

Callan



Executive Summary

September 30, 2021

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**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

Table of Contents

Total Fund Commentary	3
Select Market Returns	4
Quarterly Review	5
Asset Allocation	6
Investment Manager Asset Allocations	7
Total Fund Performance vs. Target	11
Manager Performance	14
Manager Watch List	22
General Market & Economic Conditions	30
Appendix: Watch List Criteria	33

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

Total Fund Commentary

The Fund was valued at \$12,982 million at the end of the third quarter, representing a decrease of approximately \$162.8 million from June 30, 2021. Negative net cash flows of \$221.7 million exceeded investment gains of \$55.9 million over the period. The Fund's asset allocation was close to the strategic targets at quarter-end. The largest deviations from target reflected a 3% underweight to fixed income and a 2% allocation to cash. We continue to evaluate opportunities to rebalance the portfolio, consistent with the Fund's long-term objectives and best practices.

Over the third quarter of 2021, economic data showed signs of softening: weaker job gains, slower output growth strangled by supply chain issues, a drop in income growth, and signs of waning consumer sentiment. As the quarter unfolded, supply chain issues and fears surrounding the end of fiscal stimulus, the surge in the Delta variant, and the return to a Fed taper slowed economic activity. Spiking inflation stirred even more anxiety, and the equity markets pulled back sharply in September in anticipation of weak reports for the economy. The market's concerns appeared to be well-founded, as U.S. GDP came in at 2% growth for the third quarter, down from the torrid 6.7% pace in the second quarter and very much in line with reports of growth stalling in the euro zone and in Asia, particularly China. Broad developed market equity and fixed income returns were flat over the quarter, with U.S. dollar strength being a headwind for overseas investments.

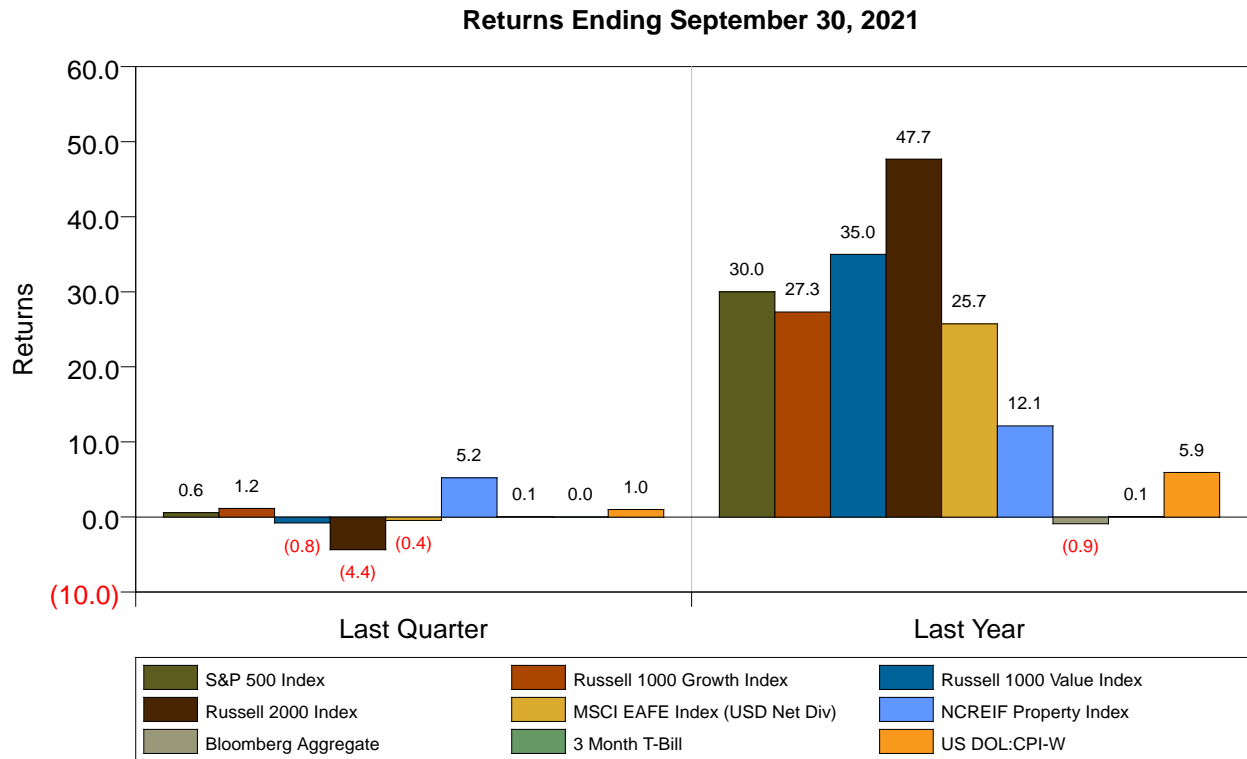
In this environment, the Fund had a net return of 0.37% over the quarter (0.44% gross of fees), outperforming the Policy Target by 54 basis points and ranking within the top 31% of peers. Longer-term performance (trailing three-, five-, seven-, and ten-year periods) is ahead of the Policy Target and ranks within the top 23% of the peer group. Over the quarter, private equity and international equity contributed most to results. The rest of the asset classes in the portfolio produced mixed results over the quarter. It is important to note that private market investments, such as private equity, infrastructure, and real estate are valued on a lagged basis and therefore should be evaluated in more detail separately, using appropriate metrics to capture the cash flows associated with these investments. Callan prepares separate reports on behalf of CTPF to evaluate the performance of these investments in more detail.

Closing Thoughts

The 2020 recession was the shortest and steepest on record, and the 2021 recovery has been the sharpest on record. We expect markets to continue to be volatile in response to the evolution of the COVID-19 pandemic and its impact on the global economy. We also acknowledge that, while recent market returns have been exceptional, they may not be sustainable over the long-term. We continue to advise our clients to adhere to a disciplined, strategic, investment process supported by a well-defined long-term asset-allocation policy.

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

Select Market Returns



**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

QUARTERLY REVIEW

• **Third Quarter, 2021 Investment Performance Update:**

- Performance: For the third quarter, the Fund outperformed the market benchmark by 61 basis points, gross of investment management fees (54 basis points net of fees), and ranked in the 31st percentile of its peers. Longer term performance (trailing three-years and longer) continues to be competitive relative to benchmarks.

• **Watch Status Report:** The following managers are on the Watch List:

- DFA: Included on the Watch List due to underperformance.
- Ariel: Included on the Watch List due to personnel changes and underperformance. On July 28th, 2020, Ariel Investments announced the resignation of Chaim Schneider to pursue other career interests. Schneider followed Portfolio Manager Rupal Bhansali from MacKay Shields and began his career at Ariel as a member of the New York-based international/global team in 2012. Schneider covered Consumer Staples, Financials, Materials, and Utilities, and spent the last two years as director of research. As a result of this departure, Bhansali has assumed the role of director of research and Schneider's coverage has been absorbed by other members of the team. In October 2020, an additional Research Associate for the International Equity strategy left the firm.

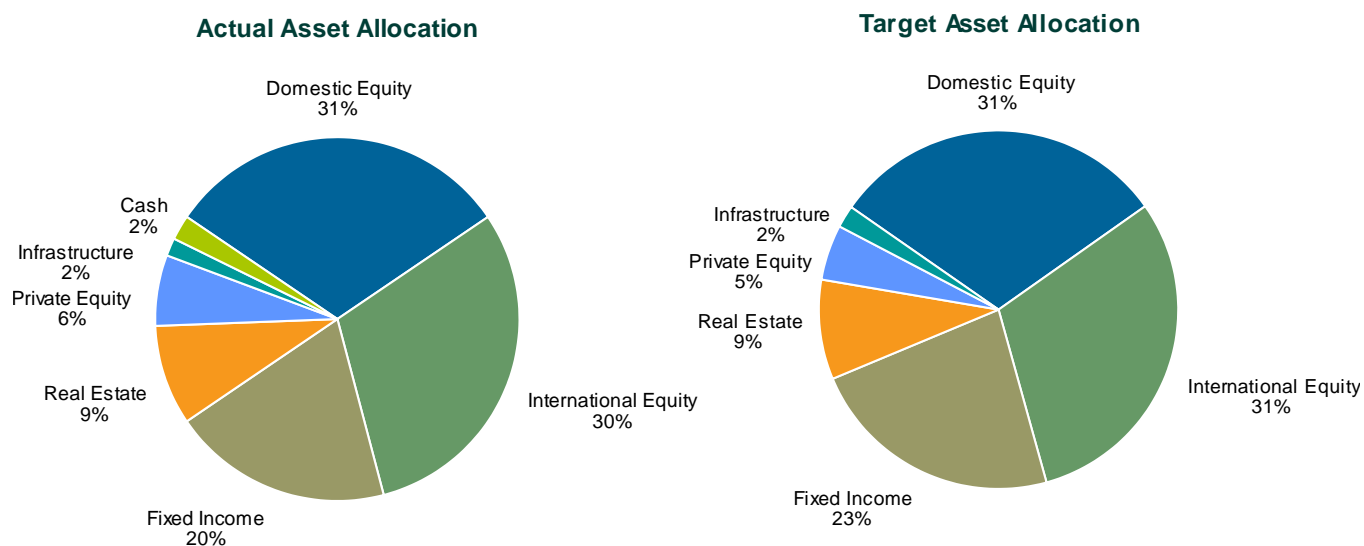
On January 11th, 2022 Ariel announced the departure of analyst Krishna Chintalapalli, his last day will be January 14th. Krishna's Telecommunications industry coverage will be assumed mostly by Todor Petrov, who has over 18 years of international equity experience covering the Telecommunications sector and by other senior members of the team. Additionally, Ariel announced that several analysts on the International and Global Equity Team were promoted to Vice President including: Todor Petrov, Barney Rosen, Barry Cohen, Kevin Buttigieg, and Yury Monakov. Doug Zheng will be promoted to Senior Research Associate.

