Marin County Employees' Retirement Association

Investment Committee Meeting

June 17, 2020, 9:00 AM

UPDATED VIEWING INSTRUCTIONS

The meeting can be accessed on MCERA's YouTube channel at <u>https://youtu.be/th66E5wc0gA</u>

To resolve technical difficulties, this link replaces the link in the original meeting agenda.

AGENDA

INVESTMENT COMMITTEE MEETING MARIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION (MCERA)

One McInnis Parkway, 1st Floor Retirement Board Chambers San Rafael, CA

June 17, 2020 – 9:00 a.m.

This meeting will be held via teleconference pursuant to Executive Order N-25-20, issued by Governor Newsom on March 12, 2020, Executive Order N-29-20, issued by Governor Newsom on March 17, 2020, and Executive Order N-35-20, issued by Governor Newsom on March 21, 2020.

The public may listen to and observe the meeting on YouTube at: <u>https://youtu.be/G1Crfi9UdKs</u>.

If members of the public wish to comment, those comments may be submitted to MCERA via email at MCERABoard@marincounty.org. This account will be monitored prior to and for the duration of the meeting. If the comment pertains to a particular agenda item, please identify that item number and the comment will be read to the Committee during that discussion. Otherwise, the comment will be read under Item A, Open Time for Public Expression. All public comments submitted before or during the meeting that pertain to topics within the jurisdiction of the MCERA Board and otherwise comply with MCERA guidelines will be read in open session and kept as part of the permanent record.

The Board of Retirement encourages a respectful presentation of public views to the Committee. The Committee, staff and public are expected to be polite and courteous, and refrain from questioning the character or motives of others. Please help create an atmosphere of respect during Board Committee meetings.

CALL TO ORDER

ROLL CALL

A. OPEN TIME FOR PUBLIC EXPRESSION

Note: The public may also address the Committee regarding any agenda item when the Committee considers the item.

Open time for public expression, from three to five minutes per speaker, on items not on the Committee Agenda. While members of the public are welcome to address the Committee during this time on matters within the Committee's jurisdiction, except as otherwise permitted by the Ralph M. Brown Act (Government Code Sections 54950 et seq.), no deliberation or action may be taken by the Committee concerning a non-agenda item. Members of the Committee may (1) briefly respond to statements made or questions posed by persons

addressing the Committee, (2) ask a question for clarification, or (3) provide a reference to staff for factual information.

B. MANAGER REPORTS

- 1. Manager Overview Jim Callahan, Callan LLC
- 2. Invesco Commodities David Gluch, Delia Roges 9:05 a.m.
- 3. <u>Artisan Partners International Growth Equity Sean Howley, Andrew Euretig 9:25</u> <u>a.m.</u>

C. <u>NEW BUSINESS</u>

- 1. <u>Capital Market Projections and Asset Allocation Review Jay Kloepfer, Callan LLC –</u> <u>10:00 a.m.</u>
- 2. <u>Investment Opportunities Distressed Investments Catherine Beard, Senior Vice</u> <u>President, Alternatives Consulting Group, Callan LLC – 10:45 a.m.</u>
- 3. Investment Manager Update Parametric Emerging Markets, Anne Heaphy, Callan LLC
- 4. Investment Manager Update UBS Trumbull Property Fund, Anne Heaphy, Callan LLC
- 5. Investment Manager Update AEW Core Property Trust, Anne Heaphy, Callan LLC
- <u>Disposition of Dividends in Real Estate Portfolio Anne Heaphy, Callan LLC</u> Consider and take possible action on disposition of dividends received in AEW and UBS real estate portfolios
- 7. Investment Policy Statement Updates (Action)

Consider and take possible action on recommended amendments to Investment Policy Statement regarding Appendix B-8, Western Asset Management, Statement of Objectives, Guidelines & Procedures: Update guidelines to reflect increased limitations to contingent convertible securities and preferred stock and below investment grade securities.

D. INVESTMENT CONSULTANT QUARTERLY REPORT

- 1. Quarterly Report as of March 31, 2020
 - a. Summary Report
 - b. Flash Performance Report May 31, 2020

Note on Process: Items designated for information are appropriate for Committee action if the Committee wishes to take action.



Agenda material is provided upon request. Requests may be submitted by email to MCERABoard@marincounty.org, or by phone at (415) 473-6147.

MCERA is committed to assuring that its public meetings are accessible to persons with disabilities. If you are a person with a disability and require an accommodation to participate in a County program, service, or activity, requests may be made by calling (415) 473-4381 (Voice), Dial 711 for CA Relay, or by email at least five business days in advance of the event. We will do our best to fulfill requests received with less than five business days' notice. Copies of documents are available in alternative formats upon request.

The agenda is available on the Internet at <u>http://www.mcera.org.</u>

B.1 Manager Overview

There is no backup for this agenda item.



B.2 Invesco Balanced-Risk Commodity Strategy April 2020 Update

Marin County Employees' Retirement Association June 17, 2020



For one-on-one US institutional investor use only

All material presented is compiled from sources believed to be reliable and current, but accuracy cannot be guaranteed. This is being provided for informational purposes only, is not to be construed as an offer to buy or sell any financial instruments and should not be relied upon as the sole factor in any investment making decision. This should not be considered a recommendation to purchase any investment product. As with all investments there are associated inherent risks.

This does not constitute a recommendation of any investment strategy for a particular investor. Investors should consult a financial professional before making any investment decisions if they are uncertain whether an investment is suitable for them. Please read all financial material carefully before investing. For additional educational information about the strategy, contact Invesco. Past performance is not indicative of future results. This portfolio is actively managed. Portfolio holdings and characteristics are subject to change. The opinions expressed herein are based on current market conditions and are subject to change without notice. These opinions may differ from those of other Invesco investment professionals.

Investment products offered are Not FDIC Insured, May Lose Value, and are Not Bank Guaranteed. Invesco Advisers, Inc. is an investment adviser and does not sell securities. It is an indirect, wholly owned subsidiary of Invesco Ltd.

05/20 NA5576



Deflation versus Inflation

Strategy Performance Review and Marin County Results

B.2

Additional information

Case for Deflation It's all about the debt



- Deflation is a decline in the general price level
- Unproductive debt that that has low or no payback via cashflows can suppress economic growth and inflation

B.2

- High corporate debt levels prior to Covid-19 may require an extended period of balance sheet repair
- Demographics add to deflationary pressure
- Falling interest rates reflect lower growth and inflation
- US following the path of Japan

Case for Deflation ^{B.2} Higher debt has led to lower interest rates





Source: Invesco. For illustrative purposes only.

Case for Deflation ^{B.2} Velocity of money has declined with rising debt





Source: Invesco. For illustrative purposes only.

Case for Inflation It's all about the debt

Invesco

• Inflation is the antidote for deflation because it devalues the debt load

B.2

- The Fed's balance sheet is increasing while declining in quality
 - Portends a lower US dollar
- Low real interest rates required to spur inflation
- Possible turn to Modern Monetary Theory and Universal Basic Income
- Commodity supply shocks possible due to falling production, reduced capital investment and maturing geology
- Deglobalization may lead to an increase in geopolitical conflict

Case for Inflation Higher deficits means more debt





B.2

Source: Invesco. For illustrative purposes only.

B.2 Three ways to finance a budget deficit



Taxation	Borro	wing	Printing Money			
Crowds out private sector spending	Crowds out p borrowing and	rivate sector d investment	Boosts total spending including govt. spending			
Transfer of Spending From Private Sector to Public Sector	From Non-Banks	From Banks*	Central Bank buys bonds in primary market	Interest rates and/or FX too low		
No increase in total spending:	No increase in total spending:	Increase in total spending:	Increase in total spending:	Increase in total spending:		
non-inflationary	non-inflationary	inflationary	inflationary	inflationary		

Source: Invesco Global Economics research.

*Can also be considered a form of printing money. For illustrative purposes only.

Case for Inflation Price of gold rising with money supply





Source: Invesco. For illustrative purposes only.

Deflation or Inflation? The US dollar will play a key role



- The US dollar is trading in the middle of its 20-year range
- The dollar typically rises during recessions due to the demand for liquidity and safe-haven protection
- A falling dollar will signal reflation and possibly inflation

10



Consumer Price Index B.2 Bias towards inflation since the 1930s



Source: Invesco. For illustrative purposes only.

Asset Classes and the Economic Environment

Directional impact due to changes in growth and inflation



Sources: Datastream, Invesco analysis. Period covered: 12/31/1969 - 04/30/2020.



Asset Classes and the Economic Environment The long commodity cycle





GSCI Light Energy: Rolling 5-Year Annualized Returns above Cash

- The commodity cycle tends to be long, reflecting the time it takes to adjust the balance between supply & demand
- The best cure for low commodity prices is low commodity prices
- Equities have enjoyed a long run following the GFC and bond yields are close to 40 year lows, while commodities remain near a trough in the latest cycle

Sources: Datastream, Invesco analysis. Period covered: 12/31/1969 - 03/31/2020.

Strategy Performance Review and Marin County Results

B.2

B.2 Invesco Balanced-Risk Commodity Strategy Investment process



Stra	tegic	
1	Asset selection	 The universe of assets is evaluated based on two key concepts; term structure (TS) and equal risk contribution (ERC)
2	Strategic Allocation	 The strategic allocation is built by balancing the risk contribution from the term structure (TS) and equal risk contribution (ERC) concepts
Tact	ical	
3	Tactical allocation	 Take advantage of optimal roll as well as short- to medium-term tactical opportunities with 3% ex-ante risk target
	Final portfolio	 Four targeted sources of return Target return objective of Bloomberg Commodity Index +5%

Source: Invesco. For illustrative purposes only.

B.2 Invesco Balanced-Risk Commodity Strategy Commodity market backdrop





- Commodity markets came under pressure over the first quarter of the year, with more economically sensitive markets, such as energy and industrial metals, declining the most.
- Energy suffered particularly heavy losses, down over 50% YTD, on fears of lower demand and the oil price war between Saudi Arabia and Russia.
- Precious metals also declined despite their safe-haven appeal, as investors sold what they could versus what they wanted, to raise cash.

Source: Invesco analysis. Peak represents recent high point of S&P 500 on 02/19/20. Data as of 03/31/20. Commodity sub-complexes represented by their respective Bloomberg Commodity sub-indices. Past performance cannot guarantee future results.

B.2 Oil volatility reaches a record high in 2020





B.2 Invesco Balanced-Risk Commodity Strategy Representative commodity performance returns





1 YR Ending April 2020



Sources: Bloomberg L.P., GSCI and Invesco analysis. Data as of 04/30/20 based on continuous future return indices. Commodities represented by the S&P GSCI sub-indices. Past performance is not a guarantee of future results.

B.2 Invesco Balanced-Risk Commodity Strategy Marin County Employees' Retirement Assoc. portfolio summary



Total Acc	count Summa	ary					Client Performance Cha	art (%)				
Month/ Year	Market Value (\$)	Portfolio (gross %)	Portfolio (net %)	Benchmark (%)	Gross Excess Return	Net Excess Return	Portfolio (gros 5 1.10 1.05	s) Portfolio	o (net) ■Be	enchmark		
04/2020	34,404,128	1.10	1.05	-1.54	2.64	2.58	-1.54					
03/2020	34,048,302	-16.18	-16.24	-12.81	-3.38	-3.43	<u>ళ</u> క్ష-10 ————————————————————————————————————			-8.09 -8.73	-6.23	-6.89 -6.70
02/2020	40,648,995	-4.31	-4.37	-5.04	0.73	0.67	₩ [₩] -15			_		
01/2020	35,903,667	-7.00	-7.05	-7.36	0.36	0.30	-20			3.18		
12/2019	38,628,686	4.29	4.23	5.04	-0.75	-0.81	-30	59.24.78-24.47	-24.51-25.05			
11/2019	37,060,684	-1.27	-1.33	-2.56	1.29	1.23	QTD	YTD	1 Year	3 Years	s li (1ception 5/19/16)
10/2019	37,559,807	1.83	1.78	2.02	-0.19	-0.25	Performance Table (%)				Gross	
09/2019	36,905,285	0.32	0.27	1.17	-0.85	-0.91	Period	Portfolio (gross %)	Portfolio (net %)	Benchmark ¹	Excess Return	Net Excess Return
08/2019	36,807,248	-1.91	-1.97	-2.32	0.41	0.35	QTD	1.10	1.05	-1.54	2.64	2.58
07/2019	37,546,550	-0.42	-0.48	-0.67	0.25	0.19	YTD	-24.59	-24.78	-24.47	-0.11	-0.30
	07 700 040						1 Year	-24.51	-25.05	-23.18	-1.33	-1.87
06/2019	37,728,346	3.05	2.99	2.69	0.36	0.31	3 Years	-8.09	-8.73	-8.62	0.53	-0.12
05/2019	36,632,294	-5.46	-5.52	-3.36	-2.09	-2.15	Since Inception (5/19/16)	-6.23	-6.89	-6.70	0.47	-0.18

All data as of 04/30/20. Source: Invesco analysis. Marin County Employees' Retirement Association fee schedule is 70 bps. *Portfolio performance inception: 05/19/16. ¹Bloomberg Commodity Index. The Dow Jones-UBS Commodity Index changed it's name to the Bloomberg Commodity Index on July 1, 2014.

Invesco Balanced-Risk Commodity Strategy



Marin County Employees' Retirement Assoc. performance attribution

B.2



YTD (gross %) 5.0 0.53 0.15 0.0 -5.0 -10.0-15.0 -20.0 -20.76 3.90 -25.0 -3.62 -24.59 -30.0 Cash Precious Energy Industrial Total Agriculture/ Tactical Metals Metals Livestock Allocation



Source: Invesco analysis. Data as of 04/30/20. *Portfolio performance inception: 05/19/16. Note: Returns are gross of fees; net returns will be lower. Past performance is not a guarantee of future results.

For one-on-one US institutional investor use only

B.2 Invesco Balanced-Risk Commodity Strategy Performance attribution





April relative attribution to BCOM (gross %)

YTD relative attribution to BCOM (gross %)



1 year relative attribution to BCOM (gross %) Since Client Inception relative attribution to BCOM (gross %)



Source: Invesco analysis. Data as of 04/30/20. *Portfolio performance inception: 05/19/16. Note: Returns are gross of fees; net returns will be lower. Past performance is not a guarantee of future results. *Since Client Inception relative attribution data reflects the first full month of performance.

Invesco Balanced-Risk Commodity Strategy



Risk contribution and notional exposure



B.2

Total Notional Exposure (%)



Source: Invesco analysis. The risk contributions represent each asset class as a percentage of the total portfolio standard deviation in the month in which it was implemented. Notional exposure in the month in which it was implemented. Data as of 04/30/20.

For one-on-one US institutional investor use only

^{B.2} Invesco Balanced-Risk Commodity Strategy Asset allocation versus the Bloomberg Commodity Index



			Invesco	Active Weight			
		Strategic	Tactical	Total	Bloomberg	-	
Agriculture/Livestock		33.28%	-4.24%	29.05%	40.65%	-13.33%	
	Cocoa	0.08%	1.25%	1.34%	0.00%	4.47%	
	Coffee	1.89%	-0.25%	1.65%	3.43%	-1.77%	
	Corn	1.93%	-1.79%	0.14%	6.70%	-8.63%	
	Cotton	7.56%	-0.51%	7.05%	1.42%	5.09%	
	Lean Hogs	0.16%	-1.36%	-1.20%	2.01%	-3.23%	
	Live Cattle	0.19%	-0.32%	-0.13%	3.79%	-3.99%	
	Soybean	7.33%	0.70%	8.02%	6.86%	-0.95%	
	Soybean Oil	1.81%	-1.35%	0.46%	2.92%	-5.78%	
	Soymeal	7.60%	0.23%	7.83%	4.56%	4.00%	
	Sugar	2.49%	0.00%	2.49%	2.99%	-0.58%	
	Wheat	2.24%	-0.69%	1.55%	4.08%	0.34%	
	Kansas Wheat	0.00%	-0.15%	-0.15%	2.00%	-2.40%	
Energy		25.81%	-6.07%	19.76%	19.16%	0.18%	
	Gas Oil	3.25%	-1.33%	2.33%	1.61%	2.54%	
	Natural Gas	2.31%	-2.07%	0.24%	7.86%	-8.05%	
	Brent Crude Oil	7.12%	-0.71%	6.41%	3.95%	1.56%	
	WTI Crude Oil	2.97%	-0.70%	2.27%	3.39%	-0.91%	
	Heating Oil	2.91%	-0.90%	2.02%	1.35%	0.50%	
	Unleaded Gasoline	7.25%	-0.76%	6.49%	1.00%	4.55%	
Industrial Metals		19.21%	-4.68%	14.53%	18.41%	-2.51%	
	Aluminum	7.65%	-3.96%	3.69%	4.69%	-4.36%	
	Copper	11.56%	0.34%	11.90%	7.20%	6.16%	
	Nickel	0.00%	0.24%	0.24%	2.94%	0.04%	
	Zinc	0.00%	-1.30%	-1.30%	3.59%	-4.36%	
Precious Metals		21.70%	2.15%	23.83%	21.68%	5.60%	
	Gold	14.97%	1.73%	16.70%	17.91%	-0.08%	
	Silver	6.73%	0.42%	7.13%	3.77%	5.69%	
Grand Total		100.00%	-12.84%	87.17%	100.00%	-10.06%	

Sources: Invesco analysis and Bloomberg. Past allocations are not a guarantee of future allocations. Data as of 04/30/20.

B.2 Invesco Balanced-Risk Commodity Composite – USD Composite performance history





Performance (%)	1 Month (%)	3 Months (%)	YTD (%)	1 year (%)	2 years (annualized %)	3 years (annualized %)	5 years (annualized %)	Since inception (annualized %)	Since inception risk (%)
Invesco Balanced-Risk Commodity Strategy Composite – USD (gross)	1.06	-18.92	-24.59	-24.58	-16.34	-8.11	-6.18	-1.55	17.34
Bloomberg Commodity Index	-1.54	-18.48	-24.47	-23.18	-15.95	-8.62	-9.07	-7.87	15.75
GSCI Index	-9.67	-41.60	-47.92	-48.19	-29.87	-15.62	-16.35	-13.80	23.22
Excess vs. Bloomberg Commodity Index	2.60	-0.44	-0.12	-1.40	-0.39	0.51	2.89	6.32	

Sources: Invesco analysis and Bloomberg L.P. Strategy inception: 09/30/08. Past performance is not a guarantee of future results. Data as of 04/30/20. Please see additional information section for complete performance and GIPS® disclosure



B.2 Invesco Balanced-Risk Commodity Strategy Investment process review





Sources: Invesco analysis and Bloomberg L.P. Time period represented: 09/30/90 – 12/31/18. **Backwardation** refers to a status where prices of futures contracts with a longer maturity are lower than the spot price of the commodity. **Contango** refers to a status where prices of futures contracts with a longer maturity are higher than the spot price of the commodity. **Excess** return relative to cash. * GSCI Index. Sources: Invesco analysis and DataStream. Inception date is 05/07/07. For illustrative purposes only. Past performance cannot guarantee future results.

Invesco Balanced-Risk Commodity Strategy

Term structure – based asset selection for strategic allocation



Strategic Commodity Selection

B.2

100%	70%	30% 0%		
Soy Meal	Gold	Corn		
Cotton	Silver Soybean Oil			
Unleaded Gasoline	WTI Crude Aluminum			
Soybeans	Gas Oil	Coffee		
Copper	Heating Oil	Natural Gas		
Brent Crude	Sugar	Wheat		

Source: Invesco analysis. As of 04/30/20. For illustrative purposes only.

B.2 Invesco Balanced-Risk Commodity Strategy Step two: Strategic allocation – risk-balanced approach





Summary

- The strategic combination of TS and ERC reduces both volatility and material concentration in unattractive assets
- The combination is riskbalanced so each concept contributes equally to the strategic allocation

Bubble size reflects beta to Bloomberg Commodity Index (BCOM). Bubble to left reflects a beta of 1.0. TS stands for Term Structure, ERC for Equal Risk Contribution and BCOM for Bloomberg Commodity Index.

Sources: CRB, Bloomberg L.P., Datastream, Invesco analysis. Bloomberg Commodity Index used as a proxy for portfolios. Inception date 7/14/98. Performance prior to inception dates is back-tested and not actual performance. Index returns are not representative of strategy returns and provide no assurance of future performance. Please see important information slide in the additional information section for complete simulation disclosure.

For one-on-one US institutional investor use only

 $\beta = 1.0$

B.2 Invesco Balanced-Risk Commodity Strategy

Step three: Tactical allocation



Directional			Factor Style Prer	nia		
Supply and Demand	Objectively determine the supply – demand balance and understand the impact on future prices		Buy cheap, sell expensive	Value		
+				+		
Economic Environment	Measure the impact of the economic environment on asset prices		Buy high yield, sell low yield	Carry		
+				+		
Investor Positioning	Take advantage of behavioral biases as expressed in short- and intermediate-term price movements		Buy winners, sell losers	Momentum		
Total Tactical						
Risk-balanced aggregation of both concepts						

Source: Invesco analysis. For illustrative purposes only. Although every effort will be made, it cannot be guaranteed that the stated targets will be reached.

B.2 Invesco Balanced-Risk Commodity Strategy Step three: Tactical allocation – combined approach



Annualized Risk & Return by Tactical Allocation Approach (7/98 – 12/18)

Sources: Invesco analysis, Bloomberg. Simulation from 07/31/98 - 12/31/18. There is no guarantee that the simulated results will be realized in the future. Please see important information slide in the additional information section for complete simulation disclosure.

B.2 Invesco Balanced-Risk Commodity Strategy Step three: Tactical allocation – optimal roll yield





Sources: Invesco analysis and DataStream. Data from 12/31/91 to 12/31/18. For illustrative purposes only. Front Month return is the GSCI Crude Oil excess return. Optimal Roll return is the Deutsche Bank Optimum Yield Light Crude Oil excess return. Past performance is not a guarantee of future results.
Invesco Balanced-Risk Commodity Strategy Impact of tactical allocation on total portfolio exposure

B.2



Strategic asset allocation:

Determined monthly by balancing the risk contribution between TS and ERC

Tactical asset allocation:

Combination of directional and factor style premia tilts; implemented monthly with an ex-ante risk budget of 3%

Tactical process results in net notional exposure that can range from 75% to 125% invested





Source: Invesco analysis. For illustrative purposes only. Although every effort will be made, it cannot be guaranteed that the stated targets will be reached.

B.2 Invesco Balanced-Risk Commodity Composite – USD

Invesco

Excess return attribution since inception



Sources: Invesco analysis, Merrill Lynch and Bloomberg L.P. Strategy inception: 09/30/08. Past performance is not a guarantee of future results. Returns are gross of fees; net returns will be lower. Data as of 04/30/20. Please see additional information section for complete performance and GIPS® disclosure. Figures may not add due to rounding.

Invesco Balanced-Risk Commodity Strategy

Marin County Employees' Retirement Assoc. asset growth



Portfolio Changes (Retirement Plan)	Amount
Initial Value Invested as of 5/19/16	\$30,000,000
Net Additions/Withdrawals	-\$983,294
Income Received	15,100,000
Market Appreciation	-\$9,712,530
Market Value as of 04/30/20	\$ 34,404,128

B.2

Past performance is not indicative of future results.

B.2 Invesco Balanced-Risk Commodity Composite – USD **GIPS®** Compliant Sch

Schedule	e of Inv	estme	ent Perf	ormano	ce				
Period	Gross Rate of Return (%)	Net Rate of Return (%)	Benchmark Return (%)	Composite 3-Yr St Dev (%)	Benchmark 3-Yr St Dev (%)	Number of Portfolios	Composite Assets (USD millions)	Total Firm Assets ¹ (USD billions)	Composite Dispersion (%)
2019	6.18	5.44	7.69	8.95	8.58	3	1,331.66	825.87	0.06
2018	(10.97)	(11.59)	(11.25)	10.94	9.73	3	1,590.5	578.9	n/a
2017	6.04	5.30	1.70	11.95	12.48	2	1,283.9	660.3	n/a
2016	14.35	13.55	11.77	12.36	14.26	2	811.8	599.0	n/a
2015	-15.61	-16.19	-24.66	11.43	12.69	2	418.0	575.1	n/a
2014	-15.39	-15.97	-17.01	13.71	12.67	2	570.8	584.9	n/a
2013	-13.06	-13.66	-9.52	19.45	14.83	2	767.2	572.8	n/a
2012	8.77	8.01	-1.06	20.64	17.91	2	450.9	497.1	n/a
2011	-7.14	-7.78	-13.32	21.35	18.37	2	903.6	479.8	n/a
2010	31.1	30.19	16.83	n/a	n/a	2	350.8	475.3	n/a
2009	52.29	51.23	18.91	n/a	n/a	2	161.1	298.2	n/a
2008 (3 months)	-22.93	-23.06	-30.05	n/a	n/a	1	7.7	254.6	n/a
Returns less than o	one year are not	annualized.							
Annualized Comp	ound Rates of	Return Endir	ng December 3	1, 2019:					
1 Year	6.18	5.44	7.69						
2 Years	(2.78)	(3.45)	(2.23)						
3 Years	0.08	(0.62)	(0.94)						

Annualized Compound	Rates of Re	eturn Ending I	December 31	, 2019:
---------------------	-------------	----------------	-------------	---------

1 Year	6.18	5.44	7.69	
2 Years	(2.78)	(3.45)	(2.23)	
3 Years	0.08	(0.62)	(0.94)	
4 Years	3.47	2.75	2.10	
5 Years	(0.66)	(1.35)	(3.92)	
10 Years	(0.59)	(1.28)	(4.73)	
Since Inception (9/30/2008)	0.90	0.20	(5.77)	

Currency: US dollar. *Inception date: 09/30/08. For complete GIPS® disclosure, see following page.

Invesco Worldwide claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Invesco Worldwide has been independently verified for the periods 1st January 2003 through 31st December 2018. The legacy firms that constitute Invesco Worldwide have been verified since 2001 or earlier. 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.



B.2 Invesco Balanced-Risk Commodity Composite – USD GIPS® Compliant – Performance Notes



- 1 Invesco Worldwide ("The Firm") manages a broad array of investment strategies around the world. The Firm comprises U.S.-based Invesco Advisers, Inc. (excluding Unit Investment Trusts) and all wholly owned Invesco firms outside of North America (excluding Invesco India and Source Investment Management Limited). All entities within the Firm are directly or indirectly owned by Invesco Ltd. Invesco Canada Ltd. is also a GIPS-compliant firm whose assets are managed by a subsidiary of Invesco Ltd. Invesco Senior Secured Management, Inc., Invesco Private Capital, Inc., and Invesco Capital Management LLC are affiliates of the Firm. Each is an SEC-registered investment adviser and is marketed as a separate entity. Invesco Great Wall Fund Management Co. Ltd is a fund management company established under China Securities Regulatory Commission's approval, and its assets are excluded from total Firm assets. On May 24, 2019 Invesco acquired Massachusetts Mutual Life Insurance Company's asset management affiliate Oppenheimer Funds. As a result of this transaction assets previously part of the OFI Global Asset Management (OFI Global) GIPS® firm will now be part of Invesco Worldwide (IWW) GIPS® firm. Firm assets under management for OFI Global as of December 31, 2018 were \$214 billion. IWW historical firm assets have not been restated to reflect the acquisition. OFI Global was independently GIPS® verified through December 31, 2018.
- 2 The objective of the Balanced-Risk Commodity investment strategy is to outperform the index, Bloomberg Commodities Index, by 5% per annum over a rolling three to five year investment horizon. The strategy will strive to achieve this objective with a proprietary risk parity strategy that targets lower portfolio risk than the benchmark and seeks to minimize the risk of large draw downs with a risk-balanced investment process. Portfolio risk is defined as the annualized standard deviation of the strategy's returns. Effective March 30, 2012, the Composite name was changed from Invesco Balanced-Risk Commodity Strategy Composite to Invesco Balanced-Risk Commodity Strategy Composite to Invesco Balanced-Risk Commodity Composite USD.
- 3 The Composite returns are benchmarked to Bloomberg Commodity Total Return Index, (formerly known as the Dow Jones-UBS Commodity Index). The benchmark is used for comparative purposes only. Investments made by the Firm for the portfolios it manages according to respective strategies may differ significantly in terms of security holdings, industry weightings, and asset allocation from those of the benchmark. Accordingly, investment results and volatility will differ from those of the benchmark.
- 4 The Balanced Risk Commodities Strategy invests primarily in derivatives including commodity futures, exchange traded funds, and commodity linked notes. The composite notional value will generally not exceed 1.5 times capital.
- 5 Valuations and portfolio total returns are computed and stated in U.S. Dollars. The Firm consistently values all portfolios each day on a trade date basis. Portfolio level returns are calculated as time-weighted total returns on daily basis. Accrual accounting is used for all interest and dividend income. Past performance is not an indication of future results.
- 6 Carve-outs from multi-asset class portfolios are included within this composite for the partial year 2008 and 2009. Carve-out returns were calculated by allocating cash to the commodities segment carve-out according to the strategic target cash position for the strategy. As of 31 December 2008 and 2009, carve-outs comprised 100% and 57% of the composite, respectively.
- 7 Composite dispersion is measured by the standard deviation across asset-weighted portfolio returns represented within the composite for the full year. It is considered not meaningful for composites with fewer than three portfolios during the year. The three-year annualized standard deviation measures the variability of the composite and the benchmark returns over the preceding 36 months. The standard deviation is not presented when there is less than 36 months.
- 8 Gross-of-fee performance results are presented before management and custodial fees but after all trading commissions and withholding taxes on dividends, interest and capital gains, when applicable. Net-of-fee performance results are calculated by subtracting the highest tier of our published fee schedule for the product from the monthly returns.

The management fee schedule is as follows:

70 basis points on the first \$100 million

60 basis points thereafter.

- 9 The minimum portfolio size for the Composite is \$5,000,000.
- 10 The composite creation date is April 29, 2010.
- 11 A complete list of composite descriptions is available upon request. Policies for valuing portfolios, calculating performance, and preparing compliant presentations is available upon request.

Invesco Disclaimer



For one-one Institutional Investor use only. All material presented is compiled from sources believed to be reliable and current, but accuracy cannot be guaranteed. This is not to be construed as an offer to buy or sell any financial instruments and should not be relied upon as the sole factor in an investment making decision. As with all investments there are associated inherent risks. Please obtain and review all financial material carefully before investing. Past performance is not indicative of future results. This does not constitute a recommendation of the suitability of any investment strategy for a particular investor. The opinions expressed herein are based on current market conditions and are subject to change without notice.

Derivatives Risk

The Invesco Balanced-Risk Commodity Strategy invests (directly or indirectly) a substantial portion of its assets in "derivatives"–socalled because their value "derives" from the value of an underlying asset (including an underlying security), reference rate or index–the value of which may rise or fall more rapidly than other investments. The strategy invests principally in exchange-traded futures across a diverse mix of assets including equities, bonds and commodities. The Invesco Balanced-Risk Commodity Strategy is a long-only strategy, so the portfolio will hold no net short positions at any time. For some derivatives, it is possible to lose more than the amount invested in the derivative. If the portfolio uses derivatives to "hedge" a portfolio risk, it is possible that the hedge may not succeed. This may happen for various reasons, including unexpected changes in the value of the rest of the portfolio. Over the counter derivatives are also subject to counterparty risk, which is the risk that the other party to the contract will not fulfill its contractual obligation to complete the transaction with the portfolio.

Leverage Risk

The Invesco Balanced-Risk Commodity Strategy employs leverage as a fundamental element within the investment strategy. The implementation of the strategy requires the use of derivatives and other leveraged instruments to create and adjust exposure to commodities. The use of derivatives facilitates the ability to create the desired level of leverage in the portfolio. Leverage may cause the portfolio to be more volatile than if the portfolio had not been leveraged because leverage can exaggerate the effect of any increase or decrease in the value of securities held by the portfolio.

Important information



The simulated results are for one-on-one institutional investor use only. The Balanced-Risk Commodity Strategy simulation presented in this presentation was created to consider possible results for strategies shown in this section that have not previously been managed by Invesco for any client. These performance results are hypothetical (not real) and were achieved by using a proprietary simulation environment using our stock return and risk forecasting models.

B.2

It may not be possible to replicate these results. The hypothetical results were derived by back-testing, using a simulated portfolio. There can be no assurance that the simulated results can be achieved in the future. While the model was used to reflect the investment process for the strategies, this model does not factor in all the economic and market conditions that can impact results. The simulation produced hypothetical monthly returns from July 1998 to December 2018, or as noted in the footnotes.

This simulation used pre-specified product parameters selected by Invesco given their optimal return and risk exposure outcome. Invesco cannot assure that the simulated performance results shown for the strategy would be similar to the firm's experience had it actually been managing portfolios using this strategy. In addition, the results actual investors might have achieved would vary from those shown because of differences in the timing and amounts of their investments.

The simulated performance is shown in US dollars and the results do not reflect the deduction of investment advisory fees. Returns shown for this simulation would be lower when reduced by the advisory fees and any other expenses incurred in the management of an investment advisory account. For example, an account with an assumed growth rate of 5% would realize a net of fees annualized return of 3.95% after three years, assuming a 1% management fee.

There are frequently material differences between back-tested performance and actual results. Back-tested performance may be designed with the benefit of hindsight. Past performance, whether actual or back-tested, is no indication or guarantee of future performance.

Invesco Global Asset Allocation

Investment strategies



Asset Class Focus	Strategies	
	Multi-Asset Suite	
EquitiesFixed IncomeCommodities	Less Tactical Global Allocation Balanced-Risk Allocation (9/08)* Global Allocation (1/14)* (9/08)* \$0.2 Billion \$13.4 Billion \$13.4 Billion	More Tactical Macro Allocation (9/12)* \$0.4 Billion
	Focused Outcomes	
Implement primarily with futures and other derivatives providing ample liquidity though will adjust where client outcomes require (e.g.,	InflationIncomeBalanced-RiskMulti-AssetCommoditiesIncome(9/08)*(12/11)*\$1.7 Billion\$2.2 Billion	Factor Commodity Style Premia (2/19)* \$87 Million
income)	Equity Suite	
	Defensive Growth	Portable Alpha
	US Int'I Global (12/17)* (6/18)* (6/18)* \$4 Million \$8 Million \$61 Million	US Small Cap Index Plus (9/19)* \$108 Million
	 Asset Class Focus Equities Fixed Income Commodities Implement primarily with futures and other derivatives providing ample liquidity though will adjust where client outcomes require (e.g., income)	Asset Class Focus Strategies • Equities • Fixed Income • Commodities Balanced-Risk Allocation (1/14)* Implement primarily with futures and other derivatives providing ample liquidity though will adjust where client outcomes require (e.g., income) Global Allocation (1/14)* Implement primarily with futures and other derivatives providing ample liquidity though will adjust where client outcomes require (e.g., income) Inflation Income (1/211)* Balanced-Risk (1/211)* S2.2 Billion Equity Suite Use (1/21/17)* Int'l Global (1/21)* Use (1/21/17)* Int'l Global (1/21)* Use (1/21/17)* Int'l Global (1/21)* Strategies Strategies

B.2

Source: Invesco as of 03/31/20. *Inception dates. **Total GAA assets include \$1.4 billion managed in multi-asset portfolios and eliminates double counting. Assets subject to rounding and may not equal total.

Invesco Global Asset Allocation Team summary





Research & PM

CPM, Implementation, Business Support

Average Experience



Long Tenure

B.2



Senior Portfolio Managers

Member	Role	Strats Ow ned ²	Yrs Exp Ttl / IVZ
Scott Wolle	CIO	•	29 / 21
Mark Ahnrud	Sr. PM	•	35 / 20
Chris Devine	Sr. PM	•	23 / 22
Scott Hixon	Sr. PM, Hd of Research	•	28 / 26
Christian Ulrich	Sr. PM	•	33 / 20

Low Turnover

Research & PM Changes¹



Senior PM Changes¹



Source: Invesco. As of 3/31/20. ¹Since Invesco Balanced-Risk Allocation inception 09/30/08. ²% of 5 key strategies that each team member invests in. • indicates all strategies, O indicates none of the strategies.

For one-on-one US institutional investor use only

Thank you

Invesco Advisers, Inc. is an investment adviser and does not sell securities.

B.2



Biography

Delia M. Roges Managing Director Regional Head of US Institutional Sales



Telephone: 415 445 3388 delia.roges@invesco.com

Invesco

101 California St, Suite 1800 San Francisco, CA 94111 institutional.invesco.com Delia M. Roges is the Regional Head of US Institutional Sales and Managing Director for the North America Institutional Sales team, with responsibility for new business generation and relationship management for institutional investors in the western United States, including Texas. As Invesco's lead liaison, she works closely with institutional plan sponsors to help manage the appropriate investment strategies and solutions to implement on behalf of their plans' strategic objectives.

Ms. Roges has been in the institutional investment management industry since 1994. Prior to joining Invesco in 2011, she was a senior member of a boutique investment banking and private placement firm focused on securing capital for private equity and real estate general partnerships. Previously, she served nearly 14 years as a senior vice president for Trust Company of the West (TCW), where she was responsible for advising institutional clients and developing product solutions primarily for new business development. She joined TCW in 1994 from Southern California Edison Company, where she held various investment positions in the corporate treasurer's department and in the pensions and investments group.

Ms. Roges earned an MBA from the University of Southern California and a BBA from Loyola Marymount University (LMU). She presently serves on the Board of Visitors at the School of Education at LMU and recently completed nine years on the LMU Board of Regents. She is currently a board trustee for both the Catholic Community Foundation and the Catholic Education Foundation of Los Angeles. Ms. Roges is a member of the Corporate Affiliate Advisory Board for the National Association of State Treasurers. Ms. Roges holds the Series 3, 7, 30, 63 and 79 registrations.



Biography

Dave Gluch, CFA[®] Client Portfolio Manager



Dave Gluch, CFA®

David Gluch has served as a Client Portfolio Manager for the Invesco Global Asset Allocation team since 2012. He works with clients across global institutional and retail channels, and he is a frequent speaker at industry conferences discussing the topics of asset allocation, commodities and risk management.

Mr. Gluch joined the firm in 1995. From 2005 to 2012, he served as head of US Product Management, where he oversaw product positioning, strategy and servicing for the retail and institutional channels. While in this role, he co-authored Invesco's educational and value-add program, "Rethinking Risk".

Mr. Gluch received his BBA in finance from the University of Texas. He is a Chartered Financial Analyst $^{\circ}$ (CFA) charterholder.

NOT FDIC INSURED | MAY LOSE VALUE | NO BANK GUARANTEE

Commodities Q&A with GAA CIO Scott Wolle

1. What impact has the Covid-19 virus had on commodity markets?

Commodities tend to perform best in periods with at least moderate real growth and rising inflation. The Covid-19 virus and associated social distancing measures have had a sharply negative impact on both growth and inflation. While risk assets have corrected sharply, the broad commodity-based S&P GSCI Light Energy index lost more than 27% during the first quarter, while the S&P GSCI Energy Index fell over 50%. That compares with a decline of 19% for global stocks represented by the MSCI ACWI. Since 1974, there have only been three quarterly results that were worse than the -27% return in 1Q 2020. Two of these occurred during the 2008-9 financial crisis and the other was in the 1975 oil crisis. Oil prices have been hit particularly hard by virus-related restrictions on travel, given that road transport and aviation account for roughly half of demand. Meanwhile, oil has also been hurt by a substantial increase in supply, as an OPEC agreement to restrain output broke down in early February and ended in the epic March 9 decision by Saudi Arabia to raise production and lower prices. The winner during the quarter was gold, which finished with a gain of 4% despite heavy selling pressure in March as investors indiscriminately sold assets in order to raise cash.*

2. Why have commodities struggled for so long even prior to Covid-19?

As noted previously, a sound place to begin thinking about commodities is with growth and inflation. Since the Global Financial Crisis, we've witnessed relatively meager growth around the world and inflation that has been below long-term targets. Even China, with real growth generally above 6%, has seen a gradual deceleration in its growth rates. In addition, over the last several years the US has been able to normalize monetary policy much more quickly than most other countries leading to a strong US Dollar. Since most commodities are priced in dollars, this creates a headwind for the asset class.

Alongside the macro environment, numerous industries have had to work through the overcapacity created in the enthusiastic period prior to 2008. A long series of closures, mergers, and other actions have brought capacity much closer to what's now required. The old saying in commodity markets, that "the best cure for low prices is low prices" remains true even if the process can move slowly.

3. If inflation was already low what can policy makers do now? If successful, will inflation skyrocket?

Policy makers had to respond aggressively to the economic consequences of the virus. The scale of GDP declines across the globe is unprecedented; many observers expect a 25% or larger annualized decline in GDP for many countries. To counter this and prevent permanent damage to the economy, the scale of the response has had to be enormous and has married fiscal and monetary policy. The Fed has taken a multi-faceted approach that includes cutting interest rates to zero, providing a huge liquidity provisions via repurchase transactions along with creating dollar swap lines between developed and emerging market central banks. The even larger component is an "unlimited" quantitative easing program that has been expanded versus prior rounds that will now purchase municipal bonds, corporate debt, including high-yield securities, in addition to Treasury and mortgage-backed securities.

On the fiscal side, a multi-phase response includes trillions of dollars of support for corporations, small businesses, individuals as well as state and local governments. These measures far exceed the response we saw after the financial crisis in 2008 and this is just in the US, so also consider that Europe, Japan, China and the UK are also implementing major fiscal and monetary programs.

In assessing the future inflationary impact of the current policy response, we must admit that it's too early to tell. Everyone thought the period following the global financial crisis was going to lead to hyperinflation due to all the quantitative easing. Those actions simply stabilized broad money growth while inflation on average remained below central banks targets.

The key markers relate to how the large deficits incurred fighting the pandemic are financed. Deficits can be financed in both non-inflationary and inflationary means. For example, if the US finances the deficit through increased taxes or borrowing from the non-bank public, the risk of elevated inflation is low. If the deficit is

FOR INSTITUTIONAL INVESTOR USE ONLY – NOT FOR FURTHER DISTRIBUTION

financed through borrowing from banks or primary purchases of debt by the central bank (printing money), the risk of inflation will be much higher.

4. So how can exposure to commodities help?

Even without the fear of hyperinflation materializing, commodity prices rallied after the financial crisis of 2008, with gold reaching an all-time high of nearly \$2000 an ounce in 2011. Commodities represent a hedge against the inevitable economic recovery as well as the monetary debasement being applied. High inflation is harmful to financial assets because their future cash flows will have less real spending power as inflation increases. Said another way, inflation is great if you are debtor but it's terrible if you are a saver and own a portfolio of financial assets. Commodities complement other types of real assets such as direct real estate, but they perform best as a hedge against inflation that is unexpected or not fully priced into markets.

5. What commodities are likely to do best?

That's a difficult question to answer because there are so many variables to correctly gauge. In assessing the impact on individual commodities its critical to consider supply in addition to demand because commodity producers will likely have to drastically reduce production and/or capital spending. A supply shock is a future risk because we have had an extended period of low prices that has required producers to develop only the highest quality/lowest cost portions of their geology. As a result, even if demand does not return to pre-crisis levels supplies could be constrained over the coming years.

We recommend an active, diversified approach that avoids being too concentrated in one commodity sector (energy) while also emphasizing commodities with the highest scarcity value. Diversification is bigger opportunity within commodities versus stocks and bonds given correlations are low across different commodity sectors. Once again, consider the difference in return between gold and energy just in the first quarter of this year. We also believe it's important to have a flexible component within a commodity strategy, so the individual exposures and risk profile are best matched to the prevailing opportunity.

All data as of 4/16/2020 unless stated otherwise. *Data source: Bloomberg.

All material presented is compiled from sources believed to be reliable and current, but accuracy cannot be guaranteed. This is being provided for informational purposes only, is not to be construed as an offer to buy or sell any financial instruments and should not be relied upon as the sole factor in any investment making decision. This should not be considered a recommendation to purchase any investment product. As with all investments there are associated inherent risks. This does not constitute a recommendation of any investment strategy for a particular investor. Investors should consult a financial professional before making any investment decisions if they are uncertain whether an investment is suitable for them. Past performance is not indicative of future results. The opinions expressed herein are based on current market conditions and are subject to change without notice. These opinions may differ from those of other Invesco investment professionals. Invesco Advisers, Inc. is an investment adviser and does not sell securities. It is an indirect, wholly owned subsidiary of Invesco Ltd. NA3999-04/20

FOR INSTITUTIONAL INVESTOR USE ONLY - NOT FOR FURTHER DISTRIBUTION



Q1 2020

Artisan International Growth Trust

The Artisan International Growth Trust is a trust for the collective investment of assets of participating tax qualified pension and profit sharing plans and related trusts, and governmental plans, as more fully described in the Declaration of Trust for the Artisan International Growth Trust. The Artisan International Growth Trust is managed by SEI Trust Company based on the investment advice of Artisan Partners Limited Partnership. As a bank collective trust, Artisan International Growth Trust is exempt from registration as an investment company.

For Institutional Investors Only — Not for Onward Distribution



Artisan Partners

Contents

- I. Firm Overview
- II. Investment Team, Philosophy and Process

B.3

III. Performance Analysis and Positioning

Appendix

Holdings

Statistics

Biographies

Notes and Disclosures

Client Service

Sean Howley T 415 283 1075 sean.howley@artisanpartners.com

Artisan Partners

About Artisan Partners

- Founded in 1994; solely focused on providing high value-added investment strategies to sophisticated investors
- Autonomous investment teams oversee a range of investment strategies across multiple asset classes
- Primary offices in Atlanta, Chicago, Denver, Dublin, London, Milwaukee, New York, San Francisco, Singapore, Stockholm, Sydney and Wilmington, with 442 associates
- Approximately \$95.2 billion under management as of 31 March 2020



Growth Team Global Opportunities^{1,3} Global Discovery U.S. Mid-Cap Growth U.S. Small-Cap Growth^{2,3}

Global Equity Team Global Equity Non-U.S. Growth Non-U.S. Small-Mid Growth

U.S. Value Team Value Equity U.S. Mid-Cap Value

International Value Team International Value

Global Value Team Global Value Select Equity

Sustainable Emerging Markets Team Sustainable Emerging Markets

Credit Team High Income Credit Opportunities

Developing World Team Developing World

Thematic Team Thematic Thematic Long/Short

As of 31 Mar 2020. ¹The Artisan Global Opportunities Strategy is closed to most new separate account clients. ²The U.S. Small-Cap Growth Strategy has limited availability to most new separate account clients. ³Artisan Partners will consider accepting new separate accounts in these strategies in its discretion. The Artisan Global Opportunities and U.S. Small-Cap Growth Strategy is a cover a

B.3

Talent-Driven Business Model



B.3

Our investment teams focus on generating results for our clients in a distraction-free environment

Artisan Partners Global Equity Team

Long-Term Alpha Generation

Artisan Non-U.S. Growth Composite Cumulative Returns



Artisan Global	Equity Compo	osite Cumulative	Returns
7 11 11 9 10 10 10 10 10	Equity compt	bite controlative	110001110

			Average Annual Total Returns (%) as of 31 Mar 2020			
(%) as of 31 Mar 2020	Status	1 Yr	3 Yr	5 Yr	10 Yr	Inception
Artisan Non-U.S. Growth Composite (1 Jan 1996)	Open	-6.61	4.16	1.02	6.19	9.20
MSCI EAFE Index		-14.38	-1.82	-0.62	2.71	3.74
Artisan Global Equity Composite (1 Apr 2010)	Open	-1.37	10.78	7.15	11.06	11.06
MSCI All Country World Index		-11.26	1.50	2.85	5.87	5.87
(Inception)						

Source: Artisan Partners/MSCI. Past performance does not guarantee and is not a reliable indicator of future results. Gross-of-fees performance shown for the Composite. Current performance may be lower or higher than performance shown.

B.3

Artisan Partners Global Equity Team

Artisan Partners Global Equity Team

Seasoned Leadership, Continuity of Decision Makers, Diverse Perspectives

Portfolio Leadership

- Process
- Research
- Decisions
- Construction / Risk



Mark Yockey, CFA

Global Equity Non-U.S. Growth

New York Investment Experience: 39 Years



Charles-Henri Hamker

Global Equity Non-U.S. Growth

New York Investment Experience: 30 Years



Andrew Euretig

Global Equity Non-U.S. Growth San Francisco

San Francisco Investment Experience: 16 Years

Portfolio Specialists

Sean Howley | Jar

Brett Meyer, CFA, FRM



Ami Fox

Chief Operating Officer

Talent, ESG, Risk

Research Analysts

- Diverse Perspectives
- Idea Generation
- Experienced
- Deep Stock Research
- Thematic Research

- FINANCIALS
- Claudia Corra
- Brice VandammeSteven Foundos, CFA
- HEALTH CARE
- Daniel Reagan
- Navdeep Singh

INDUSTRIALS / CYCLICALS / TECHNOLOGY

- Richard Logan, CFA
- Nikola Legetic, CFA
- Sam Zarnegar
- Ian Chua

CONSUMER BUSINESSES

- Stephen Chan
- Jeff Zhu, CFA

RESEARCH ASSOCIATES (6)

- Fundamental Modeling
- Sector Research Support

Team Offices



- Team Interaction
- Twice weekly research meetings
- Daily interactive between team members
- Daily meetings and conferences with management teams

Investment Portfolio Committee

- Monthly meetings
- Members include: Mark Yockey, Charles-Henri Hamker, Andrew Euretig, Brett Meyer and Claudia Corra

Artisan Partners Global Equity Team

Investment Portfolio Committee (IPC)

Members

Chair: Brett Meyer Mark Yockey | Charles-Henri Hamker | Andrew Euretig | Claudia Corra

Primary Functions

- Define thematic research priorities
- Evaluate risk
- Oversee ESG integration
- Consider macroeconomic, geopolitical impacts

Process

- Meet monthly, distribute information weekly
- Document and maintain strategic decisions
- Review capital market environment and macroeconomic factors
- Review portfolio positioning and performance
- Evaluate pipeline of stock ideas and priorities
- Assess portfolio level risk factors

We believe investing in high-quality companies with sustainable growth characteristics at attractive valuations will lead to outperformance over a full market cycle.

Artisan Partners Global Equity Team

Investment Process — Quality, Growth and Valuation



Investment Process—Idea Generation

Our ability to cut through the enormous amount of noise and remain focused on what matters is critical to directing our research appropriately.

	Themes	
Demographics Health Care Emerging Markets Consumer Financial Services Exchanges Insurance Brokerage 	Technology = E-commerce = Secure Payments Outsourcing = IT Services = Logistics	Environment Energy Efficiency Electric Vehicles Infrastructure Transportation Real Estate
Other Sources of Ideas	 Quantitative Screens Company Meetings Conferences Trade Press / Periodicals 	 Private Equity / Venture Capital Trends Sell-Side Conversations Competitors / Suppliers / Distributors

Qualified Research Candidates

In-Depth Analysis

Artisan Partners Global Equity Team

Investment Process—In-Depth Analysis



Artisan Partners Global Equity Team

Investment Process—ESG Integration



- Seek companies investing with a sustainable long-term perspective
- These companies are typically aligned with positive ESG considerations
- Also identify global themes that intersect with areas of social importance:
 - Health care for aging populations
 - Nutrition and wellness
 - Expanded access to technology and financial services



- Objective and independent review of ESG risks
- Use Refinitiv's quantitative scoring to evaluate each portfolio company on 400+ ESG metrics
- Escalation and re-evaluation of stocks with ESG scores indicating elevated risk

Corporate Engagement

- Seek high-quality management teams
- Engage regularly with management teams, including on ESG topics, especially corporate governance
- Exercise our influence and voting rights to influence best practices in corporate governance, executive compensation and fair treatment of minority shareholders

Portfolio managers take ownership of proxy votes on behalf of our clients

Canadian Pacific Railway

- Persistent failure by management to achieve industry margins.
- We proactively engaged with proxy advisors and other shareholders to change the board and management. Greater efficiencies and reduced costs led to faster earnings growth and optimized the outcome for all stakeholders.
- Our votes were crucial in effecting change and resulted in a significant re-rating of the stock.

We are not "activist shareholders" but have occasionally gone public with our votes

Syngenta

- Board refusal to accept a very fair bid from Monsanto (\$47bn).
- We went public to express our opinion board still refused, and we sold our stock.
- Other managers also went public.
- Monsanto walked away; six months later, Syngenta sold to Chinese Chemical Corp for a significantly lower price (\$43bn).

Other examples include Meggitt, Bayer, Canada Goose and others where we have sold our stock as part of our proxy voting and governance practice.

Source: Artisan Partners. As of 31 Dec 2019. Refer to Portfolio Holdings for security weights. Portfolio holdings are subject to change without notice.

Investment Process—Risk Management

A multi-faceted approach to mitigate risk of capital impairment

Security Level Know What You Own

- Continuous review of investment thesis
- Deep sector and industry knowledge
- Competitive landscape evaluation
- In-depth financial models and scenario analysis

Portfolio Construction

- Diversified by sectors, industries, themes
- Cognizant of common risk factors
- Mitigate unintended risks (Barra/Bloomberg)
- Monthly IPC meetings

Rigorous Sell Discipline

- Disruption of competitive advantages
- Deterioration in business quality and/or growth metrics
- Valuation levels
- Management or regulatory changes

Artisan International Growth Trust

Investment Process—Position Sizing

High conviction, benchmark agnostic and stock selection driven.



Portfolio ConstructionMaximum position size generally 5%*Number of holdings range from 60 to 100Maximum of 25% in any one industry*Maximum of 30% in any one country*May invest up to 35% in emerging markets*Typically less than 5% cash

Source: Artisan Partners. Determination of Risk Adjusted Upside Potential is based on analyst estimates. *Limitations apply at the time of purchase.

Artisan Partners Global Equity Team

Investment Process—Decision-Making Process

Research	Weekly Research	Team	Portfolio	Portfolio Leadership
Candidates	Meetings	Discussion	Considerations	Decision
In-Depth Analysis	Formal Presentation: Bull / Bear Case	Challenge Thesis, Growth and Valuation	Investment Portfolio Committee, Guidelines and Risk Management	Implementation: Position Sizing and Timing

Artisan International Growth Trust

Sustainable Growth—Examples



Refer to Portfolio Holdings for security weights. Portfolio holdings are subject to change without notice. The themes and stock examples listed are for illustrative purposes only.

Artisan Partners Global Equity Team

Market Review

- Global equities experienced a historic selloff in Q1 driven by the COVID-19 pandemic, with most broad-based indices declining 20% or more. Shutdowns and social distancing measures imposed by governments worldwide to slow transmission and thereby "flatten the curve" to avoid overwhelming health care systems produced a sudden shock to global supply chains and domestic demand around the world.
- Governments worldwide have responded to the health crisis's economic fallout with unprecedented levels of emergency fiscal and monetary stimulus—far exceeding and much faster than historical efforts, including responses to the 2008 financial crisis.
- All sectors and regions finished lower. The energy sector was the worst performer as oil prices came under pressure from the dual shocks of COVID-19 and the Saudi Arabia-Russia price war.
- Other hard-hit areas of the market included travel-related businesses (e.g., airlines, hotels, restaurants), retail and banks. More defensive sectors, like health care, consumer staples and utilities, held up best.
- Growth stocks continued to outpace value during the quarter, maintaining a performance pattern prevalent for the majority of the 11-year bull market that began in 2009.

	MSCI EAFE Index Total Returns (Local) %					
	Q1 2020	1 Yr				
Health Care	-6.6	8.3				
Utilities	-10.8	-3.0				
Consumer Staples	-10.9	-6.7				
Communication Services	-16.0	-10.3				
Information Technology	-16.6	-1.2				
Materials	-23.5	-17.4				
Industrials	-24.8	-14.9				
Consumer Discretionary	-25.5	-14.3				
Real Estate	-25.5	-25.6				
Financials	-28.7	-21.9				
Energy	-32.4	-34.5				
MSCI EAFE Index	-20.5%	-12.6%				

Source: Artisan Partners/FactSet/GICS/MSCI. As of 31 Mar 2020. Past performance does not guarantee and is not a reliable indicator of future results. An investment cannot be made directly in an index.

B.3

	(%) as of 31 May 2020	(%) as of 31 Mar 2020					
	YTD	YTD	1 Yr	3 Yr	5 Yr	10 Yr	Inception
Linked Mutual Fund and Trust: Tier 3	-11.59	-21.42	-7.80	3.76	0.38	5.34	7.19
MSCI EAFE Index	-14.26	-22.83	-14.38	-1.82	-0.62	2.72	5.77
MSCI All Country World ex USA Index	-14.85	-23.36	-15.57	-1.96	-0.64	2.05	6.21

Inception of Marin County investment into Artisan International Fund — Institutional Class: 30 Dec 2002, invested through 15 Feb 2018. Transition to Marin County investment into Artisan International Growth Trust — Tier 3: 28 Feb 2018. Period from 16 Feb 2018 through 27 Feb 2018 assumes a 0% return.

Differences between the Mutual Fund and Trust include, but are not limited to, the fee structure of each vehicle. Each vehicle's fee structure may have a different impact on performance. Performance is calculated using the date on which you first invested in the Fund as your "inception" date. The linked returns shown, which do not take cash flows into consideration, are computed by taking monthly NAV-based returns (as calculated by Artisan Partners for the Fund and SEI for the Trust) and then geometrically linking those daily returns. The linked performance is hypothetical and actual returns may vary due to different valuation policies and methodology.

As of 31 May 2020	Ending Market Value	Number of Shares	Share Price	Account Inception
Marin County (CA) Employees' Retirement Association	\$173,281,891.12	7,078,508.624	\$24.48	30 December 2002

Source: SEI/Artisan Partners/MSCI. Past performance does not guarantee and is not a reliable indicator of future results. Net-of-fees performance shown for the Trust. The principal value and investment return of the Trust will fluctuate, so you may have a gain or loss when you sell your units. Current performance may be lower or higher than performance shown. Trust returns were calculated net of total Trust fees and expenses (0.90% annually) which are incurred by each participating Tier 1 plan in the Trust. Fund performance varies from Trust performance based on applicable fees and does not represent past or present Trust returns. Returns less than one year are not annualized.

Sector Attribution—Q1 2020

	Portfolio MSCI EAFE		EAFE	Attribution Analysis			
Economic Sector	% Average Weight	% Return	% Average Weight	% Return	Allocation Effect	Selection Effect	Total Effect
Communication Services	2.88	-14.02	5.31	-18.01	-0.09	-0.01	-0.10
Consumer Discretionary	6.10	-10.16	11.36	-26.80	0.29	1.04	1.34
Consumer Staples	5.97	-9.32	11.67	-13.47	-0.51	0.18	-0.32
Energy	3.07	-64.58	4.30	-36.20	0.01	-1.08	-1.07
Financials	30.12	-23.98	18.01	-31.57	-1.17	2.51	1.35
Health Care	12.84	-14.62	12.90	-8.88	-0.01	-0.67	-0.68
Industrials	14.25	-35.77	14.75	-26.44	0.08	-1.60	-1.53
Information Technology	6.48	-11.30	7.31	-17.64	-0.06	0.37	0.32
Materials	13.96	-15.55	6.83	-26.81	-0.14	1.57	1.44
Real Estate			3.53	-27.58	0.33	-0.03	0.29
Utilities	0.13	-16.46	4.03	-13.24	-0.32	-0.03	-0.36
Cash	4.19	0.40			1.03	0.23	1.25
Total	100.00	-20.88	100.00	-22.83	-0.55	2.49	1.94

Source: FactSet/GICS/MSCI. As of 31 Mar 2020. Past performance does not guarantee and is not a reliable indicator of future results. Security values are reported in local currency and returns attributable to currency exposures are represented within Selection Effect. Refer to Notes and Disclosures for attribution information.

Sector Attribution — 1 Yr

	Portfolio MSCI EAFE		EAFE	Attribution Analysis			
Economic Sector	% Average Weight	% Return	% Average Weight	% Return	Allocation Effect	Selection Effect	Total Effect
Communication Services	2.27	-2.09	5.40	-11.51	-0.00	0.09	0.09
Consumer Discretionary	4.60	2.94	11.35	-15.02	-0.00	0.98	0.97
Consumer Staples	5.85	6.47	11.74	-8.47	-0.28	0.76	0.48
Energy	3.86	-62.84	5.01	-37.80	0.15	-0.84	-0.69
Financials	30.88	-8.48	18.56	-24.66	-1.18	4.91	3.74
Health Care	11.16	8.93	11.79	7.06	-0.04	-0.08	-0.13
Industrials	15.69	-22.60	14.74	-15.98	0.14	-0.84	-0.70
Information Technology	7.08	-5.66	6.90	-1.73	-0.05	-0.21	-0.26
Materials	14.21	6.54	7.09	-20.51	-0.21	3.42	3.21
Real Estate			3.61	-27.09	0.65	-0.03	0.61
Utilities	0.23	-5.32	3.82	-5.24	-0.31	0.05	-0.26
Cash	4.17	1.35			0.80	0.19	0.98
Total	100.00	-6.34	100.00	-14.38	-0.34	8.38	8.04

Source: FactSet/GICS/MSCI. As of 31 Mar 2020. Past performance does not guarantee and is not a reliable indicator of future results. Security values are reported in local currency and returns attributable to currency exposures are represented within Selection Effect. Refer to Notes and Disclosures for attribution information.

Artisan International Growth Trust

Contribution to Return—Q1 2020 and 1 Yr

Q1 2020		1 Yr	
Тор		Тор	
Lonza Group	Health Care	London Stock Exchange (sold)	Financials
Amazon.com	Consumer Discretionary	Lonza Group	Health Care
Medacta Group	Health Care	Nestle	Consumer Staples
Novo Nordisk	Health Care	Linde	Materials
Roche Holding	Health Care	Air Liquide	Materials
Bottom		Bottom	
Airbus	Industrials	Petroleo Brasileiro	Energy
Petroleo Brasileiro	Energy	Airbus	Industrials
Amarin	Health Care	Amarin	Health Care
Deutsche Boerse	Financials	ING Groep	Financials
HDFC	Financials	HDFC	Financials

Source: Artisan Partners/FactSet/GICS. As of 31 Mar 2020. **Past performance does not guarantee and is not a reliable indicator of future results**. These securities made the greatest contribution to, or detracted most from, performance during the period. This is not a complete listing of portfolio activity. Upon request, Artisan will provide: (i) the calculation methodology and/or (ii) a list showing the contribution of each holding to overall performance during the measurement period. Securities of the same issuer are aggregated to determine the weight in the portfolio. Refer to Portfolio Holdings for security weights. The holdings mentioned above comprised the following average weights in the portfolio during the Q1 2020 time period. Amazon.com Inc 2.5%, Lonza Group AG 1.7%, Novo Nordisk A/S 0.8%, Medacta Group SA <0.1%, Roche Holdings AG 1.2%, Airbus SE 3.4%, Petroleo Brasileiro SA 3.1%, Amarin Corp PLC 1.1%, Devische Boerse AG 6.1%, Housing Development Finance Corp Ltd 2.0%. The holdings mentioned above comprised the portfolio during the portfolio advectory evelpts in the portfolio during the following average weights in the portfolio during the one-year time period: London Stock Exchange Group PLC 0.9%, Linde AG 6.3%, Lonza Group AG 1.5%, Nestle SA 3.9%, Air Liquide SA 3.5%, Petroleo Brasileiro SA 3.9%, Airbus SE 3.8%, Amarin Corp PLC 0.6%, ING Groep NV 2.2%, Housing Development Finance Corp Ltd 2.0%.
Representative Transactions —Q1 2020

New Positions	Sector	Description and Investment Thesis			
Deutsche Telekom AG	Communication Services	Europe's largest integrated telecom company that owns 45% of T-Mobile US (TMUS) following its merger with Sprint. The merger between TMUS and Sprint is a highly positive event that should unlock value through cost synergies, scale and spectrum holdings. Additionally, Deutsche Telekom ex. TMUS is selling more cheaply and at a higher free cash flow yield than European telco peers despite having a better business and operating in Germany, one of Europe's more structurally stable markets.			
Roche Holding AG	Health Care	One of the largest pharmaceuticals companies globally. We are attracted to the growth potential of Roche's newer products (Hemlibra® for hemophilia, Ocrevus® for multiple sclerosis and Tecentriq® for cancer) and robust product pipeline. Roche is facing a headwind from biosimilar erosion of its three biggest oncology drugs: Herceptin®, Rituxan® and Avastin®; however, we believe innovation within its older franchises and entirely new product categories emerging from the pipeline should drive growth.			
Wuliangye Yibin Co Ltd	Consumer Staples	China's second-largest spirit maker by market value and one of only two truly national baijiu brands. Despite the February lockdown, we believe the company can grow sales mid-to-high single digits in 2020 driven by a recent price hike and resilient consumer demand given its premium brand power. The company also has a robust balance sheet with no debt. Shares sold off in late January when news of COVID-19 broke, offering an attractive entry point, with the stock selling for a ~25% discount to key competitor Kweichow Moutai.			

Sold Positions	Sector	Reason(s) for Sale
Adyen NV	Information Technology	Sold in favor of better opportunities.
BNP Paribas SA	Financials	Sold shares in early March due to concerns about the interest rate and credit environment.
SAP SE	Information Technology	Sold in favor of better opportunities.

Source: Artisan Partners/FactSet/GICS. As of 31 Mar 2020. This presentation is not a complete listing of portfolio activity. Refer to Portfolio Holdings for security weights.

Top 10 Holdings

Company		% of total portfolio
Linde PLC	One of the world's largest industrial gas providers, supplying customers across a diverse range of industries.	6.2
Deutsche Boerse AG	Largest exchanges operator in Europe.	6.2
Air Liquide SA	A global leader in the consolidated industrial gases industry.	4.7
Nestle SA	World's leading food company with a large portfolio of billionaire brands.	4.4
AIA Group Ltd	The largest independent publicly listed pan-Asian insurance group.	3.8
Aon PLC	A leading global provider of risk management, insurance and reinsurance brokerage.	3.5
Wirecard AG	A leading provider of Internet payment and processing software.	2.9
Amazon.com Inc	One of the world's largest online retailers and a leading provider of enterprise cloud services.	2.9
Medtronic PLC	A diversified medical devices company.	2.6
Nippon Shinyaku Co Ltd	A Japanese pharmaceuticals and health-foods products company.	2.5
Total		39.6%

Source: Artisan Partners. As of 31 Mar 2020. Securities of the same issuer are aggregated to determine the weight in the portfolio.

B.3

Artisan International Growth Trust

Top and Bottom Contributors to Return—1Yr



Source: Artisan Partners/FactSet. As of 31 Mar 2020. **Past performance does not guarantee and is not a reliable indicator of future results**. These securities made the greatest contribution to, or detracted most from, performance during the period. This is not a complete listing of portfolio activity. Upon request, Artisan will provide: (i) the calculation methodology and/or (ii) a list showing the contribution of each holding to overall performance during the measurement period. Securities of the same issuer are aggregated to determine the weight in the portfolio during the one-year time period: London Stock Exchange Group PLC 0.9%, Linde AG 6.3%, Lonza Group AG 1.5%, Nestle SA 3.9%, Air Liquide SA 3.5%, Nippon Shinyaku Co Ltd 1.8%, Deutsche Boerse AG 6.0%, BNP Paribas SA 1.6%, Amazon.com Inc 2.1%, Genmab A/S 2.1%, Petroleo Brasileiro SA 3.9%, Air Group Ltd 3.8%.

Sector Weights

Sector Weights (31 Mar 2019)



Relative Sector Weights (31 Mar 2019)



Source: GICS/MSCI. Percentages shown are of the portfolio equities compared to the MSCI EAFE Index. Cash represented 2.8% of the total portfolio at 31 Mar 2019 and 4.3% at 31 Mar 2020.

Sector Weights (31 Mar 2020)

B.3



Relative Sector Weights (31 Mar 2020)



ARTISAN PARTNERS

Region Weights

Region Weights (31 Mar 2019)



Relative Region Weights (31 Mar 2019)



Source: MSCI. Percentages shown are of the portfolio equities compared to the MSCI EAFE Index. Cash represented 2.8% of the total portfolio at 31 Mar 2019 and 4.3% at 31 Mar 2020.

Region Weights (31 Mar 2020)



Relative Region Weights (31 Mar 2020)



B.3

Portfolio Holdings (% of total portfolio)

Communication Services

- 2.4 Alphabet Inc
- 1.3 Deutsche Telekom AG

Consumer Discretionary

- 2.9 Amazon.com Inc
- 1.9 Alibaba Group Holding Ltd
- 1.0 Sony Corp
- 0.5 Wynn Macau Ltd
- 0.4 Midea Group Co Ltd
- 0.2 adidas AG

Consumer Staples

- 4.4 Nestle SA
- 1.9 Diageo PLC
- 1.2 Wuliangye Yibin Co Ltd
- 0.1 Coca-Cola European Partners PLC

Energy

1.4 Petroleo Brasileiro SA

Financials

- 6.2 Deutsche Boerse AG
- 3.8 AIA Group Ltd
- 3.5 Aon PLC
- 2.5 Allianz SE
- 2.0 Willis Towers Watson PLC
- 1.9 UBS Group AG
- 1.7 Housing Development Finance Corp Ltd
- 1.5 Intercontinental Exchange Inc
- 1.3 Assicurazioni Generali SpA
- 1.1 Intesa Sanpaolo SpA
- 1.0 TMX Group Ltd
- 1.0 Amundi SA0.8 ING Groep NV
- 0.6 UniCredit SpA

Health Care

- 2.6 Medtronic PLC
- 2.5 Nippon Shinyaku Co Ltd
- 2.5 Genmab A/S
- 2.1 Lonza Group AG
- 2.0 Roche Holding AG
- 0.9 Novo Nordisk A/S
- 0.7 Idorsia Ltd
- 0.3 Medacta Group SA
- 0.3 Amarin Corp PLC

Industrials

- 2.4 Deutsche Post AG
- 2.2 Airbus SE
- 1.8 Ryanair Holdings PLC
- 1.2 Vinci SA
- 1.0 RELX PLC
- 1.0 Eiffage SA
- 0.7 Safran SA
- 0.5 Schneider Electric SE
- 0.4 Recruit Holdings Co Ltd
- 0.3 GFL Environmental Inc
- 0.2 DSV PANALPINA A/S
- 0.0 Daikin Industries Ltd

Information Technology

- 2.9 Wirecard AG
- 1.2 Nice Ltd
- 1.0 AVEVA Group PLC
- 0.5 Temenos AG

Materials

- 6.2 Linde PLC
- 4.7 Air Liquide SA
- 1.6 Koninklijke DSM NV
- 1.4 Taiyo Nippon Sanso Corp
- 1.0 Symrise AG

Utilities

0.7 EDP - Energias de Portugal SA0.3 E.ON SE

B.3

Portfolio Statistics

	Trust	MSCI EAFE Index	MSCI All Country World ex USA Index
Weighted Avg. Market Cap (Billions)	\$118.9	\$57.5	\$72.4
Median Market Cap (Billions)	\$33.7	\$8.3	\$5.7
Weighted Avg. P/E Ratio (FY1) ¹	15.6X	12.3X	11.9X
Weighted Avg. P/E Ratio (FY2) ¹	13.9X	11.3X	10.8X
Weighted Avg. LT EPS Growth Rate (3-5 Yr)	11.5%	7.3%	9.2%
Weighted Avg. PEG Ratio ²	1.5X	1.6X	1.3X
Weighted Avg. Operating Margin	20.8%	17.5%	17.9%
Number of Countries	17	21	48
Number of Securities	61	918	2,411
Percent in Top 10 Holdings	39.6%	13.4%	12.2%
Active Share	85.2%	_	_

Source: FactSet/MSCI. As of 31 Mar 2020. ¹Harmonic; excluding negative earners. ²Harmonic; excluding negative earners and companies with negative growth rates.

Biographies — Artisan Partners Global Equity Team

Mark L. Yockey, CFA, is a managing director of Artisan Partners and a portfolio manager on the Global Equity team. In this role, he is a portfolio manager for the Artisan Non-U.S. Growth and Global Equity Strategies. Prior to joining Artisan Partners in December 1995, Mr. Yockey was the portfolio manager of the United International Growth Fund and vice president of Waddell & Reed from January 1990 through December 1995. Before assuming responsibility for the United International Growth Fund, Mr. Yockey was an analyst for Waddell & Reed from 1986 through 1989, specializing in the worldwide health care industry and international special situations. Earlier in his career, he was a health care analyst for the State of Michigan Retirement Fund for five years. Mr. Yockey holds a bachelor's degree and a master's degree in finance from Michigan State University. He completed one year of undergraduate work at the Université d'Aix-en-Provence in France. He also worked for the French bank, La Société Générale. He is fluent in French.

Charles-Henri Hamker is a managing director of Artisan Partners and a portfolio manager on the Global Equity team. In this role, he is a portfolio manager for the Artisan Global Equity Strategy and an associate portfolio manager for the Artisan Non-U.S. Growth Strategy. He also conducts research, primarily focusing on companies within the consumer discretionary and consumer staples sectors. Prior to joining Artisan Partners in August 2000, Mr. Hamker worked on the European Equities Desk in the New York office of Banque Nationale de Paris. Earlier in his career, he worked in the Paris and London offices of J.P. Morgan. Mr. Hamker holds a bachelor's degree with a specialization in finance and economics from the European Business School in Paris. He is fluent in French and German.

Andrew J. Euretig is a managing director of Artisan Partners and a portfolio manager on the Global Equity team. In this role, he is a portfolio manager for the Artisan Global Equity Strategy and an associate portfolio manager for the Artisan Non-U.S. Growth Strategy. He also conducts research, primarily focusing on companies within the industrials and utilities sectors. Prior to joining Artisan Partners in June 2005, Mr. Euretig was a graduate student at the University of California at Berkeley. He previously served in the United States Navy as an amphibious operations officer. Mr. Euretig holds a bachelor's and a master's degree in business administration from the Haas School of Business at the University of California-Berkeley.

Claudia P. Corra is an analyst on the Artisan Partners Global Equity Team. In this role, she conducts fundamental research, primarily focusing on global financial services companies. Prior to joining Artisan Partners in December 2003, Ms. Corra was an equity analyst for Independence Investors covering the financial services sector for the firm's domestic strategy and the global insurance sector for its international strategy. Earlier in her career, Ms. Corra worked at the Federal Reserve Bank of New York in various analyst positions. Ms. Corra holds a bachelor's degree in history and political science from New York University, a master's degree from Columbia University and a master's degree from Harvard University. She is fluent in German and Italian.

Stephen C. Chan is an analyst on the Artisan Partners Global Equity Team. In this role, he conducts fundamental research, primarily focusing on companies within the Asia Pacific region. Prior to joining Artisan Partners in April 2005, Mr. Chan was a managing director for American Century Investment Management Asia Pacific, where he led research efforts for Asia Pacific equities. Earlier in his career, Mr. Chan was a vice president at Merrill Lynch, where he conducted investment research for the technology sector. Mr. Chan holds a bachelor's degree in economics (magna cum laude) from the Wharton School, University of Pennsylvania and a master's degree in business administration from Stanford University. He is fluent in Mandarin and Cantonese.

Brice Vandamme is an analyst on the Artisan Partners Global Equity Team. In this role, he conducts fundamental research, primarily focusing on global financial services companies. Prior to joining Artisan Partners in June 2011, Mr. Vandamme was an equity research analyst at Deutsche Bank in London where he covered European banks. Earlier in his career, he was a manager on the banking and finance advisory team at Ernst & Young that conducted management consulting projects for leading French banks. Mr. Vandamme holds a business degree from the Reims Management School in France. He is fluent in French.

Biographies — Artisan Partners Global Equity Team

Richard Logan, CFA, is an analyst on the Artisan Partners Global Equity Team. In this role, he conducts fundamental research, primarily focusing on the global chemicals and energy sectors. Prior to joining Artisan Partners in April 2013, Mr. Logan headed up the Goldman Sachs European Chemicals equity research team in London. Earlier in his career, he trained as a chartered accountant at Arthur Andersen before working in securities lending with Morgan Stanley. Mr. Logan holds a bachelor's degree in chemical engineering from Aston University in Birmingham, England, and a master's degree in finance from London Business School.

Steven H. Foundos, CFA, is an analyst on the Artisan Partners Global Equity Team. In this role, he conducts fundamental research, primarily focusing on companies within the financials sector. Prior to joining Artisan Partners in February 2012, Mr. Foundos conducted equity research at Citigroup Inc. Mr. Foundos holds a bachelor's degree in business administration (magna cum laude) from Georgetown University, a master's degree in international affairs from Columbia School of International and Public Affairs and a master's degree in business administration from Columbia Business School.

Nikola Legetic, CFA, is an analyst on the Artisan Partners Global Equity Team. In this role, he conducts fundamental research, primarily focusing on energy, materials, emerging markets and financials. Prior to joining Artisan Partners in May 2017, Mr. Legetic was an analyst at GQG Partners LLC, where he covered emerging markets, global and international equities. Before that, Mr. Legetic was a senior research analyst at Riverloft Capital Management LP, where he worked on special situations, long/short equity, capital structure arbitrage and credit. Earlier in his career, he was an equity research analyst at Raymond James Financial/Eagle Asset Management, where he focused on financial services and energy. Mr. Legetic holds a bachelor's degree in international finance and international relations (with honors) from Eckerd College. He is fluent in Serbo-Croatian.

Sam Zarnegar is an analyst on the Artisan Partners Global Equity Team. In this role, he conducts fundamental research, primarily focusing on the technology sector. Prior to joining Artisan Partners in July 2017, Mr. Zarnegar was an analyst for Glenview Capital Management where he covered the technology sector for the firm's long/short equity hedge fund. Before that, he worked as an investment associate at Sageview Capital, a public/private equity hybrid fund, where he focused on TMT investments across the capital structure. Earlier in his career, Mr. Zarnegar was an investment banking analyst across a variety of industry verticals at Evercore Partners. Mr. Zarnegar holds a bachelor's degree in economics from Cornell University. He is fluent in Persian.

Ian Chua is an analyst on the Artisan Partners Global Equity Team. In this role, he conducts fundamental multi-sector research, primarily focusing on disruptive business models in the Asia Pacific region. Prior to joining Artisan Partners in February 2018, Mr. Chua was a portfolio manager covering the China and Hong Kong markets for Lion Global Investors. Prior to that, he was a co-portfolio manager for a global disruptive innovation fund at Lion. Earlier in his career, Mr. Chua was a research analyst at Citigroup Research where he maintained coverage for Singapore banks, real estate developers and REITs. Mr. Chua holds a bachelor's degree in accountancy from Nanyang Technological University and obtained a graduate certificate in real estate finance from the National University of Singapore. He is fluent in Mandarin.

Daniel Reagan, CFA, is an analyst on the Artisan Partners Global Equity Team. In this role, he conducts fundamental research, primarily focusing on the health care sector. Prior to joining Artisan Partners in June 2015, Mr. Reagan interned at UBS Global Asset Management and Balyasny Asset Management while studying for his MBA. Earlier in his career, he was an equity analyst at Hamlin Capital Management. Mr. Reagan holds bachelor's degrees in biology and economics from Bowdoin College and a master's degree in business administration from New York University.

Biographies — Artisan Partners Global Equity Team

Jeffrey Zhu, CFA, is an analyst on the Artisan Partners Global Equity Team. In this role, he conducts fundamental research, primarily focusing on the media, internet and communication sectors. Prior to joining Artisan Partners in July 2014, Mr. Zhu was an analyst at J.P. Morgan Investment Management where he covered the financial services sector. Mr. Zhu holds bachelor's degrees in mathematics and economics from Yale University and a master's degree in business administration from the Wharton School, University of Pennsylvania.

Derek G. de Petra is a managing director and head of non-US trading at Artisan Partners. Prior to joining Artisan Partners in January 2000, Mr. de Petra was a trader with Montgomery Asset Management where he was responsible for trading in developed and emerging Europe for the international and emerging strategies. Mr. de Petra began trading at Mellon Capital Management in San Francisco where he traded the firm's passive international strategies. Mr. de Petra holds a bachelor's degree in history from the University of California-Los Angeles and a master's degree in business administration from the Haas School of Business at the University of California-Berkeley.

Biographies — Operations and Client Service Team

Eric R. Colson, CFA, is a managing director, chief executive officer and president of Artisan Partners. Mr. Colson also serves as chief executive officer, president and a director of Artisan Partners Funds, Inc. Prior to joining Artisan Partners in January 2005, Mr. Colson was an executive vice president of Callan Associates, Inc. where he managed the institutional consulting group, providing business and investment advice to asset management firms. Prior to managing the institutional consulting group, he managed Callan's global manager research. Mr. Colson holds a bachelor's degree in economics from the University of California-Irvine.

Brett J. Meyer, CFA, is the chief operating officer of the Artisan Partners Global Equity Team. In this role, he is responsible for a number of non-investment responsibilities to ensure the focus of the team's portfolio managers and analysts is on managing the team's investment strategies. His responsibilities include day-to-day coordination of the research processes, hiring investment talent, and the information flow among the members of the investment team and trading. In addition, he acts as the team's liaison with Artisan Partners' business management team on legal, compliance, accounting, finance, facilities and IT matters. Mr. Meyer joined Artisan Partners in February 2013 as a director in the Investment Operations group which supports the firm's existing investment teams as well as identifies new investment talent. Prior to joining Artisan, Mr. Meyer served as an equity analyst on the investment team at Quantum Capital Management. Previously, Mr. Meyer spent 12 years at Callan Associates in a variety of capacities, including director of research for the Independent Adviser Group. Mr. Meyer holds a bachelor's degree in business administration and sports management from Principia College.

Sean J. Howley is a managing director of Artisan Partners and a business leader for the firm's Global Equity team. Prior to joining Artisan Partners in March 2007, Mr. Howley was the managing director and product manager for international and global equity products at Putnam Investments, where he was responsible for overseeing communications on policy, strategy and tactics with institutional clients. Before that, he was head of sales and distribution for Pioneer Investment Management, where he developed sales and marketing channels in the United Kingdom and Ireland. Mr. Howley holds a bachelor's degree in commerce from University College Dublin and a master's degree in business administration from the Haas School of Business at the University of California-Berkeley.

Jamie M. Sandison is a managing director of Artisan Partners and a business leader for the firm's Global Equity team. Prior to joining Artisan Partners in January 2013, Mr. Sandison was head of North American sales and client service for Martin Currie, based in New York. Before that, he spent 15 years as a portfolio manager, latterly at Edinburgh Fund Managers, where he was a director and head of European equities. Mr. Sandison holds a master's degree in philosophy, psychology and economics from Dundee University and is an Associate of the UK Institute of Investment Management and Research since 1991.

Benjamin C. Helsby is a director on the institutional client services team at Artisan Partners with responsibility for institutional marketing and client service of the strategies managed by the firm's Global Equity team. Prior to joining Artisan Partners in June 2018, Mr. Helsby was an investment consultant at Willis Towers Watson. Mr. Helsby holds a bachelor's degree in finance from the University of Florida.

Ami Fox is a director on the institutional client services team at Artisan Partners with responsibility for institutional marketing and client service of the strategies managed by the firm's Global Equity team. Prior to joining Artisan Partners in September 2018, Ms. Fox was a marketing and client service associate at DePrince, Race & Zollo, Inc. Ms. Fox holds a bachelor's degree in international business from Rollins College and is fluent in French.

Artisan Partners

Notes and Disclosures

This section of this presentation contains information important to a complete understanding of the material presented. Please review it carefully.

Artisan Partners Limited Partnership (APLP) is an investment adviser registered with the U.S. Securities and Exchange Commission (SEC). Artisan Partners UK LLP (APUK) is authorized and regulated by the Financial Conduct Authority and is a registered investment adviser with the SEC. APEL Financial Distribution Services Limited (AP Europe) is authorized and regulated by the Central Bank of Ireland. APLP, APUK and AP Europe are collectively, with their parent company and affiliates, referred to as Artisan Partners herein.

