

Callan



Chicago Teachers' Pension Fund

Executive Summary

June 30, 2018

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**Public School Teachers' Pension and Retirement Fund of Chicago
Performance Evaluation Executive Summary
Second Quarter 2018**

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Total Fund Commentary

The Fund was valued at \$10.8 billion at the end of the second quarter, representing a decrease of \$78.3 million from March 31, 2018. Investment gains of \$79.1 million were offset by negative net cash outflow activity of \$157.5 million during the quarter. Overall, the portfolio's asset allocation was close to its strategic targets at quarter-end, reflecting a slight underweight to private equity and real estate.

Summer months are typically a quiet time for the markets. Recent events, however, may disrupt this tradition. Threats of escalating trade wars have cast a pall over equities, and numerous geopolitical uncertainties continue to push investors toward a more cautious stance. A desynchronization in global growth as well as a divergence in central banks' monetary policies have contributed to U.S. dollar strength and wreaked havoc on emerging markets. Currencies of emerging market countries with significant external funding requirements came under particular pressure during the second quarter. Oil prices have risen sharply, and the CBOE's VIX Index climbed steadily higher through June, signaling increased investor angst. While economic growth in the U.S. has been robust, signs of deceleration have emerged overseas, especially in Europe, Japan, and China.

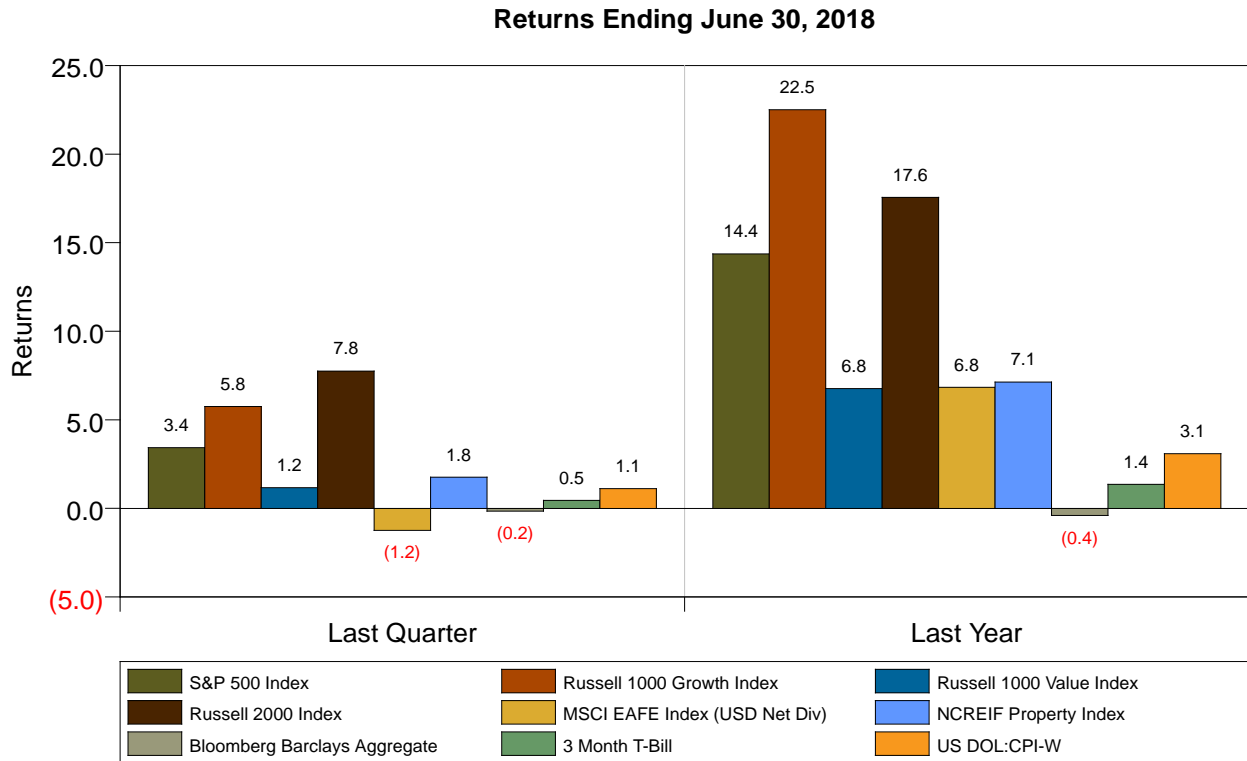
In this environment, the Fund had a net return of 0.68% over the quarter (0.75% gross of fees), underperforming the Policy Target by 15 basis points. The Fund ranked in the third quartile among peers over the second quarter, but finished in the top 39% for fiscal year 2018 and above the 38th percentile over the trailing three-, five-, and seven-year periods, with most of these periods in the top third of peers. Over the second quarter, domestic stocks outperformed international stocks and developed markets outpaced emerging markets. The small cap market outperformed the large cap market on trade war fears – large cap companies derive a significant portion of revenues from foreign markets (S&P 500 aggregate is ~40%) and are more negatively impacted by trade wars as compared to their domestically focused small cap peers. Growth continued to outperform value across the large and mid-capitalization spectrums, though value outperformed growth in small caps. Manager-specific performance was mixed relative to benchmarks. The public equity portfolio was the largest contributor to second quarter Total Fund returns while the fixed income portfolio posted less attractive results by a small margin.

The Fund posted competitive performance versus the Policy Benchmark over all longer periods measured.

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Select Market Returns



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QUARTERLY REVIEW

- **Second Quarter, 2018 Investment Performance Update:**
 - **Performance:** For the second quarter, the Fund underperformed the Policy Target benchmark by 15 basis points, net of fees, ranking in the 71st percentile of peers. Longer-term performance continues to be favorable relative to all benchmarks.

- **Watch Status Report:** The following managers are on the Watch List:
 - LM Capital: Included on the Watch List due to personnel turnover. Callan recommends that LM Capital be removed from the watch list this quarter, after a successful onsite meeting that Callan conducted at LM Capital in May 2018.
 - Channing Capital: Included on the Watch List due to personnel changes.
 - Ariel: Included on the watch list due to organizational issues.

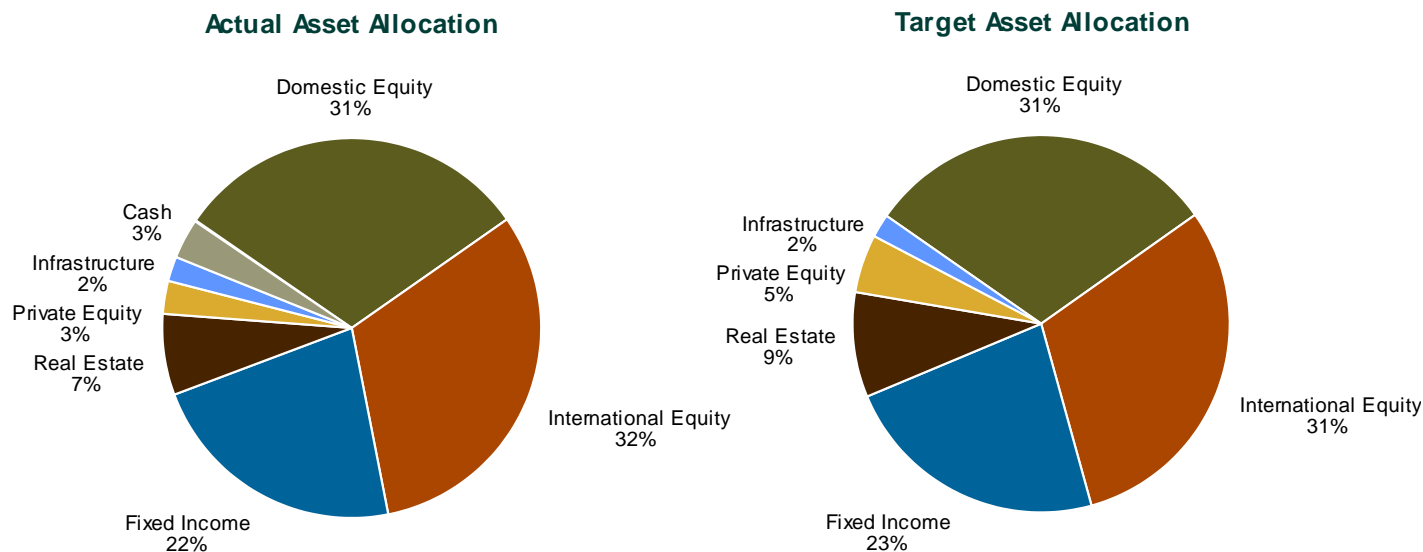
- **RFP Activity:** The following RFPs have been approved by the Board and are currently in progress:
 1. Private Non-Core Real Estate
 2. Private Equity Direct Fund – Africa Focused

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Asset Allocation

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Asset Class	\$Millions Actual	Weight Actual	Target	Percent Difference	\$Millions Difference
Domestic Equity	3,314	30.7%	30.5%	0.2%	21
International Equity	3,417	31.6%	30.5%	1.1%	123
Fixed Income	2,423	22.4%	23.0%	(0.6%)	(61)
Real Estate	749	6.9%	9.0%	(2.1%)	(223)
Private Equity	300	2.8%	5.0%	(2.2%)	(240)
Infrastructure	227	2.1%	2.0%	0.1%	11
Cash	367	3.4%	0.0%	3.4%	367
Total	10,798	100.0%	100.0%		

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INVESTMENT MANAGER ASSET ALLOCATIONS

Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of June 30, 2018, with the distribution as of March 31, 2018. 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.

