Frank Ogawa Plaza, Oakland, California.

Board Members Present:

- Walter L. Johnson, President
- Jaime T. Godfrey, Vice President
- John C. Speakman, Member
- Adam Benson, Member
- R. Steven Wilkinson, Member
- Robert W. Nichelini, Member

Additional Attendees:

- David Jones, PFRS Plan Administrator
- Jennifer Logue, PFRS Legal Counsel
- David Low & Teir Jenkins, Staff Member
- Sean Copus, Meketa Investment Group

The meeting was called to order at 1:00 pm.

A. PFRS Board Meeting Minutes – Member Nichelini made a motion to approve the October 30, 2019 PFRS Board meeting minutes, second by Member Speakman. Motion Passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

B. Resolution No. 7081 – PFRS Hearing Rules and Procedures – Member Godfrey made a motion to approve Resolution No. 7081 ratifying the October 30, 2019 motion to approve and adopt Hearing Rules and Procedures for the Oakland Police and Fire Retirement System, second by member Speakman. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

C. Resolution No. 7082 – Holiday Pay Calculations Dispute Settlement – Member Godfrey made a motion approving Resolution No. 7082 authorizing settlement of the dispute regarding holiday pay calculations for police members of the Oakland Police and Fire Retirement System classified at the rank of Captain and Deputy Chief, second by member Nichelini. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

D. PFRS AUDIT COMMITTEE MEETING – JANUARY 29, 2020

D1. PFRS Financial Statements as of, and for, the year ended June 30, 2019 – Teir Jenkins reported that Guian Chhim, Senior Manager, Macias Gini & O’Connell presented the Audit Committee with the report of the audit of the PFRS Financial Statements for the year ended June 30, 2019.

MOTION: Member Speakman made a motion to approve the Report of the PFRS Financial Statements for the year ended June 30, 2019, second by Member Benson. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

- D2. Administrative Expenses Report** – Teir Jenkins presented an informational report on the administrative expenditures of the PFRS plan through November 30, 2019.

MOTION: Member Speakman made a motion to accept the administrative expenses report, second by Member Godfrey. Motion passed

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

- D3. Annual Report for Fiscal Year ending June 30, 2019** – Teir Jenkins presented the Board with the PFRS Annual Report for the year ended June 30, 2019. The Board thanked the PFRS staff for it's hard works in creating the Annual Report.

MOTION: Member Speakman made a motion to approve the printing and publication of the PFRS Annual Report for the year ended June 30, 2019, second by Nichelini. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

- D4. Resolution No. 7084 – Wilkinson Travel** – Member Speakman made a motion to approve Resolution No. 7084 ratifying the Board President's approval of Oakland Police and Fire Retirement System Board Member R. Steven Wilkinson's request to attend the Markets Group's California Institutional Forum on December 4, 2019 in Santa Rosa, California and authorizing reimbursement of the cost for attendance in the amount of Sixty-five Dollars, second by Member Nichelini. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – ABSTAIN]
(AYES: 5/ NOES: 0/ ABSTAIN: 1)

- D5. Resolution No. 7085 – Wilkinson Travel** – Member Speakman made a motion to approve Resolution No. 7085 ratifying the Board President's approval of Oakland Police and Fire Retirement System Board Member R. Steven Wilkinson's request to attend the 2019 Opal Alternative Investing Summit from December 4, 2019 through December 6, 2019 in Dana Point, California and authorizing reimbursement of the costs for attendance in the amount of Three Hundred Thirty-two Dollars, second by Member Nichelini. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – ABSTAIN]
(AYES: 5/ NOES: 0/ ABSTAIN: 1)

- D6. Resolution No. 7086 – Jones Travel** – Member Speakman made a motion to approve Resolution No. 7086 approving request of Oakland Police and Fire Retirement System Plan Administrator David Jones to attend the 2020 California Association of Public Retirement Systems Administrators' Roundtable on February 7, 2020 in Costa Mesa, California and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Seven Hundred Dollars, second by Member Benson. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

- D7. Resolution No. 7087 – Wilkinson Travel** – Member Speakman made a motion to approve Resolution No. 7087 approving request of Oakland Police and Fire Retirement System Board Member R. Steven Wilkinson to attend the 2020 California Association of Public Retirement Systems General Assembly from March 7, 2020 to March 10, 2020 in Rancho Mirage, California and for reimbursement of registration fees and travel-related expenses in an amount not to exceed Two Thousand dollars, second by Member Godfrey. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – ABSTAIN]
(AYES: 5/ NOES: 0/ ABSTAIN: 1)

E. PFRS INVESTMENT COMMITTEE MEETING – JANUARY 29, 2020

- E1. Investment Manager Overview – Earnest Partners** – Jaime Godfrey reported that Earnest Partners presented a performance review of their firm's management of its PFRS Investment Portfolio to the Investment Committee.

MOTION: Member Godfrey made a motion to accept information report from Earnest Partners, second by Member Speakman. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

- E2. Investment Manager Overview by Meketa – Earnest Partners** – Sean Copus from Meketa presented its review of Earnest Partners. Mr. Copus reported that Meketa does not recommend any action on Earnest Partners at this time.

MOTION: Member Godfrey made a motion to approve the Meketa recommendation of no action on Earnest Partners at this time by Meketa, second by Member Nichelini. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

- E3. Investment Manager Overview – SPI Strategies, LLC** – Jaime Godfrey reported that SPI Strategies, LLC had recently agreed to an acquisition of SPI Strategies by another company. He reported that also SPI Strategies presented a performance review of their firm's management of its PFRS Investment Portfolio to the Investment Committee.

MOTION: Member Godfrey made a motion to accept information report from SPI Strategies, second by Member Nichelini. Motion passed

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

- E4. Investment Manager Overview by Meketa – SPI Strategies, LLC** – Sean Copus from Meketa presented its review of SPI Strategies. Chairman Godfrey said a meeting with Meketa and SPI Strategies should be made to further discuss the changes with SPI Strategies and how the PFRS Investments with the firm will be managed going forward.

MOTION: Member Godfrey made a motion to accept the review of SPI Strategies and approve the placement of SPI Strategies on watch status, second by Member Nichelini. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

- E5. Investment Market Overview** – Mr. Copus provided an informational report on the global economic factors affecting the PFRS Fund.

MOTION: Member Godfrey made a motion to accept the Investment Market Overview report, second by Member Speakman. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

- E6. \$13.85 million Drawdown for 1st Quarter 2020 Member Allowances** – Mr. Sancewich reported that \$2 million from Northern Trust Investments, \$1 million from the Long Duration ETF and \$10.85 million from the City of Oakland will be used for the 1st quarter 2020 drawdown to pay for member retirement allowances. Member Speakman asked if the City Contribution used for the drawdowns for member allowances comes from the Property Tax override account. Mr. Jenkins reported that the City Contribution to the PFRS fund includes withdrawals from the Property Tax override account.

MOTION: Member Godfrey made a motion to recommend Board approval of the 1st quarter 2020 drawdown of \$2 million from Northern Trust Investments, \$1 million from the Long Duration ETF and \$10.85 million from the City of Oakland to pay for member retirement allowances, second by Member Speakman. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

- E7. Investment Fund Performance for the Quarter Ending September 30, 2019** – Mr. Copus presented the Investment performance report of the PFRS investments fund for the quarter ending September 30, 2019. He reported how PFRS Investment over- and underperformed to the investment benchmarks for this period.

MOTION: Member Godfrey made a motion to recommend Board approval of the PFRS Investment Fund Performance for the Quarter Ending September 30, 2019, second by Member Speakman. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

- E8. Preliminary Investment Fund Performance for the Quarter Ending December 31, 2019** – Mr. Copus presented the preliminary investment performance report of the PFRS investments fund for the quarter ending December 31, 2019.

MOTION: Member Godfrey made a motion to approve the Preliminary PFRS Investment Fund Performance for the Quarter Ending December 31, 2019, second by Member Speakman. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

- E9. New PFRS Fixed Income Asset Class Portfolio Manager** – Mr. Copus reported that the Meketa was prepared to release the Request for Proposal for a new PFRS Fixed Income Asset Class Portfolio Manager.

MOTION: Member Godfrey made a motion approving Meketa's release of the Request for Proposal for a new PFRS Fixed Income Investment Asset Manager, second by Member Speakman. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

- E10. Northern Trust Custodian Bank Stay Protocol Consent Amendment** – Mr. Copus and Mr. Jenkins explained how the Northern Trust Custodian Bank Stay Protocol Consent Amendment is utilized and required with regard to Securities Lending actions with the Custodian Bank, the Northern Trust Company.

MOTION: Member Godfrey made a motion recommend Board approval of the Northern Trust Custodian Bank Stay Protocol Consent Amendment, second by Member Speakman. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

- E11. Selection of Investment Managers to invite to Interview for the Active Small Cap Domestic Equity Asset Class Investment Manager position** – Mr. Copus reported that the Meketa review of the Request for Proposal has completed and, following discussion with the Investment Committee, Meketa recommended four candidates, Phocus, Brown Advisory, Systematic, and Vaughan Nelson, to be interviewed to become the PFRS Active Small Cap Domestic Equity Asset Class Investment Manager.

MOTION: Member Godfrey made a motion to approve the following four candidates for Investment Committee interview to be the new Active Small Cap

Domestic Equity Asset Class Investment Manager for the PFRS fund: Phocus, Brown Advisory, Systematic, and Vaughan Nelson, second by Member Nichelini. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

E12. Portfolio Manager Review for Passive International Equity and Crisis Risk Offset (Long Duration Treasury) selection – Mr. Copus reported that the Request for Proposal for a new Passive International Equity and Crisis Risk Offset (Long Duration Treasury) manager had completed. A single finalist, Blackrock, was requested to present itself to the PFRS Investment Committee meeting at the March 2020 meeting.

MOTION: Member Godfrey made a motion to invite Blackrock to come and present itself to the PFRS Investment Committee at its March 2020 meeting to be the PFRS Passive International Equity and Crisis Risk Offset (Long Duration Treasury) investment manager, second by member Nichelini. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

E13. Organizational Changes at Parametric Portfolio Associates – Mr. Copus reported the status of the organizational changes at Parametric Portfolio Associates and recommended no changes with this manager.

MOTION: Member Godfrey made a motion to approve Meketa's recommendation of no action or changes with Parametric Portfolio Associates, second by member Nichelini. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

E14. Emergency procedures for terminating or limiting trading discretion of PFRS investment managers to protect PFRS fund assets – Plan Administrator David Jones and PFRS Legal Counsel presented a report regarding the possible need and use of emergency procedures for terminating or limiting trading discretion of PFRS investment managers to protect PFRS fund assets. Mr. Jones reported that the Investment Committee discussed options of the creation of an Ad Hoc Committee to address this matter.

MOTION: Member Godfrey made a motion to accept the informational report regarding Emergency procedures for terminating or limiting trading discretion of PFRS investment managers to protect PFRS fund assets, second by member Wilkinson. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

E15. Resolution No. 7080 – Extension of a Professional Services Agreement with Earnest Partners – Member Wilkinson made a motion to recommend Board

approval Resolution No. 7080 authorizing the one year extension of a professional services agreement with Earnest Partners, LLC for Mid-Cap Core Domestic Equity Asset Class Investment Manager Services, second by member Godfrey. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

F. Member Resolution No. 7088

F1. Resolution No. 7088 – Member Speakman made a motion to approve resolution No. 7088 approving Death Benefit Payments and directing warrants thereunder in the total sum of \$1,000.00 payable to Debra A. Maxfield, Robin L. Harrigan, Sharon R. Tinsley, Sandra L. Tinsley, Karen M. Tinsley, beneficiaries of deceased Oakland Police and Fire Retirement System Member Donald H. Tinsley, second by member Nichelini. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

G. Resolution No. 7083 – Appreciation for Robert J. Muszar – Member Nichelini made a motion to approve Resolution No. 7083 expressing appreciation for Robert J. Muszar's dedication and loyal and valuable service as a member of the Oakland Police and Fire Retirement Board, second by member Speakman. Motion passed.