- Earnest Partners EME: Included on the Watch List due to underperformance.
- Lazard: Included on the Watch List due to underperformance.
- Strategic Global Advisors: Included on the Watch List due to underperformance.

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

Asset Allocation

The Fund was valued at \$12,982 million at the end of the third quarter, representing a decrease of approximately \$162.8 million from June 30, 2021. Negative net cash flows of \$221.7 million exceeded investment gains of \$55.9 million over the period. The Fund's asset allocation was close to the strategic targets at quarter-end. The largest deviations from target reflected a 3% underweight to fixed income and a 2% allocation to cash. We continue to evaluate opportunities to rebalance the portfolio, consistent with the Fund's long-term objectives and best practices.



Asset Class	\$Millions Actual	Weight Actual	Target	Percent Difference	\$Millions Difference
Domestic Equity	4,021	31.0%	30.5%	0.5%	61
International Equity	3,949	30.4%	30.5%	(0.1%)	(10)
Fixed Income	2,550	19.6%	23.0%	(3.4%)	(436)
Real Estate	1,152	8.9%	9.0%	(0.1%)	(17)
Private Equity	816	6.3%	5.0%	1.3%	167
Infrastructure	207	1.6%	2.0%	(0.4%)	(52)
Cash	287	2.2%	0.0%	2.2%	287
Total	12,982	100.0%	100.0%		

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

INVESTMENT MANAGER ASSET ALLOCATIONS

Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of September 30, 2021, with the distribution as of June 30, 2021. 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.

	September 30, 2021				June 30, 2021	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
DOMESTIC EQUITY	\$4,020,711,881	30.97%	\$(158,538,777)	\$(11,925,106)	\$4,191,175,764	31.88%
Large Cap	\$3,581,025,923	27.58%	\$(156,637,457)	\$(8,117,494)	\$3,745,780,874	28.50%
Large Cap Core Index	\$2,512,693,696	19.35%	\$(119,098,061)	\$8,739,631	\$2,623,052,126	19.95%
Rhumbline Rsl 1000 LCC	2,512,693,696	19.35%	(119,098,061)	8,739,631	2,623,052,126	19.95%
Large Cap Growth Equity	\$533,949,739	4.11%	\$(33,902,319)	\$(3,750,053)	\$571,602,111	4.35%
Rhumbline Rsl 1000 LCG	354,528,431	2.73%	(33,722,096)	4,222,475	384,028,053	2.92%
Zevenbergen US ACE	179,421,308	1.38%	(180,222)	(7,972,528)	187,574,058	1.43%
Large Cap Value Equity	\$534,382,488	4.12%	\$(3,637,077)	\$(13,107,073)	\$551,126,638	4.19%
Channing US ACE	197,830,829	1.52%	(1,560,491)	(13,815,823)	213,207,143	1.62%
BMO Global-Harris LCV	336,551,659	2.59%	(2,076,586)	708,750	337,919,495	2.57%
Small Cap Equity	\$362,434,250	2.79%	\$(1,414,949)	\$(3,417,920)	\$367,267,119	2.79%
NTGI Structured SCC	123,065,772	0.95%	(421,994)	(3,089,359)	126,577,125	0.96%
BMO Disciplined SCG	54,755,086	0.42%	(117,855)	(1,731,028)	56,603,969	0.43%
Conestoga SCG	64,115,752	0.49%	(145,164)	2,680,594	61,580,322	0.47%
Phocas SCV	120,497,640	0.93%	(729,936)	(1,278,127)	122,505,703	0.93%
Attucks Domestic Equity (Mgr of Mgrs)	\$77,251,709	0.60%	\$(486,371)	\$(389,692)	\$78,127,771	0.59%
Attucks Heard ACC	33,831,660	0.26%	(410,818)	(1,230,289)	35,472,768	0.27%
Attucks Lasanti	29,822,683	0.23%	(19,409)	983,781	28,858,311	0.22%
Attucks Paradigm LCV	13,552,611	0.10%	(56,142)	(145,173)	13,753,926	0.10%
INTERNATIONAL EQUITY	\$3,949,319,901	30.42%	\$(21,912,646)	\$(44,287,229)	\$4,015,519,776	30.55%
Ariel EAFE ILCV	79,307,287	0.61%	(865,578)	(3,266,543)	83,439,408	0.63%
DFA ISCV	180,706,551	1.39%	(397,864)	1,075,298	180,029,118	1.37%
Earnest Partners EME	211,712,170	1.63%	(1,303,891)	(10,592,582)	223,608,642	1.70%
Earnest Partners ILCE	710,628,179	5.47%	(2,890,419)	(7,278,186)	720,796,783	5.48%
Lazard Asst Mgt ILCE	675,433,415	5.20%	(6,122,036)	(3,788,411)	685,343,862	5.21%
Leading Edge IE MOM	149,894,284	1.15%	(1,207,739)	(2,618,194)	153,720,217	1.17%
Morgan Stanley ILCE	659,332,341	5.08%	(3,804,782)	(29,876,826)	693,013,949	5.27%
Strategic Global Adv. EAFE	84,794,186	0.65%	(746,069)	(66,577)	85,606,832	0.65%
William Blair ILCG	732,094,396	5.64%	(2,052,426)	3,289,250	730,857,573	5.56%
William Blair ISCE	300,927,630	2.32%	(1,151,480)	12,000,638	290,078,473	2.21%
TOTAL FUND	\$12,982,495,881	100.0%	\$(221,723,554)	\$58,943,843	\$13,145,275,592	100.0%

Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021

INVESTMENT MANAGER ASSET ALLOCATIONS (Continued)

	September 30, 2021			Net New Inv.	Inv. Return	June 30, 2021	
	Market Value	Weight				Market Value	Weight
Attucks Int'l Equity	\$164,489,463	1.27%		\$(1,370,362)	\$(3,165,095)	\$169,024,920	1.29%
Attucks APEX Int'l ACC	12,843	0.00%		0	0	12,843	0.00%
Attucks GlobeFlex Int'l ACC	8,463	0.00%		0	170	8,293	0.00%
Attucks GlobeFlex Global Eq	32,760,970	0.25%		(360,840)	208,971	32,912,839	0.25%
Attucks Brown Capital Int'l SCG	31,156,830	0.24%		(154,008)	1,207,761	30,103,077	0.23%
Attucks Ativo Capital EM	20,022,609	0.15%		(269,866)	(971,695)	21,264,170	0.16%
Attucks Glovista EM	22,250,612	0.17%		(113,278)	(2,426,612)	24,790,501	0.19%
Attucks Redwood Int'l ACC	29,904,644	0.23%		(339,898)	(581,292)	30,825,833	0.23%
Attucks Paradigm ILCC	28,372,494	0.22%		(132,473)	(602,397)	29,107,364	0.22%
FIXED INCOME	\$2,549,955,155	19.64%		\$(18,110,768)	\$498,361	\$2,567,567,561	19.53%
Garcia Hamilton FIC	251,247,501	1.94%		(1,738,689)	(383,511)	253,369,701	1.93%
LM Capital FICP	343,022,520	2.64%		(3,140,845)	(366,797)	346,530,162	2.64%
Pugh FIC	255,045,998	1.96%		(1,676,495)	(30,002)	256,752,495	1.95%
SSgA Agg Bond Index FI	472,962,530	3.64%		(3,087,813)	(338,860)	476,389,203	3.62%
Taplin Canada FI	254,320,282	1.96%		(1,316,164)	103,952	255,532,494	1.94%
WAMCO FICP	652,277,700	5.02%		(5,011,066)	1,215,066	656,073,699	4.99%
Wellington Core Bond	258,880,837	1.99%		(1,653,002)	(3,615)	260,537,454	1.98%
Attucks Fixed Income	\$62,197,772	0.48%		\$(486,694)	\$302,127	\$62,382,338	0.47%
Attucks New Century GI TIPS	21,579,948	0.17%		(44,263)	227,711	21,396,500	0.16%
Attucks LM Capital EMD	21,481,528	0.17%		(257,239)	47,103	21,691,664	0.17%
Attucks Ramirez Fixed Income	19,136,295	0.15%		(185,192)	27,313	19,294,174	0.15%
INFRASTRUCTURE	\$207,151,861	1.60%		\$(4,255,907)	\$4,040,832	\$207,366,936	1.58%
Brookfield Infra III	41,660,208	0.32%		(1,061,121)	2,374,440	40,346,889	0.31%
Brookfield Infra IV	14,674,778	0.11%		(222,983)	632,894	14,264,867	0.11%
JLC Infrastructure Fund I	4,457,369	0.03%		(37,500)	(355,591)	4,850,460	0.04%
IFM Global Fund	38,569,229	0.30%		(1,683,313)	237	40,252,306	0.31%
JP Morgan Infr-OE	84,466,114	0.65%		(3,649,404)	1,305,901	86,809,617	0.66%
Macquarie Fd II Infr	471,903	0.00%		(8,818)	44,089	436,632	0.00%
Macquarie European Fund III Infr	386,471	0.00%		(10,234)	38,857	357,848	0.00%
Macquarie Infrastructure Fund V	7,070,967	0.05%		2,417,470	0	4,653,497	0.04%
Ullico Taxable Fund	15,394,822	0.12%		(3)	5	15,394,820	0.12%
TOTAL FUND	\$12,982,495,881	100.0%		\$(221,723,554)	\$58,943,843	\$13,145,275,592	100.0%