	June 30, 2018			Inv. Return	March 31, 2018	
	Market Value	Weight	Net New Inv.		Market Value	Weight
DOMESTIC EQUITY	\$3,314,360,665	30.69%	\$(157,827,837)	\$143,555,088	\$3,328,633,414	30.60%
Large Cap	\$2,904,198,694	26.90%	\$(155,954,637)	\$119,710,185	\$2,940,443,146	27.03%
Large Cap Core Index	\$1,941,329,645	17.98%	\$(9,400,839)	\$67,575,885	\$1,883,154,599	17.31%
NTGI 500 Index LCC	258,943,531	2.40%	(1,358,036)	8,633,070	251,668,496	2.31%
Rhumbline Rsl 1000 LCC	1,682,386,114	15.58%	(8,042,802)	58,942,551	1,631,486,365	15.00%
Large Cap Core Equity	\$617,474	0.01%	\$(142,606,107)	\$5,811,064	\$137,412,517	1.26%
Ivy LCC	617,474	0.01%	(142,606,107)	5,811,064	137,412,517	1.26%
Large Cap Growth Equity	\$509,060,989	4.71%	\$(1,318,461)	\$40,712,864	\$469,666,585	4.32%
Rhumbline Rsl 1000 LCG	329,452,078	3.05%	(1,112,198)	18,137,794	312,426,481	2.87%
Zevenbergen US ACE	179,608,911	1.66%	(206,263)	22,575,070	157,240,103	1.45%
Large Cap Value Equity	\$453,190,587	4.20%	\$(2,629,230)	\$5,610,372	\$450,209,445	4.14%
Channing US ACE	143,038,699	1.32%	(629,754)	3,690,760	139,977,693	1.29%
BMO Global-Harris LCV	310,151,888	2.87%	(1,999,476)	1,919,612	310,231,752	2.85%
Small Cap Equity	\$339,431,689	3.14%	\$(1,564,958)	\$20,719,002	\$320,277,644	2.94%
NTGI Structured SCC	180,700,923	1.67%	(650,854)	13,166,703	168,185,074	1.55%
Phocas SCV	158,730,765	1.47%	(914,105)	7,552,299	152,092,571	1.40%
Attucks Domestic Equity (Mgr of Mgrs)	\$70,730,282	0.66%	\$(308,242)	\$3,125,901	\$67,912,624	0.62%
Attucks Matarin SCC	23,771,674	0.22%	(69,145)	1,634,220	22,206,600	0.20%
Attucks Paradigm LCV	23,016,263	0.21%	(130,144)	437,817	22,708,591	0.21%
Attucks Stoneridge LCE	23,893,688	0.22%	(108,951)	1,055,595	22,947,044	0.21%
INTERNATIONAL EQUITY	\$3,416,762,812	31.64%	\$(36,332,283)	\$(88,786,680)	\$3,541,881,776	32.56%
Ariel EAFE ILCV	76,521,919	0.71%	(1,253,594)	(2,521,211)	80,296,724	0.74%
DFA ISCV	186,800,859	1.73%	(25,242)	(6,471,807)	193,297,908	1.78%
Eamest Partners EME	177,345,972	1.64%	(2,054,646)	(18,373,318)	197,773,936	1.82%
Eamest Partners ILCE	602,812,600	5.58%	(6,905,570)	(16,752,914)	626,471,084	5.76%
Lazard Asst Mgt ILCE	597,285,703	5.53%	(6,065,797)	(24,680,389)	628,031,889	5.77%
Leading Edge IE MOM	133,232,882	1.23%	(1,788,317)	(2,741,188)	137,762,387	1.27%
Morgan Stanley ILCE	611,202,763	5.66%	(8,720,963)	1,827,993	618,095,732	5.68%
Strategic Global Adv. EAFE	78,483,736	0.73%	(1,179,847)	(823,301)	80,486,884	0.74%
William Blair ILCG	629,701,423	5.83%	(5,177,592)	(8,167,879)	643,046,894	5.91%
William Blair ISCE	203,669,388	1.89%	(1,924,339)	(6,832,852)	212,426,578	1.95%
TOTAL FUND	\$10,798,147,841	100.0%	\$(157,494,411)	\$79,149,706	\$10,876,492,546	100.0%

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Asset Distribution Across Investment Managers

	June 30, 2018			March 31, 2018		
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Attucks Int'l Equity	\$119,705,568	1.11%	\$(1,236,378)	\$(3,249,815)	\$124,191,761	1.14%
Attucks APEX Int'l ACC	12,843	0.00%	(4)	4	12,843	0.00%
Attucks GlobeFlex Int'l ACC	9,835	0.00%	0	(94)	9,929	0.00%
Attucks GlobeFlex Global Eq	24,986,473	0.23%	(393,765)	(712,581)	26,092,818	0.24%
Attucks Brown Capital Int'l SCG	30,963,029	0.29%	(456,545)	1,094,710	30,324,864	0.28%
Attucks Ativo Capital EM	19,664,795	0.18%	(263,090)	(1,756,975)	21,684,860	0.20%
Attucks Glovista EM	19,750,608	0.18%	(4,951)	(2,226,324)	21,981,883	0.20%
Attucks Redwood Int'l ACC	24,317,985	0.23%	(118,023)	351,444	24,084,565	0.22%
FIXED INCOME	\$2,423,071,945	22.44%	\$(19,224,790)	\$(13,570,299)	\$2,455,867,034	22.58%
NTGI Gov/Credit Index FI	914,799,862	8.47%	(7,015,605)	(3,477,759)	925,293,226	8.51%
Garcia Hamilton FIC	226,519,846	2.10%	(1,538,909)	1,079,780	226,978,976	2.09%
LM Capital FICP	200,874,615	1.86%	(1,905,711)	(1,184,549)	203,964,875	1.88%
Pugh FIC	219,992,658	2.04%	(1,993,319)	(386,801)	222,372,777	2.04%
Taplin Canida FI	221,149,402	2.05%	(2,135,949)	(744,756)	224,030,107	2.06%
WAMCO FICP	587,687,668	5.44%	(4,240,854)	(8,198,853)	600,127,375	5.52%
Attucks Fixed Income	\$52,047,894	0.48%	\$(394,442)	\$(657,361)	\$53,099,698	0.49%
Attucks New Century GI TIPS	20,156,532	0.19%	(61,463)	(419,556)	20,637,551	0.19%
Attucks LM Capital EMD	13,748,380	0.13%	(147,466)	(221,252)	14,117,098	0.13%
Attucks Ramirez Fixed Income	18,142,982	0.17%	(185,513)	(16,554)	18,345,049	0.17%
INFRASTRUCTURE	\$227,364,041	2.11%	\$(2,885,959)	\$4,790,180	\$225,459,820	2.07%
Brookfield Infra III	19,789,496	0.18%	(560,073)	320,290	20,029,279	0.18%
JP Morgan Infr-OE	98,529,258	0.91%	(1,563,755)	3,157,649	96,935,365	0.89%
Macquarie Fd II Infr	80,382,718	0.74%	0	1,364,604	79,018,113	0.73%
Macquarie European Fund III Infr	28,662,570	0.27%	(762,130)	(52,363)	29,477,063	0.27%
TOTAL FUND	\$10,798,147,841	100.0%	\$(157,494,411)	\$79,149,706	\$10,876,492,546	100.0%

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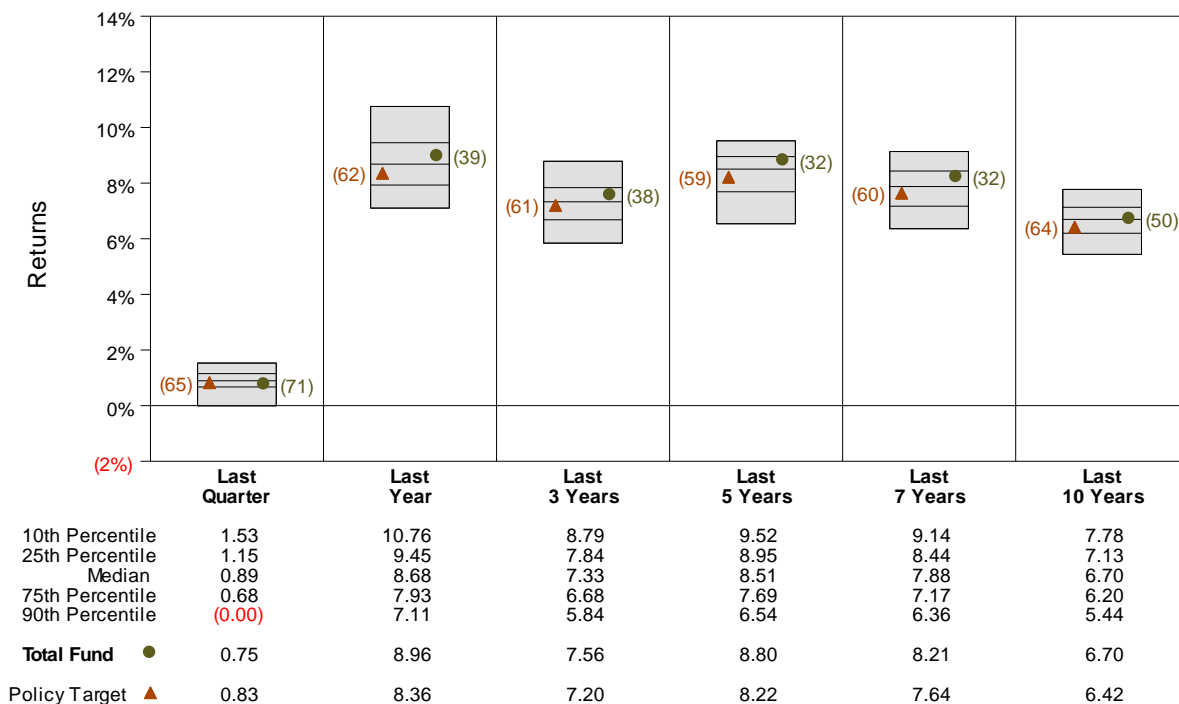
Asset Distribution Across Investment Managers