[GODFREY – Y/ JOHNSON – Y/ BENSON – Y/ NICHELINI – Y/ SPEAKMAN – Y/ WILKINSON – Y]
(AYES: 6/ NOES: 0/ ABSTAIN: 0)

H. New Business – Staff member David Low reported the test use of an Apple iPad for use in place of member binders for the PFRS Board meetings. The Board agreed the benefit of using the iPad in place of the Member Binders for the Board meetings. The matter would be continued for consideration of more purchases for Board member use at future Audit Committee meetings.

I. Open Forum – Pete Peterson, President of the Retired Oakland Police Officers Association, told the Board of the excellent relationship that has fostered between the PFRS Board and the ROPOA and expressed optimism about future relations moving forward.

J. Future Scheduling – The next PFRS Board meeting was scheduled for Wednesday, February 26, 2020.

The meeting adjourned at 1:47 pm.

DAVID JONES, BOARD SECRETARY

DATE



Oakland Police and Fire Retirement System

Actuarial Valuation Report as of July 1, 2019

Produced by Cheiron

February 2020

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
Letter of Transmittal	i
Foreword	ii
Section I Executive Summary	1
Section II Identification and Assessment of Risks	9
Section III Assets	18
Section IV Liabilities	22
Section V Contributions.....	27
Section VI Headcount and Benefit Payment Projections.....	29
 <u>Appendices</u>	
Appendix A Membership Information	31
Appendix B Statement of Actuarial Assumptions and Methods.....	35
Appendix C Summary of Plan Provisions.....	39
Appendix D Glossary	41

February 19, 2020

City of Oakland Police and Fire
Retirement System Board
150 Frank H. Ogawa Plaza
Oakland, CA 94612

Dear Members of the Board:

At your request, we have conducted an actuarial valuation of the Oakland Police and Fire Retirement System (PFRS, the Plan) as of July 1, 2019. This report contains information on the Plan's assets and liabilities. This report also discloses the employer contributions in accordance with the funding agreement between the City of Oakland and PFRS, based on the current financial status of the Plan. Your attention is called to the Foreword in which we refer to the general approach employed in the preparation of this report.

The purpose of this report is to present the results of the annual actuarial valuation of the Plan. This report is for the use of the Retirement Board and the auditors in preparing financial reports in accordance with applicable law and accounting requirements. Any other user of this report is not an intended user and is considered a third party.


Cheiron's report was prepared solely for the Retirement Board for the purposes described herein, except that the plan auditor may rely on this report solely for the purpose of completing an audit related to the matters herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to such other users.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

Sincerely,
Cheiron

A handwritten signature in blue ink, reading "Graham A. Schmidt".

Graham A. Schmidt, ASA, FCA, MAAA, EA
Consulting Actuary

A handwritten signature in blue ink, reading "Timothy S. Doyle".

Timothy S. Doyle, ASA, MAAA, EA
Associate Actuary

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

FOREWORD

Cheiron has performed the actuarial valuation of the Oakland Police and Fire Retirement System (PFRS, the Plan) as of July 1, 2019. The valuation is organized as follows:

- In Section I, the **Executive Summary**, we describe the purpose of an actuarial valuation, summarize the key results found in this valuation, and disclose important trends.
- The **Main Body** of the report presents details on the Plan's
 - Section II – Identification and Assessment of Risks
 - Section III – Assets
 - Section IV – Liabilities
 - Section V – Contributions
 - Section VI – Head Count and Benefit Payment Projections
- In the **Appendices**, we conclude our report with detailed information describing plan membership (Appendix A), actuarial assumptions and methods employed in the valuation (Appendix B), a summary of pertinent plan provisions (Appendix C), and a glossary of key actuarial terms (Appendix D).

The results of this report rely on future experience conforming to the underlying assumptions. To the extent that actual plan experience deviates from the underlying assumptions, the results would vary accordingly.

In preparing our report, we relied on information (some oral and some written) supplied by the Plan's staff. This information includes, but is not limited to, plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION I – EXECUTIVE SUMMARY

The primary purpose of the actuarial valuation and this report is to measure, describe, and identify the following as of the valuation date:

- The financial condition of the Plan,
- Past and expected trends in the financial progress of the Plan, and
- Calculation of the actuarially determined contributions for years beginning in Fiscal Year 2020-2021, and
- An assessment and disclosure of key risks.

In the balance of this Executive Summary, we present (A) the basis upon which this year's valuation was completed, (B) the key findings of this valuation including a summary of all key financial results, (C) an examination of the historical trends, and (D) the projected financial outlook for the Plan.

A. Valuation Basis

This valuation estimates the projected employer contributions in accordance with the funding agreement dated July 1, 2012 between the City of Oakland and the PFRS. Based on that agreement, employer contributions were suspended until fiscal year 2017-2018, at which time they resumed at a level based upon the recommendation of the actuary. Section IV of this report shows the development of the employer contribution for fiscal year 2020-2021.

The Plan's funding policy is to contribute an amount equal to the sum of:

- The normal cost under the Entry Age Normal Cost Method (which is zero, as there are no active members),
- Amortization of the Unfunded Actuarial Liability, and
- The Plan's expected administrative expenses.

This valuation was prepared based on the plan provisions shown in Appendix C. There have been no changes in plan provisions since the prior valuation.

A summary of the assumptions and methods used in the current valuation is shown in Appendix B. The administrative expense assumption was updated and the Longevity Pay assumption for Fire members was removed as Longevity Pay was included in the June 30, 2019 benefits provided by PFRS staff. No other changes were made to the actuarial assumptions or methods.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION I – EXECUTIVE SUMMARY

B. Key Findings of this Valuation

The key results of the July 1, 2019 actuarial valuation are as follows:

- The actuarially determined employer contribution amount for Fiscal Year 2020-2021 is \$43.6 million, based on projecting the Actuarial Liabilities and the Actuarial Value of Assets to the end of the 2019-2020 Fiscal Year. This represents a decrease of \$0.2 million from the estimated amount in the prior valuation for the same Fiscal Year. The contribution is assumed to be paid in equal installments throughout the year, or on average at approximately January 1, 2021.
- During the year ended June 30, 2019, the return on Plan assets was 5.83% on a market value basis net of investment expenses, as compared to the 6.00% assumption for the 2018-2019 Plan year. This resulted in a market value loss on investments of \$2.0 million. The Actuarial Value of Assets (AVA) is calculated as the expected AVA plus 20% of the difference between the market value and the expected AVA. This smoothed value of assets returned 7.74%, for an actuarial asset gain of \$5.9 million.
- The Plan experienced a gain on the Actuarial Liability of \$5.4 million, the net result of changes in the population and changes in benefits, including recognition of a portion of the lower than expected COLA increases from the most recent Police MOU. Another decrease in the Actuarial Liability resulted from a reduction in the Holiday Pay compensation for PFRS Police members in the ranks of Captain and Deputy Chief. Combining the liability and asset gains, the Plan experienced a total gain of \$11.3 million.
- The Plan's smoothed funded ratio, the ratio of Actuarial Value of Assets over Actuarial Liability, increased from 53.7% last year to 58.0% on an AVA basis as of June 30, 2019.
- The Plan's funded ratio increased from 58.1% to 61.8% on a Market Value of Assets (MVA) basis.
- The Unfunded Actuarial Liability (UAL) is the excess of the Plan's Actuarial Liability over the Actuarial Value of Assets. The Plan experienced a decrease in the UAL from \$299.8 million to \$261.8 million as of July 1, 2019.
- Overall participant membership decreased compared to last year. 23 members died, five of whom had their benefits continue to a surviving spouse. In addition, 21 surviving beneficiaries died. There are no active members of the Plan.
- The administrative expense assumption for Fiscal Year 2019-2020 increased from \$1.0 million to \$1.6 million after input from PFRS Staff.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION I – EXECUTIVE SUMMARY

- If the contribution were determined using a projected asset value based on the current market (i.e., non-smoothed) value of assets, the contribution for FY 2020-2021 would be \$40.0 million. The contribution is smaller than that determined using the projected AVA, because the current market value reflects the full amount of recent investment gains, while under the AVA projection a portion of those gains are deferred until years after FY 2020-2021.

Below we present Table I-1 that summarizes all the key results of the valuation with respect to membership, assets and liabilities, and contributions. The results are presented and compared for both the current and prior plan year.

TABLE I-1				
Summary of Principal Plan Results				
(\$ in thousands)				
	July 1, 2018		July 1, 2019 % Change	
<u>Participant Counts</u>				
Active Participants	0		0	
Participants Receiving a Benefit	837		798 -4.7%	
Total	837		798 -4.7%	
Annual Pay of Active Members	\$	0	\$	0
<u>Assets and Liabilities</u>				
Actuarial Liability (AL)	\$	647,251	\$	622,836 -3.8%
Actuarial Value of Assets (AVA)		347,467		361,037 3.9%
Unfunded Actuarial Liability (UAL)	\$	299,784	\$	261,798 -12.7%
Funded Ratio (AVA)		53.7%		58.0% 4.3%
Funded Ratio (MVA)		58.1%		61.8% 3.7%
<u>Contributions</u>				
Employer Contribution (FY2019-20)	\$	43,409		N/A
Employer Contribution (FY2020-21)	\$	43,835	\$	43,648 -0.4%

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION I – EXECUTIVE SUMMARY

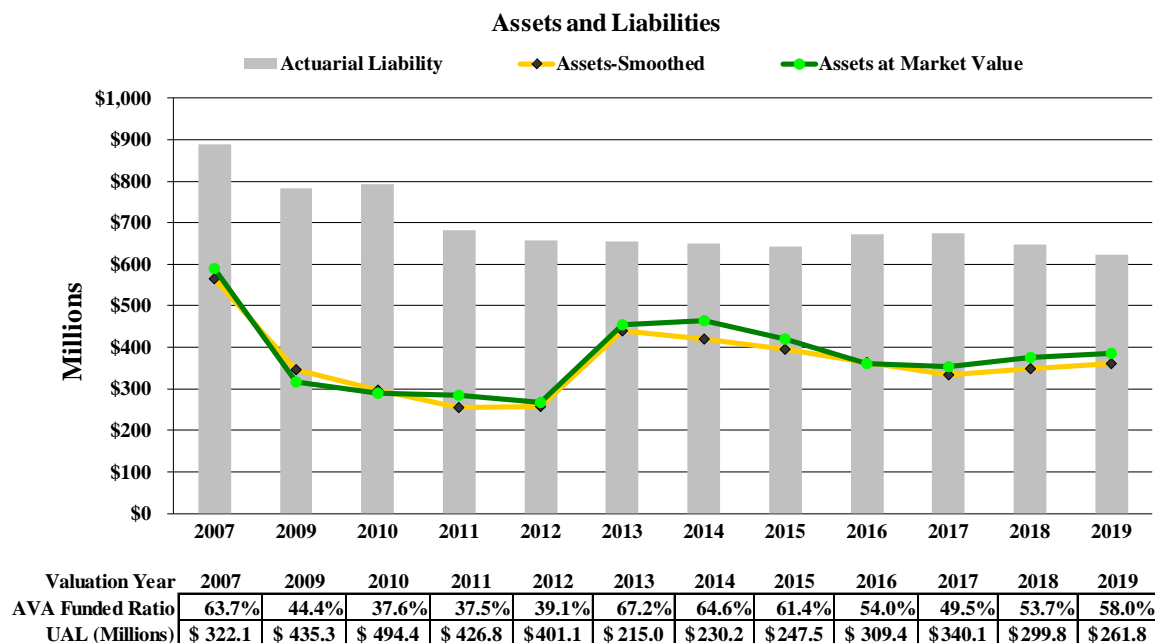
C. Historical Trends

Despite the fact that for most retirement plans the greatest attention is given to the current valuation results and in particular, the size of the current Unfunded Actuarial Liability and the employer contribution, it is important to remember that each valuation is merely a snapshot in the long-term progress of a pension fund. It is more important to judge a current year's valuation result relative to historical trends, as well as trends expected into the future.