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

INVESTMENT MANAGER ASSET ALLOCATIONS (Continued)

	September 30, 2021			June 30, 2021		
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
REAL ESTATE	\$1,151,698,575	8.87%	\$9,573,951	\$25,822,076	\$1,116,302,548	8.49%
BIG RE Fund I	23,019,315	0.18%	(3,546,958)	718,691	25,847,582	0.20%
BIG RE Fund II	8,634,189	0.07%	7,007,683	(66,682)	1,693,189	0.01%
BREDS HG LP	25,120,534	0.19%	(2,493,661)	795,941	26,818,254	0.20%
Capri Select Fd II PRE	11,165	0.00%	0	0	11,165	0.00%
City View PRE	351,567	0.00%	0	(188,118)	539,685	0.00%
Clarion Lion Indus Tr	151,618,567	1.17%	(531,223)	(431,826)	152,581,616	1.16%
Europa Fd III PRE	897,073	0.01%	(25,793)	(25,648)	948,513	0.01%
Fortress Japan PRE	1,057,042	0.01%	626	(4,975)	1,061,391	0.01%
Fortress Japan Fd II PRE	1,936,017	0.01%	(61,407)	23,503	1,973,921	0.02%
Franklin Temp PREMOM	3,674,868	0.03%	(10,497)	23,923	3,661,442	0.03%
GreenOak Fund III	15,456,621	0.12%	3,596,651	1,495,683	10,364,287	0.08%
Heitman IV LP	21,108,502	0.16%	(3,035,195)	996,794	23,146,902	0.18%
JP Morgan Strat PRE-OE	182,588,078	1.41%	(340,715)	11,490,908	171,437,885	1.30%
LaSalle Property PRE-OE	226,163,866	1.74%	0	0	226,163,866	1.72%
Longpoint RE Fd I	23,224,197	0.18%	(1,628,607)	2,852,873	21,999,931	0.17%
Long Wharf VI	11,625,730	0.09%	499,860	2,552,880	8,572,990	0.07%
MB Asia RE Fd PRE	252,019	0.00%	0	(10,291)	262,310	0.00%
Newport Cap Fund II	21,540,659	0.17%	(380,395)	627,779	21,293,275	0.16%
Newport Cap Fund III	8,974,843	0.07%	3,337,586	2,474	5,634,783	0.04%
Oak Street Fund IV RE	16,157,472	0.12%	(544,182)	851,297	15,850,357	0.12%
PRISA Fd I PRE-OE	167,217,911	1.29%	(1,468,955)	0	168,686,865	1.28%
PRISA Fd II PRE-OE	115,985,207	0.89%	0	0	115,985,207	0.88%
SASC II	15,316,146	0.12%	(41,158)	696,292	14,661,013	0.11%
TA Associates Realty Fund XII	38,533,033	0.30%	9,784,591	3,350,796	25,397,646	0.19%
UBS Realty PRE-OE	58,087,245	0.45%	(530,542)	0	58,617,787	0.45%
Walton St Fd III PRE	54,633	0.00%	0	0	54,633	0.00%
Walton St Fd IV PRE	231,897	0.00%	0	0	231,897	0.00%
Walton St Fd V PRE	2,414,949	0.02%	0	(1,576)	2,416,525	0.02%
Walton St Fd VI PRE	8,338,581	0.06%	(8,822)	148,879	8,198,524	0.06%
Walton St Mexico Fd I PRE	2,106,648	0.02%	(4,936)	(77,522)	2,189,106	0.02%
TOTAL FUND	\$12,982,495,881	100.0%	\$(221,723,554)	\$58,943,843	\$13,145,275,592	100.0%

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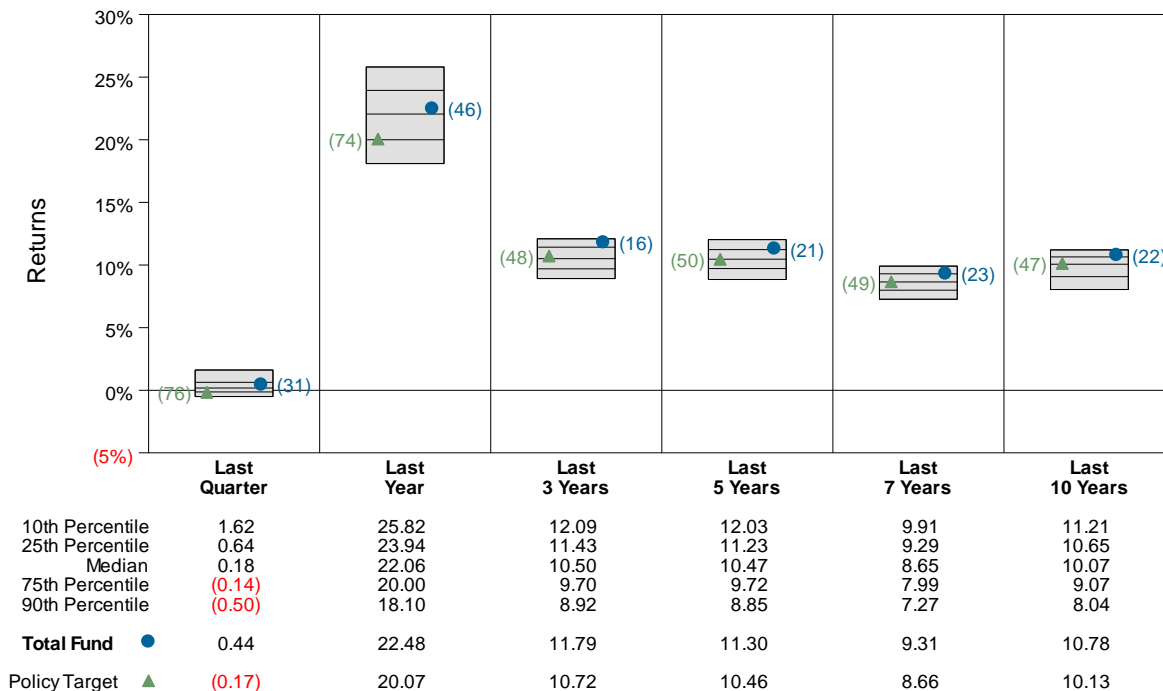
INVESTMENT MANAGER ASSET ALLOCATIONS (Continued)