	June 30, 2018			March 31, 2018		
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
REAL ESTATE	\$749,019,224	6.94%	\$(13,824,690)	\$20,577,945	\$742,265,968	6.82%
BREDS HG LP	15,022,708	0.14%	3,987,926	240,334	10,794,448	0.10%
Capri Select Fd II PRE	51,101	0.00%	0	(11)	51,112	0.00%
City View PRE	11,581,691	0.11%	0	(24,097)	11,605,788	0.11%
Clarion Lion Indus Tr	51,183,076	0.47%	(540,557)	2,073,758	49,649,875	0.46%
Europa Fd III PRE	4,877,439	0.05%	(614,638)	(227,091)	5,719,168	0.05%
Fortress Japan PRE	2,926,617	0.03%	(4,577,000)	(488,036)	7,991,654	0.07%
Fortress Japan Fd II PRE	3,955,779	0.04%	(1,020,708)	1,028	4,975,459	0.05%
Franklin Temp PREMOM	13,866,053	0.13%	(737,569)	531,277	14,072,345	0.13%
Fremont Realty PRE	1,509,618	0.01%	0	(4,290)	1,513,908	0.01%
GreenOak Fund III	2,368,798	0.02%	2,937,532	(568,734)	-	-
Hudson Realty Fd V PRE	228,391	0.00%	0	(7,327)	235,718	0.00%
IC Berkeley Partners III	3,180,149	0.03%	(3,932,504)	1,476,999	5,635,654	0.05%
JP Morgan Strat PRE-OE	156,331,533	1.45%	(1,526,296)	2,996,566	154,861,263	1.42%
LaSalle Property PRE-OE	111,467,082	1.03%	(272,642)	4,941,718	106,798,006	0.98%
MB Asia RE Fd PRE	514,254	0.00%	(158,366)	(76,688)	749,308	0.01%
Newport Cap Fund II	17,028,505	0.16%	(4,629,630)	(159,032)	21,817,167	0.20%
Newport/DV Urban PRE	1,428,065	0.01%	0	32,863	1,395,202	0.01%
Oak Street Fund IV RE	4,352,585	0.04%	1,064,521	(100,532)	3,388,596	0.03%
PRISA Fd I PRE-OE	143,456,445	1.33%	(1,606,865)	3,443,692	141,619,618	1.30%
PRISA Fd II PRE-OE	22,473,592	0.21%	(267,683)	692,734	22,048,540	0.20%
UBS Realty PRE-OE	156,436,525	1.45%	(1,601,368)	5,600,027	152,437,866	1.40%
Walton St Fd III PRE	141,772	0.00%	0	(259)	142,031	0.00%
Walton St Fd IV PRE	622,351	0.01%	0	(119,084)	741,435	0.01%
Walton St Fd V PRE	8,525,017	0.08%	(328,843)	(337,915)	9,191,775	0.08%
Walton St Fd VI PRE	10,045,451	0.09%	0	228,011	9,817,440	0.09%
Walton St Mexico Fd I PRE	5,444,626	0.05%	0	432,034	5,012,592	0.05%
PRIVATE EQUITY	\$300,394,514	2.78%	\$(2,378,745)	\$11,908,191	\$290,865,069	2.67%
Adams St Many Fd PE	153,659,970	1.42%	1,068,048	6,007,943	146,583,979	1.35%
HarbourVest Ptrs VI PE	983,295	0.01%	(139,851)	2,021	1,121,125	0.01%
HarbourVest Ptrs VII PE	11,765,873	0.11%	890,529	979,088	9,896,256	0.09%
HarbourVest Ptrs VIII PE	7,063,878	0.07%	(49,486)	302,614	6,810,750	0.06%
HVP Buyout X PE	4,759,040	0.04%	(21,612)	419,111	4,361,541	0.04%
HVP Venture X PE	4,016,628	0.04%	665,737	331,787	3,019,104	0.03%
Hispania Fd II PE	2,739,387	0.03%	0	(919,564)	3,658,951	0.03%
ICV Capital Ptrs PE	1,399,541	0.01%	0	(212,437)	1,611,978	0.01%
ICV Capital Ptrs III PE	11,184,805	0.10%	0	843,876	10,340,929	0.10%
ICV Capital Ptrs IV PE	1,643,187	0.02%	1,643,187	0	-	-
KKR Americas Fd XII	3,459,974	0.03%	377,090	149,505	2,933,379	0.03%
Mesirow Fd I PE	2,138,549	0.02%	0	75,018	2,063,531	0.02%
Mesirow Fd II PE	7,641,946	0.07%	(585,000)	222,672	8,004,274	0.07%
Mesirow Fd IV PE	10,448,098	0.10%	(827,677)	375,347	10,900,428	0.10%
Mesirow Fd V PE	17,037,207	0.16%	(823,436)	1,417,820	16,442,823	0.15%
Mesirow Fd VII A PE	760,482	0.01%	0	(18,056)	778,538	0.01%
Mesirow Fd VII B PE	1,316,178	0.01%	0	70,121	1,246,057	0.01%
Mesirow Fd VIII PE	785,357	0.01%	0	(400,065)	1,185,422	0.01%
Mesirow Fd X PE	9,438,034	0.09%	(973,813)	327,355	10,084,492	0.09%
Muller M2 ILPEFF PE	-	-	0	0	-	-
Muller M2 MPEFF PE	2,422,013	0.02%	(221,680)	182,759	2,460,934	0.02%
NMS Capital Fund III	1,708,085	0.02%	0	(92,900)	1,800,985	0.02%
Palladium Ptrs PE	1,179,795	0.01%	(2,053,722)	(112,536)	3,346,053	0.03%
Palladium IV	7,092,208	0.07%	(1,041,521)	1,214,305	6,919,423	0.06%
Pantheon Asia Fd V PE	2,427,342	0.02%	(208,322)	104,595	2,531,069	0.02%
Pantheon Europe Fd II PE	78,526	0.00%	0	(18,293)	96,819	0.00%
Pantheon Europe Fd VI PE	4,258,324	0.04%	(392,006)	(4,086)	4,654,417	0.04%
Pantheon GI Fd 2014	8,774,043	0.08%	661,683	592,565	7,519,795	0.07%
Pantheon Select Fd	425,000	0.00%	175,000	0	250,000	0.00%
Pantheon USA Fd III PE	326,821	0.00%	0	(8,516)	335,337	0.00%
Pantheon USA Fd IV PE	582,571	0.01%	0	(31,550)	614,121	0.01%
Pharos Fd II PE	4,432,464	0.04%	0	67,001	4,365,463	0.04%
Pharos Fd III PE	11,314,150	0.10%	79,932	105,033	11,129,185	0.10%
RLJ Equity Fund II	1,165,885	0.01%	(601,825)	(64,343)	1,832,053	0.02%
Syncom Venture PE	1,965,859	0.02%	0	0	1,965,859	0.02%
CASH	\$367,174,640	3.40%	\$74,979,892	\$675,282	\$291,519,465	2.68%
Cash Appropriation Acct	67,971,752	0.63%	0	329,130	67,642,621	0.62%
Cash Equivalent CTPF	297,732,216	2.76%	74,979,892	339,359	222,412,964	2.04%
Global Transition	1,457,369	0.01%	0	6,225	1,451,144	0.01%
STEP Holding	13,304	0.00%	0	567	12,737	0.00%
TOTAL FUND	\$10,798,147,841	100.0%	\$(157,494,411)	\$79,149,706	\$10,876,492,546	100.0%

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Total Fund Performance vs. Target

Callan Public Fund Sponsor - Large (>1B)



Note: Performance is shown gross-of-fees.

Current quarter Policy Target = 30.5% Russell 3000 Index, 30.5% MSCI ACWI ex US Index, 23% BB BC Aggregate Bond Index, 9% NFI ODCE Value Weight Index, 5% Russell 3000 Index+3.0% and 2% FTSE Developed Core Infrastructure 50/50 Net.

For the second quarter, the Fund underperformed the market benchmark by 8 basis points, gross of fees (15 basis points net of fees), and ranked in the 71st percentile of its peers. For the trailing one-year period, the Fund outperformed the Policy Target by 60 basis points, gross of investment management fees (33 basis points net of investment management fees) and ranked in the top 40 percentile of its peer group.

Though the manager attribution effect was mostly positive across asset classes this quarter, fixed income, infrastructure and private equity marginally underperformed their respective broad benchmarks. The following is a brief synopsis of the contribution of each major asset class over the period (performance commentary relative to benchmarks is net of fees and performance commentary relative to peers is gross of fees):

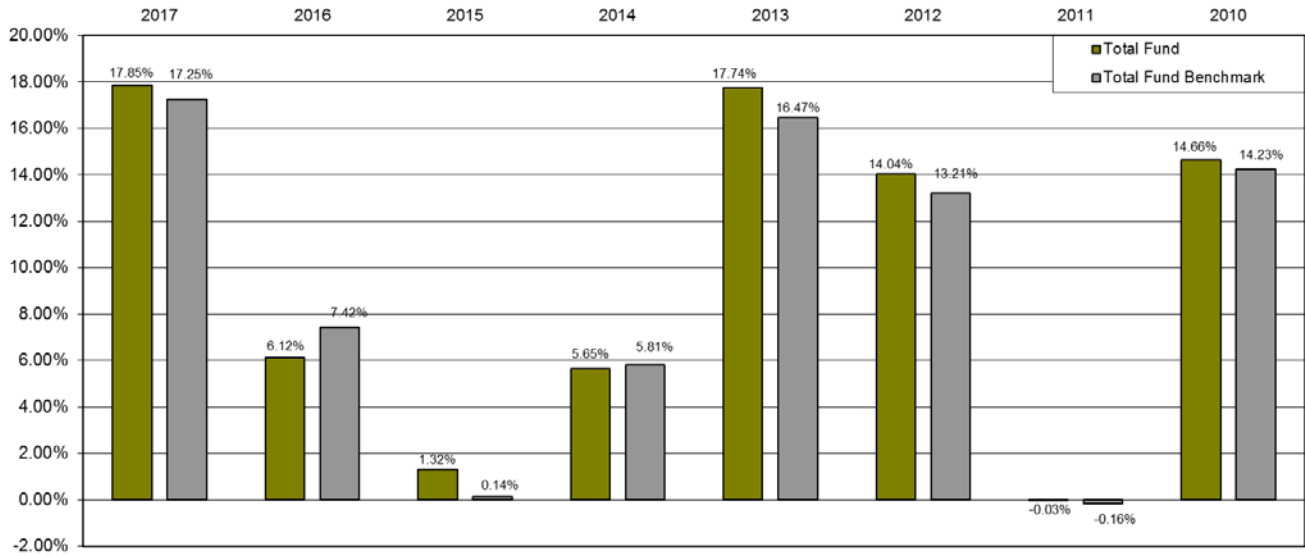
- **Domestic Equity:** The domestic equity composite outperformed the Russell 3000 Index by 49 basis points for the quarter, ranking in the 42nd percentile of the peer group. Performance was mixed for the domestic equity managers over the quarter. Zevenbergen, Channing, and Northern Trust outperformed their respective benchmarks over the period while BMO and Phocas underperformed. Zevenbergen posted particularly strong returns this quarter, outperforming the Russell 3000 Growth Index by 839 basis points, net of fees.

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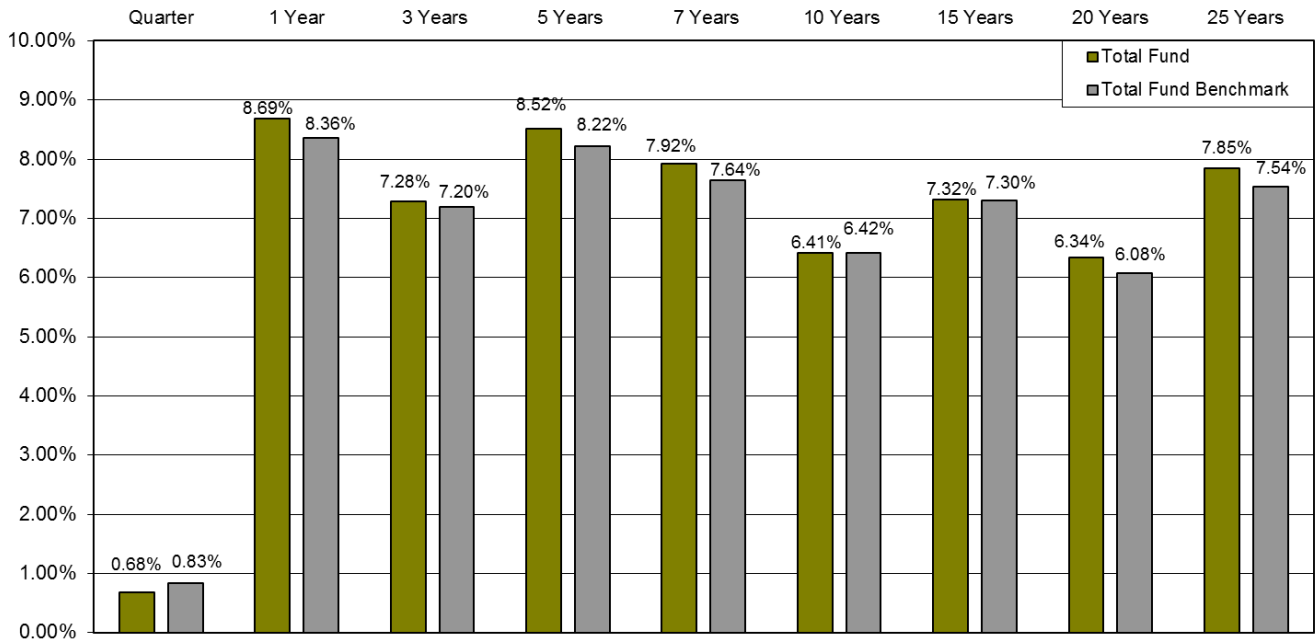
- **International Equity:** The international equity composite was nearly flat relative to the MSCI ACWI Ex-US IMI over the second quarter. However, it ranked in the 39th percentile of its peer group. Performance was mixed for the international equity managers over the quarter.
- **Fixed Income:** The fixed income composite underperformed The Bloomberg Aggregate Index by 40 basis points for the quarter, ranking in the 90th percentile of its peers. Performance was mixed for the active fixed income managers over the second quarter, with most managers underperforming their market benchmarks.
- **Alternative Investments:** The infrastructure and private equity portfolios underperformed their respective market benchmarks for the quarter while the real estate portfolio posted favorable results.