Assets and Liabilities

The chart below compares the Market Value of Assets (MVA) and Actuarial Value of Assets (AVA) to the Actuarial Liabilities. The percentages shown in the table below the chart are the ratios of the Actuarial Value of Assets to the Actuarial Liability (the funded ratio). We note that for the GASB disclosure report, this ratio is disclosed using the MVA.

The funded ratio declined from 63.7% in 2007 to 37.5% in 2011 due to negative market returns and no contributions being made in that period (\$417 million in proceeds from a POB were deposited in 1997 that acted as prepayments for 15 years of contributions). The funded ratio increased between 2012 and 2013 due to a \$210 million contribution in July 2012. The funded ratio decreased from 67.2% to 49.5% between 2013 and 2017 due to assumption changes, liability losses, new Police MOUs, and the lack of contributions since the July 2012 payment. The funded ratio has increased from 49.5% to 58.0% over the past two years due to recommencement of contributions, and to a lesser extent, asset and liability gains.

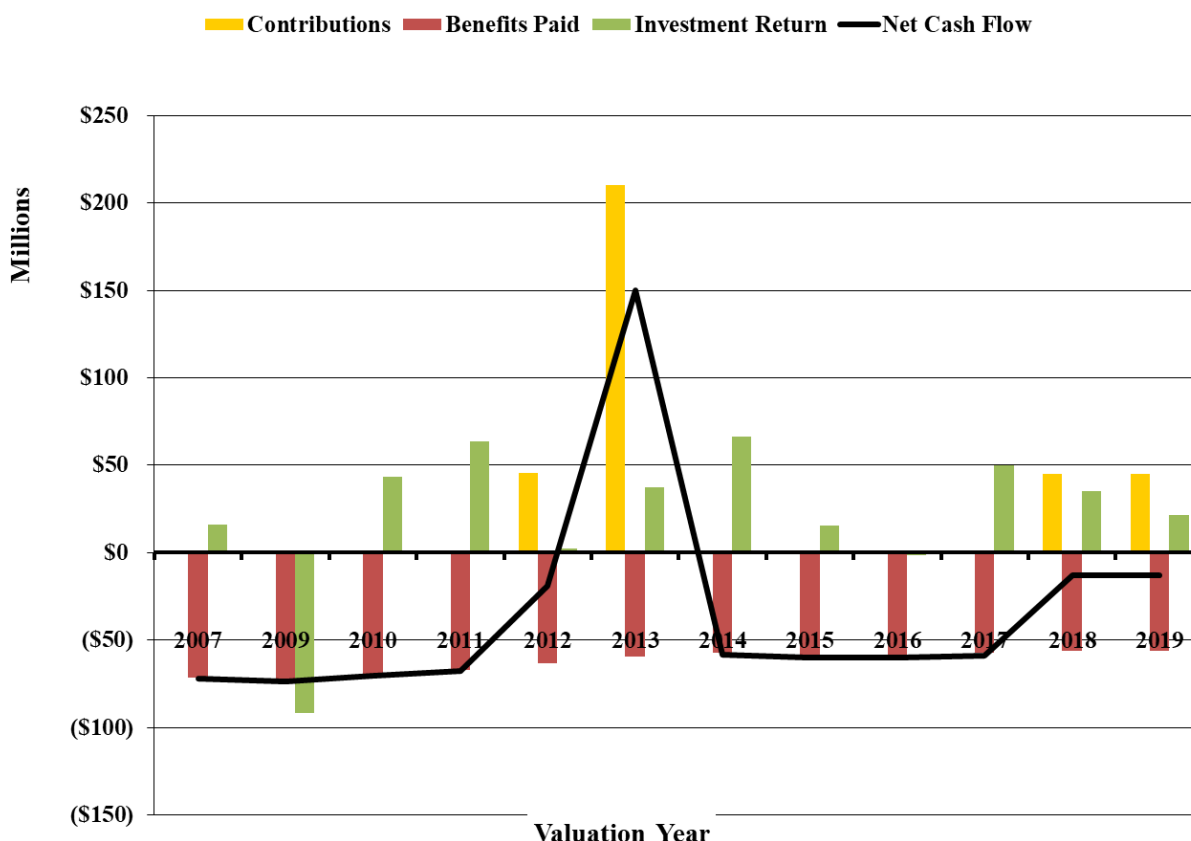


OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019

SECTION I – EXECUTIVE SUMMARY

Cash Flows

The chart below shows the Plan's cash flow, excluding investment returns (i.e., contributions less benefit payments and expenses). This is a critical measure, as it reflects the ability to have funds available to meet benefit payments without having to make difficult investment decisions, especially during volatile markets.



The contributions, benefit payments, investment returns, and net cash flow (NCF) excluding investment returns and expenses are represented by the scale on the left. The Plan's net cash flow has been negative 11 of the last 12 fiscal years, primarily due to the lack of contributions except in 2013 and in the most recent two years. Even with the recommencing of contributions under the Plan's funding policy, benefit payments exceeded contributions for the prior two years.

A negative cash flow magnifies the losses during a market decline, hindering the Plan in its ability to absorb market fluctuations. The implications of a plan in negative cash flow are that the impact of market fluctuations can be more severe: as assets are being depleted to pay benefits in down markets, there is less principal available to be reinvested during favorable return periods. The Plan is expected to remain in a negative cash flow position going forward, since the Plan is closed.

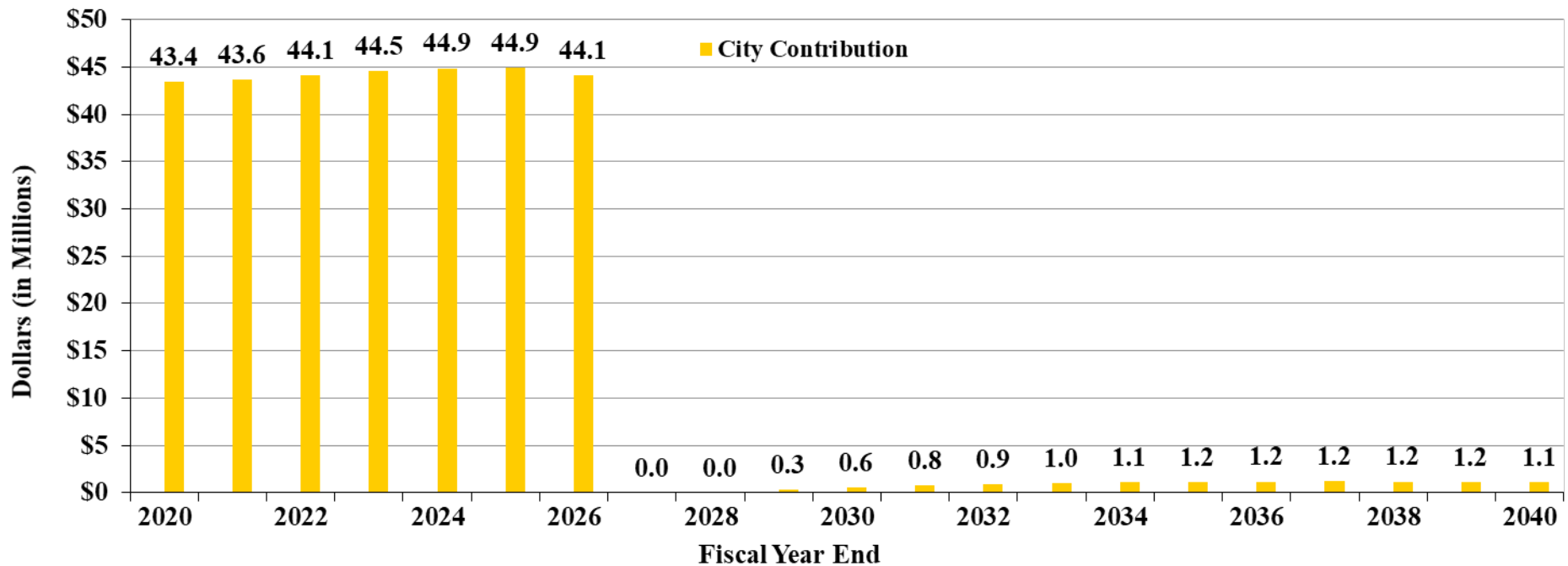
OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019

SECTION I – EXECUTIVE SUMMARY

D. Future Expected Financial Trends

The analysis of projected financial trends is perhaps the most important component of this valuation. In this section, we present our assessment of the implications of the July 1, 2019 valuation results in terms of benefit security (assets over liabilities) and contribution levels. All the projections in this section are based on the assumption that the Plan will exactly achieve the assumed rate of return each year (6.0% per year until 2027, then trending down to an annual return of 3.25% over 10 years).

Projection of Employer Contributions



The above graph shows that the City's required contribution increased from \$43.4 million in fiscal year 2020 to \$43.6 million in fiscal year 2021, and then is expected to increase slightly as the current unfunded liability is fully amortized. This assumes that the annual

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION I – EXECUTIVE SUMMARY

payments by the City will equal the administrative expenses, plus an amount needed to amortize the remaining unfunded liability as a level percentage of overall Safety payroll by July 1, 2026, as is required under the City's charter.

After July 1, 2026, the UAL is expected to be fully amortized, and the contribution would generally be equal to the administrative expense, beginning in 2026-2027. However, under the current asset smoothing method there are still expected to be some deferred asset gains, which will not be recognized until after 2026; the deferred recognition of these gains is expected to offset a portion of the administrative expenses in the final years of the graph on the previous page.

Note that the graph on the previous page does not forecast any future actuarial gains or losses or changes to the amortization policy. Even relatively modest losses could push the employer contribution over \$50 million in the next few years. We also note that the occurrence of any future gains or losses in the years leading up to or following the required full amortization date (July 1, 2026) may require a reconsideration of the funding policy for those gains or losses, as otherwise these changes would need to be recognized over an extremely short period.

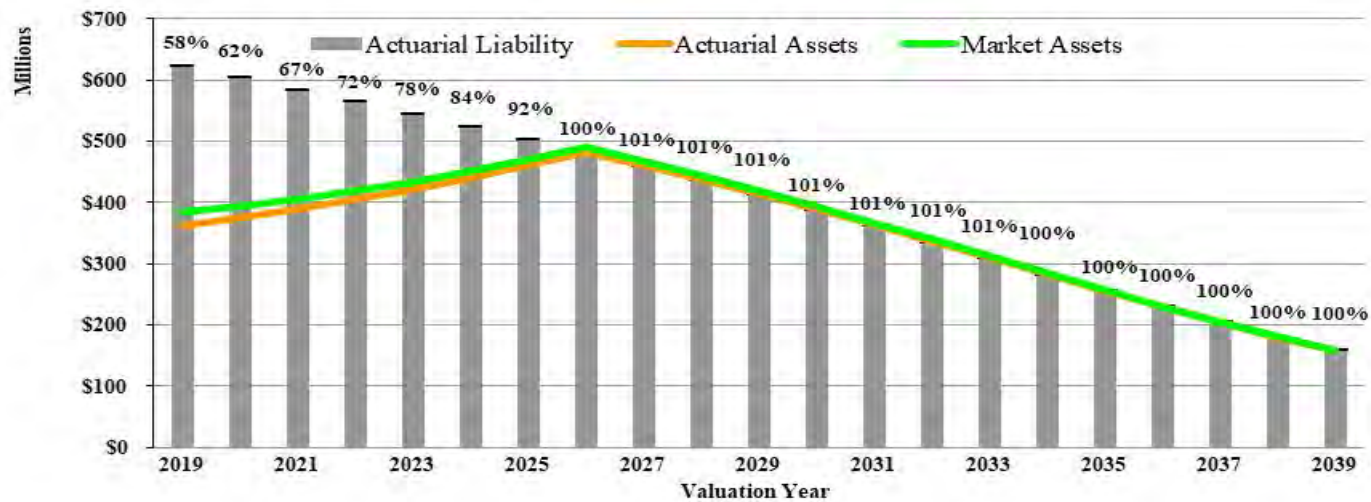
OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019

SECTION I – EXECUTIVE SUMMARY

Asset and Liability Projections:

The following graph shows the projection of assets and liabilities assuming that assets will earn the assumed rate of return each year during the projection period.