Eorm ADV: Additional information about APLP or APUK, the firms, its partners, ownership, investment strategies, fees and expenses and policies is contained in each firm's respective Form ADV. Each firm will supply a copy of its Form ADV upon request.

<u>SEI Trust Company</u>: The collective investment trust is a trust for the collective investment of assets of participating tax qualified pension and profit sharing plans and related trusts, and governmental plans, as more fully described in the Declaration of Trust. The Trust is managed by SEI Trust Company based on the investment advice of Artisan Partners Limited Partnership. As a bank collective trust, the Trust is exempt from registration as an investment company.

Artisan International Growth Trust

International investments involve special risks, including currency fluctuation, lower liquidity, different accounting methods and economic and political systems, and higher transaction costs. These risks typically are greater in emerging markets. Securities of small- and medium-sized companies tend to have a shorter history of operations, be more volatile and less liquid and may have underperformed securities of large companies during some periods. Growth securities may underperform other asset types during a given period.

This material may include the views of the portfolio manager and other information relating to the portfolio and portfolio securities. While we believe the data accurately reflects the investment process, this information is presented as of the date indicated and will change over time.

<u>Composite Performance</u>: All performance results are net of commissions and transaction costs, and have been presented gross or net of investment advisory fees. For performance presented net of fees, fees may be higher for certain pooled vehicles and the composite may include accounts with performance-based fees. Dividend income is recorded net of foreign withholding taxes on ex-dividend date or as soon after the ex-dividend date as the information becomes available to Artisan Partners. Interest income is recorded on the accrual basis. Performance results for the index include reinvested dividends and are presented net of foreign withholding taxes but, unlike the portfolio's returns, do not reflect the payment of sales commissions or other expenses incurred in the purchase or sale of the securities included in the indices. A client's returns will be reduced by the advisory fees and other expenses it may incur in the management of its account. For example, an actively managed account of \$20 million with an annual rate of return of 10% compounded over a 10-year period that was charged an advisory fee of 1.05%, would achieve a net-of-fee return of 135.65%; compared to a gross-of-fee return of 159.4% based on the same assumptions.

MSCI makes no express or implied warranties or representations and shall have no liability whatsoever with respect to any MSCI data contained herein. The MSCI data may not be further redistributed or used to create indices or financial products. This report is not approved or produced by MSCI.

Totals may not sum due to rounding. All data shown is in USD unless otherwise indicated.

Country Allocation: Historical country exposure percentages reflect country designations as dassified by MSCI as of the date shown. Securities not classified by MSCI reflect country designations as of the date the report was generated.

Sector Allocation: Unless otherwise noted, sector exposure percentages reflect sector designations as currently classified by GICS. The Global Industry Classification Standard (GICS®) is the exclusive intellectual property of MSCI Inc. (MSCI) and Standard & Poor's Financial Services, LLC (S&P). Neither MSCI, S&P, their affiliates, nor any of their third party providers ("GICS Parties") makes any representations or warranties, express or implied, with respect to GICS or the results to be obtained by the use thereof, and expressly disclaim all warranties, including warranties of accuracy, completeness, merchantability and fitness for a particular purpose. The GICS Parties shall not have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of such damages.

Portfolio Statistics: Portfolio statistics are intended to provide a general view of the entire portfolio, or Index, at a certain point in time. Statistics are calculated using information obtained from various data sources. Artisan Partners excludes outliers when calculating portfolio statistics. If information is unavailable for a particular security Artisan may use data from a related security to calculate portfolio statistics.

Security Examples: The security examples provided do not constitute recommendations to buy or sell investments. The examples present information about the companies believed to be accurate and are the views of the portfolio managers as of the date indicated.

<u>Attribution</u>: Performance attribution quantifies the relationship between a portfolio's relative returns and the active management decisions differentiating the portfolio from the benchmark. Attribution excludes account fees and expenses and does not represent an investor's total return. Allocation Effect examines the relative return attributable to group (e.g., asset class, sector, region) allocations. Selection Effect examines the relative return attributable to security selections. For international portfolios, Currency Effect examines the relative considered an approximation of the relative contribution the factors considered.

Partifolio Holdings: For the purpose of determining the portfolio's holdings, securities of the same issuer are aggregated to determine the weight in the portfolio. For an index, the largest holdings are calculated at the security level and do not aggregate securities held by an issuer. Holdings information is not intended to represent or predict portfolio investment performance or as a recommendation of any individual security. A complete list of the securities held by portfolio, other than cash and cash equivalents unless otherwise noted, as of the date indicated is included. Securities named in this material, but not listed within the portfolio holdings page were not held as of the date reported. Portfolio holdings are subject to change without notice.

This material is provided for informational purposes without regard to your particular investment needs. This material shall not be construed as investment or tax advice on which you may rely for your investment decisions. Investors should consult their financial and tax adviser before making investments in order to determine the appropriateness of any investment product discussed herein.

We expressly confirm that neither Artisan Partners nor its affiliates have made or are making an investment recommendation, or have providing investment advice of any kind whatsoever (whether impartial or otherwise), in connection with any decision to hire Artisan Partners as an investment advicer, invest in or remain invested in any funds to which we serve as investment adviser or otherwise engage with Artisan Partners in a business relationship.

In no event shall Artisan Partners have any liability for direct, indirect, special, incidental, punitive, consequential (including, without limitation, lost profits) losses or any other damages resulting from the use of this material.

© 2020 Artisan Partners. All rights reserved.

This material is for use in one-on-one presentations only.

For Institutional Investors Only - Not for Onward Distribution

Callan



June 17, 2020

2020 Capital Market Projections & Asset Allocation Review

Jay Kloepfer Capital Markets Research

Agenda

- Process overview
- -Why does Callan create capital market expectations?
- Current economic conditions
 - -What just happened?
- Detailed 2020 expectations and resulting portfolio returns and risks
- Appendix: Asset class outlook details



Process Overview

Why Make Capital Market Projections?

Guiding objectives and process

Cornerstone of a prudent process is a long-term strategic investment plan

- Capital market projections are key elements set reasonable return and risk expectations for the appropriate time horizon
- Projections represent our best thinking regarding the long-term (10-year) outlook, recognizing our median projections represent the midpoint of a range, rather than a specific number
- Develop results that are readily defensible both for individual asset classes and for total portfolios
- Be conscious of the level of change suggested in strategic allocations for long-term investors: DB plan sponsors, foundations, endowments, trusts, DC participants, families and individuals
- Reflect common sense and recent market developments, within reason

Callan's forecasts are informed by current market conditions, but are not built directly from them

• Balance recent, immediate performance and valuation against long-term equilibrium expectations

How are Capital Market Projections Constructed?

Guiding objectives and process

Underlying beliefs guide the development of the projections:

- An initial bias toward long-run averages
- A conservative bias
- An awareness of risk premiums
- A presumption that markets are ultimately clear and rational

Reflect our beliefs that long-term equilibrium relationships between the capital markets and lasting trends in global economic growth are key drivers to setting capital market expectations

Long-term compensated risk premiums represent "beta"—exposure to each broad market, whether traditional or "exotic," with limited dependence on successful realization of alpha

The projection process is built around several key building blocks:

- Advanced modeling at the individual asset class level (e.g., a detailed bond model, an equity model)
- A path for interest rates and inflation
- A cohesive economic outlook
- A framework that encompasses Callan beliefs about the long-term operation and efficiencies of the capital markets

How are Capital Market Projections Constructed?

Projections are 10-year forward-looking, representing a medium to long-term planning horizon:

- Differs from the actuarial assumptions, which tend to reflect longer-term horizons of 30-40 years

Projections consist of return and two measures that contribute to portfolio volatility: standard deviation and correlation

Cover most broad asset classes and inflation

- Broad U.S. equity
 - Large cap
 - Small/mid cap
- -Non-U.S. equity
 - Developed markets
 - Emerging markets
- -U.S. fixed income
 - Short duration
 - Broad market
 - TIPS
 - High yield
 - Long duration
- -Non-U.S. fixed income
- Real estate and other real assets
- Alternative investments
- -Cash
- Inflation

How Does the Process Work?

Start in summer, release assumptions at the beginning of the new year

- Data, thesis, and goals
- Has our thesis changed?
- Purpose of the assumptions: long-term strategic planning
 - Impact of changes to assumptions on investor behavior
- -What has changed in the capital markets in one year to warrant revision to long-term expectations?
- Agreement on inflation, path to future interest rates, targets for segments of the fixed income market
 - Bond model to test scenarios and develop range of expectations
- Equity: real returns, risk premia, relation to fixed income expectations, change in valuation (if compelling)
 Model to incorporate income, appreciation, any valuation change

- Set path for 2020 2029
- Test and tune assumptions across range of reasonable asset mixes
 - Incorporate volatility to examine potential breadth of outcomes
- Would we change our 10-year assumptions during the course of the year?



Current Market Conditions

What Just Happened?

A 'Global Hurricane' in the form of a pandemic

S&P 500 Index Cumulative Returns Market Peak-to-Trough for Recent Corrections vs. Current Path of COVID-19 Correction Through 6/05/20



C.1

The sharpest and fastest equity market decline ever: 16 trading days to reach bear market; -33% after just 23 days

- Has the market already reached capitulation?
- May be multiple rebalancing opportunities over the course of a full market correction

Source: Standard & Poor's, Callan LLC

Global Economic Update: 1Q 2020

Data Just Now Catching Up to Reality

Markets faced unprecedented disruption in Q1 as the COVID-19 virus caused global economies to grind to a halt

C.1

- Governments urged their citizens to practice social distancing and many temporarily shut down businesses deemed "non-essential"
- The result was a precipitous drop in economic activity and an equally dramatic surge in unemployment

The unemployment rate in March rose to 4.4% from 3.5% in February, the largest one-month increase since January 1975; rate then jumped to 14.7% in April, eased to 13.3% in May, the highest rates since the Great Depression

- As of end of May, number of initial unemployment claims passed 40 million
- Loss of jobs and income means consumption will fall by more than one third in 2Q
- U.S. GDP growth tracked at ~2% through February 2020; March decline concentrated in the last three weeks
- Three weeks of lockdown enough to pull Q1 GDP growth into the red—first quarter GDP growth swung from +2% to -5%
- Q2 GDP decline estimates now at -40% (annualized), like job losses, a drop not seen since the Great Depression

The Transport Security Administration (TSA) reported a 95% year-over-year decline in airline passengers by early April

Turmoil in the energy sector added to the uncertainty in March

 Oil prices fell 65% in the first quarter as a result of both demand and supply shocks; oversupply pushed prices into negative territory for some oil plays

What Else Happened?

Governments stepped in quickly with immediate monetary response and fiscal stimulus

- Fed Chairman Powell: "We'll do whatever it takes."
- -After GFC, we have a playbook for policy
- The Federal Reserve cut policy rates to the lower bound of 0% to 0.25% and expanded asset purchasing programs to bolster liquidity and stabilize the financial markets

C.1

- -Monetary response an immediate and necessary table-setter, but not the solution to this crisis
- Multiple rounds of fiscal stimulus targeted at assisting businesses and individuals
- Tremendous uncertainty remains. Who gets rescued next?

Broad economic impact

- Companies/Organizations: Stresses to revenue, earnings, economic viability, access to capital, recovery
- Individuals: Unemployment, income, wealth, retirement savings
- Governments: Increasing service burden, declining tax revenues

Need a new lens to evaluate economic data: when do *levels* of GDP, income, employment, unemployment return to normal?

True recovery depends on containment and then a vaccine

Monetary and fiscal policy can only address the symptoms

Unprecedented Spike in Volatility

VIX reaches record high of 82.69



Source: CBOE, FactSet, Standard & Poor's, J.P. Morgan Asset Management. Drawdowns are calculated as the prior peak to the lowest point. *Guide to the Markets – U.S.* Data are as of March 31, 2020.



U.S. and Global Economic Conditions

Treasury yield curve shape shifting: a moving target



- The Treasury yield curve contains an implicit broad economic forecast
- Steeper yield curves (long-term rates higher than short-term rates) suggest stronger anticipated growth
- The shape of the Treasury yield curve has varied quickly and substantially since the beginning of 2020
- Curve shifted down dramatically early in crisis
- -Current yield curve still low on the short end and upward sloping but not steep

Government Intervention

Monetary Policy



C.1



- In addition to supporting financial market liquidity the Fed cut the Fed Funds Rate
 - Fed Funds now near zero
- -The Fed cut rates repeatedly and quickly
- Market do not expect the Fed to raise the rate in the near future

Source: Federal Reserve, J.P. Morgan Guide to the Markets U.S., https://am.jpmorgan.com/content/dam/jpm-am-aem/global/en/insights/market-insights/guide-to-the-markets/daily/mi-daily-gtm-us.pdf

Government Intervention

U.S. Fiscal Policy

- "Phase I" \$8 billion
- Medical treatments and testing
- "Phase II" \$104 billion
- Expanded worker benefits
- Food assistance
- CARES Act ("Phase III") \$2 Trillion
- Equates to roughly 10% of GDP
- Expanded Unemployment Benefits
- Cash Distributions of up to \$1,200
- Student Loan Relief
- Federally-Backed Home Loan Forbearance
- Defined Contribution Plan Liquidity
- Airline industry relief
- Small business loans, grants and loan relief
- "Phase IV" \$484 billion
 - Additional small business loans
 - Funding for testing and hospitals
- What's next?
- State and local government
- Extend UI benefits? Additional cash?
- What other industries? Health care?



Source: The National Law Review, https://www.natlawreview.com/article/president-trump-signs-law-coronavirus-aid-relief-and-economic-security-cares-act, NPR.org

Our Advice to Investors

It's early innings: remain true to your investment discipline

 People are still in shock and assessing their situations. The situation is unprecedented.

C.1

- Investors are asking: Did we do something wrong?
- This event may serve to be a test of investors' risk tolerance

Our counsel to investors: follow your disciplined process

- Reevaluate liquidity. Benefit payments or spending, and capital calls.
- Rebalance
- Look for impairments or unexpected performance in your portfolio
- Watch for opportunities inside your portfolio and across the capital markets
- Conduct scenario analysis and stress testing

Growth of \$100mm invested in 60% S&P 500 / 40% Bloomberg Aggregate Portfolio Market values in millions January 1, 1989 – April 9, 2020



Source: Callan LLC



Market Timing is Hard

Ultimate goal: Make it out to the other side of this crisis

Hypothetical Market Value of \$100MM Investment as of 6/05/20 Market Values in Millions



- Finding the right entry point and the tradeoff of staying on the sidelines
- Difficulty of Timing the Market: Late Entry Point
 - Since it is not realistic to miss the best trading days, which are spread out over many years, consider the opportunity cost of staying on the sidelines following a large downturn
 - Picking the right entry point can be difficult and the early days of a recovery matter a lot

Callan

What's the Impact on Capital Market Expectations?

Short answer – None at this point

Long answer – remind ourselves of the purpose of capital market expectations

- Long-term strategic assumptions
- Shape portfolios to honor investors' goals and tolerance for risk
- Create range of scenarios for expected 10-year outcomes always include at least one recession
- Specific scenario analysis more useful: shape of recovery

What we're paying attention to ...

- Extent to which this shock becomes a financial crisis
- Shape of global economic recoveries
- Household economic health. Unemployment. Debt load.
 Perilous financial condition of lower income groups.
- Return of zero interest rate policy and the role of fixed income

The bottom line is ...

- We will revisit capital market assumptions as the crisis evolves
- May change the capital market landscape
- If we alter our assumptions, are we then suggesting changes in portfolio design?



Source: FINRA Investor Education Foundation, National Financial Capability Study,

https://www.usfinancialcapability.org/results.php?region=US

Household Spending

Callan Periodic Table of Investment Returns

Annual Returns				Monthly Returns								
2013	2014	2015	2016	2017	2018	2019	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	YTD 2020
Small Cap Equity	Real Estate	Large Cap Equity	Small Cap Equity	Emerging Market Equity	U.S. Fixed Income	Large Cap Equity	U.S. Fixed Income	U.S. Fixed Income	U.S. Fixed Income	Small Cap Equity	Small Cap Equity	U.S. Fixed Income
38.82%	15.02%	1.38%	21.31%	37.28%	0.01%	31.49%	1.92%	1.80%	-0.59%	13.74%	6.51%	5.47%
Large Cap Equity	Large Cap Equity	U.S. Fixed Income	High Yield	Dev ex-U.S. Equity	High Yield	Small Cap Equity	Real Estate	Global ex-U.S. Fixed Income	Global ex-U.S. Fixed Income	Large Cap Equity	Large Cap Equity	Global ex-U.S. Fixed Income
32.39%	13.69%	0.55%	17.13%	24.21%	-2.08%	25.52%	0.84%	-0.20%	-3.22%	12.82%	4.76%	-0.40%
Dev ex-U.S. Equity	U.S. Fixed Income	Real Estate	Large Cap Equity	Large Cap Equity	Global ex-U.S. Fixed Income	Dev ex-U.S. Equity	Global ex-U.S. Fixed Income	High Yield	High Yield	Emerging Market Equity	High Yield	High Yield
21.02%	5.97%	-0.79%	11.96%	21.83%	-2.15%	22.49%	0.76%	-1.41%	-11.46%	9.16%	4.41%	-4.73%
High Yield	Small Cap Equity	Dev ex-U.S. Equity	Emerging Market Equity	Small Cap Equity	Large Cap Equity	Real Estate	High Yield	Emerging Market Equity	Large Cap Equity	Real Estate	Dev ex-U.S. Equity	Large Cap Equity
7.44%	4.89%	-3.04%	11.19%	14.65%	-4.38%	21.91%	0.03%	-5.27%	-12.35%	7.06%	4.25%	-4.97%
Real Estate	High Yield	Small Cap Equity	Real Estate	Global ex-U.S. Fixed Income	Real Estate	Emerging Market Equity	Large Cap Equity	Large Cap Equity	Dev ex-U.S. Equity	Dev ex-U.S. Equity	Emerging Market Equity	Dev ex-U.S. Equity
3.67%	2.45%	-4.41%	4.06%	10.51%	-5.63%	18.44%	-0.04%	-8.23%	-14.12%	6.97%	0.77%	-14.42%
U.S. Fixed Income	Emerging Market Equity	High Yield	Dev ex-U.S. Equity	Real Estate	Small Cap Equity	High Yield	Dev ex-U.S. Equity	Real Estate	Emerging Market Equity	High Yield	U.S. Fixed Income	Small Cap Equity
-2.02%	-2.19%	-4.47%	2.75%	10.36%	-11.01%	14.32%	-1.94%	-8.24%	-15.40%	4.51%	0.47%	-15.95%
Emerging Market Equity	Global ex-U.S. Fixed Income	Global ex-U.S. Fixed Income	U.S. Fixed Income	High Yield	Dev ex-U.S. Equity	U.S. Fixed Income	Small Cap Equity	Small Cap Equity	Small Cap Equity	Global ex-U.S. Fixed Income	Global ex-U.S. Fixed Income	Emerging Market Equity
-2.60%	-3.08%	-6.02%	2.65%	7.50%	-14.09%	8.72%	-3.21%	-8.42%	-21.73%	2.04%	0.30%	-15.96%
Global ex-U.S. Fixed Income	Dev ex-U.S. Equity	Emerging Market Equity	Global ex-U.S. Fixed Income	U.S. Fixed Income	Emerging Market Equity	Global ex-U.S. Fixed Income	Emerging Market Equity	Dev ex-U.S. Equity	Real Estate	U.S. Fixed Income	Real Estate	Real Estate
-3.08%	-4.32%	-14.92%	1.49%	3.54%	-14.57%	5.09%	-4.66%	-8.88%	-22.76%	1.78%	0.23%	-23.31%

Sources:
Bloomberg Barclays Aggregate
Bloomberg Barclays Corp High Yield
Bloomberg Barclays Global Aggregate ex US

● FTSE EPRA Nareit Developed ● MSCI World ex USA ● MSCI Emerging Markets ● Russell 2000 ● S&P 500

Swift Recovery in the Stock Market – Did Investors Get Ahead of Themselves?

Stock market is not the economy

As of June 8 – U.S. stock market recouped its loss already, even year-to-date. How can that be?

- Supreme confidence in efficacy of monetary and fiscal policy
- Zero interest rates, the array of Fed program support, and fiscal stimulus, both here and around the globe, provide strong support for equity returns
- Imbalances between performance of growth and value remain
- -Non-U.S. stocks are still down year-to-date
 - Developed markets: -8.2%
 - Emerging markets: -9.3%
 - -ACWI ex-U.S.: -8.6%
- Investment grade bonds generated strong performance as rates were slashed
 - Credit took a hit in March, with spreads widening and liquidity drying up
 - Liquidity and confidence returned in April, credit now generating positive year-to-date returns through early June
- Below-investment grade took a bigger hit in March, still negative year-to-date
- Real estate, private equity data lag
- -Real estate will suffer drop in income, as shuttered companies struggle to pay rent, vacancies rise
- Exacerbate existing trends driving property type uses office, retail in particular
- Names and sectors driving the stock market have not seen the revenue declines and layoffs that have decimated transportation, airlines, retail, consumer services and durable goods

Callan Scenarios Analysis – Shape of Potential Recovery

	Baseline	V-Shaped	U-Shaped	L-Shaped
Description	 Callan 2020 – 2029 Capital Market Assumptions (CMAs) established in Fall, 2019 Callan CMAs implicitly reflect the possibility of recessions 	 Global economy is fully re-opened in 2020Q3 Optimistic scenario Fiscal and monetary policy is effective Job recovery is quick 	 Global economy is not fully re-opened until 2021Q1 Scenario that falls between V-Shaped and L-shaped scenarios 	 Global economy is not fully re-opened until 2021Q3 Fiscal and monetary stimulus is unprecedented and low rates remain for a long time Job destruction takes years to recover, while consumer demand is slow to resume Low inflationary regime
Time to Open		2 quarters	4 quarters	6 quarters
Equity Year 1	7.0%	-20%	-38%	-38%
Equity Year 2	7.0%	+30%	+9%	-25%
Equity Year 3 *	7.0%	+17%	+27%	+15%
10-Year Annualized				
Equities	7.0%	7.0%	3.3%	-1.5%
Long Government	1.8%	1.0%	1.2%	3.3%
Long Credit	3.3%	2.7%	2.7%	4.1%

* 7.0% return per year for each scenario thereafter

Source: Callan LLC

What Happens to the Deficit in All of This?

Do Current Debts + Future Commitments = Unsustainable Fiscal Problems for U.S.?

Framing question: Is U.S. economy better off as a result of policy actions taken, a broader question than just the impact of a ballooning deficit?

- Stimulus has prevented a much worse near-term outcome
- Larger deficit suggests a worse longer-term outcome
- -Less saving available to fund private sector investment
- -Raises future debt service burden; future tax payers pay more and get less from their government
- The stimulus and the deficit come as a package tough to pin down an definitive answer
- Does the trade-off justify the current action, or at least the scale?
- -Deficit increase may not be a problem for a number of years; Still time to take action to reduce future deficits, if all goes well
- Many if not most of the Fed's actions are actually cost-neutral
- -Loan and liquidity facilities were set up explicitly such that the Fed expects to be repaid with little loss
- Cost of stimulus reflects interaction of several factors
- Depends in part on how to treat loans; only un-repaid or forgiven loans should be counted as expenditures
- -UI claims clearly a large expense, but not expected to continue anywhere near Q2 levels
- -Large loss of tax revenues due to the shutdown and recession
- -Lower inflation lowers expenditures but also lowers tax bases
- -Lower interest rates have a huge impact on interest expense, a big offset to the cost
- Early "congestion" in the bond markets, but dealt with quickly by the Fed
- Ability to roll over debt at much lower rates compared to pre-COVID will lower debt service, mitigating the impact of the increase in debt going forward

How Big Is The Deficit?



May 2020 projection provided by IHS Markit, global forecasting firm

Deficit as % of GDP jumps from 4.6% in 2019 to 13.2% in 2020, 12.8% in 2021



What Happens to the Deficit in All of This?

Tracing potential consequences of higher deficits

Assume near-term benefits (saving the world) are a given, focus on intermediate to longer-term negatives

- What if investment is not very interest-sensitive? Less of a drag on capital formation and GDP growth
- What if demand for Treasury debt both here and abroad remains strong? Less harm in issuing more Treasuries

- Debt service burden is lowered by low interest rates; rolling over higher yielding debt actually lowers the deficit
- This "feature" is unique to the depth of this crisis and the flight-to-safety quality of Treasuries
- -Not necessarily related to the stimulus or the current deficit
- Some of the extra debt issued through the stimulus could be monetized
- There may be little inflationary consequence to greater growth in liquidity; may actually be desired to spur inflation
- Fed could forgive the debt and Treasury would not have to raise taxes to redeem the debt at maturity
- Treasury gets to spend by effectively issuing money the economy needs to operate. Why leave all the fun to the Fed?
- Debt-to-GDP ratio will be higher, but the U.S. fiscal position just needs to be the least worst, or better than most to enjoy the support of the debt markets; expect this to be the case for the U.S. among major economies
- Increased borrowing at low rates can be invested in infrastructure that helps the economy grow faster, thereby
 increasing our capacity to bear more debt in the future
- Saving the world is an investment. More insidious problem may be borrowing today to finance today's consumption. Expecting future generations to pay for today's consumption could be "generational theft".


Detailed 2020 Expectations and Resulting Portfolio Returns and Risks

2020 Callan Capital Market Assumptions

Risk and return: 2020-2029

		OJECTED RETU	RN	N PROJECTED RISK			
Asset Class	Index	1-Year Arithmetic	10-Year Geometric*	Real	Standard Deviation	Projected Yield	
Equities							
Broad U.S. Equity	Russell 3000	8.55%	7.15%	4.90%	18.10%	2.00%	
Large Cap U.S. Equity	S&P 500	8.35%	7.00%	4.75%	17.70%	2.10%	
Small Cap U.S. Equity	Russell 2500	9.25%	7.25%	5.00%	21.20%	1.55%	
Global ex-U.S. Equity	MSCI ACWI ex USA	9.10%	7.25%	5.00%	20.50%	3.10%	
Developed ex-U.S. Equity	MSCI World ex USA	8.70%	7.00%	4.75%	19.70%	3.25%	
Emerging Market Equity	MSCI Emerging Markets	10.25%	7.25%	5.00%	25.70%	2.65%	
Fixed Income							
Short Duration Gov't/Credit	Bloomberg Barclays 1-3 Yr G/C	2.70%	2.70%	0.45%	2.10%	2.85%	
Core U.S. Fixed	Bloomberg Barclays Aggregate	2.80%	2.75%	0.50%	3.75%	3.40%	
Long Government	Bloomberg Barclays Long Gov	2.55%	1.80%	-0.45%	12.50%	3.40%	
Long Credit	Bloomberg Barclays Long Cred	3.75%	3.25%	1.00%	10.50%	5.05%	
Long Government/Credit	Bloomberg Barclays Long G/C	3.25%	2.75%	0.50%	10.60%	4.45%	
TIPS	Bloomberg Barclays TIPS	2.50%	2.40%	0.15%	5.05%	3.15%	
High Yield	Bloomberg Barclays High Yield	5.10%	4.65%	2.40%	10.25%	7.30%	
Global ex-U.S. Fixed	Bloomberg Barclays Glbl Agg xUSD	1.30%	0.90%	-1.35%	9.20%	2.05%	
Emerging Market Sovereign Debt	EMBI Global Diversified	4.70%	4.35%	2.10%	9.50%	6.70%	
Other							
Core Real Estate	NCREIF ODCE	7.05%	6.25%	4.00%	14.00%	4.75%	
Private Equity	Cambridge Private Equity	12.00%	8.50%	6.25%	27.80%	0.00%	
Hedge Funds	Callan Hedge FOF Database	5.25%	5.00%	2.75%	8.70%	0.00%	
Commodities	Bloomberg Commodity	4.50%	2.75%	0.50%	18.00%	2.25%	
Cash Equivalents	90-day T-bill	2.25%	2.25%	0.00%	0.90%	2.25%	
Inflation	CPI-U		2.25%		1.50%		

Note that return projections for public markets assume index returns with no premium for active management.

Geometric returns are derived from arithmetic returns and the associated risk (standard deviation); Projected yields represent the expected 10-year average Source: Callan

2020 Callan Capital Market Assumptions

Correlation: 2020 - 2029

Large Cap U.S. Eq	1.000																	
Small/Mid Cap U.S. Eq	0.915	1.000									-							
Dev. ex-U.S. Eq	0.765	0.775	1.000									De	lations	hina ha		0000t		
Emerging Market Eq	0.775	0.765	0.845	1.000								as	import	ant as	standa	ird devi	ation	sale
Short Duration	-0.040	-0.065	-0.050	-0.080	1.000							– To	detern	nine po	ortfolio i	mixes,	Callan	
Core U.S. Fixed	-0.100	-0.125	-0.105	-0.140	0.845	1.000						en	nploys	mean-\	/arianc	e optim	nizatior	า
Long Government	-0.100	-0.125	-0.110	-0.170	0.770	0.900	1.000					-Re	eturn, s	tandar	d devia	tion, ar	nd In a construction	on of
Long Credit	0.300	0.275	0.230	0.230	0.640	0.840	0.750	1.000				eff	icient a	asset m	nixes		ipositic	
TIPS	-0.040	-0.075	-0.050	-0.085	0.555	0.640	0.530	0.480	1.000									
High Yield	0.600	0.585	0.570	0.560	-0.030	0.030	-0.100	0.400	0.055	1.000								
Global ex-U.S. Fixed	0.010	0.000	0.050	0.100	0.495	0.530	0.470	0.540	0.400	0.120	1.000							
EM Sovereign Debt	0.530	0.515	0.515	0.545	0.050	0.110	-0.010	0.350	0.180	0.600	0.010	1.000						
Core Real Estate	0.695	0.665	0.660	0.625	-0.005	-0.035	-0.045	0.320	0.000	0.455	-0.050	0.360	1.000					
Private Equity	0.830	0.805	0.795	0.765	-0.160	-0.185	-0.250	0.190	-0.135	0.525	0.060	0.425	0.600	1.000				
Hedge Funds	0.775	0.750	0.745	0.720	0.055	0.100	0.120	0.390	0.085	0.560	-0.050	0.540	0.525	0.635	1.000			
Commodities	0.220	0.210	0.205	0.200	-0.195	-0.100	-0.030	-0.045	0.120	0.100	0.150	0.190	0.200	0.180	0.210	1.000		
Cash Equivalents	-0.030	-0.045	-0.030	-0.065	0.300	0.100	0.040	-0.100	0.120	-0.110	0.000	-0.070	-0.060	0.000	-0.070	0.070	1.000	
Inflation	-0.020	0.020	0.000	0.030	-0.205	-0.280	-0.250	-0.250	0.100	0.070	-0.100	0.000	0.100	0.060	0.200	0.400	0.000	1.000
	Lg Cap	Sm/Mid	Dev ex- US	Em Market Eq	Sht Dur	Core Fix	Long Gov	Long Credit	TIPS	Hi Yield	Global ex-US Fixed	EMD	Core Real Estate	Private Equity	Hedge Funds	Comm	Cash Equiv	Inflation



7.5% Expected Returns Over Past 30+ Years



Source: Callan



MCERA Asset Classes - Return and Risk

Asset Class	10-Year Compound Return	Projected Standard Deviation
Broad Domestic Equity	7.15%	18.10%
Global ex-US Equity	7.25%	20.50%
Domestic Fixed Income	2.75%	3.75%
Private Equity	8.50%	27.80%
Real Assets	6.05%	12.20%
Cash Equivalents	2.25%	0.90%

Total Real Assets portfolio:

- 8% private real estate, 7% public real assets

- Public real assets = 25% TIPS, 25% Commodities, 25% REITs, 25% Natural Resource Equity

MCERA Asset Classes - Correlation

	Broad Domestic Equity	Global Ex-U.S. Equity	Domestic Fixed	Real Assets	Private Equity	Cash Equivalents	Inflation
Broad Domestic Equity	1.00						
Global Ex-U.S. Equity	0.81	1.00					
Domestic Fixed	-0.11	-0.12	1.00				
Real Assets	0.77	0.75	-0.06	1.00			
Private Equity	0.84	0.81	-0.19	0.73	1.00		
Cash Equivalents	-0.03	-0.04	0.10	-0.02	0.00	1.00	
Inflation	-0.01	0.01	-0.28	0.23	0.06	0.00	1.00

Total Real Assets portfolio:

- 8% private real estate, 7% public real assets

- Public real assets = 25% TIPS, 25% Commodities, 25% REITs, 25% Natural Resource Equity

Source: Callan LLC

MCERA - 2020 Efficient Mixes

Real Assets Constrained to 15% of Portfolio

			Alter	native Asso	et Mixes - 1	5% Real A	Assets			
	MCERA	Min	Max							
Asset Class	Target	Alloc	Alloc	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5		
Broad US Equity	32%	0%	100%	24%	26%	29%	31%	34%		
Broad International Equity	22%	0%	100%	16%	18%	19%	21%	23%		
Broad US Fixed Income	23%	0%	100%	35%	30%	25%	20%	15%		
Real Assets	15%	15%	15%	15%	15%	15%	15%	15%		
Private Equity	8%	0%	100%	10%	11%	12%	13%	14%		
Totals	100%			100%	100%	100%	100%	100%		
Expected Return	6.6%			6.2%	6.4%	6.7%	6.9%	7.1%		
Real Return	4.4%			4.0%	4.2%	4.4%	4.6%	4.8%		
Risk (Standard Deviation)	13.2%			11.2%	12.2%	13.1%	14.1%	15.1%		
% equity	62%			50%	55%	60%	65%	70%		
% fixed income	23%			35%	30%	25%	20%	15%		
% real assets	15%			15%	15%	15%	15%	15%		

- Mixes are constrained to hold 15% real assets

- Maximum private equity allocation = 25% of public equity exposure
- No new asset classes included
- The current target mix is efficient and lies on the efficient frontier
- Real assets expands the real estate allocation category to include other real assets, all publicly traded: TIPS, commodities, natural resource equity and REITs. Real estate remains the core, with added diversification.

MCERA - 2020 Efficient Frontier – Nominal Return

Maximum Private Equity Allocation = 25% of Public Equity Exposure



- MCERA's asset allocation target is an optimal allocation, since it lies on the efficient frontier depicting risk and return

 Current target is a well-diversified portfolio that includes fixed income, public equity, private equity and real assets, including private real estate

MCERA - 2020 Efficient Frontier – Real Return

Maximum Private Equity Allocation = 25% of Public Equity Exposure



- MCERA's long term nominal return assumption of 7.0% and inflation assumption of 2.75% suggest a long term real return target of 4.25%
- Callan's 10-year return expectation for the target asset allocation is 6.65%, and combined with our inflation assumption of 2.25%, yields a real return expectation of 4.40%, greater than the 4.25% assumed in the actuarial valuation

Projected Rates of Return – One Year

Maximum Private Equity Allocation = 25% of Public Equity Exposure



Range of Projected Rates of Return Projection Period: 1 Year Optimization Set: 2020 Constrain RE 15

Projected Rates of Return – Five Years

Maximum Private Equity Allocation = 25% of Public Equity Exposure



Range of Projected Rates of Return Projection Period: 5 Years Optimization Set: 2020 Constrain RE 15

Projected Rates of Return – Ten Years

Maximum Private Equity Allocation = 25% of Public Equity Exposure



Range of Projected Rates of Return Projection Period: 10 Years Optimization Set: 2020 Constrain RE 15

2020 Capital Market Expectations – Nominal vs Real

Modest Return Expectations Across All Asset Classes

The expected return for the MCERA Policy Target Mix is 6.65%, below the 7.0% return assumed in the actuarial valuation. The Plan has a reasonable chance of achieving this result over 10 years (49% probability). In addition, the real return embedded in the valuation (7.0% - 2.75% inflation = 4.25%) is lower than Callan's expected real return (6.65% - 2.25% inflation = 4.40%).

While return expectations are low relative to long-term history for the next five- to ten-year horizon, MCERA will need to retain a strong orientation toward risk assets (equity) in pursuit of return to achieve its funding goals.

Whether the plan should pursue more or less exposure to risk assets than the current policy target mix should not be unduly influenced by subdued expectations for the shorter-term 5-10 year horizon. We do not believe investors are likely to be compensated for greater risk taking in the shorter term.

What is the Appropriate Time Horizon for Setting Return Expectations?

Pre-COVID 19, consensus was that the economic cycle was long in the tooth

- Assets had become richly valued after strong 2019
- Downturn in the capital markets is imminent and inevitable
- Recession call was for 2020, but only a mild decline
- Growing chorus to "do something" de-risking a common theme across investor types

Should long-term investors respond to short-term market movements and changes in valuation?

- Only when they reach an extreme
- Pessimistic capital market expectations overly reliant on current situation result in unfortunate consequences
- Excessive risk taking when we may not believe it will be rewarded
- Pursuit of the bright shiny object regardless of fit or understanding

Market cycles are inevitable and should be expected

- Long-term strategic plans already incorporate expected corrections and recessions
- The path to a long-term return is through shorter-term periods of boom and bust

Time horizon is everything

- Is 10 years sufficient for a long-term investor?
- Should portfolios differ whether you have a 10-year outlook or are focused on a long-term equilibrium return?
- How about 5 years?



Appendix Asset Class Outlook - Details

Fixed Income Assumptions

Summary

Fundamental relationship

Bond Return = Capital Appreciation + Income + Roll Return

Broad U.S. fixed income

Return = 2.75%, Risk = 3.75%

• Interest rates reset with Fed pivot, now expected to rise more modestly over 5-year horizon

- Yield curve expected to gradually steepen as we return to a "normal" term structure
- Higher yields expected to be earned over the second half of the forecast horizon
- Capital losses expected as yields increase
- Little impact from changing credit spreads
- Roll return expected to provide modest tailwind

Equity Assumptions

Summary

Fundamental relationship

Equity Return = Capital Appreciation + Income + Valuation Change

C.1

Broad U.S. equity

Return = 7.15%, Risk = 18.1%

- Earnings growth likely to moderate
 - Coming off strong period of gains, despite modest GDP growth
 - Benefited from expansive economic policies
- Dividend yield consistent with recent history
- Payout ratios close to historical norms
- Yields stable for 20 years in the face of changing interest rates

Broad global ex-U.S. equity

Return = 7.25%, Risk = 20.50%

- Earnings growth likely to be moderate
- Significant uncertainty in future economic policies
- Relatively high dividend yields will support returns.
- Long period of relative undervaluation, potential for growth

Alternative Investment Assumptions

Hedge funds

Return = 5.0%, Risk = 8.7%

Hedge funds represented by the Callan Hedge Fund of Funds database

- Hedge fund returns will be supported by increasing interest rates
- Hedge fund returns consist of cash plus a spread
- -2.25% cash forecast—down from 2.5% following Fed pivot
- Hedge funds overall tend to have an equity beta
 - Beta tends to be about 0.4
- Return expected between that of stocks and bonds; benefit to hedge fund investing derives from potential for diversification to stocks and bonds

C.1

- Hedge funds earn risk premia
- Exotic beta
- Illiquidity
- Forecast does not include a net active management premium beyond beta and illiquidity
- Broad spectrum of possible returns
- Represents an average expectation for returns across the universe
- Skillful managers expected to earn net excess returns

Callan

Alternative Investment Assumptions

Core real estate

Return = 6.25%, Risk = 14.0%

Real estate represented by the NCREIF ODCE

- Real estate returns reflect decreases in cap rates
- -Cap rates continued to decline in 2019
- Spread between cap rates and bonds has compressed, making real estate relatively less attractive
- However, demand has remained high as equity gains rebalanced into real estate
- Overall real estate tends to have an equity beta
 - Stylized beta tends to be about 0.75; core real estate includes leverage that boosts this beta to 0.85
- -Real estate premium over cash projected at 4.0%; equity risk premium over real estate retained at 0.75%
- Risk reflects economic realities rather than volatility observed under normal conditions
- Risk adjusted to better reflect the diversification benefit to adding core real estate to a portfolio of stocks and bonds
- Observed volatility is generally less than 5% in normal markets
- Our forecasted volatility better represents the risk of loss
 - Assuming a 3% standard deviation would imply that the real estate loss experienced during the financial crisis was a 10+ standard deviation event

Alternative Investment Assumptions

Private equity

Return = 8.50%, Risk = 27.80%

Private equity represented by the Cambridge Private Equity Index

- Private equity forecasts related to public equity forecasts
- Both returns driven by similar economic factors
 - Risk premia for both should rise and fall together
- -Public equity markets are often the exit strategy for private equity investments
 - -Less attractive public markets reduce the outlook for private equity
- The geometric return reflects heightened risk
 - In any single period the private equity forecast has approximately a 3.5% spread over the U.S. public equity forecast

- Wide range of results across implementations
- The best managers far outperform the worst managers in any given period
- Superior managers could substantially outperform our projected return
- Risk reflects economic realities rather than volatility observed under normal conditions
- Observed volatility is generally less than that of the S&P 500
- Variations in investment values can't be observed since private equity is not frequently priced in public markets
- -Our forecasted volatility puts private equity on the security market line
- Even with economic risk accounted for, model suggests a substantial diversification benefit to private equity, shifting the efficient frontier

This report is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation.

This report may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact.

Reference to or inclusion in this report of any product, service or entity should not be construed as a recommendation, approval, affiliation or endorsement of such product, service or entity by Callan.

Past performance is no guarantee of future results.

The statements made herein may include forward-looking statements regarding future results. The forward-looking statements herein: (i) are best estimations consistent with the information available as of the date hereof and (ii) involve known and unknown risks and uncertainties such that actual results may differ materially from these statements. There is no obligation to update or alter any forward-looking statement, whether as a result of new information, future events or otherwise. Undue reliance should not be placed on forward-looking statements.

Callan



June 17, 2020

Credit Dislocation -Opportunities in Private Credit

Catherine Beard Alternatives Consulting

Distressed Credit Cycle Has Arrived



COVID Macroeconomic Effects = Global Slowdown



Source (clockwise from top left): OECD, https://www.oecd.org/economic-outlook/; Department of Labor, https://www.dol.gov/ui/data.pdf; FactSet; IHS Markit Flash U.S. Composite PMITM March 24, 2020.

Callan

Oil Markets Most Immediately Impacted



- Oil prices have fallen precipitously on OPEC/Russia negotiations and slowing demand
- Production likely to experience a similar slowdown if price is slow to recover
- 90% of energy market estimated to be distressed

Source: J.P. Morgan Asset Management; EIA; FactSet; Baker Hughes.

Impact Felt Across Sectors

Expected Default Frequencies (EDF)



- Expected default frequencies have increased across industries
- Impact greatest among travel, entertainment and energy firms
- "Essential" businesses feel less of a strain

Source: Moody's Analytics, https://ma.moodys.com/rs/961-KCJ-308/images/Tracking%20the%20Impact%20of%20COVID-19%20on%20Credit%20Risk.pdf



Slowdown Portends Higher Defaults

U.S. High Yield Bond Defaults



- Market entering another distressed cycle, as defined by spreads in excess of 1,000 bps
- In March, the amount of USD-denominated debt trading at distressed levels exceeded that of the GFC
- Several industries not just those directly impacted by COVID will likely experience higher defaults
- Expectations for \$500bn of BBB fallen angels, \$400bn of high yield loans and bonds downgraded to CCC, and \$560bn of HY to default

Source: Bank of America Merrill Lynch. Marathon Asset Management. As of March 2020.



Fed Providing Meaningful Support to Certain Markets...

...while excluding others

Program/Facility	Abbreviation	Targeted Sector	Purchases, direct lending, or SPV	Announced Treasury support (\$Bn)	Capacity (\$bn)	Authorization	Current Balance (\$bn)
Commercial Paper Fund Facility	CPFF	Commercial Paper	SPV	\$10	Not stated	13(3)	\$1
Primary Dealer Credit Facility	PDCF	Primary Dealers/Liquidity	Direct Loans	\$0	Not stated	13(3)	\$33
Money Market Mutual Fund Liquidity Facility	MMLF	Money Market Mutual Funds	SPV	\$10	Not stated	13(3)	\$51
Term Asset-Backed Securities Loan Facility	TALF	Asset-Backed Securities	SPV	\$10	Up to \$100	13(3)	-
Corporate Credit Facilities	PMCCF, SMCCF	Corporate Debt	SPV	\$75	Up to \$750	13(3)	-
Main Street Loan Facilities	MSELF, MSNLF	Small- & Mid-Sized Businesses	SPV	\$75	Up to \$600	13(3)	-
Paycheck Protection Program Liquidity Facility	PPPLF	Small Businesses	Direct Loans	\$0	Not stated	13(3)	-
Municipal Liquidity Facility	MLF	Municipal Debt	SPV	\$35	Up to \$500	13(3)	-
Discount Window	-	Banks	Direct Loans	\$0	Not stated	10(B)	\$36
Cenral Bank Swap Lines	-	Central Banks/Dollar Liquidity	Direct Loans	\$0	Not stated	14	\$378
FIMA Repo Facility	FIMA	Foreign Monetary/Treasury Liquidity	Direct Loans	\$0	Not stated	FOMC	-
Asset Purchases	-	Treasuries, Agency MBS	Purchases	\$0	Not stated	FOMC	\$1,511
Repurchase Agreements	-	Financial Intermediaries	Direct Loans	\$0	Not stated	FOMC	\$181
Totals				\$215	> \$1,950		\$2,191

A sea of Taxa	Market Size	Fed Facility Size	
Asset Type	(\$bh)	(\$DN)	Fed Eligible?
HY Bonds	\$1,300	None	Ν
HY ETF	\$42	\$8	Ν
Leveraged Loans	\$1,400	None	Ν
Leveraged Loans ETF	\$10	None	Ν
CLO AA-Unrated	\$335	None	Ν
European HY Bonds and Loans	\$700	None	Ν
Fallen Angels <bb< td=""><td>TBD</td><td>None</td><td>Ν</td></bb<>	TBD	None	Ν
Middle Market Loans	\$1,000	\$200(E)	Ν
Total Ineligible Assets	\$4,787		

Source: Marathon Asset Management, LP, SIFMA. Note HY ETF assets have very limited eligibility.

The Fed and Treasury have been quick to provide solutions to certain parts of the market, primarily short-term and investment grade securities. However, the lack of support for leveraged credit markets and high yield bonds creates opportunities for distressed investors.

Private Credit - Primary Strategy Categories

The following strategies are represented across a myriad of Private Credit funds including multi-strategy funds which invest across a number of the strategies below:

- Corporate Direct Lending (Non-Syndicated), Mezzanine Origination or purchase of commercial loans used to finance general business operations, specific projects, or growth opportunities. Includes sponsor and non-sponsor related senior and junior lending to companies with annualized EBITDA of \$10 mm to \$100 mm
- Real Asset-Based Lending (Real estate, Transportation) Origination or purchases of loans backed by real
 assets such as real estate, aviation, shipping and other infrastructure projects
- Structured Credit (CLO, RMBS, ABS) Invests in pools of corporate and other asset backed loans including corporate, consumer and residential-related structures; cash flows from loans segregated into different credit tranches
- Distressed Debt/Special Situations Invests across the capital structure in stressed or distressed companies, often with the intention of creating value through actively driving a restructuring. Portfolio value can also be added by investing in special situations such as legal or corporate events that are temporary in nature
- Specialty Finance (Consumer Lending, Franchise Lending, Specialty Lending, etc.) Origination or purchase of loans backed by more esoteric forms of collateral, usually requiring specialized expertise
- Other Niche (Insurance-Linked, Life Settlements, Royalties) Debt related investing in niche sectors such as insurance and health care royalties
- Multi-Strategy Takes a multi-strategy approach in investing in the Private Credit subcategories outlined above.
 Allocations to sub-sectors may change opportunistically over time

Varying Opportunities as Cycle Evolves

Current Period (I) <i>(< 1 yr)</i> Dislocation/Illiquidity	Intermediate Period (II) <i>(< 2 yrs)</i> Exit Paths Emerge	Extended Period (III) (1 – 3+ yrs) Restructuring & Recovery
Maximum uncertainty and dislocation	Potential outcomes narrow: deeper credit underwriting and opportunistic lending	Managers seek to improve recoveries; turnaround and restructuring opportunities
Investment Focus	Investment Focus	Investment Focus
 Aim for highest quality credits trading 	 Corporate stress & distress 	 Corporate restructurings
down	- Crossover opportunities; integration of	 Non-performing loan portfolios &
 Often IG, sectors leaders with 	credit and asset underwriting	structured credit work-outs
Non evelical businesses	 Structured Credit 	 Alternative and special situations lending
- Low LTVs & capital cushion	 Private credit 	Kev Manager Skills
- Low Lives a capital cushion	 Performing assets; loan portfolios 	- Ability to Identify/Acquire Eulcrum
 Many levers of liquidity; access to capital markets 	 Rescue lending 	Security
 Capital structure dislocations 	Key Manager Skills	 Operational Turnaround
	 Deal Origination 	 Ability to Exit
Key Manager Skills	 Security Selection 	
- Trading	- Credit Underwriting	
 Relative Value Assessment 	– Legal/Workouts	

Callan High Conviction Manager – Distressed/Dislocation Focus

			Ca	llan High Interest Ci	redit Dislocation Fur	nds		
				Draw-dow	n Structure			
	Apollo	Ares	Beach Point	Blue Torch	CarVal	Fortress	HPS	Monarch
Name of Strategy	Accord Fund IV	Corporate Opportunities Fund VI ("ACOF VI")	Opportunities Fund IV	Fund II	CVI Credit Value Fund V	Credit Opportunities Fund V Expansion	Specialty Loan Fund V	MCP V
Distressed Style	Corporate Credit	Distressed for Control/ PE	Multi-strategy	Opportunistic Lending	Multi-strategy	Multi-strategy	Opportunistic Lending	Multi-strategy
Investment Focus	Opportunity set includes idiosyncratic investments such as DIP Loans and liquidity- driven opportunities that trade down for non- fundamental reasons	Private Equity focused. Public distressed opportunities and private market distressed for control opportunities	Middle market stressed/ distressed & special situations. Focus on more liquid assets such as high yield bonds and broadly syndicated loans as well as illiquid restructuring opportunities.	Opportunistic lending strategy providing flexible lending fo companies in transition.	Corporate securities, loan portfolios, structured credit, hard assets. Quality assets at distressed prices, oprhaned asset sales, and distressed restructurings.	Distressed and mispriced opportunities; financial insitutionals and specialty finance companies; orphan portfolios; idiosyncratic asset transactions; structured credit transactions.	Opportunistic lending to middle- and upper middle market companies on a global basis.	Distressed and opportunistic credit. All-weather approach; overlooked and niche areas on a global basis: mid-sized capital structures, government debt, structured credit, real estate and other areas.
Primary Activity Phase*	1, 11	Ш	1, 11, 111	П	1, 11, 111	1, 11, 111	11, 111	1, 11, 111
FUND DATA								
Target Net IRR	10 - 12%	Mid teens	Mid-high teens	10 - 12% (unlevered);	15%	20%+ Gross	10 - 12% (unlevered);	12 - 15%
Target net MOIC	N/A	1.6 - 1.7x	N/A	N/A	N/A	N/A	N/A	NA
Investment Period	1.5 yrs	5 years from the later of the closing date of the Fund's first investment and the date of the final close ("Effective Date")	3 years	3 years	3 years	Co-terminus with FCOF V April 2023	3 years	4 years
Fund Term	3.5 years	10 years from the Effective date, subject to two 1-year extensions	6 years	6 years	6 years	6 year harvest through April 2029	7 years	7 yrs (2 1 yr ext)
Target Fund Size	\$1bn	\$7.7bn	\$1bn	\$1bn	\$2.5bn	\$3bn	\$5.5bn	\$1.5bn
Hard Cap	\$1bn	\$8bn	\$1.5 bn	\$1.5bn	\$3.0 bn	\$3.5bn	\$6.0bn	\$2.0bn
Open?	Q2/Q3	Yes	Yes	Yes	Yes	Yes	Yes	Yes
First Close Date	Q4	30-Apr	30-Sep	31-Jan	31-May	every 15 days	raised \$1bn	Early May
Second Close Date	114 2024	15-Jun	700	31-Mar	114 2024	every 15 days	May	Mid-summer
Final Close Date	H1 2021	IBD	IBD	30-Sep	H1 2021	31-Jul	31-Dec	Q3/Q4 2020
FEES:								
Management Fee	100 bps	150 bps	175 bps	100 bps	150 bps	150 bps	150 bps, then 175 bps after inv period	175 bps on lesser of invested or committed; 157 bps blended
Charged on	Invested capital	Committed	Invested	Committed	Invested	Invested	Committed, then NAV	Blended
Carried Interest	15%	20%	20%	15%	20%	20%	15%	20%
Preferred Return/Hurdle	5%	8%	8%	6%	8%	8%	5% (UL); 7% (L)	8%
GP Catch-Up	100%	100%	100%	100%	100%	50%	100%	100%
	1							

* Phase I = Current Period (0-12 mos); Phase II = Intermediate Period (0-24 mos); Phase III = Extended Period (12-36+ mos)

Note: Subject to change based on information released by managers. As of 5/18/2020.

Callan High Conviction Manager – Distressed/Dislocation Focus (Cont'd)

	Callan High Interest Credit Dislocation Funds							
		Draw-dow	n Structure		Open-Ende	d Structure		
	Oak Hill Advisors	Oaktree	Sixth Street Ptnrs	Varde Partners	Magnetar	Sculptor		
Name of Strategy	Tactical Investment Fund	Opportunities Fund XI	TAO	Dislocation Fund	Constellation	Master Fund		
Distressed Style	Multi-strategy	Multi-strategy	Multi=strategy	Multi-strategy	Structured Credit	Multi-strategy		
Investment Focus	Distressed/stressed/spe cial situations, higher- returning private credit/rescue financing, securitized and real- asset based credit (aviation, shipping, CLOs, CRE, Resi, renewables, infra, etc.)	Invest opportunistically in the debt of financially distressed companies on a global basis with a focus on hard asset values; dependable cash flows, and durable business franchises.	Theme-based investing across the SSP platform including liquid stressed/distressed; opportunistic lending and special situations	Initially dislocated, high quality credits; eventually larger restructurings and NPLs	Distressed and mispriced assets globally, with a focus on specialty finance and structured credit opportunities.	Globally diversified multi strategy fund across credit, equity, convertibles and derivatives. Emphasizes creating alpha through process-oriented and complex opportunities.		
Primary Activity Phase*	11, 111	1, 11, 111	1, 11, 111	1, 11, 111	1, 11	1, 11		
FUND DATA								
Target Net IRR	12 -15%	15 - 35%	15 - 20%	Mid to high teens	10 - 12%	8 - 10%		
Target net MOIC	N/A	1.5-2.5x	1.4 - 1.6x	N/A	NA	NA		
Investment Period	4 years	3 yrs from either 20% invested or 1 year from first investment	Long-term LPs - 5.5 yr; short-term LPs - 3.5 yr	18 month investment period	Open-end	Open-end		
Fund Term	5 years from end of investment period	10 years from start of investment period	After one year from end of Investment Period	4 1/2 years	2, 3 , 5 year investor level gate	Open-end		
Target Fund Size	\$1.2bn	\$15bn	\$6 bn	\$1bn	\$2.7bn AUM	\$8. bn AUM		
Hard Cap	\$1.5bn	\$15bn	TBD	\$1.5 bn	Open-end	Open-end		
Open?	Yes	31-Jul	Yes	Yes	Yes	Yes		
First Close Date	Early May	\$2bn committed	01-Jun	May	NA	NA		
Second Close Date	Jun-20	TBD	NA 01. Oct	June	NA	NA		
Final Close Date	TBD	IBD	01-001	31-Aug	NA	NA		
FEES:			Long torm LBs: 65 bps					
Management Fee	150/137.5/125 bps at \$50mm/\$100MM	160/15/140 bps at \$300mm and \$500mm	unfunded + 135 bps invested; Short-term LPS: 115 bps (UF) + 150 bps (Inv)	150 bps	100 - 175 bps qtrly or semi-annual liquidity,	125 / 175 / 200 bps for 3-yr / A / Q liquidity		
Charged on	On cost basis of investments	Invested	Invested	Invested	Invested	Invested		
Carried Interest	20%	20%	17.5% (LT); 18.5% (ST)	20%	20%	20%		
Preferred Return/Hurdle	7%	8%	5%	8%	NA	t-bills for 3-yr class		
GP Catch-Up	100%	80%	100%	60%	NA	NA		

* Phase I = Current Period (0-12 mos); Phase II = Intermediate Period (0-24 mos); Phase III = Extended Period (12-36+ mos)

Note: Subject to change based on information released by managers. As of 5/18/2020.



Callan

Callan LLC 600 Montgomery Street Suite 800 San Francisco, CA 94111

Main 415.974.5060 Fax 415.291.4014

www.callan.com

Memorandum

То:	MCERA Board of Trustees
From:	Jim Callahan, CFA
	Anne Heaphy
Date:	June 10, 2020
Subject:	Parametric Portfolio Associates Emerging Markets Investment Process Update

Parametric's Investment Process

Parametric Portfolio Associates ("Parametric") manages a dedicated emerging markets strategy for MCERA. This strategy employs a structured, disciplined approach using quantitative tools to manage a highly diversified portfolio (1500+ securities). It seeks to add value by emphasizing diversification and broad exposure to smaller countries relative to the cap-weighted index. Each country is categorized into one of four tiers based on its market capitalization and trading volume (tier weights: 6.2%, 3.1%, 1.5%, and 0.8%). China is the one outlier with an approximately 12% weight ("super-tier") given its outsized allocation within the MSCI Emerging Markets Index (40%). This strategy provides exposure to a wide spectrum of emerging and frontier markets. Moreover, the product's focus on systematic rebalancing to manage absolute and relative risk and compound returns are unique features within the emerging markets arena.

Recently Announced Updates to the Investment Process

China's weight in the MSCI Emerging Markets Index has grown significantly over the past 20 years, not just due to price appreciation but also by increasing the number of companies now accessible to foreign investors. In 2001, Chinese companies totaled approximately 6% of the index, in 2015 they represented about 20%, and now just five years later, they constitute 40%.

In response to the growing size of China's equity markets, Parametric has revised its "super-tier" rule. The current rule stipulates that when a single country's weighting contributes more than 30% of the active risk of the portfolio, it will be under review. Thereafter with due diligence, that country's weighting can be increased incrementally by 3% (half of the targeted 6% weight) until it reaches two times the target weight (12%). Parametric has steadily increased its target weight to China from 4% in 2001 to 12% in 2020.

Despite this increase, the portfolio's strategic underweight to Chinese companies has contributed 30% - 50% to its active risk over the last three years. Consequently, Parametric is modifying its "super tier" rule so that the country's underweight must be at most 50% of the country's weight in the MSCI Emerging Markets Index. As a result, Parametric's target weight to China (including China A Shares) is expected to increase from 12% to 18.7%. This will also impact the target weights for the other four tiers. They will be modified to: 5.3%, 2.7%, 1.3%, and 0.7%.

Additionally, Parametric is adjusting its sector weighting methodology. Currently, sector weights are determined at the country level. Parametric seeks to achieve equal weights among the sectors within each country, but this is not always possible given liquidity constraints and a lack of sector representation within

certain countries. As a result, sector weights are modified by incorporating bands around their weighting in each country to accommodate these limitations. For example, sector allocations cannot be less than half of the sector weight on the low end and up to two times the sector weight on the high end in less liquid countries.

However, when the sector allocations get rolled up at the portfolio level, these modified weights create some imbalances in the total overall sector exposures. Parametric is enhancing its sector allocation methodology in an effort to achieve a more balanced exposure at the total portfolio level. Parametric will maintain sector diversification within each country and use an optimization process to achieve more equal aggregate sector weights. This will have the largest impact on Financials and Information Technology (IT). Financials is the most prevalent sector throughout the investable universe, and subsequently, has an outsized allocation (both within the portfolio and the index). That exposure will be reduced as Parametric aims for more equal weighted allocations. Alternatively, IT companies are much sparser throughout emerging and frontier markets. The majority of IT companies are located only in Taiwan, Korea, China, and India. This has led to a significant underweight, which will be narrowed with this adjustment.



Conclusion

Callan understands the rationale for these updates to the investment process. Parametric's value proposition continues to be intact and offers a differentiated and diversified portfolio relative to the MSCI Emerging Markets Index. Composition within emerging markets has certainly changed more recently as China's prominence continues to grow. This increased concentration will continue to have an impact on the relative performance and risk profile of Parametric's strategy. We are comfortable with these adjustments and recognize that strategies may need to change incrementally over time as market environments evolve. The aforementioned changes are expected to modestly enhance returns and reduce risk. According to the backtest, the strategy generated an additional 30 basis points and lowered volatility by 3 basis points on an annual basis over the past 10 years.

Callan

Callan LLC 600 Montgomery Street Suite 800 San Francisco, CA 94111

Main 415.974.5060 Fax 415.291.4014

www.callan.com

Memorandum

То:	MCERA Board of Trustees
From:	Jim Callahan, CFA
	Anne Heaphy
Date:	March 18, 2020
Subject:	UBS Realty Personnel Updates

UBS recently announced that Matt Lynch, Head of UBS Realty and Jack Connelly, Head of UBS Realty Acquisitions, were terminated from their roles. Lynch was replaced by Matt Johnson, who served as a portfolio manager for UBS' multi-manager real estate strategy (this is a strategy that invests in other asset managers' real estate strategies). Connelly's responsibilities were assumed by Rod Chu, who currently serves as Senior Portfolio Manager for the Trumbull Property Income Fund ("TPI"). Chu's title, Head of Transactions, is a new one, but his duties will be identical to those Connelly held.

C.4

The changes stem from the underperformance of the flagship UBS core Trumbull Property Fund and the resultant levels of redemption requests. Johnson's primary focus will be to help improve the position and performance of the Fund. Paul Canning remains as the senior Portfolio Manager for the Trumbull Property Fund and will report directly to Johnson. As of December 31, 2019, the net asset value of the fund was \$16 billion with \$5.4 billion in the redemption queue.

Callan has had multiple meetings and conference calls with UBS to discuss the changes and specifically how the changes will impact the Trumbull Property Fund. UBS has relayed that they anticipate, under Johnson's direction and Canning's execution, that the repositioning of the Fund, specifically the sale of underperforming assets, will be accelerated when compared to the prior leadership's direction. While Callan views the leadership change as a potential positive, we believe that until material progress towards re-positioning the Fund is complete, the Fund will remain challenged from a performance standpoint. Notably, the Fund sold one retail center in January for \$59mm and there are six other retail assets being marketed for disposition in 2020 worth a carried value of \$600mm.

Callan

Callan LLC 600 Montgomery Street Suite 800 San Francisco, CA 94111

Main 415.974.5060 Fax 415.291.4014

www.callan.com

Memorandum

То:	MCERA Board of Trustees
From:	Jim Callahan, CFA
	Anne Heaphy
Date:	June 12, 2020
Subject:	AEW Core Property Trust – Personnel Updates

AEW recently made some management announcements that will affect the portfolio management team of the Core Property Trust (CPT). The current team currently consists of:

C.5

Dan Bradley - Senior Portfolio Manager Mike Byrne – Senior Portfolio Manager Sara Cassidy – Portfolio Manager Lily Kao – Portfolio Manager

Mike Byrne will be assuming the newly created role of Chief Investment Officer in North America. He will still be involved with CPT through the end of the year and then will have broader oversight of the fund as CIO. As a result, Sara Cassidy and Lily Kao are being promoted to Senior Portfolio Managers of CPT. Bradley is remaining in his role as senior portfolio manager.

As background, Bradley has been the key architect and senior portfolio manager of CPT since the fund's inception in 2007 and has 40 years of industry experience. Byrne was added in 2017 to replace prior portfolio manager, Jonathan Martin, who was promoted to AEW's Chief Operating Officer. Kao joined the firm in 1998 and has been a portfolio manager on CPT since 2015. Cassidy more recently joined AEW in 2018 and has 20 years of industry experience.

While there is no immediate concern with these changes since Byrne is remaining at the firm, we will be monitoring the team as it progresses through its succession planning efforts.
Callan

Callan LLC 600 Montgomery Street Suite 800 San Francisco, CA 94111

Main 415.974.5060 Fax 415.291.4014

www.callan.com

Memorandum

То:	MCERA Board of Trustees
From:	Jim Callahan, CFA
	Anne Heaphy
Date:	June 10, 2020
Subject:	Real Estate Funds – Dividend Reinvestment

Both of MCERA's core real estate funds, the AEW Core Property Trust and the UBS Trumbull Property Fund, give investors the option to reinvest their dividends back into the fund or have them paid out on a quarterly basis. This is common practice among core real estate funds. For AEW, approximately 55% of the fund's investors reinvest their dividends, and for UBS, the number is slightly lower at 43%. The following page shows MCERA's dividend reinvestment history with the two funds. MCERA did not initially reinvest dividends with UBS, but changed to reinvestment shortly thereafter.

The dividend amount is derived from the rental income net of all expenses. It is generally expected that the dividend payments for both funds would remain similar to what MCERA has experienced in the past. If the funds' income remains fairly consistent, then so should the investor dividends. MCERA's net income return for both funds is below.

Net Income Return	1Q20	2019	2018	2017	2016	2015	2014
AEW Core Property Trust	1.77	3.54	3.86	4.15	4.23	4.49	4.52
UBS Trumbull Property Fund	0.86	4.99	3.75	3.67	3.14	3.31	4.12

MCERA has the option of changing its current practice of reinvesting dividends and instead receive a quarterly payout. The Committee can direct the Retirement Administrator to notify AEW and UBS of its intent to receive a payment of any future dividends.

C.6

	AEW Core Property Trust			UBS Trumbull Property Fund			
	Capital Contributions	Dividends	MCERA Ending Market Value	Capital Contributions	Dividends	MCERA Ending Market Vale	
Q2 2013	\$15,000,000	\$150,824	\$15,269,410	\$15,000,000	\$0	\$15,503,745	
Q3 2013		\$183,696	\$15,727,407		\$109,779	\$15,773,085	
Q4 2013		\$264,989	\$16,117,946		\$108,465	\$15,975,475	
Q1 2014	\$33,000,000	\$507,204	\$49,863,586		\$107,834	\$16,333,468	
Q2 2014	\$17,000,000	\$747,422	\$68,084,815		\$114,341	\$16,687,375	
Q3 2014		\$783,065	\$69,972,030	\$50,000,000	\$114,010	\$67,171,312	
Q4 2014		\$816,196	\$72,006,735		\$113,458	\$69,149,041	
Q1 2015		\$802,613	\$73,463,185		\$456,518	\$71,027,303	
Q2 2015		\$812,347	\$76,410,562		\$531,819	\$72,913,198	
Q3 2015		\$813,198	\$78,635,878		\$530,305	\$75,214,947	
Q4 2015		\$916,324	\$81,164,548	\$8,000,000	\$528,003	\$85,518,460	
Q1 2016		\$904,050	\$82,669,785	\$20,000,000	\$584,418	\$107,476,139	
Q2 2016		\$863,229	\$84,535,275		\$830,134	\$109,109,371	
Q3 2016		\$872,662	\$85,840,887		\$834,803	\$110,673,607	
Q4 2016		\$1,883,889	\$86,362,215		\$836,654	\$111,998,892	
Q1 2017		\$918,903	\$88,906,884		\$841,974	\$112,991,015	
Q2 2017		\$903,013	\$90,300,149		\$909,645	\$114,051,853	
Q3 2017		\$894,277	\$91,730,462		\$941,431	\$115,491,658	
Q4 2017		\$971,684	\$93,443,979		\$943,648	\$117,953,240	
Q1 2018		\$921,771	\$94,850,842		\$968,020	\$119,935,868	
Q2 2018		\$950,028	\$96,813,226		\$977,928	\$121,799,272	
Q3 2018		\$897,095	\$98,257,623		\$1,008,523	\$123,283,812	
Q4 2018		\$908,760	\$99,897,474		\$1,013,556	\$125,169,903	
Q1 2019		\$922,837	\$101,376,583		\$1,021,100	\$125,781,848	
Q2 2019		\$843,976	\$102,751,546		\$1,079,490	\$120,898,089	
Q3 2019		\$885,396	\$104,278,542		\$1,092,620	\$121,750,018	
Q4 2019		\$937,079	\$105,203,610		\$1,104,717	\$121,565,497	
Q1 2020		\$945,134	\$104,081,635		\$1,116,663	\$121,860,373	
Total	\$65,000,000	\$23,221,661		\$93,000,000	\$18,819,854		

Note: AEW had a larger than usual distribution in Q4 2106 due to significant capital gains from realized property sales throughout the year. The fund is structured as a REIT and is required by that structure to distribute all taxable income. The distribution was increased in the fourth quarter to meet that requirement.

Investment Policy Statement For

Marin County Employees' Retirement Association



FINAL June 2019 DRAFT June 2020

MARIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTMENT POLICY STATEMENT

Table of Contents

Introduction	1
Policies and Procedures	2
Investment Goal Statement	3
General Objectives and Guidelines	7
Investment Management Policy	11
Private Equity Policy	15
Duties of Responsible Parties	18
Policy Review	23

Appendices:

Appendix A	Strategic Asset Allocation
Appendix B	Individual Manager Guidelines
Appendix C	Individual Private Equity Sponsor Guidelines
Appendix D	Placement Agent Payment Disclosure Policy

The Marin County Employees' Retirement Association ("MCERA") was established to provide retirement benefits to county employees and other local public agencies. The Board of Retirement (the "Board" and/or the "Board of Retirement") is comprised of the County Director of Finance, four members appointed by the County Board of Supervisors, four members elected by the membership, plus one alternate retiree and one alternate safety member.

MCERA was organized in accordance with the provisions of California's 1937 County Employees' Retirement Law ("1937 Act"). The powers and duties of the Board of Retirement are set forth in the 1937 Act and in Article XVI, section 17, of the State Constitution. This document provides a framework for the management of the assets of MCERA. The purpose of the Investment Policy is to assist the Board in effectively supervising and monitoring the assets of MCERA (the "Plan" or the "Fund"). Specifically, it will address the following issues:

- The general goals of the investment program;
- The policies and procedures for the management of the investments;
- Specific asset allocations, rebalancing procedures and investment guidelines;
- Performance objectives; and
- Responsible parties.

The Board of Retirement establishes this investment policy in accordance with applicable local, State, and Federal laws. The Board members exercise authority and control over the Plan, by setting policy which the Staff executes either internally or through the use of external prudent experts. The Board oversees and guides the Plan subject to the following basic fiduciary responsibilities:

- Solely in the interest of, and for the exclusive purpose of, providing benefits to participants and their beneficiaries, minimizing contributions thereto, and defraying reasonable expenses of administering the Plan.
- Invest and manage Fund assets as a prudent investor would, by considering the purposes, terms, distribution requirements, and other circumstances of the Fund. In satisfying this standard of care, the trustees shall exercise reasonable care, skill, and caution.
- Diversify the investments of the Plan so as to minimize the risk of loss and to maximize the rate of return, unless under the circumstances it is clearly prudent not to do so. Diversification is applicable to the deployment of the assets as a whole.

This policy statement is designed to allow for sufficient flexibility in the management oversight process to capture investment opportunities as they may occur, while setting forth reasonable parameters to ensure prudence and care in the execution of the investment program.

POLICIES AND PROCEDURES

The policies and procedures of MCERA's investment program are designed to maximize the probability that the investment goals will be fulfilled. Investment policies will evolve as fund conditions change and as investment conditions warrant.

Asset Allocation Policy

MCERA adopts and implements an asset allocation policy that is predicated on a number of factors, including:

- A projection of actuarial assets, liabilities and benefit payments and the cost of contributions;
- Historical and expected long-term capital market risk and return behavior;
- An assessment of future economic conditions, including inflation and interest rate levels; and
- The current and projected funding status of the Plan.

This policy provides for diversification of assets in an effort to maximize the investment return of the Plan consistent with market conditions. Asset allocation modeling identifies asset classes the Plan will utilize and the percentage that each class represents of the total fund. Due to the fluctuation of market values, positioning within a specified range is acceptable and constitutes compliance with the policy. It is anticipated that an extended period of time may be required to fully implement the asset allocation policy, and that periodic revisions will occur. MCERA's Staff and external consultants will monitor and assess the actual asset allocation versus policy and will evaluate any variation deemed significant.

The Board will implement the asset allocation policy (i) through the use of investment managers to invest the assets of MCERA in accordance with the investment guidelines incorporated into the investment management agreements executed with the Board and/or (ii) through its investment in limited liability partnerships, limited liability corporations, commingled funds, group trusts or other commonly used investment vehicles, which invest allocated assets in accordance with the governing documents for the investment vehicle When appropriate, passive management strategies may also be utilized.

INVESTMENT GOAL STATEMENT

The Plan's general investment goals are broad in nature. The objective shall be to efficiently allocate and manage the assets dedicated to the payment of Plan benefits and administrative expenses. The following goals, consistent with the above described purpose, are adopted:

- The overall goal of MCERA's investments is to provide Plan participants with retirement, disability, and death and survivor benefits as provided for under the County Employees' Retirement Law of 1937. This will be accomplished through a carefully planned and executed long-term investment program.
- MCERA's assets will be managed on a total return basis. While MCERA recognizes the importance of the preservation of capital, it also adheres to the principle that varying degrees of investment risk are generally rewarded with compensating returns.
- The total portfolio over the long term will be expected to:
 - 1. Meet or exceed a long-term total portfolio real (above inflation) return commensurate with the target asset allocation contained in Appendix A to this document (annualized, net of fees, over a full market cycle, normally defined as 5-7 years);
 - 2. Meet or exceed the assumed actuarial rate of return over long term periods; and
 - 3. Meet or exceed a weighted index of the total Plan's asset allocation policy and component benchmarks over rolling five-year periods by an appropriate amount (annualized, net of fees, over a full market cycle).
- MCERA's Investment Policy has been designed to produce a total portfolio, long-term real return. Consequently, prudent risk-taking is warranted within the context of overall portfolio diversification to meet this goal. The investment activities are designed and executed in a manner that serves the best interests of the members and beneficiaries of the Association.
- All transactions undertaken will be for the sole benefit of MCERA's members and beneficiaries and for the exclusive purpose of providing benefits to them, minimizing contributions to the Plan and defraying reasonable associated administrative expenses.
- MCERA has a long-term investment horizon, and utilizes an asset allocation plan that encompasses a strategic, long-run perspective of capital markets. It is recognized that a strategic long-run asset allocation plan implemented in a consistent and disciplined manner will be the major determinant of the Plan's investment performance.

Investment recommendations and subsequent actions are expected to comply with "prudent expert" standards. Board members are expected to comply with "prudent investor" standards.

Manager Utilization and Selection

The selection of investment managers is accomplished in accordance with all applicable local, State and Federal laws and regulations. Each investment manager and consultant functions under a formal contract which delineates responsibilities and appropriate performance expectations. A formal set of investment guidelines and investment administrative requirements for each investment manager has been established and is provided as an addendum to this document. With regard to investment in limited liability partnerships, limited liability corporations, commingled funds, group trusts or other commonly used investment vehicles, the management of the relevant investment vehicle and the investment guidelines will be as set forth in the fund's legal documentation.

Manager Authority

The Plan's investment managers, unless otherwise noted in their contract, shall have designated discretion to direct and manage the investment and reinvestment of assets allocated to their accounts in accordance with this document; applicable local, State and Federal statutes and regulations; and individual management investment plans and executed contracts. Commingled investments, including but not limited to investments in mutual funds, trusts, limited liability partnerships, limited liability corporations, group trusts or other commonly used investment vehicles are expected to comply with the guidelines established in the governing documents or fund prospectus.

The Board and Staff will consider the comments and recommendations of consultants in conjunction with other available information in making informed, prudent decisions.

Proxy Voting

MCERA acknowledges that the ownership of equities requires proxies to be voted. MCERA commits to managing its proxy voting rights with the same care, skill, diligence and prudence as is exercised in managing its other assets. As responsible fiduciaries, the Board of Retirement will exercise its proxy voting rights in the sole interest of the Plan's members and beneficiaries in accordance with all applicable statutes and as further set forth in MCERA's Proxy Voting and Corporate Governance Policy. Consequently, the following policies and procedures shall be utilized in the determination of voting shareholder proxies:

- All proxies shall be voted by MCERA's equity investment managers consistent with their respective policies on proxy voting and in the best interest of the shareholders. The investment managers will provide a copy of their proxy voting guidelines to MCERA annually.
- For proxy proposals that are deemed by MCERA to merit review, MCERA may temporarily revoke an investment manager's proxy voting authority in writing. After MCERA has voted on the proxy, proxy voting responsibilities may be delegated (in writing) to the investment manager.

- The investment managers are required to report not less often than semi-annually on all proxy votes cast on MCERA's behalf, which will be reported to the MCERA Governance Committee.
- A record of said proxy votes shall be maintained in the Retirement Office.

Securities Lending

The Board may authorize the execution of a "Securities Lending Program" which will be performed by the Plan custodian or qualified third-party securities lending agent(s). The program will be established by a written agreement authorized by the Board and monitored and reviewed by the Staff.

The following are the general guidelines for the securities lending program:

- 1. The lending program may be implemented through the use of agent lenders or principal lenders;
- 2. The lenders may lend financial securities including, but not limited to, U.S. and non-U.S. equities, corporate bonds, and U.S. and non-U.S. government securities;
- 3. If an agent program is implemented, the agent shall have full discretion over the selection of borrowers and shall continually review the creditworthiness of potential borrowers through extensive analysis of relevant information;
- 4. All loans shall be fully collateralized with cash, government securities or irrevocable bank letters of credit;
- 5. Cash collateral received from securities borrowers will be deposited upon receipt in a preapproved short-term investment vehicle or vehicles;
- 6. Loans of U.S. securities are initially collateralized at 102% of the market value of the borrowed securities if the borrowed securities and the collateral are denominated in the same currency and at 105% if the borrowed securities and the collateral are denominated in different currencies. As the market value of the collateral falls below 102% (105%) of the market value of the borrowed securities, the borrower is marked to market each business day using yesterday's closing prices, subject to the lending agent's de minimis rules of change;
- 7. Securities on loan should be marked-to-market on a daily basis to assess adequacy of collateralization;
- 8. The lender shall provide periodic performance reports to MCERA;
- 9. The securities lending program should in no way inhibit the portfolio management activities of the other investment managers of the system;
- 10. Staff shall be responsible for making an annual report to the Board on securities lending activity; and
- 11. All other operational aspects of MCERA's securities lending program are hereby delegated to Staff.

Derivatives and Leverage

MCERA's investment managers may be permitted under the terms of individual investment guidelines to use derivative instruments to implement market decisions and security positions

and to control portfolio risk. Derivatives are contracts or securities whose returns are derived from the returns of other securities, indices or instruments including, but not limited to, futures, forwards, options, swaps and options on futures. Examples of appropriate applications of derivative strategies include hedging interest rate and currency risk, rebalancing portfolio exposures, securitizing fund level and manager cash, maintaining exposure to a desired asset class while effecting asset allocation changes and adjusting portfolio duration for fixed income. Portfolio liabilities associated with investments (i.e. mortgage forward bond purchases, futures, in-the-money short puts, reverse repurchase agreements, etc.) shall be backed by cash equivalents or deliverable securities.

MCERA's investment managers are not allowed to utilize derivatives for speculative purposes. All derivatives must be backed by collateral in the form of deliverable securities equal to or greater than the value of the total derivative exposure. In no circumstances can individual managers borrow funds to purchase derivatives. No derivatives positions can be established that create portfolio characteristics outside of portfolio guidelines. Managers must ascertain and carefully monitor the creditworthiness of any third parties involved in derivative transactions.

Rebalancing

Staff shall, on an ongoing basis in accordance with market fluctuations, rebalance the Fund's portfolio so as to remain within the range of targeted allocations and distributions among investment managers and asset allocations. MCERA has a long-term investment horizon and utilizes an asset allocation plan that encompasses a strategic, long-run perspective of capital markets. It is recognized that a strategic long-run asset allocation plan implemented in a consistent and disciplined manner will be the major determinant of the Plan's investment performance.

MCERA will not attempt to time rises or falls in equity or bond markets by moving away from long-term targets.

Systematic rebalancing, implemented when the asset classes move outside their target ranges or when significant cash flows occur, will be used to maintain or to move asset allocations within these appropriate ranges.

GENERAL INVESTMENT OBJECTIVES AND GUIDELINES

Equity Portfolios

Each equity investment manager retained by MCERA will follow a specific investment style and will be evaluated against a specific market index that represents their investment style. In addition, in the case of active managers, investment results may also be compared to returns of a peer group of managers with similar styles. Benchmarks for the various equity portfolios may include the following indices as well as those proposed by the managers reviewed by the Staff and approved by the Board:

Domestic Equity Portfolio – Russell 3000 Index

Large Cap Stocks – S&P 500 Index Small Cap Stocks – Russell 2000 Index

International Equity Portfolio – MSCI ACWI ex-US IMI Index

International Large Cap Stocks – MSCI EAFE Index International Small Cap Stocks – MSCI EAFE Small Cap Index International Emerging Markets Stocks – MSCI Emerging Markets Free Index

General equity guidelines for active managers include the following:

- American Depository Receipts (ADRs) and foreign securities listed on a major US stock exchange or on the NASDAQ are permitted if specified in the manager's guidelines.
- Convertible securities may be held in equity portfolios and shall be considered equity holdings.
- Securities must be traded on a regulated stock exchange, or listed on the NASDAQ or a comparable foreign market operation.
- Forward or futures contracts for foreign currencies may be entered into for hedging purposes or pending the selection and purchase of suitable investments in, or the settlement of, any such securities transactions only in international equity portfolios.
- The following transactions are not permitted unless specifically authorized by the Board in the investment manager agreement or in the specific manager guidelines in the appendix:
 - The use of borrowed funds
 - Short sales or margin sales
 - Private placements (except 144As)
 - Futures, options, currency forwards and futures, and other derivative securities.

The fixed income portfolios will be managed on a total return basis, following specific investment styles and evaluated against specific market indices that represent a specific investment style or market segment. In addition, investment results may also be compared to returns of a peer group of managers investing with a similar style. The benchmarks for the various fixed income portfolios may include the following indices:

Fixed Income Portfolio – Blended Benchmark (50% Bloomberg Barclays U.S. Aggregate, 25% Bloomberg Barclays Intermediate Credit, 25% FTSE World Government Bond Index USD Unhedged)

U.S. Core Plus Fixed Income – Bloomberg Barclays U.S. Aggregate Bond Index U.S. Intermediate Credit Fixed Income – Bloomberg Barclays U.S. Intermediate Credit Index Clobal Fixed Income – ETSE World Covernment Pond Index (USD, Unbedged)

Global Fixed Income – FTSE World Government Bond Index (USD Unhedged)

General fixed income guidelines include the following:

- Unless specified in the manager's guidelines, the minimum average quality rating of the securities in any portfolio will maintain an average weighted credit quality of not more than 2 rating notches below the benchmark's average weighted credit quality, at all times. For the avoidance of doubt, if the benchmark is rated AA-, then 2 notches below would be A.
- Ratings method: The ratings method used to test both the benchmark's average credit rating and the portfolio's average credit rating will be "split to the highest rating" of the three major rating agencies.
- Derivatives, including forward or futures contracts for foreign currencies, may be used to hedge the portfolio, or to effect portfolio management decisions in a timely, cost-effective manner. Borrowed funds shall not be used.
- An individual investment manager's portfolio shall have an effective duration between 75% 125% of the effective duration of the appropriate index, unless a broader range is permitted with the specific manager guidelines in the Appendix.
- The following transactions are prohibited unless specifically authorized by the Board or by the specific manager guidelines in the Appendix:
 - Private placements (except 144As);
 - Interest Only CMOs, Principal Only CMOs, inverse floaters and any tranche that has a leveraged component embedded in the structure.