	September 30, 2021			June 30, 2021		
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
PRIVATE EQUITY	\$816,408,371	6.29%	\$(4,302,031)	\$84,774,051	\$735,936,352	5.60%
Adams St Many Fd PE	350,968,598	2.70%	(1,102,107)	32,384,676	319,686,029	2.43%
African Dev Ptr III	2,474,205	0.02%	521,395	136,118	1,816,692	0.01%
AFIG Fund II LP	8,202,593	0.06%	0	0	8,202,593	0.06%
Astra Partners I	7,663,424	0.06%	(60,647)	15,526	7,708,545	0.06%
AUA II	6,626,981	0.05%	277,060	1,237,343	5,112,577	0.04%
AVP XI LP	25,094,073	0.19%	2,356,096	6,361,694	16,376,283	0.12%
AVP XII LP	7,213,104	0.06%	2,960,625	2,479	4,250,000	0.03%
Data Focus I	3,923,904	0.03%	1,028,178	58,738	2,836,987	0.02%
EQT Fund VII	27,518,060	0.21%	(5,872,242)	8,269,163	25,121,139	0.19%
EQT IX LP	10,576,094	0.08%	890,853	169,258	9,515,983	0.07%
Estancia II	6,157,177	0.05%	(186,921)	(1,059,482)	7,403,580	0.06%
Farol Fund II	13,520,550	0.10%	(174,171)	2,576,244	11,118,477	0.08%
HarbourVest Ptrs VI PE	130,487	0.00%	0	(30,097)	160,584	0.00%
HarbourVest Ptrs VII PE	26,747,831	0.21%	(1,431,884)	2,802,743	25,376,972	0.19%
HarbourVest Ptrs VIII PE	4,125,630	0.03%	(1,881,782)	485,832	5,521,580	0.04%
HVP Buyout X PE	17,207,672	0.13%	(268,530)	2,182,089	15,294,113	0.12%
HVP Venture X PE	17,497,120	0.13%	(619,857)	3,220,926	14,896,051	0.11%
Hispania Fd II PE	1,641,555	0.01%	0	0	1,641,555	0.01%
ICV Capital Ptrs PE	147,847	0.00%	0	(404)	148,251	0.00%
ICV Capital Ptrs III PE	9,030,836	0.07%	(3,382,801)	530,426	11,883,211	0.09%
ICV Capital Ptrs IV PE	13,900,855	0.11%	3,112,452	1,294,961	9,493,442	0.07%
KKR Americas Fd XII	34,350,110	0.26%	(5,002,404)	5,699,078	33,653,436	0.26%
MB SPO FD II	2,706,797	0.02%	(22,363)	(203,735)	2,932,895	0.02%
Mesirow Fd IV PE	6,806,726	0.05%	(1,758,300)	1,073,316	7,491,710	0.06%
Mesirow Fd V PE	18,883,434	0.15%	(1,977,083)	3,117,041	17,743,476	0.13%
Mesirow Fd VII A PE	16,597,707	0.13%	1,182,188	1,508,940	13,906,579	0.11%
Mesirow Fd VII B PE	14,719,585	0.11%	(21,874)	1,164,119	13,577,340	0.10%
Mesirow Fund VIII	10,000,000	0.08%	3,140,000	0	6,860,000	0.05%
Mesirow Fd IX PE	186,008	0.00%	0	3,097	182,911	0.00%
Mesirow Fd X PE	5,212,286	0.04%	(71,740)	163,749	5,120,277	0.04%
Muller M2 MPEFF PE	214,616	0.00%	0	0	214,616	0.00%
NMS Capital Fund III	15,406,645	0.12%	(1,384,683)	2,545,477	14,245,851	0.11%
NMS Capital Fund IV	1,568,125	0.01%	53,575	(179,993)	1,694,543	0.01%
P4G I	964,589	0.01%	4,841	(11,867)	971,615	0.01%
Palladium Ptrs IV PE	9,332,950	0.07%	(357,805)	819,453	8,871,302	0.07%
Palladium Ptrs V PE	13,063,923	0.10%	(233,734)	1,899,775	11,397,882	0.09%
Pantheon Asia Fd V PE	1,672,471	0.01%	(46,134)	37,442	1,681,163	0.01%
Pantheon Europe Fd II PE	15,917	0.00%	0	(370)	16,287	0.00%
Pantheon Europe Fd VI PE	3,285,521	0.03%	(170,599)	327,120	3,129,000	0.02%
Pantheon GI Fd 2014	32,046,521	0.25%	(735,273)	3,925,680	28,856,114	0.22%
Pantheon Select Fd	14,731,980	0.11%	2,750,000	0	11,981,980	0.09%
Pantheon USA Fd III PE	251,731	0.00%	0	(6,851)	258,582	0.00%
Pantheon USA Fd IV PE	444,037	0.00%	0	0	444,037	0.00%
Pharos Fd II PE	4,060,978	0.03%	0	(259,026)	4,320,004	0.03%
Pharos Fd III PE	19,927,185	0.15%	(403,063)	1,709,184	18,621,065	0.14%
RLJ Equity Fund II	10,108,307	0.08%	281,799	553,722	9,272,786	0.07%
Syncom Venture PE	0	0.00%	(5,610)	3,806	1,804	0.00%
Turning Rock Fd I	8,410,594	0.06%	1,131,231	194,774	7,084,589	0.05%
WM Partners II	11,035,544	0.09%	3,179,082	51,902	7,804,560	0.06%
CASH	\$287,250,137	2.21%	\$(24,177,377)	\$20,859	\$311,406,655	2.37%
TOTAL FUND	\$12,982,495,881	100.0%	\$(221,723,554)	\$58,943,843	\$13,145,275,592	100.0%

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

Total Fund Performance vs. Target

Callan Public Fund Spns - 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 third quarter, the Fund outperformed the market benchmark by 61 basis points, gross of investment management fees (54 basis points net of fees), and ranked in the 31st percentile of its peers. Longer term performance (trailing three-years and longer) continues to be competitive relative to benchmarks.

The manager attribution effect was positive over the quarter, with private equity and international equity contributing mostly to results. All other asset classes posted mixed results over the quarter. The following is a brief summary of the performance of each of the major asset classes represented in the Fund (performance commentary relative to benchmarks is net of fees, while results relative to peers is gross of fees):

- Domestic Equity:** The domestic equity composite underperformed the Russell 3000 Index by 36 bps over the third quarter, ranking in the 63rd percentile of its peers. Zevenbergen and Channing had a challenging quarter, but their performance continues to be competitive relative to benchmarks over the long-term. Conversely, all of the small cap equity managers beat their benchmarks during the quarter.
- International Equity:** The international equity composite outperformed the MSCI ACWI Ex-US IMI benchmark by 136 basis points for the quarter, and ranked in the 21st percentile of its peer group. Relative performance was mostly positive for the international equity managers this quarter. William Blair Small Cap, William Blair Growth, Earnest Partners EM, Lazard, and Earnest Partners posted the strongest relative results. Leading Edge, DFA EM, and Strategic Global Advisors also

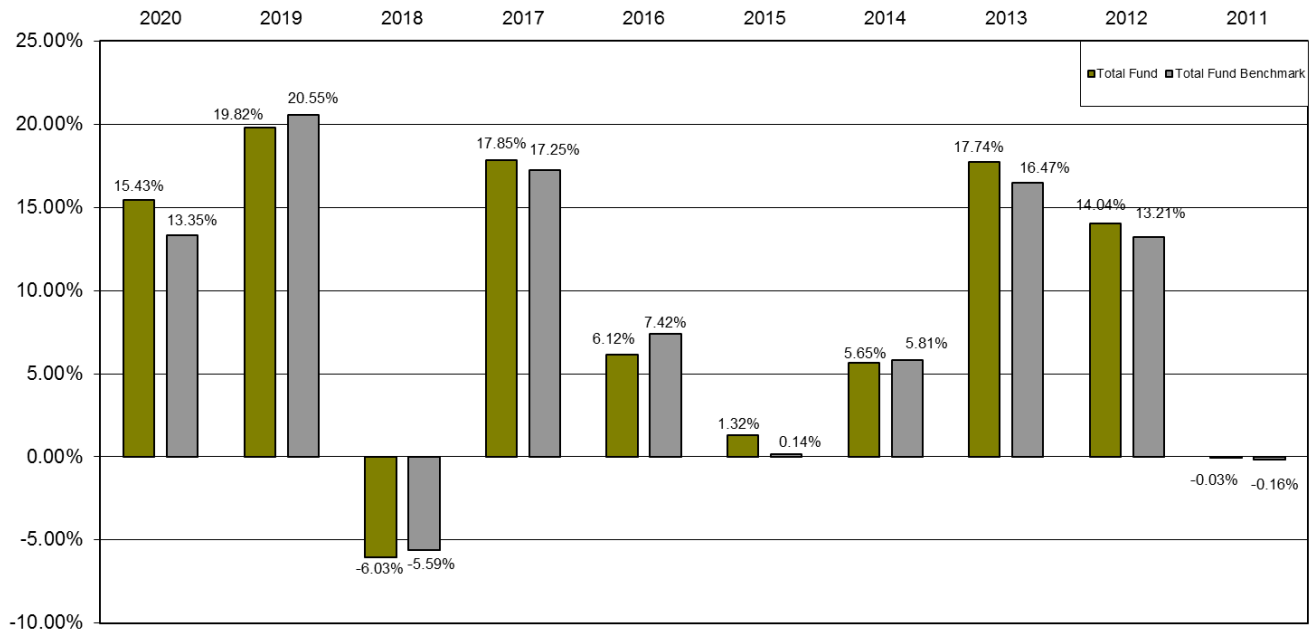
**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

contributed to relative performance. Ariel and Morgan Stanley detracted from relative results over the quarter.