Projection of Assets and Liabilities



The graph shows that the projected funded status increases as the current unfunded liability is fully amortized, assuming all actuarial assumptions are met. Once the Plan is projected to reach full funding, both the assets and liabilities are expected to decline as the Plan continues to mature.

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

Actuarial valuations are based on a set of assumptions about future economic and demographic experience. These assumptions represent a reasonable estimate of future experience, but actual future experience will undoubtedly be different and may be significantly different. This section of the report is intended to identify the primary risks to the plan, provide some background information about those risks, and provide an assessment of those risks.

Identification of Risks

The fundamental risk to a pension plan is that the contributions needed to pay the benefits become unaffordable. While the Plan cannot determine on its own what contribution level is unaffordable, we can project expected contributions and illustrate the potential impact of key sources of risk on those contribution rates so the City can assess affordability. While there are a number of factors that could lead to contribution amounts becoming unaffordable, we believe the primary sources are:

- Investment risk,
- COLA risk,
- Longevity risk, and
- Contribution risk.

Other risks that we have not identified may also turn out to be important.

Investment Risk is the potential for investment returns to be different than expected. Lower investment returns than anticipated will increase the Unfunded Actuarial Liability necessitating higher contributions in the future unless there are other gains that offset these investment losses. In contrast, higher investment returns than anticipated may create a potentially significant surplus that could be difficult to use until all benefits have been paid. Expected future investment returns and their potential volatility are determined by the Plan's asset allocation.

COLA Risk is the potential for future COLAs to increase contributions. Retirement allowances are based on the pensionable compensation attached to the average rank held during the three years immediately preceding retirement. Cost-of-living adjustments are therefore based on salary increases for current employees with the retiree's same rank at retirement. Salary increases less than or greater than those assumed cause gains or losses, respectively. COLA increases different from those expected over the last 7 years are reflected in the "MOU Changes" column in the chart on the next page.

Longevity risk is the potential for mortality experience to be different than expected. Generally, longevity risk emerges slowly over time and is often exceeded by other changes, particularly those due to investment returns. However, for a closed plan such as PFRS the mortality experience will have a significant impact on future cash flows. The chart below shows the demographic gains and losses over the last 7 years compared to the total change in the UAL for each year, a portion of which is associated with mortality experience.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

Contribution risk is the potential for actual future actuarially determined contributions to deviate from expected future contributions. The City Charter sets the Plan’s contribution policy. It requires the unfunded liability of the plan to be fully amortized by June 20, 2026. The Actuarially Determined Contribution (ADC) is based on a short remaining amortization period. As a result, a significant loss or change in assumptions may cause a large increase in the ADC. Furthermore, any change to the contribution policy would necessitate an amendment to the City Charter, which requires voter approval.

The table below shows a 7-year history of changes in the UAL by source.

TABLE II-1 UAL Change by Source (\$ in Thousands)							
FYE	MOU Changes	Assumption Changes	Contributions vs. Tread Water	Investments	Liability Experience	Total UAL Change	
2013	\$ 4,091	\$ 0	\$ (188,922)	\$ (3,803)	\$ 2,592	(186,042)	
2014	0	30,598	15,146	(10,729)	(19,869)	15,147	
2015	0	0	17,023	(6,171)	6,522	17,374	
2016	43,480	0	15,033	486	2,830	61,829	
2017	0	22,730	22,888	(4,958)	(9,959)	30,702	
2018	(1,475)	0	(24,214)	(7,128)	(7,467)	(40,284)	
2019	(7,173)	0	(26,691)	(5,919)	1,797	(37,986)	
Total	\$ 38,923	\$ 53,328	\$ (169,736)	\$ (38,222)	\$ (23,553)	\$ (139,260)	

The UAL reduced by approximately \$139.3 million over the last seven years. Contributions in excess of the “tread water” level (i.e. interest on the UAL plus administrative expenses) reduced the UAL by \$169.7 million, liability experience reduced the UAL by \$23.6 million, and investment returns decreased the UAL by \$38.2 million. Meanwhile changes to MOUs increased the UAL by \$38.9 million and assumption changes increased the UAL by \$53.5 million.

Plan Maturity Measures

The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of the plan.

Plan maturity can be measured in a variety of ways, but they all get at one basic dynamic – the larger the plan is compared to the contribution or revenue base that supports it; the more sensitive the plan will be to risk. Given that the Plan has been closed to new entrants since 1976 with no remaining active members, the Plan considered as a standalone entity is very mature, though because of the diminishing benefit cash flows it is expected to have a declining impact on the overall City finances.

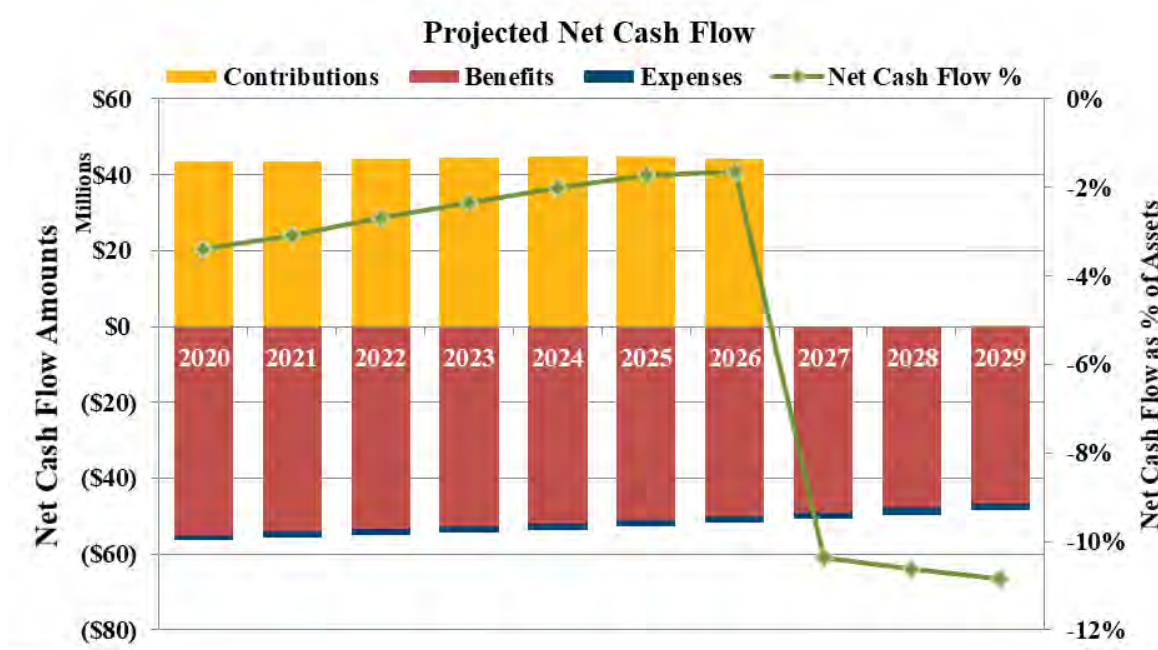
**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

Net Cash Flow

The net cash flow of the plan as a percentage of the beginning of year assets indicates the sensitivity of the plan to short-term investment returns. Net cash flow is equal to contributions less benefit payments and administrative expenses. Mature plans can have large amounts of benefit payments compared to contributions, particularly if they are well funded.

The chart below shows the projected net cash flow for the next 10 fiscal years. The bars represent the dollar amounts of the different components of the projected net cash flow, and the line represents the net cash flow as a percentage of the assets as of the beginning of the fiscal year.



The Plan's contributions are expected to cease following the 2025-2026 Fiscal Year once the unfunded liability has been paid off, other than for payments needed to cover the administrative expenses. Beyond that point, the negative net cash flows are expected to continue until all benefits are paid.

The first issue this change presents to the Plan is a need for liquidity in the investments so that benefits can be paid. When the cash flow was positive or close to neutral, benefits could be paid out of contributions without liquidating investments. As net cash flow becomes increasingly negative, the benefit payments will require liquidation of some investments (at least to the extent the bond portfolio doesn't generate sufficient cash income).

The other change of note is the sensitivity to short-term investment returns. Investment losses in the short term are compounded by the net withdrawal from the plan leaving a smaller asset base to try to recover from the investment losses. On the other hand, large investment gains in the

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

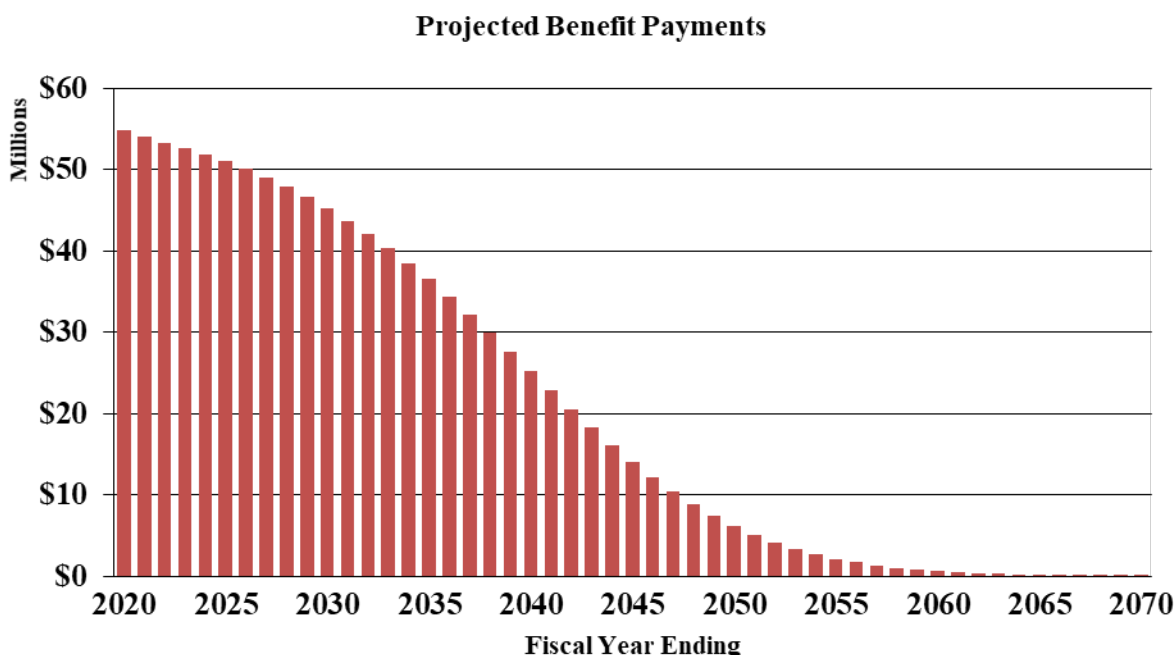
SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

short term also tend to have a longer beneficial effect as any future losses are relative to a smaller liability base due to the negative cash flow.

Assessing Costs and Risks

A closed pension plan will ultimately either end up with excess assets after all benefits have been paid or run out of assets before all benefits have been paid. The declining investment return assumption adopted by the Board implies an expectation the Plan will pursue a strategy of de-risking the Plan to minimize the impact of these scenarios, potentially by reducing the risk in its investment portfolio, immunizing investments, and/or purchase annuities to settle the remaining obligation.

However, even if the Plan were to run out of assets, PFRS would be forced to pay benefits directly on a pay-as-you-go basis. As long as PFRS (and the City) can afford the pay-as-you-go costs, benefits would remain secure. The chart below shows a projection of expected benefit payments for the closed plan.