Real Estate Portfolios

The Real Estate portfolios will be managed on a total return basis, through a combination of income and appreciation, following specific investment styles and evaluated against a specific market index. In addition, investment results may also be compared to returns of a peer group of managers investing with a similar style. The benchmarks for the various Real Estate portfolios may include the following indices:

Real Estate Portfolio – NFI-ODCE Equal Weighted Index (Net)

Core Real Estate – NFI-ODCE Equal Weighted Index (Net)

- All investments in real estate shall be managed by external advisors.
- MCERA may invest in real estate through diversified institutional commingled vehicles. The vehicles can be limited liability partnerships, limited liability corporations, group trusts or other commonly used investment vehicles.
- The vehicle's manager(s) will have discretion with respect to the management of the fund's investment program, operating within the parameters delineated in the fund's legal documentation.

Real Assets Portfolio

The real assets portfolio will be managed on a total return basis, following specific investment styles and evaluated against specific market indices that represent a specific investment style or market segment. In addition, investment results may also be compared to returns of a peer group of managers investing with a similar style. The benchmarks for the various real assets portfolios may include the following indices:

Real Assets Portfolio – Blended Benchmark (25% Bloomberg Barclays US TIPS Index, 25% Bloomberg Commodities Index, 25% S&P Global Natural Resources Index, 25% Dow Jones US Select Real Estate Securities Index)

Treasury Inflation Protected Securities – Bloomberg Barclays US TIPS Index Commodities – Bloomberg Commodities Index Global Natural Resources Equity – S&P Global Natural Resources Index Real Estate Investment Trusts – Dow Jones US Select Real Estate Securities Index

- MCERA may invest in real assets through separate accounts or diversified institutional commingled vehicles.
- The vehicle's manager(s) will have discretion with respect to the management of the fund's investment program, operating within the parameters delineated in the fund's legal documentation.

• The investment objective of the real asset program is to create a portfolio of high-quality real asset investments that will enhance long-term investment performance, meet inflation objectives, and diversify the asset base for the entire MCERA investment portfolio.

Private Equity Portfolios

MCERA will invest in private equity through institutional closed-end, finite-life commingled private equity fund-of-funds vehicles. The fund-of-funds vehicles will be limited liability partnerships, limited liability corporations, group trusts or other commonly used investment vehicles.

- Private equity investments will consist primarily of limited partnership investments in diversified private equity portfolios (e.g., venture capital, acquisition, special situation, subordinated debt, restructuring funds, and others).
- The vehicle's manager(s) will have discretion with respect to the management of the fund-offunds investment program, operating within the parameters delineated in the investment vehicle's legal documents.
- The investment objective of the private equity allocation is to achieve consistent positive real returns and to maximize long-term total return net of fees within prudent levels of risk through capital appreciation and diversification.
- While the investment guidelines of each investment vehicle will be determined by the fund-offunds legal documentation, the fund's manager, in managing the portfolio, should take prudent care.

Short Term Investment/Cash Equivalents

MCERA is restricted from investing short term funds and cash equivalents in investment vehicles other than the Treasurer's Pool, the State Pool and the STIF funds maintained at the custodian bank. Retirement funds shall be invested in investments with an average maturity of one year or less.

Any exemption from these general guidelines requires prior written approval from the Board.

Policy Implementation Overlay

The Board may retain a "policy overlay manager" to rebalance portfolio exposures, bridge exposure gaps during transitions, 'securitize' fund level cash, and securitize residual cash positions held by each manager. The policy overlay manager may use futures or swaps, when appropriate, to gain market exposure on existing cash positions. The manager will not use futures or other derivative instruments for speculative purposes.

INVESTMENT MANAGEMENT POLICY

MCERA will utilize externally managed portfolios based on specific styles and methodologies. The manager will acknowledge in writing, as more particularly set forth in Appendix B, that they are fiduciaries to MCERA with respect to the assets they manage and/or invest on MCERA's behalf, and will have discretion and authority to determine investment strategy, security selection and timing within their asset class and subject to the Policy guidelines and any other guidelines specific to their portfolio. Performance of the portfolio will be monitored and evaluated on a regular basis relative to each portfolio component's benchmark return and relative to peer groups of managers with similar investment styles.

Investment managers, as prudent experts, will be expected to know MCERA's investment policies (as outlined in this document) and any specific guidelines for their portfolios, and to comply with those policies and guidelines. It is each manager's responsibility to identify policies that may have an adverse impact on performance, and to initiate discussion with Staff toward possible amendment to said policies through Board action. Additionally, and where applicable, investment managers will certify in writing each quarter their compliance with the guidelines as described in this document.

The Board and Staff will also review each investment manager's adherence to its investment policy, and any material changes in the manager's organization (e.g., personnel changes, new business developments, etc.). The investment managers retained by MCERA will be responsible for informing the Board and Staff of all such material changes on a timely basis.

Investment managers under contract with MCERA shall have discretion to establish and execute transactions with established regional and national securities broker/dealers as needed. Unless otherwise authorized by the Board, investment managers must obtain the best available prices and most favorable executions with respect to all of the portfolio transactions as market conditions permit.

Unless specifically authorized by the Board, the following transactions will be prohibited: short sales; selling on margin; "prohibited transactions" as defined under the Employee Retirement Income Security Act of 1974 (ERISA); transactions that involve a broker acting as a "principal", where such broker is also the investment manager who is making the transaction, and any or all investment activities forbidden by the SEC or other applicable governing bodies.

Selection Criteria for Investment Managers

Criteria will be established for each manager search undertaken by MCERA, and will be tailored to MCERA's needs in such a search. In general, eligible managers will possess attributes including, but not limited to, the following:

• The firm must be experienced in managing money for institutional clients in the asset class/product category/investment style specified by MCERA.

- The firm must display a record of stability in retaining and attracting qualified investment professionals, as well as a record of managing asset growth effectively, both in gaining and retaining clients.
- The firm must have an asset base sufficient to accommodate MCERA's portfolio. In general, managers should have at least \$100 million of discretionary institutional assets under management, and MCERA's portfolio should make up no more than 20% of the firm's total asset base. Exceptions shall be made on a case-by-case basis.
- The firm must demonstrate adherence to the investment style sought by MCERA, and adherence to the firm's stated investment discipline.
- The firm's fees should be competitive with industry standards for the product category.
- The firm must comply with the "Duties of the investment managers" outlined herein and conform to the CFA Institute standards for performance reporting.

Criteria for Investment Manager Termination and Watchlist

MCERA reserves the unilateral right to terminate a manager at any time for any reason. The occurrence of certain events will result in specific actions being taken. This section describes these events, the course of action that will be taken and the responsible parties. It also establishes a "Watchlist" as a means of monitoring and evaluating managers who meet any of the items identified under the Criteria For Investment Manager Termination. If a manager is on the Watchlist no additional assets will be allocated to the manager until the manager has been removed from the Watchlist, provided however that if the Investment Committee determines, after review and discussion with staff and its Investment Consultant, that it is appropriate and in alignment with the other goals established under this policy to make additional funds to a manager on the Watchlist then the Committee can vote to direct the staff to take this action. The Investment Committee will determine where to invest any additional assets that would otherwise have been allocated to the manager. Each manager on the Watchlist will be monitored closely by Staff and the Consultant and may be required to make special presentations to the Board and Staff if requested. MCERA may place a manager on the Watchlist at any time and when it is deemed warranted due to improved conditions, a manager may be removed from the Watchlist.

Illegal or Unethical Practice. The manager will report this event in writing to the Retirement Administrator not later than the close of the business day following discovery of the illegal or unethical practice. The Retirement Administrator will inform the Investment Committee in writing of this practice as soon as administratively possible. If the illegal or unethical practice has a material adverse effect upon the MCERA portfolio, or any attempt was made by the manager to hide this practice, the manager will normally be terminated upon review and action by the Investment Committee. If the practice is procedural and has been properly referred to the appropriate regulatory authorities, the Retirement Administrator will recommend to the Investment Committee whether or not to terminate the manager.

Guideline Violation. The manager will report any guideline violation in writing to the Retirement Administrator not later than the close of the second business day following discovery along with the manager's proposed remedy. If the violation results in a loss to MCERA, the manager will compensate MCERA for this loss. If the manager refuses to correct this violation, or if other violations occur, the Retirement Administrator may recommend termination of the manager to the Investment Committee. Guideline violations that have been corrected will be reported to the Investment Committee at their next regular meeting. Violations that have not been corrected, or violations that persist, will be reported to the Investment Committee as soon as administratively possible.

Deviation from Investment Process. If the Retirement Administrator determines that the manager has deviated materially from its stated investment process or philosophy, the Retirement Administrator will report to the Chair of the Investment Committee as soon as possible. The Retirement Administrator may also recommend termination of the manager, as soon as administratively possible, to the Investment Committee.

Loss of Key Personnel or Change in Ownership. The manager will inform the Retirement Administrator in writing within 24 hours following the loss of key personnel or a change in ownership. Loss of key personnel may result in termination of the manager. A material change in the ownership of the manager may result in the termination of the manager. The Retirement Administrator will make a recommendation regarding termination to the Investment Committee as soon as administratively possible.

Lack of Cooperation with Reasonable Requests. The manager is required to provide information, attend meetings and comply with other reasonable requests. Failure to do so may result in a recommendation to terminate the manager.

Underperformance. MCERA understands the cyclical nature of investment performance and the potential for its investment managers not to meet objectives over short-term periods. While it is not the Board's intention to terminate a manager for short-term underperformance relative to objectives, the Board has implemented the following process as a means of monitoring and evaluating managers that have experienced performance difficulties in the short-term to assess the impact on longer-term performance.

If a manager trails its relevant benchmark by more than 100 basis points (net of fees) and ranks in the bottom quartile of its peer universe (gross of fees ranking) for the trailing three years, or if a manager trails its relevant benchmark (net of fees) or ranks below median of its peer universe (gross of fees ranking) for the trailing five years, then the manager may be placed on the Watchlist.

If the underperformance of a manager on the Watchlist persists over a reasonable period in the future (as defined by the Staff, Board and Consultant based on the unique circumstances surrounding the manager and current market conditions), the Board may and will consider termination.

Procedures Following the Initiation of Watch Status

The watch period will be established for a one-year total duration.

If at the end of the watch period, performance has improved to above-benchmark and/or above the manager median over a market cycle, the manager will be removed from the Watchlist.

If at the end of the watch period, the manager is underperforming the manager may be terminated or remain on the Watchlist for a period defined by the Investment Committee.

Unlike open-end funds and separate accounts for public market securities which are more easily liquidated, exiting open-end or closed-end commingled funds for private markets may have liquidity constraints. For these reasons, the Watchlist and terminating procedures used for traditional public market vehicles are not applicable for private market vehicles. Staff with the assistance of the Investment Consultant will make appropriate recommendations for exiting such positions.

PRIVATE EQUITY POLICY

MCERA's private equity investments allocation will consist primarily of limited partnership investments in diversified private equity portfolios (e.g., venture capital, acquisition, special situation, subordinated debt, and restructuring funds and others). MCERA will invest in private equity through institutional closed-end, finite-life commingled private equity fund-of-funds vehicles. The fund-of-funds vehicles will be limited liability partnerships, limited liability corporations, group trusts or other commonly used investment vehicles. Investments directly in stand-alone corporate finance limited partnerships and direct investments in companies are not currently considered appropriate. The vehicle's manager(s) will have discretion with respect to the management of the fund-of-funds investment program, operating within the parameters delineated in the fund's legal documentation. The investment manager of the fund-of-funds will acknowledge in writing by side letter or otherwise that they are Plan fiduciaries and will acknowledge having read and understood the guidelines set forth in this section of the Investment and any other guidelines specific to their portfolio as more particularly set forth in Appendix C.

To maintain an appropriate funded status on a net asset value basis, MCERA may be required to make periodic commitments to additional fund-of-funds vehicles managed by either the same or different fund-of-funds managers. MCERA's staff will work with the investment consultant and the managers to determine appropriate commitment timing and amounts and present a recommended plan to the Board annually.

To ensure adequate access and diversification, MCERA may utilize multiple fund-of-funds providers. There is no specific limit on the number of vendors to be utilized. However, to avoid unnecessary administrative burdens, MCERA will limit the number of vendors employed to the extent practical. Only those firms committed to providing ongoing access to the private equity arena through fund-of-funds offerings, who have a demonstrated record of investing client funds in top tier private equity partnerships and who limit assets accepted for management to sums that can in fact be committed in top tier funds will be considered.

MCERA recognizes that many well-qualified fund-of-funds providers make direct private equity investments within the fund-of-funds vehicle. Such investments are permissible provided that they constitute a comparatively small portion of the total fund-of-funds' asset base (typically less than 20%).

Investment Objectives

The investment objective of the private equity allocation is to achieve consistent positive real returns and to maximize long-term total return within prudent levels of risk through capital appreciation and diversification. MCERA's holdings will be professionally managed on a cash-to-cash basis and will have broad exposure to key private corporate finance strategies (e.g., venture capital, acquisition, special situation, etc.), with allocations to the various strategies diversified in a manner consistent with institutional private equity programs generally.

Selection Criteria for Private Equity

Partnership Selection

As requested by MCERA, the investment consultant shall develop a proposed "Manager Candidate Profile" that will serve as the basis for evaluation of potential fund-of-funds providers consistent with MCERA's investment policy. This document will specify the minimum selection criteria for potential vendors and also detail preferred characteristics. The consultant will then evaluate prospective candidates and submit a listing of those firms that appear to best meet the requirements and preferences. Staff and consultant will discuss these candidates and identify those that should be advanced for Committee and/or Board consideration. Ultimately, the Board will determine which firms shall be retained.

The targeted private equity investments will be fund-of-funds vehicles that are commingled, closedend, and finite-life limited liability entities.

Due to the inevitability of short-term market fluctuations that may cause variations in the investment performance, it is intended that the performance objectives outlined below will be achieved by the fund-of-funds over the life of the vehicle(s), generally 12 years. The Board of Retirement will evaluate the funds' interim performance to test progress toward attainment of these longer-term goals. However, it is understood that there are likely to be short-term periods during which performance will deviate from expectations. Minimum expectations are as follows:

- It is expected that the private equity program will, over rolling 5-year periods, provide net of fee returns in excess of those available in the public markets. The nominal return target for the private equity program is a 12% internal rate of return (IRR) or dollar-weighted net of all fees and expenses. The rate of return for the fund-of-funds will also be calculated on a time-weighted basis.
- The fund's IRR performance will also be benchmarked against peer groups in the Thomson-Cambridge (All Regions) All Private Equity Database. These return comparisons will be net of underlying partnership fees and expenses, but gross of the fund-of-funds' fees and expenses. It is expected that the vehicles will attain performance rankings consistent with the top-quartile levels of return evidenced in the database.

Attainment of these objectives does not guarantee future investment by the Board in a specific manager's fund-of-funds vehicles, nor does failure to achieve these guidelines ensure a lack of future investment support for follow-on vehicles. Providers are selected at the discretion of the Board.

In addition, the following stipulation(s) apply:

• The Fund's assets invested in the fund-of-funds vehicle should not represent more than 20% of the total market value of the fund-of-funds. It is also preferred that this holds

true for any other investor in these fund-of-funds. Should MCERA utilize a single client fund-of-funds approach (i.e., a "fund-of-one" where MCERA represents 100% of the vehicle's capitalization) the targeted commitment level should not exceed 20% of the managing/controlling entity's total discretionary assets under management.

- The investment manager of the fund-of-funds vehicle shall be a Bank or a registered investment advisor under the Investment Advisors Act of 1940 (1940 Act).
- If the fund-of-funds vehicle provides distributions in cash or securities, the Fund will opt to receive cash.

Reporting Requirements

Reporting requirements will be governed by the fund-of-funds legal documentation, which at a minimum will provide for quarterly unaudited financial statement and other relevant investment holdings related exhibits, and annual audited financial statements and relevant investment holdings-related exhibits.

It is expected that the fund-of-funds investment managers will meet with the Board as reasonably requested and at least annually.

Coordination with Total Fund Performance Reporting

MCERA relies on its custodian to generate short-term time-weighted performance statistics. This information is utilized by the Fund's investment consultant to evaluate ongoing investment performance. An integral part of the performance evaluation is a comparison of the total Fund's return in relation to a policy benchmark index comprised of market indices weighted in the same manner as the Fund's strategic asset allocation policy.

Given the private market nature of private equity investments and the long lead-time associated with such investments, a public market equity index shall be used in lieu of the absolute return target index set forth in Appendix A for the private equity component of the total portfolio. The index used shall be a composite of the equity component of MCERA's total policy benchmark: 60% Russell 3000 and 40% MSCI ACWI ex-US IMI.

DUTIES OF RESPONSIBLE PARTIES

Duties of the MCERA Board of Retirement

The Board of Retirement has the responsibility for administration of MCERA for the benefit of plan participants. The County Employees' Retirement Law of 1937, Government Code Chapter 3, Part 3, Division 4, Title 3, Article 5, permits the Board of Retirement at its discretion to invest the assets of the Plan through the purchase, holding or sale of any form or type of investment, financial instrument or financial transaction when prudent in the informed opinion of the Board. Although it is not the intent of the Board of Retirement to become involved in the day-to-day investment decisions, the Board or its designee(s) will adhere to the following procedures in the management of MCERA's assets:

- The Board develops and approves guidelines for the execution of MCERA's investment program. Only the Board in its sole discretion can delegate its decision-making authority regarding the investment program. Staff is responsible for the timely implementation and administration of these decisions.
- A formal review of MCERA's investment structure, asset allocation and financial performance will be conducted annually or more frequently as the need arises. The review will include recommended adjustments to the long-term strategic asset allocation to reflect any changes in applicable regulations, long-term capital market assumptions, actuarial assumptions or MCERA's financial condition.
- The Board shall review MCERA's investments quarterly, or as needed, to ensure that policy guidelines continue to be met. The Board shall monitor investment returns on both an absolute basis and relative to appropriate benchmarks and peer group comparisons. The source of information for these reviews shall come from Staff, outside consultants, the custodian and MCERA's investment managers.
- The Investment Committee is comprised of all Board members.
- The Board may retain investment consultants to provide services such as conducting performance reviews, asset allocation, manager reviews and investment research. The comments and recommendations of the consultants will be considered in conjunction with other available information to aid the Board in making informed, prudent decisions.
- Trustees shall direct questions from managers regarding MCERA's Investment Policy or other matters relating to the Plan to the Retirement Administrator and/or investment consultant.
- The Board shall be responsible for taking appropriate action if investment objectives are not being met or if policies and guidelines are not being followed. Reviews for separate portfolios managed by external managers will focus on:
 - 1. Written certification of manager compliance to the Policy guidelines.

- 2. Material changes in the managers' organizations, such as investment philosophy, personnel changes, acquisitions or losses of major accounts, etc. The managers will be responsible for keeping MCERA advised of any material changes in personnel, investment strategy, or other pertinent information potentially affecting performance.
- 3. Investment performance relative to each manager's stated performance benchmark(s) as set forth in the manager's investment guidelines.
- The Board shall expect Staff to administer MCERA's investments in a cost-effective manner subject to Board approval. These costs include, but are not limited to, management, consulting and custodial fees, transaction costs and other administrative costs chargeable to MCERA.
- The Board shall be responsible for selecting a qualified custodian with advice from Staff.
- The Board shall perform due diligence on each new manager prior to funding, and on each existing manager in accordance with the Due Diligence policy found at: <u>https://www.mcera.org/retirementboard/governance-policies</u>
- To maintain and strengthen the investment management of MCERA's Plan, Staff and Board members shall be expected to participate in educational conferences/seminars related to their direct responsibility for the investment activities of MCERA in accordance with the Education Policy found at:
- <u>https://www.mcera.org/retirementboard/governance-policies</u>

Duties of the Staff

The Retirement Staff, as designated by the Board, plays a significant role in the management and oversight of the Plan. Staff duties include:

- Authority to invest the Fund's cash without requiring Board permission, and as set forth elsewhere in MCERA's Investment Policy.
- Monitoring investment managers for adherence to appropriate policies and guidelines.
- Evaluating and managing the relationships with the consultants to the Fund to ensure that they are providing all the necessary assistance to Staff and the Board as set forth in their service contracts.
- Conducting manager searches, as set forth in this document, with necessary assistance from consultants as directed by the Board.
- Restructuring portfolios following manager terminations with the assistance of consultants and managers, as needed.

- Organizing and/or participating in any special research required to manage the Plan more effectively or in response to any questions raised by Board members.
- Supporting the Board in the development and approval of the Investment Plan, implementing and monitoring the Plan, and reporting at least monthly on investment activity and matters of significance.
- Assisting with the negotiation of investment manager fees when needed.
- Ensuring that investment managers conform to the terms of their contracts and that their performance monitoring systems are sufficient to provide the Board with timely, accurate and useful information.

Duties of the Investment Managers

The investment managers shall:

- Provide the Plan with a written agreement to invest within the guidelines established in the Investment Policy.
- Provide the Plan with proof of liability and fiduciary insurance coverage. Updated policy information will be provided to MCERA upon renewal and/or changes to the policy.
- Be an SEC-Registered Investment Advisor under the 1940 Act, and be recognized as providing demonstrated expertise over a number of years in the management of institutional, tax-exempt assets within a defined investment specialty.
- Adhere to the investment management style concepts and principles for which they were retained, including, but not limited to, developing portfolio strategy, performing research, developing buy, hold and sell lists, and purchasing and selling securities.
- Execute all transactions for the benefit of the Plan with brokers and dealers qualified to execute institutional orders on an ongoing basis at the best net cost to the Plan.
- Reconcile monthly accounting, transaction and asset summary data with custodian valuations, and communicate and resolve any significant discrepancies with the custodian.
- Submit written certification to the Retirement Administrator on the adherence to these investment guidelines at the end of each calendar quarter.
- Maintain frequent and open communication with Staff and the Board on all significant matters pertaining to the Investment Policy, including, but not limited to, the following:
 - Major changes in the investment manager's investment outlook, investment strategy and portfolio structure;

- Significant changes in ownership, organizational structure, financial condition or senior personnel;
- Any changes in the portfolio manager or client servicing personnel assigned to the Plan;
- All pertinent issues which the investment manager deems to be of significant interest or material importance.
- Meet with the Board or its designee(s) on an as-needed basis.

Duties of the Private Equity Investment Managers

The private equity investment manager shall:

- Be a SEC-Registered Investment Advisor under the 1940 Act.
- Adhere to the investment management style concepts and principles set forth in the legal documentation of the relevant investment vehicle.
- Submit written certification to the Retirement Administrator of the performance of the relevant investment vehicle at the end of each calendar quarter, to the extent measurable.
- Shall agree or cause the General Partners, Manager or other controlling party to the investment vehicle to agree to meet with the Board or its designee(s) on an as-needed basis and at least annually.

Duties of the Master Custodian

The master custodian shall be responsible for the following:

- Provide complete global custody and depository services for the designated accounts.
- Manage, if directed by the Board, a Short Term Investment Fund (STIF) for investment of any cash not invested by managers, and ensure that all available cash is invested. If the cash reserves are managed externally, full cooperation must be provided.
- Provide in a timely and effective manner a monthly report of the investment activities implemented by the investment managers. If certain portfolios are custodied elsewhere, full cooperation must be provided.
- Collect all income and principal realizable and properly report it on the periodic statements.
- Provide monthly and fiscal year-end accounting statements for the portfolio, including all transactions; these should be based on accurate security values for both cost and market. These reports should be provided within acceptable time frames.

- Report to MCERA situations where accurate security pricing, valuation and accrued income is either not possible or subject to considerable uncertainty.
- Provide assistance to the Plan to complete such activities as the annual audit, transaction verification or other issues as required by the Board.
- Manage a securities lending program to enhance income if directed by the Board. If the securities lending program is managed externally, full cooperation must be provided.
- Securities transactions shall be settled under the contractual method.
- The use of due bills or substitute securities is expressly forbidden.

Duties of the General Investment Consultant

The investment consultant will act as a fiduciary for all services provided to MCERA. The Investment Consultant shall be responsible for the following:

- Make recommendations to the Board regarding investment policy and strategic asset allocation.
- Assist MCERA in the selection of qualified investment managers and sponsors of limited liability partnerships, limited liability corporations, group trusts or other commonly used investment vehicles and assist in the oversight of existing managers and said sponsors, including monitoring changes in personnel, ownership and their investment process.
- Assist in the selection of a qualified custodian (including a securities lending agent and/or a cash manager) if necessary.
- Prepare a quarterly performance report including performance attribution on MCERA's managers and total assets, a check on guideline compliance and adherence to investment style and discipline.
- Provide topical research and education on investment subjects that are relevant to MCERA.
- Assist with the negotiation of investment management, private equity manager and custodian fees.

POLICY REVIEW

The Investment Committee will review this Policy at least every year to ensure that it remains relevant and appropriate. The Policy may be amended at any time by majority vote.

<u>APPENDIX A</u> MCERA'S LONG-TERM STRATEGIC ASSET ALLOCATION TARGETS AND RANGES

The strategic asset allocation targets have been developed as a function of the returns and risks of various asset classes and a rigorous analysis of MCERA's liabilities, taking into account the Board's risk tolerance and long-term objectives. As asset class values change over time, deviations from the asset allocation targets may occur. Rebalancing the portfolio may be necessary to return the asset class allocations to targeted weights so as to ensure that the Board's intended strategy is consistently maintained over time. Rebalancing actions are the responsibility of the Staff and shall be reported to the Board on a periodic basis.

Staff is authorized and directed (in the normal course of events) to act in accordance with this policy. Where particular circumstances arise and Staff determines rebalancing is not prudent, because doing so may generate unnecessary costs or otherwise not be in the best interests of MCERA, a full report of the actions taken or not taken shall be made to the Board at the earliest opportunity.

MCERA's actual asset allocation shall be reviewed at the end of each month at a minimum and shall be based on current asset valuations. Estimated values may be used when current asset valuations are not available.

By using statistical models and employing a diversified portfolio strategy, MCERA seeks to create an efficient frontier, which is an optimal portfolio profile that accomplishes the lowest possible level of risk for a certain level of return. While asset allocation targets are an essential part of MCERA's investment policy, the inputs used to develop these benchmarks are not known with certainty. Indeed, the targets were derived using estimates of future returns and estimates of the risk of loss for each asset class. Because future results are only estimates based on historical returns and volatility for each asset class, a range of different allocations other than the target percentage may be statistically identical in risk-return terms to the targeted benchmark even though the actual allocations may be outside of the targeted percent. Thus, the efficient frontier is really a range of targeted allocations, rather than a strict target percent of asset allocations in a portfolio. In other words, the portfolio is on the efficient frontier if the allocations to each asset class are within a range around the target allocations.

Asset Class	Target Percent	Allowable Range
US Fauity	32.0%	28 0% - 36 0%
Large Can Core	22.070 22.4%	19.4% - 25.4%
Small Cap Core	9.6%	7.6% - 11.6%
Non-US Equities	22.0%	<i>19.0% - 25.0%</i>
International Large Cap Value	6.6%	5.6% - 7.6%
International Large Cap Growth	6.6%	5.6% - 7.6%
International Small Cap Core	4.4%	3.9% - 4.9%
International Emerging Markets	4.4%	3.9% - 4.9%
Fixed Income	23.0%	20.0% - 26.0%
US Core Plus Fixed Income	11.5%	8.5% - 14.5%
US Intermediate Credit Fixed Income	5.75%	4.75% - 6.75%
Global Fixed Income	5.75%	4.75% - 6.75%
Real Assets	7.0%	4.0% - 10.0%
Treasury Inflation Protected Securities	1.75%	1.5% - 2.0%
Commodities	1.75%	1.5% - 2.0%
Global Natural Resources Equity	1.75%	1.5% - 2.0%
Real Estate Investment Trusts	1.75%	1.5% - 2.0%
Real Estate	8.0%	4.0% - 12.0%
Private Equity	8.0%	0.0% - 12.0%*

The strategic policy asset allocation and rebalancing triggers are set out in the table below:

* MCERA acknowledges that because of the nature of private equity investment, it may take several years to fund the private equity allocations and during the initial funding period, its allocation to private equity in market value terms may fall below the 8% target. During the initial funding period, as a proxy for private equity, MCERA intends to keep the assets committed to private equity partnerships invested in domestic and international equity. The result will be overweights in both of these asset classes relative to the long-term targets described above.

The following principles apply when asset allocations are outside the allowable ranges noted above:

1. Cash held by MCERA and cash awaiting investment in private equity investments or other alternative investments may be securitized with exchange-traded futures to a fund policy mix by MCERA's overlay manager. The use of derivative instruments is permitted as long as it does not create economic leverage in the portfolio and the instruments comply with the Derivatives section of this investment policy.

- 2. In order to rebalance as efficiently as possible and save transactions costs, allocations may be brought back by 50% of the difference between the current position and its target percentage, rather than exactly to the target percentage as long as the rebalancing brings the allocation back within the allowable range.
- 3. Real Estate and Private Equity, because of their illiquid nature, are very costly to rebalance. MCERA's Staff will make reasonable attempts to keep these asset classes within the allowable ranges defined above. Given their illiquidity, the risk of these asset classes moving outside of the allowable ranges for an extended period is heightened. In these cases, MCERA's Staff will document a plan to rebalance the allocations within the allowable ranges in the most timely and cost efficient manner possible given market and other conditions. It is noteworthy that the risk of these asset classes drifting outside of the efficient frontier is mitigated by the relatively small exposure to these classes as a percentage of the entire portfolio.
- 4. When physical securities are traded, assets will be moved between investment managers in accordance with the following principles:
 - a) Assets will be taken from investment managers in the overweight asset class(es) with consideration given to asset class structure, investment manager target weights, and confidence in the investment managers themselves. With respect to private equity and real estate allocations, the illiquid nature of these classes will be taken into account and trading will normally be avoided where possible.
 - b) Primary emphasis should be on significantly different asset classes (e.g. equity vs. fixed income).
 - c) Assets will be directed to investment managers in the underweight asset class(es) with consideration given to the same factors listed above.

<u>Appendix B - 1</u> State Street Global Advisors (SSGA) S&P 500 Index Strategy (Large Cap Core) Statement of Objectives, Guidelines & Procedures

Investment Approach

The objective of the S&P 500 Index strategy is to provide returns consistent with the US equity market as measured by the S&P 500 Index.

Performance Objectives

- Match the return, gross of management fees, of the S&P 500 Index over a complete market cycle.
- Minimize tracking error relative to the S&P 500 Index.

Investment Guidelines

- All investments shall be managed in a diversified and prudent manner, subject to compliance with the Investment Policies, Objectives and Guidelines for the Marin County Employees' Retirement Association as set forth in this Appendix B-1 and the Statement of Investment Policies, Objectives and Guidelines set forth in the Investment Management Agreement between MCERA and SSGA, dated January 11, 2019, as amended from time to time (the "SSGA Agreement").
- Sector and security selection, portfolio structure and timing of purchase and sales are delegated to SSGA subject to the SSGA Agreement.
- The following transactions are prohibited: short sales, selling on margin, writing options other than covered options, and "prohibited transactions" as defined under the Employee Retirement Income Security Act (ERISA), unless in reliance on an applicable Prohibited Transaction Exemption.

Any material violation of these Investment Manager Guidelines is to be corrected immediately upon discovery. A realized loss to the Fund resulting from a material violation of these Investment Manager Guidelines will require reimbursement of the amount of the loss by the manager.

Reporting Requirements

• Monthly – Transaction statement, asset (portfolio) statement, and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.

- Quarterly Same as monthly plus, performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.
- Review every month transaction data with custodian reports, and communicate and seek to resolve any significant discrepancies with the custodian.
- State Street Global Advisors will meet with the MCERA Board as often as deemed necessary by MCERA. A representative will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.
- State Street Global Advisors will keep MCERA apprised of relevant information regarding its organization and personnel. To the extent legally possible, SSGA will use its best efforts to promptly notify MCERA of any change in the lead personnel assigned to manage the account.

<u>Appendix B - 2</u> Dimensional Fund Advisors (DFA) Domestic Small Cap Equity Statement of Objectives, Guidelines & Procedures

Investment Approach

The strategy will be invested in a broadly diversified portfolio of companies that are generally in the lowest 10% of total market capitalization or companies whose market capitalizations are smaller than the 1,000th largest U.S. company, whichever results in the higher market capitalization break, in each case as reasonably determined by Manager at the time of purchase. In general, with respect to companies eligible for purchase the higher the relative market capitalization of the U.S. small cap company, the greater its representation in the Managed Assets. Manager may also adjust the representation within the Managed Assets of an eligible company, or exclude a company, after considering such factors as market capitalization, free float, momentum, trading strategies, liquidity, profitability, and other factors that Manager determines to be appropriate, given market conditions.

Performance Objectives

- Exceed the return, net of management fees, of the Russell 2000 Index (the "Benchmark") over a complete market cycle.
- Perform in the top half of a peer universe of small cap core equity managers over a complete market cycle.

Investment Guidelines

- All investments shall be managed in a diversified and prudent manner, subject to compliance with the Investment Policies, Objectives and Guidelines for the Marin County Employees' Retirement Association.
- Sector and security selection, portfolio structure and timing of purchase and sales are delegated to the manager subject to the investment management contract.
- The following transactions are prohibited: short sales, selling on margin, writing options other than covered options, and "prohibited transactions" as defined under the Employee Retirement Income Security Act (ERISA).
- Transactions shall be executed on the basis of seeking "best price and execution" and pursuant to Investment Manager's best execution and trading policies for the sole benefit of the Marin County Employees' Retirement Association.

- The use of foreign equity instruments which trade on U.S.-based exchanges or on NASDAQ, including American Depository Receipts (ADRs), are acceptable as domestic equity investments but shall not constitute more than 15% of the portfolio (at market). Companies headquartered in the US will be considered domestic even if they are incorporated in a foreign jurisdiction.
- Securities in the Benchmark are permitted.
- Any security purchased or received in a corporate action is permitted.
- If not otherwise permitted herein, the use of other non-U.S. equity securities is prohibited. Notwithstanding the foregoing, securities of companies listed on exchanges or markets in the United States are permitted.
- The portfolio is expected to remain fully invested in that cash holdings should not exceed 10% of the market value in the portfolio; provided that such limit may be exceeded in situations where substantial withdrawals or inflows occur.
- DFA shall not purchase stock (or securities convertible into stock) of any single issuer if the purchase would cause this portfolio to include more than 5% of the outstanding voting stock, or more than 5% in (market) value of all outstanding securities of single issuer (assuming all shares are converted).
- Other than in connection with a corporate action, DFA shall not purchase private placements unless authorized in writing by the Board.

Any material violation of these Investment Manager Guidelines shall be corrected promptly upon discovery and provided that a reasonable market exists.

Any material violation of these Investment Manager Guidelines shall be corrected promptly upon discovery, provided that in the event that the correction requires the buying and/or selling of securities, the Manager shall execute such purchase or sell trades of the applicable securities in an orderly fashion based upon prevailing market conditions.

Reporting Requirements

- Monthly Transaction statement, asset (portfolio) statement, and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus written certification of compliance with guidelines, performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception, and review of transactions costs. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.

- Review every month transaction data with custodian reports, and communicate and seek to resolve any significant discrepancies with the custodian.
- DFA will meet with the MCERA Board as often as deemed necessary by MCERA. One of the lead portfolio managers will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.
- DFA will keep MCERA apprised of relevant information regarding its organization and personnel. DFA will notify MCERA within 24 hours of any change in the lead personnel assigned to manage the account.

<u>Appendix B - 3</u> Morgan Stanley Investment Management Non U.S. Value Equity Statement of Objectives, Guidelines & Procedures

Investment Approach

Morgan Stanley uses a value-driven, bottom-up approach to maximize return potential, combined with sufficient diversification to minimize investment risk. MSIM believes that longer-term investors can take advantage of pricing anomalies by purchasing stocks of companies that are currently underpriced and by selling them before their prices reach excessive levels. In addition, they believe that fundamental research is the key to identifying such companies with a high degree of confidence on a timely basis.

Performance Objectives

- Exceed the return, net of management fees, of the MSCI EAFE Index over a complete market cycle.
- Perform in the top half of a peer universe of Non-U.S. value equity managers over a complete market cycle.

Investment Guidelines

- The Morgan Stanley International Equity Trust is subject to provisions of the Employee Retirement Income Security Act, as amended ("ERISA"). The Agreement governs all aspects of investment with respect to the Trust, including an ERISA-mandated standard of care.
- MCERA is responsible for determining that its investment in the Trust is in compliance with its Investment Guidelines (other than this document) for the Marin County Employees' Retirement Association. The Manager shall invest within the scope of its style as stated in the Agreement.

Any material violation of these Investment Manager Guidelines shall be corrected immediately upon discovery. A realized loss to the Fund resulting from a material violation of these Investment Manager Guidelines will require reimbursement of the amount of the loss by the manager.

Reporting Requirements

• Monthly – Asset (portfolio) statement and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus written certification of compliance with guidelines, performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception, and review of transactions costs (to be provided annually). These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.
- Morgan Stanley will meet with the MCERA Board as often as deemed necessary by MCERA. A representative of Morgan Stanley will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.
- Morgan Stanley will keep MCERA apprised of relevant information regarding its organization and personnel. Morgan Stanley will notify MCERA within 24 hours of any change in the lead personnel assigned to manage the account.

<u>Appendix B - 4</u> Artisan Partners Non U.S. Growth Equity Statement of Objectives, Guidelines & Procedures

Investment Approach

Artisan uses a fundamental bottom-up investment process to construct a diversified portfolio of international growth companies regardless of market capitalization, concentrating on industries or themes that the investment team believes present long-term growth opportunities and companies that are well positioned to capitalize on that growth. The portfolio has a primary emphasis on developed markets but also invests in emerging markets and is constructed without regard to index weightings.

Performance Objectives

- Exceed the return, net of management fees, of the MSCI EAFE Index over a complete market cycle.
- Perform in the top half of a peer universe of Non-U.S. growth equity managers over a complete market cycle.

- Monthly Asset (portfolio) statement and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.
- Artisan will meet with the MCERA Board as often as deemed necessary by MCERA. A representative will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the fund and its performance.
- Artisan will keep MCERA apprised of relevant information regarding its organization and personnel. Artisan will notify MCERA promptly of any change in the lead personnel assigned to manage the account.

<u>Appendix B - 5</u> TimesSquare Capital Management Collective Investment Trust TimesSquare International Small Cap Fund Statement of Objectives, Guidelines & Procedures

Investment Approach

TimesSquare Capital Management believes fundamental equity growth research with a particular emphasis on the assessment of management quality, an in-depth understanding of superior business models, and valuation discrepancies enables them to create a diversified international small cap fund that will generate quality risk-adjusted returns.

Performance Objectives

- Exceed the return, net of management fees, of the MSCI EAFE Small Cap Index over a complete market cycle.
- Perform in the top half of a peer universe of International Small Cap equity managers over a complete market cycle.

Investment Guidelines

• MCERA is responsible for determining that its investment in the TimesSquare International Small Cap Fund is in compliance with its Investment Guidelines (other than this document) for the Marin County Employees' Retirement Association. TimesSquare shall invest within the scope of its style as stated in the governing documents for the fund.

Any material violation of these Investment Manager Guidelines shall be corrected immediately upon discovery. A realized loss to the Fund resulting from a material violation of these Investment Manager Guidelines will require reimbursement of the amount of the loss by the manager.

- Monthly Asset (portfolio) statement and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.
- A representative of TimesSquare will meet with the MCERA Board as often as deemed necessary by MCERA. A representative will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the fund and its performance.

• TimesSquare will keep MCERA apprised of relevant information regarding its organization and personnel. The fund or its representative will notify MCERA promptly of any change in the lead personnel assigned to manage the account.

<u>Appendix B - 6</u> Parametric Emerging Markets Equity Statement of Objectives, Guidelines & Procedures

Investment Approach

Parametric Portfolio Advisors subadvises the Eaton Vance Trust Company/Parametric Emerging Markets Equity Fund (collective investment trust) for Eaton Vance. Parametric believes that a disciplined, long-term, structured approach can efficiently participate in the systematic growth of emerging markets on a consistent and repeatable basis with lower return risk. The structured approach is based upon quantitative research at the strategic level and observation of emerging market behavior. The factors dictating the investment approach include liquidity, volatility, correlation, reversion to the mean and the importance of country size in expected returns.

Performance Objectives

- Exceed the return, net of management fees, of MSCI Emerging Markets Free Index over a complete market cycle.
- Perform in the top half of a peer universe of emerging markets equity managers over a complete market cycle.

Investment Guidelines

• MCERA is responsible for determining that its investments in Parametric's Emerging Markets Equity collective investment trust is in compliance with its Investment Guidelines (other than this document) for the Marin County Employees' Retirement Association. Parametric shall invest within the scope of its style as stated in the governing documents for the fund.

Any material violation of these Investment Manager Guidelines shall be corrected immediately upon discovery. A realized loss to the Fund resulting from a material violation of these Investment Manager Guidelines will require reimbursement of the amount of the loss by the manager.

- Monthly Asset (portfolio) statement and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.

- A representative of Parametric will meet with the MCERA Board as often as deemed necessary by MCERA. A representative will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the fund and its performance.
- Parametric will keep MCERA apprised of relevant information regarding its organization and personnel. Parametric will notify MCERA promptly of any change in the lead personnel assigned to manage the account.

<u>Appendix B - 7</u> Wellington Management Company Core Plus Fixed Income Statement of Objectives, Guidelines & Procedures

Investment Approach

Wellington will invest in a diversified portfolio of investment grade and below investment grade fixed income securities. Wellington will add value primarily from sector and issue selection decisions. Interest rate anticipation and duration management will play a limited role in the portfolio.

Performance Objectives

- Exceed the return, net of management fees, of the Bloomberg Barclays U.S. Aggregate Index over a complete market cycle.
- Perform in the top half of a peer universe of core plus fixed income managers over a complete market cycle.

Investment Guidelines

- All investments are subject to compliance with the Investment Policies, Objectives and Guidelines for the Marin County Employees' Retirement Association, with applicable State and Federal statutes, and shall be managed in a diversified and prudent manner. The manager shall invest within the scope of their stated style.
- Sector and security selection, portfolio structure and timing of purchase and sales are delegated to the manager subject to the investment management contract.
- The following transactions are prohibited: short sales where securities are borrowed solely for the purpose of shorting, selling on margin, and "prohibited transactions" as defined under the Employee Retirement Income Security Act (ERISA).
- Transactions shall be executed on the basis of "best price and execution" for the sole benefit of the Marin County Employees' Retirement Association's beneficiaries.
- The duration on the portfolio shall range between 75% 125% of the duration on the Bloomberg Barclays U.S. Aggregate Index.
- MCERA expects its domestic fixed income investment managers to maintain diversified portfolios by sector and by issuer. No more than 5% of the portfolio shall be invested with a single investment grade issuer other than obligations of the US Government and its agencies. No more than 2% of the portfolio shall be invested with a single below investment grade issuer.

- Futures, options, swaps, forwards and other derivative securities are permitted investments. Any use of these instruments by Wellington will be in a non-leveraged manner, defined as follows:
 - The use of financial leverage is prohibited. The Account will not be considered leveraged as a result of authorized derivative positions provided the Account maintains cash and securities at least equal to the value of the obligations created by its net derivative positions in order to cover the obligations created by such positions.
- Wellington may invest up to 20% of the portfolio in securities rated below investment grade by all three of the major credit rating agencies. In the case of split ratings in which the three agencies have different ratings, the highest rating will be used in determining the credit rating of the security. If an issue is unrated, then an equivalent credit rating, as deemed by Wellington Management, may be used.
- Wellington may invest up to 20% of the portfolio in non-dollar denominated securities and currencies. The Portfolio may take currency positions unrelated to underlying portfolio holdings.
 - Non-dollar securities may be held on a currency hedged or un-hedged basis. The portfolio may invest in currency exchange transactions on a spot or forward basis. Both long and short currency exposures are permissible.
 - With respect to the 20% non-dollar investment limitation listed above, the Investment Manager may take effective foreign currency exposure up to 20% of the total portfolio (e.g. the entire non-dollar portfolio may be unhedged). Foreign currency exposure will be based on the absolute value of all positions (long and short) versus the dollar, except in the case of same country and currency exposures where these can be netted. Both long and short foreign currency positions may be held without owning securities denominated in such currencies.
- Wellington may invest up to 20% of the portfolio in private placements, including those issued pursuant to Rule 144A and/or Reg S and other restricted securities, the liquidity of which Wellington Management deems consistent with the Portfolio's investment objective.
- Wellington may invest up to 5% of the portfolio in U.S. and non-U.S. preferred and perpetual securities.
- Wellington will maintain an average weighted credit quality of not more than 2 rating notches below the benchmark's average weighted credit quality, at all times. For the avoidance of doubt, if the benchmark is rated AA-, then 2 notches below would be A.
 - Ratings method: The ratings method used to test both the benchmark's average credit rating and the portfolio's average credit rating will be "split to the highest rating" of the three major rating agencies.

- Investment in mortgage interest only (IO), principal only (PO), inverse floaters or other CMO derivatives that have highly uncertain or volatile duration or price movements are limited to 5% of the market value of the portfolio.
- Bank loans are permitted investments.
- All percentage limits refer to "at time of purchase."

Any material violation of these Investment Manager Guidelines shall be corrected immediately upon discovery. A realized loss to the Fund resulting from a material violation of these Investment Manager Guidelines will require reimbursement of the amount of the loss by the manager.

- Monthly Transaction statement, asset (portfolio) statement, and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus written certification of compliance with guidelines, performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception, and review of transactions costs. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.
- Review every month transaction data with custodian reports, and communicate and resolve any significant discrepancies with the custodian.
- Wellington will meet with the MCERA Board as often as deemed necessary by MCERA. One of the lead portfolio managers will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.
- Wellington will keep MCERA apprised of relevant information regarding its organization and personnel. Wellington will notify MCERA within 24 hours of any change in the lead personnel assigned to manage the account.

<u>APPENDIX B - 8</u> Western Asset Management Intermediate Credit Fixed Income Statement of Objectives, Guidelines & Procedures

Investment Approach

Western will invest primarily in a portfolio of cash-based U.S. dollar (USD) denominated credit issues with an intermediate overall duration.

Performance Objectives

- Exceed the return, net of management fees, of the Bloomberg Barclays U.S. Intermediate Credit Index over a complete market cycle.
- Perform in the top half of a peer universe of intermediate style fixed income managers over a complete market cycle.

Investment Guidelines

- All investments are subject to compliance with the Investment Policies, Objectives and Guidelines for the Marin County Employees' Retirement Association, with applicable State and Federal statutes; accordingly, as of the date of this amendment these guidelines conform to all applicable rules and regulations and the Client will notify Western if any change thereof materially impact these guidelines. Moreover, the portfolio shall be managed in a diversified and prudent manner. The manager shall invest within the scope of their stated style.
- Sector and security selection, portfolio structure and timing of purchase and sales are delegated to the manager subject to the investment management contract.
- The following transactions are prohibited: short sales where securities are borrowed solely for the purpose of shorting, selling on margin, and "prohibited transactions" as defined under the Employee Retirement Income Security Act (ERISA).
- Transactions shall be executed on the basis of "best price and execution" for the sole benefit of the Marin County Employees' Retirement Association's beneficiaries.
- The average weighted duration of portfolio security holdings including derivatives positions is expected to range within $\pm 20\%$ of the benchmark.
- MCERA expects its domestic intermediate credit fixed income investment managers to maintain diversified portfolios by issuer. Obligations of issuers are subject to a 5% per issuer limit excluding investments in commingled vehicles and US Treasuries and US Agencies. Any of the following fixed income securities, denominated in USD or non-USD, and their

futures or options derivatives, individually or in commingled vehicles, subject to credit, diversification and marketability, may be held outright and under resale agreement (REPO):

- Western may invest up to 100% in corporate securities.
- Western may invest up to 10% of the portfolio in debentures issued or guaranteed by the U.S. Federal Government, U.S. Federal agencies or U.S. government-sponsored corporations and agencies;
- Western may invest up to 5% of the portfolio in U.S. and non-U.S. convertible securities (excluding CoCos which have their own bucket), bank loans, preferred stocks, commercial paper, certificates of deposit and bankers acceptances issued by industrial, utility, finance, commercial banking or bank holding company organizations;
- Western may invest up to 10% in contingent convertibles ("CoCos") and preferred stocks.
- Western may invest up to 10% of the portfolio in securities of emerging market issuers, international agencies, supranational entities, and foreign governments (or their subdivisions or agencies);
- Western may invest up to 5% of the portfolio in taxable and tax-exempt obligations issued or guaranteed by U.S. local, city and state governments, instrumentalities and agencies.
- Western may invest up to 10% of the portfolio in non-USD denominated securities. Up to 5% of the portfolio may be invested in non-USD exposure via unhedged non-US denominated securities and foreign currency transactions. The portfolio may invest in non-USD securities on a currency hedged or unhedged basis. Moreover, the portfolio may invest in currency exchange transactions on a spot or forward basis. Both long and short currency exposures are permissible. Western will net within currencies and the resulting value will contribute to the max percentage permitted.
- Swaps are permitted investments up to a maximum of 5%. Any use of these instruments by Western will be in a non-leveraged manner.
- At least <u>8070</u>% of the portfolio will be rated "investment grade." Security ratings will be determined as follows. If a security is rated by Moody's, S&P, and Fitch, then the middle rating of the three agencies will apply. In the event that the security is rated by two of the agencies, and the third is non-rated, then the lower rating of the two agencies will apply. If only one agency assigns a rating, then that rating will apply.

Standard & Poor's Moody's Fitch BBB-, or A-2, or Baa3, or Prime-2, or BBB-, or F-2

- Securities not covered by these standards will normally be, in the judgment of Western, at least equal in credit quality to the criteria implied in those standards. No more than 5% of the portfolio shall be invested in other unrated securities.
- In the event downgraded securities cause a breach of the Investment Guidelines, Western may continue to hold the positions but will not make any further purchases to increase the position while the breach remains.
- Western may invest up to 20% of the portfolio in Securities defined under Rule 144A and Commercial Paper defined under Section 4(2) of the Securities Act of 1933;
- For securities with legal final maturities of 270 days or less, Western may use the underlying credit's short term ratings as proxy for establishing the minimum credit requirement.

Any material violation of these Investment Manager Guidelines shall be corrected immediately upon discovery. A realized loss to the Fund resulting from a material violation of these Investment Manager Guidelines will require reimbursement of the amount of the loss by the manager.

- Monthly Transaction statement, asset (portfolio) statement, and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus written certification of compliance with guidelines, performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception, and review of transactions costs. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.
- Review every month transaction data with custodian reports, and communicate and resolve any significant discrepancies with the custodian.
- Western will meet with the MCERA Board as often as deemed necessary by MCERA. One of the lead portfolio managers will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.
- Western will keep MCERA apprised of relevant information regarding its organization and personnel. Western will notify MCERA within 24 hours of any change in the lead personnel assigned to manage the account.

<u>Appendix B - 9</u> Colchester Global Investors Global Fixed Income Statement of Objectives, Guidelines, and Procedures

Investment Approach

Colchester is a value-oriented global fixed income manager. Colchester will invest primarily in high quality sovereign bond markets that offer attractive yields and sound finances.

Performance Objectives

- Exceed the return, net of management fees, of the FTSE World Government Bond Index (USD Unhedged) over a complete market cycle.
- Perform in the top half of a peer universe of global fixed income managers over a complete market cycle.

Investment Guidelines

• MCERA is responsible for determining that its investment in Colchester's Global Bond Fund is in compliance with its Investment Guidelines (other than this document) for the Marin County Employees' Retirement Association. Colchester shall invest within the scope of its style as stated in the governing documents for the Global Bond Fund.

Any material violation of these Investment Manager Guidelines shall be corrected immediately upon discovery. A realized loss to the Fund resulting from a material violation of these Investment Manager Guidelines will require reimbursement of the amount of the loss by the manager.

- Monthly Asset (portfolio) statement and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus written certification of compliance with guidelines, performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception, and review of transactions costs (to be provided annually). These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.
- Colchester will meet with the MCERA Board as often as deemed necessary by MCERA. A representative of Colchester will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.

• Colchester will keep MCERA apprised of relevant information regarding its organization and personnel. Colchester will notify MCERA within 24 hours of any change in the lead personnel assigned to manage the account.

<u>Appendix B - 10</u> BlackRock US Treasury Inflation Protected Securities Fund Statement of Objectives, Guidelines & Procedures

Investment Approach

The objectives of the US Treasury Inflation Protected Securities Fund are to provide returns consistent with the US TIPS market as measured by the Bloomberg Barclays US TIPS Index.

Performance Objectives

- Match the return as closely as practicable, gross of management fees, of the Bloomberg Barclays US TIPS Index over a complete market cycle.
- Minimize tracking error relative to the Bloomberg Barclays US TIPS Index.

Investment Guidelines

• MCERA is responsible for determining that its investment in the US Treasury Inflation Protected Securities Fund is in compliance with its Investment Guidelines (other than this document) for the Marin County Employees' Retirement Association. BlackRock shall invest within the scope of its style as stated in the governing documents for the fund.

Any material violation of these Investment Manager Guidelines is to be corrected immediately upon discovery. A realized loss to the Fund resulting from a material violation of these Investment Manager Guidelines will require reimbursement of the amount of the loss by the manager.

- Monthly Transaction statement, asset (portfolio) statement, and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus, performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception, and review of transactions costs. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.
- BlackRock will meet with the MCERA Board as often as deemed necessary by MCERA. A representative of BlackRock will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.

• BlackRock will keep MCERA apprised of relevant information regarding its organization and personnel. BlackRock will notify MCERA within 24 hours of any change in the lead personnel assigned to manage the account.

<u>Appendix B - 11</u> Invesco Balanced-Risk Commodity Statement of Objectives, Guidelines & Procedures

Investment Approach

The Invesco Balanced-Risk Commodity strategy uses an active approach to commodity investing due to some of the unique return sources available in the commodity markets. The investment strategy focuses on four key drivers of commodity returns: term structure weighting, equal risk contribution, optimal roll, and tactical allocation.

Performance Objectives

- Exceed the return, net of management fees, of the Bloomberg Commodities Index over a complete market cycle.
- Perform in the top half of a peer universe of commodity managers over a complete market cycle.

Investment Guidelines

• MCERA is responsible for determining that its investment in Invesco's Balanced-Risk Commodity Fund is in compliance with its Investment Guidelines (other than this document) for the Marin County Employees' Retirement Association. Invesco shall invest within the scope of its style as stated in the governing documents for the fund.

Any material violation of these Investment Manager Guidelines is to be corrected immediately upon discovery. A realized loss to the Fund resulting from a material violation of these Investment Manager Guidelines will require reimbursement of the amount of the loss by the manager.

- Monthly Transaction statement, asset (portfolio) statement, and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus, performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception, and review of transactions costs. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.

- Invesco will meet with the MCERA Board as often as deemed necessary by MCERA. A representative of Invesco will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.
- Invesco will keep MCERA apprised of relevant information regarding its organization and personnel. Invesco will notify MCERA within 24 hours of any change in the lead personnel assigned to manage the account.

<u>Appendix B - 12</u> KBI Global Investors Global Resource Solutions Statement of Objectives, Guidelines & Procedures

Investment Approach

KBI Global Investors' (KBIGI) Global Resource Solutions strategy invests in companies providing solutions to the greatest global resource challenges. There are compelling investment opportunities in companies providing solutions to resource scarcity across water, food and energy.

Performance Objectives

• Exceed the return, net of management fees, of the S&P Global Natural Resources Index over a complete market cycle.

Investment Guidelines

• MCERA is responsible for determining that its investment in the KBIGI Global Resource Solutions Fund is in compliance with its Investment Guidelines (other than this document) for the Marin County Employees' Retirement Association. KBIGI shall invest within the scope of its style as stated in the governing documents for the fund.

Any material violation of these Investment Manager Guidelines is to be corrected immediately upon discovery. A realized loss to the Fund resulting from a material violation of these Investment Manager Guidelines will require reimbursement of the amount of the loss by the manager.

- Monthly Transaction statement, asset (portfolio) statement, and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus, performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception, and review of transactions costs. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.
- KBIGI will meet with the MCERA Board as often as deemed necessary by MCERA. A representative of KBIGI will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.

• KBIGI will keep MCERA apprised of relevant information regarding its organization and personnel. KBIGI will notify MCERA within 24 hours of any change in the lead personnel assigned to manage the account.

APPENDIX B - 13 BLACKROCK REIT INDEX FUND STATEMENT OF OBJECTIVES, GUIDELINES & PROCEDURES

Investment Approach

The objectives of the REIT Index Fund are to provide returns consistent with the US REIT market as measured by the Dow Jones US Select Real Estate Securities Index.

Performance Objectives

- Match the return as closely as practicable, gross of management fees, of the Dow Jones US Select Real Estate Securities Index over a complete market cycle.
- Minimize tracking error relative to the Dow Jones US Select Real Estate Securities Index.

Investment Guidelines

• MCERA is responsible for determining that its investment in the REIT Index Fund is in compliance with its Investment Guidelines (other than this document) for the Marin County Employees' Retirement Association. BlackRock shall invest within the scope of its style as stated in the governing documents for the fund.

Any material violation of these Investment Manager Guidelines is to be corrected immediately upon discovery. A realized loss to the Fund resulting from a material violation of these Investment Manager Guidelines will require reimbursement of the amount of the loss by the manager.

- Monthly Transaction statement, asset (portfolio) statement, and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus, performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception, and review of transactions costs. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.
- BlackRock will meet with the MCERA Board as often as deemed necessary by MCERA. A representative of BlackRock will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.

• BlackRock will keep MCERA apprised of relevant information regarding its organization and personnel. BlackRock will notify MCERA within 24 hours of any change in the lead personnel assigned to manage the account.

<u>Appendix B - 14</u> UBS Core Real Estate Statement of Objectives, Guidelines & Procedures

Investment Approach

UBS Trumbull Property Fund is an open-ended core real estate commingled fund. UBS strives to invest predominantly in income producing properties diversified by both geographical region and by property type.

Performance Objectives

- Exceed the return of the NCREIF Open-Ended Core Diversified Equity (ODCE) Index over a complete market cycle.
- Perform in the top half of a peer universe of Open-Ended Core Real Estate managers over a complete market cycle.

Investment Guidelines

• MCERA is responsible for determining that its investment in the UBS Trumbull Property Fund is in compliance with its Investment Guidelines (other than this document) for the Marin County Employees' Retirement Association. UBS shall invest within the scope of its style as stated in the governing documents for the UBS Trumbull Property Fund.

Any material violation of these Investment Manager Guidelines shall be corrected immediately upon discovery. A realized loss to the Fund resulting from a material violation of these Investment Manager Guidelines will require reimbursement of the amount of the loss by the manager.

- Monthly Transaction statement, asset (portfolio) statement, and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.
- UBS will meet with the MCERA Board as often as deemed necessary by MCERA. Members of the investment team will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.

• UBS will keep MCERA apprised of relevant information regarding its organization and personnel. UBS will notify MCERA within 24 hours of any change in the lead personnel assigned to manage the account.

<u>Appendix B - 15</u> AEW Capital Management Core Real Estate Statement of Objectives, Guidelines & Procedures

Investment Approach

AEW Core Property Trust is an open-ended core real estate commingled fund. AEW strives to invest predominantly in income producing properties diversified by both geographical region and by property type.

Performance Objectives

- Exceed the return of the NCREIF Open-Ended Core Diversified Equity (ODCE) Index over a complete market cycle.
- Perform in the top half of a peer universe of Open-Ended Core Real Estate managers over a complete market cycle.

Investment Guidelines

• MCERA is responsible for determining that its investment in the AEW Core Property Trust is in compliance with its Investment Guidelines (other than this document) for the Marin County Employees' Retirement Association. AEW shall invest within the scope of its style as stated in the governing documents for the AEW Core Property Trust.

Any material violation of these Investment Manager Guidelines shall be corrected immediately upon discovery. A realized loss to the Fund resulting from a material violation of these Investment Manager Guidelines will require reimbursement of the amount of the loss by the manager.

- Monthly Transaction statement, asset (portfolio) statement, and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.
- AEW will meet with the MCERA Board as often as deemed necessary by MCERA. Members of the investment team will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.

• AEW will keep MCERA apprised of relevant information regarding its organization and personnel. AEW will notify MCERA within 24 hours of any change in the lead personnel assigned to manage the account.

<u>APPENDIX B - 16</u> PARAMETRIC PORTFOLIO ASSOCIATES POLICY IMPLEMENTATION OVERLAY SERVICE STATEMENT OF OBJECTIVES, GUIDELINES & PROCEDURES

Investment Approach

Parametric Portfolio Associates will use futures contracts to "securitize" cash investments in the portfolio, bridge exposure gaps during transitions, and to rebalance portfolio exposures.

Performance Objectives

• Produce returns approximately equal to the Fund's guideline based overlay portfolio benchmark.

Investment Guidelines

- All investments are subject to compliance with the Investment Policies, Objectives and Guidelines for the Marin County Employees' Retirement Association, with applicable State and Federal statutes, and shall be managed in a diversified and prudent manner. The manager shall invest within the scope of their stated style.
- Security selection and timing of purchase and sales are delegated to the manager subject to the investment management contract.
- The following transactions are prohibited: writing options other than covered options, and "prohibited transactions" as defined under the Employee Retirement Income Security Act (ERISA).
- Transactions shall be executed on the basis of "best price and execution" for the sole benefit of the Marin County Employees' Retirement Association's beneficiaries.
 - Futures contracts, including short positions, are permitted in order to "securitize" existing cash positions, bridge exposure gaps during transitions, and to rebalance portfolio exposures. Futures are not to be used for speculative purposes.

Any material violation of these Investment Manager Guidelines shall be corrected immediately upon discovery. A realized loss to the Fund resulting from a material violation of these Investment Manager Guidelines will require reimbursement of the amount of the loss by the manager.

- Monthly Transaction statement, asset (portfolio) statement, and performance for the portfolio and benchmark for the month will be sent to the MCERA Retirement Administrator and MCERA's Investment Consultant.
- Quarterly Same as monthly plus written certification of compliance with guidelines, performance of the portfolio and benchmark for the quarter, year-to-date, one year, three years, five years and since inception, and review of transactions costs. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.
- Review every month transaction data with custodian reports, and communicate and resolve any significant discrepancies with the custodian.
- Parametric Portfolio Associates will meet with the MCERA Board as often as deemed necessary by MCERA. One of the lead portfolio managers will be available to meet with MCERA annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.
- Parametric Portfolio Associates will keep MCERA apprised of relevant information regarding its organization and personnel. Parametric Portfolio Associates will notify MCERA within 24 hours of any change in the lead personnel assigned to manage the account.

APPENDIX C-1 PATHWAY CAPITAL MANAGEMENT PATHWAY PRIVATE EQUITY FUND 2008 (PPEF 2008) PATHWAY PRIVATE EQUITY FUND INVESTORS 7 (PPEF I-7) PATHWAY PRIVATE EQUITY FUND INVESTORS 8 (PPEF I-8) PATHWAY PRIVATE EQUITY FUND INVESTORS 9 (PPEF I-9) STATEMENT OF OBJECTIVES, GUIDELINES & PROCEDURES

Investment Approach

The Partnership's investment strategy is to create a diversified portfolio of private equity funds that pursue a variety of investment strategies, including but not limited to, buyouts, venture capital, and special situations.

Performance Objectives

• Produce returns approximately equal to or in excess of the Thomson-Cambridge (All Regions) All Private Equity Index as provided and set forth in the legal documentation of the Partnership.

Investment and other Guidelines

- All investments are subject to compliance with the investment management style concepts and principles set forth in the legal documentation of the Partnership.
- The investment manager shall at all times be a SEC-Registered Investment Advisor under the Investment Advisors Action of 1940, as amended.
- The General Partner acknowledges and agrees that the General Partner's investment in the Partnership will not exceed 20% of the Partnership's aggregate Capital Commitments of all of the Partners.

- Reporting requirements will be governed by the Partnership' legal documentation.
- Quarterly The investment manager shall submit written certification to the Retirement Administrator of the performance of the Partnership to the extent measurable, at the end of each calendar quarter, plus written certification of compliance with guidelines set forth herein. Performance of the portfolio, expressed in terms of the internal rate of return, once measurable for the relevant period, shall be described on a year-to-date, one year, three years, five years and since inception basis. These will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.

- The Partnership shall be prohibited from making direct investments in securities of portfolio companies which in the aggregate are in excess of 20% of the Partnership's aggregate Capital Commitments.
- The investment manager shall meet or shall cause the General Partner of the Partnership to meet with the Board or its designee(s) annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.

<u>Appendix C-2</u> Abbott Capital Management Abbott Private Equity Fund VI, LP (ACE VI) Abbott Private Equity Fund VII, LP (ACE VII) Abbott Annual Program 2016, LP (AP 2016) Abbott Annual Program 2017, LP (AP 2017) Statement of Objectives, Guidelines & Procedures

Investment Approach

The Partnership's investment strategy is to create a diversified portfolio of private equity funds that pursue a variety of investment strategies, including but not limited to growth equity buyouts, venture capital, and special situations.

Performance Objectives

• Produce returns approximately equal to or in excess of the Thomson-Cambridge (All Regions) All Private Equity Index as provided and set forth in the legal documentation of the Partnership.

Investment and other Guidelines

- All investments are subject to compliance with the investment management style concepts and principles set forth in the legal documentation of the Partnership.
- The investment manager shall at all times be a SEC-Registered Investment Advisor under the Investment Advisors Action of 1940, as amended.
- The General Partner acknowledges and agrees that the General Partner's investment in the Partnership will not exceed 20% of the Partnership's aggregate Capital Commitments of all of the Partners.

Any material violation of these Investment Manager Guidelines shall be corrected immediately upon discovery.

- Reporting requirements will be governed by the Partnership' legal documentation.
- Quarterly The investment manager shall submit written certification to the Retirement Administrator of the performance of the Partnership to the extent measurable, at the end of each calendar quarter, plus written certification of compliance with guidelines set forth herein. Performance of the portfolio, expressed in terms of the internal rate of return, once measurable for the relevant period, shall be described on a year-to-date, one year, three

years, five years and since inception basis and will be sent to MCERA's Retirement Administrator and MCERA's Investment Consultant.

- The investment manager shall meet or shall cause the General Partner of the Partnership to meet with the Board or its designee(s) annually, or more often if deemed necessary by MCERA, to review the portfolio and its performance.
- The Partnership shall be prohibited from making direct investments in securities of portfolio companies which are in the aggregate in excess of 20% of the Partnership's aggregate Capital Commitments.

APPENDIX D

RESOLUTION 2010/11-03

PLACEMENT AGENT PAYMENT DISCLOSURE RESOLUTION AND POLICY Adopted: December 9, 2009 Amended: February 9, 2011 Amended: November 2, 2011 Reviewed: May 6, 2015 Reviewed: May 9, 2018

WHEREAS, California Government Code section 7513.85, chaptered on October 11, 2009 to be effective immediately ("Section 7513.85"), requires all California public retirement systems to develop and implement, on or before June 30, 2010, a policy requiring the disclosure of payments to placement agents made in connection with system investments in or through external managers ("Placement Agent Payment Disclosure Policy" or "Policy").

WHEREAS, placement agent as described in this Policy includes all those identified in California Government Code section 7513.8, as amended.

WHEREAS, the Board of Retirement ("Board") of the Marin County Employees' Retirement Association ("MCERA") has determined, upon the recommendation of the MCERA Governance Committee, that adoption of a Placement Agent Payment Disclosure Policy is consistent with the Board's fiduciary responsibilities.

WHEREAS, Section 7513.85 requires the Placement Agent Payment Disclosure Policy to include, but not be limited to, six of the requirements enumerated in the Policy, and new California Government Code section 7513.9 requires additional disclosures that also are enumerated in this Policy.

WHEREAS, the MCERA Governance Committee has recommended, and the Board has determined, that the Placement Agent Payment Disclosure Policy must be agreed to in writing, and a report shall be filed annually, by all of MCERA's current and future external investment managers.

WHEREAS, in compliance with Section 7513.85, any external investment manager or Placement Agent that violates this Policy shall not solicit new investments from MCERA for five years after the violation is committed, unless the Board decides, in open session by majority vote, to waive the five year prohibition upon a showing of good cause.

WHEREAS, the Board reserves the right to impose an additional penalty of a fine on an external investment manager who violates this Policy, and does not establish good cause therefore to the reasonable satisfaction of the Board; provided, however, that said fine may not exceed the fees due from MCERA to the manager from the date of the violation to the date of the fee's imposition.

NOW, THEREFORE, BE IT RESOLVED, THAT:

Prior to MCERA investing with any external investment manager, and contemporaneous with required annual filings of Statements of Economic Interests (Form 700) with respect to all MCERA existing external investment managers, MCERA's Investment Committee shall be provided with a written representation from the investment manager, in a form acceptable to MCERA's legal counsel, stating that (1) the external investment manager agrees with the disclosure and penalty provisions set forth in this Policy and (2) it has not used a Placement Agent, it will disclose the following:

1. The name of the Placement Agent(s) and the relationship between the external investment manager and Placement Agent(s).

2. A resume for each officer, partner, or principal of the Placement Agent detailing the person's education, professional designations, regulatory licenses, and investment and work experience.

3. A description of any and all compensation of any kind provided, or agreed to be provided, to the Placement Agent.

4. A representation that the compensation provided is the sole obligation of the external investment manager and not of MCERA or the limited partnership.

5. A description of the services performed, and to be performed, by the Placement Agent.

6. A statement whether the Placement Agent, or any of its affiliates, are registered with the Securities and Exchange Commission or the Financial Industry Regulatory Association, or any similar regulatory agent in a county other than the United States, and the details of that registration or explanation as to why no registration is required.

7. A statement whether the Placement Agent, or any of its affiliates, is registered as a lobbyist with any state or national government.

8. All campaign contributions made by the Placement Agent to any elected member of the Board, and to any member of the Marin County Board of Supervisors, during the prior 24-month period, which disclosure shall be amended if any campaign contributions are made during the time the Placement Agent is receiving compensation in connection with a system investment.

9. All gifts, as defined in Government Code section 82028, given by the Placement Agent to any member of the Board, or to the Board's investment consultant, during the time the Placement Agent is receiving compensation in connection with a system investment.

10. All current or former MCERA Board members, employees, or consultants or

a member of the immediate family of any such person who are either employed or receiving compensation from the Placement Agent.

11. The names of any current or former MCERA Board members, employees, or consultants who suggested the retention of the Placement Agent.

Policy Review

The Board shall review this Placement Agent Payment Disclosure Policy at least every three years to assure its efficacy and relevance. This Policy may be amended from time to time by majority vote of the Board.

Retirement Administrator's Certificate

I, Jeff Wickman, the duly appointed Retirement Administrator of the Marin County Employees' Retirement Association, hereby certify the review of this Policy.

Dated: May ____, 2018

Retirement Administrator

Callan

March 31, 2020

Marin County Employees' Retirement Association

Investment Measurement Service Quarterly Review

Information contained herein includes confidential, trade secret and proprietary information. Neither this Report nor any specific information contained herein is to be used other than by the intended recipient for its intended purpose or disseminated to any other person without Callan's permission. Certain information herein has been compiled by Callan and is based on information provided by a variety of sources believed to be reliable for which Callan has not necessarily verified the accuracy or completeness of or updated. This content may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact. This content is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation. Past performance is no guarantee of future results. For further information, please see Appendix for Important Information and Disclosures.
Table of Contents March 31, 2020

Capital Markets Review	
Active Management Overview	17
Total Fund	
Asset Allocation Across Investment Managers	19
Actual vs Target Asset Allocation	20
Historical Asset Allocation	21
Total Fund Ranking	22
Cumulative Performance	24
Quarterly Total Fund Attribution	27
Asset Class Rankings	30
Investment Manager Performance	32
Investment Manager Performance	33
Investment Manager Performance	35
Net of Fee Returns	
Investment Manager Performance - NOF	38
Domestic Equity	
Domestic Equity Composite	41
S&P 500 Flagship Non- Lending	49
DFA Small Cap Core	51
International Equity	
International Equity Composite	62
Morgan Stanley Value	72
Artisan Partners Growth	83
TimesSquare Intl Small Cap	94
Parametric Emerging	104
Fixed Income	
Fixed Composite	117
Wellington Core Plus	121
Western Intermediate Credit	128
Colchester Global Fixed	134
Real Estate	
UBS Trumbull Property Fund	146
AEW Core Property Trust	151
AEW Partners V Fund (Liquidating)	156

Table of Contents March 31, 2020 **Public Real Assets** Public Real Assets Composite 159 BlackRock TIPS Index Fund 160 BlackRock REIT Index Fund 162 INVESCO Bal Commodity Fund 164 KBI Global Resources Fund 167 **Private Equity** 175 **Fee Schedule** 207 Target / Manager History 210 Definitions Market Indicators 215 Databases 220 Style Groups 221 **Risk/Reward Statistics** 225 Portfolio Characteristics 227 Public Fund Database Composition 231 **Callan Research/Education** 237

240

Disclosures



First Quarter 2020

Capital Market Review

Pandemic Impact: What Happened?

ECONOMY

Private RE Positive; Real Assets Hammered

REAL ESTATE/REAL ASSETS

10 PAGE Private real estate rose, due to income gains. Returns are expected to fall in 2Q20 and beyond. Global REITs underperformed equities and bonds. Infrastructure saw record fundraising. Almost all real assets saw GFC-level drops, especially energy-related sectors.

Results Reflect Initial Impact of COVID-19

INSTITUTIONAL INVESTORS

All four primary types of institutional investors experienced sharp declines in the first quarter and smaller drops for the 12 months ending March 31. Over the last 20 years, all plan types have produced returns in a narrow range of 5.1%-5.3%.

Activity Declines as Public Equity Drops

PRIVATE EQUITY

12 PAGE The public equity market decline slowed every aspect of private equity transaction activity. Valuations are likely to decline when first quarter numbers become available in early July. But historically, private equity has proven resilient in weathering downturns.

Record Plunge Amid Extreme Volatility

EQUITY

D.1

6 PAGE tility and near-record declines, in terms of speed. Large caps did relatively better; the Russell 2000 experienced its worst quarter ever. Growth continued to perform better vs. value across all market capitalizations.

Notable Losses Amid Wider Market Plunge

HEDGE FUNDS/MACs

13 P A G E Callan Hedge Fund-of-Funds Peer Group slumped 8.1%, net of all fees and expenses. And representing 50 of the largest, broadly diversified hedge funds, the Callan Institutional Hedge Fund Peer Group fell 6.3%.

Market Driven by Search for Safety

FIXED INCOME

B PAGE Treasuries rallied as investors sought safety. The yield curve steepened as the Fed cut rates. Investment grade and high yield bonds saw record outflows. Global fixed income fell across the board, with the pain especially intense for emerging market debt.

Index Posts Highest Return Since 2009

DEFINED CONTRIBUTION

15 PAGE The Callan DC Index gained 21.9% in 2019, while the Age 45 Target Date Fund rose 24.0%. TDFs saw the biggest inflows for the quarter, while U.S. large cap equity saw the largest outflows. The allocation to equity hit 70.2%, the highest since the third quarter of 2018.

Broad Market Quarterly Returns



Sources: Bloomberg Barclays, FTSE Russell, MSCI

What Just Happened?

ECONOMY | Jay Kloepfer

The unprecedented response to the COVID-19 pandemic touched every actor in the global economy: consumers, workers, businesses, shareholders and business owners, renters, property owners, nonprofits, and governments at every level. The worldwide lockdown hit travel, transportation, and retail first, and spending collapsed in March as shelter-in-place orders and steep job losses restricted expenditures. Tax revenues plunged across all levels of government while demand for (and supply of) certain services ballooned. The Federal Reserve and central banks around the globe stepped in at record speed to revive and expand many of the policies developed during the Global Financial Crisis, to provide liquidity and support for financial markets that were seizing up in uncertainty. Governments rushed to offer massive fiscal stimulus to backstop the economy.

All these actions were taken to address the economic impact of the shutdown. However, these policies can only address the symptoms of the economic dislocation. At its core, this event is a global health crisis, and its resolution depends on the containment of the spread of the virus and a vaccine. The full return of the economy depends on the confidence that we are safe to resume jobs, travel, consumption, and daily interaction. Until then, the global economy will be hampered in ways we can only partly anticipate; the unmeasurable risk of the global health crisis will dominate for some time.

The speed with which the response to the pandemic shut down the economy and devastated confidence in the capital markets was remarkable. We hit bear market territory for the U.S. stock market—defined as a decline of 20%—in 16 days, the secondfastest drop in history (dating back to the Great Depression), only missing the record by a day. We hit a bottom on March 23, when the U.S. market was down almost 34%. Equity markets around the globe were down by at least the same amount.

The U.S. economy finished February in pretty good shape, trending to a GDP growth rate for the first quarter of just above 2% annualized, with unemployment at a generational low of



Source: Bureau of Economic Analysis



Inflation Year-Over-Year

D.1

Source: Bureau of Labor Statistics

3.5%. In a matter of weeks, as efforts to address the spread of the virus were enacted quickly, the sudden drop in economic activity matched the depth and speed of the stock market drop. The national emergency was declared March 13, most shelterin-place orders came over the next couple of weeks, and the economic impact was sudden and severe.

Initial unemployment claims came in at 211,000 the first week of March, at trend for the year, and moved up to 282,000 in the second week, normally an alarming increase of 34%. However, claims then shot up to 3.3 million the next week and doubled again to 6.9 million the following week. While my commentary is focused on the first quarter, it is important to note that through the fourth week of April, claims have reached almost 30 million in just six weeks. Economic activity hit a serious bump after March 13, with 2½ weeks left in the quarter. The loss in this short period to GDP pulled growth from 2% as March began to a fall of 4.8% for the first quarter, a swing of almost 7% in less than three weeks. This was the largest quarterly decline since the fourth quarter of 2008.

As large and surprising as the first quarter drop may be, a much steeper plunge is in store for the U.S. and the rest of the global economy in the second quarter. Consensus projections are for second quarter GDP to fall by up to 35% (annual rate), and for consumption to fall by more than 40%. These numbers would be cartoonish, if they weren't so dire.

The pullback in business activity, employment, labor income, and subsequently in consumption is without modern parallel, and the usual measures of gauging economic activity must be viewed through a new lens to gain meaning. Percent changes in GDP around a cataclysmic event like this are difficult to grasp and not very helpful; a more useful approach will be to compare levels now and in the future versus pre-COVID. Percent change is more useful in describing an economy moving smoothly through normal cycles of expansion and recession.

On a hopeful note, in the words of Dr. Anthony Fauci, "this pandemic will be over, I promise." The monetary and fiscal response is massive and is keeping markets liquid. The S&P 500 was down 20% through March, but has retreated to a loss

The Long-Term View

	2020	Р	eriods	Ended	3/31/20
Index	1st Qtr	Year	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	-20.9	-9.1	5.8	10.1	8.8
S&P 500	-19.6	-7.0	6.7	10.5	8.9
Russell 2000	-30.6	-24.0	-0.2	6.9	7.6
Global ex-U.S. Equity					
MSCI EAFE	-22.8	-14.4	-0.6	2.7	4.0
MSCI ACWI ex USA	-23.4	-15.6	-0.6	2.1	
MSCI Emerging Markets	-23.6	-17.7	-0.4	0.7	
MSCI ACWI ex USA Small Cap	-29.0	-21.2	-0.8	2.8	4.6
Fixed Income					
Bloomberg Barclays Agg	3.1	8.9	3.4	3.9	5.5
90-Day T-Bill	0.6	2.3	1.2	0.6	2.4
Bloomberg Barclays Long G/C	6.2	19.3	6.0	8.1	7.9
Bloomberg Barclays GI Agg ex US	-2.7	0.7	2.0	1.4	3.8
Real Estate					
NCREIF Property	0.7	5.3	7.6	10.2	9.3
FTSE Nareit Equity	-27.3	-21.3	-0.3	7.4	9.2
Alternatives					
CS Hedge Fund	-9.0	-4.3	0.2	3.0	7.4
Cambridge PE*	5.7	16.6	12.8	13.7	15.3
Bloomberg Commodity	-23.3	-22.3	-7.8	-6.7	0.6
Gold Spot Price	4.8	23.0	6.2	3.7	5.8
Inflation – CPI-U	0.4	1.5	1.8	1.7	2.2

*Data for most recent period lags by a quarter. Data as of Dec. 31, 2019. Sources: Bloomberg, Bloomberg Barclays, Bureau of Economic Analysis, Credit Suisse, FTSE Russell, MSCI, NCREIF, S&P Dow Jones Indices, Refinitiv/Cambridge

of 12% year-to-date through April, and the index is now at a level comparable to both September 2019 and one year ago. Finally, we will adapt and learn to live and work safely, just as we learned to fly safely after 9/11.

Recent Quarterly Economic Indicators

	1020	4019	3019	2019	1019	4018	3018	2018
Freedown and Oright Table Original and the Original	0.0%		0.00/	2015	0.0%		0.00/	2000/
Employment Cost-Total Compensation Growth	2.8%	2.7%	2.8%	2.7%	2.8%	2.9%	2.8%	2.8%
Nonfarm Business–Productivity Growth	-2.5%	1.2%	-0.3%	2.6%	3.8%	0.5%	1.6%	2.0%
GDP Growth	-4.8%	2.1%	2.1%	2.0%	3.1%	1.1%	2.9%	3.5%
Manufacturing Capacity Utilization	73.5%	75.0%	75.4%	75.5%	76.4%	77.0%	76.9%	76.4%
Consumer Sentiment Index (1966=100)	96.4	97.2	93.8	98.4	94.5	98.2	98.1	98.3

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, IHS Economics, Reuters/University of Michigan

Results Reflect the Initial Impact of the Pandemic

INSTITUTIONAL INVESTORS

- All four primary types of institutional investors experienced sharp declines in the first quarter and smaller drops for the 12 months ending March 31. A quarterly rebalanced 60% S&P 500/40% Bloomberg Barclays Aggregate portfolio declined 10.9% during the quarter and 0.4% over the year. Equities, represented by the S&P 500 Index, experienced a much-sharper decline of 19.6%.
- Over the one-year period, corporate defined benefit (DB) plans showed the smallest decline, nonprofits the sharpest.
- Over longer time periods, corporate DB plans have been the best performers. But over the last 20 years, all plan types have produced returns in a narrow range of 5.1%-5.3%, in line with the performance of the blended equities/ fixed income benchmark.
- Entering the year, the primary fear for institutional investors was an equity market downturn. Those fears were of course realized.
- In the wake of the pandemic-induced bear market, investors are turning their attention to rebalancing their portfolios and managing liquidity needs.



Quarterly Returns, Callan Database Groups

Source: Callan

- Investors are also reevaluating the purpose and implementation of all diversifiers, including real assets, hedge funds and liquid alternatives, fixed income, and private assets.
- At this point, the depth and magnitude of the downturn and the recession remain unknown.

Database Group Quarter Year 3 Years 5 Years 10 Years 15 Years **Public Database** -12.35 -4.10 3.19 3.88 6.41 5.77 -10.29 -0.77 4.29 6.88 **Corporate Database** 4.24 6.08 -14.17 -5.81 2.50 3.21 6.08 5.67 Nonprofit Database **Taft-Hartley Database** -12.05 -4.07 3.36 4.23 6.83 5.68 6.55 All Institutional Investors -12.53 -4.24 3.20 3.81 5.80 -2.61 4.25 6.89 6.06 Large (>\$1 billion) -10.983.88 Medium (\$100mm - \$1bn) -12.48 -4.31 3.94 6.52 5.77 3.31 Small (<\$100 million) -13.48 -5.01 2.78 3.36 6.21 5.66

Callan Database Median and Index Returns* for Periods Ended 3/31/20

*Returns less than one year are not annualized.

Source: Callan. Callan's database includes the following groups: public defined benefit (DB) plans, corporate DB plans, nonprofits, and Taft-Hartley plans. Approximately 10% to 15% of the database constituents are Callan's clients. All database group returns presented gross of fees. Past performance is no guarantee of future results. Reference to or inclusion in this report of any product, service, or entity should not be construed as a recommendation, approval, affiliation, or endorsement of such product, service, or entity by Callan.