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Total Fund Calendar Year Performance, Net of Fees



Total Fund Trailing Year Performance, Net of Fees



**Public School Teachers' Pension and Retirement Fund of Chicago
Performance Evaluation Executive Summary
Second Quarter 2018**

MANAGER PERFORMANCE

Table 1 presents returns for the public market domestic and international equity and fixed income managers and composites in the Chicago Teacher Pension Fund relative to appropriate benchmarks on a net of fee basis. Managers highlighted in red are currently on the Watch List.

Table 1 (Net-of-Fees):

CTPF Investment Strategies	Net Investment Returns as of 6/30/2018						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
Fixed Income								
Northern Trust Gov/ Credit Index Fund	-0.38	-0.61	1.80	2.27	2.75	5.15	Jan-94	\$915m
Bloomberg Barclays Gov/Credit Index	-0.33	-0.63	1.83	2.29	2.77	5.13		
Variance	-0.05	0.02	-0.03	-0.02	-0.02	0.02		
Garcia Hamilton	0.44	1.17	2.64	3.33	3.89	3.70	Oct-10	\$227m
Bloomberg Barclays Aggregate Index	-0.16	-0.40	1.72	2.27	2.57	2.50		
Variance	0.60	1.57	0.92	1.06	1.32	1.20		
LM Capital*	-0.62	-0.85	1.95	2.63	2.80	3.94	Nov-04	\$201m
Bloomberg Barclays Aggregate Index	-0.16	-0.40	1.72	2.27	2.57	3.81		
Variance	-0.46	-0.45	0.23	0.36	0.23	0.13		
Pugh Capital Management	-0.21	-0.46	1.83	2.39	2.75	2.70	Oct-10	\$220m
Bloomberg Barclays Aggregate Index	-0.16	-0.40	1.72	2.27	2.57	2.50		
Variance	-0.05	-0.06	0.11	0.12	0.18	0.20		
Taplin, Canida & Habacht	-0.36	-0.21	2.25	2.74	3.30	3.81	Nov-04	\$221m
Bloomberg Barclays Aggregate Index	-0.16	-0.40	1.72	2.27	2.57	3.81		
Variance	-0.20	0.19	0.53	0.47	0.73	0.00		
Western Asset Management	-1.41	-0.74	2.84	3.39	3.82	4.98	Feb-03	\$588m
Bloomberg Barclays Aggregate Index	-0.16	-0.40	1.72	2.27	2.57	3.92		
Variance	-1.25	-0.34	1.12	1.12	1.25	1.06		

*LM mandate changed from Core Bond to Core Plus Bond as of 7/1/13. Peer group rankings are not applicable to the full track record given the change in mandates.

**Public School Teachers' Pension and Retirement Fund of Chicago
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Table 1 (Net-of-Fees, Continued):

CTPF Investment Strategies	Net Investment Returns as of 6/30/2018						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
Large Cap Equity								
Northern Trust S&P 500 Index Fund	3.43	14.26	11.98	13.42	13.24	9.87	Apr-90	\$259m
S&P 500 Index	3.43	14.37	11.93	13.42	13.23	9.94		
Variance	0.00	-0.11	0.05	0.00	0.01	-0.07		
Rhumbline Russell 1000 Index Fund	3.61	14.28	11.57	13.26	13.08	7.75	Jun-07	\$1,682m
Russell 1000 Index	3.57	14.54	11.64	13.37	13.12	7.68		
Variance	0.04	-0.26	-0.07	-0.11	-0.04	0.07		
Rhumbline Russell 1000 Growth Index Fund	5.81	-	-	-	-	15.63	Oct-17	\$329m
Russell 1000 Growth Index	5.76	-	-	-	-	15.69		
Variance	0.05	-	-	-	-	-0.06		
Zevenbergen Capital Management	14.26	33.94	16.60	18.65	14.93	11.41	Oct-92	\$180m
Russell 3000 Growth Index	5.87	22.47	14.63	16.14	14.69	9.29		
Variance	8.39	11.47	1.97	2.51	0.24	2.12		
Channing*	2.52	9.72	6.66	10.55	11.34	14.31	Jul-09	\$143m
Channing Benchmark	1.71	7.25	8.48	10.40	10.90	15.19		
Variance	0.81	2.47	-1.82	0.15	0.44	-0.88		
BMO Harris Investment Management	0.56	11.60	8.53	12.11	12.43	7.37	Jul-99	\$310m
Harris Benchmark**	1.18	6.77	8.26	10.34	11.27	5.15		
Variance	-0.62	4.83	0.27	1.77	1.16	2.22		
Small Cap Equity								
Northern Trust Small Cap	7.83	17.02	11.19	13.32	13.00	12.50	Jan-91	\$181m
Russell 2000 Index	7.75	17.57	10.96	12.46	11.83	11.12		
Variance	0.08	-0.55	0.23	0.86	1.17	1.38		
Phocas Small Cap Value	4.76	12.69	-	-	-	15.74	Jul-16	\$159m
Russell 2000 Value Index	8.30	13.10	-	-	-	18.83		
Variance	-3.54	-0.41	-	-	-	-3.09		
Manager of Managers								
Attucks***	-0.48	10.87	7.25	--	--	7.23	Dec-13	\$242m
Custom Benchmark	-0.76	8.83	7.38	--	--	6.55		
Variance	0.28	2.04	-0.13	--	--	0.68		

*Channing mandate changed from Mid Cap Value to All Cap Value as of 10/1/11. Channing Benchmark reflects Russell MC Value Index through 9/30/11 and Russell 3000 Value thereafter. Peer group rankings are not applicable to the full track record given the change in mandates.

**BMO Harris benchmark reflects the S&P 500 from inception to 12/31/2002 and the Russell 1000 Value benchmark thereafter.

***In 4Q13, Attucks was transitioned from a domestic equity portfolio to a Best in Class portfolio.

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Table 1 (Net-of-Fees, Continued):

CTPF Investment Strategies	Net Investment Returns as of 6/30/2018						Inception Date	Qtr-End MV	
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr			Since Inception
International Equity									
Ariel Investments	-3.34	0.78	-	-	-	-	7.46	Jul-16	\$77m
MSCI EAFE Index	-1.24	6.84	-	-	-	-	13.36		
Variance	-2.10	-6.06	-	-	-	-	-5.90		
EARNEST Partners	-2.80	8.22	6.74	7.49	4.94	5.59		Apr-07	\$603m
MSCI ACWI ex-US Index	-2.61	7.28	5.07	5.99	3.81	2.35			
Variance	-0.19	0.94	1.67	1.50	1.13	3.24			
Lazard	-3.99	6.62	3.80	6.60	5.47	5.75		Jan-01	\$597m
MSCI ACWI ex-US Index	-2.61	7.28	5.07	5.99	3.81	4.76			
Variance	-1.38	-0.66	-1.27	0.61	1.66	0.99			
Morgan Stanley	0.19	6.11	4.78	6.07	5.91	8.60		Apr-95	\$611m
MSCI EAFE Index	-1.24	6.84	4.90	6.44	4.89	5.11			
Variance	1.43	-0.73	-0.12	-0.37	1.02	3.49			
Strategic Global Advisors	-1.18	5.21	-	-	-	12.45		Jul-16	\$78m
MSCI EAFE Index	-1.24	6.84	-	-	-	13.36			
Variance	0.06	-1.63	-	-	-	-0.91			
William Blair Growth	-1.37	12.46	6.15	8.03	6.88	8.82		Feb-10	\$630m
MSCI ACWI ex-US IMI Growth Index	-1.46	10.43	6.84	7.51	5.01	6.96			
Variance	0.09	2.03	-0.69	0.52	1.87	1.86			
William Blair International Small Cap	-3.44	9.57	8.12	8.12	7.01	4.68		Apr-07	\$204m
William Blair ISCE Benchmark*	-1.67	13.67	8.57	9.73	6.13	3.48			
Variance	-1.77	-4.10	-0.45	-1.61	0.88	1.20			
Dimensional Fund Advisors	-3.35	5.57	7.24	10.12	--	13.04		Jun-12	\$187m
MSCI World Small Cap ex-US	-0.94	11.87	9.45	10.28	--	11.96			
Variance	-2.41	-6.30	-2.21	-0.16	--	1.08			
EARNEST Partners Emerging Markets	-9.49	4.93	4.63	4.96	--	2.41		Mar-13	\$177m
MSCI Emerging Markets Index	-7.96	8.20	5.60	5.01	--	2.72			
Variance	-1.53	-3.27	-0.97	-0.05	--	-0.31			
International Manager of Managers									
Leading Edge	-2.22	9.07	6.03	7.27	5.34	5.83		Apr-10	\$133m
MSCI ACWI ex-US Index	-2.61	7.28	5.07	5.99	3.81	4.83			
Variance	0.39	1.79	0.96	1.28	1.53	1.00			

* The William Blair ISCE benchmark is comprised of the MSCI ACWI ex US Small Cap Index through 5/31/12 and the MSCI ACWI ex US Small Cap Growth Index thereafter.

**Public School Teachers' Pension and Retirement Fund of Chicago
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Table 1 (Net-of-Fees, Continued):

CTPF Investment Strategies	Net Investment Returns as of 6/30/2018						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
Infrastructure								
Infrastructure Composite	2.16	17.28	10.68	6.27	6.54	6.42	Nov-08	\$227m
Infrastructure Benchmark*	3.86	2.99	6.30	6.98	7.27	7.47		
Variance	-1.70	14.29	4.38	-0.71	-0.73	-1.05		
Real Estate								
Real Estate Composite	2.58	7.60	8.87	10.50	10.30	7.34	Jan-02	\$749m
NFI-ODCE Value Weight	1.97	7.64	8.43	10.07	10.39	7.15		
Variance	0.61	-0.04	0.44	0.43	-0.09	0.19		
Private Equity								
Private Equity Composite	3.97	14.34	11.43	13.00	10.78	9.01	Jan-02	\$300m
Russell 3000 Index	3.89	14.78	11.58	13.29	13.01	7.89		
Variance	0.08	-0.44	-0.15	-0.29	-2.23	1.12		

*The Infrastructure Benchmark is 8% Annualized Return through 9/30/17 and FTSE Developed Core Infrastructure 50/50 (Net) thereafter.