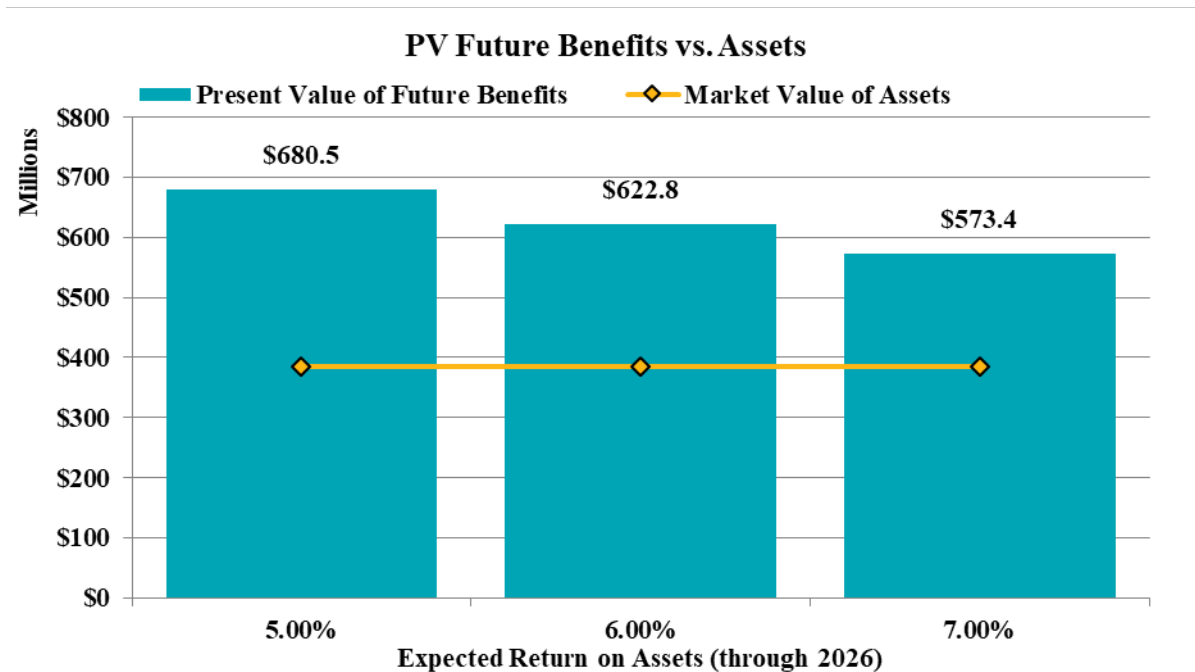


Sensitivity to Investment Returns

The chart on the next page compares assets to the present value of all projected future benefits discounted at the current expected rates of return – starting at 6.00% through 2026 and trending down to 3.25% over the next 10 years - and at investment returns 100 basis points above and below the expected rates of return. The present value of future benefits is shown as a teal bar and the Market Value of Assets is shown by the gold line.

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS



If actual investment returns meet the expected returns annually, the Plan would need approximately \$623 million in assets today to pay all projected benefits compared to current assets of \$385 million. If investment returns are 100 basis points lower each year, the Plan would need approximately \$681 million in assets today, and if investment returns are 100 basis points higher, the Plan would need approximately \$573 million in assets today.

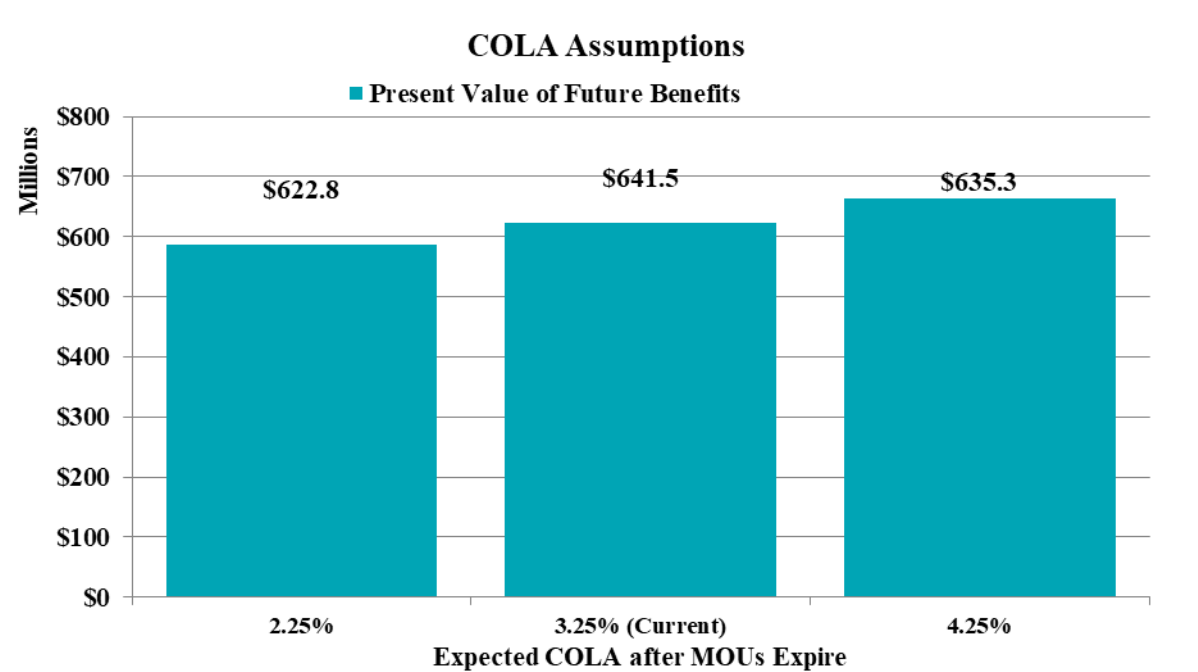
Sensitivity to COLA Changes

The present value of future benefits shown above assumes annual COLA increases of 3.25% per year once the current MOUs have expired. If COLA inflation is higher (because of higher than expected increases in the salaries of active employees); more assets would be needed to pay the benefits, and if COLA inflation is lower; fewer assets would be needed to pay benefits.

The chart on the next page is similar to the one above - comparing assets to the present value of all projected future benefits (discounted using the current expected rates of return) based on annual COLA increases of 3.25% per year once the current MOUs have expired - and at COLA increases 100 basis points above and below the current COLA assumptions. The present value of future benefits is shown as a teal bar and the Market Value of Assets is shown by the gold line.

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

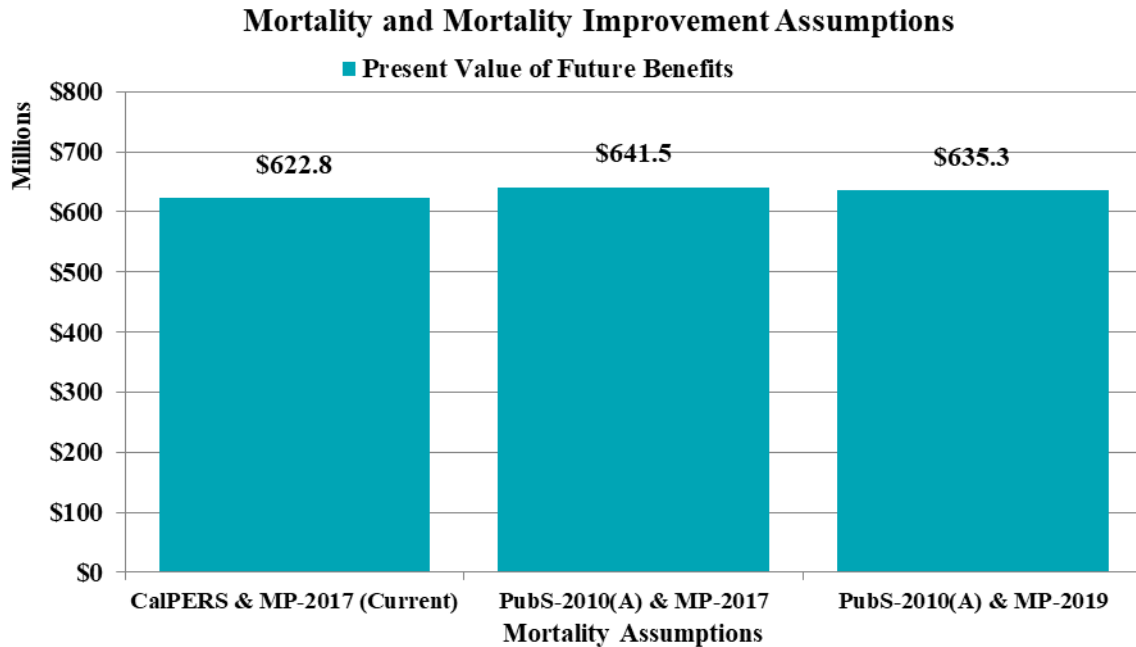


Sensitivity to Mortality Assumption Changes

The following chart shows the sensitivity of the Plan to longevity / mortality experience. In the first bar we have shown the present value of benefits using the Plan's current mortality assumptions (i.e. using the most recent CalPERS mortality assumptions, with projections for generational improvements using the Society of Actuary's MP-2017 improvement scales). In the second bar, we have shown the impact on the present value of benefits if actual longevity experience follows an alternative set of assumptions, reflecting new tables that have been developed using the experience Public Safety employees of U.S. public employers. In the third bar we have shown an additional alternative, using the Public Sector table described above, but also reflecting a slower rate of future improvements in longevity, as reflected by the Society of Actuary's latest improvement scale (MP-2019). As always, actual experience will drive costs, but this exhibit provides an example of the level of sensitivity of the Plan's liabilities to recent changes in outlooks on mortality.

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS



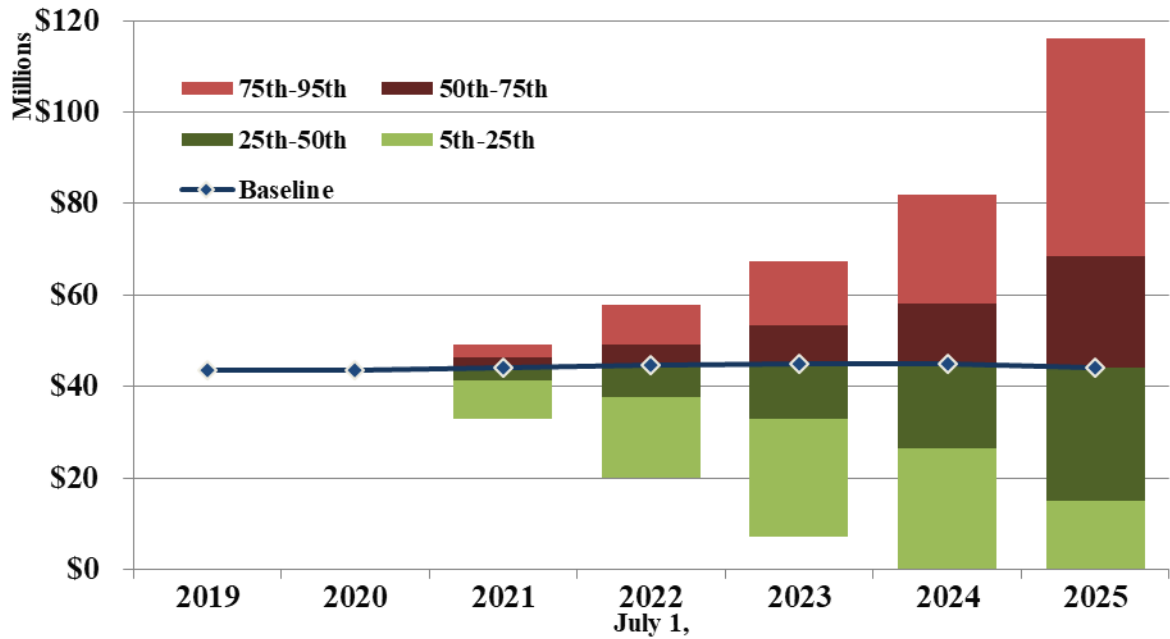
Stochastic Projections

The stochastic projections of contributions through the full funded date (June 30, 2026) in the chart on the following page shows a very wide range in future ADC's. This range is driven both by the volatility of investment returns (assumed to be 11.0% in these projections, based on the most recent information provided by Meketa) and by the short amortization period used to calculate the ADC. We note that if the Plan is required to remain fully funded after 2026, the contributions required will also vary widely.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