INSTITUTIONAL INVESTORS (Continued)

- Our counsel to investors: stay the course, rebalance, manage liquidity, evaluate portfolio segments and strategies for impairment or unexpected performance, and watch for opportunities, both inside your portfolio and across the markets.
- Not surprisingly, the coronavirus pandemic and related market upheaval dominated the attention of investors:
 - Risk management and volatility were common concerns for all institutional investors.
 - Public DB plans: Rebalancing was a recurring theme, as was the related issue of liquidity. Across nearly all asset classes, plans showed limited interest in making changes to their strategic allocations.
 - Corporate DB plans: Many were trying to address the challenges caused by changes in their funded status. A large share of plans continued to implement the process of de-risking. The decline in rates since October 2018 demonstrated the benefit to de-risking with respect to matching interest rate risk. The plunge in rates through March 2020 obscures the impact of spread widening; the effect on funded status and LDI match is uncertain and variable.
- DC plans: Sponsors focused on communication to help participants affected by the economic shutdown. They were also trying to determine the effects of the SECURE and CARES Acts. Both make major changes to the regulatory environment for DC plans. While fees continued to be the top issue, concerns about plans' investment structures climbed. The active/passive debate continues, but it is more muted and likely to stay that way as plans focus on the impact of the coronavirus pandemic.
- Nonprofits: A key concern for some of these organizations was the impact of an economic slowdown on the organization: less tuition for colleges and fewer donations for churches. Nonprofits also had little interest in changing their strategic allocations, although there was interest in alternative beta/enhanced index products and unconstrained fixed income.
- Investors are already discussing opportunities in fixed income coming from the market dislocation and the policy response around the globe. The biggest question to answer: If opportunistic fixed income is to be pursued, from where do you fund it? Do you expect it to outperform equity? Do you risk up your fixed income in response to a zero interest rate policy that is back in place?



Average Asset Allocation, Callan Database Groups

Equity

U.S. Equities

During the 1st quarter of 2020, the COVID-19 pandemic coupled with an oil price war between Saudi Arabia and Russia spurred extreme global market volatility, which was further exacerbated by the realization that a shelter-in-place mandate was required to overcome the spread of the disease, subsequently inducing an all-but-certain global recession.

Large cap ► Russell 2000: -30.6% | Russell 1000: -20.2%

- Cyclicals were punished while Technology, Staples, and Health Care were more resilient.
- Energy (-50.5%) plunged as demand declined and OPEC and Russia refused to cut production, driving down oil prices globally.
- Financials (-31.9%) and Industrials (-27.0%) fell sharply as interest rates were cut by the Fed in an emergency session, combined with expectations of a steep GDP decline because of COVID-19.
- Technology fared the best (-11.9%). The FAAMG stocks had an average return of -7.9% in 1Q, led by Amazon (+5.5%) and Microsoft (+0.3%); Health Care (-12.7%) and Consumer Staples (-12.7%) also held up better than the index average.

Large cap outpaced small cap for the quarter

- The Russell 2000 (-30.6%) experienced its worst quarter on record.
- The perceived safety of larger companies combined with more acute exposure to COVID-19 impact (e.g., restaurants, hotels, airlines, REITs) drove the sell-off.

 The performance of the Russell 2000 Value (-35.7%) was driven by its exposure to Energy (especially exploration and production companies) and Financials (banks).

Growth outpaces value across market capitalizations

- The spread between Russell 1000 Growth (-14.1%) and Russell 2000 Value (-35.7%) was one of the widest ever.
- Russell MidCap Value (-0.8%) and Russell 2000 Value (-2.4%) now have negative annualized returns over a trailing five-year time period.

U.S. Equity: Quarterly Returns



U.S. Equity: One-Year Returns



Sources: FTSE Russell and S&P Dow Jones Indices



Quarterly Performance of Industry Sectors

6 | Callan Institute

Global/Global ex-U.S. Equity

The COVID-19 pandemic coupled with the oil price war between Saudi Arabia and Russia injected significant volatility into the global equity markets, with most major indices entering bear market territory.

Global/Developed ex-U.S. ► MSCI EAFE: -22.8% | MSCI World ex USA: -23.3% | MSCI ACWI ex USA: -23.4% | MSCI Japan: -16.8% | MSCI Pacific ex Japan: -27.6%

- Fears of the pandemic and a global recession stoked the worst quarterly sell off since 2008 as economic activity halted worldwide.
- The oil price war further exacerbated the market meltdown, bidding up safe-haven assets and currencies.
- The U.S. dollar outperformed the euro, the British pound, and other major currencies, while underperforming the Swiss franc and Japanese yen.
- Every sector posted negative returns, led by cyclicals like travel-related industries, Energy, and Financials given the state of the economy and oil prices.
- Defensive sectors generally were under less pressure as demand for basic necessities to function (i.e., e-commerce and mobility) and combat the pandemic (i.e., diagnostics and treatment) helped stabilize Health Care, Consumer Staples, and Information Technology.
- Factor performance in developed ex-U.S. markets reflected risk aversion, including beta, size, and volatility.

Emerging Markets MSCI Emerging Markets Index: -23.6%

- Decisive actions to contain the pandemic and stimulate the economy allowed China to outperform every developed and developing country.
- A looming global recession and the collapse in oil prices decimated commodities-levered economies like Brazil, South Africa, and Russia.
- Every sector posted negative returns, led by cyclicals such as travel-related industries, Energy, and Financials.
- Defensive sectors generally were under less pressure as demand for basic necessities and for diagnostics and treatment helped stabilize Health Care, Consumer Staples, and Information Technology.

Global ex-U.S. Small Cap ► MSCI World ex USA Small Cap: -28.4% | MSCI EM Small Cap: -31.4%

- "Risk-off" market environment challenged small cap relative to large cap in both developed and emerging markets.
- Growth significantly outperformed value both within developed and emerging markets, supported by strong performance in Health Care, Consumer Staples, and Information Technology.

Global ex-U.S. Equity: Quarterly Returns (U.S. Dollar)

NISCI EAFE
MSCI ACWI
MSCI World
MSCI ACWI ex USA
MSCI World ex USA
MSCI ACWI ex USA Small Cap
MSCI World ex USA Small Cap
MSCI Emerging Market Small Cap
MSCI Europe ex UK
MSCI UK
MSCI Pacific ex Japan
MSCI Japan
MSCI Emerging Markets
MSCI China
MSCI Frontier Markets

Global ex-U.S. Equity: One-Year Returns

(U.S. Dollar)



Source: MSCI

D.1

Fixed Income

U.S. Fixed Income

Treasuries rallied as investors sought safety

- The 10-year U.S. Treasury yield reached a low in March of 0.31% before closing the quarter at 0.70%, down sharply from the 2019 year-end level of 1.92%.
- The Treasury yield curve steepened as the Fed cut rates to 0%-0.25%.
- TIPS underperformed nominal Treasuries as expectations for inflation sank. The 10-year breakeven spread ended the quarter at 87 basis points, down sharply from 177 bps at year-end.

Investors spurned credit risk

- Investment grade and high yield bond funds experienced record outflows as investors flocked to cash.
- Investment grade corporate spreads widened by 149 bps to 272 bps, representing the hardest hit sector in the Bloomberg Barclays US Aggregate Bond Index, particularly within Industrials, where several well-known issuers were downgraded to below investment grade, including Occidental Petroleum and Ford.
- The quality bias was evident as BBB-rated credit (-7.4%) underperformed single A or higher (+0.5%).
- CCC-rated high yield corporates (-20.6%) lagged BB-rated corporates (-10.2%).
- Energy (-38.9%) was the lowest-performing high yield bond sub-sector as oil prices collapsed.
- Most securitized sectors underperformed U.S. Treasuries.
- Bloomberg Barclays CMBS (+1.2%) and Bloomberg Barclays MBS (+2.8%) gained, while Bloomberg Barclays ABS declined (-0.2%).

U.S. Treasury Yield Curves



U.S. Fixed Income: Quarterly Returns

Bloomberg Barclays Gov/Credit 1-3 Yr	1.7%
Bloomberg Barclays Interm Gov/Credit	2.4%
Bloomberg Barclays Aggregate	3.1%
Bloomberg Barclays Long Gov/Credit	6.2%
Bloomberg Barclays Universal	1.3%
-13.2%	CS Leveraged Loans
-12.7%	Bloomberg Barclays Corp. High Yield
Bloomberg Barclays US TIPS	1.7%

Sources: Bloomberg Barclays and Credit Suisse

U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and Credit Suisse

FIXED INCOME (Continued)

Global Fixed Income

Most indices fell by double digits

- Developed market sovereign bond yields ended the quarter slightly higher even as central banks stepped in to provide support to their economies; the European Central Bank launched a €750 billion stimulus program and the Bank of England cut interest rates.
- The U.S. dollar rose against the Australian dollar, British pound, and euro as investors sought safety within the greenback.

EM debt plummeted in the risk-off environment

- Within the dollar-denominated benchmark, returns were mixed amongst its 60+ constituents.
- Within the local currency-denominated benchmark, several local market returns in Latin America dropped about 20% (Brazil, Mexico, and Colombia), and South Africa plunged 29% as oil-sensitive economies suffered from the fall in oil prices.

Change in 10-Year Global Government Bond Yields



Source: Bloomberg Barclays

D.1

Global ex-U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and JPMorgan Chase

Global ex-U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and JPMorgan Chase

Private RE Returns Positive, but Likely to Change; Real Assets Hammered

REAL ESTATE/REAL ASSETS | Sally Haskins and David Welsch

Private real estate results positive due to income

- Initial impact of pandemic reflected in 1Q20 results
- Positive return due to income
- Industrial real estate performed well.
- Retail depreciation accelerated this quarter.
- The dispersion of returns by manager within the NCREIF ODCE Index was due to the composition of underlying portfolios but also valuation methodologies and approaches.
- Negative returns expected for the second quarter and beyond.

How the pandemic is affecting fundamentals

- Vacancy rates for all property types in the U.S. are or will be impacted.
- There has been limited change in net operating income, but the second quarter will show declines.
- April rent collections show malls severely impacted followed by other types of retail. Class A/B urban apartments are relatively strong, followed by certain types of industrial and office.
- Supply was in check prior to the pandemic.
- Construction is limited to finishing up existing projects but has been hampered by shelter-in-place orders and material shortages.
- New construction will be basically halted in future quarters except for pre-leased properties.
- Transaction volumes were healthy in the first part of the quarter, but dropped off at quarter end and ground to a halt thereafter, with deals being canceled even when there were material non-refundable deposits.
- Cap rates remained steady during the quarter. The spread between cap rates and 10-year Treasuries is relatively high, leading some market participants to speculate that cap rates will not adjust much. Price discovery is happening and there are limited transactions.
- Callan believes the pandemic may cause a permanent repricing of risk across property types. Property types with more reliable cash flows will experience less of a change in cap rates; however, those with less reliable cash flows will see greater adjustments.

Global REITs underperformed vs. equities and bonds

- Global REITs plunged 28.5% in 1Q20 compared to a 21% drop for global equities (MSCI World).
- U.S. REITs fell 27.3% in 1Q20, lagging the S&P 500 Index, which was off 19.6%.
- Globally REITs are trading at a significant discount to NAV; in most regions the discount is at a five-year low.
- All property types except for data centers, cell towers, and life science are trading at the bottom of their range.

Infrastructure sees near-record fundraising

 1Q20 was the third-largest quarter for closed-end infrastructure fundraising. The closed-end fund market continues to expand, with infrastructure debt, emerging markets, and

Rolling One-Year Returns



Sector Quarterly Returns by Property Type and Region



D.1

REAL ESTATE/REAL ASSETS (Continued)

sector-specific strategies (e.g., communications and renewables). Investor interest in mezzanine or debt-focused funds has increased.

- Open-end funds raised significant capital in 2019, and the universe of investable funds continues to increase as the sector matures.
- In 2020 assets with guaranteed/contracted revenue or more inelastic demand patterns (e.g., renewables, telecoms, utilities) fared better than assets with GDP/demand-based revenue (e.g., airports, seaports, midstream-related).

Real assets buffeted by COVID-19

 Real asset returns were significantly challenged during the first quarter of 2020 as almost the entire space (except gold

NCREIF Capitalization Rates by Property Type



Source: NCREIF. Capitalization rates (net operating income / current market value (or sale price)) are appraisal-based.

and TIPS) experienced performance not seen since the Global Financial Crisis.

- The MLP space (Alerian MLP Index: -57%) and energyrelated stocks (S&P 1200 Energy Index: -44%) were among the worst hit as Russia and Saudi Arabia engaged in an oil price war smack in the middle of a global pandemic that was already poised to cripple near-term energy demand.
- One silver lining, pun intended, was gold, which served its usual safe-haven role during the depths of March and throughout the first quarter; the Bloomberg Gold sub-Index rose 4.5% in the first quarter while equities of most companies tasked with mining the shiny metal were not so fortunate (GDX-Van Eck Gold Miners ETF: -14.5%).

NCREIF Transaction and Appraisal Capitalization Rates



Source: NCREIF Note: Transaction capitalization rate is equal weighted.

Callan Database Median and Index Returns* for Periods Ended 3/31/20

Private Real Assets	Quarter	Year to Date	Year	3 Years	5 Years	10 Years	15 Years
Real Estate ODCE Style	1.5	1.5	5.6	6.7	8.2	10.6	6.5
NFI-ODCE (value wt net)	0.8	0.8	3.9	5.9	7.5	10.4	6.5
NCREIF Property	0.7	0.7	5.3	6.4	7.6	10.2	8.1
NCREIF Farmland	-0.1	-0.1	2.6	5.2	6.3	10.7	13.1
NCREIF Timberland	0.1	0.1	1.3	2.5	2.8	4.5	6.4
Public Real Estate							
Global Real Estate Style	-25.2	-25.2	-18.7	-0.4	0.5	6.4	5.7
FTSE EPRA Nareit Developed	-28.5	-28.5	-24.0	-3.8	-2.1	4.4	
Global ex-U.S. Real Estate Style	-24.8	-24.8	-18.0	0.6	0.1	5.4	5.3
FTSE EPRA Nareit Dev ex US	-27.7	-27.7	-23.0	-2.1	-1.5	3.4	
U.S. REIT Style	-23.1	-23.1	-15.2	-0.4	1.4	8.6	7.2
EPRA Nareit Equity REITs	-27.3	-27.3	-21.3	-3.1	-0.3	7.4	6.2

*Returns less than one year are not annualized.

Sources: Callan, FTSE Russell, NCREIF

Over the Cliff

PRIVATE EQUITY | Gary Robertson

The impact of the COVID-19 virus on the capital markets in late February has introduced a period of price uncertainty and a pull-back in lending. Transaction activity is expected to slow for the remainder of 2020. New fundraising is also being delayed. General partners are focused more on existing portfolio company health and less on starting new company platforms.

Fundraising ► Based on preliminary data, first quarter private equity partnerships holding final closes totaled \$119 billion, down 37% from the fourth quarter. New partnerships formed totaled 223, off 28%. Callan expects fundraising to continue to slow as 2020 progresses. (Unless otherwise noted, all data come from PitchBook.)

Buyouts ► New buyout transactions declined notably, albeit from strong levels. Funds closed 1,677 investments with \$103 billion in disclosed deal value, a 27% decline in count and a 41% dip in dollar value from the fourth quarter. The largest investment was the \$14.3 billion take-private of Zayo Group, a digital communications infrastructure and services provider, by Digital Colony and EQT, along with a consortium of co-investors.

VC Investments ► New investments in venture capital companies totaled 5,868 rounds of financing, down 16%, with \$64 billion of announced value, off just 2%. The largest investment

Funds Closed 1/1/2020 to 3/31/2020

Strategy	No. of Funds	Amt (\$mm)	Share
Venture Capital	119	30,155	25%
Growth Equity	20	14,289	12%
Buyouts	56	52,736	44%
Mezzanine Debt	1	434	0%
Distressed	0	0	0%
Energy	2	4,475	4%
Secondary and Other	14	8,053	7%
Fund-of-Funds	11	8,836	7%
Totals	223	118,978	100%

Source: PitchBook (Figures may not total due to rounding.)

was a \$3 billion round in Gojek, a ride-hailing and personal courier company serving Southeast Asia.

Exits ► There were 422 private M&A exits of private equitybacked companies, a drop of 23%. Disclosed values plunged 69% to \$55 billion. There were 11 private equity-backed IPOs in the first quarter, down 67%, which raised an aggregate \$6 billion, lower by 14%.

Venture-backed M&A exits totaled 354 with disclosed value of \$23 billion. The number of sales declined 12% from the fourth quarter, and announced value was unchanged. There were 50 VC-backed IPOs, lower by 34%, and the combined float totaled \$6 billion, a drop of 14%.

Private Equity Performance (%) (Pooled Horizon IRRs through 9/30/2019*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	-0.37	13.01	14.56	14.39	14.83	11.41	11.02
Growth Equity	1.32	12.76	16.02	12.77	14.03	13.41	13.13
All Buyouts	1.43	8.85	15.32	12.83	14.59	13.65	12.04
Mezzanine	0.87	6.02	10.86	10.00	10.85	10.58	8.60
Credit Opportunities	-0.36	0.61	7.73	5.49	10.47	9.28	9.90
Control Distressed	1.05	4.38	8.86	7.83	11.17	10.52	10.58
All Private Equity	0.92	9.59	14.41	12.33	14.03	12.72	11.72
S&P 500	1.70	4.25	13.39	10.84	13.24	9.01	6.33
Russell 3000	1.16	2.92	12.83	10.44	13.08	9.10	6.72

Note: Private equity returns are net of fees. Sources: Refinitiv/Cambridge and S&P Dow Jones Indices *Most recent data available at time of publication

Note: Transaction count and dollar volume figures across all private equity measures are preliminary figures and are subject to update in subsequent versions of *Capital Market Review* and other Callan publications.

Breaking Bad

HEDGE FUNDS/MACs | Jim McKee

Crushing fragile hopes of continuing economic strength coming into 2020, the COVID-19 pandemic coupled with a sudden oil market collapse forced investors to recalibrate their measures of risk across all capital markets. As investors ran for safe havens, Treasuries soared while equities cratered.

Representing a paper portfolio of hedge fund interests without implementation costs, the **Credit Suisse Hedge Fund Index (CS HFI)** lost 9.0% in the first quarter. As a proxy for live hedge fund portfolios, the median manager in the **Callan Hedge Fund-of-Funds Peer Group** slumped 8.1%, net of all fees and expenses. Representing 50 of the largest, broadly diversified hedge funds with low-beta exposure to equity markets, the median manager in the **Callan Institutional Hedge Fund Peer Group** fell 6.3%.



Hedge Fund-of-Funds Style Group Returns

Sources: Callan, Credit Suisse, and Federal Reserve

Callan Peer Group Median and Index Returns* for Periods Ended 3/31/2020

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Peer Group	-8.1	-4.9	0.5	0.7	3.1	3.8
Callan Absolute Return FOF Style	-8.5	-6.7	0.1	0.8	3.1	3.3
Callan Core Diversified FOF Style	-7.3	-4.3	0.4	0.4	3.0	3.5
Callan Long/Short Equity FOF Style	-10.8	-6.5	0.4	0.8	3.6	4.6
Credit Suisse Hedge Fund	-9.0	-4.3	0.4	0.2	3.0	4.0
CS Convertible Arbitrage	-5.3	-1.3	0.9	2.4	3.2	3.7
CS Distressed	-10.8	-11.5	-2.2	-0.8	2.5	3.9
CS Emerging Markets	-10.5	-6.2	0.7	1.8	3.2	5.1
CS Equity Market Neutral	-5.3	-6.2	-1.0	-0.3	0.9	-1.1
CS Event-Driven Multi	-18.8	-14.9	-4.1	-3.4	0.6	3.1
CS Fixed Income Arb	-5.8	-2.2	1.7	2.5	4.4	3.3
CS Global Macro	-8.1	-1.1	1.1	0.6	3.6	5.4
CS Long/Short Equity	-11.2	-5.4	1.4	1.1	3.6	4.8
CS Managed Futures	0.0	5.7	2.0	-2.0	1.4	3.0
CS Multi-Strategy	-6.5	-2.6	1.0	2.2	5.0	5.2
CS Risk Arbitrage	-6.8	-4.1	0.8	1.8	1.9	3.2
HFRI Asset Wtd Composite	-10.0	-6.1	0.2	0.4	3.1	
90-Day T-Bill + 5%	1.8	7.3	6.8	6.2	5.6	6.4

D.1

*Net of fees. Sources: Callan, Credit Suisse, Hedge Fund Research

Within CS HFI, the worst-performing index was *Event-Driven Multi-Strategy* (-18.8%), reflecting its material exposure to soft deals particularly vulnerable to shifting market sentiments and crowded trades. The next group of poorly performing strategies included *Long/Short Equity* (-11.2%), *Distressed* (-10.8%), and *Emerging Markets* (-10.5%). Despite low net exposures, risk-on arbitrage strategies like *Equity Market Neutral* (-5.3%), *Convertible Arbitrage* (-5.3%), and *Fixed-Income Arbitrage* (-5.8%) suffered the next level of losses due to widened spreads from derisking or being net long with illiquidity. The best-performing strategy last quarter was *Managed Futures* (+0.0%).

Within the Callan Hedge FOF Group, net exposures to illiquidity and equity-related risks primarily determined performance in the first quarter. The median *Callan Long/Short Equity FOF* dropped 10.8%, with its net equity exposure driving the loss. Similarly, the median *Callan Absolute Return FOF* sank 8.5%. The *Core Diversified FOF* (-7.3%) suffered the least of the FOF style groups.

Within Callan's database of liquid alternative solutions, the median managers of Callan Multi-Asset Class (MAC) style groups were all negative, gross of fees. The median *Callan Risk Premia MAC* dropped 10.2% as managers reduced gross exposures to their factors to keep within volatility targets. Targeting equal risk-weighted allocations to major asset classes with leverage, the *Callan Risk Parity MAC* fell 13.9%, trailing its 60% MSCI ACWI/40% Bloomberg Barclays US Aggregate Bond Index (-12.0%). Given a usually long equity bias within its dynamic asset allocation mandate, the *Callan Long-Biased MAC* (-14.8%) also trailed the 60%/40% benchmark. As the most conservative MAC style focused on non-directional strategies of long and short asset class exposures, *Callan Absolute Return MAC* slipped 4.6%.



Credit Suisse Hedge Fund Strategy Returns

MAC Style Group Returns



Sources: Bloomberg Barclays, Callan, Eurekahedge, S&P Dow Jones Indices

Index Posts Highest Return Since 2009

DEFINED CONTRIBUTION | Patrick Wisdom

- The Callan DC Index[™] rose 6.3% in the final quarter of 2019, the fourth consecutive quarter of gains, and jumped 21.1% for the year, the highest since 2009. The Age 45 Target Date Fund had a larger fourth-quarter (7.2%) and full-year gain (24.0%).
- The Index's growth in balances in the fourth quarter (5.9%) marked the fourth straight quarter of growth. Investment returns (6.3%) drove the growth, while net flows (-0.3%) detracted.
- Target date funds (TDFs) experienced the largest inflows (53.8%). After garnering the most flows in the previous quarter, U.S. fixed income again saw significant inflows (36.5%).
 U.S. large cap equity (-38.5%) had the largest outflows.
- Fourth-quarter turnover (i.e., net transfer activity) increased to 0.38% from the previous quarter's 0.35%, well below the historical average (0.60%).
- The allocation to equity within the Index increased to 70.2%, the highest since the third quarter of 2018.
- The share of assets allocated to stable value decreased to 9.8%. The allocation to U.S. fixed income (6.1%) also fell despite positive flows; the asset class's relative underperformance was the primary driver of the decrease.
- TDFs experienced the largest increase in asset allocation (30.4%), due to large inflows and solid performance.
- The prevalence of real return/TIPS within DC plans increased by 3.4 percentage points from the previous quarter to 38.5%.
- The presence of company stock (21.5%) remains near historic lows. Brokerage window prevalence (41.4%) remains near all-time highs.
- For plans with more than \$1 billion in assets, the average asset-weighted fee decreased by 4 basis points to 0.29%.
 Plans with less than \$500 million in assets saw a fee decrease of 2 bps, while the fee for plans with assets between \$500 million and \$1 billion remained steady at 0.36%.

The Callan DC Index is an equally weighted index tracking the cash flows and performance of over 100 plans, representing nearly \$300 billion in assets. The Index is updated quarterly and is available on Callan's website.

Investment Performance



Growth Sources



Net Cash Flow Analysis (Fourth Quarter 2019) (Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	53.80%
U.S. Fixed Income	36.52%
U.S. Smid Cap	-18.02%
U.S. Large Cap	-38.48%
Total Turnover**	0.38%

Data provided here is the most recent available at time of publication. Source: Callan DC Index

Note: DC Index inception date is January 2006.

- $^{\ast}\,$ The Age 45 Fund transitioned from the average 2035 TDF to the 2040 TDF in June 2018.
- ** Total Index "turnover" measures the percentage of total invested assets (transfers only, excluding contributions and withdrawals) that moved between asset classes.

Market Overview Active Management vs Index Returns

Market Overview

The charts below illustrate the range of returns across managers in Callan's Separate Account database over the most recent one quarter and one year time periods. The database is broken down by asset class to illustrate the difference in returns across those asset classes. An appropriate index is also shown for each asset class for comparison purposes. As an example, the first bar in the upper chart illustrates the range of returns for domestic equity managers over the last quarter. The triangle represents the S&P 500 return. The number next to the triangle represents the ranking of the S&P 500 in the Large Cap Equity manager database.

D.1

Range of Separate Account Manager Returns by Asset Class One Quarter Ended March 31, 2020



Range of Separate Account Manager Returns by Asset Class One Year Ended March 31, 2020





Total Fund

Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of March 31, 2020, with the distribution as of December 31, 2019. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

Asset Distribution Across Investment Managers

	March 31,	2020			December 3	1, 2019
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Domestic Equity	\$648,385,384	27.68%	\$(29,471,325)	\$(189,350,580)	\$867,207,288	31.80%
SSGA S&P 500 Index Fund	453,072,349	19.34%	(83,198,829)	(110,763,665)	647,034,843	23.73%
DFA Small Cap Core	170,156,849	7.27%	(827,088)	(82,655,741)	253,639,678	9.30%
Parametric Domestic Equity Futures	25,156,186	1.07%	54,554,592	4,068,826	-33,467,232	(1.23%)
International Equity	\$504,660,413	21.55%	\$67,461,105	\$(144,055,357)	\$581,254,665	21.31%
Morgan Stanley Value	141,584,494	6.05%	0	(35,328,419)	176,912,913	6.49%
Artisan Partners Growth	154,028,348	6.58%	0	(41,975,556)	196,003,904	7.19%
TimesSquare Intl Small Cap	82,004,677	3.50%	0	(32,606,753)	114,611,430	4.20%
Parametric Emerging Markets	75,465,355	3.22%	0	(32,663,794)	108,129,150	3.97%
Parametric International Equity Futures	51,577,540	2.20%	67,461,105	(1,480,834)	-14,402,731	(0.53%)
Fixed Income	\$511,836,048	21.85%	\$(43,624,194)	\$(4,295,284)	\$559,755,526	20.53%
Wellington Core Plus	255,105,608	10.89%	22,037,446	1,861,714	231,206,448	8.48%
Western Intermediate Credit	136,002,652	5.81%	13,690,588	(5,746,086)	128,058,150	4.70%
Colchester Global	133,607,272	5.70%	9,858,368	(5,604,425)	129,353,329	4.74%
Parametric Fixed Income Futures	-12,879,484	(0.55%)	(89,210,596)	5,193,513	71,137,599	2.61%
Real Estate	\$243,349,110	10.39%	\$(227,728)	\$875,616	\$242,701,222	8.90%
Woodmont	17,395,078	0.74%	495,075	979,932	15,920,071	0.58%
UBS Trumbull Property Fund	121,860,373	5.20%	(241,930)	536,806	121,565,497	4.46%
AEW Core Property Trust	104,081,635	4.44%	(480,872)	(641,103)	105,203,610	3.86%
AEW Partners V, LP **	12,025	0.00%	Ó	(20)	12,045	0.00%
Public Real Assets	\$140,661,243	6.01%	\$(8,067,412)	\$(34,816,904)	\$183,545,559	6.73%
INVESCO Commodities Fund	34,048,302	1.45%	6,432,588	(11,012,972)	38,628,686	1.42%
BlackRock TIPS Index Fund	39,169,617	1.67%	(8,000,000)	851,577	46,318,040	1.70%
KBI Global Resources Fund	35,514,750	1.52%	Ó	(11,956,514)	47,471,264	1.74%
Blackrock REIT Index Fund	31,928,575	1.36%	(6,500,000)	(12,698,995)	51,127,569	1.87%
Private Equity*	\$293,180,877	12.52%	\$562,269	\$0	\$292,618,608	10.73%
Abbott ACE VI*	59,415,532	2.54%	(3,625,479)	0	63,041,011	2.31%
Abbott ACE VII*	40,094,949	1.71%	(85,000)	0	40,179,949	1.47%
Abbott 2016*	33,550,389	1.43%	2,175,000	0	31,375,389	1.15%
Abbott 2017*	6,842,444	0.29%	446,250	0	6,396,194	0.23%
Pathway PPEF 2008*	64,891,775	2.77%	(640,133)	(0)	65,531,908	2.40%
Pathway PE I-7*	38,755,347	1.65%	14,242	0	38,741,105	1.42%
Pathway PE I-8*	43,455,936	1.86%	1,962,377	(0)	41,493,559	1.52%
Pathway PE I-9*	6,174,505	0.26%	315,012	0	5,859,493	0.21%
Total Fund	\$2,342,073,076	100.0%	\$(13,367,285)	\$(371,642,508)	\$2,727,082,869	100.0%

*Current market values are those of the prior quarter, adjusted for capital calls and distributions of current quarter. **Estimate



D.1

Actual vs Target Asset Allocation As of March 31, 2020

The first chart below shows the Fund's asset allocation as of March 31, 2020. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.



Asset Class	\$Millions Actual	Weight Actual	Min Target	Target	Max Target	Percent Difference	\$Millions Difference
Domestic Equity	648	27.7%	28.0%	32.0%	36.0%	(4.3%)	(101)
International Equity	505	21.5%	19.0%	22.0%	25.0%	(0.5%)	(11)
Fixed Income	512	21.9%	20.0%	23.0%	26.0%	(1.1%)	(27)
Real Assets	384	16.4%	12.0%	15.0%	18.0%	1.4%	33
Private Equity	293	12.5%	0.0%	8.0%	12.0%	4.5%	106
Total	2,342	100.0%		100.0%			

* Current Quarter Target = 32.0% Russell 3000 Index, 22.0% MSCI ACWI ex US IMI, 11.5% Blmbg Aggregate, 8.0% NCREIF NFI-ODCE Eq Wt Net, 6.4% Russell 3000 Index (Lagged), 5.8% Blmbg Intmdt Credit, 5.8% FTSE WGBI, 1.8% S&P Global Nat Res (Net), 1.8% Blmbg Commodity TR Idx, 1.8% S&P DJ US Select REIT, 1.8% Blmbg:TIPS and 1.6% MSCI ACWI ex US IMI (Lagged).

Actual vs Target Historical Asset Allocation

The Historical asset allocation for a fund is by far the largest factor explaining its performance. The charts below show the fund's historical actual asset allocation, the fund's historical target asset allocation, and the historical asset allocation of the average fund in the Callan Public Fund Spons - Large (>1B).



Actual Historical Asset Allocation

Target Historical Asset Allocation







* Current Quarter Target = 32.0% Russell 3000 Index, 22.0% MSCI ACWI ex US IMI, 11.5% Blmbg Aggregate, 8.0% NCREIF NFI-ODCE Eq Wt Net, 6.4% Russell 3000 Index (Lagged), 5.8% Blmbg Intmdt Credit, 5.8% FTSE WGBI, 1.8% S&P Global Nat Res (Net), 1.8% Blmbg Commodity TR Idx, 1.8% S&P DJ US Select REIT, 1.8% Blmbg:TIPS and 1.6% MSCI ACWI ex US IMI (Lagged).



D.1

Total Fund Period Ended March 31, 2020

Quarterly Summary and Highlights

Performance vs Callan Public Fund Spons - Large (>1B) (Gross)

- Total Fund's portfolio posted a (13.39)% return for the quarter placing it in the 71 percentile of the Callan Public Fund Spons Large (>1B) group for the quarter and in the 64 percentile for the last year.
- Total Fund's portfolio underperformed the Total Fund Target by 0.34% for the quarter and underperformed the Total Fund Target for the year by 0.33%.





Relative Return vs Total Fund Target

Callan Public Fund Spons - Large (>1B) (Gross) Annualized Ten Year Risk vs Return



Callan

Marin County Employees' Retirement Association Performance vs Callan Public Fund Spons - Large (>1B)

Return Ranking

The chart below illustrates fund rankings over various periods versus the Callan Public Fund Spons - Large (>1B). The bars represent the range of returns from the 10th percentile to the 90th percentile for each period for all funds in the Callan Public Fund Spons - Large (>1B). The numbers to the right of the bar represent the percentile rankings of the fund being analyzed. The table below the chart details the rates of return plotted in the graph above.



* Current Quarter Target = 32.0% Russell 3000 Index, 22.0% MSCI ACWI ex US IMI, 11.5% Blmbg Aggregate, 8.0% NCREIF NFI-ODCE Eq Wt Net, 6.4% Russell 3000 Index (Lagged), 5.8% Blmbg Intmdt Credit, 5.8% FTSE WGBI, 1.8% S&P Global Nat Res (Net), 1.8% Blmbg Commodity TR Idx, 1.8% S&P DJ US Select REIT, 1.8% Blmbg:TIPS and 1.6% MSCI ACWI ex US IMI (Lagged).



Cumulative Performance Relative to Target

The first chart below illustrates the cumulative performance of the Total Fund relative to the cumulative performance of the Fund's Target Asset Mix. The Target Mix is assumed to be rebalanced each quarter with no transaction costs. The second chart below shows the return and the risk of the Total Fund and the Target Mix, contrasted with the returns and risks of the funds in the Callan Public Fund Spons - Large (>1B).

Cumulative Returns Actual vs Target



Ten Year Annualized Risk vs Return





* Current Quarter Target = 32.0% Russell 3000 Index, 22.0% MSCI ACWI ex US IMI, 11.5% Blmbg Aggregate, 8.0% NCREIF NFI-ODCE Eq Wt Net, 6.4% Russell 3000 Index (Lagged), 5.8% Blmbg Intmdt Credit, 5.8% FTSE WGBI, 1.8% S&P Global Nat Res (Net), 1.8% Blmbg Commodity TR Idx, 1.8% S&P DJ US Select REIT, 1.8% Blmbg:TIPS and 1.6% MSCI ACWI ex US IMI (Lagged).

MCERA - Total Fund Historical Consistency Analysis

Consistency of Standard Deviation and Sharpe Ratio

The first chart below illustrates the consistency of standard deviation over rolling three year periods. The gray area represents the range of standard deviation for the 10th through 90th percentile for the Callan Public Fund Spr DB. The second chart below illustrates the consistency of sharpe ratio over rolling three year periods. The tables provide summary statistics for the median manager of the group and the portfolio.





Rolling Three Year Period Analysis	Median	Portfolio
Average Annual Standard Deviation	8.67%	9.27%
% Positive Periods	100%	100%
Average Ranking	50	40

Rolling Three Year Sharpe Ratio Relative to Composite Benchmark Ten Years Ended March 31, 2020



MCERA - Total Fund Drawdown Analysis for Ten Years Ended March 31, 2020

The following analysis focuses on downside risk by looking at cumulative drawdowns experienced from peak-to-trough for the portfolio, index, and peer group. Drawdown is measured from the "high-water mark" of cumulative return to the subsequent "trough". The first chart illustrates the Worst Absolute Drawdown as well as the Current Drawdown (cumulative return from high-water mark to now). The second chart focuses on Relative Drawdown (negative excess return vs. index). The bottom charts highlight the portfolio's peer rankings during drawdown periods.

Absolute Cumulative Drawdown Analysis



Drawdown Rankings vs. Total Fund Target Rankings against Callan Public Fund Sponsor Database Ten Years Ended March 31, 2020



Recovery from Trough

Quarterly Total Fund Relative Attribution - March 31, 2020

The following analysis approaches Total Fund Attribution from the perspective of relative return. Relative return attribution separates and quantifies the sources of total fund excess return relative to its target. This excess return is separated into two relative attribution effects: Asset Allocation Effect and Manager Selection Effect. The Asset Allocation Effect represents the excess return due to the actual total fund asset allocation differing from the target asset allocation. Manager Selection Effect represents the total fund impact of the individual managers excess returns relative to their benchmarks.



Asset Class Under or Overweighting

Actual vs Target Returns



Relative Attribution Effects for Quarter ended March 31, 2020

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity NOF International Equity N Fixed Income NOF Real Assets NOF Private Equity NOF	- 31% IOF 23% 20% 15% 11%	32% 22% 23% 15% 8%	(23.03%) (23.12%) (0.39%) (8.14%) (0.10%)	(20.90%) (24.11%) 1.49% (9.32%) 0.00%	(0.67%) 0.23% (0.37%) 0.18% (0.01%)	0.07% (0.05%) (0.32%) 0.02% 0.48%	(0.60%) 0.17% (0.69%) 0.21% 0.47%
Total			(13.49%) =	(13.05%) +	(0.64%) +	0.20%	(0.44%)

* Current Quarter Target = 32.0% Russell 3000 Index, 22.0% MSCI ACWI ex US IMI, 11.5% Blmbg Aggregate, 8.0% NCREIF NFI-ODCE Eq Wt Net, 6.4% Russell 3000 Index (Lagged), 5.8% Blmbg Intmdt Credit, 5.8% FTSE WGBI, 1.8% S&P Global Nat Res (Net), 1.8% Blmbg Commodity TR Idx, 1.8% S&P DJ US Select REIT, 1.8% Blmbg:TIPS and 1.6% MSCI ACWI ex US IMI (Lagged). Net-of-fee attribution



Relative Attribution by Asset Class

Cumulative Total Fund Relative Attribution - March 31, 2020

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

One Year Relative Attribution Effects



Cumulative Relative Attribution Effects



One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity NO	- 31%	32%	(12.58%)	(9.13%)	(1.08%)	0.03%	(1.05%)
International Equity N	IOF 21%	22%	(13.70%)	(16.32%)	0.60%	(0.06%)	0.54%
Fixed Income NOF	21%	23%	5.05%	6.83%	(0.38%)	(0.29%)	(0.66%)
Private Equity NOF	11%	8%	12.24%	13.96%	(0.16%)	0.63%	0.47%
Real Assets NOF	16%	15%	(5.89%)	(5.73%)	(0.02%)	(0.04%)	(0.06%)
Total			(5.16%) =	(4.40%) +	(1.03%) +	0.27%	(0.76%)

* Current Quarter Target = 32.0% Russell 3000 Index, 22.0% MSCI ACWI ex US IMI, 11.5% Blmbg Aggregate, 8.0% NCREIF NFI-ODCE Eq Wt Net, 6.4% Russell 3000 Index (Lagged), 5.8% Blmbg Intmdt Credit, 5.8% FTSE WGBI, 1.8% S&P Global Nat Res (Net), 1.8% Blmbg Commodity TR Idx, 1.8% S&P DJ US Select REIT, 1.8% Blmbg:TIPS and 1.6% MSCI ACWI ex US IMI (Lagged). Net-of-fee attribution

Cumulative Total Fund Relative Attribution - March 31, 2020

The charts below accumulate the Total Fund Attribution Analysis (shown earlier) over multiple periods to examine the cumulative sources of excess total fund performance relative to target. These cumulative results quantify the longer-term sources of total fund excess return relative to target by asset class. These relative attribution effects separate the cumulative sources of total fund excess return into Asset Allocation Effect and Manager Selection Effect.

Five Year Annualized Relative Attribution Effects



Cumulative Relative Attribution Effects



Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity NO	= 32%	32%	4.49%	5.77%	(0.37%)	(0.04%)	(0.40%)
International Equity N	NOF 21%	22%	(0.08%)	(0.66%)	0.14%	0.01%	0.15%
Fixed Income NOF	21%	23%	3.01%	3.11%	(0.03%)	(0.06%)	(0.10%)
Private Equity NOF	10%	8%	14.46%	9.68%	0.39%	`0.18%´	0.58%
Real Assets NOF	16%	15%	5.30%	3.95%	0.19%	(0.02%)	0.17%
Total			4.44% =	4.04%	+ 0.32% +	0.08%	0.40%

* Current Quarter Target = 32.0% Russell 3000 Index, 22.0% MSCI ACWI ex US IMI, 11.5% Blmbg Aggregate, 8.0% NCREIF NFI-ODCE Eq Wt Net, 6.4% Russell 3000 Index (Lagged), 5.8% Blmbg Intmdt Credit, 5.8% FTSE WGBI, 1.8% S&P Global Nat Res (Net), 1.8% Blmbg Commodity TR Idx, 1.8% S&P DJ US Select REIT, 1.8% Blmbg:TIPS and 1.6% MSCI ACWI ex US IMI (Lagged). Net-of-fee attribution

Asset Class Rankings

The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used to make this calculation. The weighted average ranking can be viewed as a measure of the fund's overall success in picking managers and structuring asset classes.





* Current Quarter Target = 32.0% Russell 3000 Index, 22.0% MSCI ACWI ex US IMI, 11.5% Blmbg Aggregate, 8.0% NCREIF NFI-ODCE Eq Wt Net, 6.4% Russell 3000 Index (Lagged), 5.8% Blmbg Intmdt Credit, 5.8% FTSE WGBI, 1.8% S&P Global Nat Res (Net), 1.8% Blmbg Commodity TR Idx, 1.8% S&P DJ US Select REIT, 1.8% Blmbg:TIPS and 1.6% MSCI ACWI ex US IMI (Lagged).



Asset Class Rankings

The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases. In the upper right corner of each graph is the weighted average of the rankings across the different asset classes. The weights of the fund's actual asset allocation are used to make this calculation. The weighted average ranking can be viewed as a measure of the fund's overall success in picking managers and structuring asset classes.



Total Asset Class Performance Ten Years Ended March 31, 2020 Weighted Ranking 15% 50 10% 70) (76) Returns (80) 5% (4) (45)(85) 0% Pub Pin- Intl Pub Pln-Pub Pin-Callan Tot Real Dom Equity Equity Dom Fixed Est DB 4.30 3.70 3.12 10th Percentile 10.53 10.10 13.44 5.17 4.74 4.17 11.49 25th Percentile 9.68 10.45 Median 75th Percentile 9.31 2.38 3 35 9.29 90th Percentile 1.40 2.92 5.56 8.61 Asset Class Composite 9.39 4.58 4.30 9.23 10.17 1.93 3.44 8.23 Composite Benchmark

* Current Quarter Target = 32.0% Russell 3000 Index, 22.0% MSCI ACWI ex US IMI, 11.5% Blmbg Aggregate, 8.0% NCREIF NFI-ODCE Eq Wt Net, 6.4% Russell 3000 Index (Lagged), 5.8% Blmbg Intmdt Credit, 5.8% FTSE WGBI, 1.8% S&P Global Nat Res (Net), 1.8% Blmbg Commodity TR Idx, 1.8% S&P DJ US Select REIT, 1.8% Blmbg:TIPS and 1.6% MSCI ACWI ex US IMI (Lagged).



Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended March 31, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

	Returns for Periods Ended March 31, 2020				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Domestic Equity	(23.26%)	(12.76%)	2.49%	4.63%	9.39%
Equity Benchmark	(20.90%)	(9.13%)	4.00%	5.77%	10.17%
Large Cap Equity	(19.67%)	(6.95%)	5.07%	6.74%	10.23%
SSGA S&P 500 Index Fund	(19.62%)	(6.99%)	5.11%	6.76%	-
S&P 500 Index	(19.60%)	(6.98%)	5.10%	6.73%	10.53%
Small Cap Equity DFA Small Cap Core Russell 2000 Index	(31.62%) (32.65%) (30.61%)	(25.77%) (26.94%) (23.99%)	(4.25%) (4.64%)	(0.85%) (0.25%)	7.36% 6.90%
International Equity	(22.97%)	(13.04%)	(0.17%)	0.73%	4.58%
International Benchmark	(24.11%)	(16.32%)	(2.34%)	(0.66%)	1.93%
Morgan Stanley Value Artisan Partners Growth MSCI EAFE Index TimesSquare Intl Small Cap	(19.97%) (21.25%) (22.83%) (28.29%)	(12.68%) (7.05%) (14.38%)	(0.47%) 4.02% (1.82%)	0.42% 0.93% (0.62%)	3.83% 6.15% 2.72%
MSCI EAFE Small Cap Index Parametric Emerging MSCI Emerging Markets Index	(27.52%) (30.06%) (23.60%)	(18.15%) (26.02%) (17.69%)	(2.88%) (6.87%) (1.62%)	0.97% (2.96%) (0.36%)	4.81%
Fixed Income	<mark>(0.14%)</mark>	5.50%	4.01%	3.32%	4.30%
Fixed Income Benchmark	1.49%	6.83%	4.28%	3.11%	3.44%
Wellington Core Plus	1.00%	7.42%	4.82%	3.86%	4.75%
Bloomberg Aggregate Index	3.15%	8.93%	4.82%	3.36%	3.88%
Western Asset Intermediate Credit	(3.81%)	1.81%	2.93%	2.87%	4.46%
Blended Benchmark****	(2.35%)	3.28%	3.11%	2.65%	3.37%
Colchester Global	(3.74%)	1.97%	2.81%	2.39%	-
FTSE World Govt Bond Index	2.00%	6.17%	4.27%	2.96%	-
Real Assets	(7.94%)	(5.20%)	1.92%	5.99%	9.23%
Real Asset Benchmark	(9.32%)	(5.73%)	1.85%	3.97%	8.23%
Private Real Estate	0.36%	0.90%	4.73%	9.30%	10.93%
NFI-ODCE Equal Weight Net	0.71%	4.38%	6.14%	7.82%	10.55%
UBS Trumbull Property Fund	0.44%	<mark>(2.15%)</mark>	3.46%	5.66%	-
AEW Core Property Trust	(0.60%)	3.83%	6.38%	8.20%	
Public Real Assets Public Real Assets Benchmark	(19.04%) (20.78%)	(13.86%) (17.37%)	(2.21%) (3.50%)	:	:
BlackRock TIPS Index Fund Bloomberg US TIPS Index BlackRock REIT Index Fund (1) D UIS Soloct PEIT Index	1.62% 1.69% (28.50%) (28.52%)	6.82% 6.85% (23.92%)	3.57% 3.46% (3.93%)	2.67%	3.48%
Invesco Commodity Fund (2) Bloomberg Commodity Index KBI Global Resources Fund (3)	(25.41%) (23.29%) (25.19%)	(23.90%) (24.64%) (22.31%) (15.74%)	(9.20%) (9.20%) (8.61%) (1.52%)	(7.76%)	(6.74%)
S&P Global Natural Resources Index	(32.99%)	(30.49%)	(6.98%)	<mark>(3.33%)</mark>	<mark>(2.75%)</mark>
KBI Custom Benchmark (4)	(21.58%)	(9.58%)	0.35%	1.35%	3.53%
Private Equity**	0.00%	13.13%	16.96%	15.71%	13.96%
Total Fund	(13.39%)	(4.73%)	3.89%	4.95%	7.93%
Total Fund - NOF	(13.49%)	(5.16%)	3.39%	4.44%	7.38%
Total Fund - IRR	(13.39%)	(4.79%)	4.07%	5.23%	7.82%
Total Fund Target	(13.05%)	(4.40%)	3.32%	4.04%	6.89%
Public Fund Sponsor Database	(12.35%)	(4.10%)	3.19%	3.88%	6.41%

- The Total Fund/Plan IRR Calculation is based upon best available data. (1) MCERA changed managers in 3Q17. Prior returns linked to Vanguard REIT Index Fund. (2) MCERA changed managers in 2Q16. Prior returns linked to BlackRock Commodity Index Fund. (3) MCERA changed managers in 3Q16. Prior returns linked to SSGA Natural Resources Index Fund. (4) KBI Custom Benchmark consists of 1/3 each: S-Network Global Water Index, Wilderhill New Energy

Clobal Innovation Index, and Dax Global Agribusiness Index.
**Current market values are those of the prior quarter, adjusted for capital calls and distributions

****Blended Index = Bloomberg Aggregate through 2/10/14 and Bloomberg U.S. Intermediate Credit thereafter.



32

of current quarter. ***Estimate

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended June 30. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

	6/2019-					
	3/2020	FY 2019	FY 2018	FY 2017	FY 2016	
Domestic Equity	(15 81%)	6 41%	16 87%	19.56%	(0.59%)	
Equity Benchmark	(12.70%)	8.98%	14.78%	18.51%	2.14%	
Large Cap Equity	(10.84%)	10.33%	14.36%	18.07%	4.00%	
SSGA S&P 500 Index Fund	(10.85%)	10.44%	14.40%	17.97%	4.08%	
S&P 500 Index	(10.82%)	10.42%	14.37%	17.90%	3.99%	
Small Cap Equity	(27.09%)	(4,42%)	23.31%	23.47%	(11,13%)	
DFA Small Cap Core	(28.23%)	((······,·)	
Russell 2000 Index	(25.55%)	(3.31%)	17.57%	24.60%	(6.73%)	
International Equity	(17.27%)	3.12%	8.05%	18.41%	(6.92%)	
International Benchmark	(18.55%)	0.26%	7.75%	20.43%	(9.61%)	
Morgan Stanley Value	(15.09%)	0.95%	6.61%	17.87%	(7.41%)	
Artisan Partners Growth	(14.38%)	9.99%	8.77%	14.74%	(10.76%)	
MSCI EAFE Index	(17.42%)	1.08%	6.84%	20.27%	(10.16%)	
FIAM International Small Cap	-	-	12.26%	23.14%	(2.74%)	
_S&P EPAC Small Cap Index	(20.55%)	(6.38%)	11.27%	22.97%	(4.77%)	
TimesSquare Intl Small Cap	(20.42%)	-	-	-	-	
MSCI EAFE Small Cap Index	(19.52%)	(6.35%)	12.45%	23.18%	(3.67%)	
Parametric Emerging	(27.71%)	2.98%	4.27%	18.89%	(7.65%)	
MSCI Emerging Markets Index	(18.18%)	1.22%	8.20%	23.75%	(12.05%)	
Fixed Income	2.20%	7.68%	0.31%	1.28%	6.68%	
Fixed Income Benchmark	3.54%	7.36%	0.21%	(0.83%)	7.05%	
Wellington Core Plus	3.94%	8.35%	0.34%	2.40%	6.05%	
Bloomberg Aggregate Index	5.68%	7.87%	(0.40%)	(0.31%)	6.00%	
Western Asset Intermediate Credit	(1.36%)	8.94%	(0.02%)	3.11%	5.09%	
Blended Benchmark****	0.28%	8.23%	(0.36%)	1.36%	4.97%	
Colchester Global	(1.46%)	5.88%	1.47%	(0.81%)	8.29%	
FTSE World Govt Bond Index	2.51%	5.48%	1.90%	(4.14%)	11.26%	
Real Assets	(5 13%)	3 10%	7 29%	4 10%	13 68%	
Real Assets Benchmark	(6,68%)	3 80%	8 58%	4 30%	6 79%	
	(0.0070)	0.0070	010070	110070	011 0 /0	
	0.040/	0.000/			40.049/	
Private Real Estate	2.21%	3.08%	7.60%	6.55%	19.84%	
NFI-ODCE Equal weight Net	3.22%	5.99%	7.08%	1.23%	11.24%	
LIBS Trumbull Property Fund	1 60%	0.04%	7 70%	5 60%	10 71%	
AFW Core Property Trust	2 30%	6 92%	8 16%	7 77%	11 61%	
ALW Oble Hoperty Hust	2.0070	0.0270	0.1070	1.11/0	11.0170	
Public Real Assets	(15.23%)	3.14%	6.80%	0.39%	1.14%	
Public Real Asset Benchmark	(18.10%)	0.91%	9.51%	1.01%	1.32%	
	0.000/			(0.000())		
BlackRock TIPS Index Fund	3.83%	4.95%	2.30%	(0.38%)	4.35%	
Bloomberg US TIPS Index	3.87%	4.84%	2.11%	(0.63%)	4.35%	
BlackRock REIT Index Fund (1)	(24.54%)	9.81%	5.26%	(1.79%)	24.06%	
DJ US Select RETT Index	(24.00%)	9.75%	4.23%	(2.43%)	(12,00%)	
Bloomborg Commodity Index	(23.30%)	(7.44%)	7 35%	(0.47 %)	(12.33%)	
KBI Global Resources Fund (3)	(21.37%)	4.65%	7.53%	13 / 3%	(13.32 %)	
S&P Global Natural Resources Index	(31 23%)	(4.63%)	24.07%	14 70%	(9.47%)	
KBI Custom Benchmark (4)	(13.76%)	7.71%	5.46%	12.80%	(5.43%)	
Private Equity**	7.19%	16.55%	20.80%	20.43%	9.29%	
Total Fund	(7 000/)	6 200/	40.00%	40.000/	0.000/	
Total Fund NOF	(7.90%)	0.39%	0.740/	12.88%	2.08% 2.100/	
Total Fund IPP	(0.22%) (8.14%)	0.00%	9.74% 10.10%	12.04%	2.19%	
Total Fund Target	(0.14%)	6 13%	8 78%	12.02%	2.01%	
Public Fund Sponsor Database	(7.07%)	6.08%	8 28%	12.30%	0.88%	
7.00% Actuarial Assumption	5.21%	7.00%	7.00%	7.00%	7.00%	

The Total Fund/Plan IRR Calculation is based upon best available data. (1) MCERA changed managers in 3Q17. Prior returns linked to Vanguard REIT Index Fund. (2) MCERA changed managers in 2Q16. Prior returns linked to BlackRock Commodity Index Fund. (3) MCERA changed managers in 3Q16. Prior returns linked to SSGA Natural Resources Index Fund.

(4) KBI Custom Benchmark consists of 1/3 each: S-Network Global Water Index, Wilderhill New Energy

Global Innovation Index, and Dax Global Agribusiness Index. **Current market values are those of the prior quarter, adjusted for capital calls and distributions

*****Blended Index = Bloomberg Aggregate through 2/10/14 and Bloomberg U.S. Intermediate Credit thereafter.



D.1

of current quarter. ***Estimate

Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended June 30. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