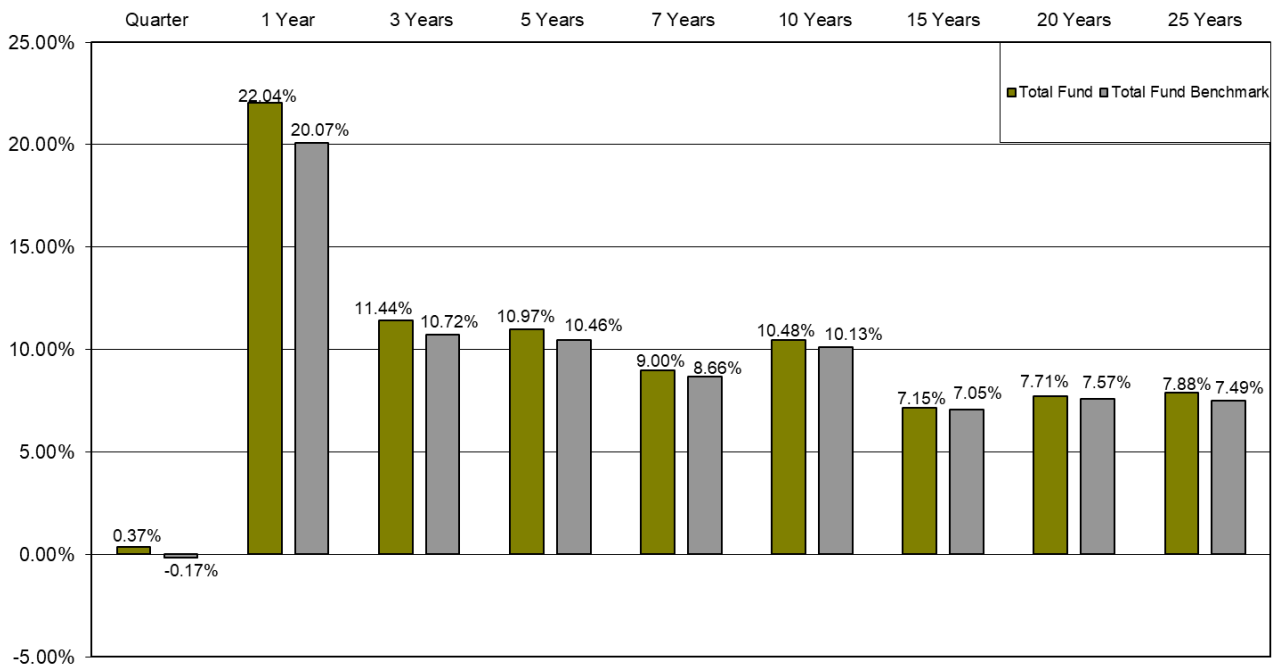
- **Fixed Income:** The fixed income composite underperformed the Bloomberg Aggregate Index by 7 basis points for the quarter and ranked in the 89th percentile of its peers. Manager performance was mostly negative for the fixed income managers over the third quarter, with the exception of WAMCO. Garcia Hamilton detracted the most from relative results. Performance over longer periods continues to be competitive.
- **Alternative Investments:** The private equity and infrastructure portfolios outperformed relative to their respective benchmarks over the quarter on a time-weighted return basis. Conversely, the real estate portfolio underperformed its benchmark. It is important to note that performance evaluation for these instruments should encompass several metrics that go beyond time-weighted return calculations. These metrics take into account the timing and magnitude of distributions and contributions over the life of these investments. This cash flow activity is key in evaluating the success of these instruments. Hence, these portfolios are evaluated separately and more rigorously under separate cover.

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

Total Fund Calendar Year Performance, Net of Fees



Total Fund Performance over Various Trailing Periods, Net of Fees



**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

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 9/30/2021						Inception Date	Qtr-End MV	
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr			Since Inception
Fixed Income									
SSgA Aggregate Bond Index	-0.10	-1.05	-	-	-	-	3.60	Aug-19	\$473m
Bloomberg Barclays Aggregate Index	0.05	-0.90	-	-	-	-	3.70		
Variance	-0.15	-0.15	-	-	-	-	-0.10		
Wellington Core Bond	-0.05	-0.49	-	-	-	-	4.52	Aug-19	\$259m
Bloomberg Barclays Aggregate Index	0.05	-0.90	-	-	-	-	3.70		
Variance	-0.10	0.41	-	-	-	-	0.82		
Garcia Hamilton	-0.19	-1.54	4.74	2.97	3.36	3.88		Oct-10	\$251m
Bloomberg Barclays Aggregate Index	0.05	-0.90	5.36	2.94	3.26	3.21			
Variance	-0.24	-0.64	-0.62	0.03	0.10	0.67			
LM Capital*	-0.15	0.07	5.61	3.24	3.56	4.20		Nov-04	\$343m
Bloomberg Barclays Aggregate Index	0.05	-0.90	5.36	2.94	3.26	4.03			
Variance	-0.20	0.97	0.25	0.30	0.30	0.17			
Pugh Capital Management	-0.05	-0.38	5.71	3.15	3.42	3.45		Oct-10	\$255m
Bloomberg Barclays Aggregate Index	0.05	-0.90	5.36	2.94	3.26	3.21			
Variance	-0.10	0.52	0.35	0.21	0.16	0.24			
BMO Fixed Income	0.01	-0.87	5.40	3.41	3.40	4.06		Nov-04	\$254m
Bloomberg Barclays Aggregate Index	0.05	-0.90	5.36	2.94	3.26	4.03			
Variance	-0.04	0.03	0.04	0.47	0.14	0.03			
Western Asset Management	0.14	1.59	7.12	4.30	4.47	5.26		Feb-03	\$652m
Bloomberg Barclays Aggregate Index	0.05	-0.90	5.36	2.94	3.26	4.09			
Variance	0.09	2.49	1.76	1.36	1.21	1.17			

*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.

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

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

CTPF Investment Strategies	Net Investment Returns as of 9/30/2021						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
Large Cap Equity								
Rhumbline Russell 1000 Index Fund	0.12	30.86	16.32	16.99	13.99	9.89	Jun-07	\$2,513m
Russell 1000 Index	0.21	30.96	16.43	17.11	14.09	9.86		
Variance	-0.09	-0.10	-0.11	-0.12	-0.10	0.03		
Rhumbline Russell 1000 Growth Index Fund	1.03	27.49	21.90	-	-	22.96	Oct-17	\$355m
Russell 1000 Growth Index	1.16	27.32	22.00	-	-	23.06		
Variance	-0.13	0.17	-0.10	-	-	-0.10		
Zevenbergen Capital Management	-4.35	17.14	32.45	32.03	22.60	13.52	Oct-92	\$179m
Russell 3000 Growth Index	0.69	27.57	21.27	22.30	18.13	10.71		
Variance	-5.04	-10.43	11.18	9.73	4.47	2.81		
Channing*	-6.61	42.46	12.46	12.75	9.72	13.88	Jul-09	\$198m
Channing Benchmark	-0.93	36.64	9.94	10.94	9.38	14.04		
Variance	-5.68	5.82	2.52	1.81	0.34	-0.16		
BMO Disciplined Large Cap Value	0.15	41.64	9.30	11.98	9.57	7.80	Jul-99	\$337m
Harris Benchmark**	-0.78	35.01	10.07	10.94	9.32	6.01		
Variance	0.93	6.63	-0.77	1.04	0.25	1.79		
Small Cap Equity								
Northern Trust Small Cap	-2.47	51.70	10.49	13.34	12.09	12.33	Jan-91	\$123m
Russell 2000 Index	-4.36	47.68	10.54	13.45	11.90	11.10		
Variance	1.89	4.02	-0.05	-0.11	0.19	1.23		
BMO Disciplined Small Cap Growth	-3.20	44.40	-	-	-	11.29	Jul-18	\$55m
Russell 2000 Growth Index	-5.65	33.27	-	-	-	12.34		
Variance	2.45	11.13	-	-	-	-1.05		
Conestoga Small Cap Growth	4.17	39.00	-	-	-	15.98	Jul-18	\$64m
Russell 2000 Growth Index	-5.65	33.30	-	-	-	12.34		
Variance	9.82	5.70	-	-	-	3.64		
Phocas Small Cap Value	-1.24	69.11	9.32	10.63	-	11.32	Jul-16	\$120m
Russell 2000 Value Index	-2.98	63.92	8.58	11.03	-	12.28		
Variance	1.74	5.19	0.74	-0.40	-	-0.96		
Manager of Managers								
Attucks***	-1.20	23.00	9.68	10.48	8.46	8.23	Dec-13	\$304m
Custom Benchmark	-1.67	22.95	10.47	10.65	8.58	8.07		
Variance	0.47	0.05	-0.79	-0.17	-0.12	0.16		

*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.

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

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

CTPF Investment Strategies	Net Investment Returns as of 9/30/2021						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
International Equity								
Ariel Investments	-4.11	10.25	4.07	4.48	-	5.50	Jul-16	\$79m
MSCI EAFE Index	-0.45	25.73	7.62	8.81	-	9.67		
Variance	-3.66	-15.48	-3.55	-4.33	-	-4.17		
EARNEST Partners	-1.12	37.73	9.45	10.66	7.19	6.31	Apr-07	\$711m
MSCI ACWI ex-US Index	-2.99	23.92	8.03	8.94	5.69	3.51		
Variance	1.87	13.81	1.42	1.72	1.50	2.80		
Lazard	-0.60	22.50	7.08	7.26	5.25	5.88	Jan-01	\$675m
MSCI ACWI ex-US Index	-2.99	23.92	8.03	8.94	5.69	5.18		
Variance	2.39	-1.42	-0.95	-1.68	-0.44	0.70		
Morgan Stanley	-4.42	17.59	7.18	8.45	5.50	8.36	Apr-95	\$659m
MSCI EAFE Index	-0.45	25.73	7.62	8.81	5.80	5.40		
Variance	-3.97	-8.14	-0.44	-0.36	-0.30	2.96		
Strategic Global Advisors	-0.21	23.63	5.52	7.17	-	8.03	Jul-16	\$85m
MSCI EAFE Index	-0.45	25.73	7.62	8.81	-	9.67		
Variance	0.24	-2.10	-2.10	-1.64	-	-1.64		
William Blair Growth	0.36	26.16	16.93	14.71	10.54	10.64	Feb-10	\$732m
MSCI ACWI ex-US IMI Growth Index	-3.06	18.51	12.07	11.31	8.46	8.05		
Variance	3.42	7.65	4.86	3.40	2.08	2.59		
William Blair International Small Cap	3.94	31.85	16.73	13.01	10.82	6.80	Apr-07	\$301m
William Blair ISCE Benchmark*	0.35	28.61	12.85	11.85	9.68	5.13		
Variance	3.59	3.24	3.88	1.16	1.14	1.67		
Dimensional Fund Advisors	0.59	36.03	4.50	6.78	5.70	9.75	Jun-12	\$181m
MSCI World Small Cap ex-US Value	0.12	35.29	6.48	8.12	6.43	9.50		
Variance	0.47	0.74	-1.98	-1.34	-0.73	0.25		
EARNEST Partners Emerging Markets	-4.88	30.82	8.63	9.44	5.81	4.47	Mar-13	\$212m
MSCI Emerging Markets Index	-8.09	18.20	8.59	9.23	5.62	4.52		
Variance	3.21	12.62	0.04	0.21	0.19	-0.05		
International Manager of Managers								
Leading Edge	-1.91	20.56	6.68	8.15	5.86	5.92	Apr-10	\$150m
MSCI ACWI ex-US Index	-2.99	23.92	8.03	8.94	5.69	5.61		
Variance	1.08	-3.36	-1.35	-0.79	0.17	0.31		

* 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.