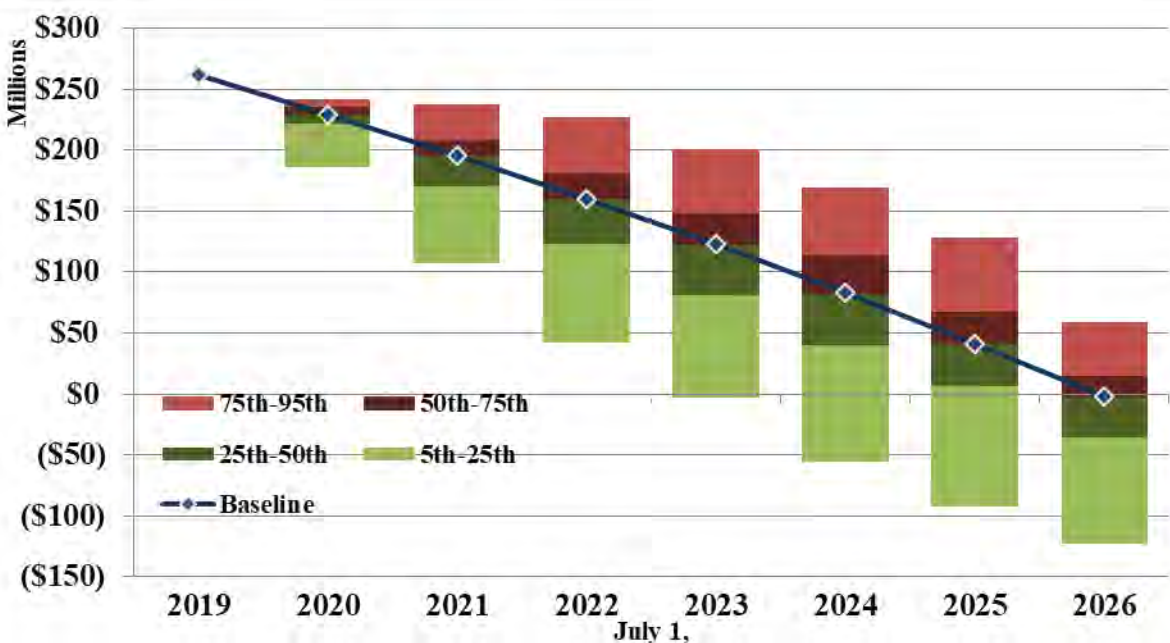
SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

Stochastic Projection of Actuarially Determined Contribution (ADC)



The chart below shows the projection of the UAL through the full funding date. While the UAL is projected in the baseline to be eliminated by 2026, because of the statutory requirement to fully fund the Plan by that time, there is still a wide range of potential outcomes.

Stochastic Projection of UAL/(Surplus)



**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

More Detailed Assessment

A detailed assessment of risk would be valuable in understanding the risks identified above, especially given the closed nature of the plan. We encourage the Board to consider a more detailed analysis of some of the risks identified above, in particularly in developing a funding strategy to deal with changes in the UAL after the required full funding date.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION III – ASSETS

Pension Plan assets play a key role in the financial operation of the Plan and in the decisions the Board may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact benefit levels, employer contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on Plan assets including:

- **Disclosure** of Plan assets as of June 30, 2018 and June 30, 2019,
- Statement of the **changes** in market values during the year, and
- Development of the **Actuarial Value of Assets**.

Disclosure

There are two types of asset values disclosed in the valuation, the Market Value of Assets and the Actuarial Value of Assets. The market value represents “snap-shot” or “cash-out” values, which provide the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are sometimes not as suitable for long-range planning as are the Actuarial Value of Assets, which reflect smoothing of annual investment returns.

Table III-1 discloses and compares each component of the market asset value as of June 30, 2018 and June 30, 2019.

TABLE III-1			
Statement of Assets at Market Value			
June 30,			
(in thousands)			
	2018		2019
Cash and Cash Equivalents	\$ 7,821	\$	6,484
Receivables	6,288		4,428
Investments, at Fair Value	<u>415,919</u>		<u>420,245</u>
Total Assets	\$ 430,027	\$	431,157
Liabilities	54,051		46,446
Market Value of Assets	\$ 375,976	\$	384,711

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION III – ASSETS

Changes in Market Value

The components of asset change are:

- Contributions (employer and employee)
- Benefit payments
- Expenses (investment and administrative)
- Investment income (realized and unrealized)

Table III-2 shows the components of a change in the Market Value of Assets during 2018 and 2019.

TABLE III-2 Changes in Market Values June 30, (in thousands)			
	<u>2018</u>		<u>2019</u>
Contributions			
Contributions of Plan Members	\$ 0	\$	0
Contributions from the City	44,860		44,821
Total Contributions	<u>44,860</u>		<u>44,821</u>
Investment Income			
Miscellaneous Income	20		20
Investment Income	35,435		21,552
Total Investment Income	<u>35,455</u>		<u>21,572</u>
Disbursements			
Benefit Payments	(55,999)		(56,212)
Administrative Expenses	(1,543)		(1,446)
Total Disbursements	<u>(57,542)</u>		<u>(57,658)</u>
Net increase (Decrease)	22,773		8,734
Net Assets Held in Trust for Benefits:			
Beginning of Year	353,203		375,976
End of Year	\$ <u>375,976</u>	\$	<u>384,711</u>
Approximate Return	10.2%		5.8%

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION III – ASSETS

Actuarial Value of Assets (AVA)

The Actuarial Value of Assets represents a “smoothed” value developed by the actuary to reduce the volatile results, which could develop due to short-term fluctuations in the Market Value of Assets. For this Plan, the Actuarial Value of Assets is calculated on a modified market-related value. The Actuarial Value of Assets recognizes one-fifth of the difference between the expected asset value (based on the 6.00% return assumption from 2018-2019) and the actual market value each year. The actuarial value is restricted to fall between 90% and 110% of the market value.

**Table III-3
Development of Actuarial Value of Assets
(in thousands)**

1. Calculate Expected Actuarial Value of Assets	
a. Value of Actuarial Value of Assets - July 1, 2018	\$ 347,467
b. Total Contributions and Misc Income	44,841
c. Administrative Expense	(1,446)
d. Benefit Payments	(56,212)
e. Expected Investment Earnings	20,469
f. Expected Actuarial Value of Assets - July 1, 2019	\$ 355,119
[1a + 1b + 1c + 1d + 1e]	
2. Calculate Final Actuarial Value of Assets	
a. Value of Market Value of Assets - July 1, 2019	\$ 384,711
b. Excess of MVA over Expected AVA [2a - 1f]	29,592
c. Preliminary AVA [1f + 0.2 * 2b]	361,037
d. 90% of MVA [90% * 2a]	346,240
e. 110% of MVA [110% * 2a]	423,182
3. Final Actuarial Value of Assets	\$ 361,037
[2c, not less than 2d or greater than 2e]	

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION III – ASSETS

Investment Performance

The following table calculates the investment related gain/loss for the plan year on both a market value and an actuarial value basis. The market value gain/loss is an appropriate measure for comparing the actual asset performance to the previous valuation's 6.00% assumption.

TABLE III-4 Asset Gain/(Loss) (in thousands)		
	Market Value	Actuarial Value
July 1, 2018 value	\$ 375,976	\$ 347,467
Contributions of Plan Members	0	0
Contributions from the City	44,821	44,821
Miscellaneous Income	20	20
Benefit Payments	(56,212)	(56,212)
Administrative Expenses	(1,446)	(1,446)
Expected Investment Earnings (6.00%)	23,544	20,469
Expected Value June 30, 2019	\$ 386,703	\$ 355,119
Investment Gain / (Loss)	(1,992)	5,918
July 1, 2019 value	384,711	361,037
Return	5.83%	7.74%

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION IV – LIABILITIES

In this section, we present detailed information on Plan liabilities including:

- **Disclosure** of Plan liabilities at July 1, 2018 and July 1, 2019
- Statement of **changes** in these liabilities during the year

Disclosure

Several types of liabilities are typically shown in an actuarial valuation report. Each type is distinguished by the people ultimately using the figures and the purpose for which they are using them. Note that these liabilities are not applicable for settlement purposes, including the purchase of annuities and the payment of lump sums.

- **Present Value of Future Benefits:** Used for measuring all future Plan obligations, the obligations of the Plan earned as of the valuation date and those to be earned in the future by current plan participants under the current Plan provisions, if all assumptions are met.
- **Actuarial Liability:** Used for funding calculations, this liability is calculated taking the Present Value of Future Benefits and subtracting the Present Value of Future Normal Costs under an acceptable actuarial funding method. Because the Plan has no active members, the Actuarial Liability is equal to the Present Value of Future Benefits (i.e., all benefits are fully accrued).
- **Unfunded Actuarial Liability:** The excess of the Actuarial Liability over the Actuarial Value of Assets.

Table IV-1 on the next page discloses each of these liabilities for the current and prior valuations.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION IV – LIABILITIES

TABLE IV-1 Liabilities/Net (Surplus)/Unfunded (in thousands)				
			July 1, 2018	July 1, 2019
<u>Present Value of Future Benefits</u>				
Active Participant Benefits	\$	0	\$	0
Retiree and Inactive Benefits		647,251		622,836
Present Value of Future Benefits (PVB)	\$	647,251	\$	622,836
<u>Actuarial Liability</u>				
Present Value of Future Benefits (PVB)	\$	647,251	\$	622,836
Present Value of Future Normal Costs (PVFNC)		0		0
Actuarial Liability (AL = PVB – PVFNC)	\$	647,251	\$	622,836
Actuarial Value of Assets (AVA)		347,467		361,037
Net (Surplus)/Unfunded (AL – AVA)	\$	299,784	\$	261,798

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION IV – LIABILITIES

Changes in Liabilities

Each of the liabilities disclosed in the prior table is expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- New hires since the last valuation (not applicable for this Plan)
- Benefits accrued since the last valuation (not applicable for this Plan)
- Plan amendments
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, dying, or receiving COLA adjustments at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method or software

Unfunded liabilities will change because of all of the above and also due to changes in Plan assets resulting from:

- Employer contributions different than expected
- Investment earnings different than expected
- A change in the method used to measure plan assets

**TABLE IV-2
Changes in Actuarial Liability
(in thousands)**

Actuarial Liability at July 1, 2018	\$ 647,251
Actuarial Liability at July 1, 2019	\$ 622,836
Liability Increase (Decrease)	\$ (24,415)
Change due to:	
Plan Design Changes	\$ 0
Assumption Change	0
Accrual of Benefits	0
Actual Benefit Payments	(56,212)
Interest	37,173
Data Corrections	0
Actuarial Liability (Gain)/Loss	\$ (5,376)

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION IV – LIABILITIES

Table IV-3 Liabilities by Group as of July 1, 2019 (in thousands)			
	Police	Fire	Total
Actuarial Accrued Liability			
Active	\$ 0	\$ 0	\$ 0
Service Retirees	235,757	80,035	315,792
Disabled Retirees	95,781	85,840	181,621
Beneficiaries	<u>66,097</u>	<u>59,325</u>	<u>125,423</u>
Total Accrued Liability	\$ 397,635	\$ 225,201	\$ 622,836

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION IV – LIABILITIES

**TABLE IV-4
Development of Actuarial Gain / (Loss)
(in thousands)**

1. Unfunded Actuarial Liability at Start of Year (not less than zero)	\$	299,784
2. Employer Normal Cost at Start of Year		0
3. Interest on 1. and 2. to End of Year		17,987
4. Contributions and Miscellaneous Income for Prior Year		44,841
5. Administrative Expenses		(1,446)
6. Interest on 4. and 5. to End of Year		1,283
7. Change in Unfunded Actuarial Liability Due to Changes in Assumptions		0
8. Change in Unfunded Actuarial Liability Due to Changes in Actuarial Methods		0
9. Change in Unfunded Actuarial Liability Due to Changes in Plan Design		0
10. Change in Unfunded Actuarial Liability Due to Data Corrections		0
11. Expected Unfunded Actuarial Liability at End of Year [1. + 2. + 3. - 4. - 5. - 6. + 7. + 8. + 9. + 10.]	\$	273,093
12. Actual Unfunded Actuarial Liability at End of Year (not less than zero)		261,798
13. Unfunded Actuarial Liability Gain / (Loss) [11. – 12.]	\$	11,295

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION V – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the Plan. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that are both stable and predictable.