	FY 2015	FY 2014	FY 2013	FY 2012	FY 2011
Domestic Equity	7 52%	24 38%	22 55%	1 07%	35 41%
Equity Benchmark	7 29%	25 22%	21 46%	3 84%	32 37%
		20.22 /0	2	010170	02.01 /0
Large Cap Equity	7.47%	24.60%	21.36%	2.46%	31.98%
Dodge & Cox Value	-			0.40%	30.50%
RCM Growth	-	-	-	(0.65%)	31.40%
S&P 500 Index	7.42%	24.61%	20.60%	5.45%	30.69%
Small Cap Equity	7.05%	23.57%	25.33%	(3.63%)	48.85%
Russell 2000 Index	6.49%	23.64%	24.21%	(2.08%)	37.41%
DFA Value	3.50%	25.92%	33.04%	(3.56%)	40.67%
Russell 2000 Value Index	0.78%	22.54%	24.76%	(1.44%)	31.35%
Russell 2000 Growth Index	12.34%	24.73%	23.67%	(2.71%)	43.50%
International Equity	(1.97%)	22.56%	19.76%	(7.18%)	32.48%
International Benchmark	(4.97%)	22.28%	13.91%	(14.79%)	30.26%
Morgan Stanley Value	(2.55%)	20.84%	19.69%	(7.10%)	29.25%
Artisan Partners Growth	0.60%	23.64%	21.84%	(2.57%)	33.42%
MSCI EAFE Index	(4.22%)	23.57%	18.62%	(13.83%)	30.36%
FIAM International Small Cap	1.65%	27.34%	26.27%	(12.50%)	40.91%
S&P EPAC Small Cap Index	0.33%	29.15%	20.11%	(15.62%)	36.79%
Fixed Income	(0.57%)	6.02%	1.89%	8.77%	5.79%
Fixed Income Benchmark	(1.02%)	4.36%	(0.69%)	7.47%	3.90%
Wellington	1.79%	6.31%	1.74%	8.39%	5.14%
Bloomberg Aggregate Index	1.86%	4.37%	(0.69%)	7.47%	3.90%
Western Asset	1.44%	5.22%	2.93%	8.80%	7.33%
Bloomberg Aggregate Index	1.86%	4.37%	(0.69%)	7.47%	3.90%
Real Assets	22.79%	13.73%	13.23%	13.02%	13.00%
Real Assets Benchmark	13.15%	11.21%	10.72%	12.04%	16.73%
	~~~~	10	10	10	
Real Estate	22.84%	13.73%	13.23%	13.02%	13.00%
NCREIF Total Index	12.98%	11.21%	10.72%	12.04%	16.73%
NFI-ODCE Equal Weight Net	13.64%	11.37%	10.80%	11.46%	19.33%
Woodmont	37.42%	14.06%	13.03%	12.26%	9.02%
AEW Partners V Fund	44.36%	27.76%	20.69%	23.82%	14.98%
RREEF America III	24.69%	27.46%	19.17%	20.69%	65.53%
ING Clarion	-	-	-	10.01%	26.72%
Private Equity	10.45%	25.66%	12.34%	5.16%	16.55%
Total Fund	5.52%	19.22%	15.60%	2.26%	24.42%
Total Fund - NOF	5.02%	18.65%	15.01%	1.67%	23.71%
Total Fund Toract	0.070/	40.400/	40 740/	2.02%	00 50%
i otai Fund i arget	3.07%	18.12%	12.74%	2.02%	22.58%
Public Fund Sponsor Database	3.19%	16.33%	11.99%	1.20%	20.86%
7.00% Actuarial Assumption	7.00%	7.00%	7.00%	7.00%	7.00%
## **Investment Manager Returns**

The table below details the rates of return for the Fund's investment managers over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

	12/2019-				
	3/2020	2019	2018	2017	2016
Domestic Equity	(23,26%)	28.93%	(5.14%)	20.85%	13.35%
Equity Benchmark	(20.90%)	31.02%	(5.24%)	21.13%	12.74%
Largo Cap Equity	(10.67%)	31 67%	(4 56%)	21 80%	12 04%
SSGA S&P 500 Index Fund	(19.62%)	31.07 %	(4.36%)	21.05 %	12.04 /0
S&P 500 Index	(19.60%)	31.49%	(4.38%)	21.83%	11.96%
Small Can Equity	(24 629/)	22 2 4 9/	(9.409/)	10 210/	16 70%
DFA Small Cap Core	(32.65%)	22.19%	(0.19%)	-	-
Russell 2000 Index	(30.61%)	25.52%	(11.01%)	14.65%	21.31%
International Equity	(22.97%)	24.44%	(12.81%)	29.99%	0.23%
International Benchmark	(24.11%)	21.63%	(14.76%)	27.81%	4.41%
Morgan Stanley Value	(19.97%)	21.63%	(12.86%)	26.28%	(0.82%)
Artisan Partners Growth	(21.25%)	30.65%	<b>`(9.79%</b> )	32.52%	(8.53%)
MSCI EAFE Index	(22.83%)	22.01%	(13.79%)	25.03%	1.00%
TimesSquare Intl Small Cap	(28.29%)	-		-	-
MSCI EAFE Small Cap	(27.52%)	24.96%	(17.89%)	33.01%	2.18%
Parametric Emerging	(30.06%)	13.48%	(12.89%)	28.61%	13.85%
MSCI Emerging Markets Index	(23.60%)	18.44%	(14.57%)	37.28%	11.19%
Fixed Income	(0.14%)	8.87%	(0.09%)	5.43%	4.55%
Fixed Income Benchmark	1.49%	8.21%	(0.17%)	4.55%	2.70%
Wellington Core Plus	1.00%	10.16%	(0.17%)	5.11%	4.93%
Bloomberg Aggregate Index	3.15%	8.72%	0.01%	3.54%	2.65%
Western Asset Intermediate Credit	(3.81%)	10.11%	(0.07%)	4.43%	5.21%
Blended Benchmark****	(2.35%)	9.52%	0.01%	3.67%	3.68%
Colchester Global	(3.74%)	8.02%	(0.47%)	8.68%	4.33%
FISE World Govt Bond Index	2.00%	5.90%	(0.84%)	7.49%	1.60%
Real Assets	(7.94%)	7.26%	1.01%	7.91%	9.37%
Real Asset Benchmark	(9.32%)	9.32%	0.40%	7.42%	11.18%
Drivete Deel Estate	0.26%	4 6 4 9/	7 200/	6 E79/	0 440/
NELODCE Equal Weight Net	0.30%	1.34% 5.18%	7.30%	6.92%	0.11% 8.36%
	0.7170	0.1070	1.0070	0.0270	0.0070
UBS Trumbull Property Fund	0.44%	(1.91%)	6.97%	6.29%	7.21%
AEW Core Property Trust	(0.60%)	6.24%	7.73%	7.96%	8.49%
Public Real Assets	(19.04%)	15.95%	(7,59%)	10.03%	11.14%
Public Real Assets Benchmark	(20.78%)	14.08%	(7.27%)	7.95%	14.37%
BlackRock TIPS Index Fund	1 62%	8 53%	(1 12%)	3 24%	4 84%
Bloomberg US TIPS Index	1.69%	8.43%	(1.26%)	3.01%	4.68%
BlackRock REIT Index Fund (1)	(28.50%)	23.15%	(4.16%)	6.10%	8.62%
DJ US Select REIT Index	(28.52%)	23.10%	(4.22%)	3.76%	6.68%
MSCI REIT Index	(26.99%)	25.84%	(4.57%)	5.07%	8.60%
Invesco Commodity Fund (2)	(25.41%)	6.23%	(10.99%)	5.91%	11.05%
Bloomberg Commodity Index	(23.29%)	7.69%	(11.25%)	1.70%	11.77%
KBI Global Resources Fund (3)	(25.19%)	25.87%	(13.86%)	25.66%	21.17%
KBI Custom Benchmark (4)	(21.58%)	28.74%	(13.06%)	21.96%	7.57%
	(		( · · · · · · · · · · · · · · · · · · ·		
Private Equity**	0.00%	18.53%	16.44%	22.16%	13.53%
	(10.000())	40	(0.000())	4= 4464	0.400/
I otal Fund	(13.39%)	18.73%	(2.68%)	17.41%	8.10%
i otal Fund - NOF Total Fund -IRR	(13.49%) (13.56%)	18.19%	(3.10%) (2.91%)	10.01%	7.01% 8.13%
Total Fund Target	(13.05%)	20 11%	(5.33%)	16.58%	8 26%
Public Fund Sponsor Database	(12.35%)	17.73%	(3.77%)	15.56%	7.71%

The Total Fund/Plan IRR Calculation is based upon best available data. (1) MCERA changed managers in 3Q17. Prior returns linked to Vanguard REIT Index Fund. (2) MCERA changed managers in 2Q16. Prior returns linked to BlackRock Commodity Index Fund. (3) MCERA changed managers in 3Q16. Prior returns linked to SSGA Natural Resources Index Fund.

(4) KBI Custom Benchmark consists of 1/3 each: S-Network Global Water Index, Wilderhill New Energy

Global Innovation Index, and Dax Global Agribusiness Index. **Current market values are those of the prior quarter, adjusted for capital calls and distributions

of current quarter. ***Estimate

*****Blended Index = Bloomberg Aggregate through 2/10/14 and Bloomberg U.S. Intermediate Credit thereafter.



## **Investment Manager Returns**

The table below details the rates of return for the Fund's investment managers over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

	2015	2014	2013	2012	2011
Domestic Equity	(0.72%)	11.02%	34.25%	17.20%	(1.09%)
Equity Benchmark	0.48%	12.56%	33.55%	16.42%	1.03%
Large Cap Equity	1.46%	13.70%	32.40%	16.68%	(0.79%)
SSGA S&P 500 Index Fund	1.44%	13.69%	32.39%	16.07%	2.14%
Dodge & Cox Value	-	-	-	20.59%	(3.02%)
RCM Growth	-	-	-	10.26%	(3.73%)
S&P 500 Index	1.38%	13.69%	32.39%	16.00%	2.11%
Small Can Equity	(6 22%)	4 65%	38.37%	18 28%	(2 29%)
Russell 2000 Index	(4,41%)	4.89%	38.82%	16.35%	(4.18%)
	(				(
DFA Value	(6.06%)	5.04%	42.66%	22.41%	(6.75%)
Russell 2000 Value Index	(7.47%)	4.22%	34.52%	18.05%	(5.50%)
Columbus Circle Growth	(6.66%)	4.51%	32.88%	14.09%	2.49%
Russell 2000 Growth Index	(1.38%)	5.60%	43.30%	14.59%	(2.91%)
International Equity	(0.66%)	(3.27%)	22.57%	23.53%	(8.87%)
International Benchmark	(4.60%)	(3.89%)	15.82%	17.04%	(14.31%)
			o / <b>T</b> oo/		
Morgan Stanley Value	1.1/%	(5.10%)	21.79%	20.70%	(7.40%)
Artisan Partners Growth	(2.61%)	0.24%	26.68%	26.87%	(6.12%)
MSCI EAFE Index	(0.81%)	(4.90%)	22.78%	17.32%	(12.14%)
FIAM International Small Cap	12.54%	(5.75%)	31.84%	26.26%	(13.39%)
S&P EPAC Small Cap Index	8.58%	(3.43%)	27.93%	19.92%	(14.74%)
Parametric Emerging	(15.12%)	(3.00%)	3.38%	21.17%	(17.23%)
MSCI Emerging Markets Index	(14.92%)	(2.19%)	(2.60%)	18.23%	(18.42%)
Fixed Income	(0.61%)	4.46%	(0.90%)	8.28%	7.93%
Fixed Income Benchmark	(0.39%)	3.74%	(2.02%)	4.21%	7.84%
Wallington Core Plus	0.20%	6 400/	(0,709/)	0.020/	7 000/
Pleamberg Aggregate Index	0.30%	0.40% 5.07%	(0.79%)	0.03%	7.02%
Mostern Asset	0.55%	5.97%	(2.02%)	4.21%	7.04%
Nestern Asset	1.25%	4.30%	(0.00%)	9.79%	7.39%
Calabastar Clabal	0.90% (F. F. 20()	4.10%	(2.02%)	4.21%	7.04%
Colonester Global	(3.32%)	(0.499())	(4,00%)	- 1 CE0/	-
FISE World Govt Bond Index	(3.57%)	(0.48%)	(4.00%)	1.05%	0.35%
Real Assets	18.37%	15.55%	13.01%	14.69%	13.57%
Real Assets Benchmark	5.44%	11.82%	10.98%	10.54%	14.26%
Private Real Estate	29.00%	15.55%	13.01%	14.69%	13.57%
NCREIF Total Index	13.33%	11.82%	10.98%	10.54%	14.26%
NFI-ODCE Equal Weight Net	14.18%	11.42%	12.36%	9.93%	14.99%
M/a a alma a mt	04.040/	40 700/	40 400/	45.000/	44.000/
VVOODMONI	04.21%	10.72%	13.48%	15.29%	11.86%
AEW Core Property Fund	12.93%	11.00%	-	-	-
AEW Core Property Trust	13./0%	11.31%	-	-	- 17 4 2 0/
AEW Parmers V (estimated)	40.40%	40.09%	20.24%	19.92%	11.13%
	8.3∠%	21.93%	10.97%	23.13%	00.41%
ING Clarion	-	-	-	-	18.70%
Private Equity**	11.24%	14.19%	20.25%	12.28%	6.63%
Total Fund	0 7 2 9/	7 409/	20.049/	45 709/	4 000/
	2.13%	1.10%	20.94%	15./0%	1.00%
i otal fund - NOF	2.24%	6.59%	20.37%	15.03%	0.42%
Total Fund Target	(0.26%)	6.50%	17.92%	12.93%	1.13%
Public Fund Sponsor Database	0.03%	6.02%	15.74%	12.66%	0.91%

* Current Quarter Target = 32.0% Russell 3000 Index, 22.0% MSCI ACWI ex US IMI, 11.5% Bimbg Aggregate, 8.0% NCREIF NFI-ODCE Eq Wt Net, 6.4% Russell 3000 Index, 5.8% Bimbg Intmdt Credit, 5.8% FTSE WGBI, 1.8% Bimbg Commodity TR Idx, 1.8% Bimbg:TIPS, 1.8% MSCI US REIT Index, 1.8% S&P Gib L/M Cmdty+NR (Nt) and 1.6% MSCI ACWI ex US IMI. **Current market values are those of the prior quarter, adjusted for capital calls and distributions

state of current quarter.
****Blended Index = Bloomberg Aggregate through 2/10/14 and Bloomberg U.S. Intermediate Credit thereafter.



## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended March 31, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

D.1

	<b>Returns for Peri</b>	ods Ended Marc	ch 31, 2020		
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Net-of-Fees	Quartor	. oui			louio
Domestic Equity Equity Benchmark	<b>(23.03%)</b> (20.90%)	<b>(12.58%)</b> (9.13%)	<b>2.43%</b> 4.00%	<b>4.49%</b> 5.77%	<b>9.18%</b> 10.17%
Large Cap Equity SSGA S&P 500 Index Fund S&P 500 Index	(19.67%) (19.63%) (19.60%)	(6.97%) (7.01%) (6.98%)	5.04% 5.08% 5.10%	6.71% 6.73% 6.73%	10.14%  10.53%
Small Cap Equity DFA Small Cap Core	(31.68%) (32.72%) (30.61%)	(26.04%) (27.20%) (23.99%)	(4.75%)	(1.41%)	6.74%
International Equity International Benchmark	(30.01%) (23.12%) (24.11%)	(13.70%) (16.32%)	( <b>0.95%</b> ) (2.34%)	(0.23%) (0.08%) (0.66%)	<b>3.77%</b> 1.93%
Morgan Stanley Value Artisan Partners Growth MSCI EAFE Index TimesSquare Intl Small Cap MSCI EAFE Small Cap Index Parametric Emerging MSCI Emerging Markets Index	(20.09%) (21.42%) (22.83%) (28.29%) (27.52%) (30.21%) (23.60%)	(13.19%) (7.80%) (14.38%) (18.15%) (26.61%) (17.69%)	(1.11%) 3.14% (1.82%) (2.88%) (7.60%) (1.62%)	(0.22%) 0.03% (0.62%) 0.97% (3.74%) (0.38%)	3.17% 5.15% 2.72% 4.81%
Fixed Income Benchmark	(0.39%) 1.49%	<b>5.05%</b> 6.83%	<b>3.69%</b> 4.28%	<b>3.01%</b> 3.11%	<b>4.02%</b> 3.44%
Wellington Core Plus Bloomberg Aggregate Index Western Asset Intermediate Credit Blended Benchmark**** Colchester Global FTSE World Govt Bond Index	0.95% 3.15% (3.88%) (2.35%) (3.84%) 2.00%	7.20% 8.93% 1.51% 3.28% 1.53% 6.17%	4.60% 4.82% 2.63% 3.11% 2.36% 4.27%	3.65% 3.36% 2.57% 2.65% 1.94% 2.96%	4.54% 3.88% 4.17% 3.37% - 2.19%
Real Assets Real Assets Benchmark	<b>(8.14%)</b> (9.32%)	<b>(5.89%)</b> (5.73%)	<b>1.23%</b> 1.85%	<b>5.30%</b> 3.97%	<b>8.71%</b> 8.23%
Private Real Estate NFI-ODCE Equal Weight Net	<b>0.07%</b> 0.71%	<mark>(0.09%)</mark> 4.38%	<b>3.83%</b> 6.14%	<b>8.37%</b> 7.82%	<b>10.28%</b> 10.55%
UBS Trumbull Property Fund AEW Core Property Trust	0.24% (1.03%)	<mark>(3.12%)</mark> 2.69%	2.55% 5.36%	4.68% 7.18%	-
Public Real Assets Public Real Assets Benchmark	<b>(19.12%)</b> (20.78%)	<b>(14.19%)</b> (17.37%)	<b>(2.60%)</b> (3.50%)	•	•
BlackRock TIPS Index Fund Bloomberg US TIPS Index BlackRock REIT Index Fund (1) DJ US Select REIT Index	1.61% 1.69% (28.51%) (28.52%)	6.79% 6.85% (23.96%) (23.96%)	3.54% 3.46% (3.99%) (4.28%)	2.67%	3.48% 6.88%
Invesco Commodity Fund (2) Bloomberg Commodity Index	(25.55%) (23.29%)	(25.17%) (22.31%)	(9.79%) (8.61%)	(7.76%)	(6.74%)
S&P Global Netural Resources Fund (3) S&P Global Natural Resources Index KBI Custom Benchmark (4)	(25.35%) (32.99%) (21.58%)	(30.49%) (9.58%)	(2.35%) (6.98%) 0.35%	( <mark>3.33%)</mark> 1.35%	( <mark>2.75%)</mark> 3.53%
Private Equity**	(0.10%)	12.24%	15.86%	14.48%	10.15%
<b>Total Fund</b> Total Fund Target Public Fund Sponsor Database	<b>(13.49%)</b> (13.05%) (12.35%)	<b>(5.16%)</b> (4.40%) (4.10%)	<b>3.39%</b> 3.32% 3.19%	<b>4.44%</b> 4.04% 3.88%	<b>7.38%</b> 6.89% 6.41%

* Current Quarter Target = 32.0% Russell 3000 Index, 22.0% MSCI ACWI ex US IMI, 11.5% Bimbg Aggregate, 8.0% NCREIF NFI-ODCE Eq Wt Net, 6.4% Russell 3000 Index (Lagged), 5.8% Bimbg Intmdt Credit, 5.8% FTSE WGBI, 1.8% S&P Global Nat Res (Net), 1.8% Bimbg Commodity TR Idx, 1.8% S&P DJ US Select REIT, 1.8% Bimbg:TIPS and 1.6% MSCI ACWI ex US

- Nat Res (Net), 1.8% Bimbg Commodity TR Iux, 1.0% Ser Do Coste Char, 1.6% European et al. IMI (Lagged). (1) MCERA changed managers in 3Q17. Prior returns linked to Vanaguard REIT Index Fund. (2) MCERA changed managers in 2Q16. Prior returns linked to BlackRock Commodity Index Fund. (3) MCERA changed managers in 3Q16. Prior returns linked to SSGA Natural Resources Index Fund. (4) KBI Custom Benchmark consists of 1/3 each: S-Network Global Water Index, Wilderhill New Energy Global Innovation Index, and Dax Global Agribusiness Index. **Current market values are those of the prior quarter, adjusted for capital calls and distributions effourment quarter

of current quarter. ****Blended Index = Bloomberg Aggregate through 2/10/14 and Bloomberg U.S. Intermediate Credit thereafter.



# Actual vs Target Style Allocation As of March 31, 2020

The first chart below shows the Fund's style allocation as of March 31, 2020. The second chart shows the Fund's target style allocation as outlined in the investment policy statement.



Asset Class	\$Millions Actual	Weight Actual	Target	Percent Difference	\$Millions Difference
Large Cap Core	460	71.0%	0.0%	71.0%	460
Small Cap Core	188	29.0%	30.0%	(1.0%)	(7)
Large Cap Core	0	0.0%	70.0%	(70.0%)	(454)
Total	648	100.0%	100.0%		

* Current Quarter Target = 70.0% S&P 500 Index and 30.0% Russell 2000 Index.



## Domestic Equity Composite Period Ended March 31, 2020

### **Investment Philosophy**

The Equity Benchmark is comprised of 51.1% S&P/BARRA Value, 22.2% S&P 500, 15.6% Russell 2000 and 11.1% S&P/BARRA Growth through 12/31/1999, 80% S&P 500 and 20% Russell 2000 from 12/31/1999 to 06/30/2010, and 100% Russell 3000 from 06/30/2010 to present.

### **Quarterly Summary and Highlights**

- Domestic Equity Composite's portfolio posted a (23.26)% return for the quarter placing it in the 77 percentile of the Public Fund Domestic Equity group for the quarter and in the 77 percentile for the last year.
- Domestic Equity Composite's portfolio underperformed the Equity Benchmark by 2.36% for the quarter and underperformed the Equity Benchmark for the year by 3.63%.

## Performance vs Public Fund - Domestic Equity (Gross)



Service Servic

### **Relative Return vs Equity Benchmark**

## Public Fund - Domestic Equity (Gross) Annualized Ten Year Risk vs Return



## Domestic Equity Composite Return Analysis Summary

## **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

### Performance vs Public Fund - Domestic Equity (Gross)







Risk Adjusted Return Measures vs Equity Benchmark Rankings Against Public Fund - Domestic Equity (Gross) Ten Years Ended March 31, 2020





## **Domestic Equity Composite Risk Analysis Summary**

### **Risk Analysis**

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows Up and Down Market Capture. The last two charts show the ranking of the manager's risk statistics versus the peer group.

**Risk Analysis vs Public Fund - Domestic Equity (Gross)** Ten Years Ended March 31, 2020



## Market Capture vs Equity Benchmark **Rankings Against Public Fund - Domestic Equity (Gross)** Ten Years Ended March 31, 2020



### **Risk Statistics Rankings vs Equity Benchmark** Rankings Against Public Fund - Domestic Equity (Gross) Ten Years Ended March 31, 2020



## Domestic Equity Composite Equity Characteristics Analysis Summary

## **Portfolio Characteristics**

This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

## Portfolio Characteristics Percentile Rankings Rankings Against Public Fund - Domestic Equity as of March 31, 2020



## **Sector Weights**

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. Diversification by number and concentration of holdings are also compared to the benchmark and peer group. Issue Diversification represents by count, and Diversification Ratio by percent, the number of holdings that account for half of the portfolio's market value.



## **Portfolio Characteristics Analysis**

## **Pub Pln- Dom Equity**

The charts below illustrate the behavior of the product over different portfolio characteristics through time. As a backdrop the range (from 10th to 90th percentile) is shown for the Pub Pln- Dom Equity Universe. The ranking of the product in this group is shown above each quarter end dot. The average ranking of the product and, if there are at least 12 data points, the standard deviation of that ranking is also shown on the chart. The Russell 3000 Index is shown for comparison purposes.



Any particular portfolio characteristic observation(s) may be missing due to a failure to pass a minimum "coverage hurdle" intended to ensure quality. This can occur when the portfolio has a significant weight in stocks for which the data vendor(s) cannot supply the particular relevant financial metric.

## Current Holdings Based Style Analysis Domestic Equity Composite As of March 31, 2020

This page analyzes the current investment style of a portfolio utilizing a detailed holdings-based style analysis to determine actual exposures to various market capitalization and style segments of the domestic equity market. The market is segmented quarterly by capitalization and style. The capitalization segments are dictated by capitalization decile breakpoints. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the current market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the current portfolio and index weights and stock counts (in parentheses) in each capitalization/style segment of the market. The middle chart illustrates the total exposures and stock counts in the three style segments, with a legend showing the total growth, value, and "combined Z" (growth - value) scores. The bottom chart exhibits the sector weights as well as the style weights within each sector.

**Style Exposure Matrix** 



### Style Map vs Pub Pln- Dom Equity Holdings as of March 31, 2020

## Combined Z-Score Style Distribution Holdings as of March 31, 2020



## Sector Weights Distribution Holdings as of March 31, 2020



## Historical Holdings Based Style Analysis Domestic Equity Composite For Three Years Ended March 31, 2020

This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various market capitalization and style segments of the domestic equity market. The market is segmented quarterly by capitalization and style. The capitalization segments are dictated by capitalization decile breakpoints. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each capitalization/style segment of the market. The next two style exposure charts illustrate the actual quarterly cap/style and style only segment exposures of the portfolio through history.



### Average Style Map vs Pub Pln- Dom Equity Holdings for Three Years Ended March 31, 2020

## Average Style Exposure Matrix Holdings for Three Years Ended March 31, 2020

	21.5% (102)	18.3% (93)	24.5% (89)	<b>64.3%</b> (284)
Large				
	25.1% (104)	21.4% (96)	29.2% (98)	<b>75.7%</b> (298)
	3.2% (100)	3.9% (101)	4.9% (78)	12.0% (279)
Mid				
	4.8% (171)	6.0% (211)	5.9% (214)	<b>16.7%</b> (596)
	5.7% (209)	8.1% (271)	7.2% (174)	20.9% (654)
Small				
	2.0% (330)	2.7% (484)	2.1% (378)	<b>6.8%</b> (1192)
	1.2% (272)	1.1% (216)	0.6% (85)	<b>2.9%</b> (573)
Micro				
	0.3% (296)	0.3% (380)	0.2% (209)	<b>0.8%</b> (885)
	<b>31.6%</b> (683)	31.3% (681)	37.0% (426)	100.0% (1790)
Total				
	32.2% (901)	30.4% (1171)	37.5% (899)	100.0% (2971)
	Value	Core	Growth	Total

Domestic Equity Composite Historical Cap/Style Exposures







## Active Share Structure Analysis For One Quarter Ended March 31, 2020

This analysis compares multiple portfolios and composites in an active share context, illustrating the varying degrees of active risk taken by individual portfolios, and how they combine into active risk profiles for composites and the equity structure. Two sources of active share (active risk) are shown: 1) Total Holdings-Based Active Share based on individual position comparisons to the index (and the subcomponent from holding non-index securities), and 2) Sector Exposure Active Share that quantifies the more macro-level sector differences from the index.

### Active Share Analysis Ended March 31, 2020



	Weight		Total	Non-Idx	Sector	Number	Security
	%	Index	Act Share	Act Share	Act Share	Securities	Diverse
Small Cap Equity	28.98%	Russell 2000	37.35%	7.70%	17.38%	1622	256.81
DFA Small Cap Core	26.24%	Russell 2000	37.35%	7.70%	17.38%	1622	256.81
Large Cap Equity	71.02%	S&P 500	0.16%	0.00%	0.04%	505	42.03
SSGA S&P 500 Index Fund	69.88%	S&P 500	0.16%	0.00%	0.00%	505	42.03
Domestic Equity	100.00%	Russell 3000	21.89%	0.30%	5.68%	2110	95.46

## SSGA S&P 500 Index Fund Period Ended March 31, 2020

### **Investment Philosophy**

SSGA believes that their passive investment strategy can provide market-like returns with minimal transaction costs. The first full quarter of performance is 2Q11. Performance prior to 2Q11 is that of the manager's composite.

## **Quarterly Summary and Highlights**

• SSGA S&P 500 Index Fund's portfolio posted a (19.62)% return for the quarter placing it in the 51 percentile of the Callan Large Capitalization group for the quarter and in the 49 percentile for the last year.

Quarterly Asset Growth					
Beginning Market Value	\$647,034,843				
Net New Investment	\$-83,198,829				
Investment Gains/(Losses)	\$-110,763,665				
Ending Market Value	\$453,072,349				

 SSGA S&P 500 Index Fund's portfolio underperformed the S&P 500 Index by 0.03% for the quarter and underperformed the S&P 500 Index for the year by 0.01%.

## Performance vs Callan Large Capitalization (Gross)





### **Relative Return vs S&P 500 Index**

## Callan Large Capitalization (Gross) Annualized Ten Year Risk vs Return



## SSGA S&P 500 Index Fund Return Analysis Summary

## **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

### Performance vs Callan Large Capitalization (Gross)







## Risk Adjusted Return Measures vs S&P 500 Index Rankings Against Callan Large Capitalization (Gross) Ten Years Ended March 31, 2020



## DFA Small Cap Core Period Ended March 31, 2020

### **Investment Philosophy**

Dimensional's core philosophical principles are: public capital markets work (Dimensional uses information in market prices to identify reliable dimensions of expected market returns: size, relative price, and profitability and to design and implement strategies along those dimensions); diversification is essential (helps reduce uncertainty, manage risk, increase the reliability of outcomes, and provide flexibility); and managing tradeoffs adds value (Dimensional seeks to add value by targeting market premiums efficiently and continuously, reducing the costs associated with turnover, and implementing a flexible trading strategy). The first full quarter of performance is 1Q19. Prior performance is that of the manager's composite.

### **Quarterly Summary and Highlights**

Performance vs Callan Small Cap Core (Gross)

- DFA Small Cap Core's portfolio posted a (32.65)% return for the quarter placing it in the 63 percentile of the Callan Small Cap Core group for the quarter and in the 61 percentile for the last year.
- DFA Small Cap Core's portfolio underperformed the Russell 2000 Index by 2.04% for the quarter and underperformed the Russell 2000 Index for the year by 2.95%.







## Callan Small Cap Core (Gross) Annualized Ten Year Risk vs Return



## DFA Small Cap Core Return Analysis Summary

## **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

## Performance vs Callan Small Cap Core (Gross)







## Risk Adjusted Return Measures vs Russell 2000 Index Rankings Against Callan Small Cap Core (Gross) Ten Years Ended March 31, 2020





## **DFA Small Cap Core Risk Analysis Summary**

### **Risk Analysis**

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows Up and Down Market Capture. The last two charts show the ranking of the manager's risk statistics versus the peer group.

Risk Analysis vs Callan Small Cap Core (Gross) Ten Years Ended March 31, 2020



## Market Capture vs Russell 2000 Index Rankings Against Callan Small Cap Core (Gross) Ten Years Ended March 31, 2020



## **Risk Statistics Rankings vs Russell 2000 Index** Rankings Against Callan Small Cap Core (Gross) Ten Years Ended March 31, 2020



## DFA Small Core Equity Characteristics Analysis Summary

## **Portfolio Characteristics**

This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

### Portfolio Characteristics Percentile Rankings Rankings Against Callan Small Cap Core as of March 31, 2020



## **Sector Weights**

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. Diversification by number and concentration of holdings are also compared to the benchmark and peer group. Issue Diversification represents by count, and Diversification Ratio by percent, the number of holdings that account for half of the portfolio's market value.



## **Portfolio Characteristics Analysis**

### **Callan Small Cap Core**

The charts below illustrate the behavior of the product over different portfolio characteristics through time. As a backdrop the range (from 10th to 90th percentile) is shown for the Callan Small Cap Core Universe. The ranking of the product in this group is shown above each quarter end dot. The average ranking of the product and, if there are at least 12 data points, the standard deviation of that ranking is also shown on the chart. The Russell 2000 Index is shown for comparison purposes.



Any particular portfolio characteristic observation(s) may be missing due to a failure to pass a minimum "coverage hurdle" intended to ensure quality. This can occur when the portfolio has a significant weight in stocks for which the data vendor(s) cannot supply the particular relevant financial metric.

## Marin Co. - DFA Small Core Top 10 Portfolio Holdings Characteristics as of March 31, 2020

## **10 Largest Holdings**

						Price/		
		Ending	Percent			Forecasted		Forecasted
		Market	of	Qtrly	Market	Earnings	Dividend	Growth in
Stock	Sector	Value	Portfolio	Return	Capital	Ratio	Yield	Earnings
Amedisys	Health Care	\$930,364	0.5%	9.96%	5.93	35.03	0.00%	15.00%
Horizon Therapeutics Pub Ltd Shs	Health Care	\$914,991	0.5%	(18.18)%	5.63	14.67	0.00%	13.50%
Helen of Troy Corp Ltd	Consumer Discretionary	\$748,092	0.4%	(19.89)%	3.63	15.39	0.00%	3.90%
Cogent Communications Hldgs	Communication Services	\$741,583	0.4%	25.62%	3.87	75.00	3.22%	28.72%
Generac Hldgs Inc	Industrials	\$729,428	0.4%	(7.38)%	5.83	17.90	0.00%	6.50%
Fti Consulting	Industrials	\$715,266	0.4%	8.23%	4.49	20.52	0.00%	43.72%
Tech Data Corp	Information Technology	\$714,572	0.4%	(8.88)%	4.65	11.01	0.00%	21.75%
Lhc Group Inc	Health Care	\$706,888	0.4%	1.77%	4.42	28.51	0.00%	14.49%
Tetra Tech	Industrials	\$620,679	0.4%	(17.91)%	3.86	19.54	0.85%	17.72%
Armstrong World Inds Inc New	Industrials	\$591,202	0.3%	(15.33)%	3.81	14.84	1.01%	7.90%

### **10 Best Performers**

						Price/		
		Ending	Percent			Forecasted		Forecasted
		Market	of	Qtrly	Market	Earnings	Dividend	Growth in
Stock	Sector	Value	Portfolio	Return	Capital	Ratio	Yield	Earnings
Kala Pharmaceuticals Inc	Health Care	\$30,862	0.0%	138.18%	0.49	(4.77)	0.00%	-
Aduro Biotech Inc	Health Care	\$16,440	0.0%	132.03%	0.22	(3.71)	0.00%	-
Inovio Pharmaceuticals Inc	Health Care	\$62,913	0.0%	125.58%	1.08	(9.36)	0.00%	-
Owens & Minor Inc New	Health Care	\$66,136	0.0%	77.08%	0.58	16.00	0.11%	(8.70)%
Acceleron Pharma Inc	Health Care	\$142,893	0.1%	69.50%	4.79	(32.99)	0.00%	-
Acm Research Inc Com Cl A	Information Technology	\$33,963	0.0%	60.49%	0.48	26.84	0.00%	20.00%
Stamps Com Inc	Consumer Discretionary	\$225,949	0.1%	55.75%	2.22	29.20	0.00%	30.73%
Nautilus	Consumer Discretionary	\$19,129	0.0%	49.12%	0.08	(5.02)	0.00%	(5.44)%
Ehealth Inc	Financials	\$519,626	0.3%	46.57%	3.59	34.68	0.00%	14.13%
Lakeland Inds Inc	Consumer Discretionary	\$25,544	0.0%	43.52%	0.12	20.13	0.00%	10.00%

## **10 Worst Performers**

						Price/		
		Ending	Percent			Forecasted		Forecasted
		Market	of	Qtrly	Market	Earnings	Dividend	Growth in
Stock	Sector	Value	Portfolio	Return	Capital	Ratio	Yield	Earnings
Valaris Plc Shs Class A	Energy	\$15,178	0.0%	(93.21)%	0.09	(0.10)	35.55%	(23.10)%
Independence Contract Drilli	Energy	\$235	0.0%	(93.01)%	0.01	(0.12)	0.00%	-
Qep Res Inc	Energy	\$15,284	0.0%	(92.51)%	0.08	5.97	23.92%	99.84%
Whiting Pete Corp New	Energy	\$8,098	0.0%	(90.87)%	0.06	(0.28)	0.00%	(35.19)%
Amplify Energy Corp New	Energy	\$1,451	0.0%	(90.41)%	0.02	3.13	70.68%	(27.64)%
Penn Va Corp New	Energy	\$3,452	0.0%	(89.81)%	0.05	0.84	0.00%	-
Nine Energy Svc Inc	Energy	\$911	0.0%	(89.65)%	0.02	(0.56)	0.00%	(54.20)%
Forum Energy Technologies In	Energy	\$2,569	0.0%	(89.38)%	0.02	(0.70)	0.00%	(60.94)%
Oasis Pete Inc New	Energy	\$21,314	0.0%	(89.27)%	0.11	(0.63)	0.00%	10.11%
Klx Energy Svcs Hldgs Inc Com	Energy	\$2,129	0.0%	(89.15)%	0.02	(0.17)	0.00%	-

## **Current Holdings Based Style Analysis DFA Small Cap Core** As of March 31, 2020

This page analyzes the current investment style of a portfolio utilizing a detailed holdings-based style analysis to determine actual exposures to various market capitalization and style segments of the domestic equity market. The market is segmented quarterly by capitalization and style. The capitalization segments are dictated by capitalization decile breakpoints. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the current market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the current portfolio and index weights and stock counts (in parentheses) in each capitalization/style segment of the market. The middle chart illustrates the total exposures and stock counts in the three style segments, with a legend showing the total growth, value, and "combined Z" (growth - value) scores. The bottom chart exhibits the sector weights as well as the style weights within each sector.



## Style Map vs Callan Small Cap Core

## **Combined Z-Score Style Distribution** Holdings as of March 31, 2020



## **Sector Weights Distribution** Holdings as of March 31, 2020



## Historical Holdings Based Style Analysis DFA Small Cap Core For Three Years Ended March 31, 2020

This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various market capitalization and style segments of the domestic equity market. The market is segmented quarterly by capitalization and style. The capitalization segments are dictated by capitalization decile breakpoints. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each capitalization/style segment of the market. The next two style exposure charts illustrate the actual quarterly cap/style and style only segment exposures of the portfolio through history.



### Average Style Map vs Callan Small Cap Core Holdings for Three Years Ended March 31, 2020

## Average Style Exposure Matrix Holdings for Three Years Ended March 31, 2020

l arge	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
20.90	0.0% (0)	0.0% (0)	0.0% (0)	<b>0.0%</b> (0)
	1.2% (16)	2.8% (27)	5.4% (35)	9.4% (78)
Mid	1.4% (7)	3.7% (18)	6.8% (31)	<b>11.9%</b> (56)
Small	20.8% (242)	36.1% (390)	23.3% (268)	80.2% (900)
omai	19.1% (266)	31.3% (434)	26.3% (349)	<b>76.7%</b> (1049)
Micro	3.9% (330)	4.2% (330)	2.4% (151)	10.5% (811)
	3.9% (296)	4.6% (379)	2.9% (209)	<b>11.4%</b> (884)
Total	25.9% (588)	43.0% (747)	31.1% (454)	<b>100.0%</b> (1789)
TOLAI	24.4% (569)	39.6% (831)	36.0% (589)	<b>100.0%</b> (1989)
	Value	Core	Growth	Total









## **DFA Small Core** Active Share Analysis as of March 31, 2020 vs. Russell 2000 Index

Active Share analysis compares the holdings of a portfolio to an index to measure how aggressively it differs from the index. Active share is measured at the individual stock level ("holdings-level active share") and using sector weights ("sector exposure active share"). Holdings-level active share comes from: 1) Index Active Share - over/under weighting of stocks in the index, and 2) Non-Index Active Share - positions in stocks not in the index. This analysis displays active share by sector and compares the portfolio to a relevant peer group.



## **Sector Exposure Active Share**



## Total Active Share: 37.35%

	Index Active Share Within Sector	Non-Index Active Share Within Sector	Total Active Share Within Sector	Index Weight	Manager Weight	Contribution to Total Portfolio Active Share
Communication Services	19.86%	15.44%	35.30%	2.26%	3.66%	1.23%
Consumer Discretionary	22.07%	10.19%	32.26%	8.74%	11.78%	3.83%
Consumer Staples	21.00%	7.17%	28.16%	3.44%	4.76%	1.44%
Energy	19.13%	9.16%	28.29%	1.77%	2.55%	0.75%
Financials	20.63%	7.84%	28.47%	16.70%	20.05%	5.76%
Health Care	47.82%	6.01%	53.83%	21.27%	11.46%	8.27%
Industrials	14.42%	5.19%	19.61%	15.22%	20.11%	4.37%
Information Technology	27.14%	7.30%	34.45%	15.18%	15.90%	5.46%
Materials	17.98%	14.23%	32.20%	3.41%	5.26%	1.53%
Miscellaneous	0.00%	100.00%	100.00%	-	0.01%	0.04%
Real Estate	93.65%	0.00%	93.65%	7.57%	0.46%	3.68%
Utilities	23.15%	2.81%	25.96%	4.45%	3.99%	0.99%
Total	29.65%	7.70%	37.35%	100.00%	100.00%	37.35%

## Active Share vs. Callan Small Cap Core





## Actual vs Target Style Allocation As of March 31, 2020

The first chart below shows the Fund's style allocation as of March 31, 2020. The second chart shows the Fund's target style allocation as outlined in the investment policy statement.



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
International Value	141,584	31.2%	30.0%	1.2%	5,660
International Growth	154,028	34.0%	30.0%	4.0%	18,103
International Small Cap	82,005	18.1%	20.0%	(1.9%)	(8,612)
Emerging Markets	75,465	16.7%	20.0%	(3.3%)	(15,151)
Total	453,083	100.0%	100.0%		

* Current Quarter Target = 30.0% MSCI EAFE, 30.0% MSCI ACWI ex US IMI, 20.0% MSCI EM Gross and 20.0% S&P Dev ex US Small Cap.

## International Equity Composite Period Ended March 31, 2020

### **Investment Philosophy**

The International Benchmark is comprised of 100% MSCI EAFE Index through 06/30/2010, and 100% MSCI ACWI ex-US IMI Index thereafter.

D.1

### **Quarterly Summary and Highlights**

- International Equity Composite's portfolio posted a (22.97)% return for the quarter placing it in the 44 percentile of the Public Fund - International Equity group for the quarter and in the 18 percentile for the last year.
- International Equity Composite's portfolio outperformed the International Benchmark by 1.13% for the quarter and outperformed the International Benchmark for the year by 3.27%.

## Performance vs Public Fund - International Equity (Gross)





### **Relative Return vs International Benchmark**

## Public Fund - International Equity (Gross) Annualized Ten Year Risk vs Return



Relative Returns

## International Equity Composite Return Analysis Summary

## **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

## Performance vs Public Fund - International Equity (Gross)



Rolling 12 Quarter and Quarterly Relative Return vs International Benchmark



Risk Adjusted Return Measures vs International Benchmark Rankings Against Public Fund - International Equity (Gross) Ten Years Ended March 31, 2020



## **International Equity Composite Risk Analysis Summary**

### **Risk Analysis**

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows Up and Down Market Capture. The last two charts show the ranking of the manager's risk statistics versus the peer group.

**Risk Analysis vs Public Fund - International Equity (Gross)** Ten Years Ended March 31, 2020



Market Capture vs MSCI ACWI ex US IMI Index (USD Net Div) Rankings Against Public Fund - International Equity (Gross) Ten Years Ended March 31, 2020



Risk Statistics Rankings vs MSCI ACWI ex US IMI Index (USD Net Div) Rankings Against Public Fund - International Equity (Gross) Ten Years Ended March 31, 2020



## International Equity Composite Equity Characteristics Analysis Summary

## **Portfolio Characteristics**

This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

## Portfolio Characteristics Percentile Rankings Rankings Against Callan Non-US Equity as of March 31, 2020



## **Sector Weights**

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. The regional allocation chart compares the manager's geographical region weights with those of the benchmark as well as the median region weights of the peer group.



*3/31/20 portfolio characteristics generated using most recently available holdings (12/31/19) modified based on a "buy-and-hold" assumption (repriced and adjusted for corporate actions). Analysis is then done using current market and company financial data.

## **Portfolio Characteristics Analysis**

## Callan NonUS Eq

The charts below illustrate the behavior of the product over different portfolio characteristics through time. As a backdrop the range (from 10th to 90th percentile) is shown for the Callan NonUS Eq Universe. The ranking of the product in this group is shown above each quarter end dot. The average ranking of the product and, if there are at least 12 data points, the standard deviation of that ranking is also shown on the chart. The MSCI ACWI ex US IMI is shown for comparison purposes.

D.1

#### Weighted Average Market Cap 120 *International Equity Composite Average Rank: 62 - Volatility: 17 100 **\$Billions** 80 49 64 59 56 41 37 52 64 66 66 62 52 42 57 54 53 60 55 54 60 54 46 53 50 67 63 60 59 56 49 49 43 40 00 20 IS IMI 0 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 20

## Forecasted P/E



### Price/Book Value



## **Forecasted Growth in Earnings**





### **MSCI** Combined Z-Score



*3/31/20 portfolio characteristics generated using most recently available holdings (12/31/19) modified based on a "buy-and-hold" assumption (repriced and adjusted for corporate actions). Analysis is then done using current market and company financial data.

Any particular portfolio characteristic observation(s) may be missing due to a failure to pass a minimum "coverage hurdle" intended to ensure quality. This can occur when the portfolio has a significant weight in stocks for which the data vendor(s) cannot supply the particular relevant financial metric.



## Country Allocation International Equity Composite VS MSCI ACWI ex US IMI

### **Country Allocation**

The chart below contrasts the portfolio's country allocation with that of the index as of March 31, 2020. This chart is useful because large deviations in country allocation relative to the index are often good predictors of tracking error in the subsequent quarter. To the extent that the portfolio allocation is similar to the index, the portfolio should experience more "index-like" performance. In order to illustrate the performance effect on the portfolio and index of these country allocations, the individual index country returns are also shown.





## Marin County Employees' Retirement Association History of Ending Regional Weights Period Ended March 31, 2020



Callan

## Current Holdings Based Style Analysis International Equity Composite As of March 31, 2020

This page analyzes the current investment style of a portfolio utilizing a detailed holdings-based style analysis to determine actual exposures to various regional and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the current market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the current portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The middle chart illustrates the total exposures and stock counts in the three style segments, with a legend showing the total growth, value, and "combined Z" (growth - value) scores. The bottom chart exhibits the sector weights as well as the style weights within each sector.

Style Exposure Matrix



## Style Map vs Callan NonUS Eq Holdings as of March 31, 2020

## Combined Z-Score Style Distribution Holdings as of March 31, 2020



## Sector Weights Distribution Holdings as of March 31, 2020

allan



*3/31/20 portfolio characteristics generated using most recently available holdings (12/31/19) modified based on a "buy-and-hold" assumption (repriced and adjusted for corporate actions). Analysis is then done using current market and company financial data.

## Historical Holdings Based Style Analysis International Equity Composite For Three Years Ended March 31, 2020

This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various region and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The next two style exposure charts illustrate the actual quarterly region/style and style only segment exposures of the portfolio through history.

Average Style Exposure Matrix

Holdings for Three Years Ended March 31, 2020



#### Average Style Map vs Callan NonUS Eq Holdings for Three Years Ended March 31, 2020

*International Equity Composite Historical Region/Style Exposures







*3/31/20 portfolio characteristics generated using most recently available holdings (12/31/19) modified based on a "buy-and-hold" assumption (repriced and adjusted for corporate actions). Analysis is then done using current market and company financial data.


### Active Share Structure Analysis For One Quarter Ended March 31, 2020

This analysis compares multiple portfolios and composites in an active share context, illustrating the varying degrees of active risk taken by individual portfolios, and how they combine into active risk profiles for composites and the equity structure. Two sources of active share (active risk) are shown: 1) Total Holdings-Based Active Share based on individual position comparisons to the index (and the subcomponent from holding non-index securities), and 2) Sector Exposure Active Share that quantifies the more macro-level sector differences from the index.

#### Active Share Analysis Ended March 31, 2020



	Weight		Total	Non-Idx	Sector	Number	Security
	%	Index	Act Share	Act Share	Act Share	Securities	Diverse
*International Equity	100.00%	MSCI ACWI ex US IMI	72.98%	7.57%	22.30%	1725	52.58
Morgan Stanley Value	28.06%	MSCI EAFE	83.38%	8.40%	26.65%	58	16.15
Artisan Partners Growth	30.52%	MSCI EAFE	85.32%	17.12%	25.01%	60	13.28
TimesSquare Intl Small Cap	16.25%	MSCI EAFE Small Cap	95.64%	15.83%	23.87%	78	21.76
Parametric Emerging	14.95%	MSCI EM	61.75%	18.09%	21.70%	1542	192.67

*3/31/20 portfolio characteristics generated using most recently available holdings (12/31/19) modified based on a "buy-and-hold" assumption (repriced and adjusted for corporate actions). Analysis is then done using current market and company financial data.

## Morgan Stanley Value Period Ended March 31, 2020

### **Investment Philosophy**

The International Equity team uses a value-driven, bottom-up approach to maximize return potential, combined with sufficient diversification to minimize investment risk. The first full quarter of performance began 4Q01. Prior performance is that of the manager's composite. Cash percentage listed is the cash represented in the commingled trust.

### **Quarterly Summary and Highlights**

- Morgan Stanley Value's portfolio posted a (19.97)% return for the quarter placing it in the 1 percentile of the Callan Non-US Developed Value Equity group for the quarter and in the 2 percentile for the last year.
- Morgan Stanley Value's portfolio outperformed the MSCI EAFE Index by 2.86% for the quarter and outperformed the MSCI EAFE Index for the year by 1.70%.

Quarterly Asset Growth							
Beginning Market Value	\$176,912,913						
Net New Investment	\$0						
Investment Gains/(Losses)	\$-35,328,419						
Ending Market Value	\$141.584.494						

Percent Cash: 3.8%



Relative Return vs MSCI EAFE Index



### Callan Non-US Developed Value Equity (Gross) Annualized Ten Year Risk vs Return



### Morgan Stanley Value Return Analysis Summary

### **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.







Risk Adjusted Return Measures vs MSCI EAFE Index Rankings Against Callan Non-US Developed Value Equity (Gross) Ten Years Ended March 31, 2020





### Morgan Stanley Value Risk Analysis Summary

#### **Risk Analysis**

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows Up and Down Market Capture. The last two charts show the ranking of the manager's risk statistics versus the peer group.

Risk Analysis vs Callan Non-US Developed Value Equity (Gross) Ten Years Ended March 31, 2020



### Market Capture vs MSCI EAFE Index Rankings Against Callan Non-US Developed Value Equity (Gross) Ten Years Ended March 31, 2020



#### Risk Statistics Rankings vs MSCI EAFE Index Rankings Against Callan Non-US Developed Value Equity (Gross) Ten Years Ended March 31, 2020



### Morgan Stanley Value Equity Characteristics Analysis Summary

### **Portfolio Characteristics**

This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

#### Portfolio Characteristics Percentile Rankings Rankings Against Callan Non-US Developed Value Equity as of March 31, 2020



### **Sector Weights**

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. The regional allocation chart compares the manager's geographical region weights with those of the benchmark as well as the median region weights of the peer group.



### **Portfolio Characteristics Analysis**

#### Callan NonUS Dev Val Eq

The charts below illustrate the behavior of the product over different portfolio characteristics through time. As a backdrop the range (from 10th to 90th percentile) is shown for the Callan NonUS Dev Val Eq Universe. The ranking of the product in this group is shown above each quarter end dot. The average ranking of the product and, if there are at least 12 data points, the standard deviation of that ranking is also shown on the chart. The MSCI EAFE Index is shown for comparison purposes.



Any particular portfolio characteristic observation(s) may be missing due to a failure to pass a minimum "coverage hurdle" intended to ensure quality. This can occur when the portfolio has a significant weight in stocks for which the data vendor(s) cannot supply the particular relevant financial metric.

### Country Allocation Morgan Stanley Value VS MSCI EAFE Index

### **Country Allocation**

The chart below contrasts the portfolio's country allocation with that of the index as of March 31, 2020. This chart is useful because large deviations in country allocation relative to the index are often good predictors of tracking error in the subsequent quarter. To the extent that the portfolio allocation is similar to the index, the portfolio should experience more "index-like" performance. In order to illustrate the performance effect on the portfolio and index of these country allocations, the individual index country returns are also shown.



### Marin County Employees' Retirement Association History of Ending Regional Weights Period Ended March 31, 2020



### Morgan Stanley Value vs MSCI EAFE Index Attribution for Quarter Ended March 31, 2020

### **International Attribution**

The first chart below illustrates the return for each country in the index sorted from high to low. The total return for the index is highlighted with a dotted line. The second chart (countries presented in the same order) illustrates the manager's country allocation decisions relative to the index. To the extent that the manager over-weighted a country that had a higher return than the total return for the index (above the dotted line) it contributes positively to the manager's country (or currency) selection effect. The last chart details the manager return, the index return, and the attribution factors for the quarter.

	Local Return	Dollar Return	Currency Return		Index Weight		Portfolio Weight
Denmark	(5.8)		(2.1)	Denmark	1.8		0.0
Switzerland	(11.2)		0.1	Switzerland	9.3		4.9
China	(11.9)		0.5	China	0.0		3.4
Portugal	(11.1)		(2.2)	Portugal	0.2		0.4
New Zealand	(4.8)		(12.1)	New Zealand	0.3		0.0
Japan	(17.0)		0.7	Japan	24.5		11.4
Hong Kong	(17.7)		0.5	Hong Kong	3.5		3.6
Israel	(16.8)		(1.4)	Israel	0.6		0.0
Finland	(17.1)		(2.2)	Finland	0.9		1.0
Taiwan	(18.3)		(0.9)	Taiwan	0.0		1.4
Netherlands	(18.9)		(2.1)	Netherlands	4.0		5.8
Sweden	(16.8)		(5.5)	Sweden	2.7		1.2
South Korea	(18.3)		(5.0)	South Korea	0.0		3.0
Total	(20.5) — —	·	(2.9)-	Total			
Ireland	(23.8)		(2.2)	Ireland	0.6		0.0
Germany	(25.3)		(2.2)	Germany	8.7		15.9
Canada	(20.3)		(8.9)	Canada	0.0		6.3
France	(25.8)		(2.2)	France	11.4		15.2
Singapore	(24.0)		(5.6)	Singapore	1.3		1.4
United Kingdom	(23.9)		(6.4)	United Kingdom	16.5		22.3
Italy	(27.6)		(2.2)	Italy	2.3		0.8
Spain	(28.1)		(2.2)	Spain	2.8		1.3
Belgium	(31.0)		(2.2)	Belgium	1.0		0.0
Australia	(23.3)		(12.9)	Australia	6.8		0.0
Norway	(20.3)		(16.3)	Norway	0.6		0.8
Austria	(41.6)		(2.2)	Austria	0.2		0.0
(60	0%) (50%) (40	1%) (30%) (20%) (10%) 0 ⁴	% 10% 20%	% (20	%) (15%)	(10%) (5%) 0% 5	% 10% 159



### Beginning Relative Weights (Portfolio - Index)



## D.1

### Current Holdings Based Style Analysis Morgan Stanley Value As of March 31, 2020

This page analyzes the current investment style of a portfolio utilizing a detailed holdings-based style analysis to determine actual exposures to various regional and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the current market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the current portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The middle chart illustrates the total exposures and stock counts in the three style segments, with a legend showing the total growth, value, and "combined Z" (growth - value) scores. The bottom chart exhibits the sector weights as well as the style weights within each sector.

**Style Exposure Matrix** 



### Style Map vs Callan NonUS Dev Val Eq Holdings as of March 31, 2020

### Combined Z-Score Style Distribution Holdings as of March 31, 2020







### Historical Holdings Based Style Analysis Morgan Stanley Value For Three Years Ended March 31, 2020

This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various region and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The next two style exposure charts illustrate the actual quarterly region/style and style only segment exposures of the portfolio through history.

Average Style Exposure Matrix



#### Average Style Map vs Callan NonUS Dev Val Eq Holdings for Three Years Ended March 31, 2020









### **Morgan Stanley Value** Active Share Analysis as of March 31, 2020 vs. MSCI EAFE Index

Active Share analysis compares the holdings of a portfolio to an index to measure how aggressively it differs from the index. Active share is measured at the individual stock level ("holdings-level active share") and using sector weights ("sector exposure active share"). Holdings-level active share comes from: 1) Index Active Share - over/under weighting of stocks in the index, and 2) Non-Index Active Share - positions in stocks not in the index. This analysis displays active share by sector and compares the portfolio to a relevant peer group.





### Total Active Share: 83.38%

	Index Active Share Within Sector	Non-Index Active Share Within Sector	Total Active Share Within Sector	Index Weight	Manager Weight	Contribution to Total Portfolio Active Share
Communication Services	50.00%	50.00%	100.00%	5.52%	3.00%	4.27%
Consumer Discretionary	84.68%	6.13%	90.81%	11.08%	4.24%	6.53%
Consumer Staples	73.25%	5.35%	78.60%	12.64%	30.59%	18.63%
Energy	76.46%	20.36%	96.82%	3.96%	2.11%	2.91%
Financials	80.81%	3.75%	84.57%	16.45%	13.47%	12.44%
Health Care	56.14%	0.00%	56.14%	14.33%	18.97%	10.29%
Industrials	89.64%	0.00%	89.64%	14.23%	10.98%	11.15%
Information Technology	54.93%	24.17%	79.11%	7.61%	11.66%	8.05%
Materials	67.54%	25.13%	92.67%	6.69%	4.99%	5.36%
Real Estate	100.00%	0.00%	100.00%	3.30%	-	1.65%
Utilities	100.00%	0.00%	100.00%	4.20%	-	2.10%
Total	74.98%	8.40%	83.38%	100.00%	100.00%	83.38%

#### Active Share vs. Callan NonUS Dev Val Eq



### **Investment Philosophy**

Artisan's Non-U.S. Growth team identifies themes and/or industries that Artisan believes are likely to exhibit strong growth. Once these themes are identified, securities are selected based on their ability to excel within their industry. The first full quarter of performance is 1Q03. MCERA is invested in the mutual fund until 02/15/2018. Cash percentage listed is the cash represented in the CIT. Switch to a CIT account on 02/15/2018 Tier III.

#### **Quarterly Summary and Highlights**

- Artisan Partners Growth's portfolio posted a (21.25)% return for the quarter placing it in the 69 percentile of the Callan Non-US Broad Growth Equity group for the quarter and in the 36 percentile for the last year.
- Artisan Partners Growth's portfolio outperformed the MSCI EAFE Index by 1.57% for the quarter and outperformed the MSCI EAFE Index for the year by 7.33%.

#### **Quarterly Asset Growth**

Beginning Market Value	\$196,003,904
Net New Investment	\$0
Investment Gains/(Losses)	\$-41,975,556
Ending Market Value	\$154,028,348

### Percent Cash: 5.2%







### Callan Non-US Broad Growth Equity (Gross) Annualized Ten Year Risk vs Return



### Artisan Partners Growth Return Analysis Summary

### **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.











### Artisan Partners Growth Risk Analysis Summary

#### **Risk Analysis**

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows Up and Down Market Capture. The last two charts show the ranking of the manager's risk statistics versus the peer group.

Risk Analysis vs Callan Non-US Broad Growth Equity (Gross) Ten Years Ended March 31, 2020



### Market Capture vs MSCI EAFE Index Rankings Against Callan Non-US Broad Growth Equity (Gross) Ten Years Ended March 31, 2020



### Risk Statistics Rankings vs MSCI EAFE Index Rankings Against Callan Non-US Broad Growth Equity (Gross) Ten Years Ended March 31, 2020





### Artisan Partners Growth Equity Characteristics Analysis Summary

### **Portfolio Characteristics**

This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

### Portfolio Characteristics Percentile Rankings Rankings Against Callan Non-US Broad Growth Equity as of March 31, 2020



### **Sector Weights**

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. The regional allocation chart compares the manager's geographical region weights with those of the benchmark as well as the median region weights of the peer group.



### **Portfolio Characteristics Analysis**

#### Callan NonUS Broad Gr Eq

The charts below illustrate the behavior of the product over different portfolio characteristics through time. As a backdrop the range (from 10th to 90th percentile) is shown for the Callan NonUS Broad Gr Eq Universe. The ranking of the product in this group is shown above each quarter end dot. The average ranking of the product and, if there are at least 12 data points, the standard deviation of that ranking is also shown on the chart. The MSCI EAFE Index is shown for comparison purposes.









Any particular portfolio characteristic observation(s) may be missing due to a failure to pass a minimum "coverage hurdle" intended to ensure quality. This can occur when the portfolio has a significant weight in stocks for which the data vendor(s) cannot supply the particular relevant financial metric.

### **Country Allocation Artisan Partners Growth VS MSCI EAFE Index**

### **Country Allocation**

The chart below contrasts the portfolio's country allocation with that of the index as of March 31, 2020. This chart is useful because large deviations in country allocation relative to the index are often good predictors of tracking error in the subsequent guarter. To the extent that the portfolio allocation is similar to the index, the portfolio should experience more "index-like" performance. In order to illustrate the performance effect on the portfolio and index of these country allocations, the individual index country returns are also shown.



Country Weights as of March 31, 2020



### Marin County Employees' Retirement Association History of Ending Regional Weights Period Ended March 31, 2020



### Artisan Partners Growth vs MSCI EAFE Index Attribution for Quarter Ended March 31, 2020

### **International Attribution**

The first chart below illustrates the return for each country in the index sorted from high to low. The total return for the index is highlighted with a dotted line. The second chart (countries presented in the same order) illustrates the manager's country allocation decisions relative to the index. To the extent that the manager over-weighted a country that had a higher return than the total return for the index (above the dotted line) it contributes positively to the manager's country (or currency) selection effect. The last chart details the manager return, the index return, and the attribution factors for the quarter.

D.1

	Local Return	Dollar Return	Currency Return		Index Weight			Portfolio Weight
Denmark	(5.8)		(2.1)	Denmark	1.8			3.0
Switzerland	(11.2)		0.1	Switzerland	9.3			7.7
China	(11.9)		0.5	China	0.0			1.1
Portugal	(11.1)		(2.2)	Portugal	0.2			0.0
New Zealand	(4.8)		(12.1)	New Zealand	0.3			0.0
Japan	(17.0)		0.7	Japan	24.5			4.5
Hong Kong	(17.7)		0.5	Hong Kong	3.5			4.6
Israel	(16.8)		(1.4)	Israel	0.6			0.8
Finland	(17.1)		(2.2)	Finland	0.9			0.0
United States	(19.6)		0.0	United States	0.0			8.5
Netherlands	(18.9)		(2.1)	Netherlands	4.0		1	4.5
Sweden	(16.8)		(5.5)	Sweden	2.7			0.6
Total	(20.5) — —		(2:9)-	Total				
Ireland	(23.8)		(2.2)	Ireland	0.6			0.0
Germany	(25.3)		(2.2)	Germany	8.7			16.3
Canada	(20.3)		(8.9)	Canada	0.0			1.4
France	(25.8)		(2.2)	France	11.4			15.2
Singapore	(24.0)		(5.6)	Singapore	1.3			0.0
United Kingdom	(23.9)		(6.4)	United Kingdom	16.5			21.1
Italy	(27.6)		(2.2)	Italy	2.3			4.2
Spain	(28.1)		(2.2)	Spain	2.8			0.0
India	(27.0)		(5.6)	India	0.0			2.1
Belgium	(31.0)		(2.2)	Belgium	1.0			0.0
Australia	(23.3)		(12.9)	Australia	6.8			0.0
Norway	(20.3)		(16.3)	Norway	0.6			0.0
Austria	(41.6)		(2.2)	Austria	0.2			0.0
Brazil	(35.8)		(22.4)	Brazil	0.0			4.3
(60	)%) (50%) (40%	%) (30%) (20%) (10%)    0'	% 10% 20%	% ( <mark>30</mark>	)%) (20%	o) (10%)	0%	10% 20%



#### Beginning Relative Weights (Portfolio - Index)



### Current Holdings Based Style Analysis Artisan Partners Growth As of March 31, 2020

This page analyzes the current investment style of a portfolio utilizing a detailed holdings-based style analysis to determine actual exposures to various regional and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the current market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the current portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The middle chart illustrates the total exposures and stock counts in the three style segments, with a legend showing the total growth, value, and "combined Z" (growth - value) scores. The bottom chart exhibits the sector weights as well as the style weights within each sector.

**Style Exposure Matrix** 



### Style Map vs Callan NonUS Broad Gr Eq Holdings as of March 31, 2020

### Combined Z-Score Style Distribution Holdings as of March 31, 2020







This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various region and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The next two style exposure charts illustrate the actual guarterly region/style and style only segment exposures of the portfolio through history.



#### Average Style Map vs Callan NonUS Broad Gr Eq Holdings for Three Years Ended March 31, 2020

### **Average Style Exposure Matrix** Holdings for Three Years Ended March 31, 2020









92

### **Artisan Partners Growth** Active Share Analysis as of March 31, 2020 vs. MSCI EAFE Index

Active Share analysis compares the holdings of a portfolio to an index to measure how aggressively it differs from the index. Active share is measured at the individual stock level ("holdings-level active share") and using sector weights ("sector exposure active share"). Holdings-level active share comes from: 1) Index Active Share - over/under weighting of stocks in the index, and 2) Non-Index Active Share - positions in stocks not in the index. This analysis displays active share by sector and compares the portfolio to a relevant peer group.







### Total Active Share: 85.32%

	Index Active Share Within Sector	Non-Index Active Share Within Sector	Total Active Share Within Sector	Index Weight	Manager Weight	Contribution to Total Portfolio Active Share
Communication Services	60.56%	32.56%	93.12%	5.52%	3.83%	4.30%
Consumer Discretionary	53.32%	37.51%	90.83%	11.08%	7.20%	8.12%
Consumer Staples	64.77%	8.15%	72.92%	12.64%	8.00%	6.92%
Energy	50.00%	50.00%	100.00%	3.96%	1.48%	2.72%
Financials	63.81%	20.07%	83.88%	16.45%	32.15%	21.67%
Health Care	62.57%	14.00%	76.57%	14.33%	14.68%	11.16%
Industrials	82.20%	0.00%	82.20%	14.23%	10.13%	9.67%
Information Technology	96.07%	0.00%	96.07%	7.61%	5.85%	6.44%
Materials	66.60%	20.92%	87.52%	6.69%	15.65%	10.34%
Real Estate	100.00%	0.00%	100.00%	3.30%	-	1.65%
Utilities	92.98%	0.00%	92.98%	4.20%	1.03%	2.32%
Total	68.20%	17.12%	85.32%	100.00%	100.00%	85.32%

#### Active Share vs. Callan NonUS Broad Gr Eq



### TimesSquare Intl Small Cap Period Ended March 31, 2020

#### **Investment Philosophy**

TimesSquare Capital Management believes in fundamental equity growth research with a particular emphasis on the assessment of management guality, an in-depth understanding of superior business models, and valuation discrepancies. The first full guarter of performance began 3Q19. Prior performance is that of the manager's composite. Cash percentage listed is the cash represented in the commingled trust.

#### **Quarterly Summary and Highlights**

- TimesSquare Intl Small Cap's portfolio posted a (28.29)% return for the quarter placing it in the 61 percentile of the Callan International Small Cap group for the quarter and in the 42 percentile for the last year.
- TimesSquare Intl Small Cap's portfolio underperformed the MSCI EAFE Small Cap by 0.77% for the quarter and ٠ outperformed the MSCI EAFE Small Cap for the year by 0.59%.

Performance vs Callan International Small Cap (Gross)





Relative Return vs MSCI EAFE Small Cap

**Callan International Small Cap (Gross)** Annualized Seven Year Risk vs Return



### TimesSquare Intl Small Cap Return Analysis Summary

### **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

#### Performance vs Callan International Small Cap (Gross)







Risk Adjusted Return Measures vs MSCI EAFE Small Cap Rankings Against Callan International Small Cap (Gross) Seven Years Ended March 31, 2020



### TimesSquare Intl Small Cap Risk Analysis Summary

#### **Risk Analysis**

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows Up and Down Market Capture. The last two charts show the ranking of the manager's risk statistics versus the peer group.

Risk Analysis vs Callan International Small Cap (Gross) Seven Years Ended March 31, 2020



#### Market Capture vs MSCI EAFE Small Cap Rankings Against Callan International Small Cap (Gross) Seven Years Ended March 31, 2020



#### Risk Statistics Rankings vs MSCI EAFE Small Cap Rankings Against Callan International Small Cap (Gross) Seven Years Ended March 31, 2020





### TimesSquare Intl Small Cap Equity Characteristics Analysis Summary

### **Portfolio Characteristics**

This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

### Portfolio Characteristics Percentile Rankings Rankings Against Callan International Small Cap as of March 31, 2020



### **Sector Weights**

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. The regional allocation chart compares the manager's geographical region weights with those of the benchmark as well as the median region weights of the peer group.



### **Portfolio Characteristics Analysis**

#### **Callan Intl Small Cap**

The charts below illustrate the behavior of the product over different portfolio characteristics through time. As a backdrop the range (from 10th to 90th percentile) is shown for the Callan Intl Small Cap Universe. The ranking of the product in this group is shown above each quarter end dot. The average ranking of the product and, if there are at least 12 data points, the standard deviation of that ranking is also shown on the chart. The MSCI EAFE Small Cap is shown for comparison purposes.



Any particular portfolio characteristic observation(s) may be missing due to a failure to pass a minimum "coverage hurdle" intended to ensure quality. This can occur when the portfolio has a significant weight in stocks for which the data vendor(s) cannot supply the particular relevant financial metric.

### **Country Allocation** TimesSquare Intl Small Cap VS MSCI EAFE Small Cap

### **Country Allocation**

The chart below contrasts the portfolio's country allocation with that of the index as of March 31, 2020. This chart is useful because large deviations in country allocation relative to the index are often good predictors of tracking error in the subsequent guarter. To the extent that the portfolio allocation is similar to the index, the portfolio should experience more "index-like" performance. In order to illustrate the performance effect on the portfolio and index of these country allocations, the individual index country returns are also shown.



Country Weights as of March 31, 2020

### Marin County Employees' Retirement Association History of Ending Regional Weights Period Ended March 31, 2020



### **Current Holdings Based Style Analysis** TimesSquare Intl Small Cap As of March 31, 2020

This page analyzes the current investment style of a portfolio utilizing a detailed holdings-based style analysis to determine actual exposures to various regional and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the current market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the current portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The middle chart illustrates the total exposures and stock counts in the three style segments, with a legend showing the total growth, value, and "combined Z" (growth - value) scores. The bottom chart exhibits the sector weights as well as the style weights within each sector.

**Style Exposure Matrix** 



### Style Map vs Callan Intl Small Cap Holdings as of March 31, 2020

### **Combined Z-Score Style Distribution** Holdings as of March 31, 2020





# **Sector Weights Distribution**

### **Historical Holdings Based Style Analysis** TimesSquare Intl Small Cap For Three Years Ended March 31, 2020

This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various region and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The next two style exposure charts illustrate the actual guarterly region/style and style only segment exposures of the portfolio through history.

Average Style Exposure Matrix



#### Average Style Map vs Callan Intl Small Cap Holdings for Three Years Ended March 31, 2020

### TimesSquare Intl Small Cap Historical Region/Style Exposures







### TimesSquare Intl Small Cap Active Share Analysis as of March 31, 2020 vs. MSCI EAFE Small Cap

Active Share analysis compares the holdings of a portfolio to an index to measure how aggressively it differs from the index. Active share is measured at the individual stock level ("holdings-level active share") and using sector weights ("sector exposure active share"). Holdings-level active share comes from: 1) Index Active Share - over/under weighting of stocks in the index, and 2) Non-Index Active Share - positions in stocks not in the index. This analysis displays active share by sector and compares the portfolio to a relevant peer group.







	Index Active Share Within Sector	Non-Index Active Share Within Sector	Total Active Share Within Sector	Index Weight	Manager Weight	Contribution to Total Portfolio Active Share
Communication Services	57.59%	39.61%	97.20%	4.71%	8.70%	6.62%
Consumer Discretionary	75.14%	23.33%	98.47%	11.08%	6.97%	8.80%
Consumer Staples	95.39%	0.00%	95.39%	7.39%	7.52%	7.11%
Energy	94.84%	0.00%	94.84%	1.75%	0.82%	1.19%
Financials	78.26%	18.78%	97.04%	10.44%	16.49%	13.15%
Health Care	81.30%	7.48%	88.78%	8.67%	11.95%	9.33%
Industrials	79.51%	14.37%	93.88%	20.53%	22.31%	20.12%
Information Technology	80.69%	10.24%	90.93%	10.60%	19.23%	13.95%
Materials	50.00%	50.00%	100.00%	8.13%	0.52%	4.32%
Miscellaneous	100.00%	0.00%	100.00%	-	-	0.00%
Real Estate	99.04%	0.00%	99.04%	13.91%	2.82%	8.22%
Utilities	50.00%	50.00%	100.00%	2.79%	2.67%	2.73%
Total	79.81%	15.83%	95.64%	100.00%	100.00%	95.56%

#### Active Share vs. Callan Intl Small Cap



### Parametric Emerging Period Ended March 31, 2020

#### **Investment Philosophy**

This strategy is managed by Parametric Portfolio Associates, which is majority owned by Eaton Vance. Parametric uses a structured and disciplined investment approach of investing in emerging markets countries to capture their long-term growth potential, while seeking to avoid undue risk through country timing or concentrated stock selection strategies. The first full quarter for MCERA's mutual fund investment began 12/31/2010. An additional investment was made into a collective investment trust in October 2013. The Eaton Vance Emerging composite combines the two investments and is shown gross of fees. In November 2016 the Mutual fund investment was rolled into the CIT fund and closed.

#### **Quarterly Summary and Highlights**

- Parametric Emerging's portfolio posted a (30.06)% return for the quarter placing it in the 86 percentile of the Emerging Markets Equity DB group for the quarter and in the 85 percentile for the last year.
- Parametric Emerging's portfolio underperformed the MSCI Emerging Markets Index by 6.46% for the quarter and underperformed the MSCI Emerging Markets Index for the year by 8.34%.







### Relative Returns vs MSCI Emerging Markets Index

### Emerging Markets Equity DB (Gross) Annualized Nine and One-Half Year Risk vs Return



### Parametric Emerging Return Analysis Summary

### **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 4 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

#### Performance vs Emerging Markets Equity DB (Gross)



**Rolling 4 Quarter and Quarterly Relative Return vs MSCI Emerging Markets Index** 



### Risk Adjusted Return Measures vs MSCI Emerging Markets Index Rankings Against Emerging Markets Equity DB (Gross) Nine and One-Half Years Ended March 31, 2020



### Parametric Emerging Risk Analysis Summary

#### **Risk Analysis**

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows Up and Down Market Capture. The last two charts show the ranking of the manager's risk statistics versus the peer group.

Risk Analysis vs Emerging Markets Equity DB (Gross) Nine and One-Half Years Ended March 31, 2020



Market Capture vs MSCI Emerging Markets Index Rankings Against Emerging Markets Equity DB (Gross) Nine and One-Half Years Ended March 31, 2020



Risk Statistics Rankings vs MSCI Emerging Markets Index Rankings Against Emerging Markets Equity DB (Gross) Nine and One-Half Years Ended March 31, 2020


# Parametric Emerging Equity Characteristics Analysis Summary

#### **Portfolio Characteristics**

This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

### Portfolio Characteristics Percentile Rankings Rankings Against Emerging Markets Equity DB as of March 31, 2020



## **Sector Weights**

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. The regional allocation chart compares the manager's geographical region weights with those of the benchmark as well as the median region weights of the peer group.



*3/31/20 portfolio characteristics generated using most recently available holdings (12/31/19) modified based on a "buy-and-hold" assumption (repriced and adjusted for corporate actions). Analysis is then done using current market and company financial data.

# **Portfolio Characteristics Analysis**

#### **Emerging Mkts Equity DB**

Callan

The charts below illustrate the behavior of the product over different portfolio characteristics through time. As a backdrop the range (from 10th to 90th percentile) is shown for the Emerging Mkts Equity DB Universe. The ranking of the product in this group is shown above each quarter end dot. The average ranking of the product and, if there are at least 12 data points, the standard deviation of that ranking is also shown on the chart. The MSCI Emerging Markets Ind is shown for comparison purposes.

D.1



*3/31/20 portfolio characteristics generated using most recently available holdings (12/31/19) modified based on a "buy-and-hold" assumption (repriced and adjusted for corporate actions). Analysis is then done using current market and company financial data.

Marin County Employees' Retirement Association 108

Any particular portfolio characteristic observation(s) may be missing due to a failure to pass a minimum "coverage hurdle" intended to ensure quality. This can occur when the portfolio has a significant weight in stocks for which the data vendor(s) cannot supply the particular relevant financial metric.

# **Country Allocation** Parametric Emerging VS MSCI Emerging Markets Index

#### **Country Allocation**

The chart below contrasts the portfolio's country allocation with that of the index as of March 31, 2020. This chart is useful because large deviations in country allocation relative to the index are often good predictors of tracking error in the subsequent guarter. To the extent that the portfolio allocation is similar to the index, the portfolio should experience more "index-like" performance. In order to illustrate the performance effect on the portfolio and index of these country allocations, the individual index country returns are also shown.





# Marin County Employees' Retirement Association History of Ending Regional Weights Period Ended March 31, 2020



Callan

D.1

# Parametric Emerging vs MSCI Emerging Markets Index Attribution for Quarter Ended March 31, 2020

#### **International Attribution**

The first chart below illustrates the return for each country in the index sorted from high to low. The total return for the index is highlighted with a dotted line. The second chart (countries presented in the same order) illustrates the manager's country allocation decisions relative to the index. To the extent that the manager over-weighted a country that had a higher return than the total return for the index (above the dotted line) it contributes positively to the manager's country (or currency) selection effect. The last chart details the manager return, the index return, and the attribution factors for the quarter.





# Attribution Factors for Quarter Ended March 31, 2020

# Current Holdings Based Style Analysis Parametric Emerging As of March 31, 2020

This page analyzes the current investment style of a portfolio utilizing a detailed holdings-based style analysis to determine actual exposures to various regional and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the current market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the current portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The middle chart illustrates the total exposures and stock counts in the three style segments, with a legend showing the total growth, value, and "combined Z" (growth - value) scores. The bottom chart exhibits the sector weights as well as the style weights within each sector.

**Style Exposure Matrix** 

Holdings as of March 31, 2020



### Style Map vs Emerging Mkts Equity DB Holdings as of March 31, 2020

#### Combined Z-Score Style Distribution Holdings as of March 31, 2020



#### Sector Weights Distribution Holdings as of March 31, 2020

allan



*3/31/20 portfolio characteristics generated using most recently available holdings (12/31/19) modified based on a "buy-and-hold" assumption (repriced and adjusted for corporate actions). Analysis is then done using current market and company financial data.

# Historical Holdings Based Style Analysis Parametric Emerging For Three Years Ended March 31, 2020

This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various region and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The next two style exposure charts illustrate the actual quarterly region/style and style only segment exposures of the portfolio through history.

**Average Style Exposure Matrix** 

Holdings for Three Years Ended March 31, 2020



#### Average Style Map vs Emerging Mkts Equity DB Holdings for Three Years Ended March 31, 2020

#### Parametric Emerging Historical Region/Style Exposures







D.1

## **Parametric Emerging** Active Share Analysis as of March 31, 2020 vs. MSCI Emerging Markets Index

Active Share analysis compares the holdings of a portfolio to an index to measure how aggressively it differs from the index. Active share is measured at the individual stock level ("holdings-level active share") and using sector weights ("sector exposure active share"). Holdings-level active share comes from: 1) Index Active Share - over/under weighting of stocks in the index, and 2) Non-Index Active Share - positions in stocks not in the index. This analysis displays active share by sector and compares the portfolio to a relevant peer group.



#### **Sector Exposure Active Share**



## Total Active Share: 61.75%

	Index Active Share Within Sector	Non-Index Active Share Within Sector	Total Active Share Within Sector	Index Weight	Manager Weight	Contribution to Total Portfolio Active Share
Communication Services	47.77%	15.56%	63.34%	13.06%	12.33%	8.02%
Consumer Discretionary	50.41%	21.04%	71.45%	15.41%	8.52%	8.70%
Consumer Staples	25.86%	14.86%	40.72%	6.62%	10.73%	4.06%
Energy	38.37%	11.15%	49.52%	5.90%	7.80%	3.51%
Financials	38.60%	19.17%	57.77%	21.60%	19.43%	12.03%
Health Care	34.37%	18.23%	52.61%	3.55%	5.73%	2.82%
Industrials	38.03%	23.55%	61.57%	4.93%	8.92%	4.55%
Information Technology	44.28%	16.25%	60.52%	16.86%	4.94%	8.55%
Materials	37.61%	19.75%	57.36%	6.66%	11.33%	5.40%
Pooled Vehicles	0.00%	100.00%	100.00%	-	0.05%	0.03%
Real Estate	27.02%	17.02%	44.04%	2.92%	3.65%	1.41%
Utilities	28.87%	20.53%	49.40%	2.48%	6.55%	2.67%
Total	43.67%	18.09%	61.75%	100.00%	100.00%	61.75%

#### Active Share vs. Emerging Mkts Equity DB



# Actual vs Target Style Allocation As of March 31, 2020

The first chart below shows the Fund's style allocation as of March 31, 2020. The second chart shows the Fund's target style allocation as outlined in the investment policy statement.



Asset Class	\$Millions Actual	Weight Actual	Target	Percent Difference	\$Millions Difference
Core Plus	255	48.6%	50.0%	(1.4%)	(7)
Intermediate Credit	136	25.9%	25.0%	0.9%	5
Global	134	25.5%	25.0%	0.5%	2
Total	525	100.0%	100.0%		

* Current Quarter Target = 50.0% Blmbg Aggregate, 25.0% FTSE WGBI and 25.0% Blmbg Intmdt Credit.



# Fixed Income Composite Period Ended March 31, 2020

#### **Investment Philosophy**

Fixed Income Benchmark is comprised of 100% Blmbg Aggregate until 03/31/2014 and 50% Blmbg Aggregate, 25% Blmbg Intermediate Credit, and 25% FTSE WGBI thereafter.

#### **Quarterly Summary and Highlights**

- Fixed Income Composite's portfolio posted a (0.14)% return for the quarter placing it in the 64 percentile of the Public Fund Domestic Fixed group for the quarter and in the 58 percentile for the last year.
- Fixed Income Composite's portfolio underperformed the Fixed Income Benchmark by 1.63% for the quarter and underperformed the Fixed Income Benchmark for the year by 1.34%.

#### Performance vs Public Fund - Domestic Fixed (Gross)





#### **Relative Return vs Fixed Income Benchmark**

## Public Fund - Domestic Fixed (Gross) Annualized Ten Year Risk vs Return



# Fixed Income Composite Return Analysis Summary

#### **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

#### Performance vs Public Fund - Domestic Fixed (Gross)



**Rolling 12 Quarter and Quarterly Relative Return vs Fixed Income Benchmark** 



Risk Adjusted Return Measures vs Fixed Income Benchmark Rankings Against Public Fund - Domestic Fixed (Gross) Ten Years Ended March 31, 2020



## Fixed Income Risk Analysis Summary

#### **Risk Analysis**

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows tracking error patterns versus the benchmark over time. The last two charts show the ranking of the manager's risk statistics versus the peer group.

Risk Analysis vs Public Fund - Domestic Fixed (Gross) Ten Years Ended March 31, 2020













# Fixed Income Composite Bond Characteristics Analysis Summary

#### **Portfolio Characteristics**

This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

#### Fixed Income Portfolio Characteristics Rankings Against Total Domestic Fixed-Inc Database as of March 31, 2020



#### Sector Allocation and Quality Ratings

The first graph compares the manager's sector allocation with the average allocation across all the members of the manager's style. The second graph compares the manager's weighted average quality rating with the range of quality ratings for the style.



#### Quality Ratings vs Total Domestic Fixed-Inc Database





## Wellington Core Plus Period Ended March 31, 2020

#### **Investment Philosophy**

Wellington's fixed income process focuses on fundamental research, diversification and risk control. The firm's orientation is toward intensive, bottom-up research. Marin switched Wellington's mandate from Core to Core Plus in first quarter 2012. Returns prior to that are linked to Wellington's Core Plus composite (portfolio A). The Wellington Management return stream (portfolio B) is Marin's historical core bond returns linked to the core plus returns. Wellington's hire date was in third quarter 2002.

#### **Quarterly Summary and Highlights**

- Wellington Core Plus's portfolio posted a 1.00% return for the quarter placing it in the 25 percentile of the Callan Core Plus Fixed Income group for the quarter and in the 21 percentile for the last year.
- Wellington Core Plus's portfolio underperformed the Bloomberg Aggregate Index by 2.15% for the quarter and underperformed the Bloomberg Aggregate Index for the year by 1.52%.

#### Performance vs Callan Core Plus Fixed Income (Gross)



Percent Cash: 0.0%





#### Relative Returns vs Bloomberg Aggregate Index

## Callan Core Plus Fixed Income (Gross) Annualized Ten Year Risk vs Return



## Wellington Management Period Ended March 31, 2020

#### **Investment Philosophy**

Wellington's fixed income process focuses on fundamental research, diversification and risk control. The firm's orientation is toward intensive, bottom-up research. Marin switched Wellington's mandate from Core to Core Plus in first quarter 2012. Wellington's hire date was in third quarter 2002.

#### **Quarterly Summary and Highlights**

- Wellington Management's portfolio posted a 1.00% return for the quarter placing it in the 25 percentile of the Callan Core Plus Fixed Income group for the quarter and in the 21 percentile for the last year.
- Wellington Management's portfolio underperformed the Bloomberg Aggregate Index by 2.15% for the quarter and underperformed the Bloomberg Aggregate Index for the year by 1.52%.

### Performance vs Callan Core Plus Fixed Income (Gross)





#### Relative Returns vs Bloomberg Aggregate Index

## Callan Core Plus Fixed Income (Gross) Annualized Ten Year Risk vs Return



# Wellington Core Plus Return Analysis Summary

#### **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

#### Performance vs Callan Core Plus Fixed Income (Gross)



Rolling 12 Quarter and Quarterly Relative Return vs Bloomberg Aggregate Index



Risk Adjusted Return Measures vs Bloomberg Aggregate Index Rankings Against Callan Core Plus Fixed Income (Gross) Ten Years Ended March 31, 2020



# Wellington Core Plus **Risk Analysis Summary**

#### **Risk Analysis**

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows tracking error patterns versus the benchmark over time. The last two charts show the ranking of the manager's risk statistics versus the peer group.

Risk Analysis vs Callan Core Plus Fixed Income (Gross) Ten Years Ended March 31, 2020











Marin County Employees' Retirement Association 124

# Wellington Core Plus Bond Characteristics Analysis Summary

#### **Portfolio Characteristics**

This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

#### Fixed Income Portfolio Characteristics Rankings Against Callan Core Plus Fixed Income as of March 31, 2020



## Sector Allocation and Quality Ratings

The first graph compares the manager's sector allocation with the average allocation across all the members of the manager's style. The second graph compares the manager's weighted average quality rating with the range of quality ratings for the style.



#### Quality Ratings vs Callan Core Plus Fixed Income





## Wellington Core Plus Portfolio Characteristics Summary As of March 31, 2020

## Portfolio Structure Comparison

The charts below compare the structure of the portfolio to that of the index from the three perspectives that have the greatest influence on return. The first chart compares the two portfolios across sectors. The second chart compares the duration distribution. The last chart compares the distribution across quality ratings.



# **Portfolio Characteristics Analysis**

#### Callan Core Plus Fl

The charts below illustrate the behavior of the product over different portfolio characteristics through time. As a backdrop the range (from 10th to 90th percentile) is shown for the Callan Core Plus FI Universe. The ranking of the product in this group is shown above each quarter end dot. The average ranking of the product and, if there are at least 12 data points, the standard deviation of that ranking is also shown on the chart. The Bloomberg Aggregate Index is shown for comparison purposes.