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

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

CTPF Investment Strategies	Net Investment Returns as of 9/30/2021						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
Infrastructure								
Infrastructure Composite	1.75	13.92	15.02	13.07	9.80	8.24	Nov-08	\$207m
Infrastructure Benchmark*	0.58	15.28	7.48	6.20	6.71	7.30		
Variance	1.17	-1.36	7.54	6.87	3.09	0.94		
Real Estate								
Real Estate Composite	2.18	13.08	6.38	6.73	8.29	7.18	Jan-02	\$1,152m
NFI-ODCE Value Weight	6.41	13.64	6.13	6.56	7.93	7.00		
Variance	-4.23	-0.56	0.25	0.17	0.36	0.18		
Private Equity								
Private Equity Composite	11.38	57.14	23.44	20.24	16.25	11.17	Jan-02	\$816m
Private Equity Benchmark**	0.70	35.18	19.86	19.80	15.98	10.05		
Variance	10.68	21.96	3.58	0.44	0.27	1.12		

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

**The Private Equity Benchmark is Russell 3000 through 9/30/17, thereafter Russell 3000+3%.

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.

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

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 9/30/2021						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
Fixed Income								
SSgA Aggregate Bond Index	-0.08	-1.01	-	-	-	3.64	Aug-19	\$473m
Bloomberg Barclays Aggregate Index	0.05	-0.90	-	-	-	3.70		
Variance	-0.13	-0.11	-	-	-	-0.06		
Peer Ranking – CAI Core Bond	96	94	-	-	-			
Wellington Core Bond	-0.01	-0.31	-	-	-	4.69	Aug-19	\$259m
Bloomberg Barclays Aggregate Index	0.05	-0.90	-	-	-	3.70		
Variance	-0.06	0.59	-	-	-	0.99		
Peer Ranking – CAI Core Bond	91	71	-	-	-			
Garcia Hamilton	-0.16	-1.41	4.88	3.11	3.53	4.05	Oct-10	\$251m
Bloomberg Barclays Aggregate Index	0.05	-0.90	5.36	2.94	3.26	3.21		
Variance	-0.21	-0.51	-0.48	0.17	0.27	0.84		
Peer Ranking – CAI Core Bond	98	97	98	92	86			
LM Capital*	-0.11	0.22	5.76	3.39	3.72	4.38	Nov-04	\$343m
Bloomberg Barclays Aggregate Index	0.05	-0.90	5.36	2.94	3.26	4.03		
Variance	-0.16	1.12	0.40	0.45	0.46	0.35		
Peer Ranking - CAI Core Plus Bond	92	93	89	97	90			
Pugh Capital Management	-0.02	-0.24	5.86	3.30	3.57	3.62	Oct-10	\$255m
Bloomberg Barclays Aggregate Index	0.05	-0.90	5.36	2.94	3.26	3.21		
Variance	-0.07	0.66	0.50	0.36	0.31	0.41		
Peer Ranking - CAI Core Bond	92	69	66	82	81			
BMO Fixed Income	0.04	-0.74	5.53	3.54	3.54	4.22	Nov-04	\$254m
Bloomberg Barclays Aggregate Index	0.05	-0.90	5.36	2.94	3.26	4.03		
Variance	-0.01	0.16	0.17	0.60	0.28	0.19		
Peer Ranking - CAI Core Bond	82	89	91	54	86			
Western Asset Management	0.18	1.76	7.29	4.47	4.65	5.45	Feb-03	\$652m
Bloomberg Barclays Aggregate Index	0.05	-0.90	5.36	2.94	3.26	4.09		
Variance	0.13	2.66	1.93	1.53	1.39	1.36		
Peer Ranking - CAI Core Plus Bond	67	47	9	27	18			

*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.

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

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

CTPF Investment Strategies	Gross Investment Returns as of 9/30/2021						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
Large Cap Equity								
Rhumbline Russell 1000 Index Fund	0.12	30.87	16.33	17.00	14.00	9.90	Jun-07	\$2,513m
Russell 1000 Index	0.21	30.96	16.43	17.11	14.09	9.86		
Variance	-0.09	-0.09	-0.10	-0.11	-0.09	0.04		
Peer Ranking – CAI Large Cap	51	48	52	53	52			
Rhumbline Russell 1000 Growth Index Fund	1.03	27.50	21.91	-	-	22.96	Oct-17	\$355m
Russell 1000 Growth Index	1.16	27.32	21.67	-	-	23.06		
Variance	-0.13	0.18	0.24	-	-	-0.10		
Peer Ranking - CAI Large Cap Growth	44	47	40	-	-			
Zevenbergen Capital Management	-4.25	17.65	32.98	32.54	23.09	13.98	Oct-92	\$179m
Russell 3000 Growth Index	0.69	27.57	21.27	22.30	18.13	10.71		
Variance	-4.94	-9.92	11.71	10.24	4.96	3.27		
Peer Ranking - CAI All Cap Growth	93	91	9	10	10			
Channing*	-6.50	43.08	12.98	13.27	10.24	14.44	Jul-09	\$198m
Channing Benchmark	-0.93	36.64	9.94	10.94	9.38	14.04		
Variance	-5.57	6.44	3.04	2.33	0.86	0.40		
Peer Ranking – CAI All Cap Value	88	60	42	61	49			
BMO Disciplined Large Cap Value	0.20	41.92	9.53	12.22	9.81	8.08	Jul-99	\$337m
Harris Benchmark**	-0.78	35.01	10.07	10.94	9.32	6.01		
Variance	0.98	6.91	-0.54	1.28	0.49	2.07		
Peer Ranking - CAI Large Cap Value	20	33	67	47	46			
Small Cap Equity								
Northern Trust Small Cap	-2.45	51.82	10.58	13.44	12.19	12.42	Jan-91	\$123m
Russell 2000 Index	-4.36	47.68	10.54	13.45	11.90	11.10		
Variance	1.91	4.14	0.04	-0.01	0.29	1.32		
Peer Ranking - CAI Small Cap	64	47	49	48	52			
BMO Disciplined Small Cap Growth	-3.06	45.10	-	-	-	11.88	Jul-18	\$55m
Russell 2000 Growth Index	-5.65	33.27	-	-	-	12.34		
Variance	2.59	11.83	-	-	-	-0.46		
Peer Ranking - CAI Small Cap Growth	79	29	-	-	-			
Conestoga Small Cap Growth	4.36	40.00	-	-	-	16.78	Jul-18	\$64m
Russell 2000 Growth Index	-5.65	33.30	-	-	-	12.34		
Variance	10.01	6.70	-	-	-	4.44		
Peer Ranking - CAI Small Cap Growth	3	43	-	-	-			
Phocas Small Cap Value	-1.04	70.35	10.23	11.54	-	12.19	Jul-16	\$120m
Russell 2000 Value Index	-2.98	63.92	8.58	11.03	-	12.28		
Variance	1.94	6.43	1.65	0.51	-	-0.09		
Peer Ranking - CAI Small Cap Value	36	26	30	39	-			
Manager of Managers								
Attucks***	-1.06	23.68	10.31	11.12	9.07	8.84	Dec-13	\$304m
Custom Benchmark	-1.67	22.95	10.47	10.65	8.58	8.07		
Variance	0.61	0.73	-0.16	0.47	0.49	0.77		

*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.