For this Plan, the actuarial funding method used to determine the normal cost and the Unfunded Actuarial Liability is the **Entry Age Normal** cost method.

The normal cost rate is determined with the normal cost percentage equal to the total Projected Value of Benefits at Entry Age, divided by Present Value of Future Salary at Entry Age. Since there are no longer any active employees, the normal cost for this plan is \$0.

The Unfunded Actuarial Liability is the difference between the EAN Actuarial Liability and the Actuarial Value of Assets. For the contribution projections, the UAL payment is based on the unfunded liability of the Plan being fully amortized by June 30, 2026, in accordance with the City Charter. Amortization payments are determined based on an assumption that payments will increase by 3.25% each year, reflecting the assumed ultimate rate of increase in overall City Safety member salaries.

An amount equal to the expected administrative expenses for the Plan is added directly to the actuarial cost calculation.

Table V-1 on the next page shows the employer contribution amount for the 2020-2021 Fiscal Year. The projected assets and liabilities assume that all actuarial assumptions are met and that contributions are made as expected between now and June 30, 2020.

For this calculation, we have shown the contribution amount using both the projected actuarial and Market Value of Assets. The current funding policy uses the AVA to determine the UAL and the associated amortization payment. We have included the contribution amount as determined using the current Market Value of Assets to demonstrate what the actuarial cost would be if all deferred asset gains were fully recognized at the time the contributions commence. In both cases, the contribution is based on an assumption that the investment returns will exactly equal the assumed rate of return during the 2019-2020 Fiscal Year.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION V – CONTRIBUTIONS

**TABLE V-I
Development of Projected 2020-2021 Employer Contribution Amount
(in thousands)**

	Actuarial Value of Assets	Market Value of Assets
1. Value of Assets at June 30, 2019:	\$ 361,037	\$ 384,711
a. Expected Contributions and Misc Income	\$ 43,409	\$ 43,409
b. Expected Administrative Expense	\$ (1,600)	\$ (1,600)
c. Expected Benefit Payments	\$ (54,662)	\$ (54,662)
d. Expected Investment Earnings	<u>\$ 21,282</u>	<u>\$ 22,703</u>
2. Expected Value of Assets at June 30, 2020:	\$ 369,467	\$ 394,561
a. Excess of Expected MVA over Expected AVA	\$ 25,094	
b. Preliminary AVA [Expected AVA + 20% * 2a]	\$ 374,486	
c. 90% of Expected MVA	\$ 355,105	
d. 110% of Expected MVA	\$ 434,017	
3. Final Expected AVA [2b, not less than 2c or greater than 2d]	\$ 374,486	\$ 394,561
4. Entry Age Liability at June 30, 2019	\$ 622,836	\$ 622,836
5. Expected Benefit Payments	\$ (54,662)	\$ (54,662)
6. Expected Interest	<u>\$ 35,754</u>	<u>\$ 35,754</u>
7. Expected Entry Age Liability at June 30, 2020	\$ 603,928	\$ 603,928
8. Projected Unfunded Actuarial Liability: (7) - (3)	229,443	209,367
9. Funded Ratio: (3) / (7)	62.0%	65.3%
10. Unfunded Actuarial Liability Amortization at Middle of Year as a Level Percentage of Payroll (6 Years Remaining) as of June 30, 2020	42,003	38,328
11. Expected Administrative Expenses for Fiscal 2020-2021	<u>1,646</u>	<u>1,646</u>
12. Total Contribution: (10) + (11)	43,648	39,973

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION VI – HEADCOUNT AND BENEFIT PAYMENT PROJECTIONS

Table VI-1 Benefit Payment and Headcount Projection							
Fiscal Year Ending June 30,	Police		Fire		Total		
	Count	Benefits (in thousands)	Count	Benefits (in thousands)	Count	Benefits (in thousands)	
2020	475.0	\$ 32,855	323.0	\$ 21,807	798.0	54,662	
2021	460.2	\$ 32,518	306.7	\$ 21,422	766.9	53,940	
2022	445.5	\$ 32,303	290.6	\$ 20,867	736.1	53,170	
2023	430.8	\$ 32,201	275.0	\$ 20,292	705.8	52,493	
2024	416.2	\$ 32,050	259.7	\$ 19,698	675.9	51,748	
2025	401.5	\$ 31,766	244.9	\$ 19,089	646.4	50,855	
2026	386.7	\$ 31,421	230.6	\$ 18,464	617.2	49,885	
2027	371.7	\$ 31,007	216.7	\$ 17,824	588.4	48,831	
2028	356.5	\$ 30,515	203.3	\$ 17,167	559.9	47,682	
2029	341.1	\$ 29,939	190.3	\$ 16,493	531.4	46,432	
2030	325.4	\$ 29,271	177.8	\$ 15,800	503.1	45,070	
2031	309.3	\$ 28,504	165.6	\$ 15,085	474.8	43,589	
2032	292.8	\$ 27,632	153.7	\$ 14,349	446.5	41,981	
2033	275.9	\$ 26,652	142.2	\$ 13,590	418.1	40,242	
2034	258.6	\$ 25,565	131.0	\$ 12,809	389.6	38,375	
2035	241.1	\$ 24,375	120.1	\$ 12,009	361.2	36,384	
2036	223.3	\$ 23,089	109.5	\$ 11,193	332.8	34,282	
2037	205.5	\$ 21,717	99.2	\$ 10,366	304.7	32,082	
2038	187.7	\$ 20,272	89.4	\$ 9,534	277.0	29,806	
2039	170.1	\$ 18,772	79.9	\$ 8,705	250.0	27,477	
2040	152.9	\$ 17,237	70.9	\$ 7,887	223.8	25,123	
2041	136.2	\$ 15,687	62.4	\$ 7,088	198.6	22,775	
2042	120.3	\$ 14,146	54.5	\$ 6,317	174.8	20,463	
2043	105.2	\$ 12,636	47.2	\$ 5,582	152.4	18,219	
2044	91.1	\$ 11,178	40.5	\$ 4,891	131.6	16,069	
2045	78.2	\$ 9,788	34.4	\$ 4,248	112.6	14,036	
2046	66.3	\$ 8,484	29.0	\$ 3,658	95.3	12,142	
2047	55.7	\$ 7,277	24.2	\$ 3,123	80.0	10,400	
2048	46.3	\$ 6,176	20.1	\$ 2,643	66.4	8,819	
2049	38.1	\$ 5,186	16.4	\$ 2,219	54.5	7,405	

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

SECTION VI – HEADCOUNT AND BENEFIT PAYMENT PROJECTIONS

Table VI-1 Benefit Payment and Headcount Projection (Continued)							
Fiscal Year Ending June 30,	Police		Fire		Total		
	Count	Benefits (in thousands)	Count	Benefits (in thousands)	Count	Benefits (in thousands)	
2050	31.0	\$ 4,310	13.4	\$ 1,847	44.4	6,157	
2051	25.0	\$ 3,546	10.8	\$ 1,526	35.8	5,072	
2052	19.9	\$ 2,888	8.6	\$ 1,252	28.5	4,141	
2053	15.7	\$ 2,330	6.9	\$ 1,021	22.6	3,351	
2054	12.3	\$ 1,862	5.4	\$ 827	17.7	2,689	
2055	9.5	\$ 1,474	4.2	\$ 667	13.7	2,141	
2056	7.3	\$ 1,158	3.3	\$ 534	10.6	1,692	
2057	5.6	\$ 902	2.5	\$ 426	8.1	1,328	
2058	4.2	\$ 699	2.0	\$ 338	6.2	1,037	
2059	3.2	\$ 538	1.5	\$ 267	4.7	805	
2060	2.4	\$ 411	1.1	\$ 210	3.5	621	
2061	1.8	\$ 313	0.9	\$ 164	2.6	477	
2062	1.3	\$ 236	0.6	\$ 127	1.9	363	
2063	0.9	\$ 176	0.5	\$ 98	1.4	274	
2064	0.7	\$ 131	0.4	\$ 74	1.0	205	
2065	0.5	\$ 96	0.3	\$ 56	0.7	151	
2066	0.4	\$ 69	0.2	\$ 41	0.5	110	
2067	0.2	\$ 49	0.1	\$ 30	0.4	79	
2068	0.2	\$ 34	0.1	\$ 21	0.3	55	
2069	0.1	\$ 23	0.1	\$ 14	0.2	37	
2070	0.1	\$ 14	0.0	\$ 9	0.1	24	
2071	0.0	\$ 8	0.0	\$ 6	0.1	14	
2072	0.0	\$ 5	0.0	\$ 4	0.0	8	
2073	0.0	\$ 2	0.0	\$ 2	0.0	4	
2074	0.0	\$ 1	0.0	\$ 1	0.0	2	
2075	0.0	\$ 0	0.0	\$ 0	0.0	1	
2076	0.0	\$ 0	0.0	\$ 0	0.0	0	
2077	0.0	\$ 0	0.0	\$ 0	0.0	0	
2078	0.0	\$ 0	0.0	\$ 0	0.0	0	

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data as of

Active Participants	July 1, 2018			July 1, 2019		
	Police	Fire	Total	Police	Fire	Total
Number	0	0	0	0	0	0
Number Vested	0	0	0	0	0	0
Average Age	0.0	0.0	0.0	0.0	0.0	0.0
Average Service	0.0	0.0	0.0	0.0	0.0	0.0
Average Pay	\$0	\$0	\$0	\$0	\$0	\$0
Service Retirees						
Number	250	110	360	241	100	341
Average Age	75.0	80.8	76.8	75.7	80.9	77.2
Average Annual Benefit	\$77,420	\$77,216	\$77,358	\$76,879	\$80,605	\$77,972
Disabled Retirees						
Number	109	101	210	107	99	206
Average Age	74.2	75.6	74.9	75.2	76.4	75.8
Average Annual Benefit	\$73,959	\$72,635	\$73,322	\$73,598	\$74,879	\$74,214
Beneficiaries						
Number	133	134	267	127	124	251
Average Age	80.5	83.4	82.0	80.6	83.2	81.8
Average Annual Benefit	\$55,952	\$54,306	\$55,126	\$54,889	\$55,549	\$55,215
All Inactives						
Number	492	345	837	475	323	798
Average Age	76.3	80.3	77.9	76.9	80.4	78.3
Average Annual Benefit	\$70,850	\$66,976	\$69,253	\$70,261	\$69,231	\$69,844

Data pertaining to active and inactive Members and their beneficiaries as of the valuation date was supplied by the Plan Administrator on electronic media.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

APPENDIX A – MEMBERSHIP INFORMATION

Changes in Plan Membership: Police

	Actives	Service Retirees	Disabled Retirees	Beneficiaries	Total
July 1, 2018	0	250	109	133	492
Retired	0	0	0	0	0
Disabled	0	0	0	0	0
Deceased	0	(9)	(2)	(10)	(21)
New Beneficiary	0	0	0	4	4
July 1, 2019	0	241	107	127	475

Changes in Plan Membership: Fire

	Actives	Service Retirees	Disabled Retirees	Beneficiaries	Total
July 1, 2018	0	110	101	134	345
Retired	0	0	0	0	0
Disabled	0	0	0	0	0
Deceased	0	(10)	(2)	(11)	(23)
New Beneficiary	0	0	0	1	1
July 1, 2019	0	100	99	124	323