Any particular portfolio characteristic observation(s) may be missing due to a failure to pass a minimum "coverage hurdle" intended to ensure quality. This can occur when the portfolio has a significant weight in stocks for which the data vendor(s) cannot supply the particular relevant financial metric.

# Western Intermediate Credit Period Ended March 31, 2020

#### **Investment Philosophy**

Western Asset's philosophy in managing investment-grade credit portfolios involves the integration of fundamental credit research with relative value analysis to drive long-term performance in corporate portfolios. The firm's Global Credit Team applies a tightly controlled, value-oriented approach with the firm's top-down macroeconomic view that is integrated with extensive bottom-up credit research and relative value analysis. There are three differentiating features of this investment philosophy: the first is a consistent emphasis on long-term value investing; the second is a style of top-down macroeconomic and industry views integrated with extensive bottom-up fundamental research and relative value analysis; and the third is the long-term commitment the firm has to credit research. Marin switched Western's mandate from Core Plus to Intermediate Credit in first quarter 2014. Returns prior to that are linked to Western's Intermediate Credit composite.

#### **Quarterly Summary and Highlights**

- Western Intermediate Credit's portfolio posted a (3.81)% return for the quarter placing it in the 100 percentile of the Callan Intermediate Fixed Income group for the quarter and in the 100 percentile for the last year.
- Western Intermediate Credit's portfolio underperformed the Blmbg Intermediate Credit Index by 1.45% for the quarter and underperformed the Blmbg Intermediate Credit Index for the year by 1.47%.

#### Performance vs Callan Intermediate Fixed Income (Gross)

Beginning Market Value	\$128,058,150
Net New Investment	\$13,690,588
Investment Gains/(Losses)	\$-5,746,086
Ending Market Value	\$136,002,652

Percent Cash: 0.5%





Relative Returns vs Blmbg Intermediate Credit Index

Callan Intermediate Fixed Income (Gross) Annualized Ten Year Risk vs Return



# Western Intermediate Credit Return Analysis Summary

#### **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

#### Performance vs Callan Intermediate Fixed Income (Gross)



Rolling 12 Quarter and Quarterly Relative Return vs Blmbg Intermediate Credit Index



Risk Adjusted Return Measures vs Blmbg Intermediate Credit Index Rankings Against Callan Intermediate Fixed Income (Gross) Ten Years Ended March 31, 2020





## Western Intermediate Credit **Risk Analysis Summary**

#### **Risk Analysis**

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows tracking error patterns versus the benchmark over time. The last two charts show the ranking of the manager's risk statistics versus the peer group.

**Risk Analysis vs Callan Intermediate Fixed Income (Gross)** Ten Years Ended March 31, 2020











# Western Intermediate Credit Bond Characteristics Analysis Summary

#### **Portfolio Characteristics**

This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

#### Fixed Income Portfolio Characteristics Rankings Against Callan Intermediate Fixed Income as of March 31, 2020



## Sector Allocation and Quality Ratings

The first graph compares the manager's sector allocation with the average allocation across all the members of the manager's style. The second graph compares the manager's weighted average quality rating with the range of quality ratings for the style.



# Quality Ratings vs Callan Intermediate Fixed Income





## Western Intermediate Credit Portfolio Characteristics Summary As of March 31, 2020

## Portfolio Structure Comparison

The charts below compare the structure of the portfolio to that of the index from the three perspectives that have the greatest influence on return. The first chart compares the two portfolios across sectors. The second chart compares the duration distribution. The last chart compares the distribution across quality ratings.

D.1



# **Portfolio Characteristics Analysis**

### Callan Intermediate FI

The charts below illustrate the behavior of the product over different portfolio characteristics through time. As a backdrop the range (from 10th to 90th percentile) is shown for the Callan Intermediate FI Universe. The ranking of the product in this group is shown above each quarter end dot. The average ranking of the product and, if there are at least 12 data points, the standard deviation of that ranking is also shown on the chart. The BImbg Intmdt Credit is shown for comparison purposes.



Any particular portfolio characteristic observation(s) may be missing due to a failure to pass a minimum "coverage hurdle" intended to ensure quality. This can occur when the portfolio has a significant weight in stocks for which the data vendor(s) cannot supply the particular relevant financial metric.

## Colchester Global Period Ended March 31, 2020

#### **Investment Philosophy**

Colchester is a value-oriented manager. They believe that investments should be valued in terms of the income they will generate in real terms. The investment approach is therefore based on the analysis of inflation, real interest rates and real exchange rates, supplemented by an assessment of sovereign financial balances - fiscal, external and monetary. Portfolios are constructed to benefit from those opportunities with the greatest relative investment potential for a given level of risk. The investment opportunity set currently includes the domestic sovereign debt of the non-classic countries such as Brazil, Poland and Mexico among others. Colchester uses sovereign only portfolios. The first full quarter of performance began 2Q14. Prior performance is that or the manager's composite.

#### **Quarterly Summary and Highlights**

- Colchester Global's portfolio posted a (3.74)% return for the quarter placing it in the 66 percentile of the Callan Global Fixed Income (Unhedged) group for the quarter and in the 64 percentile for the last year.
- Colchester Global's portfolio underperformed the FTSE World Govt Bond Index by 5.74% for the quarter and underperformed the FTSE World Govt Bond Index for the year by 4.20%.

#### **Quarterly Asset Growth**

Beginning Market Value	\$129,353,329
Net New Investment	\$9,858,368
Investment Gains/(Losses)	\$-5,604,425
Ending Market Value	\$133,607,272







#### Relative Returns vs FTSE World Govt Bond Index

#### Callan Global Fixed Income (Unhedged) (Gross) Annualized Ten Year Risk vs Return



# Colchester Global Return Analysis Summary

#### **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.



Rolling 12 Quarter and Quarterly Relative Return vs FTSE World Govt Bond Index



Risk Adjusted Return Measures vs FTSE World Govt Bond Index Rankings Against Callan Global Fixed Income (Unhedged) (Gross) Ten Years Ended March 31, 2020





# Colchester Global Risk Analysis Summary

#### **Risk Analysis**

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows tracking error patterns versus the benchmark over time. The last two charts show the ranking of the manager's risk statistics versus the peer group.

Risk Analysis vs Callan Global Fixed Income (Unhedged) (Gross) Ten Years Ended March 31, 2020











# Colchester Global Bond Characteristics Analysis Summary

#### **Portfolio Characteristics**

This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

#### Fixed Income Portfolio Characteristics Rankings Against Callan Global Fixed Income (Unhedged) as of March 31, 2020



#### Sector Allocation and Quality Ratings

The first graph compares the manager's sector allocation with the average allocation across all the members of the manager's style. The second graph compares the manager's weighted average quality rating with the range of quality ratings for the style.



#### Quality Ratings vs Callan Global Fixed Income (Unhedged)



# Colchester Global Portfolio Characteristics Summary As of March 31, 2020

#### **Portfolio Structure Comparison**

The charts below compare the structure of the portfolio to that of the index from two perspectives that have the greatest influence on return. The first chart compares the two portfolios across sectors. The last chart compares the distribution across quality ratings.





# **Portfolio Characteristics Analysis**

#### Callan Gbl Fl (Unhedged)

The charts below illustrate the behavior of the product over different portfolio characteristics through time. As a backdrop the range (from 10th to 90th percentile) is shown for the Callan Gbl FI (Unhedged) Universe. The ranking of the product in this group is shown above each quarter end dot. The average ranking of the product and, if there are at least 12 data points, the standard deviation of that ranking is also shown on the chart. The FTSE World Govt Bond Idx is shown for comparison purposes.



Any particular portfolio characteristic observation(s) may be missing due to a failure to pass a minimum "coverage hurdle" intended to ensure quality. This can occur when the portfolio has a significant weight in stocks for which the data vendor(s) cannot supply the particular relevant financial metric.

## Marin County Employees' Retirement Association Historical Distribution of Countries Percent of Ending Weights in Country

#### **Country Distribution**

The Historical Distribution of Countries chart illustrates the split between developed and emerging market countries over time. The white line delineates developed and emerging market countries as defined by MSCI.

#### **Colchester Global**





## **FTSE World Govt Bond Index**

Callan

D.1

# Marin County Employees' Retirement Association

## Long/Short Country Distribution

The Long/Short Historical Distribution of Countries chart illustrates the split between developed and emerging market countries over time. The white line delineates developed and emerging market countries as defined by MSCI. The top chart represents the portfolio's long exposures and the bottom chart represents the portfolio's short exposures.



**Colchester Global - Historical Currency Allocation, Long Positions** 

# Marin County Employees' Retirement Association Historical Distribution of Countries Percent of Ending Weights in Country



## **Colchester Global - Historical Country Allocation, Long Positions**
## Real Estate Composite Period Ended March 31, 2020

#### **Investment Philosophy**

The Total Real Estate Funds Database consists of both open and closed-end commingled funds as well as separate accounts managed by real estate firms. The returns represent the overall performance of institutional capital invested in real estate properties. The composite benchmark is comprised of the NCREIF Classic Index through 12/31/2004, NCREIF Total Property Index through 12/31/2014, and the NFI-ODCE Equal Weight Net thereafter.

#### **Quarterly Summary and Highlights**

- Real Estate Composite's portfolio posted a 0.07% return for the quarter placing it in the 97 percentile of the Callan Real Estate ODCE group for the quarter and in the 93 percentile for the last year.
- Real Estate Composite's portfolio underperformed the Composite Benchmark by 0.64% for the quarter and underperformed the Composite Benchmark for the year by 4.46%.



Performance vs Callan Real Estate ODCE (Net)







## Real Estate Composite Diversification Analysis as of March 31, 2020

## **Diversification Analysis**

The following charts provide information on the diversification of the portfolio with regards to both Geographic Region and Property Type. Similar information is provided on the relevant market index for comparison.









## UBS Trumbull Property Fund Period Ended March 31, 2020

### **Investment Philosophy**

The Total Real Estate Funds Database consists of both open and closed-end commingled funds as well as separate accounts managed by real estate firms. The returns represent the overall performance of institutional capital invested in real estate properties. UBS Trumbull Property Fund was funded 04/01/2013. Prior performance is that of the manager's composite.

#### **Quarterly Summary and Highlights**

- UBS Trumbull Property Fund's portfolio posted a 0.24% return for the quarter placing it in the 97 percentile of the Callan Real Estate ODCE group for the quarter and in the 97 percentile for the last year.
- UBS Trumbull Property Fund's portfolio underperformed the NFI-ODCE Equal Weight Net by 0.46% for the quarter and underperformed the NFI-ODCE Equal Weight Net for the year by 7.49%.







## Cumulative Returns vs NFI-ODCE Equal Weight Net



## UBS Trumbull Property Fund Period Ended March 31, 2020

UBS Trumbull Property Fund was funded 04/01/2013. Prior history represents the returns of the composite.

#### **Fund Summary**

Inception Date: January, 1978 Vehicle Type: Limited Partnership Key Professionals: Paul Canning - PM Nolan Henry - PM Peter Shaplin - PM Pamela Thompson - PM Target Return: to outperform the NFI-ODCE index over a full market cycle. Target Income Return: N/A Min Acct Size (\$mm): 1

#### **Fee Information**

Management Fee: First \$10 1.00 0.99 Next \$10 Next \$10 0.95 Next \$15 0.89 Next \$15 0.82 Next \$25 0.81 Next \$50 0.79 Next \$150 0.67 Next \$150 0.60 Balance 0.56 Performance Fee: The "Variable Fee %" is set at a fulcrum point of 0.15%, and ranges from a min of 0% to a max of 0.25%. (Currently Suspended)

## **Client Summary**

Client Inception Date: March, 2013 Client Commitment: \$93,000,000 Client Market Value: \$121,860,373 Dividend Re-Investment: Yes Advisory Board Seat: No

Gross/Net Asset Value (\$mm): 19,396 / 15,527

Joint Venture Level (gross) (\$mm): 9,475

Fund Cash (\$mm): 284

**Occupancy:** 93.00%

Current Leverage: 18.60%

Implied Cap Rate: 4.40%

Number of Investments: 184

Entry/Exit Queue (\$mm): 25 / 7,100

#### Time-Weighted Returns Performance vs Callan Real Estate ODCE





# UBS Trumbull Property Fund Return Analysis

## **Return Analysis**

The graphs below give a detailed analysis of the portfolio's return by decomposing it into component subreturns. The first chart shows the portfolio's income return ranked against the income returns of the appropriate peer group. The second chart performs the same comparison using appreciation returns. The bottom graph illustrates the historical composition of total return on an income versus appreciation basis.

## Income Rankings vs Callan Real Estate ODCE Periods ended March 31, 2020



Appreciation Rankings vs Callan Real Estate ODCE Periods ended March 31, 2020



## **Cumulative Return Composition by Income/Appreciation**



# UBS Trumbull Property Fund Diversification Analysis as of March 31, 2020

## **Diversification Analysis**

The following charts provide information on the diversification of the portfolio with regards to both Geographic Region and Property Type. Similar information is provided on the relevant market index for comparison.







## UBS Trumbull Property Fund Real Estate Portfolio Quarterly Changes in Market Value

	Beg. of	Capital					End of
	Period	+ Contri-	+ Accounting	- Mgmt.	+ Appre-	- Distri-	= Period
	<u>Market</u>	butions	Income	Fees	<u>ciation</u>	<u>butions</u>	<u>Market</u>
06/2013	0	15,000,000	191,243	0	312,502	0	15,503,745
09/2013	15,503,745	0	200,125	44,173	223,167	109,779	15,773,085
12/2013	15,773,085	0	189,604	45,487	166,738	108,465	15,975,475
03/2014	15,975,475	107,834	199,263	46,118	204,848	107,834	16,333,468
06/2014	16,333,468	114,341	211,177	46,005	188,736	114,341	16,687,375
09/2014	16,687,375	50,114,010	207,022	47,469	324,384	114,010	67,171,312
12/2014	67,171,312	113,458	850,851	49,136	1,176,014	113,458	69,149,041
03/2015	69,149,041	456,518	847,191	185,133	1,216,204	456,518	71,027,303
06/2015	71,027,303	531,819	887,499	185,877	1,184,273	531,819	72,913,198
09/2015	72,913,198	530,305	873,485	192,820	1,621,083	530,305	75,214,947
12/2015	75,214,947	8,528,003	992,278	200,434	1,511,669	528,003	85,518,460
03/2016	85,518,460	20,584,418	1,267,447	227,418	917,650	584,418	107,476,139
06/2016	107,476,139	830,134	1,314,727	279,897	598,402	830,134	109,109,371
09/2016	109,109,371	834,803	1,210,594	283,891	637,533	834,803	110,673,607
12/2016	110,673,607	836,654	1,212,189	290,688	403,783	836,654	111,998,892
03/2017	111,998,892	841,974	1,227,298	293,978	58,803	841,974	112,991,015
06/2017	112,991,015	909,645	1,291,880	266,150	35,108	909,645	114,051,853
09/2017	114,051,853	941,431	1,309,576	243,930	374,159	941,431	115,491,658
12/2017	115,491,658	943,648	1,339,746	251,600	1,373,436	943,648	117,953,240
03/2018	117,953,240	968,020	1,294,320	237,096	925,404	968,020	119,935,868
06/2018	119,935,868	977,928	1,411,878	258,687	710,211	977,928	121,799,272
09/2018	121,799,272	1,008,523	1,352,122	238,279	370,697	1,008,523	123,283,812
12/2018	123,283,812	1,013,556	1,372,021	243,677	757,746	1,013,556	125,169,903
03/2019	125,169,903	1,021,100	1,366,657	246,576	(508,136)	1,021,100	125,781,848
06/2019	125,781,848	1,079,490	1,413,105	243,089	(6,053,774)	1,079,490	120,898,089
09/2019	120,898,089	1,092,620	1,451,086	241,430	(357,727)	1,092,620	121,750,018
12/2019	121,750,018	1,104,717	1,549,219	241,524	(1,492,215)	1,104,717	121,565,497
03/2020	121,565,497	1,116,663	1,292,265	241,930	(755,458)	1,116,663	121,860,373
	0	111,601,610	28,325,869	5,372,494	6,125,242	18,819,855	121,860,373

Returns

Net Portfolio Cumulative IRR = 5.17%

Ratios

Capital Account = \$121,860,373

Total Value = \$140,680,227

Committed Capital = \$93,000,000

Paid In Capital = \$111,601,610

Remaining Commitment = \$(18,601,610)

PIC Multiple (Paid In Capital/Committed Capital) = 120.00%

Total Economic Exposure (Capital Account + Remaining Commitment) = \$103,258,762

TVPI Investment Multiple (Total Value/Paid In Capital) = 1.26x

DPI Realization Multiple (Distributions/Paid In Capital) = 0.17x

RVPI Residual Multiple (Capital Account/Paid In Capital) = 1.09x

## AEW Core Property Trust Period Ended March 31, 2020

### **Investment Philosophy**

The Total Real Estate Funds Database consists of both open and closed-end commingled funds as well as separate accounts managed by real estate firms. The returns represent the overall performance of institutional capital invested in real estate properties. AEW Core Property Trust was funded 04/01/2013. Prior performance is that of the manager's composite.

#### **Quarterly Summary and Highlights**

- AEW Core Property Trust's portfolio posted a (1.03)% return for the quarter placing it in the 99 percentile of the Callan Real Estate ODCE group for the quarter and in the 88 percentile for the last year.
- AEW Core Property Trust's portfolio underperformed the NFI-ODCE Equal Weight Net by 1.74% for the quarter and underperformed the NFI-ODCE Equal Weight Net for the year by 1.69%.







## Cumulative Returns vs NFI-ODCE Equal Weight Net



## AEW Core Property Trust Period Ended March 31, 2020

AEW Core Property Trust was funded 04/01/2013. Prior history represents the returns of the composite.

#### **Fund Summary**

Inception Date: July, 2007 Vehicle Type: Private REIT Key Professionals: Daniel Bradley - PM Michael Byrne - PM Pamela Herbst - Research Sara Cassidy - PM Lily Kao - PM Target Return: Outperform NFI-ODCE on a total net-of-fee basis Target Income Return: None Stated Min Acct Size (\$mm): 5

#### Fee Information

Management Fee:	First \$10	1.10
-	Next \$15	1.00
	Next \$25	0.85
	Next \$50	0.80
	Next \$50	0.75
	Next \$150	0.65
	Balance	0.50

Performance Fee: None.

**Time-Weighted Returns** 

#### **Client Summary**

Client Inception Date: March, 2013 Client Commitment: \$65,000,000 Client Market Value: \$104,081,635

# Dividend Re-Investment: Yes Advisory Board Seat: Yes



Gross/Net Asset Value (\$mm): 9,434 / 7,161 Fund Cash (\$mm): 351 Current Leverage: 25.15% Joint Venture Level (gross) (\$mm): 3,614 Occupancy: 95.58% Implied Cap Rate: 4.50% Number of Investments: 84 Entry/Exit Queue (\$mm): 147 / 194

## AEW Core Property Trust Return Analysis

## **Return Analysis**

The graphs below give a detailed analysis of the portfolio's return by decomposing it into component subreturns. The first chart shows the portfolio's income return ranked against the income returns of the appropriate peer group. The second chart performs the same comparison using appreciation returns. The bottom graph illustrates the historical composition of total return on an income versus appreciation basis.

# Income Rankings vs Callan Real Estate ODCE Periods ended March 31, 2020



Appreciation Rankings vs Callan Real Estate ODCE Periods ended March 31, 2020



#### **Cumulative Return Composition by Income/Appreciation**



## **AEW Core Property Trust Diversification Analysis as of March 31, 2020**

## **Diversification Analysis**

The following charts provide information on the diversification of the portfolio with regards to both Geographic Region and Property Type. Similar information is provided on the relevant market index for comparison.





14.81%

22.00%

NFI-ODCE Equal Weight

Net

32.61%

26.42%

D.1

4.16%

0.00%

## AEW Core Property Trust Real Estate Portfolio Quarterly Changes in Market Value

	Beg. of	Capital								End of
	Period	+ Contri-	+ .	Accounting	- Mgm	it	+ Appre-	- Distri-	=	Period
	<u>Market</u>	butions		Income	Fee	<u>s</u>	<u>ciation</u>	<u>butions</u>		Market
06/2013	0	15,000,000		192,549	41,23	31	268,915	150,824		15,269,410
09/2013	15,269,410	150,824		226,706	42,51	7	306,680	183,696		15,727,407
12/2013	15,727,407	183,696		303,012	37,39	8	206,218	264,988		16,117,946
03/2014	16,117,946	33,222,276		623,003	114,91	4	522,479	507,204		49,863,586
06/2014	49,863,586	17,549,916		905,459	156,89	9	670,175	747,422		68,084,815
09/2014	68,084,815	747,422		944,637	161,06	67	1,139,287	783,065		69,972,030
12/2014	69,972,030	783,065		972,401	155,83	37	1,251,272	816,196		72,006,735
03/2015	72,006,735	816,196		972,694	168,58	6	638,759	802,613		73,463,185
06/2015	73,463,185	802,613		988,196	175,04	3	2,143,959	812,347		76,410,562
09/2015	76,410,562	812,347		993,811	179,84	8	1,412,205	813,198		78,635,878
12/2015	78,635,878	813,198		1,102,620	185,57	'9	1,714,754	916,324		81,164,548
03/2016	81,164,548	916,324		1,093,744	188,67	7	587,895	904,050		82,669,785
06/2016	82,669,785	904,050		1,056,494	192,51	3	960,689	863,229		84,535,275
09/2016	84,535,275	863,229		1,067,747	195,23	88	442,537	872,662		85,840,887
12/2016	85,840,887	872,662		1,061,970	198,42	21	669,007	1,883,889		86,362,215
03/2017	86,362,215	1,883,889		1,121,855	201,42	27	659,254	918,903		88,906,884
06/2017	88,906,884	918,903		1,108,522	204,26	64	473,117	903,013		90,300,149
09/2017	90,300,149	903,013		1,102,049	207,19	2	526,719	894,277		91,730,462
12/2017	91,730,462	894,277		1,183,353	210,96	3	818,534	971,684		93,443,979
03/2018	93,443,979	971,684		1,136,185	213,73	0	434,496	921,771		94,850,842
06/2018	94,850,842	921,771		1,168,295	217,90	)3	1,040,248	950,028		96,813,226
09/2018	96,813,226	950,028		1,118,223	220,75	8	493,999	897,095		98,257,623
12/2018	98,257,623	897,095		1,133,631	224,18	84	742,068	908,760		99,897,474
03/2019	99,897,474	908,760		1,150,344	227,25	50	570,092	922,837		101,376,583
06/2019	101,376,583	922,837		1,075,108	229,90	)1	450,896	843,976		102,751,546
09/2019	102,751,546	843,976		1,119,293	233,14	9	682,271	885,396		104,278,542
12/2019	104,278,542	885,396		1,172,671	235,08	80	39,159	937,079		105,203,610
03/2020	105,203,610	1,874,158		2,356,686	464,76	51	(2,997,788)	1,890,269		104,081,635
	0	88,213,606		28,451,257	5,284,32	29	16,867,897	24,166,796		104,081,635

Returns

Net Portfolio Cumulative IRR = 7.83%

Ratios

Capital Account = \$104,081,635

Total Value = \$128,248,431

Committed Capital = \$65,000,000

Paid In Capital = \$88,213,606

Remaining Commitment = \$(23,213,606)

PIC Multiple (Paid In Capital/Committed Capital) = 135.71%

Total Economic Exposure (Capital Account + Remaining Commitment) = \$80,868,029

TVPI Investment Multiple (Total Value/Paid In Capital) = 1.45x

DPI Realization Multiple (Distributions/Paid In Capital) = 0.27x

RVPI Residual Multiple (Capital Account/Paid In Capital) = 1.18x

## AEW Partners V Fund (Liquidating) Real Estate Portfolio Quarterly Changes in Market Value

	Beg. of	Beg. of Capital		I		Dist. of	Return	End of
	Period	+ Contri-	+ Accounting	- Mgmt.	+ Appre-	- Income &	- of	= Period
	Market	butions	Income	Fees	ciation	Real. Gains	<u>Capital</u>	<u>Market</u>
03/2006	0	0	(10,691	) 62,496	(375)	0	0	(73,562)
06/2006	(73,562)	1,020,258	(6,842	) 15,624	1,494	0	0	925,724
09/2006	925,724	291,502	(9,963	) 15,624	148,054	0	0	1,339,693
12/2006	1,339,693	510,130	(18,629	) 15,624	50,129	0	0	1,865,699
03/2007	1,865,699	400,815	(3,631	) 15,624	246,300	0	0	2,493,559
06/2007	2,493,559	473,692	59	15,624	20,060	394,252	266,875	2,310,619
09/2007	2,310,619	218,627	(8,353	) 15,624	64,064	60,803	73,107	2,435,423
12/2007	2,435,423	364,377	(41,023	) 15,624	119,263	130,203	233,493	2,498,720
03/2008	2,498,720	0	(16,992	) 15,624	(2,829)	0	0	2,463,275
06/2008	2,463,275	218,627	(10,892	) 15,624	1,864	0	0	2,657,250
09/2008	2,657,250	255,065	(18,094	) 15,624	(81,085)	71,057	0	2,726,455
12/2008	2,726,455	0	(48,501	) 15,624	(475,775)	0	0	2,186,555
03/2009	2,186,555	0	(31,084	) 15,624	(226,975)	0	0	1,912,872
06/2009	1,912,872	72,876	(12,072	) 15,624	(399,859)	0	0	1,558,193
09/2009	1.558.193	145,751	(3.089	) 15.624	(116,486)	0	0	1,568,745
12/2009	1.568.745	255.065	(18,922	) 15.624	(121,104)	0	0	1,668,160
03/2010	1,668,160	54,657	5.561	15.624	(2,035)	0	0	1,710,719
06/2010	1 710 719	36 438	19 498	8 787	(8,825)	0	0	1 749 043
09/2010	1 749 043	00,100	18 526	8 900	8 102	0	0	1 766 771
12/2010	1,746,040	0	3 293	8 652	140 005	0	23 822	1 877 595
03/2011	1,700,771	0	9 503	8 335	27 763	0	20,022	1,077,000
06/2011	1,077,555	36 438	33 690	8 353	15 832	164 020	101 225	1,500,520
00/2011	1,300,320	94 738	28 188	7 928	38 997	104,020	170 893	1 701 981
12/2011	1,7 10,073	0,730	14 509	7,520	11/ 18/	0	254 718	1,701,301
03/2011	1,701,901	36 438	10,009	7,001	119,104	0	234,710	1,500,275
06/2012	1,300,273	0,430	32 500	7,302	7 600	0	0	1,727,352
00/2012	1,727,552	0	32,399	6,002	26.009	100.005	109 095	1,700,400
12/2012	1,760,406	0	20,330	0,903	50,202	106,965	106,965	1,090,013
12/2012	1,596,013	0	7,001	7,025	50,792	0	0	1,007,301
03/2013	1,057,381	0	5,395	6,412	58,128	0	228,726	1,485,766
06/2013	1,485,766	0	27,435	6,108	72,403	28,949	0	1,550,547
09/2013	1,550,547	0	21,228	6,120	91,248	0	0	1,656,903
12/2013	1,656,903	0	6,847	5,041	58,200	0	509,333	1,207,576
03/2014	1,207,576	0	16,028	4,468	62,521	21,722	0	1,259,935
06/2014	1,259,935	0	21,482	4,504	74,475	0	11	1,351,377
09/2014	1,351,377	0	12,932	4,255	146,252	261,949	0	1,244,357
12/2014	1,244,357	0	11,785	3,811	158,974	0	79,920	1,331,385
03/2015	1,331,385	0	9,666	3,671	70,587	0	134,705	1,273,262
06/2015	1,273,262	0	24,291	3,452	64,435	0	597,371	761,165
09/2015	761,165	0	6,913	2,216	53,138	62,673	534,757	221,570
12/2015	221,570	0	(2,783	) 899	40,448	76,779	36,124	145,433
03/2016	145,433	0	1,225	509	186	29,111	0	117,224
06/2016	117,224	0	1,798	458	1,460	43,696	0	76,328
09/2016	76,328	0	(1,254	) 0	3,940	0	29,137	49,877
12/2016	49,877	0	(1,681	) 0	12,581	11,660	17,490	31,627
03/2017	31,627	0	201	0	0	0	0	31,828
06/2017	31,828	0	(206	) 0	199	0	0	31,821
09/2017	31,821	0	(457	) 0	463	0	12,389	19,438

## AEW Partners V Fund (Liquidating) Real Estate Portfolio Quarterly Changes in Market Value

	Beg. of	Capital				Dist. of	Return		End of
	Period	+ Contri-	+ Accounting	- Mgmt.	+ Appr	e Income &	- of	=	Period
	Market	<u>butions</u>	Income	Fees	ciatio	on <u>Real. Gains</u>	<u>Capital</u>		Market
12/2017	19,438	0	(643)	0	27,79	92 0	29,150		17,437
03/2018	17,437	0	(363)	0	1,86	63 0	0		18,937
06/2018	18,937	0	0	0	(1,52	22) 0	0		17,415
09/2018	17,415	0	(93)	0	2,52	25 0	7,288		12,559
12/2018	12,559	0	(116)	0	(70	03) 0	0		11,740
03/2019	11,740	0	1,378	0	(97	74) 0	0		12,144
06/2019	12,144	0	(340)	0	2	21 0	0		11,825
09/2019	11,825	0	(129)	0	(8	38) 0	0		11,608
12/2019	11,608	0	(235)	0	67	72 0	0		12,045
03/2020	12,045	0	(209)	0	18	89 0	0		12,025
	0	4,485,494	111,692	451,764	781,99	90 1,465,868	3,449,519		12,025

Returns

Net Portfolio Cumulative IRR = 1.96%

Ratios

Capital Account = \$12,025

Total Value = \$4,927,412

Committed Capital = \$5,000,000

Paid In Capital = \$4,485,494

Remaining Commitment = \$514,506

PIC Multiple (Paid In Capital/Committed Capital) = 89.71%

Total Economic Exposure (Capital Account + Remaining Commitment) = \$526,531

TVPI Investment Multiple (Total Value/Paid In Capital) = 1.10x

DPI Realization Multiple (Distributions/Paid In Capital) = 1.10x

RVPI Residual Multiple (Capital Account/Paid In Capital) = 0.00x

Based on estimated values



## Public Real Assets Period Ended March 31, 2020

## **Quarterly Summary and Highlights**

- Public Real Assets's portfolio posted a (19.04)% return for the quarter placing it in the 53 percentile of the Callan Real Assets Database group for the quarter and in the 55 percentile for the last year.
- Public Real Assets's portfolio outperformed the Public Real Assets Blended Benchmark by 1.74% for the quarter and outperformed the Public Real Assets Blended Benchmark for the year by 3.51%.

## Performance vs Callan Real Assets Database (Gross)

#### Quarterly Asset Growth

Beginning Market Value	\$183,545,559
Net New Investment	\$-8,067,412
Investment Gains/(Losses)	\$-34,816,904
Ending Market Value	\$140,661,243





## Relative Returns vs Public Real Assets Blended Benchmark

## Cumulative Returns vs Public Real Assets Blended Benchmark



## BlackRock TIPS Index Fund Period Ended March 31, 2020

### **Investment Philosophy**

BlackRock TIPS Index Fund was funded in 2Q15. The first full quarter of performance is 3Q15. Prior performance is that of the manager's composite.

## **Quarterly Summary and Highlights**

- BlackRock TIPS Index Fund's portfolio posted a 1.62% return for the quarter placing it in the 55 percentile of the Real Returns Database group for the quarter and in the 50 percentile for the last year.
- BlackRock TIPS Index Fund's portfolio underperformed the Bloomberg US TIPS Index by 0.07% for the quarter and underperformed the Bloomberg US TIPS Index for the year by 0.03%.

Quarterly Asset Growth						
Beginning Market Value	\$46,318,040					
Net New Investment	\$-8,000,000					
Investment Gains/(Losses)	\$851,577					
Ending Market Value	\$39,169,617					

## Performance vs Real Returns Database (Gross)





#### **Relative Return vs Bloomberg US TIPS Index**

#### Cumulative Returns vs Bloomberg US TIPS Index



## BlackRock TIPS Index Fund Return Analysis Summary

## **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

#### Performance vs Real Returns Database (Gross)



Rolling 12 Quarter and Quarterly Relative Return vs Bloomberg US TIPS Index









## BlackRock REIT Index Fund Period Ended March 31, 2020

#### **Investment Philosophy**

BlackRock REIT Index Fund was funded in 3Q17. The first full quarter of performance is 4Q17. Prior performance is that of the manager's composite.

## **Quarterly Summary and Highlights**

- BlackRock REIT Index Fund's portfolio posted a (28.50)% return for the quarter placing it in the 88 percentile of the Callan Real Estate Mutual Funds group for the quarter and in the 92 percentile for the last year.
- BlackRock REIT Index Fund's portfolio outperformed the DJ US Select REIT Index by 0.02% for the quarter and outperformed the DJ US Select REIT Index for the year by 0.05%.

## Performance vs Callan Real Estate Mutual Funds (Gross)





#### **Relative Return vs DJ US Select REIT Index**

## Cumulative Returns vs DJ US Select REIT Index



## BlackRock REIT Index Fund Return Analysis Summary

## **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

#### Performance vs Callan Real Estate Mutual Funds (Gross)



Rolling 12 Quarter and Quarterly Relative Return vs DJ US Select REIT Index



## Risk Adjusted Return Measures vs DJ US Select REIT Index Rankings Against Callan Real Estate Mutual Funds (Gross) Ten Years Ended March 31, 2020





## Invesco Commodity Fund Period Ended March 31, 2020

## **Investment Philosophy**

INVESCO Commodities Index Fund was funded in 2Q16. The first full quarter of performance is 3Q16. Prior performance is that of the manager's composite.

D.1

## **Quarterly Summary and Highlights**

- Invesco Commodity Fund's portfolio posted a (25.41)% return for the quarter placing it in the 55 percentile of the Callan Commodities group for the quarter and in the 56 percentile for the last year.
- Invesco Commodity Fund's portfolio underperformed the Bloomberg Commodity Index by 2.12% for the quarter and underperformed the Bloomberg Commodity Index for the year by 2.33%.

## Performance vs Callan Commodities (Gross)





Callan

## Relative Returns vs Bloomberg Commodity Index

## Cumulative Returns vs Bloomberg Commodity Index



## Invesco Commodity Fund Return Analysis Summary

## **Return Analysis**

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 4 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

#### Performance vs Callan Commodities (Gross)



Rolling 4 Quarter and Quarterly Relative Return vs Bloomberg Commodity Index



Risk Adjusted Return Measures vs Bloomberg Commodity Index Rankings Against Callan Commodities (Gross) Eleven and One-Half Years Ended March 31, 2020



## Invesco Commodity Fund **Risk Analysis Summary**

## **Risk Analysis**

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows Up and Down Market Capture. The last two charts show the ranking of the manager's risk statistics versus the peer group.

**Risk Analysis vs Callan Commodities (Gross)** Five Years Ended March 31, 2020











## KBI Global Resources Fund Period Ended March 31, 2020

## **Investment Philosophy**

Kleinwort Benson Investors' environmental strategies provide investors with the opportunity to achieve strong long-term returns and potential portfolio diversification from investing in companies providing solutions to their greatest global resource challenges. There are compelling investment opportunities in companies providing solutions to resource scarcity across water, food and energy driven by five long term trends: inadequate supply of water, cleaner energy and arable land for farming; increasing demand for resources driven by population growth, industrialisation and urbanisation; increasing regulation and government support; increasing investment in Infrastructure to facilitate provision and management of resources; and increasing investment in technology to create solutions and facilitate the more efficient use of resources. KBI Global Resources Fund was funded in 3Q16. The first full quarter of performance is 4Q16. Prior performance is that of the manager's composite.

#### **Quarterly Summary and Highlights**

• KBI Global Resources Fund's portfolio outperformed the S&P Global Natural Resources Index by 7.80% for the quarter and outperformed the S&P Global Natural Resources Index for the year by 14.75%.



## KBI Global Resources Fund Risk Analysis Summary

#### **Risk Analysis**

The graphs below analyze the risk or variation of a manager's return pattern. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the benchmark. The second chart shows Up and Down Market Capture. The last two charts show the ranking of the manager's risk statistics versus the peer group.

Risk Analysis vs Callan Global Natural Rsrcs Mut Funds (Gross) Five Years Ended March 31, 2020



Market Capture vs S&P Global Natural Resources Index Rankings Against Callan Global Natural Rsrcs Mut Funds (Gross) Five Years Ended March 31, 2020









## KBI Global Resources Fund Equity Characteristics Analysis Summary

## **Portfolio Characteristics**

This graph compares the manager's portfolio characteristics relative to the benchmark's portfolio characteristics.



## **Sector Weights**

The graph below contrasts the manager's sector weights for the most recent quarter with those of the benchmark. The regional allocation chart also compares the manager's geographical region weights with those of the benchmark.





## Country Allocation KBI Global Resources Fund VS S&P Global NR Index

## **Country Allocation**

The chart below contrasts the portfolio's country allocation with that of the index as of March 31, 2020. This chart is useful because large deviations in country allocation relative to the index are often good predictors of tracking error in the subsequent quarter. To the extent that the portfolio allocation is similar to the index, the portfolio should experience more "index-like" performance. In order to illustrate the performance effect on the portfolio and index of these country allocations, the individual index country returns are also shown.



## Marin County Employees' Retirement Association History of Ending Regional Weights Period Ended March 31, 2020



## Current Holdings Based Style Analysis KBI Global Resources Fund As of March 31, 2020

This page analyzes the current investment style of a portfolio utilizing a detailed holdings-based style analysis to determine actual exposures to various regional and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the current market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the current portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The middle chart illustrates the total exposures and stock counts in the three style segments, with a legend showing the total growth, value, and "combined Z" (growth - value) scores. The bottom chart exhibits the sector weights as well as the style weights within each sector.

**Style Exposure Matrix** 



## Style Map vs Callan Gbl Nat Res MF Holdings as of March 31, 2020

## Combined Z-Score Style Distribution Holdings as of March 31, 2020



## Sector Weights Distribution Holdings as of March 31, 2020

allan



*3/31/20 portfolio characteristics generated using most recently available holdings (12/31/19) modified based on a "buy-and-hold" assumption (repriced and adjusted for corporate actions). Analysis is then done using current market and company financial data.

## **Historical Holdings Based Style Analysis KBI Global Resources Fund** For Four and 1/2 Years Ended March 31, 2020

This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various region and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The next two style exposure charts illustrate the actual guarterly region/style and style only segment exposures of the portfolio through history.

**Average Style Exposure Matrix** 



#### Average Style Map vs Callan Gbl Nat Res MF Holdings for Four and 1/2 Years Ended March 31, 2020 Holdings for Four and 1/2 Years Ended March 31, 2020









*3/31/20 portfolio characteristics generated using most recently available holdings (12/31/19) modified based on a "buy-and-hold" assumption (repriced and adjusted for corporate actions). Analysis is then done using current market and company financial data.

## **KBI Global Resources Fund** Active Share Analysis as of March 31, 2020 vs. S&P Global Natural Resources Index

Active Share analysis compares the holdings of a portfolio to an index to measure how aggressively it differs from the index. Active share is measured at the individual stock level ("holdings-level active share") and using sector weights ("sector exposure active share"). Holdings-level active share comes from: 1) Index Active Share - over/under weighting of stocks in the index, and 2) Non-Index Active Share - positions in stocks not in the index. This analysis displays active share by sector and compares the portfolio to a relevant peer group.



#### **Sector Exposure Active Share**



## Total Active Share: 89.87%

	Index Active Share Within Sector	Non-Index Active Share Within Sector	Total Active Share Within Sector	Index Weight	Manager Weight	Contribution to Total Portfolio Active Share
Consumer Discretionary	0.00%	100.00%	100.00%	-	2.85%	1.43%
Consumer Staples	25.40%	17.08%	42.48%	4.85%	7.47%	2.17%
Energy	50.00%	50.00%	100.00%	29.32%	0.33%	14.78%
Financials	0.00%	100.00%	100.00%	-	0.28%	0.14%
Health Care	0.00%	100.00%	100.00%	-	3.96%	1.98%
Industrials	0.00%	100.00%	100.00%	-	34.65%	17.32%
Information Technology	0.00%	100.00%	100.00%	-	11.40%	5.70%
Materials	65.76%	19.68%	85.44%	64.23%	12.83%	32.45%
Pooled Vehicles	0.00%	100.00%	100.00%	-	1.40%	0.70%
Real Estate	50.00%	50.00%	100.00%	1.60%	1.66%	1.62%
Utilities	0.00%	100.00%	100.00%	-	21.87%	10.93%
Total	46.22%	43.65%	89.87%	100.00%	100.00%	89.23%

#### Active Share vs. Callan Gbl Nat Res MF



## Total Private Equity Period Ended December 31, 2019

## **Private Equity Allocation Overview**

The MCERA private equity portfolio was initiated in 2008 and currently utilizes two gatekeepers, Abbott Capital ("Abbott") and Pathway Capital Management ("Pathway"), to help the plan reach its desired private equity allocation of 8%. MCERA is invested in fund-of-funds vehicles.

	Quarter					
	December 31, 2019	Change	September 30, 2019			
Summary						
Vintage Years	13 in 2008-2020		13 in 2008-2020			
# Total Partnerships	357	1	356			
# Active Partnerships	354	1	353			
# Liquidated Partnerships	3	-	3			
Changes in Value						
Capital Commitments	\$400,000,000	-	\$400,000,000			
Paid-In Capital	\$335,751,462	\$9,453,814	\$326,297,648			
Uncalled Capital	\$64,307,887	\$(9,453,814)	\$73,761,701			
% Paid-In	83.94%	2.36%	81.57%			
Distributed Capital	\$234,946,437	\$12,655,031	\$222,291,406			
Net Asset Value	\$292,618,608	\$11,628,287	\$280,990,321			
Total Realized and Unrealized Value	\$527,565,045	\$24,283,318	\$503,281,727			
Ratios and Performance						
Distributions to Paid-In Capital (DPI)	0.70x	0.02x	0.68x			
Residual Value to Paid-In Capital (RVPI)	0.87x	0.01x	0.86x			
Total Value to Paid-In Capital (TVPI)	1.57x	0.03x	1.54x			
Quartile Ranking	2nd		2nd			
Net IRR	13.03%	0.29%	12.74%			
Additional Performance Metrics						
Distribution Rate, as % of Beginning NAV		4.50%				
Unrealized Gain/(Loss), Dollars		\$14,829,504				
Unrealized Gain/(Loss), %		5.28%				

Quartile rankings against the All Private Equity, All Regions Refinitiv/Cambridge Database. Uncalled capital above does not reflect currency fluctuations for Pathway's investments in foreign partnerships.



## Total Private Equity Private Equity Investment Portfolio Quarterly Changes in Market Value

	Beg. of	Capital				Dist. of	Return	Dist. of	End of
	Period	+ Contri-	+ Accounting	- Mgmt.	+ Appre-	- Income &	- of	- Recallable	= Period
	<u>Market</u>	<u>butions</u>	Income	Fees	<u>ciation</u>	<u>Real. Gains</u>	<u>Capital</u>	Capital	<u>Market</u>
03/2009	0	5,623,729	(301,039)	558,424	(649,009)	0	0	0	4,115,257
06/2009	4,115,257	225,000	10,022	331,250	(68,925)	0	0	0	3,950,104
09/2009	3,950,104	1,378,170	(15,473)	384,375	(17,463)	0	0	0	4,910,963
12/2009	4,910,963	2,035,317	(45,633)	384,375	310,671	0	0	0	6,826,943
03/2010	6,826,943	1,405,159	(55,406)	384,375	(106,094)	0	0	0	7,686,227
06/2010	7,686,227	1,225,000	(19,095)	384,375	(194,748)	0	0	0	8,313,009
09/2010	8,313,009	2,838,797	(50,285)	437,500	411,669	0	0	0	11,075,690
12/2010	11,075,690	3,963,461	(110,914)	437,500	702,011	0	0	0	15,192,748
03/2011	15,192,748	2,841,483	(127,842)	437,500	678,042	0	0	0	18,146,931
06/2011	18,146,931	3,960,774	(184,803)	437,500	996,942	133,755	69,654	0	22,278,935
09/2011	22,278,935	8,609,888	(265,645)	437,500	(195,435)	0	0	0	29,990,243
12/2011	29,990,243	5,617,948	(175,287)	437,500	529,487	0	0	0	35,524,891
03/2012	35,524,891	6,281,785	(173,125)	437,500	2,079,434	0	0	0	43,275,485
06/2012	43,275,485	7,874,800	(113,404)	437,500	692,927	331,545	120,080	0	50,840,683
09/2012	50,840,683	4,558,302	(303,027)	437,500	1,105,721	260,954	215,388	0	55,287,837
12/2012	55,287,837	11,334,284	(41,281)	437,500	2,708,758	288,586	275,607	0	68,287,905
03/2013	68,287,905	5,239,926	(120,123)	437,500	1,886,426	78,940	352,195	0	74,425,498
06/2013	74,425,498	5,359,974	(147,222)	562,625	2,651,531	514,376	515,820	0	80,696,960
09/2013	80,696,960	7,768,201	(226,298)	516,250	5,890,689	1,165,176	355,990	0	92,092,136
12/2013	92,092,136	12,666,640	(54,150)	516,250	6,253,270	2,563,309	3,688,605	0	104,189,733
03/2014	104,189,733	10,332,824	(204,331)	516,250	4,125,365	6,302,488	654,422	0	110,970,431
06/2014	110,970,431	10,513,534	75,076	516,250	7,884,217	746,471	2,533,431	0	125,647,106
09/2014	125,647,106	17,570,746	10,500	516,250	1,245,992	1,615,602	2,925,053	0	139,417,439
12/2014	139,417,439	10,833,803	(61,667)	558,750	3,052,494	1,112,031	4,049,723	0	147,521,565
03/2015	147,521,565	8,258,958	22,076	558,750	3,915,369	1,080,998	4,004,433	0	154,073,787
06/2015	154,073,787	12,520,450	(252,087)	558,750	7,392,432	2,171,067	5,209,351	0	165,795,414
09/2015	165,795,414	12,661,165	8,918	537,500	2,632,199	1,814,825	5,406,163	0	173,339,208
12/2015	173,339,208	10,950,390	(73,852)	636,937	3,903,312	5,200,032	3,213,356	0	179,068,733
03/2016	179,068,733	4,401,061	(299,677)	558,750	2,098,534	2,134,279	907,141	0	181,668,481
06/2016	181,668,481	10,147,317	56,802	609,194	7,769,013	384,668	1,481,019	0	197,166,732
09/2016	197,166,732	6,046,669	152,647	590,069	7,907,843	2,838,197	1,439,821	0	206,405,805
12/2016	206,405,805	9,423,568	(337,203)	609,852	7,772,643	2,210,046	6,703,806	0	213,741,108
03/2017	213,741,108	6,022,843	(48,597)	624,466	11,538,200	2,611,810	5,480,599	0	222,536,678
06/2017	222,536,678	5,942,110	39,415	654,116	13,245,307	4,835,151	9,091,365	59,349	227,123,528
09/2017	227,123,528	16,537,410	(30,778)	637,141	9,591,347	5,248,683	7,736,243	0	239,599,440
12/2017	239,599,440	13,884,994	21,740	635,673	11,666,611	4,382,265	16,309,746	0	243,845,101
03/2018	243,845,101	7,150,727	(163,332)	643,100	10,972,723	7,403,967	3,491,705	0	250,266,447
06/2018	250,266,447	11,444,547	(144,165)	672,751	14,602,061	4,351,051	7,785,725	0	263,359,363
09/2018	263,359,363	7,431,280	(238,296)	657,497	12,294,502	4,011,337	8,778,135	0	269,399,880
12/2018	269,399,880	14,191,664	3,385,950	656,029	(1,352,804)	9,915,706	9,598,228	0	265,454,727
03/2019	205,454,727	5,829,912	(283,332)	050,246	12,966,290	5,633,889	3,007,549	0	274,009,912
00/2019	274,009,912	1,010,263	82,950	003,197	15,115,571	5,061,949	0,031,822	0	200,127,728
09/2019	285,127,728	5,/16,//6	(98,346)	649,492	4,630,383	3,987,114	9,749,615	0	280,990,321
12/2019	200,990,321	9,403,814	(04,183)	048,025	15,541,711	4,095,571	0,009,400	0	292,010,008
	0	335,751,462	(963,802)	23,399,834	216,177,218	94,485,838	140,401,250	59,349	292,618,608

## Total Private Equity Private Equity Investment Portfolio Quarterly Changes in Market Value

Returns Net Portfolio Cumulative IRR = 13.03%

Ratios

Capital Account = \$292,618,608 Total Value = \$527,565,045 Committed Capital = \$400,000,000 Paid In Capital = \$335,751,462 Remaining Commitment = \$64,307,887 PIC Multiple (Paid In Capital/Committed Capital) = 83.94% Total Economic Exposure (Capital Account + Remaining Commitment) = \$356,926,495 TVPI Investment Multiple (Total Value/Paid In Capital) = 1.57x DPI Realization Multiple (Distributions/Paid In Capital) = 0.70x RVPI Residual Multiple (Capital Account/Paid In Capital) = 0.87x

Uncalled capital above does not reflect currency fluctuations for Pathway's investments in foreign partnerships.


# Portfolio Exposure Mix Total Private Equity Period Ended December 31, 2019

The follow charts provide information on the portfolio mix with regards to Strategy, Geographic Region, and Industry.

#### Strategy Mix by Net Asset Value



#### **Geographic Mix by Net Asset Value**



North Atlantic	14.94%
West/Pacific Northwest	20.07%
Mid-West	13.52%
Southwest/Rockies	10.84%
Southeast	7.66%
Mid-Atlantic	5.55%
Europe	20.20%
Asia/Pacific	4.22%
Canada	1.02%
Other	1.98%

#### Industry Mix by Net Asset Value



# Callan

# D.1

# Abbott Fund VI, L.P. Period Ended December 31, 2019

#### **Organization History**

Abbott is an independent registered investment adviser founded in 1986 to provide investors with private equity portfolio management. Abbott's investment philosophy focuses on three aspects of the business: 1) access to top-performing partnerships; 2) a rigorous selection process; and 3) a commitment to diversification.

#### **Private Equity Allocation Overview**

Abbott has managed fund-of-funds private equity investments for MCERA since 2008, which is when MCERA committed \$100 million to ACE VI. Abbott's model portfolios typically have the following allocation targets: Buyouts 50-80%; Venture Capital 10-30%; and, Special Situations 5-25%.

		Quarter	
	December 31, 2019	Change	September 30, 2019
Summary			
Vintage Years	7 in 2008-2014		7 in 2008-2014
# Total Partnerships	56	-	56
# Active Partnerships	54	-	54
# Liquidated Partnerships	2	-	2
Changes in Value			
Capital Commitments	\$100,000,000	-	\$100,000,000
Paid-In Capital	\$99,047,700	\$250,000	\$98,797,700
Uncalled Capital	\$952,300	\$(250,000)	\$1,202,300
% Paid-In	99.05%	0.25%	98.80%
Distributed Capital	\$105,393,939	\$4,393,939	\$101,000,000
Net Asset Value	\$63,041,011	\$(1,762,441)	\$64,803,452
Total Realized and Unrealized Value	\$168,434,950	\$2,631,498	\$165,803,452
Ratios and Performance			
Distributions to Paid-In Capital (DPI)	1.06x	0.04x	1.02x
Residual Value to Paid-In Capital (RVPI)	0.64x	(0.02)x	0.66x
Total Value to Paid-In Capital (TVPI)	1.70x	0.02x	1.68x
Quartile Ranking	2nd		2nd
Net IRR	12.56%	0.05%	12.51%
Additional Performance Metrics			
Distribution Rate, as % of Beginning NAV		6.78%	
Unrealized Gain/(Loss), Dollars		\$2,381,498	
Unrealized Gain/(Loss), %		3.67%	

Quartile rankings against the All Private Equity, All Regions Refinitiv/Cambridge Database.



# Abbott Fund VI, L.P. Private Equity Investment Portfolio Quarterly Changes in Market Value

	Beg. of	Capital						Dist. of	Return	End of
	Period	+ Contri-	+	Accounting	- Mgmt.	+	Appre-	- Income &	- of	= Period
	<u>Market</u>	<u>butions</u>		Income	Fees		<u>ciation</u>	<u>Real. Gains</u>	<u>Capital</u>	<u>Market</u>
03/2009	0	4,547,700		(112,820)	318,750		(604,525)	0	0	3,511,605
06/2009	3,511,605	0		(2,729)	106,250		(94,275)	0	0	3,308,351
09/2009	3,308,351	0		3,445	159,375		(28,545)	0	0	3,123,876
12/2009	3,123,876	1,000,000		(1,221)	159,375		162,943	0	0	4,126,223
03/2010	4,126,223	1,000,000		(2,357)	159,375		(100,250)	0	0	4,864,241
06/2010	4,864,241	1,000,000		2,059	159,375		(220,726)	0	0	5,486,199
09/2010	5,486,199	1,000,000		14,193	212,500		226,639	0	0	6,514,531
12/2010	6,514,531	2,000,000		65	212,500		282,565	0	0	8,584,661
03/2011	8,584,661	2,000,000		2,326	212,500		383,955	0	0	10,758,442
06/2011	10,758,442	1,000,000		11,142	212,500		636,894	0	0	12,193,978
09/2011	12,193,978	3,000,000		3,939	212,500		(189,135)	0	0	14,796,282
12/2011	14,796,282	3,000,000		12,355	212,500		280,998	0	0	17,877,135
03/2012	17,877,135	3,000,000		5,850	212,500		1,090,959	0	0	21,761,444
06/2012	21,761,444	2,000,000		67,498	212,500		(67,270)	0	0	23,549,172
09/2012	23,549,172	3,000,000		752	212,500		206,348	0	0	26,543,772
12/2012	26,543,772	5,500,000		128,410	212,500		1,082,849	0	0	33,042,531
03/2013	33,042,531	1,500,000		98,277	212,500		464,582	0	0	34,892,890
06/2013	34,892,890	1,500,000		86,882	212,500		1,325,269	0	0	37,592,541
09/2013	37,592,541	2,500,000		29,707	212,500		1,762,681	1,000,000	0	40,672,429
12/2013	40,672,429	7,500,000		92,437	212,500		2,262,463	0	3,000,000	47,314,829
03/2014	47,314,829	7,000,000		85,886	212,500		1,924,080	4,000,000	0	52,112,295
06/2014	52,112,295	4,500,000		179,299	212,500		2,457,448	0	2,000,000	57,036,542
09/2014	57,036,542	8,500,000		106,723	212,500		1,674,877	0	2,000,000	65,105,642
12/2014	65,105,642	3,000,000		116,605	212,500		2,000,581	0	2,500,000	67,510,328
03/2015	67,510,328	4,000,000		213,714	212,500		1,898,768	0	3,500,000	69,910,310
06/2015	69,910,310	5,500,000		88,289	212,500		3,353,716	0	3,500,000	75,139,815
09/2015	75,139,815	4,000,000		(2,949)	191,250		2,194,512	0	4,000,000	77,140,128
12/2015	77,140,128	3,500,000		121,976	191,250		2,631,973	3,278,722	2,221,278	77,702,827
03/2016	77,702,827	0		91,920	191,250		782,805	500,000	0	77,886,302
06/2016	77,886,302	2,500,000		310,111	191,250		3,654,142	0	1,000,000	83,159,305
09/2016	83,159,305	0		101,709	172,125		3,712,578	500,000	0	86,301,467
12/2016	86,301,467	1,500,000		170,302	172,125		2,223,778	0	5,000,000	85,023,422
03/2017	85,023,422	1,000,000		224,358	172,125		3,409,422	0	3,000,000	86,485,077
06/2017	86,485,077	500,000		286,985	172,125		4,125,279	0	6,000,000	85,225,216
09/2017	85,225,216	2,500,000		183,667	154,913		3,897,913	0	5,500,000	86,151,883
12/2017	86,151,883	2,000,000		195,453	154,913		3,947,600	0	11,500,000	80,640,023
03/2018	80,640,023	1,000,000		108,656	154,912		2,980,673	4,500,000	0	80,074,440
06/2018	80,074,440	500,000		196,285	154,913		4,537,413	0	4,500,000	80,653,225
09/2018	80,653,225	500,000		0	139,422		2,823,196	0	7,500,000	76,336,999
12/2018	76,336,999	500,000		0	139,422		1,828,076	3,082,577	2,917,423	/2,525,653
03/2019	72,525,653	0		(123)	139,421		2,694,551	2,157,386	2,342,614	70,580,660
06/2019	70,580,660	0		268,212	139,421		3,902,713	0	4,000,000	70,612,164
09/2019	70,612,164	250,000		91,196	125,479		(24,429)	0	6,000,000	64,803,452
12/2019	64,803,452	250,000		106,538	125,479		2,400,439	0	4,393,939	63,041,011
	0	99,047,700		3,685,022	8,194,295		73,896,523	19,018,684	86,375,255	63,041,011



## Abbott Fund VI, L.P. Private Equity Investment Portfolio Quarterly Changes in Market Value

Returns

Net Portfolio Cumulative IRR = 12.56%

Ratios

Capital Account = \$63,041,011 Total Value = \$168,434,950 Committed Capital = \$100,000,000 Paid In Capital = \$99,047,700 Remaining Commitment = \$952,300 PIC Multiple (Paid In Capital/Committed Capital) = 99.05% Total Economic Exposure (Capital Account + Remaining Commitment) = \$63,993,311 TVPI Investment Multiple (Total Value/Paid In Capital) = 1.70x DPI Realization Multiple (Distributions/Paid In Capital) = 1.06x

RVPI Residual Multiple (Capital Account/Paid In Capital) = 0.64x



# Portfolio Exposure Mix Abbott Fund VI, L.P. Period Ended December 31, 2019

The follow charts provide information on the portfolio mix with regards to Strategy, Geographic Region, and Industry.

#### Strategy Mix by Net Asset Value



#### **Geographic Mix by Net Asset Value**



#### Industry Mix by Net Asset Value



Technology	34.00%
Health Care	20.00%
Consumer Discretionary	18.00%
Financial	10.00%
Industrials	8.00%
Energy	3.00%
Materials	3.00%
Consumer Staples	2.00%
Communication Services	1.00%
Utilities	1.00%

18.00% 17.00% 15.00% 12.00% 9.00% 6.00% 13.00%

6.00% 3.00% 1.00%



# D.1

# Abbott Fund VII, L.P. Period Ended December 31, 2019

#### **Organization History**

Abbott is an independent registered investment adviser founded in 1986 to provide investors with private equity portfolio management. Abbott's investment philosophy focuses on three aspects of the business: 1) access to top-performing partnerships; 2) a rigorous selection process; and 3) a commitment to diversification.

#### **Private Equity Allocation Overview**

Abbott has managed fund-of-funds private equity investments for MCERA since 2008. MCERA committed \$35 million to ACE VII in 2013. Abbott's model portfolio typically has the following allocation: Buyouts 25-40%; Venture Capital 25-40%; and, Special Situations 25-40%.

		Quarter				
	December 31, 2019	Change	September 30, 2019			
Summary						
Vintage Years	4 in 2014-2017		4 in 2014-2017			
# Total Partnerships	40	-	40			
# Active Partnerships	39	-	39			
# Liquidated Partnerships	1	-	1			
Changes in Value						
Capital Commitments	\$35,000,000	-	\$35,000,000			
Paid-In Capital	\$33,950,000	\$1,575,000	\$32,375,000			
Uncalled Capital	\$1,050,000	\$(1,575,000)	\$2,625,000			
% Paid-In	97.00%	4.50%	92.50%			
Distributed Capital	\$12,250,000	\$2,100,000	\$10,150,000			
Net Asset Value	\$40,179,949	\$1,622,421	\$38,557,528			
Total Realized and Unrealized Value	\$52,429,949	\$3,722,421	\$48,707,528			
Ratios and Performance						
Distributions to Paid-In Capital (DPI)	0.36x	0.05x	0.31x			
Residual Value to Paid-In Capital (RVPI)	1.18x	(0.01)x	1.19x			
Total Value to Paid-In Capital (TVPI)	1.54x	0.04x	1.50x			
Quartile Ranking	2nd		2nd			
Net IRR	18.10%	0.39%	17.72%			
Additional Performance Metrics						
Distribution Rate, as % of Beginning NAV		5.45%				
Unrealized Gain/(Loss), Dollars		\$2,147,421				
Unrealized Gain/(Loss), %		5.57%				

Quartile rankings against the All Private Equity, All Regions Refinitiv/Cambridge Database.



# Abbott Fund VII, L.P. Private Equity Investment Portfolio Quarterly Changes in Market Value

	Beg. of	Capital				Dist. of	Return		End of
	Period	+ Contri-	+ Accounting	- Mgmt.	+ Appre-	- Income &	- of	=	Period
	<u>Market</u>	butions	Income	Fees	<u>ciation</u>	<u>Real. Gains</u>	<u>Capital</u>		<u>Market</u>
03/2014	0	87,500	(2,298)	0	(9,232)	0	0		75,970
06/2014	75,970	0	(7,146)	0	42,004	0	0		110,828
09/2014	110,828	1,400,000	(751)	0	(48,585)	0	0		1,461,492
12/2014	1,461,492	612,500	(85,245)	42,500	(38,230)	0	0		1,908,017
03/2015	1,908,017	700,000	203	42,500	(40,496)	0	0		2,525,224
06/2015	2,525,224	1,400,000	(2,952)	42,500	107,255	0	0		3,987,027
09/2015	3,987,027	2,450,000	339	42,500	9,889	175,000	0		6,229,755
12/2015	6,229,755	2,625,000	(5,533)	63,750	180,105	350,000	0		8,615,577
03/2016	8,615,577	1,400,000	(507)	63,750	65,888	0	0	1	0,017,208
06/2016	10,017,208	2,275,000	42,684	63,750	405,171	0	175,000	1	2,501,313
09/2016	12,501,313	1,225,000	(2,341)	63,750	335,684	350,000	0	1	3,645,906
12/2016	13,645,906	2,100,000	70,040	85,000	663,483	175,000	0	1	6,219,429
03/2017	16,219,429	1,400,000	2,343	85,000	604,250	0	1,050,000	1	7,091,022
06/2017	17,091,022	1,575,000	61,065	85,000	1,041,816	0	0	1	9,683,903
09/2017	19,683,903	3,150,000	43,842	85,000	740,792	0	525,000	2	3,008,537
12/2017	23,008,537	3,500,000	52,201	85,000	1,922,267	0	2,275,000	2	6,123,005
03/2018	26,123,005	1,225,000	33,563	85,000	1,338,683	0	700,000	2	7,935,251
06/2018	27,935,251	1,925,000	37,722	85,000	1,251,411	0	1,050,000	3	0,014,384
09/2018	30,014,384	0	0	85,000	1,933,848	0	0	3	1,863,232
12/2018	31,863,232	2,625,000	0	85,000	1,505,652	1,076,117	848,883	3	3,983,884
03/2019	33,983,884	0	1,752	85,000	1,561,518	0	0	3	5,462,154
06/2019	35,462,154	0	15,268	85,000	2,740,932	0	0	3	8,133,354
09/2019	38,133,354	700,000	6,632	85,000	1,202,542	0	1,400,000	3	8,557,528
12/2019	38,557,528	1,575,000	103,916	85,000	2,128,505	0	2,100,000	4	0,179,949
	0	33,950,000	364,797	1,530,000	19,645,152	2,126,117	10,123,883	4	0,179,949

Returns

Net Portfolio Cumulative IRR = 18.10%

 Ratios

 Capital Account = \$40,179,949

 Total Value = \$52,429,949

 Committed Capital = \$35,000,000

 Paid In Capital = \$33,950,000

 Remaining Commitment = \$1,050,000

 PIC Multiple (Paid In Capital/Committed Capital) = 97.00%

 Total Economic Exposure (Capital Account + Remaining Commitment) = \$41,229,949

 TVPI Investment Multiple (Total Value/Paid In Capital) = 1.54x

 DPI Realization Multiple (Distributions/Paid In Capital) = 0.36x

 RVPI Residual Multiple (Capital Account/Paid In Capital) = 1.18x



# Portfolio Exposure Mix Abbott Fund VII, L.P. Period Ended December 31, 2019

The follow charts provide information on the portfolio mix with regards to Strategy, Geographic Region, and Industry.

#### Strategy Mix by Net Asset Value



#### **Geographic Mix by Net Asset Value**



#### Industry Mix by Net Asset Value



# Callan

21.00% 17.00% 14.00% 13.00% 7.00% 4.00% 20.00%

2.00% 1.00% 1.00%

# D.1

# Abbott Fund 2016, L.P. Period Ended December 31, 2019

#### Organization History

Abbott is an independent registered investment adviser founded in 1986 to provide investors with private equity portfolio management. Abbott's investment philosophy focuses on three aspects of the business: 1) access to top-performing partnerships; 2) a rigorous selection process; and 3) a commitment to diversification.

#### **Private Equity Allocation Overview**

Abbott has managed fund-of-funds private equity investments for MCERA since 2008. Abbott offers a recommended "core" portfolio, but allows clients to create their own customized portfolio by allocating capital across the following three strategy buckets: North America Private Equity; Ex-North America Private Equity; and, Venture Capital & Growth Equity. The AP 2016 model portfolio has the following recommended allocation: 45% to North America Private Equity (primarily buyout and control-oriented strategies); 25% to Ex-North America Private Equity (primarily buyout and control-oriented strategies); and, 30% to Venture and Growth Equity.

		Quarter						
	December 31, 2019	Change	September 30, 2019					
Summary								
Vintage Years	4 in 2016-2019		4 in 2016-2019					
# Total Partnerships	55	-	55					
# Active Partnerships	55	-	55					
# Liquidated Partnerships	0	-	0					
Changes in Value								
Capital Commitments	\$50,000,000	-	\$50,000,000					
Paid-In Capital	\$29,565,002	\$3,753,750	\$25,811,252					
Uncalled Capital	\$20,434,998	\$(3,753,750)	\$24,188,748					
% Paid-In	59.13%	7.51%	51.62%					
Distributed Capital	\$2,800,000	-	\$2,800,000					
Net Asset Value	\$31,375,389	\$5,482,503	\$25,892,886					
Total Realized and Unrealized Value	\$34,175,389	\$5,482,503	\$28,692,886					
Ratios and Performance								
Distributions to Paid-In Capital (DPI)	0.09x	(0.01)x	0.11x					
Residual Value to Paid-In Capital (RVPI)	1.06x	0.06x	1.00x					
Total Value to Paid-In Capital (TVPI)	1.16x	0.04x	1.11x					
Quartile Ranking	2nd		2nd					
Net IRR	11.24%	2.69%	8.55%					
Additional Performance Metrics								
Distribution Rate, as % of Beginning NAV		0.00%						
Unrealized Gain/(Loss), Dollars		\$1,728,753						
Unrealized Gain/(Loss), %		6.68%						

Quartile rankings against the All Private Equity, All Regions Refinitiv/Cambridge Database.

# Abbott Fund 2016, L.P. Private Equity Investment Portfolio Quarterly Changes in Market Value

	Beg. of	Capital								Dist. of		Return		End of
	Period	+ Contri-	+	Accounting	-	Mgmt.	+	Appre-	-	Income &	-	of	=	Period
	Market	butions		Income		Fees		ciation		Real. Gains		<u>Capital</u>		<u>Market</u>
03/2016	0	37,500		(4,687)		0		0		0		0		32,813
06/2016	32,813	1,950,000		(786)		0		41,420		0		0		2,023,447
09/2016	2,023,447	250,000		(1,897)		0		(531,113)		0		0		1,740,437
12/2016	1,740,437	662,500		(152,726)		0		63,410		0		0		2,313,621
03/2017	2,313,621	483,125		(1,727)		33,125		88,203		0		0		2,850,097
06/2017	2,850,097	745,625		(6,482)		33,125		125,662		0		0		3,681,777
09/2017	3,681,777	2,258,125		(5,592)		33,125		(15,656)		0		0		5,885,529
12/2017	5,885,529	1,433,125		(13,935)		33,125		238,162		0		0		7,509,756
03/2018	7,509,756	1,299,688		(4,724)		49,688		75,644		0	7	50,000		8,080,676
06/2018	8,080,676	2,818,438		(147)		49,688		311,710		0		0		11,160,989
09/2018	11,160,989	2,412,188		0		49,688		889,340		0		0		14,412,829
12/2018	14,412,829	4,024,688		0		49,688		572,005		312,606	1	62,394		18,484,834
03/2019	18,484,834	1,191,250		17,120		66,250		678,792		0		0		20,305,746
06/2019	20,305,746	4,116,250		(3,606)		66,250		612,321		950,000		0		24,014,461
09/2019	24,014,461	2,128,750		5,381		66,250		435,544		0	6	25,000		25,892,886
12/2019	25,892,886	3,753,750		46,958		66,250		1,748,045		0		0		31,375,389
	0	29.565.002		(126.850)		596.252		5.333.489		1.262.606	1.5	37.394		31.375.389

Returns

Net Portfolio Cumulative IRR = 11.24%

Ratios

Capital Account = \$31,375,389

Total Value = \$34,175,389

Committed Capital = \$50,000,000

Paid In Capital = \$29,565,002

Remaining Commitment = \$20,434,998

PIC Multiple (Paid In Capital/Committed Capital) = 59.13%

Total Economic Exposure (Capital Account + Remaining Commitment) = \$51,810,388

TVPI Investment Multiple (Total Value/Paid In Capital) = 1.16x

DPI Realization Multiple (Distributions/Paid In Capital) = 0.09x

RVPI Residual Multiple (Capital Account/Paid In Capital) = 1.06x

# Portfolio Exposure Mix Abbott Fund 2016, L.P. Period Ended December 31, 2019

The follow charts provide information on the portfolio mix with regards to Strategy, Geographic Region, and Industry.

#### Strategy Mix by Net Asset Value



#### **Geographic Mix by Net Asset Value**



North Atlantic	15.56%
West/Pacific Northwest	15.54%
Mid-West	12.40%
Southwest/Rockies	12.23%
Southeast	8.67%
Mid-Atlantic	2.60%
Europe	22.00%
Asia/Pacific	8.00%
Canada	2.00%
Other	1.00%

#### Industry Mix by Net Asset Value



Technology	39.00%
Consumer Discretionary	15.00%
Health Care	15.00%
Industrials	9.00%
Financial	8.00%
Other/Misc	5.00%
Energy	4.00%
Materials	3.00%
Communication Services	1.00%
Consumer Staples	1.00%

1



# Abbott Fund 2017, L.P. Period Ended December 31, 2019

#### Organization History

Abbott is an independent registered investment adviser founded in 1986 to provide investors with private equity portfolio management. Abbott's investment philosophy focuses on three aspects of the business: 1) access to top-performing partnerships; 2) a rigorous selection process; and 3) a commitment to diversification.

#### **Private Equity Allocation Overview**

Abbott has managed fund-of-funds private equity investments for MCERA since 2008. Abbott offers a recommended "core" portfolio, but allows clients to create their own customized portfolio by allocating capital across the following three strategy buckets: North America Private Equity; Ex-North America Private Equity; and, Venture Capital & Growth Equity. The AP 2016 model portfolio has the following recommended allocation: 45% to North America Private Equity (primarily buyout and control-oriented strategies); 25% to Ex-North America Private Equity (primarily buyout and control-oriented strategies); and, 30% to Venture and Growth Equity.

		Quarter				
	December 31, 2019	Change	September 30, 2019			
Summary						
Vintage Years	3 in 2017-2019		3 in 2017-2019			
# Total Partnerships	61	1	60			
# Active Partnerships	61	1	60			
# Liquidated Partnerships	0	-	0			
Changes in Value						
Capital Commitments	\$15,000,000	-	\$15,000,000			
Paid-In Capital	\$5,790,002	\$989,063	\$4,800,939			
Uncalled Capital	\$9,209,998	\$(989,063)	\$10,199,061			
% Paid-In	38.60%	6.59%	32.01%			
Distributed Capital	\$0	-	\$0			
Net Asset Value	\$6,396,194	\$1,249,794	\$5,146,400			
Total Realized and Unrealized Value	\$6,396,194	\$1,249,794	\$5,146,400			
Ratios and Performance						
Distributions to Paid-In Capital (DPI)	0.00x	-	0.00x			
Residual Value to Paid-In Capital (RVPI)	1.10x	0.03x	1.07x			
Total Value to Paid-In Capital (TVPI)	1.10x	0.03x	1.07x			
Quartile Ranking	2nd		2nd			
Net IRR	10.46%	2.54%	7.92%			
Additional Performance Metrics						
Distribution Rate, as % of Beginning NAV		0.00%				
Unrealized Gain/(Loss), Dollars		\$260,731				
Unrealized Gain/(Loss), %		5.07%				

Quartile rankings against the All Private Equity, All Regions Refinitiv/Cambridge Database.

# Abbott Fund 2017, L.P. Private Equity Investment Portfolio Quarterly Changes in Market Value

	Beg. of	Capital										End of
	Period	+ Contri-	+	Accounting	-	Mgmt.	+	Appre-	-	Distri-	=	Period
	<u>Market</u>	<u>butions</u>		Income		Fees		<u>ciation</u>		<u>butions</u>		<u>Market</u>
06/2017	0	60,000		0		0		0		0		60,000
09/2017	60,000	375,000		(5,136)		0		(1,293)		0		428,571
12/2017	428,571	108,750		(9,946)		0		(22,104)		0		505,271
03/2018	505,271	0		(585)		9,375		(11,886)		0		483,425
06/2018	483,425	723,750		558		9,375		3,600		0		1,201,958
09/2018	1,201,958	718,125		8,956		9,375		38,774		0		1,958,438
12/2018	1,958,438	845,625		0		9,375		25,493		0		2,820,181
03/2019	2,820,181	576,563		135		14,063		105,110		0		3,487,926
06/2019	3,487,926	1,034,063		(1,624)		14,063		106,013		0		4,612,315
09/2019	4,612,315	359,063		2,677		14,063		186,408		0		5,146,400
12/2019	5,146,400	989,063		(849)		14,063		275,643		0		6,396,194
	0	5,790,002		(5,814)		93,752		705,758		0		6,396,194

Returns

Net Portfolio Cumulative IRR = 10.46%

Ratios

Capital Account = \$6,396,194

Total Value = \$6,396,194

Committed Capital = \$15,000,000

Paid In Capital = \$5,790,002

Remaining Commitment = \$9,209,998

PIC Multiple (Paid In Capital/Committed Capital) = 38.60%

Total Economic Exposure (Capital Account + Remaining Commitment) = \$15,606,192

TVPI Investment Multiple (Total Value/Paid In Capital) = 1.10x

DPI Realization Multiple (Distributions/Paid In Capital) = 0.00x

RVPI Residual Multiple (Capital Account/Paid In Capital) = 1.10x

# Portfolio Exposure Mix Abbott Fund 2017, L.P. Period Ended December 31, 2019

The follow charts provide information on the portfolio mix with regards to Strategy, Geographic Region, and Industry.

#### Strategy Mix by Net Asset Value



#### **Geographic Mix by Net Asset Value**



#### Industry Mix by Net Asset Value



Technology	47.00%
Consumer Discretionary	14.00%
Health Care	14.00%
Financial	9.00%
Industrials	9.00%
Energy	4.00%
Other/Misc	2.00%
Consumer Staples	1.00%

# Callan

## Pathway Fund 2008, L.P. Period Ended December 31, 2019

#### **Organization History**

Pathway Capital Management is an independent registered investment advisor wholly owned by senior professionals. Pathway was formed in 1991 to provide institutional investors with specialized investment and advisory services.

#### **Private Equity Allocation Overview**

Pathway has managed fund-of-funds private equity investments for MCERA since 2008. MCERA committed \$100 million to PPEF 2008. The PPEF 2008 model portfolio has the following allocation targets: Buyouts 50-80%; Venture Capital 10-30%; and, Special Situations 5-25%.

		Quarter	
	December 31, 2019	Change	September 30, 2019
Summary			
Vintage Years	7 in 2008-2014		7 in 2008-2014
# Total Partnerships	34	-	34
# Active Partnerships	34	-	34
# Liquidated Partnerships	0	-	0
Changes in Value			
Capital Commitments	\$100,000,000	-	\$100,000,000
Paid-In Capital	\$97,213,687	\$313,110	\$96,900,577
Uncalled Capital	\$2,786,313	\$(313,110)	\$3,099,423
% Paid-In	97.21%	0.31%	96.90%
Distributed Capital	\$98,107,519	\$3,925,610	\$94,181,909
Net Asset Value	\$65,531,908	\$(666,834)	\$66,198,742
Total Realized and Unrealized Value	\$163,639,427	\$3,258,776	\$160,380,651
Ratios and Performance			
Distributions to Paid-In Capital (DPI)	1.01x	0.04x	0.97x
Residual Value to Paid-In Capital (RVPI)	0.67x	(0.01)x	0.68x
Total Value to Paid-In Capital (TVPI)	1.68x	0.03x	1.66x
Quartile Ranking	2nd		2nd
Net IRR	12.10%	0.13%	11.97%
Additional Performance Metrics			
Distribution Rate, as % of Beginning NAV		5.93%	
Unrealized Gain/(Loss), Dollars		\$2,945,666	
Unrealized Gain/(Loss), %		4.45%	

Quartile rankings against the All Private Equity, All Regions Refinitiv/Cambridge Database.

Uncalled capital above does not reflect currency fluctuations for Pathway's investments in foreign partnerships.



# Pathway Fund 2008, L.P. Private Equity Investment Portfolio Quarterly Changes in Market Value

	Beg. of	Capital				Dist. of	Return	End of
	Period	+ Contri-	+ Accounting	- Mgmt.	+ Appre-	- Income &	- of	= Period
	<u>Market</u>	butions	Income	Fees	<u>ciation</u>	<u>Real. Gains</u>	<u>Capital</u>	Market
03/2009	0	1,076,029	(188,219	) 239,674	(44,484)	0	0	603,652
06/2009	603,652	225,000	12,751	225,000	25,350	0	0	641,753
09/2009	641,753	1,378,170	(18,918	3) 225,000	11,082	0	0	1,787,087
12/2009	1,787,087	1,035,317	(44,412	225,000	147,728	0	0	2,700,720
03/2010	2,700,720	405,159	(53,049	) 225,000	(5,844)	0	0	2,821,986
06/2010	2,821,986	225,000	(21,154	) 225,000	25,978	0	0	2,826,810
09/2010	2,826,810	1,838,797	(64,478	3) 225,000	185,030	0	0	4,561,159
12/2010	4,561,159	1,963,461	(110,979	) 225,000	419,446	0	0	6,608,087
03/2011	6,608,087	841,483	(130,168	3) 225,000	294,087	0	0	7,388,489
06/2011	7,388,489	2,960,774	(195,945	i) 225,000	360,048	133,755	69,654	10,084,957
09/2011	10,084,957	5,609,888	(269,584	) 225,000	(6,300)	0	0	15,193,961
12/2011	15,193,961	2,617,948	(187,642	225,000	248,489	0	0	17,647,756
03/2012	17,647,756	3,281,785	(178,975	5) 225,000	988,475	0	0	21,514,041
06/2012	21,514,041	5,874,800	(180,902	225,000	760,197	331,545	120,080	27,291,511
09/2012	27,291,511	1,558,302	(303,779	) 225,000	899,373	260,954	215,388	28,744,065
12/2012	28,744,065	5,834,284	(169,691	) 225,000	1,625,909	288,586	275,607	35,245,374
03/2013	35,245,374	3,739,926	(218,400	) 225,000	1,421,844	78,940	352,195	39,532,608
06/2013	39,532,608	3,677,593	(215,653	3) 225,000	1,326,781	514,376	515,820	43,066,134
09/2013	43,066,134	4,300,914	(239,202	225,000	3,962,432	165,176	355,990	50,344,112
12/2013	50,344,112	4,737,239	(111,111	) 225,000	3,973,657	2,563,309	688,605	55,466,984
03/2014	55,466,984	2,991,940	(234,369	) 225,000	2,184,033	2,184,287	603,888	57,395,414
06/2014	57,395,414	4,830,737	(40,595	5) 225,000	5,287,891	700,955	519,113	66,028,379
09/2014	66,028,379	6,362,845	(15,978	3) 225,000	(442,225)	1,615,602	925,053	69,167,366
12/2014	69,167,366	5,447,108	(15,809	) 225,000	1,051,444	1,087,941	1,539,165	72,798,003
03/2015	72,798,003	2,649,114	(104,192	225,000	1,842,372	1,042,655	493,044	75,424,598
06/2015	75,424,598	3,272,435	(221,462	225,000	3,550,835	2,111,084	1,683,841	78,006,481
09/2015	78,006,481	4,176,250	120,879	225,000	343,727	1,544,796	1,341,251	79,536,290
12/2015	79,536,290	225,000	23,239	225,000	842,955	1,527,405	916,072	77,959,007
03/2016	77,959,007	935,586	(201,156	5) 225,000	1,039,791	1,597,545	891,664	77,019,019
06/2016	77,019,019	1,815,241	(105,542	2) 225,000	3,048,748	286,511	254,131	81,011,824
09/2016	81,011,824	225,000	310,669	225,000	3,247,256	1,794,669	1,352,657	81,422,423
12/2016	81,422,423	846,854	(184,084	) 223,533	3,704,271	1,787,524	1,582,132	82,196,274
03/2017	82,196,274	848,340	(71,649	) 202,500	6,172,475	2,361,427	1,367,307	85,214,206
06/2017	85,214,206	716,740	(113,776	5) 202,500	6,346,721	4,585,804	2,811,765	84,563,821
09/2017	84,563,821	2,727,321	(22,582	2) 202,500	3,260,373	4,951,070	1,552,892	83,822,471
12/2017	83,822,471	1,136,014	84,882	201,033	3,051,688	3,786,144	2,243,087	81,864,791
03/2018	81,864,791	1,816,033	(63,700	) 180,000	3,379,050	2,621,848	1,840,872	82,353,454
06/2018	82,353,454	362,321	(90,180	) 180,000	5,463,118	3,219,478	1,876,485	82,812,750
09/2018	82,812,750	180,000	(36,719	9) 180,000	2,722,252	3,034,294	/10,967	81,753,022
12/2018	81,753,022	760,714	2,454,418	178,533	(4,976,858)	4,073,203	4,979,613	70,759,948
03/2019	70,759,948	313,798	(53,055	b) 157,500	3,169,127	2,287,579	883,462	/0,861,276
06/2019	/0,861,276	248,505	88,136	157,500	3,567,505	3,106,930	1,823,611	69,677,380
09/2019	69,677,380	830,811	26,806	157,500	(427,650)	2,593,393	1,157,712	66,198,742
12/2019	66,198,742	313,110	(57,898	5) 156,033	3,159,596	2,433,043	1,492,567	65,531,908
	0	97,213,687	(1,413,227	) 9,368,805	77,207,772	60,671,829	37,435,690	65,531,908



## Pathway Fund 2008, L.P. Private Equity Investment Portfolio Quarterly Changes in Market Value

Returns

Net Portfolio Cumulative IRR = 12.10%

Ratios

Capital Account = \$65,531,908 Total Value = \$163,639,427 Committed Capital = \$100,000,000 Paid In Capital = \$97,213,687 Remaining Commitment = \$2,786,313 PIC Multiple (Paid In Capital/Committed Capital) = 97.21% Total Economic Exposure (Capital Account + Remaining Commitment) = \$68,318,221 TVPI Investment Multiple (Total Value/Paid In Capital) = 1.68x DPI Realization Multiple (Distributions/Paid In Capital) = 1.01x

RVPI Residual Multiple (Capital Account/Paid In Capital) = 0.67x

Uncalled capital above does not reflect currency flucations for Pathway's investments in foreign partnerships.



# Portfolio Exposure Mix Pathway Fund 2008, L.P. Period Ended December 31, 2019

The follow charts provide information on the portfolio mix with regards to Strategy, Geographic Region, and Industry.

#### Strategy Mix by Net Asset Value



#### **Geographic Mix by Net Asset Value**



West/Pacific Northwest	25.00%
Mid-West	16.00%
North Atlantic	9.00%
Mid-Atlantic	7.00%
Southeast	7.00%
Southwest/Rockies	5.00%
Europe	28.00%
Asia/Pacific	2.00%
Other	1.00%

#### Industry Mix by Net Asset Value



Technology	40.00%
Consumer Discretionary	19.00%
Health Care	17.00%
Financial	8.00%
Industrials	7.00%
Energy	3.00%
Consumer Staples	2.00%
Materials	2.00%
Communication Services	1.00%
Other/Misc	1.00%



# Pathway Fund VII, L.P. Period Ended December 31, 2019

#### **Organization History**

Pathway Capital Management is an independent registered investment advisor wholly owned by senior professionals. Pathway was formed in 1991 to provide institutional investors with specialized investment and advisory services.

#### **Private Equity Allocation Overview**

Pathway has managed fund-of-funds private equity investments for MCERA since 2008. MCERA committed \$35 million to PPEF I-7 in 2013. The PPEF I-7 model portfolio has the following allocation targets: Buyouts 45-75%; Venture Capital 10-25%; and, Special Situations 10-40%.

	December 21, 2010	Quarter	Sentember 20, 2010
	December 31, 2019	Change	September 30, 2019
Summary			
Vintage Years	5 in 2012-2016		5 in 2012-2016
# Total Partnerships	35	-	35
# Active Partnerships	35	-	35
# Liquidated Partnerships	0	-	0
Changes in Value			
Capital Commitments	\$35,000,000	-	\$35,000,000
Paid-In Capital	\$32,129,766	\$78,750	\$32,051,016
Uncalled Capital	\$2,870,234	\$(78,750)	\$2,948,984
% Paid-In	91.80%	0.22%	91.57%
Distributed Capital	\$12,487,388	\$1,730,440	\$10,756,948
Net Asset Value	\$38,741,105	\$1,270,983	\$37,470,122
Total Realized and Unrealized Value	\$51,228,493	\$3,001,423	\$48,227,070
Ratios and Performance			
Distributions to Paid-In Capital (DPI)	0.39x	0.05x	0.34x
Residual Value to Paid-In Capital (RVPI)	1.21x	0.04x	1.17x
Total Value to Paid-In Capital (TVPI)	1.59x	0.09x	1.50x
Quartile Ranking	2nd		2nd
Net IRR	15.38%	1.07%	14.31%
Additional Performance Metrics			
Distribution Rate, as % of Beginning NAV		4.62%	
Unrealized Gain/(Loss), Dollars		\$2,922,673	
Unrealized Gain/(Loss), %		7.80%	

Quartile rankings against the All Private Equity, All Regions Refinitiv/Cambridge Database.

Uncalled capital above does not reflect currency fluctuations for Pathway's investments in foreign partnerships.



# Pathway Fund VII, L.P. Private Equity Investment Portfolio Quarterly Changes in Market Value

	Beg. of	Capital						Dist. of	Return		End of
	Period	+ Contri-	+	Accounting	- Mgmt.	+	Appre-	- Income &	- of	=	Period
	Market	<u>butions</u>		Income	Fees		ciation	Real. Gains	<b>Capital</b>		<u>Market</u>
06/2013	0	182,380		(18,451)	125,125		(519)	0	0		38,285
09/2013	38,285	967,287		(16,803)	78,750		165,576	0	0		1,075,595
12/2013	1,075,595	429,401		(35,476)	78,750		17,150	0	0		1,407,920
03/2014	1,407,920	253,384		(53,550)	78,750		26,483	118,201	50,535		1,386,752
06/2014	1,386,752	1,182,797		(56,482)	78,750		96,874	45,516	14,318		2,471,357
09/2014	2,471,357	1,307,901		(79,494)	78,750		61,925	0	0		3,682,939
12/2014	3,682,939	1,774,195		(77,218)	78,750		38,699	24,090	10,558		5,305,217
03/2015	5,305,217	909,844		(87,649)	78,750		214,725	38,343	11,389		6,213,655
06/2015	6,213,655	2,348,015		(115,962)	78,750		380,626	59,983	25,510		8,662,091
09/2015	8,662,091	2,034,915		(109,351)	78,750		84,071	95,029	64,912		10,433,035
12/2015	10,433,035	1,909,065		(101,792)	78,750		246,958	43,905	76,006		12,288,605
03/2016	12,288,605	1,887,927		(110,775)	78,750		191,514	34,968	15,477		14,128,076
06/2016	14,128,076	150,044		(130,967)	78,750		554,488	98,157	51,888		14,472,846
09/2016	14,472,846	2,029,228		(84,224)	78,750		821,245	174,979	66,907		16,918,459
12/2016	16,918,459	1,807,454		(81,851)	78,750		828,814	142,641	113,096		19,138,389
03/2017	19,138,389	2,081,269		(93,961)	78,750		785,709	192,947	51,419		21,588,290
06/2017	21,588,290	124,242		(52,649)	78,750		1,040,561	249,347	129,638		22,242,709
09/2017	22,242,709	2,258,850		(85,415)	78,750		1,120,174	193,750	118,323		25,145,495
12/2017	25,145,495	3,036,491		(71,045)	78,750		1,650,270	454,549	272,344		28,955,568
03/2018	28,955,568	78,750		(55,810)	78,750		1,653,540	264,138	166,666		30,122,494
06/2018	30,122,494	1,357,146		(98,731)	78,750		1,749,616	692,146	352,027		32,007,602
09/2018	32,007,602	906,367		(41,319)	78,750		1,521,755	768,198	324,453		33,223,004
12/2018	33,223,004	1,314,768		477,323	78,750		(185,106)	865,317	497,493		33,388,429
03/2019	33,388,429	924,905		(91,599)	78,750		2,427,342	1,147,344	163,679		35,259,304
06/2019	35,259,304	715,641		(55,755)	78,750		2,445,674	575,314	192,795		37,518,005
09/2019	37,518,005	78,750		13,831	78,750		1,646,938	1,184,635	524,017		37,470,122
12/2019	37,470,122	78,750		(30,705)	78,750		3,032,128	1,214,003	516,437		38,741,105
	0	32.129.766		(1.345.880)	2.172.625	2	2.617.232	8.677.500	3.809.889		38.741.105

Returns

Net Portfolio Cumulative IRR = 15.38%

 Ratios

 Capital Account = \$38,741,105

 Total Value = \$51,228,493

 Committed Capital = \$35,000,000

 Paid In Capital = \$32,129,766

 Remaining Commitment = \$2,870,234

 PIC Multiple (Paid In Capital/Committed Capital) = 91.80%

 Total Economic Exposure (Capital Account + Remaining Commitment) = \$41,611,339

 TVPI Investment Multiple (Total Value/Paid In Capital) = 1.59x

 DPI Realization Multiple (Distributions/Paid In Capital) = 0.39x

 RVPI Residual Multiple (Capital Account/Paid In Capital) = 1.21x

Uncalled capital above does not reflect currency flucations for Pathway's investments in foreign partnerships.



# **Portfolio Exposure Mix** Pathway Fund VII, L.P. Period Ended December 31, 2019

The follow charts provide information on the portfolio mix with regards to Strategy, Geographic Region, and Industry.

#### Strategy Mix by Net Asset Value



#### **Geographic Mix by Net Asset Value**



Industry Mix by Net Asset Value



Technology	43.00%
Consumer Discretionary	24.00%
Health Care	8.00%
Industrials	8.00%
Financial	6.00%
Communication Services	3.00%
Other/Misc	3.00%
Consumer Staples	2.00%
Energy	2.00%
Materials	1.00%

21.00% 15.00% 12.00% 12.00% 6.00% 22.00% 4.00% 1.00%

# Callan

# Pathway Fund VIII, L.P. Period Ended December 31, 2019

#### **Organization History**

Pathway Capital Management is an independent registered investment advisor wholly owned by senior professionals. Pathway was formed in 1991 to provide institutional investors with specialized investment and advisory services.

#### **Private Equity Allocation Overview**

Pathway has managed fund-of-funds private equity investments for MCERA since 2008. MCERA committed \$50 million to PPEF I-8 in 2016. The PPEF I-8 model portfolio has the following allocation targets: Buyouts 45-75%; Venture Capital 10-25%; and, Special Situations 10-40%.

	December 21, 2010	Quarter Change	Sontombor 20, 2010
	December 31, 2019	Change	September 30, 2019
Summary			
Vintage Years	6 in 2015-2020		6 in 2015-2020
# Total Partnerships	38	-	38
# Active Partnerships	38	-	38
# Liquidated Partnerships	0	-	0
Changes in Value			
Capital Commitments	\$50,000,000	-	\$50,000,000
Paid-In Capital	\$31,849,257	\$747,512	\$31,101,745
Uncalled Capital	\$18,210,092	\$(747,512)	\$18,957,604
% Paid-In	63.70%	1.50%	62.20%
Distributed Capital	\$3,256,040	\$379,072	\$2,876,968
Net Asset Value	\$41,493,559	\$2,549,908	\$38,943,651
Total Realized and Unrealized Value	\$44,749,599	\$2,928,980	\$41,820,619
Ratios and Performance			
Distributions to Paid-In Capital (DPI)	0.10x	0.01x	0.09x
Residual Value to Paid-In Capital (RVPI)	1.30x	0.05x	1.25x
Total Value to Paid-In Capital (TVPI)	1.41x	0.06x	1.34x
Quartile Ranking	2nd		2nd
Net IRR	17.30%	0.75%	16.56%
Additional Performance Metrics			
Distribution Rate, as % of Beginning NAV		0.97%	
Unrealized Gain/(Loss), Dollars		\$2,181,468	
Unrealized Gain/(Loss), %		5.60%	

Quartile rankings against the All Private Equity, All Regions Refinitiv/Cambridge Database.

Uncalled capital above does not reflect currency fluctuations for Pathway's investments in foreign partnerships.



# Pathway Fund VIII, L.P. Private Equity Investment Portfolio Quarterly Changes in Market Value

	Beg. of	Capital	+ Accounting	Mamt	+ Annro	Dist. of	Return	Dist. of	End of
	Market	butions	Income	- Mgmt. Fees	ciation	Real. Gains	Capital	Capital	– Penou Market
12/2015	0	2,691,326	(111,742)	78,187	1,320	0	0	0	2,502,717
03/2016	2,502,717	140,048	(74,472)	0	18,536	1,766	0	0	2,585,063
06/2016	2,585,063	1,457,032	(58,698)	50,444	65,044	0	0	0	3,997,997
09/2016	3,997,997	2,317,441	(171,269)	50,444	322,194	18,549	20,257	0	6,377,113
12/2016	6,377,113	2,506,760	(158,884)	50,444	288,886	104,881	8,577	0	8,849,973
03/2017	8,849,973	210,109	(107,961)	52,966	478,140	57,436	11,873	0	9,307,986
06/2017	9,307,986	2,182,022	(127,175)	75,665	565,668	0	149,962	59,349	11,643,525
09/2017	11,643,525	2,419,889	(126,250)	75,665	587,214	103,863	40,028	0	14,304,822
12/2017	14,304,822	2,663,426	(179,281)	75,665	799,463	141,572	19,315	0	17,351,879
03/2018	17,351,879	1,682,946	(161,358)	78,187	1,508,468	17,981	34,167	0	20,251,600
06/2018	20,251,600	3,466,887	(161,726)	100,887	1,194,338	439,427	7,214	0	24,203,571
09/2018	24,203,571	1,930,887	(138,731)	100,887	2,317,537	0	0	0	28,212,377
12/2018	28,212,377	3,384,252	495,781	100,887	(53,373)	480,611	182,979	0	31,274,560
03/2019	31,274,560	1,776,537	(116,691)	100,887	2,151,073	35,770	267,962	0	34,680,860
06/2019	34,680,860	1,174,172	(159,949)	100,887	1,608,524	410,151	11,308	0	36,781,261
09/2019	36,781,261	1,098,012	(191,021)	100,887	1,608,257	209,086	42,886	0	38,943,651
12/2019	38,943,651	747,512	(167,514)	100,887	2,449,869	339,876	39,196	0	41,493,559
	0	31,849,257	(1,716,941)	1,293,876	15,911,159	2,360,969	835,722	59,349	41,493,559

Returns

Net Portfolio Cumulative IRR = 17.30%

Ratios

Capital Account = \$41,493,559

Total Value = \$44,749,599

Committed Capital = \$50,000,000

Paid In Capital = \$31,849,257

Remaining Commitment = \$18,210,092

PIC Multiple (Paid In Capital/Committed Capital) = 63.70%

Total Economic Exposure (Capital Account + Remaining Commitment) = \$59,703,651

TVPI Investment Multiple (Total Value/Paid In Capital) = 1.41x

DPI Realization Multiple (Distributions/Paid In Capital) = 0.10x

RVPI Residual Multiple (Capital Account/Paid In Capital) = 1.30x

Uncalled capital above does not reflect currency fluctuations for Pathway's investments in foreign partnerships.



# Portfolio Exposure Mix Pathway Fund VIII, L.P. Period Ended December 31, 2019

The follow charts provide information on the portfolio mix with regards to Strategy, Geographic Region, and Industry.

#### Strategy Mix by Net Asset Value



#### **Geographic Mix by Net Asset Value**



West/Pacific Northwest	19.00%