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

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

CTPF Investment Strategies	Gross Investment Returns as of 9/30/2021						Inception Date	Qtr-End MV
	Qtr	1 Yr	3 Yr	5 Yr	7 Yr	Since Inception		
International Equity								
Ariel Investments	-3.95	10.99	4.77	5.19	-	6.18	Jul-16	\$79m
MSCI EAFE Index	-0.45	25.73	7.62	8.81	-	9.67		
Variance	-3.50	-14.74	-2.85	-3.62	-	-3.49		
Peer Ranking - CAI Non-US Equity	94	100	92	98	-			
EARNEST Partners	-1.01	38.26	9.90	11.11	7.63	6.80	Apr-07	\$711m
MSCI ACWI ex-US Index	-2.99	23.92	8.03	8.94	5.69	3.51		
Variance	1.98	14.34	1.87	2.17	1.94	3.29		
Peer Ranking - CAI Non-US Equity	46	10	46	36	41			
Lazard	-0.56	22.71	7.27	7.44	5.43	6.21	Jan-01	\$675m
MSCI ACWI ex-US Index	-2.99	23.92	8.03	8.94	5.69	5.18		
Variance	2.43	-1.21	-0.76	-1.50	-0.26	1.03		
Peer Ranking - CAI Non-US Equity	37	74	68	85	78			
Morgan Stanley	-4.33	18.04	7.61	8.89	5.92	8.82	Apr-95	\$659m
MSCI EAFE Index	-0.45	25.73	7.62	8.81	5.80	5.40		
Variance	-3.88	-7.69	-0.01	0.08	0.12	3.42		
Peer Ranking - CAI Non-US Equity	95	90	65	64	70			
Strategic Global Advisors	-0.09	24.22	6.04	7.70	-	8.53	Jul-16	\$85m
MSCI EAFE Index	-0.45	25.73	7.62	8.81	-	9.67		
Variance	0.36	-1.51	-1.58	-1.11	-	-1.14		
Peer Ranking - CAI Non-US Equity	28	62	84	81	-			
William Blair Growth	0.44	26.57	17.32	15.10	10.93	11.04	Feb-10	\$732m
MSCI ACWI ex-US IMI Growth Index	-3.06	18.51	12.07	11.31	8.46	8.05		
Variance	3.50	8.06	5.25	3.79	2.47	2.99		
Peer Ranking - CAI Core Growth Int'l Equity	25	34	15	23	25			
William Blair International Small Cap	4.13	32.87	17.67	13.93	11.74	7.79	Apr-07	\$301m
William Blair ISCE Benchmark*	0.35	28.61	12.85	11.85	9.68	5.13		
Variance	3.78	4.26	4.82	2.08	2.06	2.66		
Peer Ranking - CAI Int'l Small Cap Equity	6	33	3	17	19			
Dimensional Fund Advisors	0.59	36.03	4.50	6.78	5.70	9.77	Jun-12	\$181m
MSCI World Small Cap ex-US Value	0.12	35.29	6.48	8.12	6.43	9.50		
Variance	0.47	0.74	-1.98	-1.34	-0.73	0.27		
Peer Ranking - CAI Int'l Small Cap Equity	32	12	93	91	94			
EARNEST Partners Emerging Markets	-4.75	31.48	9.20	10.01	6.35	5.00	Mar-13	\$212m
MSCI Emerging Markets Index	-8.09	18.20	8.59	9.23	5.62	4.52		
Variance	3.34	13.28	0.61	0.78	0.73	0.48		
Peer Ranking - CAI EM Equity	34	26	63	54	64			
International Manager of Managers								
Leading Edge	-1.72	21.48	7.52	9.00	6.68	6.75	Apr-10	\$150m
MSCI ACWI ex-US Index	-2.99	23.92	8.03	8.94	5.69	5.61		
Variance	1.27	-2.44	-0.51	0.06	0.99	1.14		
Peer Ranking - CAI Non-US Equity	65	80	66	63	59			

* 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.

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

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

CTPF Investment Strategies	Gross Investment Returns as of 9/30/2021						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
Infrastructure								
Infrastructure Composite	1.97	15.98	16.31	14.05	10.66	8.93	Nov-08	\$207m
Infrastructure Benchmark*	0.58	15.28	7.48	6.20	6.71	7.30		
Variance	1.39	0.70	8.83	7.85	3.95	1.63		
Real Estate								
Real Estate Composite	2.31	14.17	7.22	7.53	9.09	7.70	Jan-02	\$1,152m
NFI-ODCE Value Weight	6.41	13.64	6.13	6.56	7.93	7.00		
Variance	-4.10	0.53	1.09	0.97	1.16	0.70		
Private Equity								
Private Equity Composite	11.56	58.88	24.69	21.13	16.90	11.42	Jan-02	\$816m
Private Equity Benchmark**	0.70	35.18	19.86	19.80	15.98	10.05		
Variance	10.86	23.70	4.83	1.33	0.92	1.37		

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

**The Private Equity Benchmark is Russell 3000 through 9/30/17, thereafter Russell 3000+3%.

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.

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

Manager Watch List

MANAGER	DATE WATCH STARTED, REASON	LAST DUE DILIGENCE MEETING	ACTIONS TAKEN	POLICY/ RECOMMENDED ACTIONS	AUM as of 9/30/2021	Current Quarter Watch List Score	Previous Quarter Watch List Score
DFA	August - 19 Underperformance	July - 21	Monitor	Monitor	\$181 mil.	0.8	0.9
Ariel	July - 20 Personnel Turnover Underperformance	August - 21	Monitor	Monitor	\$79 mil.	0.9	0.9
BMO Fixed Income	July - 20 Personnel Turnover	August - 21	Termination	Termination	\$254 mil.	0.4	0.4
Earnest Partners Emerging Markets	December - 20 Underperformance	August - 21	Monitor	Monitor	\$212 mil.	0.4	0.8
Lazard International Equity	February - 21 Underperformance	August - 21	Monitor	Monitor	\$675 mil.	0.9	0.9
Strategic Global Advisors	February - 21 Underperformance	July - 21	Monitor	Monitor	\$85 mil.	0.8	0.8
BMO Large Cap Value	April - 21 Underperformance and Organizational Changes	August - 21	Termination	Termination	\$337 mil.	0.2	0.2
BMO Small Cap Growth	June - 21 Organizational Changes	August - 21	Termination	Termination	\$55 mil.	0.4	0.4

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

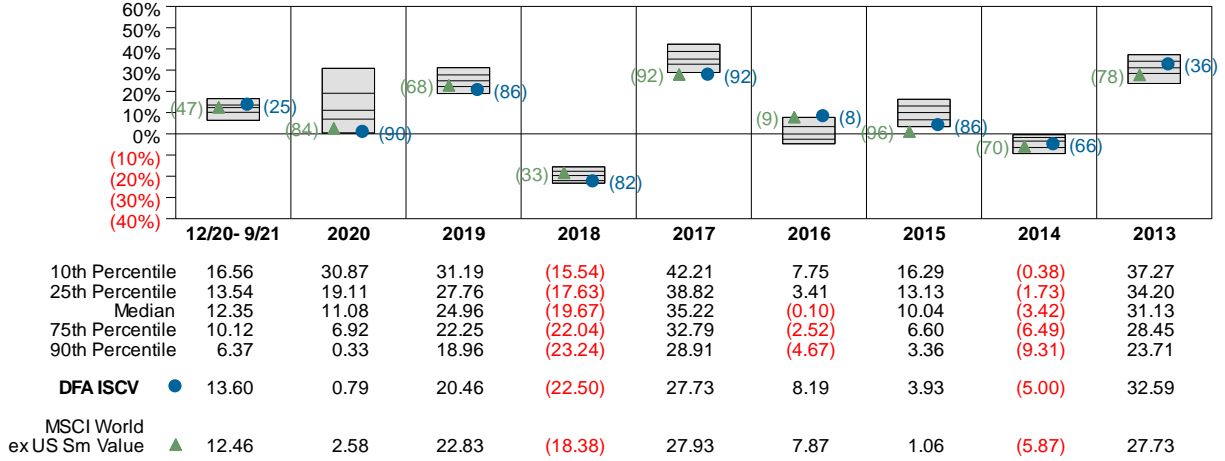
Monitor = Recommended action for the Board

Search = Board authorized a manager search

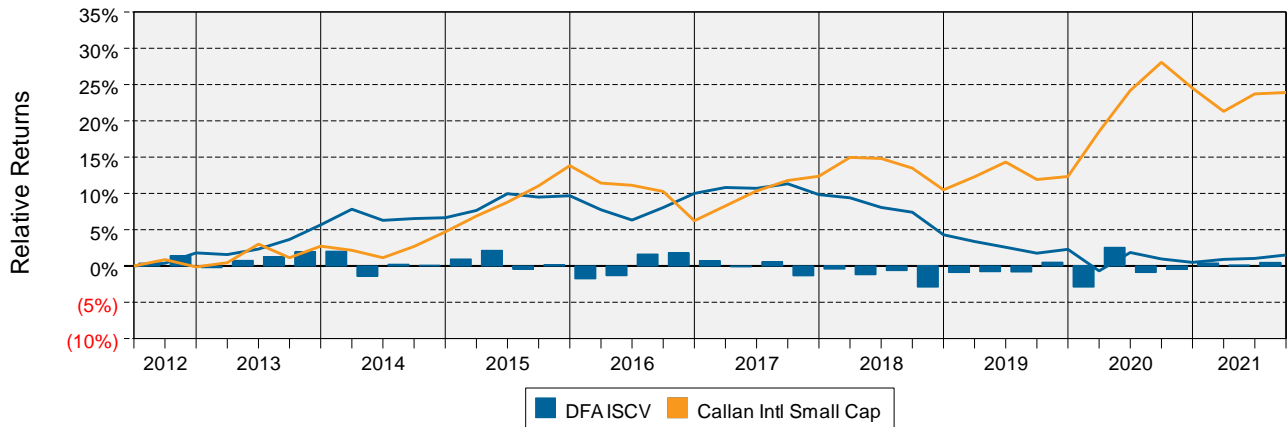
Chicago Teachers' Pension Fund Performance Evaluation Executive Summary Third Quarter 2021