Note: Private market investments shown above are typically reported on a one quarter lag. Private Equity returns are, at times, reported on a longer lag. Comments on Infrastructure, REITS and Real Estate are covered in the quarterly Real Estate Report. Private Equity is discussed in the quarterly Private Equity Report.

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MANAGER PERFORMANCE

Table 1 presents returns for the public market domestic and international equity and fixed income managers and composites in the Chicago Teacher Pension Fund relative to appropriate benchmarks on a gross of fee basis. Managers highlighted in red are currently on the Watch List.

Table 2 (Gross-of-Fees):

CTPF Investment Strategies	Gross Investment Returns as of 6/30/2018						Inception Date	Qtr-End MV
	Qtr	1 Yr	3 Yr	5 Yr	7 Yr	Since Inception		
FUND								
Fixed Income								
Northern Trust Gov/ Credit Index Fund	-0.38	-0.60	1.81	2.28	2.76	5.16	Jan-94	\$915m
Bloomberg Barclays Gov/Credit Index	-0.33	-0.63	1.83	2.29	2.77	5.13		
Variance	-0.05	0.03	-0.02	-0.01	-0.01	0.03		
Peer Ranking – CAI Core Bond	93	93	87	92	88			
Garcia Hamilton	0.48	1.30	2.82	3.52	4.08	3.88	Oct-10	\$227m
Bloomberg Barclays Aggregate Index	-0.16	-0.40	1.72	2.27	2.57	2.50		
Variance	0.64	1.70	1.10	1.25	1.51	1.38		
Peer Ranking – CAI Core Bond	1	1	5	2	1			
LM Capital*	-0.58	-0.69	2.11	2.80	2.97	4.13	Nov-04	\$201m
Bloomberg Barclays Aggregate Index	-0.16	-0.40	1.72	2.27	2.57	3.81		
Variance	-0.42	-0.29	0.39	0.53	0.40	0.32		
Peer Ranking - CAI Core Plus Bond	87	93	86	81	100			
Pugh Capital Management	-0.17	-0.32	1.99	2.55	2.93	2.88	Oct-10	\$220m
Bloomberg Barclays Aggregate Index	-0.16	-0.40	1.72	2.27	2.57	2.50		
Variance	-0.01	0.08	0.27	0.28	0.36	0.38		
Peer Ranking - CAI Core Bond	73	77	69	66	65			
Taplin, Canida & Habacht	-0.33	-0.09	2.40	2.89	3.45	3.98	Nov-04	\$221m
Bloomberg Barclays Aggregate Index	-0.16	-0.40	1.72	2.27	2.57	3.81		
Variance	-0.17	0.31	0.68	0.62	0.88	0.17		
Peer Ranking - CAI Core Bond	93	56	24	28	17			
Western Asset Management	-1.37	-0.58	3.03	3.57	4.00	5.17	Feb-03	\$588m
Bloomberg Barclays Aggregate Index	-0.16	-0.40	1.72	2.27	2.57	3.92		
Variance	-1.21	-0.18	1.31	1.30	1.43	1.25		
Peer Ranking - CAI Core Plus Bond	97	90	25	25	22			

*LM mandate changed from Core Bond to Core Plus Bond as of 7/1/13. Peer group rankings are not applicable to the full track record given the change in mandates.

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Table 2 (Gross-of-Fees, Continued):

CTPF Investment Strategies	Gross Investment Returns as of 6/30/2018						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
Large Cap Equity								
Northern Trust S&P 500 Index Fund	3.43	14.27	11.99	13.43	13.24	9.88	Apr-90	\$259m
S&P 500 Index	3.43	14.37	11.93	13.42	13.23	9.94		
Variance	0.00	-0.10	0.06	0.01	0.01	-0.06		
Peer Ranking – CAI Large Cap	47	52	40	51	47			
Rhumbline Russell 1000 Index Fund	3.62	14.29	11.58	13.27	13.09	7.76	Jun-07	\$1,682m
Russell 1000 Index	3.57	14.54	11.64	13.37	13.12	7.68		
Variance	0.05	-0.25	-0.06	-0.10	-0.03	0.08		
Peer Ranking – CAI Large Cap	41	52	45	53	52			
Rhumbline Russell 1000 Growth Index Fund	5.81	-	-	-	-	15.63	Oct-17	\$329m
Russell 1000 Growth Index	5.76	-	-	-	-	15.69		
Variance	0.05	-	-	-	-	-0.06		
Peer Ranking - CAI Large Cap Growth	49	-	-	-	-			
Zevenbergen Capital Management	14.36	34.45	17.05	19.12	15.38	11.85	Oct-92	\$180m
Russell 3000 Growth Index	5.87	22.47	14.63	16.14	14.69	9.29		
Variance	8.49	11.98	2.42	2.98	0.69	2.56		
Peer Ranking - CAI All Cap	6	6	5	5	14			
Channing*	2.64	10.24	7.17	11.07	11.88	14.89	Jul-09	\$143m
Channing Benchmark	1.71	7.25	8.48	10.40	10.90	15.19		
Variance	0.93	2.99	-1.31	0.67	0.98	-0.30		
Peer Ranking – CAI All Cap Value	41	49	85	36	34			
BMO Harris Investment Management	0.61	11.84	8.77	12.35	12.68	7.65	Jul-99	\$310m
Harris Benchmark**	1.18	6.77	8.26	10.34	11.27	5.15		
Variance	-0.57	5.07	0.51	2.01	1.41	2.50		
Peer Ranking - CAI Large Cap Value	76	26	64	17	21			
Small Cap Equity								
Northern Trust Small Cap	7.85	17.09	11.28	13.41	13.06	12.59	Jan-91	\$181m
Russell 2000 Index	7.75	17.57	10.96	12.46	11.83	11.12		
Variance	0.10	-0.48	0.32	0.95	1.23	1.47		
Peer Ranking - CAI Small Cap	29	42	46	52	44			
Phocas Small Cap Value	4.97	13.60	-	-	-	16.55	Jul-16	\$159m
Russell 2000 Value Index	8.30	13.10	-	-	-	18.83		
Variance	-3.33	0.50	-	-	-	-2.28		
Peer Ranking - CAI Small Cap Value	70	38	-	-	-			
Manager of Managers								
Attucks***	-0.33	11.51	7.89	--	--	7.82	Dec-13	\$242m
Custom Benchmark	-0.76	8.83	7.38	--	--	6.55		
Variance	0.43	2.68	0.51	--	--			

*Channing mandate changed from Mid Cap Value to All Cap Value as of 10/1/11. Channing Benchmark reflects Russell MC Value Index through 9/30/11 and Russell 3000 Value thereafter. Peer group rankings are not applicable to the full track record given the change in mandates.

**Harris benchmark reflects the S&P 500 from inception to 12/31/2002 and the Russell 1000 Value benchmark thereafter.

***In 4Q13, Attucks was transitioned from a domestic equity portfolio to a Best in Class portfolio.

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Table 2 (Gross-of-Fees, Continued):

CTPF Investment Strategies	Gross Investment Returns as of 6/30/2018						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
International Equity								
Ariel Investments	-3.17	1.46	-	-	-	8.10	Jul-16	\$77m
MSCI EAFE Index	-1.24	6.84	-	-	-	13.36		
Variance	-1.93	-5.38	-	-	-	-5.26		
Peer Ranking - CAI Non-US Equity	77	98	-	-	-			
EARNEST Partners	-2.70	8.66	7.18	7.93	5.36	6.09	Apr-07	\$603m
MSCI ACWI ex-US Index	-2.61	7.28	5.07	5.99	3.81	2.35		
Variance	-0.09	1.38	2.11	1.94	1.55	3.74		
Peer Ranking - CAI Non-US Equity	70	41	28	42	72			
Lazard	-3.95	6.79	4.00	6.78	5.65	6.10	Jan-01	\$597m
MSCI ACWI ex-US Index	-2.61	7.28	5.07	5.99	3.81	4.76		
Variance	-1.34	-0.49	-1.07	0.79	1.84	1.34		
Peer Ranking - CAI Non-US Equity	87	60	85	71	64			
Morgan Stanley	0.29	6.53	5.21	6.53	6.36	9.06	Apr-95	\$611m
MSCI EAFE Index	-1.24	6.84	4.90	6.44	4.89	5.11		
Variance	1.53	-0.31	0.31	0.09	1.47	3.95		
Peer Ranking - CAI Non-US Equity	14	64	61	79	43			
Strategic Global Advisors	-1.06	5.72	-	-	-	12.93	Jul-16	\$78m
MSCI EAFE Index	-1.24	6.84	-	-	-	13.36		
Variance	0.18	-1.12	-	-	-	-0.43		
Peer Ranking - CAI Non-US Equity	34	71	-	-	-			
William Blair Growth	-1.28	12.84	6.52	8.41	7.27	9.23	Feb-10	\$630m
MSCI ACWI ex-US IMI Growth Index	-1.46	10.43	6.84	7.51	5.01	6.96		
Variance	0.18	2.41	-0.32	0.90	2.26	2.27		
Peer Ranking - CAI Core Growth Int'l Equity	41	33	65	54	34			
William Blair International Small Cap	-3.24	10.46	9.03	9.02	7.92	5.69	Apr-07	\$204m
William Blair ISCE Benchmark*	-1.67	13.67	8.57	9.73	6.13	3.48		
Variance	-1.57	-3.21	0.46	-0.71	1.79	2.21		
Peer Ranking - CAI Int'l Small Cap Equity	78	72	74	90	88			
Dimensional Fund Advisors	-3.35	5.57	7.24	10.26	--	13.16	Jun-12	\$187m
MSCI World Small Cap ex-US	-0.94	11.87	9.45	10.28	--	11.96		
Variance	-2.41	-6.30	-2.21	-0.02	--	1.20		
Peer Ranking - CAI Int'l Small Cap Equity	79	94	90	75	--			
EARNEST Partners Emerging Markets	-9.36	5.47	5.19	5.51	--	2.93	Mar-13	\$177m
MSCI Emerging Markets Index	-7.96	8.20	5.60	5.01	--	2.72		
Variance	-1.40	-2.73	-0.41	0.50	--	0.21		
Peer Ranking - CAI EM Equity	76	68	71	58	--			
International Manager of Managers								
Leading Edge	-2.02	9.91	6.87	8.11	6.17	6.66	Apr-10	\$133m
MSCI ACWI ex-US Index	-2.61	7.28	5.07	5.99	3.81	4.83		
Variance	0.59	2.63	1.80	2.12	2.36	1.83		
Peer Ranking - CAI Non-US Equity	57	29	31	39	50			

* The William Blair ISCE benchmark is comprised of the MSCI ACWI ex US Small Cap Index through 5/31/12 and the MSCI ACWI ex US Small Cap Growth Index thereafter.