North Atlantic	17.00%
Southwest/Rockies	12.00%
Mid-West	11.00%
Southeast	6.00%
Mid-Atlantic	5.00%
Europe	18.00%
Asia/Pacific	8.00%
Other	4.00%

#### Industry Mix by Net Asset Value



Technology	40.00%
Consumer Discretionary	18.00%
Industrials	13.00%
Health Care	10.00%
Financial	9.00%
Energy	4.00%
Consumer Staples	2.00%
Materials	2.00%
Communication Services	1.00%
Other/Misc	1.00%



## Pathway Fund IX, L.P. Period Ended December 31, 2019

#### **Organization History**

Pathway Capital Management is an independent registered investment advisor wholly owned by senior professionals. Pathway was formed in 1991 to provide institutional investors with specialized investment and advisory services.

#### **Private Equity Allocation Overview**

Pathway has managed fund-of-funds private equity investments for MCERA since 2008. MCERA committed \$15 million to PPEF I-9 in 2017.

	December 31, 2019	Quarter Change	September 30, 2019
Summary			
Vintage Years	4 in 2017-2020		4 in 2017-2020
# Total Partnerships	38	-	38
# Active Partnerships	38	-	38
# Liquidated Partnerships	0	-	0
Changes in Value			
Capital Commitments	\$15,000,000	-	\$15,000,000
Paid-In Capital	\$6,206,049	\$1,746,630	\$4,459,419
Uncalled Capital	\$8,793,951	\$(1,746,630)	\$10,540,581
% Paid-In	41.37%	11.64%	29.73%
Distributed Capital	\$651,551	\$125,970	\$525,581
Net Asset Value	\$5,859,493	\$1,881,953	\$3,977,540
Total Realized and Unrealized Value	\$6,511,044	\$2,007,923	\$4,503,121
Ratios and Performance			
Distributions to Paid-In Capital (DPI)	0.10x	(0.01)x	0.12x
Residual Value to Paid-In Capital (RVPI)	0.94x	0.05x	0.89x
Total Value to Paid-In Capital (TVPI)	1.05x	0.04x	1.01x
Quartile Ranking	2nd		2nd
Net IRR	5.79%	4.72%	1.08%
Additional Performance Metrics			
Distribution Rate, as % of Beginning NAV		3.17%	
Unrealized Gain/(Loss), Dollars		\$261,293	
Unrealized Gain/(Loss), %		6.57%	

Quartile rankings against the All Private Equity, All Regions Refinitiv/Cambridge Database. Uncalled capital above does not reflect currency fluctuations for Pathway's investments in foreign partnerships.



# Pathway Fund IX, L.P. Private Equity Investment Portfolio Quarterly Changes in Market Value

	Beg. of	Capital				Dist. of	Return		End of
	Period	+ Contri-	+ Accounting	- Mgmt.	+ Appre-	- Income &	- of	=	Period
	<u>Market</u>	butions	Income	Fees	<u>ciation</u>	<u>Real. Gains</u>	<u>Capital</u>		Market
06/2017	0	38,481	(8,553)	6,951	(400)	0	0		22,577
09/2017	22,577	848,224	(13,312)	7,188	1,831	0	0		852,132
12/2017	852,132	7,187	(36,589)	7,187	79,265	0	0		894,808
03/2018	894,808	48,310	(19,374)	7,188	48,551	0	0		965,107
06/2018	965,107	291,005	(27,946)	14,138	90,856	0	0		1,304,884
09/2018	1,304,884	783,713	(30,483)	14,375	47,800	208,845	242,714		1,639,979
12/2018	1,639,979	736,618	(41,572)	14,375	(68,694)	25,275	9,443		2,217,238
03/2019	2,217,238	1,046,860	(40,871)	14,375	178,776	5,810	9,832		3,371,986
06/2019	3,371,986	387,632	(67,732)	21,326	131,890	19,554	4,108		3,778,788
09/2019	3,778,788	271,390	(53,848)	21,563	2,773	0	0		3,977,540
12/2019	3,977,540	1,746,630	(64,629)	21,563	347,485	108,649	17,321		5,859,493
	0	6,206,049	(404,909)	150,229	860,134	368,133	283,418		5,859,493

Returns

Net Portfolio Cumulative IRR = 5.79%

Ratios

Capital Account = \$5,859,493

Total Value = \$6,511,044

Committed Capital = \$15,000,000

Paid In Capital = \$6,206,049

Remaining Commitment = \$8,793,951

PIC Multiple (Paid In Capital/Committed Capital) = 41.37%

Total Economic Exposure (Capital Account + Remaining Commitment) = \$14,653,444

TVPI Investment Multiple (Total Value/Paid In Capital) = 1.05x

DPI Realization Multiple (Distributions/Paid In Capital) = 0.10x

RVPI Residual Multiple (Capital Account/Paid In Capital) = 0.94x

Uncalled capital above does not reflect currency fluctuations for Pathway's investments in foreign partnerships.



# Portfolio Exposure Mix Pathway Fund IX, L.P. Period Ended December 31, 2019

The follow charts provide information on the portfolio mix with regards to Strategy, Geographic Region, and Industry.

#### Strategy Mix by Net Asset Value



#### **Geographic Mix by Net Asset Value**



West/Pacific Northwest     North Atlantic     Mid-West     Southeast     Southwest/Rockies     Mid-Atlantic     Europe     outheast	23.00% 14.00% 12.00% 10.00% 4.00% 17.00%
<ul><li>Europe</li><li>Other</li><li>Asia/Pacific</li></ul>	17.00% 8.00% 2.00%

Industry Mix by Net Asset Value



Technology	45.00%
Consumer Discretionary	20.00%
Industrials	8.00%
Financial	7.00%
Health Care	7.00%
Energy	6.00%
Materials	3.00%
Communication Services	2.00%
Consumer Staples	1.00%
Other/Misc	1.00%



# Portfolio Breakdown Period Ended December 31, 2019

The table below summarizes mangers' breakdown by Strategy, Domestic & Global Geography and Industry.

	Abbott Fund	Abbott Fund	Abbott Fund	Abbott Fund	Pathway Fund 2008 L P	Pathway Fund VII I P	Pathway Fund VIII L P	Pathway Fund IX I P	Total Private Equity
	VI, E.I .	VII, L.I .	2010, 211.	2017, 2.1 .	2000, 2	VII, 2.1 .	•, ב	iX, E.i .	Equity
Strategy									
Venture Capital	40%	45%	30%	5%	27%	25%	24%	39%	32%
Buyout	32%	51%	48%	56%	58%	42%	54%	33%	47%
Special Situations	24%	-	-	-	13%	28%	17%	27%	15%
Secondary Interest	4%	4%	22%	38%	-	-	-	-	5%
Distressed for Control	-	-	-	-	2%	5%	5%	1%	2%
Domestic & Global Geo	oraphy								
North Atlantic	18%	17%	16%	17%	9%	15%	17%	14%	15%
West/Pacific Northwest	17%	21%	16%	15%	25%	21%	19%	23%	20%
Mid-West	15%	13%	12%	9%	16%	12%	11%	12%	14%
Southwest/Rockies	12%	14%	12%	19%	5%	12%	12%	10%	11%
Southeast	9%	7%	9%	19%	7%	6%	6%	10%	8%
Mid-Atlantic	6%	4%	3%	7%	7%	7%	5%	4%	6%
Europe	13%	20%	22%	10%	28%	22%	18%	17%	20%
Asia/Pacific	6%	2%	8%	2%	2%	1%	8%	2%	4%
Canada	3%	1%	2%	1%	-	-	-	-	1%
Other	1%	1%	1%	2%	1%	4%	4%	8%	2%
Industry									
Technology	34%	41%	39%	47%	40%	43%	40%	45%	39%
Health Care	20%	16%	15%	14%	17%	8%	10%	7%	15%
Consumer Discretionary	18%	10%	15%	14%	19%	24%	18%	20%	18%
Financial	10%	12%	8%	9%	8%	6%	9%	7%	9%
Industrials	8%	9%	9%	9%	7%	8%	13%	8%	9%
Energy	3%	6%	4%	4%	3%	2%	4%	6%	4%
Materials	3%	1%	3%	-	2%	1%	2%	3%	2%
Consumer Staples	2%	1%	1%	1%	2%	2%	2%	1%	2%
Communication Services	1%	1%	1%	-	1%	3%	1%	2%	1%
Utilities	1%	1%	-	-	-	-	-	-	0%
Other/Misc	-	2%	5%	2%	1%	3%	1%	1%	2%







Manager	Market Value	BPS per Tier	Tier Breaks	Actual Amount Per Tier	Yearly	Quarterly	Annual BPS
SSGA	\$453,072,349	5.00	On the first \$50,000,000	\$50,000,000	\$25,000	\$6,250	5.00
		4.00	\$50,000,000 to \$100,000,000	\$50,000,000	\$20,000	\$5,000	4.00
		2.00	On balance over \$100,000,000	\$353,072,349	\$70,614	\$17,004 \$28 904	2.00
				Total.	\$113,014	\$20,504	2.55
Dimensional	\$170,156,849	33.00	On all assets	\$170,156,849	\$561,518	\$140,379	33.00
				Total:	\$561,518	\$140,379	33.00
Morgan Stanley	\$141,584,494	75.00	On the first \$25,000,000	\$25,000,000	\$187,500	\$46,875	75.00
<b>U</b>		65.00	\$25,000,000 to \$75,000,000	\$50,000,000	\$325,000	\$81,250	68.33
		60.00	\$75,000,000 to \$100,000,000	\$25,000,000	\$150,000	\$37,500	66.25
		45.00	On balance over \$100,000,000	\$41,584,494	\$187,130	\$46,783	60.01
				l otal:	\$849,630	\$212,408	60.01
Artisan	\$154,028,348	80.00	On all assets	\$154,028,348	\$1,232,227	\$308,057	80.00
				Total:	\$1,232,227	\$308,057	80.00
TimosSquaro	\$82,004,677	85.00		\$82,004,677	\$607.040	\$174.260	85.00
TimesSquare	φo2,004,077	85.00	Off all assets	502,004,077 Total:	\$697,040 \$697.040	\$174,260 \$174.260	85.00
					<b>***</b> **	<b>*</b> *** <b>·</b> , <b>_</b> ***	
Parametric EM (CIT)	\$75,465,355	78.00	On all assets	\$75,465,355	\$588,630	\$147,157	78.00
				Total:	\$588,630	\$147,157	78.00
Wellington	\$255,105,608	30.00	On the first \$25,000,000	\$25,000,000	\$75,000	\$18,750	30.00
_		25.00	\$25,000,000 to \$50,000,000	\$25,000,000	\$62,500	\$15,625	27.50
		22.00	\$50,000,000 to \$100,000,000	\$50,000,000	\$110,000	\$27,500	24.75
		15.00	On balance over \$100,000,000	\$155,105,608	\$232,658	\$58,165	18.82
				Total:	\$480,158	\$120,040	18.82
Western Asset	\$136,002,652	30.00	On the first \$100,000,000	\$100,000,000	\$300,000	\$75,000	30.00
		15.00	On balance over \$100,000,000	\$36,002,652	\$54,004	\$13,501	26.03
				Total:	\$354,004	\$88,501	26.03
Colchester	\$133,607,272	60.00	On the first \$25,000,000	\$25,000,000	\$150,000	\$37,500	60.00
	,,,	50.00	\$25,000,000 to \$50,000,000	\$25,000,000	\$125,000	\$31,250	55.00
		35.00	\$50,000,000 to \$150,000,000	\$83,607,272	\$292,625	\$73,156	42.48
		30.00	On balance over \$150,000,000	\$0 Tatak	\$0 \$507.025	\$0	0.00
				Total:	\$367,623	\$141,906	42.48
Invesco Commodities	\$34,048,302	70.00	On all assets	\$34,048,302	\$238,338	\$59,585	70.00
				Total:	\$238,338	\$59,585	70.00
BlackRock TIPS	\$39,169,617	3.00	On all assets	\$30,160,617	\$11 751	\$2.038	3.00
BlackNock III 5	\$33,103,017	5.00		Total:	\$11,751	\$2,938	3.00
KBI Global Resources	\$35,514,750	85.00	On all assets	\$35,514,750	\$301,875	\$75,469	85.00
				l otal:	\$301,875	\$75,469	85.00
BlackRock REITS	\$31,928,575	6.00	On all assets	\$31,928,575	\$19,157	\$4,789	6.00
				Total:	\$19,157	\$4,789	6.00
Weedment ^A	\$17 205 078	0.00	On all assets	\$17 205 078	02	0.2	0.00
woodmont	\$17,393,078	0.00	Plus property management, leasing	\$17,395,076	φU	<del>م</del> 0	0.00
			advisory, and property disposition fees	Total:	\$0	\$0	0.00
			(not included)				
	\$121 860 373	95.50	On the first \$10,000,000	\$10,000,000	\$95 500	\$23,875	95.50
obs frumbul Property Fund	φ121,000,010	82.50	\$10.000.000 to \$25.000.000	\$15,000,000	\$123,750	\$30,938	87.70
		80.50	\$25,000,000 to \$50,000,000	\$25,000,000	\$201,250	\$50,313	84.10
		79.00	\$50,000,000 to \$100,000,000	\$50,000,000	\$395,000	\$98,750	81.55
		67.00	\$100,000,000 to \$250,000,000	\$21,860,373	\$146,464	\$36,616	78.94
		60.00	\$250,000,000 to \$400,000,000	\$0	\$0	\$0	0.00
		56.00	\$400,000,000 to \$600,000,000	\$0	\$0 \$0	\$0	0.00
	Plus Incentive Fee	52.00 (not included ar	On balance over \$ 600,000,000 of suspended for 2 years starting 2018)	\$0 Total:	\$0 \$961 964	\$0	0.00
	25% Loyalty Discount	on \$100 million	for 4 years (effective $1/1/20 - 12/31/23$ )	Total.	\$758,089	\$189,522	62.21
AEW Core Property Trust	\$104,081,635	110.00	On the first \$10,000,000	\$10,000,000	\$110,000	\$27,500	110.00
		100.00	\$10,000,000 to \$25,000,000 \$25,000,000 to \$50,000,000	\$15,000,000	\$150,000	\$37,500 \$52,125	104.00
		80.00	\$25,000,000 to \$50,000,000 \$50,000,000 to \$100,000,000	\$25,000,000	\$212,500	\$03,125 \$100,000	94.50
		75.00	On balance over \$100,000,000	\$4.081.635	\$30.612	\$7.653	86.77
				Total:	\$903,112	\$225,778	86.77
	\$40 cos	405.00		<b>610 005</b>	<b>#</b> 450	<b>\$</b> \$\$\$	105.00
AEW Partners V°	\$12,025	125.00	Un net asset value	\$12,025	\$150 \$150	\$38 \$38	125.00 125.00
				Total.	φ130	ψ30	125.00

# D.1

Manager	Market Value	BPS per Tier	Tier Breaks	Actual Amount	Yearly	Quarterly	Annual BPS
	\$59,415,532		Called Capital	Per Lier			
ADDOLLACE VI	φ00,+10,002		Fees On Committed Capital				
	\$100,000,000	100.00	On the first \$25,000,000	\$25,000,000	\$250,000	\$62,500	100.00
	\$100,000,000	90.00	\$25,000,000 to \$50,000,000	\$25,000,000	\$225,000	\$56,250	95.00
		75.00	On balance over \$50.000.000	\$50.000.000	\$375,000	\$93,750	85.00
				Total:	\$850,000	\$212,500	85.00
	\$40,004,040						
ADDOTT ACE VII	\$40,034,343		Fees On Committed Capital				
	\$35,000,000	100.00	On the first \$25,000,000	\$25,000,000	\$62 500	\$15 625	25.00
	\$00,000,000	90.00	\$25,000,000 to \$50,000,000	\$10,000,000	\$22,500	\$5 625	20.00
		75.00	On balance over \$50,000,000	\$0	\$0	\$0	0.00
		10.00		Total:	\$85.000	\$21.250	24.29
					\$00,000	<b>\$</b> _1,200	220
Abbott AP 2016 ^E	\$33,550,389		Called Capital				
			Fees On Committed Capital				
			Assets stacked for tiered fees				
	\$50,000,000	60.00	On the first \$15,000,000	\$15,000,000	\$90,000	\$22,500	60.00
		50.00	On the next \$350,000,000	\$35,000,000	\$175,000	\$43,750	53.00
				Total:	\$265,000	\$66,250	53.00
Abbott AP 2017 ^E	\$6,842,444		Called Capital				
			Fees On Committed Capital				
			Fee rate takes into account prior				
			commitments in last 10 years				
	\$15,000,000	50.00	On the first \$15,000,000	\$15,000,000	\$75,000	\$18,750	50.00
				Total:	\$75,000	\$18,750	50.00
	<b>A</b> 04.004.775		Colled Conital				
Pathway PPEF 2008	\$64,891,775		Called Capital	<b>A</b> 400.000.000	<b>*</b> ***	<b>A</b> 005 000	
	\$100,000,000	90.00	Fees On Committed Capital	\$100,000,000	\$900,000	\$225,000	90.00
				Total:	\$900,000	\$225,000	90.00
Pathanan PPEE LaF	¢20.755.247		Called Capital				
Pathway PPEF I-7	\$36,755,347	00.00	Ease On Committed Capital	\$25,000,000	\$215 000	¢70.7E0	00.00
	\$33,000,000	90.00	Tees on committee capital	\$35,000,000	\$315,000	\$78,750	90.00
				Total.	\$313,000	\$70,750	50.00
Bothway BBEE L 9 ^F	\$43,455,936		Called Capital				
Falliway FFEF 1-0	\$50,000,000	90.00	Fees On Committed Capital	\$50,000,000	\$450,000	\$112 500	90.00
	\$00,000,000	00.00		Total:	\$450,000	\$112,500	90.00
					\$ 100,000	¢ <u>=</u> ,000	00.00
Pathway PPEF I-9 ^G	\$6,174,505		Called Capital				
	<b>T</b>		Fees On Committed Capital				
			Fee rate takes into account portion				
	\$15,000,000	80.00	of prior commitments	\$15,000,000	\$120,000	\$30,000	80.00
			· ·	Total:	\$120,000	\$30,000	80.00
Parametric Overlay	\$18,000		Annual Retainer	\$18,000	\$18,000	\$4,500	
	\$63,854,242	20.00	On the first \$25,000,000	\$25,000,000	\$50,000	\$12,500	20.00
		10.00	On balance over \$25,000,000	\$38,854,242	\$38,854	\$9,714	16.73
				Total:	\$106,854	\$26,714	16.73
Total Fund:	\$2,342,073,078				\$10,845,774	\$2,711,444	0.46%

The effective annual fee is an approximation based on the recent quarter market values and the managers' yearly fee schedules.

A Woodmont's fees were revised and they no longer charge for advisory and asset management services. The property management fees are 2% of monthly collected rent receipts for single tenant buildings and 4% for multi-tenant buildings. Leasing advisory fees are 1% of lease rent for single-tentant buildings and 1% for multi-tenant buildings if no commission is paid by MCERA to an outside broker. Additionally, property disposition services have been added and vary by property.
^B UBS receives a performance incentive that could increase fees by as much as 25 bps. This fee has been suspended for two years beginning 2Q18.

^CAEW's fee is now calculated based on the net asset value (no longer total committed capital of \$5mm).

^D Abbott's fee is calculated based on the total committed capital (\$100mm for ACE VI), not the paid in amount. Fees are scaled in: 50% in year 1, 75% in year 2, and 100% in year 3. Fees decline by 10% after year 7, and each year thereafter.

^EAbbott's fee is calculated based on the total committed capital (\$35mm for ACE VII, \$50mm for AP 2016, \$15mm for AP 2017), not the paid in amount. Fees are scaled in: 25% in year 1, 50% in year 2, 75% in year 3, and 100% in year 4. Fees decline by 10% after year 8, and each year thereafter. To the extent the term of the Fund is extended beyond the 12th anniversary, the fee will decline by 25% per year. No fees charged after 15 years. Fees for AP 2016 are tiered. MCERA's assets are stacked to determine the starting tier. Fee rate for AP 2017 is based on prior commitments over the last 10 years. The AP 2017 commitment is charged in the 50 bp, \$150-\$500 mm bracket. Management fees are waived in 2017 for AP 2017 (early closer discount).

^F Pathway's fee is calculated based on the total committed capital (\$100mm for PPEF 2008, \$35mm for PPEF I-7, and \$50mm for PPEF I-8). Fees decline 10% per year after year 8.

^G Pathway's fee is calculated based on the total committed capital (\$15mm for PPEF I-9). Management fee rate takes into account a portion of prior commitments by the investor to prior PCM funds. The PPEF I-9 commitment is charged in the 80 bp, \$25-\$50 mm bracket. Fees are scaled in: 25% in year 1, 50% in year 2, 75% in year 3, and 100% in year 4. Fees decline 10% per year starting in year 9-15. After year 15, fee will remain 20% of full fee (\$25.5k) for as long as a capital account exists.

Callan

# Marin County Employees' Retirement Association Target History

Domestic Equity	Russell 3000 Index	32.00%
Intl Equity	MSCI ACWI xUS IMI Index	22.00%
Fixed Income	Barclay's Aggregate Index	11.50%
Fixed Income	Barclay's Intermediate Credit Index	5.75%
Fixed Income	Citi World Govt Bond (Unhedged)	5.75%
Private Equity	Russell 3000 Index	6.40%
Private Equity	MSCI ACWI xUS IMI Index	1.60%
Real Assets	S&P Global Natural Resources (Net Div)	1.75%
Real Assets	Bloomberg Commodity Index - Total Return	1.75%
Real Assets	S&P Dow Jones US Select REIT	1.75%
Real Assets	BImbg US TIPS Index	1.75%
Real Assets	NFI-ODCE Equal Weight Net	8.00%

100.00%

30-Sep-2016 - 30-S	Sep-2017	
Domestic Equity	Russell 3000 Index	32.00%
Intl Equity	MSCI ACWI xUS IMI Index	22.00%
Fixed Income	Barclay's Aggregate Index	11.50%
Fixed Income	Barclay's Intermediate Credit Index	5.75%
Fixed Income	Citi World Govt Bond (Unhedged)	5.75%
Private Equity	Russell 3000 Index	6.40%
Private Equity	MSCI ACWI xUS IMI Index	1.60%
Real Assets	S&P Global Natural Resources (Net Div)	1.75%
Real Assets	Bloomberg Commodity Index - Total Return	1.75%
Real Assets	Blmbg US TIPS Index	1.75%
Real Assets	MSCI US REIT Index	1.75%
Real Assets	NFI-ODCE Equal Weight Net	8.00%
		100.00%

31-Dec-2015 - 30-Sep-2016					
Domestic Equity	Russell 3000 Index	32.00%			
Intl Equity	MSCI ACWI xUS IMI Index	22.00%			
Fixed Income	Barclay's Aggregate Index	11.50%			
Fixed Income	Barclay's Intermediate Credit Index	5.75%			
Fixed Income	Citi World Govt Bond (Unhedged)	5.75%			
Private Equity	Russell 3000 Index	6.40%			
Private Equity	MSCI ACWI xUS IMI Index	1.60%			
Real Assets	Bloomberg Commodity Index - Total Return	1.75%			
Real Assets	BImbg US TIPS Index	1.75%			
Real Assets	MSCI US REIT Index	1.75%			
Real Assets	S&P Global Commodity and Resources Index	1.75%			
Real Assets	NFI-ODCE Equal Weight Net	8.00%			

100.00%

30-Jun-2015 - 31-De	ec-2015	
Domestic Equity	Russell 3000 Index	32.00%
Intl Equity	MSCI ACWI xUS IMI Index	22.00%
Fixed Income	Barclay's Aggregate Index	11.50%
Fixed Income	Barclay's Intermediate Credit Index	5.75%
Fixed Income	Citi World Govt Bond (Unhedged)	5.75%
Private Equity	Russell 3000 Index	6.40%
Private Equity	MSCI ACWI xUS IMI Index	1.60%
Real Assets	Bloomberg Commodity Index - Total Return	1.75%
Real Assets	BImbg US TIPS Index	1.75%
Real Assets	MSCI US REIT Index	1.75%
Real Assets	S&P Global Commodity and Resources Index	1.75%
Real Assets	NFI-ODCE Equal Weight Net	8.00%
	1	00.00%

31-Dec-2014 - 30-Jun-2015				
Domestic Equity	Russell 3000 Index	36.50%		
Intl Equity	MSCI ACWI xUS IMI Index	22.00%		
Fixed Income	Barclay's Aggregate Index	11.50%		
Fixed Income	Barclay's Intermediate Credit Index	5.75%		
Fixed Income	Citi World Govt Bond (Unhedged)	5.75%		
Private Equity	Russell 3000 Index	6.40%		
Private Equity	MSCI ACWI xUS IMI Index	1.60%		
Real Assets	NFI-ODCE Equal Weight Net	10.50%		
		100.00%		

30-Sep-2014 - 31-I	Dec-2014	
Domestic Equity	Russell 3000 Index	36.50%
Intl Equity	MSCI ACWI xUS IMI Index	22.00%
Fixed Income	Barclay's Aggregate Index	11.50%
Fixed Income	Citi World Govt Bond (Unhedged)	5.75%
Private Equity	Russell 3000 Index	6.40%
Private Equity	MSCI ACWI xUS IMI Index	1.60%
Real Assets	NCREIF Property Index	10.50%
		100.00%
31-Mar-2014 - 30-5	Sep-2014	
Domestic Equity	Russell 3000 Index	39.50%
Intl Equity	MSCI ACWI xUS IMI Index	22.00%
Fixed Income	Barclay's Aggregate Index	11.50%
Fixed Income	Citi World Govt Bond (Unbedged)	5.75%
Private Equity	Russell 3000 Index	4.00%
Private Equity	MSCI ACWI xUS IMI Index	1.00%
Real Assets	NCREIF Property Index	10.50%
		100.00%
30-Jun-2013 - 31-N	/ar-2014	
Domestic Equity	Russell 3000 Index	39.50%
Intl Equity	MSCI ACWI XUS IMI Index Barclay's Aggregate Index	22.00%
Private Equity	Russell 3000 Index	23.00%
Private Equity	MSCI ACWI xUS IMI Index	1.00%
Real Assets	NCREIF Property Index	10.50%
		100.00%
30-Sep-2012 - 30	lun-2013	
Domestic Equity	Russell 3000 Index	38.00%
Intl Equity	MSCI ACWI xUS IMI Index	21.50%
Fixed Income	Barclay's Aggregate Index	26.00%
Private Equity	Russell 3000 Index	3.20%
Real Assets	NCREIF Property Index	10.50%
		100.00%
20 Con 2011 20 0	202 2012	
Su-Sep-2011 - Su-S	Buscell 2000 Index	40.00%
Intl Fauity	MSCLACWLXUS IMLINdex	40.00%
Fixed Income	Barclay's Aggregate Index	26.00%
Private Equity	Russell 3000 Index	1.20%
Private Equity	MSCI ACWI xUS IMI Index	0.80%
Real Assets	NCREIF Property Index	10.50%
		100.00%
30-Jun-2010 - 30-S	Sep-2011	
Domestic Equity	Russell 3000 Index	41.50%
Fixed Income	Barclay's Aggregate Index	21.50% 26.00%
Private Equity	Russell 3000 Index	0.30%
Private Equity	MSCI ACWI xUS IMI Index	0.20%
Real Assets	NCREIF Property Index	10.50%
		100.00%
31-Dec-2008 - 30	Jun-2010	
Domestic Equity	S&P 500 Index	35.50%
Domestic Equity	KUSSEII 2000 INDEX	9.00%
Fixed Income	Barclay's Aggregate Index	23.00%
Private Equity	Russell 3000 Index	0.50%
Real Assets	NCREIF Property Index	12.00%
		100.00%
31-De <u>c-2004 - 31-</u>	Dec-2008	
Domestic Equity	S&P 500 Index	36.00%
Domestic Equity	Russell 2000 Index	9.00%
Intl Equity	MSCI EAFE Index (USD Net Div)	20.00%
Real Assets	NCREIF Property Index	23.00% 12.00%
		100.00%
		100.0070

# Marin County Employees' Retirement Association Target History

30-Jun-2001 - 31-E	Dec-2004				
Domestic Equity Domestic Equity Intl Equity Fixed Income	S&P 500 Index Russell 2000 Index MSCI EAFE Index (USD Net Div) Barclay's Aggregate Index	36.00% 9.00% 20.00% 23.00%			
Real Assets	NCREIF Classic Index	12.00%			
		100.00%			
31-Dec-1999 - 30-	Jun-2001				
Domestic Equity Domestic Equity Real Estate Intl Equity Fixed Income Fixed Income	S&P 500 Index Russell 2000 Index NCREIF Classic Index MSCI EAFE Index (USD Net Div) Barclay's Aggregate Index WGBI Hedged Benchmark	36.00% 9.00% 12.00% 20.00% 19.00% 4.00%			
		100.00%			
30-Jun-1998 <u>- 31-</u> [	Dec-1999				
Domestic Equity Domestic Equity Domestic Equity Domestic Equity Fixed Income Real Estate Intl Equity Fixed Income	S&P 500 Value S&P 500 Index Russell 2000 Index S&P 500 Growth Barclay's Aggregate Index NCREIF Classic Index MSCI EAFE Index (USD Net Div) WGBI Hedged Benchmark	23.00% 10.00% 7.00% 23.00% 12.00% 15.00% 5.00%			
30-Jun-1995 - 30-Jun-1998					
Domestic Equity Domestic Equity Domestic Equity Domestic Equity Fixed Income Real Estate Intl Equity Fixed Income	S&P 500 Value S&P 500 Index Russell 2000 Index S&P 500 Growth Barclay's Aggregate Index NCREIF Classic Index MSCI EAFE Index (USD Net Div) Citi World Govt Bond (Unhedged)	23.00% 10.00% 7.00% 23.00% 12.00% 15.00% 5.00%			
		100.00%			

# Marin County Employees' Retirement Association Manager History

Manager	Asset Class	Start Date	End Date
SSGA	Domestic Equity (Large Cap Core - Passive)	11/30/2010	
BlackRock (BGI)	Domestic Equity (Large Cap Core - Passive)	03/31/1999	10/31/2006
BlackRock (BGI)	Domestic Equity (Large Cap Core - Alpha Tilt)	08/31/1996	09/30/2006
Dodge & Cox	Domestic Equity (Large Cap Value)	04/30/1996	12/31/2012
RCM	Domestic Equity (Large Cap Growth)	08/31/2001	12/31/2012
BlackRock (BGI)	Domestic Equity (Large Cap Growth - Passive)	02/29/1996	08/31/2001
BlackRock (BGI)	Domestic Equity (Large Cap 130/30)	09/30/2006	11/30/2010
DFA	Domestic Equity (Small Cap Value)	10/31/1999	11/30/2018
DFA	Domestic Equity (Small Cap Core)	11/30/2018	
Columbus Circle	Domestic Equity (Small Cap Growth)	11/30/2009	11/30/2018
Mazama Capital	Domestic Equity (Small Cap Growth)	04/30/2001	11/30/2009
BlackRock (BGI)	Domestic Equity (Small Cap Growth - Passive)	01/31/2000	05/31/2001
Analytic Investors	Domestic Equity (US Market Neutral)	03/31/2004	04/30/2011
FIAM (Pyramis)	Domestic Equity (US Market Neutral)	12/31/2003	04/30/2011
Numeric Investors	Domestic Equity (US Market Neutral)	09/30/2003	04/30/2011
FirstQuadrant	Domestic Equity (European Market Neutral)	07/31/2006	06/30/2010
Analytic Investors	Domestic Equity (Japan Market Neutral)	07/31/2006	06/30/2010
Morgan Stanley	International Equity (Value)	07/31/2001	
Artisan Partners	Interntional Equity (Growth)	12/31/2002	
Montgomery Asset	International Equity (Growth)	01/31/2001	12/31/2002
Putnam Investments	International Equity	12/31/2002	07/31/2005
Zurich Scudder	International Equity	10/31/1996	07/31/2001
TimesSquare Capital Management	International Equity (Small Cap)	05/01/2019	
Fidelity Institutional Asset Management	International Equity (Small Cap)	09/30/2006	04/30/2019
AXA Rosenburg	International Equity (Small Cap Value)	09/30/2006	04/30/2010
Parametric	International Equity (Emerging Markets - Commingled Fund)	10/31/2013	
Parametric	International Equity (Emerging Markets - Mutual Fund)	08/31/2010	11/30/2016
Wellington Management	Fixed Income (Core Plus)	03/31/2012	
Wellington Management	Fixed Income (Core)	09/30/2002	03/31/2012
Western Asset	Fixed Income (Intermediate Credit)	03/31/2014	
Western Asset	Fixed Income (Core Plus)	08/31/2001	03/31/2014
Seneca	Fixed Income (Core)	06/30/1995	09/30/2002
Colchester	Fixed Income (Global Unhedged)	02/28/2014	
BlackRock (BGI)	Fixed Income (Global Hedged)	06/30/1998	05/31/2001
INVESCO	Real Assets (Commodities)	05/31/2016	
BlackRock	Real Assets (Commodities - Passive)	06/30/2015	05/31/2016
KBI Global Investors	Real Assets (Global Natural Resource Equity)	09/30/2016	
SSGA	Real Assets (Global Natural Resource Equity - Passive)	06/30/2015	09/30/2016
BlackRock	Real Assets (REITS - Passive)	09/30/2017	
Vanguard	Real Assets (REITS - Passive)	06/30/2015	09/30/2017
BlackRock	Real Assets (TIPS - Passive)	06/30/2015	
AEW Core Property Trust	Real Estate (Core)	06/30/2013	
UBS Trumbull Property Fund	Real Estate (Core)	06/30/2013	
Cornerstone Patriot Fund	Real Estate (Core)	09/30/2012	06/30/2013
ING Clarion	Real Estate (Core)	04/30/2006	06/30/2012
Woodmont	Real Estate (Discretionary Separate Account)	06/30/1995	09/30/2015
AEW Partners V Fund	Real Estate (Value Added)	03/31/2006	
RREEF America REIT III	Real Estate (Value Added)	06/30/2006	12/31/2017
Abbott Fund VI, L.P.	Private Equity	03/31/2009	
Abbott Fund VII, L.P.	Private Equity	03/31/2014	
Abbott Fund 2016	Private Equity	03/31/2016	
Abbott Fund 2017	Private Equity	03/31/2017	
Pathway Private Equity 2008	Private Equity	03/31/2009	
Pathway PE I-7	Private Equity	06/30/2013	
Pathway PE I-8	Private Equity	09/30/2015	
Pathway PE I-9	Private Equity	03/31/2017	
Parametric (Clifton) - Overlay	Policy Implementation Overlay	08/31/2001	
Parametric (Clifton) - Overlay	Alpha Transport - Bondized	11/30/2006	08/31/2010
Parametric (Clifton) - Overlay	Alpha Transport - Equitized	11/30/2006	04/30/2011



Definitions
#### **Equity Market Indicators**

The market indicators included in this report are regarded as measures of equity or fixed income performance results. The returns shown reflect both income and capital appreciation.

Russell 1000 Growth measures the performance of those Russell 1000 companies with higher price-to-book ratios and higher forecasted growth values.

**Russell 1000 Value** measures the performance of those Russell 1000 companies with lower price-to-book ratios and lower forecasted growth values.

**Russell 2000 Growth** contains those Russell 2000 securities with a greater than average growth orientation. Securities in this index tend to exhibit higher price-to-book and price-earning ratios, lower dividend yields and higher forecasted growth values than the Value universe.

**Russell 2000 Index** is composed of the 2000 smallest stocks in the Russell 3000 Index, representing approximately 11% of the U.S. equity market capitalization.

**Russell 2000 Value** contains those Russell 2000 securities with a less than average growth orientation. Securities in this index tend to exhibit lower price-to-book and price-earning ratios, higher dividend yields and lower forecasted growth values than the Growth universe.

Standard & Poor's 500 Index is designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries. The index is capitalization-weighted, with each stock weighted by its proportion of the total market value of all 500 issues. Thus, larger companies have a greater effect on the index.

Standard & Poor's/Citi Growth Index is a composite of the firms in the S&P 500 Index which, based on three growth and four value factors, exhibit stronger growth characteristics. The index is designed so that it represents roughly fifty percent of the market capitalization of the S&P 500 Index. Generally, companies in the Growth Index have higher growth rates of earnings, sales and return on equity than those in the Value Index. Like the full S&P 500 Index, the Growth Index is capitalization-weighted.

Standard & Poor's/Citi Value Index is a composite of the firms in the S&P 500 Index which, based on three growth and four value factors, exhibit stronger value characteristics. The index is designed so that it represents roughly fifty percent of the market capitalization of the S&P 500 Index. Generally, companies in the Value Index have higher dividend yields and book value, cash flow, and sales to price ratios than those in the Growth Index. Like the full S&P 500 Index, the Value Index is capitalization-weighted.

#### **Fixed Income Market Indicators**

The market indicators included in this report are regarded as measures of equity or fixed income performance results. The returns shown reflect both income and capital appreciation.

**90-Day U.S. Treasury Bills** provide a measure of riskless return. The rate of return is the average interest rate available on the beginning of each month for a Treasury Bill maturing in ninety days.

Bloomberg Barclays 1-3 Year Government Index is composed of agency and Treasury securities with maturities of one to three years.

Bloomberg Barclays Aggregate Bond Index is a combination of the Mortgage Backed Securities Index and the intermediate and long-term components of the Government/Credit Bond Index.

**Bloomberg Barclays Capital Govt/Credit Bond Index** is a composite of all publicly issued, fixed rate, non-convertible, domestic bonds. The issues are rated at least BBB, have a minimum outstanding principal of \$100 million for U.S. Government issues or \$50 million for other bonds, and have a maturity of at least one year. The index is capitalization-weighted.

Bloomberg Barclays Govt/Credit Intermediate Index is one of the components of the Government/Credit Index which includes only bonds with maturities between one to ten years.

**Citigroup Broad Investment-Grade Bond Index** is a composite of all institutionally traded U.S. Treasury, agency, mortgage, and corporate securities. The issues are rated BBB- or better, have remaining maturities of one year or longer and at least \$25 million outstanding. The index is capitalization-weighted.

**Citigroup Government Bond Index** is a composite that covers investments in all types of U.S. Government Debt outstanding. The index offers total returns on a broad base of government fixed-income securities with maturities of at least one year.

**Citigroup Long Term High-Grade Bond Index** is a composite of approximately 800 industrial, financial, and utility bonds. The issues are rated AA or AAA and have a maturity of at least 12 years. The index is weighted by the outstanding principal amount of each issue.

#### **International Equity Market Indicators**

The market indicators included in this report are regarded as measures of equity or fixed income performance results. The returns shown reflect both income and capital appreciation.

**FT-Actuaries World Index** is composed of at least 70% of the aggregate market value of every country's domestic exchange-listed companies' shares of stock, approximately 2400 common stocks. The index includes only markets, companies and securities where direct holdings of capital by foreign nationals is permissible. The index is capitalization-weighted; includes currency changes and is expressed in terms of U.S. dollars.

**MSCI ACWI (All Country World Index) Index** The MSCI ACWI (All Country World Index) Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets. As of May 27, 2010 the MSCI ACWI consisted of 45 country indices comprising 24 developed and 21 emerging market country indices. The developed market country indices included are: Australia, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom and the United States. The emerging market country indices included are: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Morocco, Peru, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, and Turkey.

**MSCI ACWI ex US Index** The MSCI ACWI ex US(All Country World Index) Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets, excluding the US. As of May 27, 2010 the MSCI ACWI consisted of 45 country indices comprising 24 developed and 21 emerging market country indices. The developed market country indices included are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom. The emerging market country indices included are: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Morocco, Peru, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, and Turkey.

**Morgan Stanley Capital International (MSCI) EAFE Index** is composed of approximately 1000 equity securities representing the stock exchanges of Europe, Australia, New Zealand and the Far East. The index is capitalization-weighted and is expressed in terms of U.S. dollars.

**Morgan Stanley Capital International (MSCI) Europe Index** is composed of approximately 600 equity securities representing the stock exchanges of 14 European countries. The index is capitalization-weighted and is expressed in terms of U.S. dollars.

**Morgan Stanley Capital International (MSCI) Japan Index** is composed of approximately 270 equity securities representing the stock exchanges of Japan. The index is capitalization-weighted and is expressed in terms of U.S. dollars.

**Morgan Stanley Capital International (MSCI) Pacific Index** is composed of approximately 350 equity securities representing the stock exchanges of Japan, Hong Kong, Singapore, Malaysia, plus approximately 70 Australian and New Zealand securities. The index is capitalization-weighted and is expressed in terms of U.S. dollars.

**Morgan Stanley Capital International (MSCI) United Kingdom Index** is composed of approximately 140 equity securities representing the stock exchanges of the United Kingdom. The index is capitalization-weighted and is expressed in terms of U.S. dollars.

**Morgan Stanley Capital International (MSCI) World Index** is composed of approximately 1500 equity securities representing the stock exchanges of the USA, Europe, Canada, Australia, New Zealand and the Far East. The index is capitalization-weighted; includes currency changes and is expressed in terms of U.S. dollars.



## **International Equity Market Indicators**

**Morgan Stanley Capital Intl (MSCI) Emerging Markets Free Index** is composed of about 549 equity securities representing the stock exchanges of 13 countries in Central Asia and the Far East, Latin America, Europe, and the Middle East. Only 20% of Korea's market capitalization is included in this index. The index is market capitalization-weighted and is expressed in terms of U.S. dollars.

## **Fixed Income Market Indicators**

**Bloomberg Barclays US TIPS Index** The Bloomberg Barclays US Government Inflation-Linked Bond Index measures the performance of the US Treasury Inflation Protected Securities ("TIPS") market. The index includes TIPS with one or more years remaining maturity with total outstanding issue size of \$500m or more.

## D.1

#### **Callan Databases**

In order to provide comparative investment results for use in evaluating a fund's performance, Callan gathers rate of return data from investment managers. These data are then grouped by type of assets managed and by the type of investment manager. Except for mutual funds, the results are for tax-exempt fund assets. The databases, excluding mutual funds, represent investment managers who handle over 80% of all tax-exempt fund assets.

#### **Real Estate Funds**

Real estate funds consist of open or closed-end commingled funds. The returns are net of fees and represent the overall performance of commingled institutional capital invested in real estate properties.

**CAI Total Real Estate Funds** - The Total Real Estate Funds Database consists of both open and closed-end commingled funds managed by real estate firms.

#### Other Funds

**Public - Total** - consists of return and asset allocation information for public pension funds at the city, county and state level. The database is made up of Callan clients and non-clients.

#### **Callan Databases**

In order to provide comparative investment results for use in evaluating a fund's performance, Callan gathers rate of return data from investment managers. These data are then grouped by type of assets managed and by the type of investment manager. Except for mutual funds, the results are for tax-exempt fund assets. The databases, excluding mutual funds, represent investment managers who handle over 80% of all tax-exempt fund assets.

#### **Equity Funds**

Equity funds concentrate their investments in common stocks and convertible securities. The funds included maintain well-diversified portfolios.

**Core Equity** - Managers whose portfolio holdings and characteristics are similar to that of the broader market as represented by the Standard & Poor's 500 Index, with the objective of adding value over and above the index, typically from sector or issue selection. The core portfolio exhibits similar risk characteristics to the broad market as measured by low residual risk with Beta and R-Squared values close to 1.00 and combined growth and value z-score values close to 0.00.

Large Cap Growth - Managers who invest mainly in large companies that are expected to have above average prospects for long-term growth in earnings and profitability. Future growth prospects take precedence over valuation levels in the stock selection process. Invests in companies with P/E ratios, Price-to-Book values, Return-on-Assets values, Growth-in-Earnings values above the broader market. The companies typically have zero dividends or dividend yields below the broader market. Invests in securities which exhibit greater volatility than the broader market as measured by the securities' Beta and Standard Deviation. Portfolios have high growth z-scores and low value z-scores.

Large Cap Value - Managers who invest primarily in large companies believed to be currently undervalued in the general market and whose shares are priced below the market compared to their peers. Valuation issues take precedence over near term earnings prospects in the stock selection process. The Large Cap Value Style invests in companies with P/E ratios, Return-on-Equity values, and Price-to-Book values below the broader market and the middle capitalization segment. This style invests in securities with risk/reward profiles in the lower risk range of the medium capitalization market. Portfolios have low growth z-scores and high value z-scores.

**Small Capitalization (Growth)** - Managers who invest mainly in small companies that are expected to have above average prospects for long-term growth in earnings and profitability. Future growth prospects take precedence over valuation levels in the stock selection process. The Small Cap Growth Style invests in companies with P/E ratios, Price-to Book values, and Growth-in Earnings values above the broader market, in addition to the small capitalization market segment. The companies typically have zero dividends or dividend yields below the broader market. The securities exhibit greater volatility than the broader market as well as the small capitalization market segment as measured by the risk statistics values Beta and Standard Deviation. Portfolios have high growth z-scores and low value z-scores.

**Small Capitalization (Value)** - Managers who invest in small capitalization companies that are believed to be currently undervalued in the general market. Valuation issues take precedence over near-term earnings prospects in the stock selection process. The companies are expected to have a near-term earnings rebound and eventual realization of expected value. The Small Cap Value Style invests in companies with P/E ratios, Return-on-Equity values, and Price-to-Book values below the broader market in addition to the small capitalization market segment. This style invests in securities with dividend yields in the high range for the small capitalization market. The Small Cap Value Style invests in securities with risk/reward profiles in the lower risk range of the small capitalization market. Portfolios have low growth z-scores and high value z-scores.

#### **Callan Databases**

In order to provide comparative investment results for use in evaluating a fund's performance, Callan gathers rate of return data from investment managers. These data are then grouped by type of assets managed and by the type of investment manager. Except for mutual funds, the results are for tax-exempt fund assets. The databases, excluding mutual funds, represent investment managers who handle over 80% of all tax-exempt fund assets.

#### **Equity Funds**

Equity funds concentrate their investments in common stocks and convertible securities. The funds included maintain well-diversified portfolios.

**Core International Equity Style** Managers whose portfolio holdings and characteristics are similar to that of the broader developed market as represented by the MSCI EAFE Index, with the objective of adding value over and above the index, typically from country, sector, or issue selection. The Core portfolio is broadly diversified and exhibits similar risk characteristics to the developed market as measured by low residual risk with Beta and R-Squared values close to 1.00 and combined growth and value z-score values close to 0. Exposure to emerging markets and smaller capitalization stocks is limited.

**Non-U.S. Equity** A broad array of active managers who employ various strategies to invest assets in a well-diversified portfolio of non-U.S. equity securities. This group consists of all Core, Core Plus, Growth, and Value international products, as well as products using various mixtures of these strategies. Region-specific, index, emerging market, or small cap products are excluded.

#### **Balanced Funds**

Balanced funds diversify their investments among common stocks, bonds, preferred stocks and money market securities. The funds included maintain well-diversified equity and fixed income portfolios.

**International Growth Style Group** International Growth Equity Style managers invest predominantly in companies that are expected to have above average prospects for long-term growth in earnings and profitability. Future growth prospects take precedence over valuation levels in stock selection. The International Growth Equity Style group consists of broad developed market mandates with incidental exposure to the emerging markets.

**International Value Style Group** International Value Equity Style managers invest predominantly in companies believed to be currently undervalued in the general market. The companies are expected to have a near-term earnings rebound and eventual realization of expected value. The International Value Equity Style group consists of broad developed market mandates with incidental exposure to the emerging markets.

#### **Callan Databases**

In order to provide comparative investment results for use in evaluating a fund's performance, Callan gathers rate of return data from investment managers. These data are then grouped by type of assets managed and by the type of investment manager. Except for mutual funds, the results are for tax-exempt fund assets. The databases, excluding mutual funds, represent investment managers who handle over 80% of all tax-exempt fund assets.

#### **Fixed Income Funds**

Fixed Income funds concentrate their investments in bonds, preferred stocks, and money market securities. The funds included maintain well-diversified portfolios.

**Core Bond** - Managers who construct portfolios to approximate the investment results of the Bloomberg Barclays Capital Government/Credit Bond Index or the Bloomberg Barclays Capital Aggregate Bond Index with a modest amount of variability in duration around the index. The objective is to achieve value added from sector and/or issue selection.

**Core Plus Bond** - Active managers whose objective is to add value by tactically allocating significant portions of their portfolios among non-benchmark sectors (e.g. high yield corporate, non-US\$ bonds, etc.) while maintaining majority exposure similar to the broad market.

**Defensive** - Managers whose objective is to minimize interest rate risk by investing predominantly in short to intermediate term securities. The average portfolio duration is similar to the duration of the Merrill Lynch 1-3 Year Bond Index.

**Extended Maturity** - Managers whose average portfolio duration is greater than that of the Bloomberg Barclays Capital Government/Credit Bond Index. These portfolios exhibit risk/return characteristics similar to the long-bond portion of the Bloomberg Barclays Capital Government/Credit Index, called the Bloomberg Barclays Capital Government/Credit Long Bond Index. Variations in bond portfolio characteristics are made to enhance performance results. This results in an aggressive risk/return profile that embraces interest rate risk in search of both high yields as well as capital gains.

**Intermediate** - Managers whose objective is to lower interest rate risk while retaining reasonable yield levels by investing primarily in intermediate term securities. The average portfolio duration is similar to that of the duration of the Bloomberg Barclays Capital Intermediate Government/Credit Bond Index.

#### **Risk/Reward Statistics**

The risk statistics used in this report examine performance characteristics of a manager or a portfolio relative to a benchmark (market indicator) which assumes to represent overall movements in the asset class being considered. The main unit of analysis is the excess return, which is the portfolio return minus the return on a risk free asset (3 month T-Bill).

**Alpha** measures a portfolio's return in excess of the market return adjusted for risk. It is a measure of the manager's contribution to performance with reference to security selection. A positive alpha indicates that a portfolio was positively rewarded for the residual risk which was taken for that level of market exposure.

**Beta** measures the sensitivity of rates of portfolio returns to movements in the market index. A portfolio's beta measures the expected change in return per 1% change in the return on the market. If a beta of a portfolio is 1.5, a 1 percent increase in the return on the market will result, on average, in a 1.5 percent increase in the return on the portfolio. The converse would also be true.

**Downside Risk** stems from the desire to differentiate between "good risk" (upside volatility) and "bad risk" (downside volatility). Whereas standard deviation punishes both upside and downside volatility, downside risk measures only the standard deviation of returns below the target. Returns above the target are assigned a deviation of zero. Both the frequency and magnitude of underperformance affect the amount of downside risk.

**Excess Return Ratio** is a measure of risk adjusted relative return. This ratio captures the amount of active management performance (value added relative to an index) per unit of active management risk (tracking error against the index.) It is calculated by dividing the manager's annualized cumulative excess return relative to the index by the standard deviation of the individual quarterly excess returns. The Excess Return Ratio can be interpreted as the manager's active risk/reward tradeoff for diverging from the index when the index is mandated to be the "riskless" market position.

**Information Ratio** measures the manager's market risk-adjusted excess return per unit of residual risk relative to a benchmark. It is computed by dividing alpha by the residual risk over a given time period. Assuming all other factors being equal, managers with lower residual risk achieve higher values in the information ratio. Managers with higher information ratios will add value relative to the benchmark more reliably and consistently.

**R-Squared** indicates the extent to which the variability of the portfolio returns are explained by market action. It can also be thought of as measuring the diversification relative to the appropriate benchmark. An r-squared value of .75 indicates that 75% of the fluctuation in a portfolio return is explained by market action. An r-squared of 1.0 indicates that a portfolio's returns are entirely related to the market and it is not influenced by other factors. An r-squared of zero indicates that no relationship exists between the portfolio's return and the market.

**Relative Standard Deviation** is a simple measure of a manager's risk (volatility) relative to a benchmark. It is calculated by dividing the manager's standard deviation of returns by the benchmark's standard deviation of returns. A relative standard deviation of 1.20, for example, means the manager has exhibited 20% more risk than the benchmark over that time period. A ratio of .80 would imply 20% less risk. This ratio is especially useful when analyzing the risk of investment grade fixed-income products where actual historical durations are not available. By using this relative risk measure over rolling time periods one can illustrate the "implied" historical duration patterns of the portfolio versus the benchmark.

**Residual Portfolio Risk** is the unsystematic risk of a fund, the portion of the total risk unique to the fund (manager) itself and not related to the overall market. This reflects the "bets" which the manager places in that particular asset market. These bets may reflect emphasis in particular sectors, maturities (for bonds), or other issue specific factors which the manager considers a good investment opportunity. Diversification of the portfolio will reduce or eliminate the residual risk of that portfolio.

#### **Risk/Reward Statistics**

**Rising Declining Periods** refer to the sub-asset class cycles vis-a-vis the broader asset class. This is determined by evaluating the cumulative relative sub-asset class index performance to that of the broader asset class index. For example, to determine the Growth Style cycle, the S&P 500 Growth Index (sub-asset class) performance is compared to that of the S&P 500 Index (broader asset class).

**Sharpe Ratio** is a commonly used measure of risk-adjusted return. It is calculated by subtracting the "risk-free" return (usually 3 Month Treasury Bill) from the portfolio return and dividing the resulting "excess return" by the portfolio's risk level (standard deviation). The result is a measure of return gained per unit of risk taken.

**Sortino Ratio** is a downside risk-adjusted measure of value-added. It measures excess return over a benchmark divided by downside risk. The natural appeal is that it identifies value-added per unit of truly bad risk. The danger of interpretation, however, lies in these two areas: (1) the statistical significance of the denominator, and (2) its reliance on the persistence of skewness in return distributions.

**Standard Deviation** is a statistical measure of portfolio risk. It reflects the average deviation of the observations from their sample mean. Standard deviation is used as an estimate of risk since it measures how wide the range of returns typically is. The wider the typical range of returns, the higher the standard deviation of returns, and the higher the portfolio risk. If returns are normally distributed (ie. has a bell shaped curve distribution) then approximately 2/3 of the returns would occur within plus or minus one standard deviation from the sample mean.

**Total Portfolio Risk** is a measure of the volatility of the quarterly excess returns of an asset. Total risk is composed of two measures of risk: market (non-diversifiable or systematic) risk and residual (diversifiable or unsystematic) risk. The purpose of portfolio diversification is to reduce the residual risk of the portfolio.

**Tracking Error** is a statistical measure of a portfolio's risk relative to an index. It reflects the standard deviation of a portfolio's individual quarterly or monthly returns from the index's returns. Typically, the lower the Tracking Error, the more "index-like" the portfolio.

**Treynor Ratio** represents the portfolio's average excess return over a specified period divided by the beta relative to its benchmark over that same period. This measure reflects the reward over the risk-free rate relative to the systematic risk assumed.

Note: Alpha, Total Risk, and Residual Risk are annualized.

#### **Common Stock Portfolio Characteristics**

**D**.1

All Portfolio Characteristics are derived by first calculating the characteristics for each security, and then calculating the weighted average of these values for the portfolio.

**Diversification Ratio** - The ratio of the number of securities comprising the most concentrated half of the portfolio market value (see Issue Concentration) divided by the total number of portfolio securities (see Number of Securities). This value expresses to what extent a portfolio is equally weighted versus concentrated, given the number of names in the portfolio. This value can range from a high of 50% (equal weighted) to a low of 1% (half of the portfolio in 1% of the names).

**Dividend Yield** - The total amount of dividends paid out for a stock over the preceding twelve months divided by the closing price of a share of the common stock.

**Forecasted Long-Term Earnings Growth** - This growth rate is a measure of a company's expected long-term success in generating future year-over-year earnings growth. This growth rate is a market value weighted average of the consensus (mean) analysts' long-term earnings growth rate forecast for each company in the portfolio. The definition of long-term varies by analyst but is limited to a 3-8 year range. This value is expressed as the expected average annual growth of earnings in percent.

**Forecasted Price/Earnings Ratio** - This ratio is a forward-looking valuation measure of a company's common stock. It encapsulates the amount of earnings estimated for next year per dollar of current share price. This value is calculated by dividing the present stock price of each company in the portfolio by the consensus (mean) analysts' earnings forecasts for the next year. These earnings estimates are for recurring, non-extraordinary earnings per primary common share.

**Issue Diversification** - A measure of portfolio concentration in individual issues (securities). This number represents how many different securities (names) comprise the most concentrated half of the portfolio assets (half of the assets are in how many names?). This measure is useful in evaluating the concentration/diversification of portfolios made up of many issues but concentrated in a small subset of those issues (e.g. 100 stocks with 50% of assets in 10 stocks, Issue Diversification = 10).

**Market Capitalization (weighted median)** - The weighted median market cap is the point at which half of the market value of the portfolio is invested in stocks with a greater market cap, and consequently the other half is invested in stocks with a lower market cap.

**Number of Securities** - This is a simple portfolio diversification measure representing the number of unique non-cash securities (names) currently held in the portfolio. This measure does not address potential concentration of assets within these securities (see Issue Concentration).

**Price/Book Value** - The Price to Book Value is a measure of value for a company. It is equal to the market value of all the shares of common stock divided by the book value of the company. The book value is the sum of capital surplus, common stock, and retained earnings.

**Relative Sector Variance** - A measure illustrating how significantly a portfolio currently differs from the sector weights of the index. This measure is the sum of the differences (absolute value) between the portfolio and index sector weights across all sectors. The higher the number the more aggressive the deviation from the index sector weights, and vice versa. This relative risk measure can help explain the magnitude of past tracking error and potential future tracking error versus the index.

## **Common Stock Portfolio Characteristics**

**Sector Concentration** - A measure of current portfolio diversification by economic sector (equity) or market sector (fixed income) to illustrate potential risk from concentrated sector exposures. The measure itself represents how few sectors contain half of the portfolio market value. A low number means the assets are concentrated in a few sectors and potentially highly exposed to the risks of those sectors.

#### **Fixed Income Portfolio Characteristics**

All Portfolio Characteristics are derived by first calculating the characteristics for each security, and then calculating the market value weighted average of these values for the portfolio.

Allocation by Sector - Sector allocation is one of the tools which managers often use to add value without impacting the duration of the portfolio. The sector weights exhibit can be used to contrast a portfolio's weights with those of the index to identify any significant sector bets.

**Average Coupon** - The average coupon is the market value weighted average coupon of all securities in the portfolio. The total portfolio coupon payments per year are divided by the total portfolio par value.

**Average Moody's Rating for Total Portfolio** - A measure of the credit quality as determined by the individual security ratings. The ratings for each security, from Moody's Investor Service, are compiled into a composite rating for the whole portfolio. Quality symbols range from Aaa+ (highest investment quality - lowest credit risk) to C (lowest investment quality - highest credit risk).

Average Option Adjusted (Effective) Convexity - Convexity is a measure of the portfolio's exposure to interest rate risk. It is a measure of how much the duration of the portfolio will change given a change in interest rates. Generally, securities with negative convexities are considered to be risky in that changes in interest rates will result in disadvantageous changes in duration. When a security's duration changes it indicates that the stream of expected future cash-flows has changed, generally having a significant impact on the value of the security. The option adjusted convexity for each security in the portfolio is calculated using models developed by Lehman Brothers and Salomon Brothers which determine the expected stream of cash-flows for the security based on various interest rate scenarios. Expected cash-flows take into account any put or call options embedded in the security, any expected sinking-fund paydowns or any expected mortgage principal prepayments.

Average Option Adjusted (Effective) Duration - Duration is one measure of the portfolio's exposure to interest rate risk. Generally, the higher a portfolio's duration, the more that its value will change in response to interest rate changes. The option adjusted duration for each security in the portfolio is calculated using models developed by Lehman Brothers and Salomon Brothers which determine the expected stream of cash-flows for the security based on various interest rate scenarios. Expected cash-flows take into account any put or call options embedded in the security, any expected sinking-fund paydowns or any expected mortgage principal prepayments.

**Average Price** - The average price is equal to the portfolio market value divided by the number of securities in the portfolio. Portfolios with an average price above par will tend to generate more current income than those with an average price below par.

Average Years to Expected Maturity - This is a measure of the market-value-weighted average of the years to expected maturity across all of the securities in the portfolio. Expected years to maturity takes into account any put or call options embedded in the security, any expected sinking-fund paydowns or any expected mortgage principal prepayments.

Average Years to Stated Maturity - The average years to stated maturity is the market value weighted average time to stated maturity for all securities in the portfolio. This measure does not take into account imbedded options, sinking fund paydowns, or prepayments.

**Current Yield** - The current yield is the current annual income generated by the total portfolio market value. It is equal to the total portfolio coupon payments per year divided by the current total portfolio market value.

## **Fixed Income Portfolio Characteristics**

**Duration Dispersion** - Duration dispersion is the market-value weighted standard deviation of the portfolio's individual security durations around the total portfolio duration. The higher the dispersion, the more variable the security durations relative to the total portfolio duration ("barbellness"), and the smaller the dispersion, the more concentrated the holdings' durations around the overall portfolio's ("bulletness"). The purpose of this statistic is to gauge the "bulletness" or "barbellness" of a portfolio relative to its total duration and to that of its benchmark index.

**Effective Yield** - The effective yield is the actual total annualized return that would be realized if all securities in the portfolio were held to their expected maturities. Effective yield is calculated as the internal rate of return, using the current market value and all expected future interest and principal cash flows. This measure incorporates sinking fund paydowns, expected mortgage principal prepayments, and the exercise of any "in-the-money" imbedded put or call options.

**Weighted Average Life** - The weighted average life of a security is the weighted average time to payment of all remaining principal. It is calculated by multiplying each expected future principal payment amount by the time left to the payment. This amount is then divided by the total amount of principal remaining. Weighted average life is commonly used as a measure of the investment life for pass-through security types for comparison to non-pass-through securities.

#### **General Terms**

**Private Equity:** Refers to equity and equity-related investments in companies that are not quoted on the stock exchange. Investments are typically illiquid in nature. Ownership is typically accessed through limited partnership interests.

Vintage Year: The year in which a private equity partnership makes its first investment.

**J Curve Effect:** A common phenomenon associated with a developing private equity program where the return during the first several years can be moderately negative prior to larger positive returns developing (hence the "J" representation). The actual curve is depicted by plotting the return generated by a private equity fund against time (from inception to termination). In the early years of a developing program the payment of management fees out of drawn down capital does not produce an equivalent book value. Consequently, a private equity fund will initially show a negative return. For more detailed information on the "J-Curve Effect" ask to see Callan's Whitepaper on the topic.

#### **Cash Flow and Valuation Definitions**

Commitment: The amount of a limited partner's obligation to a private equity fund.

**Capital Contribution:** The amount of the commitment that has been called by the general partner for company investments and also fees and expenses. Capital contributed is also referred to as paid-in capital.

**Recycling/Reinvestment and Recallable Cash Flows:** Private equity vehicles are usually characterized by the prohibition (unless stipulated by agreement) to reinvest proceeds or allow redemptions. This means that unless otherwise agreed to, private equity funds must distribute proceeds from investments to limited partners and cannot reinvest that capital. In some cases, distributions are "recallable", that is, after the fund distributes proceeds to its investors, it can draw down the same capital again, which makes it possible for the fund to draw capital in excess of its total committed capital.

Distributions include both recallable and non-recallable distributions. This means that a recallable distribution must be treated as an actual distribution and, if and when that distribution is called again, it must be treated as additional paid-in capital but must not reduce unfunded commitments or change cumulative committed capital.

It should be noted that recallable distributions have an impact on the metric calculations. For example, this recallable feature means that cumulative paid-in capital can be higher than cumulative committed capital. It also means that, all other things being equal, the DPI, RVPI, and TVPI multiples will be lower for funds with recallable distributions as the denominator will be increased. It also means that the PIC multiple (paid-in capital to cumulative committed capital) will be higher for funds with recallable distributions, all other things being equal. (Source: GIPS Guidance Statement on Private Equity, January 2011)

Distribution: The returns of cash or securities that an investor in a private equity fund receives.

**Market Value or Net Asset Value (NAV):** The carrying value of the investments as determined by the general partner of a partnership in accordance with a limited partnership's valuation policy.

#### Major Components

#### **Venture Capital**

 Seed Capital – An initial investment funding a start-up company's initial activities, such as business plan development, initial management and employee hiring, prototype development, and product beta testing

- Series A first round of institutional investment capital
- Series B second round of institutional investment capital
- Series C third round of institutional investment capital (Source: VCExperts)
- Early Stage Funding a company typically subsequent to its seed stage that has a founding or core senior management team, has proven its concept or completed its beta test, has minimal revenues, and no positive earnings or cash flows. (Source: VCExperts)
- Later Stage Financing for the expansion of a company that is producing, shipping its product, and increasing its sales volume. Later stage funds often provide the financing to help a company achieve critical mass in order to position its shareholders for an exit event (e.g., an IPO or strategic sale of the company). (Source: VCExperts)

#### **Buyouts / Corporate Finance**

- Leveraged Buyout The acquisition of a company using a combination of equity and borrowed funds. Generally the target company's assets act as the collateral for the loans taken out by the acquiring group. The acquiring group then repays the loan from the cash flow of the acquired company. For example, a group of investors may borrow funds, using the assets of the company as collateral, in order to take ownership of a company. (Source: VCExperts)
- Management Buyout A private equity firm will often provide financing to enable current operating management to acquire a significant stake in the business they manage, along with the private equity firm providing significant equity and arranging other financing. (Source: VCExperts)

#### Categorizations of Buyout Funds by Fund Size:

Small Buyout	(\$0 to \$1 billion)
Medium Buyout	(\$1 billion to \$3 billion)
Large Buyout	(\$3 billion to \$7 billion)
Mega Buyout	(\$7 billion +)

**Mezzanine (Subordinated Debt):** An investment strategy that involves providing capital or financing that is below the senior debt and above the equity in terms of liquidation priority. Mezzanine is analogous to private high yield debt and typically includes preferred stock and warrants. The majority of return is provided through coupon payments and equity rights typically increase the return. Mezzanine debt is commonly structured as part of a Buyout transaction.

**Distressed Debt:** Investing in corporate bonds of companies that have either filed for bankruptcy or appear likely to do so in the near future. The strategy of distressed debt involves first becoming a major creditor of the target company by buying up a company's bonds at a deep discount to par. Securing a position as a key creditor allows for influence regarding the plan for reorganization of the company. In the event of liquidation distressed debt investors have a senior position to the equity holders for priority of repayment and normally recover the full par value of debt securities. Usually a reorganization allows the company to avoid or emerge from bankruptcy protection. In some instances distressed debt firms convert the debt obligations to equity in the company, and gain majority control of the newly capitalized business. (*Source: VCExperts*)

**Secondary Investing:** There is a private equity secondary market where investors in private equity funds can privately negotiate the sale of their interest(s) to a new buyer. Secondary funds are vehicles which buy (invest in)

secondary partnership interests purchased from pre-existing investors. Usually secondary purchases are made at a discount to the partnerships' stated valuation.

**Fund-of-Funds:** A vehicle established to invest in a diversified portfolio of private equity partnerships over a period of several vintage years. The underlying partnerships in turn invest the capital in companies. Investing in fund-of-funds can help spread the risk of investing in private equity because they invest the capital in a variety of funds and provide diversification by general partner, industry, geography, time and strategy. Fund-of-funds are specialist private equity investors and have existing relationships with general partner firms. Fund-of-funds may be able to provide investors with a route to investing in partnerships that would otherwise not be available to them. (*Source: VCExperts*)

#### **Performance Metrics**

**DPI** = Distributions as a ratio of (divided by) paid-in capital (notionally a DPI ratio of 0.60 means that 60 cents has been distributed back to investors for every dollar contributed).

**RVPI** = Residual Value (NAV) as a ratio of (divided by) paid-in capital (notionally a RVPI ratio of 0.70 means that the remaining investment(s) is currently valued at 70 cents for every dollar contributed.

**TVPI** = Total Value (Distributions + Net Asset Value) as a ratio of (divided by) paid-in capital. Notionally a TVPI ratio of 1.30 means that the investment has created a total gain of 30 cent for every dollar contributed. TVPI is composed of both returned capital and residual value (e.g., DPI of 0.60 + RVPI of 0.70 = TVPI of 1.30).

**Public Market Equivalent (PME) TVPI:** A TVPI calculated by applying the called capital and distributed capital of the private equity investment as an equivalent purchase and sale of the chosen benchmark. The calculated net asset value (NAV) is then used to calculate the benchmark's RVPI, which is subsequently added to the investors actual DPI to get a benchmark TVPI. The figure is intended to evaluate the investor's total value if they had moved money in and out of the chose benchmark instead of the partnership.

**Internal Rate of Return (IRR):** The CFA Institute GIPS approved methodology to calculate return performance of private equity investments. The IRR calculates the rate of return since inception (implied interest rate earned) of an investment based on the amount and timing of capital contributions (money invested), distributions (money returned from investments), and the current unrealized value of investments. The IRR is a capital- or dollar-weighted calculation and accounts for the timing and size of flows. IRR differs from the time-weighted return (TWR) calculation employed with equity and fixed income investments, where a series of interim period (e.g., quarterly) returns are linked together in an equal-weighted manner to derive a percentage return unaffected by cash flows.

**Public Market Equivalent (PME) IRR:** An internal rate of return (IRR) calculated by applying the called capital and distributed capital of the private equity investment as an equivalent purchase and sale of the chosen benchmark. The calculated net asset value (NAV) is then used to calculate the benchmark's IRR. The figure is intended to evaluate the investor's return if they had moved money in and out of the chose benchmark instead of the partnership.

**Cash Yield:** Quarter's Distributed capital change divided by the quarter's beginning Net Asset Value. It values the percentage of realized appreciation/depreciation embedded in the NAV. For example, a cash yield of 5% means every dollar of residual value (NAV) has paid 5 cents to the investor this quarter.

**\$ Unrealized Appreciation/ Depreciation** = Quarter's Total Value change minus the quarter's Distribution capital change minus the quarter's Paid-In capital change. The dollar amount values the unrealized appreciation/depreciation embedded in the Net Asset Value.

% Unrealized Appreciation/ Depreciation = Unrealized Appreciation/ Depreciation in dollars divided by the quarter's starting Net Asset Value. It values the percentage of unrealized appreciation/depreciation embedded in the NAV. For example, unrealized appreciation of 2% means every dollar of residual value (NAV) has a gain of 2 cents that has yet to be paid to investors.

**\$ Total Valuation Change** = Quarter's Distributed capital change minus the quarter's Paid-In capital during the quarter plus the quarter's change in Net Asset Value. It values the total dollar amount of both realized and unrealized gains/ losses that the investor received over the quarter.

% Total Valuation Change = Total Valuation Change in dollars divided by the quarter's starting Net Asset Value. It values the percentage of both realized and unrealized gains/ losses that the investor received over the quarter. For example, total valuation change of 4% means every dollar of residual value (NAV) has a gain of 4 cents of which a portion has and a portion has not been paid to investors.

#### **Database Metrics**

**Pooled IRR:** An IRR calculation that treats a database of multiple private equity partnerships (such as Thomson Reuters/Cambridge) as a single portfolio. The initial flow in the calculation represents the total market value of the database (if any). The subsequent cash inflows and outflows are incorporated, and the final cash flow is the ending valuation of the database holdings.

**TVPI Quartile:** Drawn from a database of multiple private equity partnerships, the quartile is a breakpoint return that separates the partnerships' TVPIs in a selected sample into 25% increments ranked from highest to lowest, e.g. 1st quartile is the highest 25% performing funds. Members may be separated into by specific vintage years and strategies.

**IRR Quartile:** Drawn from a database of multiple private equity partnerships, the quartile is a breakpoint return that separates the partnerships' IRRs in a selected sample into 25% increments ranked from highest to lowest, e.g. 1st quartile is the highest 25% performing funds. Members may be separated into by specific vintage years and strategies.

D.1

# **Callan Associates Inc. Public Fund Database**

Alaska Permanent Fund Alaska State - Judicial Pension **Alaska State - Military Pension** Alaska State - Public Employees Ret. Alaska State - Teachers Ret. Plan Anchorage Police & Fire Arkansas Judicial Arkansas PERS Aurora General Emp. Ret. Charlotte Firefighters' Retirement System **Chicago Teachers City of Atlanta City of Fort Pierce City of Milwaukee ERS** Citv of Norwalk City of Tulsa Citv of Valdez City of Wyoming **City Sanitation District of Orange County Cook County Dekalb Countv Denver Water** El Paso City Employees' Pension Fund Firemen's Annuity & Benefit Fd of Chicago **Georgia Firefighter's Pension Fund** Georgia Interlocal **Georgia Municipal EBS Georgia Workers' Compensation** Idaho State Treasurer's Office Illinois Municipal Retirement Fund Lexington-Fayette Urban County Gov Marin County Employees' Ret. Association MARTA OPEB Trust

Massachusetts Pension Re Inv Mgmt Board **Medical University Retirement** Mendocino County Employees' Retirement Minnesota State Board of Investment Mississippi Public Employees' Retirement Nevada Judicial Nevada Legislators Nevada Public Employees' Ret. System North Carolina Department of State North Dakota Public Employee Ret North Dakota State Investment Board North Dakota Teachers Fund Ret NYC Employees Retirement System Ohio STRS Public Emp Ret System of Idaho Santa Clara VTA/ATU Pension Fund South Dakota Investment State of Oregon - PERS State of Wisconsin Investment Board Town of Fairfield **US Army NAF Employee Retirement** University Health System Pension Trust University of Colorado Boulder University of Puerto Rico Retirement System Utah State Retirement System Wichita Employees' Retirement

324 Other Public Funds*

^{*} Callan's Public Fund Database is represented by both Callan and non-Callan clients. Certain information in the database is received from other database sources.



# **Education**

1st Quarter 2020

## **Research and Educational Programs**

The Callan Institute provides research to update clients on the latest industry trends and carefully structured educational programs to enhance the knowledge of industry professionals. Visit www.callan.com/library to see all of our publications, and www.callan.com/blog to view our blog "Perspectives." For more information contact Barb Gerraty at 415-274-3093 / institute@callan.com.

D.1

#### New Research from Callan's Experts

**2020 National Workshop Summary: Turbocharging DC Plans** In this workshop, Connie Lee, Jana Steele, and James Veneruso described ways in which defined contribution plan sponsors can improve participant outcomes, including plan design strategies and investment implementation steps.

**2019 Nuclear Decommissioning Funding Study** | Callan's annual study offers insights into the status of nuclear decommissioning funding to make peer comparisons more accurate and relevant.

**2020 National Workshop Summary: Diversifying Alternatives** In this workshop, presenters Pete Keliuotis, Catherine Beard, and Ashley DeLuce discussed three lesser-known alternatives strategies: specialty lending, emerging market private equity, and insurance-linked strategies.

**2020 DC Trends Survey** | Callan's 2020 Defined Contribution *Trends Survey* is designed to provide a benchmark for sponsors to evaluate their plans compared to peers, and to offer insights to help sponsors improve their plans and the outcomes for their participants.

How Sponsors Can Harness DC Plan Data for Better Outcomes Defined contribution (DC) plans are designed to help participants achieve the most beneficial outcomes. But participants' choices may not necessarily reflect asset allocation best practices. Sponsors can help participants by analyzing how investment options are used and make adjustments based on those observations.

The Callan Periodic Table of Investment Returns | We offer our Periodic Table Collection and the Callan Periodic Table of Investment Returns (Key Indices: 2000-2019).

Callan's 2020-2029 Capital Market Assumptions | Callan develops capital market assumptions to help clients with their long-term strategic planning. This year, we reduced our fixed income

assumptions to reflect lower starting yields following the Fed pivot in policy, but we held constant our real equity return over inflation.

**2020 National Workshop Summary: Fee Study** | In this 2020 workshop, presenters Butch Cliff, Mark Stahl, and Brady O'Connell discussed the major themes of our *2019 Investment Management Fee Study* and their impact on the institutional investor community.

An Introduction to Our New Hedge Fund Peer Group | The Callan Institutional Hedge Fund Peer Group is designed to help institutional investors better understand alpha-oriented solutions that can diversify their existing stock and bond exposures, and it represents the available pool of hedge fund talent that investors will want to consider, or at least compare with their existing hedge fund portfolios.

#### **Quarterly Periodicals**

**Private Equity Trends, 4Q19** | A high-level summary of private equity activity in the quarter through all the investment stages

Active vs. Passive Charts, 4Q19 | A comparison of active managers alongside relevant benchmarks over the long term

**Market Pulse Flipbook, 4Q19** | A quarterly market reference guide covering trends in the U.S. economy, developments for institutional investors, and the latest data on the capital markets

**Capital Market Review, 4Q19** | Analysis and a broad overview of the economy and public and private market activity each quarter across a wide range of asset classes

Hedge Fund Quarterly, 4Q19 | Commentary on developments for hedge funds and multi-asset class (MAC) strategies

**<u>Real Assets Reporter, 4Q19</u>** | Data and insights on real estate and other real assets investment topics.

# D.1

## **Events**

Miss out on a Callan conference or workshop? Event summaries and speakers' presentations are available on our website: www.callan.com/library/

Please mark your calendar and look forward to upcoming invitations:

#### **Upcoming Webinars**

May 21 – Hedge Fund Overview July 8 – China Update

For more information about events, please contact Barb Gerraty: 415-274-3093 / gerraty@callan.com

#### **Education: By the Numbers**

50+	Unique pieces of research the Institute generates each year		
525	Attendees (on average) of the Institute's annual National Conference		
3,700	Total attendees of the "Callan College" since 1994		

## Education

Through the "Callan College," the Callan Institute offers educational sessions for industry professionals involved in the investment decision-making process. It was founded in 1994 to provide both clients and non-clients with basic- to intermediate-level instruction.

#### Introduction to Investments for Institutional Investors

This program familiarizes institutional investor trustees and staff and asset management advisers with basic investment theory, terminology, and practices. It lasts one-and-a-half days and is designed for individuals with less than two years of experience with asset-management oversight and/or support responsibilities. Tuition is \$2,350 per person and includes instruction, all materials, breakfast and lunch on each day, and dinner on the first evening with the instructors.

Additional information including dates and registration can be found at: www.callan.com/callan-college-intro-2/

#### Alternative Investments for Institutional Investors

Alternative investments like private equity, hedge funds, and real estate can play a key role in any portfolio. In this one-day session, Callan experts will provide instruction about the importance of allocations to alternatives, and how to integrate, evaluate, and monitor them.

Learn from some of Callan's senior consultants and experts, including Pete Keliuotis, the head of Alternatives Consulting. The session will cover private equity, private credit, hedge funds, real estate, and real assets; why invest in alternatives; risk/return characteristics and liquidity; designing and implementing an alternatives program; and trends and case studies.

Tuition is \$2,000 per person and includes instruction, all materials, and breakfast and lunch with the instructors.

Additional information including dates and registration can be found at: https://www.callan.com/callan-college-alternatives-2/



"Research is the foundation of all we do at Callan, and sharing our best thinking with the investment community is our way of helping to foster dialogue to raise the bar across the industry."

Greg Allen, CEO and Chief Research Officer

Callan Institute

## List of Callan's Investment Manager Clients

Confidential - For Callan Client Use Only

Callan takes its fiduciary and disclosure responsibilities to clients very seriously. We recognize that there are numerous potential conflicts of interest encountered in the investment consulting industry and that it is our responsibility to manage those conflicts effectively and in the best interest of our clients. At Callan, we employ a robust process to identify, manage, monitor and disclose potential conflicts on an on-going basis.

D.1

The list below is an important component of our conflicts management and disclosure process. It identifies those investment managers that pay Callan fees for educational, consulting, software, database or reporting products and services. We update the list guarterly because we believe that our fund sponsor clients should know the investment managers that do business with Callan, particularly those investment manager clients that the fund sponsor clients may be using or considering using. Please note that if an investment manager receives a product or service on a complimentary basis (e.g. attending an educational event), they are not included in the list below. Callan is committed to ensuring that we do not consider an investment manager's business relationship with Callan, or lack thereof, in performing evaluations for or making suggestions or recommendations to its other clients. Please refer to Callan's ADV Part 2A for a more detailed description of the services and products that Callan makes available to investment manager clients through our Institutional Consulting Group, Independent Adviser Group and Fund Sponsor Consulting Group. Due to the complex corporate and organizational ownership structures of many investment management firms, parent and affiliate firm relationships are not indicated on our list.