Changes in Plan Membership: All

	Actives	Service Retirees	Disabled Retirees	Beneficiaries	Total
July 1, 2018	0	360	210	267	837
Retired	0	0	0	0	0
Disabled	0	0	0	0	0
Deceased	0	(19)	(4)	(21)	(44)
New Beneficiary	0	0	0	5	5
July 1, 2019	0	341	206	251	798

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

APPENDIX A – MEMBERSHIP INFORMATION

Service Retired Participants

Age	Police		Fire		Total	
	Number	Total Annual Benefit	Number	Total Annual Benefit	Number	Total Annual Benefit
< 50	0	\$0	0	\$0	0	\$0
50-54	0	\$0	0	\$0	0	\$0
55-59	0	\$0	0	\$0	0	\$0
60-64	0	\$0	0	\$0	0	\$0
65-69	32	\$2,478,381	2	\$141,947	34	\$2,620,329
70-74	93	\$7,094,911	23	\$1,638,511	116	\$8,733,422
75-79	75	\$5,507,600	31	\$2,524,962	106	\$8,032,562
80-84	22	\$1,931,751	13	\$1,150,005	35	\$3,081,755
85-89	11	\$820,048	13	\$986,182	24	\$1,806,230
90-94	6	\$530,159	13	\$1,237,336	19	\$1,767,494
95-99	2	\$165,066	5	\$381,536	7	\$546,602
100+	0	\$0	0	\$0	0	\$0
Total	241	\$18,527,915	100	\$8,060,478	341	\$26,588,393

Disability Retired Participants

Age	Police		Fire		Total	
	Number	Total Annual Benefit	Number	Total Annual Benefit	Number	Total Annual Benefit
< 50	0	\$0	0	\$0	0	\$0
50-54	0	\$0	0	\$0	0	\$0
55-59	0	\$0	0	\$0	0	\$0
60-64	0	\$0	0	\$0	0	\$0
65-69	9	\$631,236	11	\$727,128	20	\$1,358,364
70-74	56	\$4,108,597	37	\$2,631,149	93	\$6,739,746
75-79	26	\$1,867,605	31	\$2,350,391	57	\$4,217,996
80-84	10	\$748,019	9	\$787,392	19	\$1,535,411
85-89	5	\$407,755	8	\$670,644	13	\$1,078,399
90-94	1	\$111,785	2	\$182,354	3	\$294,138
95-99	0	\$0	1	\$63,958	1	\$63,958
100+	0	\$0	0	\$0	0	\$0
Total	107	\$7,874,996	99	\$7,413,016	206	\$15,288,012

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

APPENDIX A – MEMBERSHIP INFORMATION

Beneficiaries

Age	Police		Fire		Total	
	Number	Total Annual Benefit	Number	Total Annual Benefit	Number	Total Annual Benefit
< 50	0	\$0	0	\$0	0	\$0
50-54	0	\$0	0	\$0	0	\$0
55-59	1	\$69,896	1	\$83,666	2	\$153,562
60-64	3	\$166,930	4	\$208,384	7	\$375,315
65-69	15	\$786,304	9	\$551,554	24	\$1,337,858
70-74	28	\$1,445,175	14	\$797,000	42	\$2,242,175
75-79	21	\$1,061,570	17	\$962,928	38	\$2,024,497
80-84	12	\$736,686	16	\$922,431	28	\$1,659,117
85-89	14	\$840,522	24	\$1,162,612	38	\$2,003,134
90-94	26	\$1,464,351	30	\$1,710,967	56	\$3,175,318
95-99	6	\$324,839	7	\$359,756	13	\$684,594
100+	1	\$74,685	2	\$128,824	3	\$203,509
Total	127	\$6,970,958	124	\$6,888,121	251	\$13,859,080

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

The assumptions and methods used in the actuarial valuation as of July 1, 2019 are:

Actuarial Method

The Entry Age Normal Actuarial Cost Method is used. Under this method, the Plan's Actuarial Liability (AL) is determined as the Present Value of Future Benefits (PVFB) less the Present Value of Future Normal Costs (PVFNC). Since all of the Plan's members are retired, the AL and the PVFB are the same.

The excess of the AL over the Actuarial Value of Assets (AVA) is the Unfunded Actuarial Liability (UAL). In accordance with the Plan's funding agreement with the City of Oakland, the UAL must be amortized by July 1, 2026, with contributions resuming in the 2017-2018 fiscal year. The projected fiscal year 2020-2021 contribution has been calculated using level percent of pay amortization, based on total projected City payroll for all Safety employees.

Actuarial Value of Plan Assets

In determining the recommended employer contribution to the PFRS, we use a smoothed Actuarial Value of Assets. The asset smoothing method dampens the volatility in asset values that could occur because of the fluctuations in market conditions. Use of an asset smoothing method is consistent with the long-term nature of the actuarial valuation process. Assets are assumed to be used exclusively for the provision of retirement benefits and expenses.

The Actuarial Value of Assets is equal to 100% of the *expected Actuarial Value of Assets* plus 20% of the difference between the current Market Value of Assets and the expected Actuarial Value of Assets. In no event will the Actuarial Value of Assets ever be less than 90% of the Market Value of Assets or greater than 110% of the Market Value of Assets.

The expected Actuarial Value of Assets is equal to the prior year's Actuarial Value of Assets increased with actual contributions made, decreased with actual disbursements made, all items (prior assets, contributions, and disbursements) further adjusted with expected investment returns for the year.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

Actuarial Assumptions

The assumptions used in this report reflect the results of an experience study performed by Cheiron covering the period from July 1, 2014 through June 30, 2017 and adopted by the Board. More details on the rationale for the demographic and economic assumptions can be found in the experience analysis presented to the Board on February 28, 2018.

1. Rate of Return

The expected annual rates of return, net of investment expenses, on all Plan assets are shown in the table below. The equivalent single discount rate for these returns using the Plan's expected projected benefit payments is 5.50%.

Benefit Payment Year	Expected Return
2019-2026	6.000%
2027	5.725%
2028	5.450%
2029	5.175%
2030	4.900%
2031	4.625%
2032	4.350%
2033	4.075%
2034	3.800%
2035	3.525%
2036+	3.250%

2. Inflation

The assumed rate of general inflation is 2.75% (entire US) and local inflation is 2.85% (Bay Area). The general inflation rate is used in the determination of the investment return assumptions. The local inflation rate is used in the determination of the growth in expenses and salaries (which determine the COLA increases).

3. Administrative Expenses

Administrative expenses for the Fiscal Year Ending June 30, 2020 are assumed to be \$1,600,000, growing at 2.85% per year.

4. Cost-of-Living Adjustments and Long-Term Salary Increases

Cost-of-living adjustments are based on salary increases for a retiree's rank at retirement.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

The long-term rate of salary increase is assumed to be 3.25% (2.85% inflation plus 0.4% productivity). The following schedule shows salary increases based on the current Police contract that expires on June 30, 2023 and the Fire contract that expires on October 31, 2020. All increases shown after those dates are assumptions (we have assumed a 3.25% increase for Fire will occur in FY2020-21).

Post-Retirement Benefit Increases (Based on Salary Increases for Rank at Retirement)		
Date of Increase	Police	Fire
November 1, 2019	0.00%	2.00%
July 1, 2020	2.50%	3.25%
July 1, 2021	3.00%	3.25%
July 1, 2022	3.50%	3.25%
July 1, 2023	3.50%	3.25%
Annual Increases		
Starting	3.25%	3.25%
July 1, 2024		

5. Rates of Termination

None

6. Rates of Disability

None

7. Rates of Retirement

None

8. Rates of Mortality for Healthy Lives

CalPERS Healthy Annuitant Table from the 2012-2015 experience study, excluding the 15-year projection using 90% of Scale MP-2016.

9. Rates of Mortality for Disabled Retirees

CalPERS Industrial Disability Mortality Table from the 2012-2015 experience study, excluding the 15-year projection using 90% of Scale MP-2016.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

10. Mortality Improvement

The mortality tables are projected to improve with MP-2017 generational mortality improvement tables, with improvements projected from a base year of 2014 (the mid-point of the CalPERS base tables).

11. Survivor Continuance

30% of disabled retirees' deaths are assumed to be related to injuries arising out of the performance of duty, entitling the surviving spouse to a 100% continuance.

12. Changes in Assumptions Since the Last Valuation

The administrative expense assumption increased to \$1.6 million and the Longevity Pay assumption for Fire members was removed, as Longevity Pay was included in the June 30, 2019 benefits provided by PFRS staff. No other changes were made to the actuarial assumptions.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

1. Plan Year

July 1 to June 30.

2. Membership

The Plan has been closed to new members since June 30, 1976.

3. Salary

Retirement allowances are based on the pensionable compensation attached to the average rank held during the three years immediately preceding retirement.

4. Employee Contributions

There are no active employees in the Plan, and thus no employee contributions.

5. Service Retirement

Eligibility

25 years of service, or 20 years of service and age 55, or age 65. A reduced early retirement is available with 20 years of service.

Benefit Amount

50% of Salary plus 1.67% for each additional year of service beyond that required for service retirement eligibility, to a maximum of 10 years. For retirements with less than 20 years of service, benefits are pro-rated.

6. Duty-Related Disability Retirement

Equivalent to service retirement benefit if 25 or more years of service.

7. Non-Duty Related Disability Retirement

Equivalent to service retirement benefit if age 55 is attained.

8. Post-Retirement Death Benefit

For retirees without a spouse at death, a \$1,000 lump sum is paid to designated beneficiary.

9. Cost-of-Living Adjustments

Benefit increases are based on increases in salary for rank at retirement (see above definition of Salary).

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

10. Benefit Forms

Benefit is paid for the lifetime of the member. For non-duty related deaths after retirement, a 66-2/3% continuance is paid for the lifetime of the spouse. If the death is duty-related, a continuance of 100% is paid.

11. Changes in Plan Provisions Since the Last Valuation

None

APPENDIX D – GLOSSARY

1. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs such as mortality, withdrawal, disability, retirement, changes in compensation, and rates of investment return.

2. Actuarial Cost Method

A procedure for determining the actuarial present value of pension plan benefits and expenses and for developing an allocation of such value to each year of service, usually in the form of a normal cost and an Actuarial Liability.

3. Actuarial Gain (Loss)

The difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

4. Actuarial Liability

The portion of the Actuarial Present Value of Projected Benefits that will not be paid by future normal costs. It represents the value of the past normal costs with interest to the valuation date.

5. Actuarial Present Value (Present Value)

The value as of a given date of a future amount or series of payments. The actuarial present value discounts the payments to the given date at the assumed investment return and includes the probability of the payment being made.

6. Actuarial Valuation

The determination, as of a specified date, of the normal cost, Actuarial Liability, Actuarial Value of Assets, and related actuarial present values for a pension plan.

7. Actuarial Value of Assets

The value of cash, investments, and other property belonging to a pension plan as used by the actuary for the purpose of an actuarial valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values.

8. Actuarially Equivalent

Of equal actuarial present value, determined as of a given date, with each value based on the same set of actuarial assumptions.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2019**

APPENDIX D – GLOSSARY

9. Amortization Payment

The portion of the pension plan contribution that is designed to pay interest and principal on the Unfunded Actuarial Liability in order to pay for that liability in a given number of years.

10. Entry Age Normal Actuarial Cost Method

A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages.

11. Funded Ratio

The ratio of the Actuarial Value of Assets to the Actuarial Liabilities.

12. Normal Cost

That portion of the actuarial present value of pension plan benefits and expenses that is allocated to a valuation year by the actuarial cost method.

13. Projected Benefits

Those pension plan benefit amounts which are expected to be paid in the future under a particular set of actuarial assumptions, taking into account such items as increases in future compensation and service credits.

14. Unfunded Actuarial Liability

The excess of the Actuarial Liability over the Actuarial Value of Assets.



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