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Table 2 (Gross-of-Fees, Continued):

CTPF Investment Strategies	Gross Investment Returns as of 6/30/2018						Inception Date	Qtr-End MV
	Qtr	1 Yr	3 Yr	5 Yr	7 Yr	Since Inception		
FUND								
Infrastructure								
Infrastructure Composite	2.13	17.79	11.32	6.83	7.16	6.95	Nov-08	\$227m
Infrastructure Benchmark*	3.86	2.99	6.30	6.98	7.27	7.47		
Variance	-1.73	14.80	5.02	-0.15	-0.11	-0.52		
Real Estate								
Real Estate Composite	2.79	8.35	9.64	11.26	11.07	7.81	Jan-02	\$749m
NFI-ODCE Value Weight	1.97	7.64	8.43	10.07	10.39	7.15		
Variance	0.82	0.71	1.21	1.19	0.68	0.66		
Private Equity								
Private Equity Composite	4.07	14.57	11.71	13.26	10.97	9.10	Jan-02	\$300m
Russell 3000 Index	3.89	14.78	11.58	13.29	13.01	7.89		
Variance	0.18	-0.21	0.13	-0.03	-2.04	1.21		

*The Infrastructure Benchmark is 8% Annualized Return through 9/30/17 and FTSE Developed Core Infrastructure 50/50 (Net) thereafter.

Note: Private market investments shown above are typically reported on a one quarter lag. Private Equity returns are, at times, reported on a longer lag. Comments on Infrastructure, REITS and Real Estate are covered in the quarterly Real Estate Report. Private Equity is discussed in the quarterly Private Equity Report.

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Manager Watch List

MANAGER	DATE WATCH STARTED, REASON	LAST DUE DILIGENCE MEETING	ACTIONS TAKEN	POLICY/ RECOMMENDED ACTIONS	AUM as of 6/30/2018	Current Quarter Watch List Score	Previous Quarter Watch List Score
Ariel	May - 18 Organizational Issues	May - 18	Monitor	Monitor	\$77 mil.	0.5	0.5
Channing	January - 18 Personnel Turnover	18-Mar	Monitor	Monitor	\$143 mil.	0.1	0.1
LM Capital	March - 17 Personnel Turnover	18-Apr	Monitor	Remove	\$201 mil.	0.3	0.3

Policy/Recommended Actions Legend

Remove = Policy action taken due to IPS guidelines. Remove manager from the watch list as performance improves.

Termination = Recommended action for the Board

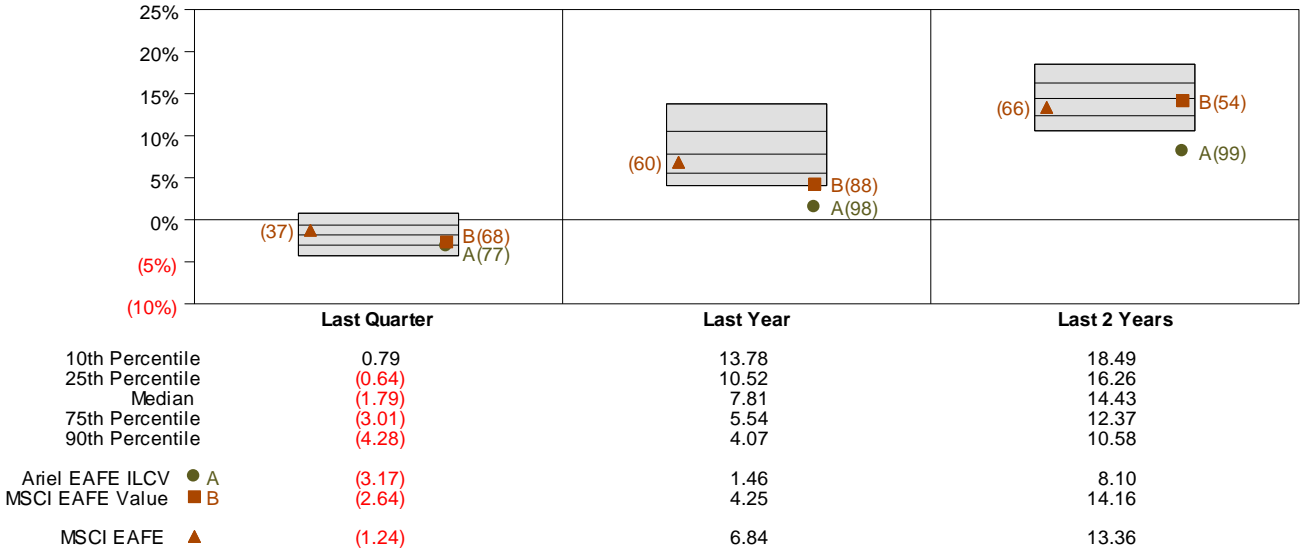
Monitor = Recommended action for the Board

Search = Board authorized a manager search

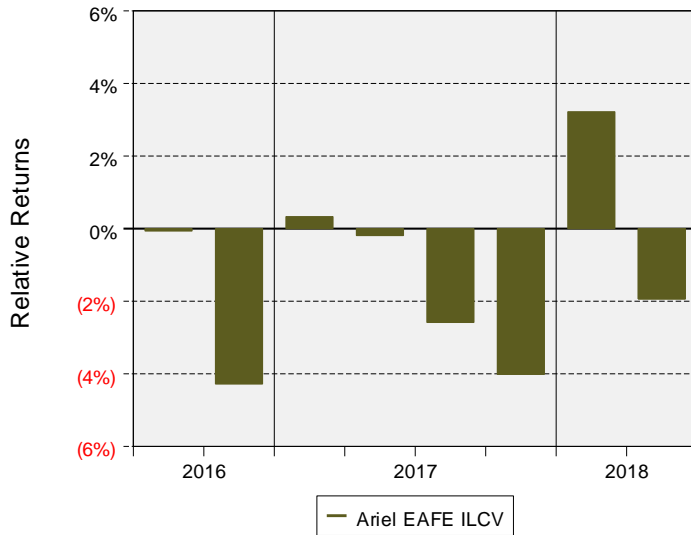
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Manager Watch List: Ariel

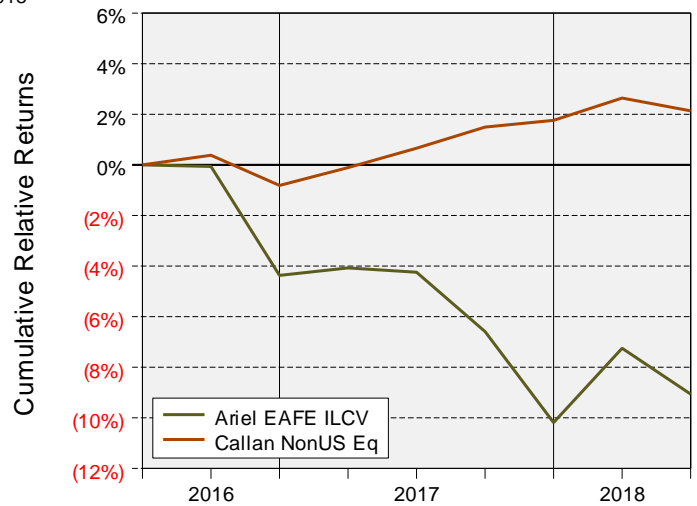
Performance vs Callan Non-US Equity (Gross)