Fund sponsor clients may request a copy of the most currently available list at any time. Fund sponsor clients may also request specific information regarding the fees paid to Callan by particular fund manager clients. Per company policy, information requests regarding fees are handled exclusively by Callan's Compliance Department.

Aberdeen Standard Investments       Cohen & Steers Capital M         Acadian Asset Management LLC       Columbia Threadneedle L         AEGON USA Investment Management Inc.       Columbus Circle Investor         Allianz       DePrince, Race & Zollo, I         American Century Investments       DePrince, Race & Zollo, I         American Century Investments       DePrince, Race & Zollo, I         Ares Management       Doubleline         Ares Management LLC       Duff & Phelps Investment         Ariel Investments, LLC       Duff & Phelps Investment         Avira Investors Americas       Duff & Phelps Investment         Aviva Investors Americas       Epoch Investment Partners, LLC         Baron Capital Management, Inc.       Eaton Vance Management         Baron Capital Management       Fiederated Hermes, Inc.         Baron Capital Management       First State Investments         BNY Mellon Asset Management       First Hawaiian Bank Wea         BNY Mellon Asset Management       First State Investment         BNY Mellon Asset Management       First Hawaiian Bank Wea         BrightSphere Investment Management, LLC       GCM Grosvenor         Brandke Investment Management, LLC       GCM Grosvenor         Brandkin Colub Investment Management, LLC       GCM Grosvenor         Brandkin Group <td< th=""><th>Manager Name</th><th></th></td<>	Manager Name	
Acadian Asset Management LLC       Columbia Threadneedle Investors         AEGON USA Investment Management Inc.       Columbus Circle Investors         Allianz       D.E. Shaw Investment Management         American Century Investments       DePrince, Race & Zollo, Inc.         Ares Management       Doubleline         ARes Management       Doubleline         Ares Management LLC       Duff & Phelps Investment Manage         Aries Investments, LLC       Duff & Phelps Investment Management         Aviva Investment Management Co., LLC       EARNEST Partners, LLC         Atland Capital Management Co., LLC       Eaton Vance Management         Aviva Investment Managers       Epoch Investment Partners, In         Baillie Gifford International, LLC       Federated Hermes, Inc.         Baird Advisors       Fidelity Institutional Asset Management         Barrow, Hanley, Mewhinney & Strauss, LLC       First Hawaiian Bank Wealth M         BlackRock       First Hawaiian Bank Wealth M         BNP Paribas Asset Management       Fred Alger Management, Inc.         BNY Mellon Asset Management       Fred Alger Management, Inc.         BY Mullon Asset Management       Fred Alger Management, Inc.         BringhtSphere Investment Management, LLC       GAM (USA) Inc.         Brandes Investment Management, LLC       Genemade Investment Manageme	Aberdeen Standard Investments	Cohen & Steers Capital Manag
AEGON USA Investment Management Inc.       Columbus Circle Investors         Allianz       D.E. Shaw Investment Manage         Allianz       D.E. Shaw Investment Manage         American Century Investments       DePrince, Race & Zollo, Inc.         Amundi Pioneer Asset Management       Dimensional Fund Advisors LP         AQR Capital Management       Dubleline         Ares Management LLC       Duff & Phelps Investment Manage         Ariel Investments, LLC       DWS         Aristotle Capital Management, LLC       EARNEST Partners, LLC         Atlanta Capital Management, LLC       Eaton Vance Management, Inc.         Avia Investment Managers       Epoch Investment Partners, Inc.         Baillie Gifford International, LLC       Fidelity Institutional Asset Management         Barrow, Hanley, Mewhinney & Strauss, LLC       First State Investments         BANG Global Asset Management       First State Investments         BNP Aribas Asset Management       Fred Alger Management, Inc.         BNY Melion Asset Management       Fred Alger Management, Inc.         BNY Melion Asset Management       Fred Alger Management, Inc.         BNY Melion Asset Management       Fred Alger Management, Inc.         Brown Brothers Harring & Company       God Gosvenor         Grameia Investors, LLC       Gereen Square Capital Advisors <td>Acadian Asset Management LLC</td> <td>Columbia Threadneedle Invest</td>	Acadian Asset Management LLC	Columbia Threadneedle Invest
AllianceBernstein       Credit Suisse Asset Managemet         Allianz       D.E. Shaw Investment Manage         American Century Investments       DePrince, Race & Zollo, Inc.         Amundi Pioneer Asset Management       Doubleline         AR Capital Management       Doubleline         Aristotle Capital Management LLC       Duff & Phelps Investment Management         Aristotle Capital Management Co., LLC       EARNEST Partners, LLC         Atlanta Capital Management Co., LLC       Eaton Vance Management         Aviva Investment Managers       Epoch Investment Partners, Inc.         Baird Advisors       Fidelity Institutional Asset Management         Barrow, Hanley, Mewhinney & Strauss, LLC       Fist State Investments         BNP Paribas Asset Management       Fisher Investments         BNY Mellon Asset Management       Fisher Investments         BNY Mellon Asset Management       Fied Alger Management, Inc.         Brandes Investment Management       Erd Alger Management, Inc.         Brandes Investment Partners, L.P.       GAM (USA) Inc.         Brandes Investment Partners, L.P.       GAM (USA) Inc.         Brande Investment Management       Fied Alger Management, Inc.         Brandes Investment Management       Erd Alger Management, Inc.         Boston Partners       GAM (USA) Inc.         G	AEGON USA Investment Management Inc.	Columbus Circle Investors
Allianz       D.E. Shaw Investment Manager         American Century Investments       DePrince, Race & Zollo, Inc.         Amudi Pioneer Asset Management       Dimensional Fund Advisors LP         AQR Capital Management       Dubleline         Ares Management LLC       Duff & Phelps Investment Management         Ariel Investments, LLC       Duff & Phelps Investment Management         Aristotle Capital Management, LLC       EARNEST Partners, LLC         Attanta Capital Management, Co., LLC       Eaton Vance Management         Aviva Investors Americas       Epoch Investment Partners, Inc.         Baillie Gifford International, LLC       Fayez Sarofim & Company         Baillie Gifford International, LLC       Federated Hermes, Inc.         Barow, Hanley, Mewhinney & Strauss, LLC       Fistel Investments         BMO Global Asset Management       Fisher Investments         BNP Paribas Asset Management       Fisher Investments         BNY Mellon Asset Management       Fred Alger Management, Inc.         Brandes Investment Partners, L.P.       GCM Grosvenor         Branke Investment Ranagement, LLC       Geldman Sachs         BrightSphere Investment Management, LLC       GlobeFlex Capital, L.P.         Brown Brothers Harriman & Company       Goldman Sachs         Cambiar Investors, LLC       Green Square Capital Advisors, CapF	AllianceBernstein	Credit Suisse Asset Managemen
American Century Investments       DePrince, Race & Zollo, Inc.         Amundi Pioneer Asset Management       Dimensional Fund Advisors LP         AQR Capital Management       Doubleline         Ares Management LLC       Duff & Phelps Investment Manag         Ariel Investments, LLC       Duff & Phelps Investment Management         Aristotle Capital Management Co., LLC       EARNEST Partners, LLC         Atlanta Capital Management Co., LLC       Eaton Vance Management         Avia Investors Americas       Epoch Investment Partners, Inc.         Baille Gifford International, LLC       Federated Hermes, Inc.         Baird Advisors       Fidelity Institutional Asset Management         Baron Capital Management, Inc.       First State Investments         BMO Global Asset Management       First State Investments         BMO Global Asset Management       Fisher Investments         BNP Paribas Asset Management       Fred Alger Management, Inc.         Barandes Investment Partners, L.P.       GCM Grosvenor         Brandes Investment Partners, LLC       Gelemaede Investment Management, Inc.         Brown Brothers Harriman & Company       Goldman Sachs         Capital Group       Goldman Sachs         Capital Corup       Goldman Sachs         Capital Investors, LLC       Green Square Capital Advisors, CapFinancial Partners, LLC <td>Allianz</td> <td>D.E. Shaw Investment Managem</td>	Allianz	D.E. Shaw Investment Managem
Amundi Pioneer Asset ManagementDimensional Fund Advisors LPAQR Capital ManagementDoublelineAres Management LLCDuff & Phelps Investment ManageAriel Investments, LLCEARNEST Partners, LLCAtlanta Capital Management Co., LLCEaton Vance ManagementAviva Investors AmericasEpoch Investment Partners, Inc.AXA Investment ManagersFayez Sarofim & CompanyBaille Gifford International, LLCFederated Hermes, Inc.Baird AdvisorsFidelity Institutional Asset ManagementBarrow, Hanley, Mewhinney & Strauss, LLCFirst Hawaiian Bank Wealth ManBlackRockFirst State InvestmentsBNP Paribas Asset ManagementFranklin TempletonBrandywine Global Investment Management, LLCGeAM (USA) Inc.Brandywine Global Investment Management, LLCGelomeade Investment ManagementBrightSphere Investment GroupGoldman SachsCarpFinancial Partners, LLCGeggenheim InvestmentsCapifal GroupGiv&K Investment ManagementCapifal GroupGiv&K Investment ManagementCapifal CorporationGadiman SachsCapifal Management LLCGeggenheim Investment ManagementBringhtSphere Investment GroupGoldman SachsCapifal GroupGW&K Investment ManagementCapifal GroupGW&K Investment ManagementCapifal GroupGW&K Investment ManagementCapifal GroupGiveR Partners, LLCCapifal GroupGiveR VisersCapifal GroupGiveR VisersCastleArk Management, LLCHartford Investment Management<	American Century Investments	DePrince, Race & Zollo, Inc.
AQR Capital Management       Doubleline         Ares Management LLC       Duff & Phelps Investment Manage         Ariet Investments, LLC       Duff & Phelps Investment Manage         Aristotle Capital Management, LLC       EARNEST Partners, LLC         Atlanta Capital Management Co., LLC       Eaton Vance Management         Aviva Investors Americas       Epoch Investment Partners, Inc.         Baillie Gifford International, LLC       Federated Hermes, Inc.         Baird Advisors       Fidelity Institutional Asset Manage         Barrow, Hanley, Mewhinney & Strauss, LLC       First Hawaiian Bank Weath Management         BNO Global Asset Management       First Hawaiian Bank Weath Management, Inc.         BNP Paribas Asset Management       Franklin Templeton         BNP V Mellon Asset Management       Fred Alger Management, Inc.         Brandes Investment Partners, L.P.       GCM Grosvenor         Brandy Nine Global Investment Management, LLC       GAM (USA) Inc.         Brandes Investment Group       GlobeFlex Capital, L.P.         Brown Brothers Harriman & Company       Goldman Sachs         Capital Group       GW&K Investment Management         Capital Group       GW&K Investment Management         Capital Group       GW&K Investment Management         Capital Group       GW&K Investment Management <td< td=""><td>Amundi Pioneer Asset Management</td><td>Dimensional Fund Advisors LP</td></td<>	Amundi Pioneer Asset Management	Dimensional Fund Advisors LP
Ares Management LLCDuff & Phelps Investment ManageAriel Investments, LLCDWSAristotle Capital Management, LLCEARNEST Partners, LLCAtlanta Capital Management, Co., LLCEaton Vance ManagementAviva Investors AmericasFayez Sarofim & CompanyBaillie Gifford International, LLCFederated Hermes, Inc.Baird AdvisorsFidelity Institutional Asset ManageBaron Capital Management, Inc.Fiera Capital CorporationBarrow, Hanley, Mewhinney & Strauss, LLCFirst Hawaiian Bank Wealth ManageBMO Global Asset ManagementFisher InvestmentsBNP Paribas Asset ManagementFisher InvestmentsBNY Mellon Asset ManagementFred Alger Management, Inc.Brandes Investment Partners, L.P.GCM GrosvenorBrandes Investment Partners, L.P.GCM GrosvenorBrandywine Global Investment Management, LLCGelenmeade Investment ManagementBriox Brown Brothers Harriman & CompanyGoldman SachsCapital GroupGW&K Investment ManagementCapital GroupGW&K Investment ManagementCapital GroupGW&K Investment ManagementCastleArk Management, LLCHartford Investment Management <t< td=""><td>AQR Capital Management</td><td>Doubleline</td></t<>	AQR Capital Management	Doubleline
Ariel Investments, LLCDWSAristotle Capital Management, LLCEARNEST Partners, LLCAttanta Capital Management Co., LLCEaton Vance ManagementAviva Investors AmericasEpoch Investment Partners, Inc.AXA Investment ManagersEpoch Investment Partners, Inc.Baille Gifford International, LLCFederated Hermes, Inc.Baird AdvisorsFidelity Institutional Asset ManageBarrow, Hanley, Mewhinney & Strauss, LLCFirst Capital CorporationBarrow, Hanley, Mewhinney & Strauss, LLCFirst Hawaiian Bank Wealth ManaBlackRockFirst State InvestmentsBNO Global Asset ManagementFisher InvestmentsBNP Paribas Asset ManagementFred Alger Management, Inc.Boston PartnersGAM (USA) Inc.Brandes Investment Partners, L.P.GCM GrosvenorBrandywine Global Investment Management, LLCGelenmeade Investment ManagemBrown Brothers Harriman & CompanyGoldman SachsCapital GroupGuderan SachsCapital GroupGW&K Investment ManagementCapital GroupGW&K Investment ManagementCastleArk Management, LLCHarbor Capital Group TrustCastleArk Management, LLCHarbor Capital Group TrustCastleArk Management, LLCHarbor Capital ManagementCastleArk Management, LLCHarbor Capital Management </td <td>Ares Management LLC</td> <td>Duff &amp; Phelps Investment Manage</td>	Ares Management LLC	Duff & Phelps Investment Manage
Aristotle Capital Management, LLCEARNEST Partners, LLCAtlanta Capital Management Co., LLCEaton Vance ManagementAviva Investors AmericasEpoch Investment Partners, Inc.AXA Investment ManagersEpoch Investment Partners, Inc.Baild AdvisorsBaird AdvisorsBaird AdvisorsFidelity Institutional Asset ManageBaron Capital ManagementFirst Hawaiian Bank Wealth ManaBARON, Hanley, Mewhinney & Strauss, LLCFirst Hawaiian Bank Wealth ManaBMO Global Asset ManagementFirst Hawaiian Bank Wealth ManaBNP Paribas Asset ManagementFirst Hawaiian Bank Wealth ManaBNY Mellon Asset ManagementFirst Hawaiian Bank Wealth ManagementBY Mellon Asset ManagementFred Alger Management, Inc.Brandes Investment Partners, L.P.GAM (USA) Inc.Brandywine Global Investment Management, LLCGelemeade Investment ManagemBrightSphere Investment GroupGlobeFlex Capital, L.P.Brown Brothers Harrinan & CompanyGoldman SachsCapFinancial Partners, LLCGreen Square Capital Advisors, LLCapital GroupGW&K Investment ManagementCarillon Tower AdvisersGuy TrustCastBArk Management, LLCHartford Investment ManagementCaratle Ark Management, LLCHartford Investment ManagementChartwell Investment PartnersCapital Management, LLCChartwell Investment PartnersCapital Management, LLCChartwell Investment PartnersHotchkis & Wiley Capital ManagementCapital GroupGub Research + ManagementCapital Group InvestHartfo	Ariel Investments, LLC	DWS
Atlanta Capital Management Co., LLCEaton Vance ManagementAviva Investors AmericasEpoch Investment Partners, Inc.AXA Investment ManagersFayez Sarofin & CompanyBailie Gifford International, LLCFederated Hermes, Inc.Baird AdvisorsFidelity Institutional Asset ManageBarrow, Hanley, Mewhinney & Strauss, LLCFirst State InvestmentsBMO Global Asset ManagementFirst State InvestmentsBNP Paribas Asset ManagementFisher InvestmentsBNY Mellon Asset ManagementFired Alger Management, Inc.Brandes Investment Partners, L.P.GAM (USA) Inc.Brandes Investment Partners, L.P.GCM GrosvenorBrandywine Global Investment Management, LLCGlenmeade Investment ManagementBrightSphere Investment GroupGoldman SachsCarbiar Investors, LLCGreen Square Capital Advisors, LLCapFinancial Partners, LLCGuggenheim InvestmentsCapital GroupGW&K Investment ManagementCastleArk Management, LLCHartford Investment ManagementCastleArk Wanagement, LLCHartford Investment ManagementCastleArk Wanagement, LLC <t< td=""><td>Aristotle Capital Management, LLC</td><td>EARNEST Partners, LLC</td></t<>	Aristotle Capital Management, LLC	EARNEST Partners, LLC
Aviva Investors AmericasEpoch Investment Partners, Inc.AXA Investment ManagersFayez Sarofim & CompanyBaillie Gifford International, LLCFederated Hermes, Inc.Baird AdvisorsFidelity Institutional Asset ManageBaron Capital Management, Inc.Fidelity Institutional Asset ManageBarrow, Hanley, Mewhinney & Strauss, LLCFirst State InvestmentsBMO Global Asset ManagementFirst State InvestmentsBNP Paribas Asset ManagementFranklin TempletonBNY Mellon Asset ManagementFred Alger Management, Inc.Boston PartnersGAM (USA) Inc.Brandes Investment Partners, L.P.GCM GrosvenorBrandes Investment GroupGlobeFlex Capital, L.P.Brown Brothers Harriman & CompanyGoldman SachsCambiar Investors, LLCGuggenheim InvestmentsCapital GroupGW&K Investment ManagementCarillon Tower AdvisersGuggenheim Investment ManagementCasteArk Management LLCHarbor Capital Group TrustChartwell Investment PartnersHotchkis & Wiley Capital ManagementClearBridde Investment PartnersHotchkis & Wiley Capital Management	Atlanta Capital Management Co., LLC	Eaton Vance Management
AXA Investment ManagersFayez Sarofim & CompanyBaillie Gifford International, LLCFederated Hermes, Inc.Baird AdvisorsFidelity Institutional Asset ManageBarrow, Hanley, Mewhinney & Strauss, LLCFiera Capital CorporationBarrow, Hanley, Mewhinney & Strauss, LLCFirst State InvestmentsBMO Global Asset ManagementFisher InvestmentsBNP Paribas Asset ManagementFranklin TempletonBNY Mellon Asset ManagementFred Alger Management, Inc.Boston PartnersGAM (USA) Inc.Brandsvine Global Investment Management, LLCGlenmeade Investment ManagementBrightSphere Investment GroupGlobeFlex Capital, L.P.Brown Brothers Harriman & CompanyGoldman SachsCambiar Investors, LLCGreen Square Capital Advisors, LLCapFinancial PartnersGW&K Investment ManagementCazillon Tower AdvisersGW&K Investment ManagementCastleArk Management, LLCHarbor Capital Group TrustCauseway Capital Management LLCHartford Investment ManagementChartwell Investment PartnersHotchkis & Wiley Capital ManagementCastleArk Management LLCHeitman LLCChartwell Investment PartnersHotchkis & Wiley Capital Management	Aviva Investors Americas	Epoch Investment Partners, Inc.
Baillie Gifford International, LLCFederated Hermes, Inc.Baird AdvisorsFidelity Institutional Asset ManageBaron Capital Management, Inc.Fiera Capital CorporationBarrow, Hanley, Mewhinney & Strauss, LLCFirst Hawaiian Bank Wealth ManageBlackRockFirst State InvestmentsBMO Global Asset ManagementFisher InvestmentsBNP Paribas Asset ManagementFranklin TempletonBNY Mellon Asset ManagementFred Alger Management, Inc.Boston PartnersGAM (USA) Inc.Brandes Investment Partners, L.P.GCM GrosvenorBrandywine Global Investment Management, LLCGlenmeade Investment ManagementBrightSphere Investment GroupGoldman SachsBrown Brothers Harriman & CompanyGoldman SachsCapital GroupGW&K Investment ManagementCapital GroupGW&K Investment ManagementCastleArk Management, LLCHarbor Capital Group TrustCastleArk Management, LLCHartford Investment ManagementChartwell Investment PartnersHartford Investment ManagementClearBridne Investment LLCHartford Investment ManagementChartwell Investment PartnersHartford Investment ManagementClearBridne Investment PartnersHanagementClearBridne Investments PartnersHanagementClearBridne Investment PartnersHanagementClearBridne Investment PartnersHanagementClearBridne Investment PartnersHanagementClearBridne Investment PartnersHanagementClearBridne Investment PartnersHanagementClearBr	AXA Investment Managers	Fayez Sarofim & Company
Baird AdvisorsFidelity Institutional Asset ManagerBaron Capital Management, Inc.Fiera Capital CorporationBarrow, Hanley, Mewhinney & Strauss, LLCFiera Capital CorporationBarrow, Hanley, Mewhinney & Strauss, LLCFirst Hawaiian Bank Wealth ManageBlackRockFirst State InvestmentsBMO Global Asset ManagementFisher InvestmentsBNY Mellon Asset ManagementFranklin TempletonBNY Mellon Asset ManagementFred Alger Management, Inc.Boston PartnersGAM (USA) Inc.Brandes Investment Partners, L.P.GCM GrosvenorBrandywine Global Investment Management, LLCGlenmeade Investment ManagementBrightSphere Investment GroupGlobeFlex Capital, L.P.Brown Brothers Harriman & CompanyGoldman SachsCapital GroupGW&K Investment ManagementCarillon Tower AdvisersHarbor Capital Group TrustCastleArk Management, LLCHartford Investment ManagementCauseway Capital Management LLCHeitman LLCChartwell Investment PartnersHotchkis & Wiley Capital ManagementClearBridge Investment PartnersHotchkis & Wiley Capital Management	Baillie Gifford International, LLC	Federated Hermes, Inc.
Baron Capital Management, Inc.Fiera Capital CorporationBarrow, Hanley, Mewhinney & Strauss, LLCFirst Hawaiian Bank Wealth ManageBlackRockFirst State InvestmentsBMO Global Asset ManagementFisher InvestmentsBNY Paribas Asset ManagementFranklin TempletonBNY Mellon Asset ManagementFred Alger Management, Inc.Boston PartnersGAM (USA) Inc.Brandes Investment Partners, L.P.GCM GrosvenorBrandywine Global Investment Management, LLCGlenmeade Investment ManagementBrightSphere Investment GroupGlobeFlex Capital, L.P.Brown Brothers Harriman & CompanyGoldman SachsCapFinancial Partners, LLCGreen Square Capital Advisors, LLCCapital GroupGW&K Investment ManagementCatilon Tower AdvisersHarbor Capital Group TrustCauseway Capital Management LLCHartford Investment ManagementChartwell Investment PartnersHotchkis & Wiley Capital ManagementClearRidge Investment PartnersHotchkis & Wiley Capital Management	Baird Advisors	Fidelity Institutional Asset Manager
Barrow, Hanley, Mewhinney & Strauss, LLCFirst Hawaiian Bank Wealth ManageBlackRockFirst State InvestmentsBMO Global Asset ManagementFisher InvestmentsBNY Mellon Asset ManagementFred Alger Management, Inc.Boston PartnersGAM (USA) Inc.Brandes Investment Partners, L.P.GCM GrosvenorBrandywine Global Investment Management, LLCGlenmeade Investment ManagementBrightSphere Investment GroupGlobeFlex Capital, L.P.Brown Brothers Harriman & CompanyGoldman SachsCambiar Investors, LLCGreen Square Capital Advisors, LLCapFinancial Partners, LLCGuggenheim Investment ManagementCastleArk Management, LLCGW&K Investment ManagementCauseway Capital Management LLCHartford Investment ManagementChartwell Investment PartnersHotchkis & Wiley Capital ManagementClearBridge Investment PartnersHotchkis & Wiley Capital Management	Baron Capital Management, Inc.	Fiera Capital Corporation
BlackRockFirst State InvestmentsBMO Global Asset ManagementFisher InvestmentsBNP Paribas Asset ManagementFranklin TempletonBNY Mellon Asset ManagementFred Alger Management, Inc.Boston PartnersGAM (USA) Inc.Brandes Investment Partners, L.P.GCM GrosvenorBrandywine Global Investment Management, LLCGlenmeade Investment ManagementBrightSphere Investment GroupGlobeFlex Capital, L.P.Brown Brothers Harriman & CompanyGoldman SachsCambiar Investors, LLCGreen Square Capital Advisors, LLCapFinancial Partners, LLCGuggenheim InvestmentsCapital GroupGW&K Investment ManagementCastleArk Management, LLCHartford Investment ManagementCauseway Capital Management LLCHeitman LLCChartwell Investment PartnersHotchkis & Wiley Capital ManagementClearBridge Investment PartnersHotchkis & Wiley Capital Management	Barrow, Hanley, Mewhinney & Strauss, LLC	First Hawaiian Bank Wealth Manag
BMO Global Asset ManagementFisher InvestmentsBNP Paribas Asset ManagementFranklin TempletonBNY Mellon Asset ManagementFred Alger Management, Inc.Boston PartnersGAM (USA) Inc.Brandes Investment Partners, L.P.GCM GrosvenorBrandywine Global Investment Management, LLCGlenmeade Investment ManagementBrightSphere Investment GroupGlobeFlex Capital, L.P.Brown Brothers Harriman & CompanyGoldman SachsCambiar Investors, LLCGreen Square Capital Advisors, LLCapFinancial Partners, LLCGuggenheim InvestmentsCapital GroupGW&K Investment ManagementCastleArk Management, LLCHarbor Capital Group TrustCastleArk Management, LLCHartford Investment ManagementChartwell Investment PartnersHotchkis & Wiley Capital ManagementClearBridge Investment PartnersHotchkis & Wiley Capital Management	BlackRock	First State Investments
BNP Paribas Asset ManagementFranklin TempletonBNY Mellon Asset ManagementFred Alger Management, Inc.Boston PartnersGAM (USA) Inc.Brandes Investment Partners, L.P.GCM GrosvenorBrandywine Global Investment Management, LLCGlenmeade Investment ManagemBrightSphere Investment GroupGlobeFlex Capital, L.P.Brown Brothers Harriman & CompanyGoldman SachsCambiar Investors, LLCGreen Square Capital Advisors, LLCapFinancial Partners, LLCGuggenheim InvestmentsCapital GroupGW&K Investment ManagementCarillon Tower AdvisersHarbor Capital Group TrustCastleArk Management, LLCHartford Investment ManagementCauseway Capital Management LLCHeitman LLCChartwell Investment PartnersHotchkis & Wiley Capital ManagementClearBridge Investment PartnersHanagement	BMO Global Asset Management	Fisher Investments
BNY Mellon Asset ManagementFred Alger Management, Inc.Boston PartnersGAM (USA) Inc.Brandes Investment Partners, L.P.GCM GrosvenorBrandywine Global Investment Management, LLCGlenmeade Investment ManagementBrightSphere Investment GroupGlobeFlex Capital, L.P.Brown Brothers Harriman & CompanyGoldman SachsCambiar Investors, LLCGreen Square Capital Advisors, LLCapFinancial Partners, LLCGuggenheim InvestmentsCapital GroupGW&K Investment ManagementCastleArk Management, LLCHarbor Capital Group TrustCauseway Capital Management LLCHeitman LLCChartwell Investment PartnersHotchkis & Wiley Capital ManagementClearBridge Investments LLCInc.	BNP Paribas Asset Management	Franklin Templeton
Boston PartnersGAM (USA) Inc.Brandes Investment Partners, L.P.GCM GrosvenorBrandywine Global Investment Management, LLCGlenmeade Investment ManagementBrightSphere Investment GroupGlobeFlex Capital, L.P.Brown Brothers Harriman & CompanyGoldman SachsCambiar Investors, LLCGreen Square Capital Advisors, LLCapFinancial Partners, LLCGuggenheim InvestmentsCapital GroupGW&K Investment ManagementCarillon Tower AdvisersGastleArk Management, LLCCauseway Capital Management LLCHartford Investment Management of Heitman LLCChartwell Investment PartnersHotchkis & Wiley Capital ManagementClearBridge Investment SL C	BNY Mellon Asset Management	Fred Alger Management, Inc.
Brandes Investment Partners, L.P.       GCM Grosvenor         Brandywine Global Investment Management, LLC       Glenmeade Investment Management         BrightSphere Investment Group       GlobeFlex Capital, L.P.         Brown Brothers Harriman & Company       Goldman Sachs         Cambiar Investors, LLC       Green Square Capital Advisors, LL         CapFinancial Partners, LLC       Guggenheim Investments         Capital Group       GW&K Investment Management         Carillon Tower Advisers       GW&K Investment Management         CastleArk Management, LLC       Hartford Investment Management Capital Management LLC         Chartwell Investment Partners       Hotchkis & Wiley Capital Management	Boston Partners	GAM (USA) Inc.
Brandywine Global Investment Management, LLC       Glenmeade Investment Management         BrightSphere Investment Group       GlobeFlex Capital, L.P.         Brown Brothers Harriman & Company       Goldman Sachs         Cambiar Investors, LLC       Green Square Capital Advisors, LLC         CapFinancial Partners, LLC       Guggenheim Investments         Capital Group       GW&K Investment Management         Carillon Tower Advisers       GW&K Investment Management         Causeway Capital Management, LLC       Hartford Investment Management C         Chartwell Investment Partners       Hotchkis & Wiley Capital Management         ClearBridge Investments, LLC       Hotchkis & Wiley Capital Management	Brandes Investment Partners, L.P.	GCM Grosvenor
BrightSphere Investment Group       GlobeFlex Capital, L.P.         Brown Brothers Harriman & Company       Goldman Sachs         Cambiar Investors, LLC       Green Square Capital Advisors, LLC         CapFinancial Partners, LLC       Guggenheim Investments         Capital Group       GW&K Investment Management         Carillon Tower Advisers       Harbor Capital Group Trust         CastleArk Management, LLC       Hartford Investment Management C         Causeway Capital Management LLC       Heitman LLC         Chartwell Investment Partners       Hotchkis & Wiley Capital Management LLC	Brandywine Global Investment Management, LLC	Glenmeade Investment Manageme
Brown Brothers Harriman & Company       Goldman Sachs         Cambiar Investors, LLC       Green Square Capital Advisors, LLC         CapFinancial Partners, LLC       Guggenheim Investments         Capital Group       GW&K Investment Management         Carillon Tower Advisers       Harbor Capital Group Trust         CastleArk Management, LLC       Hartford Investment Management Causeway Capital Management LLC         Chartwell Investment Partners       Hotchkis & Wiley Capital Management LLC	BrightSphere Investment Group	GlobeFlex Capital, L.P.
Cambiar Investors, LLC       Green Square Capital Advisors, LLC         CapFinancial Partners, LLC       Guggenheim Investments         Capital Group       GW&K Investment Management         Carillon Tower Advisers       Harbor Capital Group Trust         CastleArk Management, LLC       Hartford Investment Management Causeway Capital Management LLC         Chartwell Investment Partners       Hotchkis & Wiley Capital Management LLC         ClearBridge Investments       LLC	Brown Brothers Harriman & Company	Goldman Sachs
CapFinancial Partners, LLC       Guggenheim Investments         Capital Group       GW&K Investment Management         Carillon Tower Advisers       Harbor Capital Group Trust         CastleArk Management, LLC       Hartford Investment Management C         Causeway Capital Management LLC       Heitman LLC         Chartwell Investment Partners       Hotchkis & Wiley Capital Management LLC         ClearBridge Investments LLC       Income Research + Management LLC	Cambiar Investors, LLC	Green Square Capital Advisors, LL
Capital Group       GW&K Investment Management         Carillon Tower Advisers       Harbor Capital Group Trust         CastleArk Management, LLC       Hartford Investment Management C         Causeway Capital Management LLC       Heitman LLC         Chartwell Investment Partners       Hotchkis & Wiley Capital Management         ClearBridge Investments, LLC       Income Research + Management	CapFinancial Partners, LLC	Guggenheim Investments
Carillon Tower Advisers       Harbor Capital Group Trust         CastleArk Management, LLC       Hartford Investment Management C         Causeway Capital Management LLC       Heitman LLC         Chartwell Investment Partners       Hotchkis & Wiley Capital Management         ClearBridge Investments       LLC         Income Research + Management       Income Research + Management	Capital Group	GW&K Investment Management
CastleArk Management, LLC       Hartford Investment Management C         Causeway Capital Management LLC       Heitman LLC         Chartwell Investment Partners       Hotchkis & Wiley Capital Management         ClearBridge Investments, LLC       Income Research + Management	Carillon Tower Advisers	Harbor Capital Group Trust
Causeway Capital Management LLC Heitman LLC Hotchkis & Wiley Capital Management ClearBridge Investments LLC Income Research + Management	CastleArk Management, LLC	Hartford Investment Management (
Chartwell Investment Partners Hotchkis & Wiley Capital Management	Causeway Capital Management LLC	Heitman LLC
ClearBridge Investments LLC	Chartwell Investment Partners	Hotchkis & Wiley Capital Manageme
licenbildge investments, EEO	ClearBridge Investments, LLC	Income Research + Management, Inc

Manager Name	
Insight Investment Management Limited	Pathway Capital Ma
Intech Investment Management, LLC	Peregrine Capital M
Intercontinental Real Estate Corporation	Perkins Investment
Invesco	PFM Asset Manage
Investec Asset Management North America, Inc.	PGIM Fixed Income
Ivy Investments	PineBridge Investm
J.P. Morgan	PNC Capital Adviso
Janus	Polen Capital Mana
Jennison Associates LLC	Principal Global Inv
Jobs Peak Advisors	Putnam Investment
KeyCorp	QMA LLC
Lazard Asset Management	RBC Global Asset
Legal & General Investment Management America	Regions Financial C
Lincoln National Corporation	Robeco Institutional
Longview Partners	Rothschild & Co. As
Loomis, Sayles & Company, L.P.	S&P Dow Jones Inc
Lord Abbett & Company	Schroder Investmer
Los Angeles Capital Management	SLC Management
LSV Asset Management	Smith Graham & Co
MacKay Shields LLC	State Street Global
Macquarie Investment Management (MIM)	Stone Harbor Inves
Manulife Investment Management	Strategic Global Ad
Marathon Asset Management, L.P.	T. Rowe Price Asso
McKinley Capital Management, LLC	The TCW Group, In
Mellon	Thompson, Siegel &
MetLife Investment Management	Thornburg Investme
MFS Investment Management	Tri-Star Trust Bank
MidFirst Bank	UBS Asset Manage
Mondrian Investment Partners Limited	USAA Real Estate
Montag & Caldwell, LLC	VanEck
Morgan Stanley Investment Management	Versus Capital Grou
Mountain Pacific Advisors, LLC	Victory Capital Man
MUFG Union Bank, N.A.	Virtus Investment P
Natixis Investment Managers	Vontobel Asset Mar
Neuberger Berman	Voya
Newton Investment Management	WCM Investment M
Nikko Asset Management Co., Ltd.	WEDGE Capital Ma
Nile Capital Group LLC	Wellington Manager
Northern Trust Asset Management	Wells Fargo Asset
Nuveen	Western Asset Man
P/E Investments	Westfield Capital M
Pacific Investment Management Company	William Blair & Com
Parametric Portfolio Associates LLC	

Manager Name	
Pathway Capital Management	
Peregrine Capital Management, LLC.	
Perkins Investment Management	
PFM Asset Management LLC	
PGIM Fixed Income	
PineBridge Investments	
PNC Capital Advisors, LLC	
Polen Capital Management	
Principal Global Investors	
Putnam Investments, LLC	
QMA LLC	
RBC Global Asset Management	
Regions Financial Corporation	
Robeco Institutional Asset Management, US Inc.	
Rothschild & Co. Asset Management US	
S&P Dow Jones Indices	
Schroder Investment Management North America	a Inc.
SLC Management	
Smith Graham & Co. Investment Advisors, L.P.	
State Street Global Advisors	
Stone Harbor Investment Partners L.P.	
Strategic Global Advisors	
T. Rowe Price Associates, Inc.	
The TCW Group, Inc.	
Thompson, Siegel & Walmsley LLC	
Thornburg Investment Management, Inc.	
Tri-Star Trust Bank	
UBS Asset Management	
USAA Real Estate	
VanEck	
Versus Capital Group	
Victory Capital Management Inc.	
Virtus Investment Partners, Inc.	
Vontobel Asset Management, Inc.	
Voya	
WCM Investment Management	
WEDGE Capital Management	
Wellington Management Company LLP	
Wells Fargo Asset Management	
Western Asset Management Company LLC	
Westfield Capital Management Company, LP	
William Blair & Company LLC	

Callan Knowledge. Experience. Integrity.





First Quarter 2020 Summary Investment Presentation

Jim Callahan, CFA President

Anne Heaphy Senior Vice President



# **Economic and Capital Markets Review**

# **Capital Markets**

# What just happened?

- A "Global Hurricane" in the form of a pandemic; unprecedented economic impact from a global shutdown
  - Dominant fear over last few years: an equity market downturn, which was realized at the end of February
  - -Breathtaking speed and depth of the three-week economic decline

Governments stepped in quickly with immediate monetary response, fiscal stimulus

- Fed Chairman Powell: "We'll do whatever it takes." Able to leverage policy playbook following GFC.
- Monetary response important, but not the solution to this crisis
- Massive fiscal policy required to address economic dislocation: companies, industries, individuals
- Tremendous uncertainty remains. Who gets rescued next?

# Broad economic impact

- Companies/Organizations: Stresses to revenue, earnings, economic viability, access to capital, recovery
- Individuals: Unemployment, income, wealth, retirement savings
- -Governments: Increasing service burden, declining tax revenues
- Need a new method of evaluating economic data: When do levels of GDP, income, employment, and unemployment return to normal?

Left us with a very uncertain future

- -Question we're getting from clients: When will this uncertainty settle down?
- True recovery depends on containment and then a vaccine. Monetary and fiscal policy can only address the symptoms.

# What Just Happened?

# A 'Global Hurricane' in the form of a pandemic

The sharpest and fastest equity market decline ever: 16 trading days to reach bear market; -33% after just 23 days

# S&P 500 Index Cumulative Returns

Market Peak-to-Trough for Last Two Corrections vs. Current Path of COVID-19 Correction Through 5/15/20



# Sharp Drop in Global Equity Markets in 1Q 2020

# No place to hide

- Equity markets around the globe collapsed starting in late February.
  - S&P was down 33% from peak (02/19/20) at worst point on 3/23/20; -19.6% loss for the quarter. All countries and sectors suffered.
  - Fed cut interest rates to zero, commenced QE, instituted multiple facilities to backstop money markets, credit markets, and the economy.
  - Congress passed fiscal stimulus (CARES) to carry the economy through the crisis.
  - Fed's role is a backstop/facilitator/lender of last resort, but not a grantor; it expects to get paid back. Programs are designed to keep the Fed from losing money.
  - Granting is the province of Congress, and fiscal policy.

## **Returns for Periods ended March 31, 2020**

	1 Quarter	1 Year	5 Years	10 Years	25 Years
U.S. Equity					
Russell 3000	-20.90	-9.13	5.77	10.15	8.81
S&P 500	-19.60	-6.98	6.73	10.53	8.85
Russell 2000	-30.61	-23.99	-0.25	6.90	7.57
Global ex-U.S. Equity					
MSCI World ex USA	-23.26	-14.89	-0.76	2.43	4.12
MSCI Emerging Markets	-23.60	-17.69	-0.36	0.69	
MSCI ACWI ex USA Small Cap	-29.01	-21.18	-0.81	2.79	4.57
Fixed Income					
Bloomberg Barclays Aggregate	3.15	8.93	3.36	3.88	5.49
90-day T-Bill	0.57	2.25	1.19	0.64	2.43
Bloomberg Barclays Long Gov/Credit	6.21	19.32	5.99	8.07	7.89
Bloomberg Barclays Global Agg ex-US	-2.68	0.74	2.04	1.39	3.77
Real Estate					
NCREIF Property	0.71	5.28	7.65	10.17	9.28
FTSE Nareit Equity	-27.30	-21.26	-0.35	7.40	9.24
Alternatives					
CS Hedge Fund	-8.98	-4.32	0.24	2.96	7.35
Cambridge Private Equity*	0.90	9.50	12.37	13.75	15.30
Bloomberg Commodity	-23.29	-22.31	-7.76	-6.74	0.56
Gold Spot Price	4.83	22.96	6.18	3.66	5.75
Inflation - CPI-U	0.44	1.54	1.80	1.72	2.15

# U.S. Equity: COVID-19 Decimates U.S. Equity Returns

# Cyclicals punished; Tech, Staples, and Health Care more resilient

- Energy fell as demand declined and OPEC and Russia refused to cut production, driving down oil prices globally.
- Financials and Industrials plunged as interest rates were cut by the Fed compounded by expectations of a GDP decline due to COVID-19.
- Tech fared the best— "FAAMG" stocks averaged -7.9% led by Amazon (+5.5%) and Microsoft (+0.3%).

#### Large cap outpaces small cap for quarter

- Russell 2000 (-30.6%) experienced worst quarter on record.
- Perceived safety of larger companies combined with more acute exposure to COVID-19 impact (restaurants, hotels, airlines) drove sell-off.
- Russell 2000 Value exposure to Energy (especially E&P companies) and Financials (banks) drove results.

#### Growth outpaces value across market capitalizations

 Spread between Russell 1000 Growth (-14.1%) and Russell 2000 Value (-35.7%) one of widest on record

## Economic Sector Quarterly Performance (S&P 500)

#### -11.9% -12.7% -12.7% -13.5% -17.0% -19.3% -19.2% -26.1% -27.0% -31.9% -50.5% Communication Consumer Consumer Energy Financials Health Care Information Real Estate Utilities Industrials Materials Services Discretionary Staples Technology Sources: FTSE Russell, S&P Dow Jones Indices

# Callan

## **U.S. Equity: Quarterly Returns**



# **U.S. Equity: One-Year Returns**

# Russell 3000 -9.1% Russell 1000 -8.0% Russell 1000 Growth 0.9% Russell 1000 Value -17.2% S&P 500 -7.0% Russell Midcap -18.3% Russell 2500 -22.5% Russell 2000 -24.0%

# **Global ex-U.S. Equity Performance**

# Worst sell-off since 2008

- Global economic activity halted with shelter-in-place response to COVID-19.
- Oil price war between Saudi Arabia and Russia further exacerbated market meltdown.
- Decisive actions to contain the outbreak and stimulate the economy allowed China to outperform every developed and developing country.

## Cyclical sectors imploded

- Energy, Financial, and travel-related industries derailed by pandemic, looming global recession, and oil price war.
- Factor performance favored risk aversion, including beta, size and volatility, reflecting "risk-off" market environment.

## U.S. dollar vs. other currencies

 Safe-haven currencies (U.S. dollar, Swiss franc, and yen) were bid up as market volatility peaked and outperformed other major currencies.

## Growth vs. value

 Growth continued to outperform value within markets and capitalizations, supported by Health Care, Consumer Staples, and Tech.

# **Global Equity: Quarterly Returns**

MSCI EAFE MSCI ACWI MSCI ACWI ex USA MSCI ACWI ex USA MSCI World ex USA MSCI ACWI ex US Small Cap MSCI World ex US Small Cap MSCI Europe ex UK MSCI Europe ex UK MSCI Europe ex UK MSCI Dapan MSCI Pacific ex Japan MSCI Emerging Markets MSCI China MSCI Frontier Markets -26.6



## **Global Equity: Annual Returns**



Source: MSCI



# **U.S. Fixed Income Performance**

## Treasuries rallied as investors sought safety

- The 10-year U.S. Treasury yield reached a low in March of 0.31% before closing the quarter at 0.70%, down sharply from the 2019 year-end level of 1.92%.
- The Treasury yield curve steepened as the Fed cut rates to 0% - 0.25%.
- TIPS underperformed nominal Treasuries as expectations for inflation sank. The 10-year breakeven spread ended the quarter at 87 bps, down sharply from 177 bps at year-end.

## Investors spurned credit risk

- IG and HY funds saw record outflows as investors flocked to cash.
- IG corporate spreads widened by 149 bps to 272 bps, representing hardest-hit sector in BB Aggregate Index; several well-known Industrials issuers downgraded to belowinvestment grade, including Occidental Petroleum and Ford.
- Quality bias was evident as BBB-rated credit (-7.4%) underperformed single A or higher (+0.5%).
- CCC-rated high yield corporates (-20.6%) lagged BB-rated corporates (-10.2%).
- Energy (-38.9%) was the lowest-performing high yield bond sub-sector as oil prices collapsed.

## **U.S. Fixed Income: Quarterly Returns**

BImberg Barclays Gov/Cr 1-3 Yr BImberg Barclays Interm Gov/Cr BImberg Barclays Aggregate BImberg Barclays Long Gov/Cr BImberg Barclays Universal S&P/LSTA Leverage Loans -13.0% BImberg Barclays High Yield -12.7% BImberg Barclays TIPS



## **U.S. Fixed Income: Annual Returns**

Blmberg Barclays Gov/Cr 1-3 Yr Blmberg Barclays Interm Gov/Cr Blmberg Barclays Aggregate Blmberg Barclays Long Gov/Cr Blmberg Barclays Universal S&P/LSTA U.S. Leveraged Loans -9. Blmberg Barclays High Yield Blmberg Barclays TIPS



Sources: Bloomberg Barclays, S&P Dow Jones Indices



# **Global Fixed Income Performance**

## Global ex-U.S. fixed income flat

- Developed market sovereign bond yields ended the quarter slightly higher even as central banks stepped in to provide support to their economies; the ECB launched a €750 bn stimulus program and the BoE cut interest rates.
- U.S. dollar rose against the Australian dollar, British pound, and euro as investors sought safety within the greenback.

## EM debt plummeted in the risk-off environment

- Within the dollar-denominated emerging market debt benchmark, returns were mixed among its 60+ constituents.
- Within the local currency-denominated benchmark, several local market returns in Latin America dropped about 20% (Brazil, Mexico, and Colombia) and South Africa was down 29% as oil-sensitive economies suffered from the drop in oil prices.

## **Global Fixed Income: Quarterly Returns**

BImberg Barclays GI Aggregate BImberg Barclays GI Agg (hdg) BImberg Barclays GI Agg ex US BImberg Barclays GI Agg ex US (hdg) BImberg Barclays GI High Yield JPM EMBI Global Diversified JPM GBI-EM Global Diversified JPM EMBI GI Div/JPM GBI-EM GI Div JPM CEMBI



## **Global Fixed Income: Annual Returns**

BImberg Barclays GI Aggregate BImberg Barclays GI Agg (hdg) BImberg Barclays GI Agg ex US BImberg Barclays GI Agg ex US (hdg) BImberg Barclays GI High Yield -10 JPM EMBI Global Diversified JPM GBI-EM Global Diversified JPM EMBI GI Div/JPM GBI-EM GI Div JPM CEMBI



# **U.S. Private Real Estate Market Trends**

## Results

- Initial impact of pandemic reflected in Q1 results
- Positive return due to income
- Industrial real estate performed well.
- Retail depreciation accelerated this quarter.
- Dispersion of returns by manager within the ODCE Index due to composition of underlying portfolios but also valuation methodologies/approach
- Negative returns expected for the second quarter and beyond.

# NCREIF Property Index Returns by Region and Property Type

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
NCREIF ODCE	1.0%	4.9%	6.8%	8.5%	11.5%
Appreciation	0.0%	0.7%	2.5%	3.9%	6.3%
Income	1.0%	4.2%	4.2%	4.4%	4.9%
NCREIF Property Index	0.7%	5.3%	6.4%	7.7%	10.2%
Appreciation	-0.4%	0.7%	1.8%	2.9%	5.7%
Income	1.1%	4.5%	4.6%	4.7%	4.6%


## **Private Equity Global Fundraising**

## Boom continues ... for now

- Spike in 2019 fundraising a reflection of a booming private equity industry
- Fundraising remained heightened through 1Q20 and is expected to stay relatively strong through April and potentially May.
- Fundraising expected to significantly slow toward the latter half of 2Q20 as travel restrictions delay onsite diligence. Some investors also may reduce commitments due to liquidity challenges.
- Expect to see a "flight to quality" with investors preferring stable, resilient strategies and shying away from first-time funds, emerging markets, and niche strategies

### Funds Holding Final Closes by Year



# **Callan Periodic Table of Investment Returns**

20122013201420152016201720182019Jan 2020Feb 2020Mar 2020Apr 2020Real EstateSmall CapReal EstateLarge CapU.S. FixedLarge CapU.S. FixedU.S. FixedU.S. FixedSmall Cap	May 2020 YTD 20 Small Cap Equity Incom 6.51% 3.48%	<b>) 2020</b> . Fixed come
Real Estate Small Cap Real Estate Large Cap Small Cap Emerging U.S. Fixed Large Cap U.S. Fixed U.S. Fixed U.S. Fixed Small Cap	Small Cap U.S. Fix Equity Incom 6.51% 3.48%	. Fixed come
Equity Equity Equity Market Income Equity Income Income Income Equity	6.51% 3.48%	
<b>27.73%</b> 38.82% <b>15.02% 1.38%</b> 21.31% <b>37.28%</b> 0.01% <b>31.49% 1.92% 1.80%</b> -0.59% 13.74%		48%
Emerging Market EquityLarge Cap EquityLarge Cap EquityU.S. Fixed IncomeHigh Yield PieldDev ex-U.S. EquityHigh Yield EquitySmall Cap EquityReal Estate EquityGlobal ex- U.S. Fixed U.S. Fixed IncomeLarge Cap Equity	Large Cap Global e Equity U.S. Fix Incom	bal ex- . Fixed come
<u>18.23%</u> <u>32.39%</u> <u>13.69%</u> <u>0.55%</u> <u>17.13%</u> <u>24.21%</u> <u>-2.08%</u> <u>25.52%</u> <u>0.84%</u> <u>-0.20%</u> <u>-3.22%</u> <u>12.82%</u>	4.76% -1.15%	.15%
Dev ex-U.S.Dev ex-U.S.U.S. FixedReal EstateLarge CapEquityGlobal ex-Dev ex-U.S.Global ex-High YieldHigh YieldHigh YieldEmergingEquityEquityEquityU.S. FixedEquityU.S. FixedEquityU.S. FixedEquityU.S. FixedEquity	High Yield High Yie	h Yield
<u>16.41% 21.02% 5.97% -0.79% 11.96% 21.83% -2.15% 22.49% 0.76% -1.41% -11.46% 9.16%</u>	4.41% -4.76%	.76%
Small CapHigh YieldSmall CapDev ex-U.S.EmergingSmall CapLarge CapReal EstateHigh YieldEmergingLarge CapReal EstateEquityEquityEquityMarketEquity <td< td=""><td>Dev ex-U.S. Large C Equity Equity</td><td>ge Cap quity</td></td<>	Dev ex-U.S. Large C Equity Equity	ge Cap quity
16.35% 7.44% 4.89% -3.04% 11.19% 14.65% -4.38% 21.91% 0.03% -5.27% -12.35% 7.06%	4.25% -4.93%	.93%
Large Cap EquityReal EstateHigh YieldSmall Cap EquityReal EstateGlobal ex- U.S. FixedReal EstateEmerging MarketLarge Cap EquityLarge Cap EquityDev ex-U.S.Dev ex-U.S.EquityEquityIncomeIncomeEquityEquityEquityEquityEquity	Emerging Emergi Market Marke Equity Equity	erging arket quity
16.00% 3.67% 2.45% -4.41% 4.06% 10.51% -5.63% 18.44% -0.04% -8.23% -14.12% 6.97%	0.77% -11.85	.85%
High Yield       U.S. Fixed       Emerging       High Yield       Dev ex-U.S.       Real Estate       Small Cap       High Yield       Dev ex-U.S.       Real Estate       Emerging       High Yield         Income       Market       Equity       Equity	U.S. Fixed Dev ex-U Income Equity	ex-U.S. quity
<u>15.81%</u> -2.02% -2.19% -4.47% 2.75% 10.36% -11.01% 14.32% -1.94% -8.24% -15.40% 4.51%	0.47% -12.73	2.73%
U.S. Fixed Emerging Global ex- Global ex- U.S. Fixed High Yield Dev ex-U.S. U.S. Fixed Small Cap Small Cap Small Cap Global ex- Income Market U.S. Fixed U.S. Fixed Income	Global ex- Small C U.S. Fixed Equity Income	all Cap quity
4.21%         -2.60%         -3.08%         -6.02%         2.65%         7.50%         -14.09%         8.72%         -3.21%         -8.42%         -21.73%         2.04%	0.30% -13.16	8.16%
Global ex-Global ex-Dev ex-U.S.EmergingGlobal ex-U.S. FixedEmergingGlobal ex-EmergingGlobal ex-EmergingDev ex-U.S.Real EstateU.S. FixedU.S. FixedU.S. FixedIncome<	Real Estate Real Est	Estate

Sources: 
Bloomberg Barclays Aggregate
Bloomberg Barclays Corp High Yield
Bloomberg Barclays Global Aggregate ex US

● FTSE EPRA Nareit Developed ● MSCI World ex USA ● MSCI Emerging Markets ● Russell 2000 ● S&P 500



**MCERA Total Fund Review** 

## **Total Fund Asset Allocation**

## As of March 31, 2020



	\$Millions	Weight	Min		Max	Percent	\$Millions
Asset Class	Actual	Actual	Target	Target	Target	Difference	Difference
Domestic Equity	648	27.7%	28.0%	32.0%	36.0%	(4.3%)	(101)
International Equity	505	21.5%	19.0%	22.0%	25.0%	(0.5%)	<b>(11)</b>
Fixed Income	512	21.9%	20.0%	23.0%	26.0%	(1.1%)	(27)
Real Assets	384	16.4%	12.0%	15.0%	18.0%	1.4%	33
Private Equity	293	12.5%	0.0%	8.0%	12.0%	4.5%	106
Total	2,342	100.0%		100.0%			

• Domestic Equity and Private Equity were out of range at the end of March but allocations have since corrected.

## **Total Fund Asset Distribution**

	March 31, 2020				December 31, 2019	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Domestic Equity	\$648,385,384	27.68%	\$(29,471,325)	\$(189,350,580)	\$867,207,288	31.80%
SSGA S&P 500 Index Fund	453,072,349	19.34%	(83,198,829)	(110,763,665)	647,034,843	23.73%
DFA Small Cap Core	170,156,849	7.27%	(827,088)	(82,655,741)	253,639,678	9.30%
Parametric Domestic Equity Futures	25,156,186	1.07%	54,554,592	4,068,826	-33,467,232	(1.23%)
International Equity	\$504,660,413	21.55%	\$67,461,105	\$(144,055,357)	\$581,254,665	21.31%
Morgan Stanley Value	141,584,494	6.05%	0	(35,328,419)	176,912,913	6.49%
Artisan Partners Growth	154,028,348	6.58%	0	(41,975,556)	196,003,904	7.19%
TimesSquare Intl Small Cap	82,004,677	3.50%	0	(32,606,753)	114,611,430	4.20%
Parametric Emerging Markets	75,465,355	3.22%	0	(32,663,794)	108,129,150	3.97%
Parametric International Equity Futures	51,577,540	2.20%	67,461,105	(1,480,834)	-14,402,731	(0.53%)
Fixed Income	\$511,836,048	21.85%	\$(43,624,194)	\$(4,295,284)	\$559,755,526	20.53%
Wellington Core Plus	255,105,608	10.89%	22,037,446	1,861,714	231,206,448	8.48%
Western Intermediate Credit	136,002,652	5.81%	13,690,588	(5,746,086)	128,058,150	4.70%
Colchester Global	133,607,272	5.70%	9,858,368	(5,604,425)	129,353,329	4.74%
Parametric Fixed Income Futures	-12,879,484	(0.55%)	(89,210,596)	5,193,513	71,137,599	2.61%
Real Estate	\$243,349,110	10.39%	\$(227,728)	\$875,616	\$242,701,222	8.90%
Woodmont	17,395,078	0.74%	495,075	979,932	15,920,071	0.58%
UBS Trumbull Property Fund	121,860,373	5.20%	(241,930)	536,806	121,565,497	4.46%
AEW Core Property Trust	104,081,635	4.44%	(480,872)	(641,103)	105,203,610	3.86%
AEW Partners V, LP **	12,025	0.00%	0	(20)	12,045	0.00%
Public Real Assets	\$140,661,243	6.01%	\$(8,067,412)	\$(34,816,904)	\$183,545,559	6.73%
INVESCO Commodities Fund	34,048,302	1.45%	6,432,588	(11,012,972)	38,628,686	1.42%
BlackRock TIPS Index Fund	39,169,617	1.67%	(8,000,000)	851,577	46,318,040	1.70%
KBI Global Resources Fund	35,514,750	1.52%	0	(11,956,514)	47,471,264	1.74%
Blackrock REIT Index Fund	31,928,575	1.36%	(6,500,000)	(12,698,995)	51,127,569	1.87%
Private Equity*	\$293,180,877	12.52%	\$562,269	\$0	\$292,618,608	10.73%
Abbott ACE VI*	59,415,532	2.54%	(3,625,479)	0	63,041,011	2.31%
Abbott ACE VII*	40,094,949	1.71%	(85,000)	0	40,179,949	1.47%
Abbott 2016*	33,550,389	1.43%	2,175,000	0	31,375,389	1.15%
Abbott 2017*	6,842,444	0.29%	446,250	0	6,396,194	0.23%
Pathway PPEF 2008*	64,891,775	2.77%	(640,133)	(0)	65,531,908	2.40%
Pathway PE I-7*	38,755,347	1.65%	14,242	0	38,741,105	1.42%
Pathway PE I-8*	43,455,936	1.86%	1,962,377	(0)	41,493,559	1.52%
Pathway PE I-9*	6,174,505	0.26%	315,012	0	5,859,493	0.21%
Total Fund	\$2,342,073,076	100.0%	\$(13,367,285)	\$(371,642,508)	\$2,727,082,869	100.0%

## **Parametric Overlay Positions – Changes Over Time**



## **Total Fund Performance - Annualized**

Returns for Periods Ended March 31, 2020 Group: Callan Public Fund Sponsor - Large (>1B)



Current Quarter Target = 32.0% Russell 3000 Index, 22.0% MSCI ACWI ex US IMI Index, 11.5% Bloomberg Aggregate Index, 5.8% Bloomberg Intermediate Credit Index, 5.8% FTSE World Government Bond Index, 8.0% NCREIF NFI-ODCE Equal Weight Net, 1.8% Bloomberg Commodity Price Index, 1.8% S&P Global Natural Resources Index, 1.8% S&P DJ US Select REIT Index, 1.8% Bloomberg US TIPS Index, 6.4% Russell 3000 Index (Lagged)and 1.6% MSCI ACWI ex US IMI Index (Lagged).



## **Total Fund Performance – Fiscal Year**

**Fiscal Year Returns** 

Group: Callan Public Fund Sponsor - Large (>1B)



## **Total Fund Performance – Fiscal Year**

Fiscal Year Returns

Group: Callan Public Fund Sponsor - Large (>1B)



## **Total Fund Performance – Calendar Years**

Returns for Periods Ended March 31, 2020 Group: Callan Public Fund Sponsor - Large (>1B)



## Annualized 10 Year Total Fund Net Returns (Quarterly Roll)



## **Total Fund - Volatility & Risk Adjusted Returns Comparison**

Rolling Three Year Period Analysis	Median	Portfolio
Average Annual Standard Deviation	8.67%	9.27%
% Positiv e Periods	100%	100%
Average Ranking	50	40

Rolling 3 Year Standard Deviation 10 Years ended March 31, 2020



#### Rolling 3 Year Sharpe Ratio 10 Years ended March 31, 2020

Rolling Three Year Period Analysis	Median	Portfolio
Average Annual Sharpe Ratio	1.02%	1.20%
% Positive Periods	95%	93%
Average Ranking	50	36



# **Total Fund – Cumulative Returns Relative to Target**



Ten Year Annualized Risk vs. Return

#### Total Fund Cumulative Returns vs. Target 10 Years Ended March 31, 2020



Watchlist

### Investment Manager Monitoring Summary Report Active Managers as of March 31, 2020

		3 Year	3 Year	5 Year	5 Year		
	Organization/	Performance	Performance	Performance	Performance	Qualify for	
Investment Manager	leam	vs Benchmark	vs Peers	vs Benchmark	vs Peers	Watchlist?	Date Added
DEA Small Cap Core Equity							
Russell 2000 Index		N/A	N/A	N/A	N/A		
Morgan Stapley International Value Equity	~						
MSCI EAFE Index						No	4Q17
Artisan International Growth Equity	•						
MSCI EAFE Index						Yes	4Q17
TimesSquare International Small Cap Equity	-	N//A	N// A	N//A	NI/A		
MSCI EAFE Small Cap Index		NA	NA	NA	N/A		
Parametric Emerging Markets Equity						Vac	1015
MSCI Emerging Markets Index						Tes	IGID
Wellington Core Plus Fixed Income	-						
Bloomberg Barclays Aggregate Index							
Western Asset Intermediate Credit Fixed Income						Vos	
Bloomberg Barclays Intermediate Credit Index	_					163	
Colchester Global Fixed Income						Vec	3019
FTSE World Government Bond Index	_					163	3013
Invesco Balanced Risk Commodity Fund				N/A	N/A	Ves	
Bloomberg Commodity Index						103	
KBI Global Natural Resources Fund			N/A	N/A	N/A		
S&P Global Natural Resource Index					i vA		
UBS Trumbull Property Fund*		N/A	N/A	N/A	N/A	Under	4019
NFI-ODCE Index		174		17/5	IVA	Review	46(15

*UBS Trumbull Property Fund placed on watch for organizational concerns. Quantitative criteria for private market portfolios under review by Governance Committee.

#### **Quantitative Criteria**

If a manager trails its relevant benchmark by more than 100 basis points (net of fees) and ranks in the bottom quartile of its peer universe (gross of fees ranking) for the trailing three years, or if a manager trails its relevant benchmark (net of fees) or ranks below median of its peer universe (gross of fees ranking) for the trailing five years, then the manager may be placed on the Watchlist.

#### **Color Code**

meets watch list criteria, no concerns, no actions recommended

concerns exist, no actions recommended

violates watch list criteria, concerns exist, action to be determined

# Watchlist

Investment Manager	3 Year Net Return Trails Benchmark by <u>AND</u> more than 100 bps (relative return shown in bps)	3 Year Gross Return Ranks 75th - 100th%	<u>OR</u>	5 Year Net Return Trails Benchmark (relative return shown in bps)	<u>OR</u>	5 Year Gross Return Ranks 50th - 100th%	Qualify for Watchlist (Quantitative)?
DEA Small Cap Core Equity							
Bussell 2000 Index	N/A	N/A		N/A		N/A	No
Morgan Stanloy International Value Equity							
MSCI FAFE Index	71	1st		40		4th	No
Artisan International Growth Equity							
MSCI EAFE Index	496	28th		65		75th	Yes
TimesSquare International Small Cap Equity					<u> </u>		
MSCI EAFE Small Cap Index	N/A	N/A		N/A		N/A	No
Parametric Emerging Markets Equity							
MSCI Emerging Markets Index	-598	85th		-410		87th	res
Wellington Core Plus Fixed Income							<u>.</u>
Bloomberg Barclays Aggregate Index	-22	15th		29		12th	No
Western Asset Intermediate Credit Fixed Income	10	00/1		2			v
Bloomberg Barclays Intermediate Credit Index	-48	99th		-8		47th	Yes
Colchester Global Fixed Income	101	COth		100		COth	Naa
FTSE World Government Bond Index	-191	69th		-102		69th	Yes
Invesco Balanced Risk Commodity Fund	110	7946		NI/A		N1/A	Vac
Bloomberg Commodity Index	-118	78th		N/A		N/A	res
KBI Global Natural Resources Fund	462	NI/A		NI/A		NI/A	No
S&P Global Natural Resource Index	403	N/A		N/A		IN/A	INO
UBS Trumbull Property Fund	Quantitative criteria for pri	vate markets portf	olios	under review by G	overna	ance Committee.	Under
NCREIF NFI-ODCE Index	C	n watch due to or	ganiz	ational changes.			Review

# **UBS Trumbull Property Fund Snapshot**

As of March 31, 2020

As of 1Q2020	
Gross Asset Value	\$19.4 B
Net Asset Value	\$15.5 B
Leverage	18.6%
Number of Investments	184
Number of Investors	446
Redemption Queue	\$7.1 Billion
1Q20 Redemption Queue Payout	\$0 million
Contribution Queue	\$25 million

### Property Type Weights (Change from Prior Quarter)



- The Fund has a current redemption pool of \$8.3 Billion. Redemption payments have been suspended indefinitely.
- -MCERA submitted a partial redemption request for \$20 million in January 2020.
- Redemption requests must be submitted at least 60 days prior to the end of the quarter and may be withdrawn no later than 14 days prior to the end of the quarter.
- In September 2019, the fund announced investors would have a choice between two fee incentives: loyalty incentive (discounted fees of 15% over 3 years or 25% over 4 years) and top-up incentive (\$0 base fee on additional dollars deposited). These are available for election until January 2021.
- The amount of client assets in the Loyalty Fee Program is \$3.1 billion.
- -MCERA elected for the 4 year/25% discount loyalty incentive on approximately \$100 million NAV.

## **NFI-ODCE Funds - Net of Fee Returns**

As of March 31, 2020

Fund	Last Quarter	Last Year	Last 3 Years	Last 5 Years
AEW	-1.03%	2.75%	5.43%	7.27%
ARA	1.29%	5.06%	6.38%	7.38%
ASB	1.50%	2.94%	4.73%	6.61%
Barings	1.24%	5.58%	6.54%	8.05%
BGO	1.42%	4.04%	5.51%	6.95%
Blackrock	1.41%	5.66%	7.05%	8.91%
CBRE	1.44%	7.13%	8.40%	10.27%
Clarion	1.19%	5.78%	7.33%	8.75%
DWS	0.95%	5.57%	6.60%	8.08%
Everwest	1.67%	5.21%	5.87%	7.47%
GSAM	0.65%	5.06%	6.41%	7.82%
Heitman	-2.02%	-1.93%	3.65%	6.47%
Intercontinental	0.08%	6.43%	7.87%	9.48%
Invesco	1.44%	6.34%	6.97%	8.44%
JP Morgan	1.32%	4.53%	5.33%	7.01%
LaSalle	-0.36%	3.48%	6.01%	7.95%
MetLife	0.73%	6.22%	7.27%	8.99%
MSIM	0.61%	5.47%	7.16%	8.79%
NYLIM	0.02%	4.52%	6.74%	8.60%
PGIM	1.45%	5.27%	6.65%	8.09%
Principal	0.33%	4.46%	6.65%	8.16%
Stockbridge	0.90%	6.25%	7.09%	8.47%
UBS	0.26%	-3.10%	2.59%	4.71%

Rent Collections AEW April: Multifamily: 95% Industrial: 87% Office: 94% Retail: 43% AEW May: Multifamily: 95% Industrial 91% Office: 90% Retail: 56%

### **UBS April**:

Multifamily: 93% Industrial: 84% Office: 85% Retail: 31% **UBS May:** Multifamily: 94% Industrial 87% Office: 83% Retail: 32%

# **NFI-ODCE Funds - Gross of Fee All Sector Returns**

As of March 31, 2020

Fund	Retail 1Q 2020	Apartment 1Q 2020	Industrial 1Q 2020	Office 1Q 2020
AEW	-8.01%	1.51%	2.42%	-0.72%
ARA	-0.09%	-0.51%	3.74%	1.97%
ASB	-2.72%	1.49%	15.02%	2.97%
Barings	0.56%	0.78%	2.32%	1.52%
BGO	0.63%	1.16%	3.22%	0.67%
Blackrock	1.03%	0.48%	2.95%	1.65%
CBRE	-2.30%	1.60%	3.05%	0.97%
Clarion	-1.04%	1.34%	1.72%	1.37%
DWS	-0.85%	1.28%	1.90%	0.47%
GSAM	-0.33%	1.02%	2.24%	2.13%
Heitman	-14.08%	-0.68%	1.83%	-0.56%
Intercontinental	2.00%	0.26%	2.94%	0.12%
Invesco	-0.22%	1.14%	4.19%	1.12%
JP Morgan	-0.63%	1.29%	2.75%	2.61%
LaSalle	-1.10%	-2.03%	1.38%	0.66%
MetLife	-1.96%	0.45%	5.22%	1.00%
MSIM	-5.21%	0.60%	3.58%	1.03%
NYLIM	-0.98%	0.01%	1.28%	0.63%
PGIM	0.21%	1.43%	3.14%	1.40%
Principal	-1.62%	0.33%	3.69%	-0.59%
Stockbridge	0.86%	0.38%	0.97%	2.05%
UBS	-2.90%	1.80%	1.53%	0.87%

# NFI-ODCE Funds - Gross of Fee Retail Returns (trailing 4 quarters)

As of March 31, 2020

Fund	Fund Allocation Weight	Retail 1Q 2020	Retail 4Q 2019	Retail 3Q 2019	Retail 2Q 2019
AEW	17.58%	-8.01%	-1.55%	0.95%	0.45%
ARA	17.56%	-0.09%	0.85%	0.62%	0.96%
ASB	17.90%	-2.72%	-0.05%	-4.90%	0.56%
Barings	16.15%	0.56%	0.21%	0.47%	1.42%
BGO	8.95%	0.63%	1.18%	0.14%	0.43%
Blackrock	16.85%	1.03%	1.12%	1.92%	1.38%
CBRE	17.52%	-2.30%	0.20%	0.67%	1.36%
Clarion	12.70%	-1.04%	-0.69%	0.08%	-0.62%
DWS	17.90%	-0.85%	0.13%	-0.33%	0.33%
GSAM	11.37%	-0.33%	1.53%	2.01%	0.56%
Heitman	17.36%	-14.08%	-12.18%	-0.51%	-5.99%
Intercontinental	2.30%	2.00%	0.57%	1.37%	1.88%
Invesco	15.20%	-0.22%	-0.53%	0.34%	-0.62%
JP Morgan	24.64%	-0.63%	0.67%	-1.44%	0.54%
LaSalle	15.45%	-1.10%	0.45%	-1.06%	-0.98%
MetLife	13.29%	-1.96%	0.99%	-0.10%	0.30%
MSIM	13.50%	-5.21%	-1.08%	-0.47%	-0.19%
NYLIM	3.37%	-0.98%	0.44%	1.87%	2.25%
PGIM	14.32%	0.21%	0.07%	0.75%	0.85%
Principal	14.45%	-1.62%	-0.15%	0.77%	0.81%
Stockbridge	18.28%	0.86%	-0.02%	0.66%	1.63%
UBS	17.30%	-2.90%	-5.29%	0.96%	-18.30%



**MCERA Asset Class Review** 

-- Domestic Equity

-- Russell 3000 Index

## **Domestic Equity Composite**



#### Portfolio Characteristics as of March 31, 2020



Sector Allocation as of March 31, 2020



### Style Exposure Matrix Holdings as of March 31, 2020



## **Domestic Equity Composite**

#### **Returns and Rankings for Periods Ended March 31, 2020**

Returns and Rankin	gs for Ca	alendar Ye	ers
--------------------	-----------	------------	-----

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Domestic Equity - Net	(23.03)	(12.59)	2.43	4.49	9.18
Domestic Equity Target	(20.90)	(9.13)	4.00	5.77	10.17
Large Cap Equity - Net	(19.67)	(6.97)	5.04	6.71	10.14
SSGA - Net	(19.63)	(7.02)	5.07	6.72	
S&P 500 Index	(19.60)	(6.98)	5.10	6.73	10.53
Ranking vs. Large Cap Equity	51	49	47	46	
Small Cap Equity - Net	(31.68)	(26.05)	(4.75)	(1.41)	6.74
DFA Small Core - Net	(32.72)	(27.20)			
Russell 2000 Index	(30.61)	(23.99)	(4.64)	(0.25)	6.90
Ranking vs. Small Cap Equity	63	61			

	1 Qtr.					
	2020	2019	2018	2017	2016	2015
Domestic Equity - Net	(23.03)	28.75	(5.34)	20.60	13.10	(0.95)
Domestic Equity Target	(20.90)	31.02	(5.24)	21.13	12.74	0.48
Large Cap Equity - Net	(19.67)	31.63	(4.59)	21.86	12.01	1.43
SSGA - Net	(19.63)	31.43	(4.39)	21.82	12.00	1.41
S&P 500 Index	(19.60)	31.49	(4.38)	21.83	11.96	1.38
Ranking vs. Large Cap Equity	51	44	46	51	35	50
Small Cap Equity - Net	(31.68)	21.86	(8.79)	17.50	15.99	(6.82)
DFA Small Core - Net	(32.72)	21.80				
Russell 2000 Index	(30.61)	25.52	(11.01)	14.65	21.31	(4.41)
Ranking vs. Small Cap Equity	63	69				

- The domestic equity composite underperformed the index in the first quarter due to its small cap overweight and DFA's performance.
- DFA: In the first quarter, lower profitability and higher market cap stocks outperformed. DFA's investment process focuses on higher profitability and smaller market cap stocks, thus detracting from relative performance. DFA's overweight to the energy and consumer discretionary sectors plus an underweight to health care also weighed on returns.

The Domestic Equity Target is comprised of 51.1% S&P/BARRA Value, 22.2% S&P 500, 15.6% Russell 2000 and 11.1% S&P/BARRA Growth through 12/31/1999, 80% S&P 500 and 20% Russell 2000 from 12/31/1999 to 06/30/2010, and 100% Russell 3000 from 06/30/2010 to present.



## **Domestic Equity Composite**

Rolling 3 Year Tracking Error vs. Domestic Equity Target 10 Years ended March 31, 2020



# Rolling 3 Year Relative Standard Deviation vs. Domestic Equity Target 10 Years ended March 31, 2020



# Rolling 3 Year Relative Returns vs. Domestic Equity Target 10 Years ended March 31, 2020



## **International Equity Composite**



#### Portfolio Characteristics as of March 31, 2020



### Region & Style Exposure Matrix Holdings as of March 31, 2020





#### Sector Allocation as of March 31, 2020



## **International Equity Composite**

### **Returns and Rankings for Periods Ended March 31, 2020**

Returns and Rankings for Periods	Ended March 31, 2020
----------------------------------	----------------------

	Last	Last	Last 3	Last 5	Last 10		1 Qtr.				
	Quarter	Year	Years	Years	Years		2020	2019	2018	2017	2016
International Equity - Net	(23.12)	(13.70)	(0.95)	(0.08)	3.77	International Equity - Net	(23.12)	23.52	(13.51)	28.92	(0.61)
International Equity Target	(24.11)	(16.32)	(2.34)	(0.66)	1.93	International Equity Target	(24.11)	21.63	(14.76)	27.81	4.41
Morgan Stanley - Net	(20.09)	(13.20)	(1.11)	(0.22)	3.16	Morgan Stanley - Net	(20.09)	20.92	(13.46)	25.42	(1.45)
MSCI EAFE Index	(22.83)	(14.38)	(1.82)	(0.62)	2.72	MSCI EAFE Index	(22.83)	22.01	(13.79)	25.03	1.00
Ranking vs. Non-US Developed Value Equity	1	2	1	4	13	Ranking vs. Non-US Developed Value Equity	1	33	14	41	95
Artisan - Net	(21.42)	(7.80)	3.13	0.02	5.15	Artisan - Net	(21.42)	29.61	(10.56)	31.24	(9.41)
MSCI EAFE Index	(22.83)	(14.38)	(1.82)	(0.62)	2.72	MSCI EAFE Index	(22.83)	22.01	(13.79)	25.03	1.00
Ranking vs. Non-US Developed Growth Equity	69	36	28	75	26	Ranking vs. Non-US Developed Growth Equity	69	26	13	25	99
TimesSquare - Net	(28.29)					TimesSquare - Net	(28.29)				
MSCI EAFE Small Cap	(27.52)	(18.15)	(2.88)	0.97	4.81	MSCI EAFE Small Cap	(27.52)	24.96	(17.89)	33.01	2.18
TimesSquare - Gross (unlinked)	61		´			TimesSquare - Gross (unlinked)	61				
Parametric EM - Net	(30.21)	(26.60)	(7.60)	(3.74)		Parametric EM - Net	(30.21)	12.61	(13.57)	27.62	12.95
MSCI Emerging Markets Index	(23.60)	(17.69)	(1.62)	(0.36)	0.69	MSCI Emerging Markets Index	(23.60)	18.44	(14.57)	37.28	11.19
Ranking vs. Emerging Markets Equity	86	85	85	87		Ranking vs. Emerging Markets Equity	86	83	25	83	22

- The International Equity composite outperformed on a relative basis.
- Morgan Stanley: a significant overweight to consumer staples (31% vs. 13%) contributed to performance as did an overweight to health care.
- Artisan: an underweight to and stock selection within the consumer discretionary sector was beneficial. Exposure to a few U.S.
   headquartered companies that derive a significant amount of revenue overseas (such as Amazon) also contributed to returns.
- TimesSquare: overweights to financials and industrials plus selection in Japan negatively impacted performance.
- Parametric: an underweight to China (13% vs. 40%) negatively impacted performance as China was one of the top performing countries. Additionally, an overweight to Mexico weighed on performance as the peso and local companies sharply declined as the coronavirus spread.

The International Equity Target is comprised of 100% MSCI EAFE Index through 06/30/2010, and 100% MSCI ACWI ex-US IMI Index thereafter.

# **International Equity Composite**



Callan

-- International Equity

## **International Equity Composite**

Rolling 3 Year Tracking Error vs. Int'l Equity Target 10 Years Ended March 31, 2020



# Rolling 3 Year Relative Standard Deviation vs. Int'l Equity Target 10 Years ended March 31, 2020



### Rolling 3 Year Relative Returns vs. Int'l Equity Target 10 Years ended March 31, 2020



## **Fixed Income Composite**



Portfolio Characteristics as of March 31, 2020



Quality Rating as of March 31, 2020 Total Domestic Fixed Income Database



Sector Allocation as of March 31, 2020



## **Fixed Income Composite**

#### Returns and Rankings for Periods Ended March 31, 2020

	Last	Last	Last 3	Last 5	Last 10
	Quarter	Year	Years	Years	Years
Fixed Income - Net	(0.39)	5.09	3.70	3.01	4.03
Fixed Income Target	1.49	6.83	4.28	3.11	3.44
Wellington - Net	0.95	7.20	4.61	3.65	4.54
Bloomberg Aggregate Index	3.15	8.93	4.82	3.36	3.88
Ranking vs. Core Plus Fixed Income	25	21	15	12	31
Western Asset - Net	(3.88)	1.50	2.62	2.57	4.17
Bloomberg Intermediate Credit Index	(2.35)	3.28	3.11	2.65	3.76
Ranking vs. Intermediate Fixed Income	100	100	99	47	1
Colchester - Net	(3.84)	1.54	2.37	1.94	
FTSE World Government Bond Index	2.00	6.17	4.27	2.96	2.19
Ranking vs. Global Fixed Income (Uhedged)	66	64	69	69	

#### **Returns and Rankings for Calendar Years**

	1 Qtr.					
	2020	2019	2018	2017	2016	2015
Fixed Income - Net	(0.39)	8.65	(0.35)	5.14	4.26	(0.89)
Fixed Income Target	1.49	8.21	(0.17)	4.55	2.70	(0.39)
Wellington - Net	0.95	9.94	(0.37)	4.90	4.72	0.09
Bloomberg Aggregate Index	3.15	8.72	0.01	3.54	2.65	0.55
Ranking vs. Core Plus Fixed Income	25	44	43	41	43	51
Western Asset - Net	(3.88)	9.78	(0.37)	4.12	4.89	0.95
Bloomberg Intermediate Credit Index	(2.35)	9.52	0.01	3.67	3.68	0.90
Ranking vs. Intermediate Fixed Income	100	1	99	2	1	59
Colchester - Net	(3.84)	7.56	(0.90)	8.20	3.87	(5.95)
FTSE World Government Bond Index	2.00	5.90	(0.84)	7.49	1.60	(3.57)
Ranking vs. Global Fixed Income (Uhedged)	66	58	18	35	15	90

- The Fixed Income composite lagged its target in the first quarter.
  - Wellington: exposure to bank loans and high yield as well as allocations to securitized products were headwinds to performance.
     The Fed's intervention measures were focused more on corporate credit and helped recovery in that sector more so than the securitized sector.
  - Western Asset: the portfolio's overweight to low quality holdings and energy were the largest detractors to performance over the quarter.
  - Colchester: currency exposure was the largest detractor for the fund over the first quarter, particularly for oil producing countries. An
    overweight to the Norwegian Krone and the Mexican Peso were the biggest headwinds.

Fixed Income Target is comprised of 100% Bloomberg Aggregate Index until 03/31/2014 and 50% Bloomberg Aggregate Index, 25% Bloomberg Intermediate Credit Index, and 25% FTSE World Government Bond Index thereafter.

## **Fixed Income Composite**





# Rolling 3 Year Relative Standard Deviation vs. Fixed Income Target 10 Years ended March 31, 2020



# Rolling 3 Year Relative Returns vs. Fixed Income Target 10 Years ended March 31, 2020



## **Real Estate Composite**



Diversification by Property Type as of March 31, 2020







## **Real Estate Composite**

#### Returns and Rankings for Periods Ended March 31, 2020

	Last		Last 3	Last 5	Last 10
	Quarter	Last Year	Years	Years	Years
Real Estate - Net	0.07	(0.09)	3.83	8.37	10.28
Real Estate Target	0.71	4.38	6.14	7.82	10.38
AEW Core Property Trust - Net	(1.03)	2.69	5.36	7.18	
NFI-ODCE Equal Wt Net Index	0.71	4.38	6.14	7.82	10.55
Ranking vs. Core Open End Funds	99	88	78	74	
UBS Trumbull Property Fund - Net	0.24	(3.12)	2.55	4.68	
NFI-ODCE Equal Wt Net Index	0.71	4.38	6.14	7.82	10.55
Ranking vs. Core Open End Funds	97	97	97	97	

#### **Returns and Rankings for Calendar Years**

	1 Qtr.						
	2020	2019	2018	2017	2016	2015	
Real Estate - Net	0.07	0.64	6.46	5.66	7.14	28.12	
Real Estate Target	0.71	5.18	7.30	6.92	8.36	14.18	
AEW Core Property Trust - Net	(1.03)	5.29	6.77	6.99	7.51	12.71	
NFI-ODCE Equal Wt Net Index	0.71	5.18	7.30	6.92	8.36	14.18	
Ranking vs. Core Open End Funds	96	71	75	46	82	78	
UBS Trumbull Property Fund - Net	0.24	(2.88)	6.12	5.32	6.16	11.79	
NFI-ODCE Equal Wt Net Index	0.71	5.18	7.30	6.92	8.36	14.18	
Ranking vs. Core Open End Funds	94	97	86	88	90	83	

- The AEW Core Property Trust's current leverage is 25.1% (NFI-ODCE leverage: 21.9%) and has an occupancy rate of 95.6%.
  - The industrial sector continues to lead performance for AEW while the retail and office sectors posted a negative appreciation return in the first quarter.
- The UBS Trumbull Property Fund's current leverage is 18.6% and has an occupancy rate of 93.0%.
- -UBS' performance this quarter was mainly impacted by negative appreciation for office, hotel, and retail assets.

The Real Estate Target is comprised of the NCREIF Classic Index through 12/31/2004, NCREIF Total Property Index through 12/31/2014, and the NFI-ODCE Equal Weight Net thereafter.

## **AEW Income and Appreciation Returns**

## Income Rankings vs Callan Real Estate ODCE

Periods ended March 31, 2020



### Appreciation Rankings vs Callan Real Estate ODCE Periods ended March 31, 2020

10%	(60)	(67)	(62)	(65)	(54)
(8%) —	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
10th Percentile	0.74	2.85	3.99	5.68	6.68
25th Percentile	0.56	2.66	3.78	5.21	6.03
Median	0.15	1.68	3.09	4.42	5.44
75th Percentile	(0.87)	0.52	2.17	3.56	4.67
90th Percentile	(2.03)	(5.78)	(0.24)	2.36	3.55
AEW Core Property Trust	(2.80)	(1.70)	1.21	2.90	3.73
NFI-ODCE Equal Weight Net	(0.17)	0.88	2.57	4.08	5.16

## **UBS Income and Appreciation Returns**

### Income Rankings vs Callan Real Estate ODCE Periods ended March 31, 2020



### Appreciation Rankings vs Callan Real Estate ODCE Periods ended March 31, 2020

$ \begin{array}{c} 10\% \\ 8\% \\ -6\% \\ -4\% \\ -2\% \\ -0\% \\ -(2\%) \\ -(4\%) \\ -(6\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8\%) \\ -(8$	(60)	(67) <b></b> ● (97)	(62)	(65) (95)	(54)
(10%) —	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
10th Percentile 25th Percentile Median 75th Percentile 90th Percentile	0.74 0.56 0.15 (0.87) (2.03)	2.85 2.66 1.68 0.52 (5.78)	3.99 3.78 3.09 2.17 (0.24)	5.68 5.21 4.42 3.56 2.36	6.68 6.03 5.44 4.67 3.55
UBS Trumbull Property Fund	(0.62)	(7.78)	(1.55)	0.90	2.43
NFI-ODCE Equal Weight Net ▲	(0.17)	0.88	2.57	4.08	5.16

## **Real Assets Composite**



- The BlackRock TIPS and REITs Funds are passive.
- The Invesco Balanced Risk Commodities Fund underperformed primarily due to its overweight in energy.
- All three strategies within the KBI Global Resources Solutions Fund (energy solutions, water, and agribusiness) outperformed the S&P Global Natural Resources Index (materials and energy) with defensive segments, such as energy and water utilities, performing relatively well.

### Returns and Rankings for Periods Ended March 31, 2020

	Last Quarter	Last Year	Last 3 Years	Last 4 Years
Real Assets - Net	(19.12)	(14.19)	(2.60)	(0.15)
Real Assets Target	(20.78)	(17.37)	(3.50)	(0.39)
BlackRock TIPS Index Fund - Net	1.61	6.79	3.54	3.07
Bloomberg US TIPS Index	1.69	6.85	3.46	2.96
Ranking vs. Real Returns Database	28	14	11	1
BlackRock REITs Index Fund - Net	(28.51)	(23.96)	(3.99)	(2.27)
S&P Dow Jones US Select REIT Index	(28.52)	(23.96)	(4.28)	(2.94)
MSCI US REIT Index	(26.99)	(20.99)	(3.02)	(1.51)
Ranking vs. Real Estate Mutual Funds	87	91	83	77
Invesco Commodities Fund - Net	(25.55)	(25.17)	(9.79)	(5.29)
Bloomberg Commodity Index	(23.29)	(22.31)	(8.61)	(4.55)
Ranking vs. Commodities Funds	48	50	77	51
KBI Global Resources - Net	(25.35)	(16.46)	(2.35)	2.37
S&P Global Natural Resources Index	(32.99)	(30.49)	(6.98)	(0.09)
KBI Custom Benchmark	(21.58)	(9.58)	0.35	3.13

#### **Returns and Rankings Calendar Years**

	1 Qtr. 2020	2019	2018	2017
Real Assets - Net	(19.12)	15.51	(7.97)	9.59
Real Assets Target	(20.78)	14.08	(7.27)	7.95
BlackRock TIPS Index Fund - Net	1.61	8.49	(1.15)	3.21
Bloomberg US TIPS Index	1.69	8.43	(1.26)	3.01
Ranking vs. Real Returns Database	28	13	27	1
BlackRock REITS Index Fund - Net	(28.51)	23.08	(4.22)	6.01
S&P Dow Jones US Select REIT Index	(28.52)	23.10	(4.22)	3.76
MSCI US REIT Index	(26.99)	25.84	(4.57)	5.07
Ranking vs. Real Estate Mutual Funds	87	89	25	42
Invesco Commodities Fund - Net	(25.55)	5.49	(11.61)	5.35
Bloomberg Commodity Index	(23.29)	7.69	(11.25)	1.70
Ranking vs. Commodities Funds	48	57	28	28
KBI Global Resources - Net	(25.35)	24.81	(14.59)	24.61
S&P Global Natural Resources Index	(32.99)	16.41	(13.08)	21.98
KBI Custom Benchmark	(21.58)	28.74	(13.77)	21.96

The Real Assets Target is comprised of 25% Bloomberg US TIPS Index, 25% Bloomberg Commodity Index, 25% S&P Dow Jones US Select REIT Index, and 25% S&P Global Natural Resources Index. The KBI Custom Benchmark consists of 1/3 each: S-Network Global Water Index, Wilderhill New Energy Global Innovation Index, and Dax Global Agribusiness Index.

## **Private Equity Portfolio**

- 84% Paid-In through 12/31/19.
- When ranked against the Thomson-Cambridge Private Equity Database, MCERA is ranked in the second quartile for Total Value to Paid-In (TVPI) basis.
- The total portfolio is well diversified by vintage year and investment type.

	Quarter		
	December 31, 2019	Change	September 30, 2019
Summary			
Vintage Years	13 in 2008-2020		13 in 2008-2020
# Total Partnerships	357	1	356
# Active Partnerships	354	1	353
# Liquidated Partnerships	3	-	3
Changes in Value			
Capital Commitments	\$400,000,000	-	\$400,000,000
Paid-In Capital	\$335,751,462	\$9,453,814	\$326,297,648
Uncalled Capital	\$64,307,887	\$(9,453,814)	\$73,761,701
% Paid-In	83. <b>94%</b>	2.36%	81.57%
Distributed Capital	\$234,946,437	\$12,655,031	\$222,291,406
Net Asset Value	\$292,618,608	\$11,628,287	\$280,990,321
Total Realized and Unrealized Value	\$527,565,045	\$24,283,318	\$503,281,727
Ratios and Performance			
Distributions to Paid-In Capital (DPI)	0.70x	0.02x	0.68x
Residual Value to Paid-In Capital (RVPI)	0.87x	0.01x	0.86x
Total Value to Paid-In Capital (TVPI)	1.57x	0.03x	1.54x
Quartile Ranking	2nd		2nd
Net IRR	13.03%	0.29%	12.74%
Additional Performance Metrics			
Distribution Rate, as % of Beginning NAV		4.50%	
Unrealized Gain/(Loss), Dollars		\$14,829,504	
Unrealized Gain/(Loss), %		5.28%	

Quartile Rankings against the All Private Equity, All Regions Refinitiv/Cambridge Database.

Uncalled capital above does not reflect currency fluctuations for Pathway's investments in foreign partnerships.


### **Private Equity Portfolio Exposure**



#### **Private Equity Ratios – Changes Over Time**





Appendix

#### SSGA S&P 500 Index Portfolio

Inception Date: 12/31/2010 Strategy AUM: \$430.6B Vehicle AUM: \$39.4B Fee Schedule: 0.03% on all assets

Returns for Periods Ended March 31, 2020 Group: Callan Large Capitalization



#### **DFA Small Cap Core Equity**

Inception Date: 12/31/2018 Strategy AUM: \$16.9B Vehicle AUM: \$1.4B Fee Schedule:

0.33% on all assets

Returns for Periods Ended March 31, 2020 Group: Callan Small Cap Core



### Morgan Stanley International Value Equity

Inception Date: 9/30/2001 Strategy AUM: \$8.9B Vehicle AUM: \$1.7B Fee Schedule: 0.75% on the first \$25 million 0.65% on the next \$50 million 0.60% on the next \$25 million 0.45% on the balance Returns for Periods Ended March 31, 2020 Group: Callan Non-US Developed Value Equity



### **Artisan International Growth Equity**

Inception Date: 12/31/2002 Strategy AUM: \$18.4B Vehicle AUM: \$1.2B Fee Schedule:

0.80% on all assets

Returns for Periods Ended March 31, 2020 Group: Callan Non-US Broad Growth Equity



### **TimesSquare International Small Cap Equity**

Inception Date: 3/31/2019 Strategy AUM: \$2.4B Vehicle AUM: \$138M Fee Schedule: 0.85% on all assets

Returns for Periods Ended March 31, 2020 Group: Callan International Small Cap



### **Parametric Emerging Markets Equity**

Inception Date: 9/30/2010
Strategy AUM: \$3.9B
Vehicle AUM: \$915M
Fee Schedule:

0.78% on all assets

Returns for Periods Ended March 31, 2020 Group: Emerging Markets Equity DB



### Wellington Core Plus Fixed Income



#### Western Asset Intermediate Credit Fixed Income



#### **Colchester Global Fixed Income**

Inception Date: 3/31/2014 Strategy AUM: \$23.2B Vehicle AUM: \$4.7B Fee Schedule: 0.60% on the first \$25 million 0.50% on the next \$25 million 0.35% on the next \$100 million 0.30% on the balance

Returns for Periods Ended March 31, 2020 Group: Callan Global Fixed Income (Unhedged)



### **UBS Trumbull Property Fund**

Inception Date: 3/31/2013 Fund NAV: \$15.5B Fee Schedule: 0.955% on the first \$10 million 0.825% on the next \$15 million 0.805% on the next \$25 million 0.79% on the next \$25 million 0.67% on the next \$150 million 0.60% on the next \$150 million 0.56% on the next \$200 million 0.52% on the balance

25% Loyalty Incentive Fee for 4 years Effective 1/1/20





### **AEW Core Property Trust**

Inception Date: 3/31/2013 Fund NAV: \$7.2B Fee Schedule: 1.10% on the first \$10 million 1.00% on the next \$15 million 0.85% on the next \$25 million 0.80% on the next \$50 million 0.75% on the balance

Returns for Periods Ended March 31, 2020 Group: Callan Open End Core Cmmingled Real Est



#### **BlackRock TIPS Index Fund**

Inception Date: 6/30/2015 Strategy AUM: \$39.3B Vehicle AUM: \$11.6B Fee Schedule: 0.03% on all assets



Returns for Periods Ended March 31, 2020 Group: Real Returns Database

#### BlackRock REITs Index Fund

Inception Date: 9/30/2017
Strategy AUM: \$928M
Vehicle AUM: \$928M
Fee Schedule:
0.06% on all assets

Returns for Periods Ended March 31, 2020 Group: Callan Real Estate Mutual Funds



### **Invesco Balanced Risk Commodities Fund**

Inception Date: 6/30/2016 Strategy AUM: \$1.7B Vehicle AUM: \$0.7B Fee Schedule: 0.70% on all assets Returns for Periods Ended March 31, 2020 Group: Callan Commodities



#### **KBI Global Resources Fund**

Inception Date: 9/30/2016 Strategy AUM: \$222.3M Vehicle AUM: \$54.3M Fee Schedule: 0.85% on all assets



**Returns for Periods Ended March 31, 2020** 

### Callan

## Marin County Employees' Retirement Association Defined Benefit Plan

Managers	May Market Value	May 2020	Calendar Year to Date: 1/1/20 - 5/31/20	Fiscal Year to Date: 7/1/19 -5/31/20
Domestic Equity	\$760,292,546	<b>5.0%</b>	<b>-8.6%</b>	<b>0.2%</b>
Russell 3000 Index		5.4%	-5.6%	4.2%
Large Cap Equity SSgA S&P 500 Index Fund S&P 500 Index	\$537,896,733 \$533,938,734	<b>4.8%</b> <b>4.8%</b> 4.8%	<b>-5.0%</b> <b>-5.0%</b> -5.0%	<b>5.4%</b> <b>5.3%</b> 5.3%
Parametric S&P 500 Futures	\$3,957,999			
Small Cap Equity Dimensional Fund Advisors Russell 2000 Index Parametric Russell 2000 Futures	\$222,395,813 \$204,391,011 \$18,004,802	<b>5.7%</b> <b>5.7%</b> 6.5%	<b>-19.0%</b> <b>-19.0%</b> - <i>16.0%</i>	<b>-13.8%</b> <b>-13.8%</b> <i>-9.8%</i>
International Equity	\$574,769,527	<b>5.4%</b>	<b>-12.1%</b>	<b>-5.9%</b>
MSCI ACWI ex-US IMI Index		3.6%	-14.9%	-8.8%
Morgan Stanley Artisan Partners MSCI EAFE Index	\$160,414,416 \$173,281,891	3.9% 5.1% 4.4%	-9.6% -11.6% -14.3%	<b>-4.4%</b> <b>-4.2%</b> -8.2%
TimesSquare	\$99,179,025	<b>10.3%</b>	<b>-13.1%</b>	<b>-3.6%</b>
MSCI EAFE Small Cap Index		7.1%	-14.3%	-4.8%
Parametric Emerging Markets	\$85,322,030	<b>3.5%</b>	<b>-21.1%</b>	<b>-18.7%</b>
MSCI Emerging Markets Index		0.8%	-16.0%	-10.0%
Parametric International Futures	\$56,572,165			
Fixed Income	\$487,304,644	<b>1.9%</b>	<b>4.8%</b>	<b>7.2%</b>
Blended Benchmark		0.7%	4.3%	6.4%
Wellington	\$216,182,543	<b>1.6%</b>	<b>5.5%</b>	<b>8.3%</b>
Bloomberg Barclays US Aggregate Index		0.5%	5.5%	8.2%
Western Asset	\$145,674,201	<b>2.2%</b>	<b>3.7%</b>	<b>6.1%</b>
Bloomberg Barclays US Intermediate Credit Index		1.7%	2.7%	5.5%
Colchester	\$139,903,662	<b>2.4%</b>	<b>0.7%</b>	<b>2.8%</b>
FTSE World Government Bond Index		0.2%	3.4%	3.9%
Parametric Fixed Income Futures	-\$14,455,762			

All market values and returns shown are preliminary and subject to revision.

### Callan

### Marin County Employees' Retirement Association Defined Benefit Plan

Managers	May Market Value	May 2020	Calendar Year to Date: 1/1/20 - 5/31/20	Fiscal Year to Date: 7/1/19 - 5/31/20
Public Real Assets	\$153,159,311	3.2%	-12.0%	-8.1%
Blended Benchmark		1.9%	-15.1%	-11.8%
BlackRock TIPS Index Fund	\$40.438.562	0.4%	4.9%	7.1%
Barclays US TIPS Index	· · / · · / · ·	0.3%	4.8%	7.1%
BlackRock REIT Index Fund	\$34,219,141	-0.6%	-23.4%	-19.3%
DJ S&P US Select REIT Index		-0.6%	-23.4%	-19.3%
Invesco Balanced Risk Commodities Fund	\$36,636,070	6.5%	-19.9%	<b>-18.0%</b>
Bloomberg Commodities Index		4.3%	-21.2%	-19.2%
KBI Global Resources Fund	\$41,865,539	6.6%	-11.8%	-5.3%
S&P Global Natural Resources Index		3.7%	-20.8%	-18.8%
Real Estate(1)	\$243,349,111	0.0%	0.1%	1.4%
NFI-ODCE Equal Weight Net(1)		0.0%	0.7%	3.2%
Woodmont	\$17.395.078	-	-	
UBS Trumbull Property Fund	\$121,860,373	-	-	
AEW Core Property Trust	\$104,081,635	-	-	
AEW Partners V, LP	\$12,025	-	-	
Private Equity(2)	\$293,180,877	0.0%	0.0%	6.6%
Abbott ACE VI	\$59,415,532	-	-	
Abbott ACE VII	\$40,094,949	-	-	
ACE Fund 2016	\$33,550,389	-	-	
Abbott Fund 2017	\$6,842,444	-	-	
Pathway PPEF 2008	\$64,891,775	-	-	
Pathway PPEF I-7	\$38,755,347	-	-	
Pathway PPEF I-8	\$43,455,936	-	-	
Pathway PPEF I-9	\$6,174,505	-	-	
Total Fund	\$2,512,056,015	3.3%	-4.8%	1.0%

(1)Market values as of March 31, 2020; 0% return used for April and May.

(2)Market values as of March 31, 2020; 0% return used for April and May.

All market values and returns shown are preliminary and subject to revision.