Relative Return vs MSCI EAFE



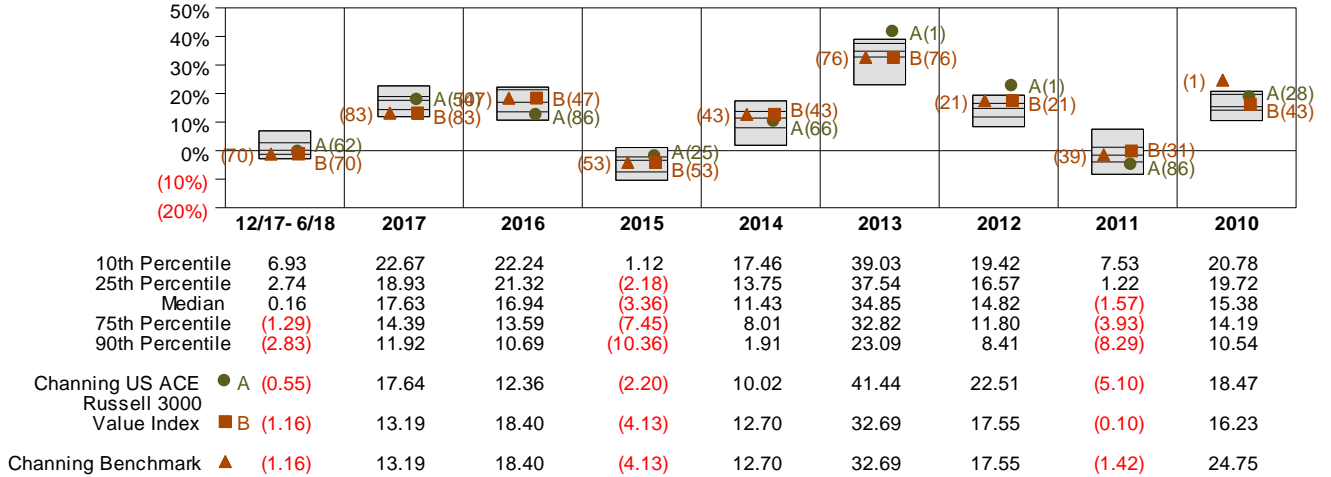
Cumulative Returns vs MSCI EAFE



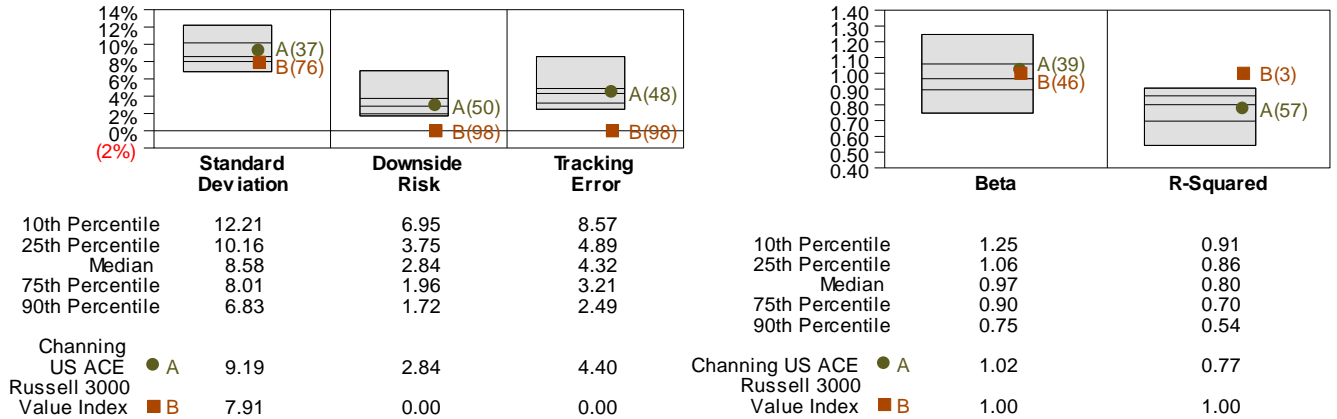
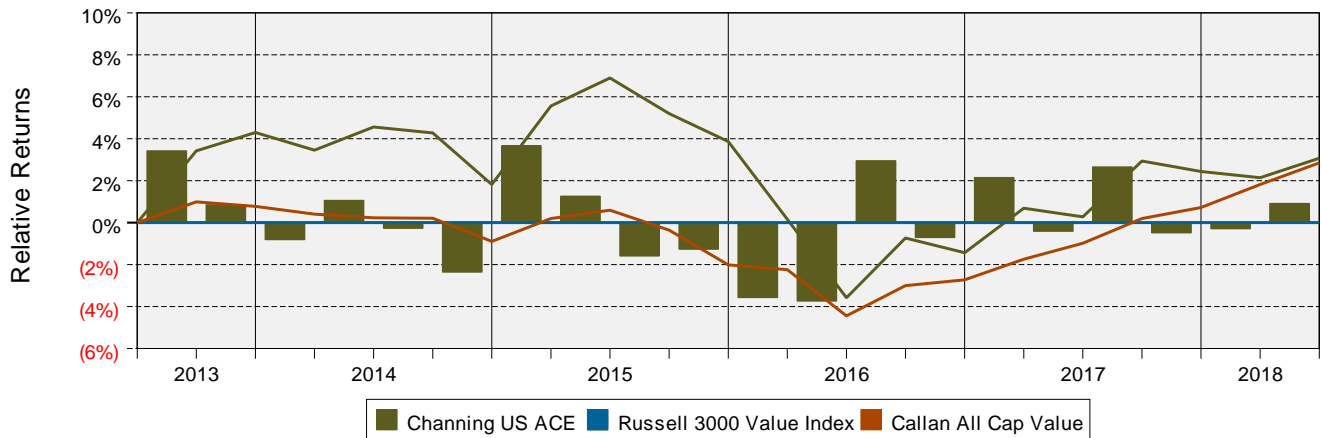
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Manager Watch List: Channing

Performance vs Callan All Cap Value (Gross)



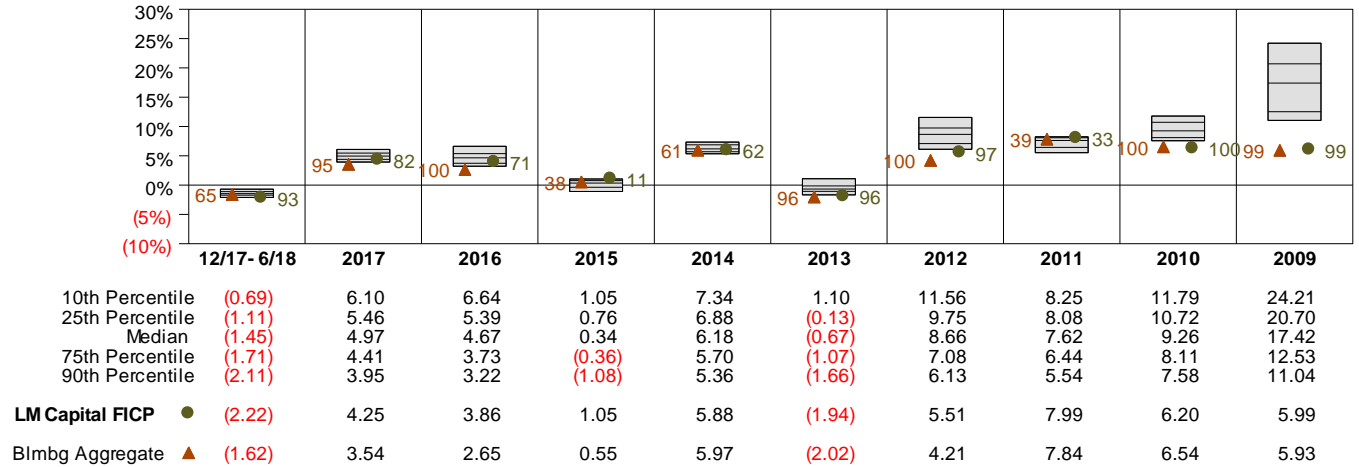
Cumulative and Quarterly Relative Return vs Channing Benchmark



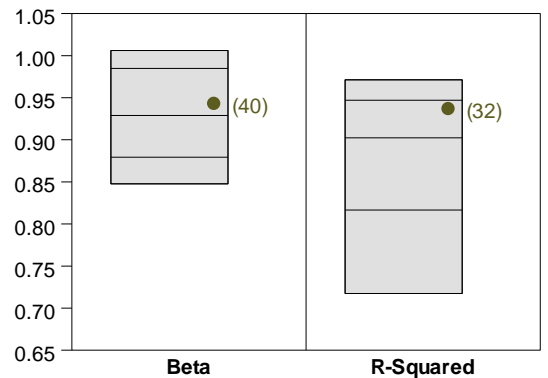
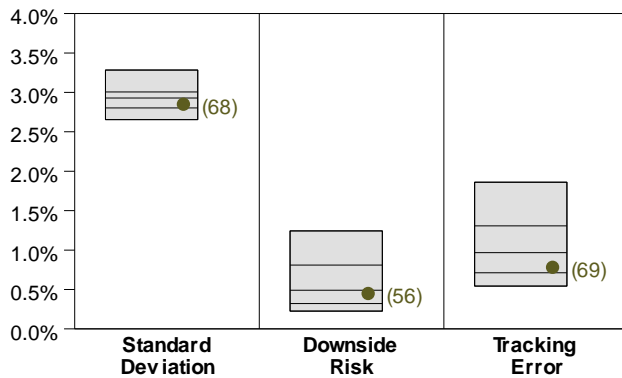
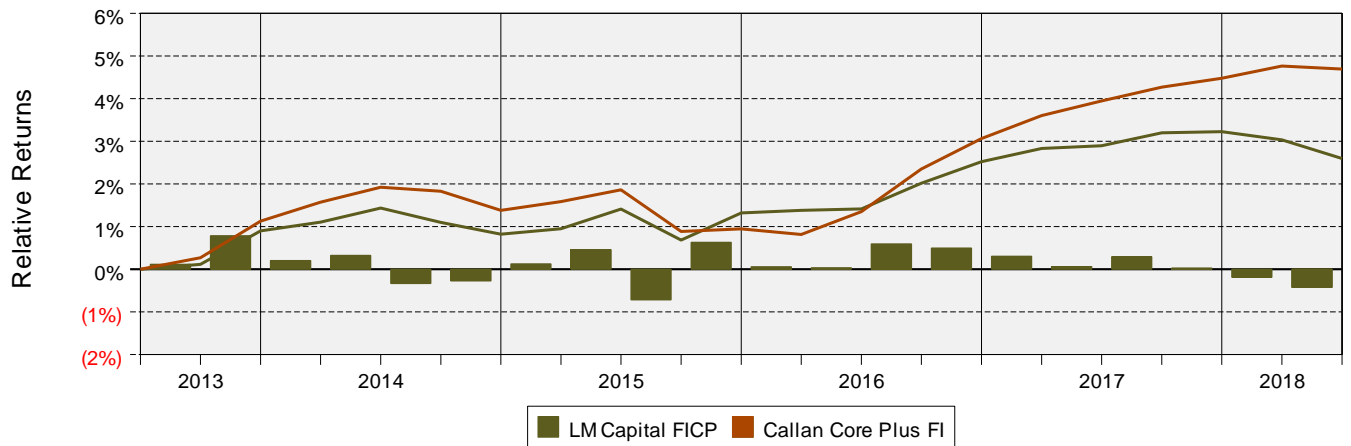
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Manager Watch List: LM Capital

Performance vs Callan Core Plus Fixed Income (Gross)



Cumulative and Quarterly Relative Return vs Blmbg Aggregate



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General Market and Economic Conditions

The U.S. economy continued to thrive during the second quarter. The unemployment rate dropped to 3.8% in May, the lowest since 2000. Wages have been inching up, showing a year-over-year increase of 2.7% in May. Consumer spending has been robust; retail sales topped forecasts in May, rising 0.8% (6% y/y). Housing starts, which have been hindered by high lumber costs and a shortage of labor, surged to near an 11-year high in May. Business optimism and consumer confidence indices remain elevated. The National Federation of Independent Business reported that its index of small business optimism rose in May to its highest level in more than 30 years. While real U.S. GDP growth in the first quarter was a mere 2.0% (annualized), expectations for second quarter growth are sharply higher. Some are forecasting an annual rate of more than 4%—the Atlanta Fed expects 4.5%—and most project at least 3.5%.

Inflation is moving up but remains contained. The Producer Price Index jumped 0.5% (3.1% y/y) in May with roughly half the increase attributable to higher oil prices. This marked the highest level since 2012. Consumer prices rose 0.2% (2.8% y/y), also the biggest jump since 2012. Energy prices climbed 11.7% y/y and appear poised to rise further given a sharp drop in supply and President Trump's threats of sanctions on countries that continue to import from Iran. The Fed's favored inflation measure, the Core Personal Consumption Expenditures Index, hit its stated 2% y/y target in May for the first time since 2012.

Against this backdrop, the Fed raised short-term rates for the second time in 2018, bringing the Fed Funds rate to 1.75% - 2.0%. The Fed expects two more rate hikes this year and three more in 2019. The U.S. dollar appreciated more than 5% over the course of the quarter (versus a basket of currencies) given higher interest rates, the strength of the U.S. economy, and relative weakness in Europe and Japan.

In the face of all of the good economic news (and perhaps because of it), the White House imposed a 25% tariff on \$50 billion of imports from China. While these tariffs are not expected to have a meaningful impact on U.S. GDP (roughly -0.2%), the administration has threatened to apply additional tariffs on at least \$200 billion of goods should China retaliate. That move would have a much more significant impact on U.S. GDP as well as add to inflation. Further, the White House announced new tariffs on steel and aluminum from Europe, Mexico, and Canada. In response to President Trump's move, European Union members unanimously backed a plan to impose import duties on €2.8 billion worth of American products. Discussions are ongoing, but the markets have clearly expressed displeasure in recent days around the potential impact of trade wars on the economy.

Conversely and in contrast to 2017, data in Europe suggested slower growth. German factory orders unexpectedly dropped for a fourth month in April. A European Commission Index of consumer sentiment fell to an eight-month low in June. Turmoil in Italy also worried investors. Initial attempts by the Northern League and 5 Star Movement to form an anti-establishment government coalition were rebuffed by the Italian president's veto of the parties' choice of a euro-skeptic finance minister. While a compromise was reached, investors are wary of the new government's fiscal discipline. Italy's national debt is among the highest in the world and growth remains meager; unemployment hovers around 11%, and the new government includes leaders who have talked of leaving the euro. Italian bond yields surged 100 basis points on the news. Finally, Brexit negotiations between Britain and the EU have stalled, raising the threat of a "hard" Brexit come March 2019.

In recognition of these headwinds, euro zone central bankers trimmed their outlook for growth in 2018 to 2.1%, down from the previous forecast of 2.4%. The European Central Bank announced plans to cut in half (€30 billion to €15 billion) its monthly asset purchase program beginning in October 2018, and fully stop purchases by the end of 2019. However, this timing was further out than markets had expected, and reinvestment of principal payments from maturing bonds is expected to remain for "an extended period of

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time after the end of the net asset purchases," according to the ECB. The Bank also kept rates unchanged during the quarter.

China also showed signs of slowing. Both industrial output and retail sales rose less than expected in May and fixed-asset investment growth has also slowed. Japan's economy contracted for the first time in two years. The world's third-largest economy shrank by 0.2% in the first quarter. Stimulus measures are expected to remain in place in Japan as inflation remains significantly below target.

Second Quarter 2018 Market Performance

The U.S. equity market posted solid returns in the second quarter on the back of strong first quarter earnings as well as record share buybacks fueled by the Trump Administration's \$1.5 trillion tax cut. The S&P 500 Index gained 3.4% in the second quarter. Small cap stocks, seen to be relatively immune to global trade spats, surged nearly 8% (Russell 2000: +7.8%). Large cap growth (Russell 1000 Growth: +5.8%) continued to dominate large cap value (Russell 1000 Value: +1.2%); for the y-t-d period growth (+7.3%) outpaced value (-1.7%) by 9%. Within the S&P 500, rising oil prices fueled the Energy sector (+13.5%), but Consumer Discretionary (+8.2%) and Technology stocks (+7.1%) were not far behind. In spite of a late quarter boost, Financials (-3.2%) were hurt by rising short rates and a flattening yield curve. Industrials (-3.2%) and Consumer Staples (-1.5%) also lost ground during the quarter. The oft-quoted "FANG" stocks plus Apple and Microsoft accounted for over half of the second quarter total returns for both the Russell 1000 Growth and S&P 500 indices. Notably, the y-t-d contribution from these six stocks accounted for over 70% of the Russell 1000 Growth and over 120% of the S&P 500 total returns; Amazon alone accounted for nearly half of the y-t-d total return for the S&P 500 Index.

U.S. stocks outperformed non-U.S. and (in particular) emerging market equities both in local as well as U.S. dollar terms. The U.S. dollar appreciated roughly 5% over the quarter (versus a basket of developed market currencies), benefitting from higher interest rates and a relatively robust economy. The MSCI ACWI ex-US Index lost 2.6%, with most countries posting negative returns. The MSCI Emerging Markets Index sank 8.0%, with many countries posting double-digit declines. Regionally, Emerging Europe and Latin America sank about 15% while Emerging Asia fared better with a 3% drop.

U.S. rates rose in the second quarter and the yield curve continued its flattening trend. The yield on the 10-year U.S. Treasury note hit an intra-quarter high of 3.11% in May but closed the quarter at 2.85%, only 11 bps higher than March 31. Concerns over mounting trade tensions and slower global growth pushed yields lower going into quarter-end. The 2-year U.S. Treasury note closed at 2.52%, up sharply from 2.27% as of March 31 and its highest level since August 2008. The yield curve continued to flatten and the spread between the 2-year and 10-year ended at its lowest level (33 bps) in more than 10 years. The Fed hiked rates in June, as was widely expected, and expects two more increases in 2018. The Bloomberg Barclays US Aggregate Bond Index fell -0.2%, with investment grade corporates underperforming Treasuries as heavy supply and concerns over heightened M&A activity weighed on the market. High yield corporates (Blomberg Barclays High Yield: +1.0%) outperformed, and leveraged bank loans (S&P LSTA: +0.7%), which carry a floating rate coupon, posted the best returns. Municipals performed relatively well during the quarter; the Bloomberg Barclays Municipal Bond Index was up 0.9%.

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Overseas, changes in interest rates were modest (with the exception of Italy, where yields spiked on political news) and currency fluctuations drove returns for unhedged bonds. The dollar strengthened by 5% versus the euro over the quarter and similarly relative to the yen and U.K. pound. The Bloomberg Barclays Global Aggregate ex-US Bond Index fell 4.8%, largely a result of U.S. dollar strength. Emerging market currencies suffered more as higher interest rates in the U.S. and trade concerns weighed on markets. The JPM EMBI Global Diversified Index was down 3.5% with broad-based weakness. Argentina (-11.5%) and Venezuela (-14.5%) were among the weakest performers. The local currency-denominated JPM GBI-EM Global Diversified Index fared even worse (-10.4%) with several countries posting double digit declines. Argentina (-34%), Turkey (-22%), South Africa (-17%), and Brazil (-16%) were notably poor performers. Countries that rely heavily on external financing were especially hard-hit.

As a group, real assets performed relatively well in the second quarter, led by Energy stocks (S&P 500 Energy: +13.5%), MLPs (Alerian MLP Index: +11.8%), and equity REITS (FTSE NAREIT: +10.0%). The listed infrastructure sector wasn't to be kept away from the party, as the Dow Jones Brookfield Global Infrastructure Index rose 4.2%, while hard commodities saw dispersed returns and a more modest +0.4% return overall for the Bloomberg Commodity TR Index. Gold slipped 5.5%. Across the hard commodity complex, the biggest gains came from lean hogs (+45%), crude oil (+14%) in both Brent and WTI, and feeder cattle (+14%). The biggest loser was soybeans, which fell by 18% over the quarter. TIPS also performed well, in relative terms, rising 0.8% for the quarter as inflation expectations rose. The 10-year breakeven inflation rate was 2.11% as of quarter-end.

Geopolitics influenced the performance of several hard commodities. The tension between the U.S. and North Korea was somewhat eased by a June 12 summit between President Trump and Kim Jong-Un, while the U.S.-Russia relationship continued to stand at a post-Cold War low. Elsewhere, the continued rhetoric and threat of a trade war between the U.S. and China continued to weigh on several commodity sectors, soybeans chief among them (the U.S. is the largest global exporter and China is the largest buyer of American soybeans). As for oil, robust demand and a spate of global oil supply disruptions in Venezuela, Libya, and even Canada pushed the spot price to a multi-year high of \$74/barrel despite efforts by OPEC and others to open the spigot. Recent threats by President Trump to sanction nations importing oil from Iran only exacerbated concerns around this imbalance.

Inflation-sensitive assets traditionally perform well through the later stages of economic growth cycles. However, the Fed expects to hike rates up to five times between now and the end of 2019, leaving us to wonder how long some of these more rate-sensitive real asset categories can maintain this momentum.

Closing Thoughts

As of the end of the quarter, valuations remained full across most asset classes (emerging markets being the notable exception) and numerous storm clouds loomed on the horizon. Could rising interest rates, higher energy prices, U.S. dollar strength, Brexit woes, looming trade wars and/or other geopolitical concerns derail the 108-month-old economic expansion, the second-longest since data were recorded, or will sunny skies prevail? While we cannot predict the future, we continue to suggest that investors temper return expectations, maintain a long-term perspective, and adhere to prudent asset allocation with appropriate levels of diversification.

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Appendix

Appendix - 6/30/18

Manager	Watch List Criteria: Rolling three year returns rank below median (Gross of Fees).		Watch List Criteria: Rolling three year returns are more than: 1. 200 basis points below the market index (Net of Fees) for equity managers. 2. 50 basis points below the market index (Net of Fees) for core fixed income managers. 3. 100 basis points below the market index (Net of Fees) for core plus fixed income managers.		Watch List Criteria: Rolling seven year returns rank below median (Gross of Fees).		Watch List Criteria: Rolling seven year returns are below the return of the index (Net of Fees).		Watch List Criteria: Five year information ratio is negative and ranks below median.		Watch List Criteria: Five year up market capture is below 90% and ranks below median.		Watch List Criteria: Five year down market capture is above 90% and ranks below median.		Weighted Averages	
	03/31/2018	06/30/2018	03/31/2018	06/30/2018	03/31/2018	06/30/2018	03/31/2018	06/30/2018	03/31/2018	06/30/2018	03/31/2018	06/30/2018	03/31/2018	06/30/2018	03/31/2018	06/30/2018
Large Cap Value Equity BMO-Harris	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	0.10	0.10
Small Cap Value Equity Phocas**	Yes	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No	0.30	0.20
Small Cap Equity NTGI Structured Small Cap	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	0.20	0.00
All Cap Growth Equity Zevenbergen	No	No	No	No	No	No	Yes	No	No	No	No	No	Yes	Yes	0.30	0.10
All Cap Value Equity Channing	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	0.10	0.10
International Equity EARNEST Partners	No	No	No	No	Yes	Yes	No	No	No	No	No	No	Yes	No	0.30	0.20
Lazard	Yes	Yes	No	No	No	Yes	No	No	No	No	No	No	No	No	0.10	0.30
Morgan Stanley	Yes	Yes	No	No	No	No	No	No	No	No	No	No	Yes	No	0.20	0.10
Leading Edge	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	0.20	0.00
William Blair	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	0.10	0.10
Ariel**	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	No	No	No	No	0.50	0.50
Strategic Global**	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	0.10	0.10
International Small Cap William Blair	Yes	Yes	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	Yes	0.40	0.50
DFA*	Yes	Yes	No	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Yes	0.40	0.50
Emerging Market Equity EARNEST Partners*	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	No	No	No	No	0.50	0.50
Active Core Fixed Income Taplin, Canida & Habacht	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	0.10	0.00
Pugh	Yes	Yes	No	No	Yes	Yes	No	No	No	No	No	No	Yes	Yes	0.40	0.40
Garcia Hamilton	No	No	No	No	No	No	No	No	No	No	No	No	No	No	0.00	0.00
Active Core Plus Fixed Income LM Capital	Yes	Yes	No	No	Yes	Yes	No	No	No	No	No	No	No	No	0.30	0.30
Active Opportunistic Fixed Income WAMCO	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	0.00	0.10

*Manager does not yet have 7 years of portfolio data. CTPF portfolio data has been linked with a representative historical manager composite to populate 7-year gross returns relative to a peer group and 7-year net returns relative to a market index.
 **Manager inception date was in 2016. Historical composite data is used to populate the above. Please note that Ariel International Equity (DM) only has historical data going back to the 1st quarter of 2012. We used the most data that was available to us in order to populate all five year and seven year fields above. For example, in order to populate seven year figures above for Ariel as of 6/30/18, we have used 6 1/2 year figures dating back to the 1st quarter of 2012.