Manager Watch List: DFA

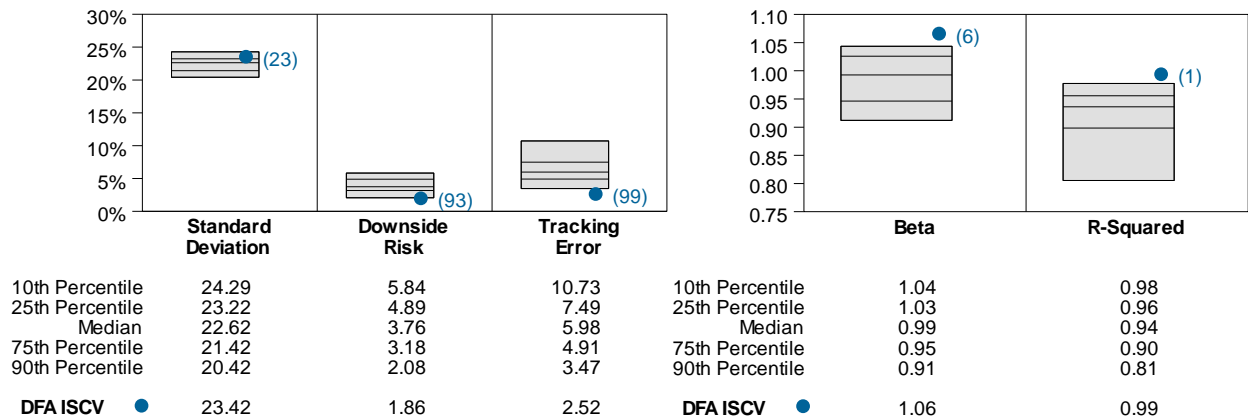
Performance vs Callan International Small Cap (Gross)



Cumulative and Quarterly Relative Return vs MSCI World ex US Sm Value



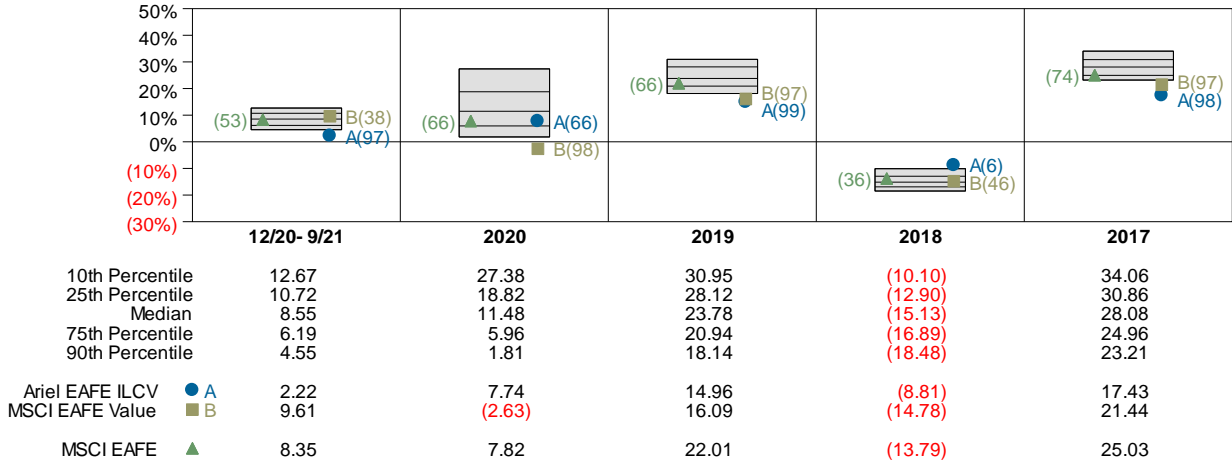
Risk Statistics Rankings vs MSCI World ex US Sm Val (USD Net Div) Rankings Against Callan International Small Cap (Gross) Five Years Ended September 30, 2021



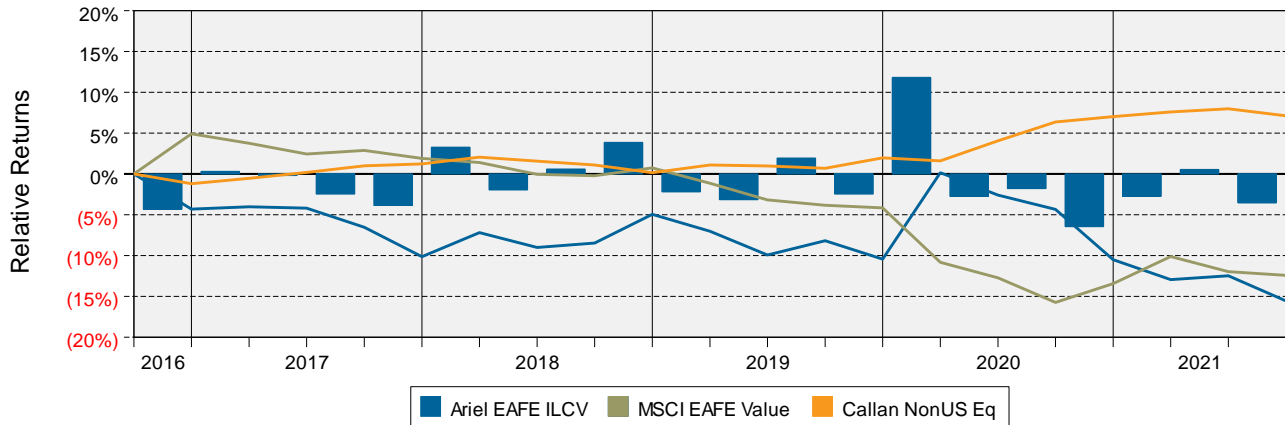
**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

Manager Watch List: Ariel

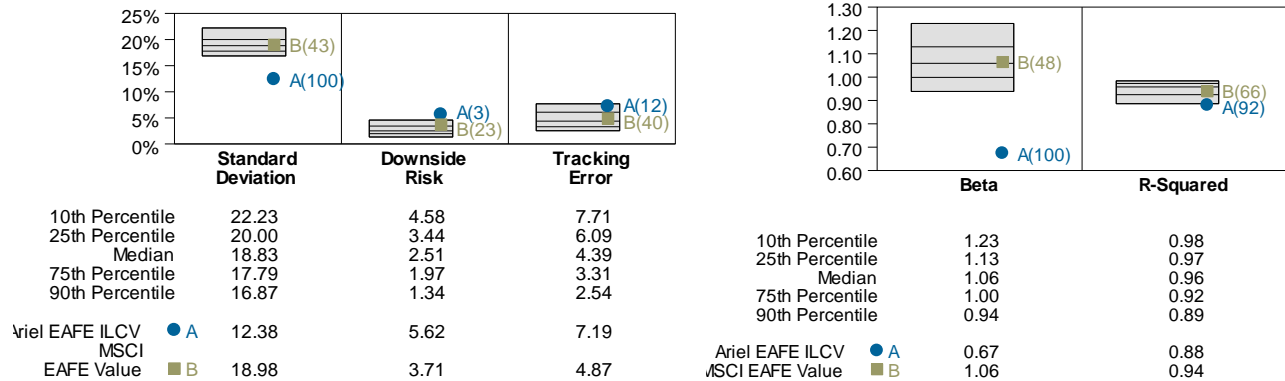
Performance vs Callan Non-US Equity (Gross)



Cumulative and Quarterly Relative Return vs MSCI EAFE



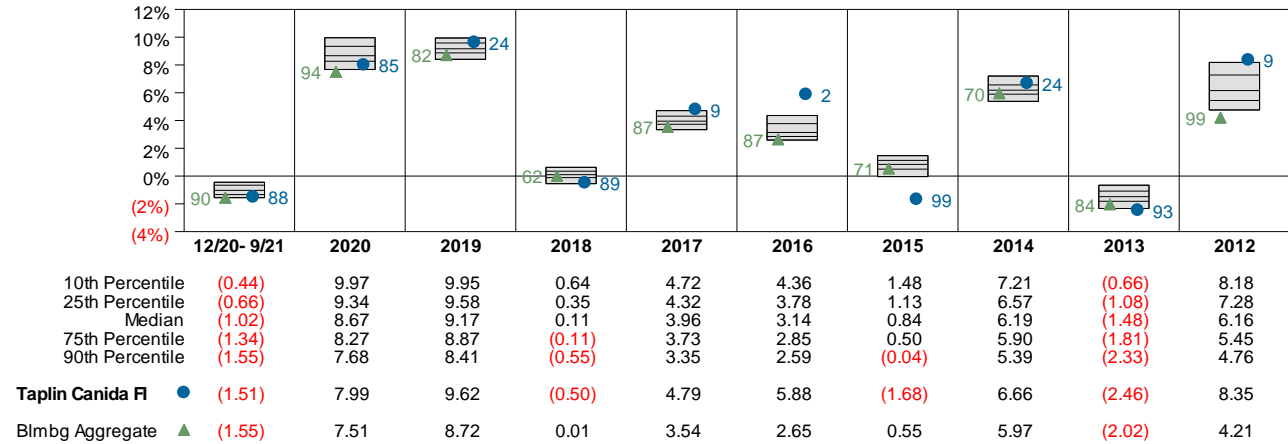
**Risk Statistics Rankings vs MSCI EAFE Index (USD Net Div)
Rankings Against Callan Non-US Equity (Gross)
Five Years Ended September 30, 2021**



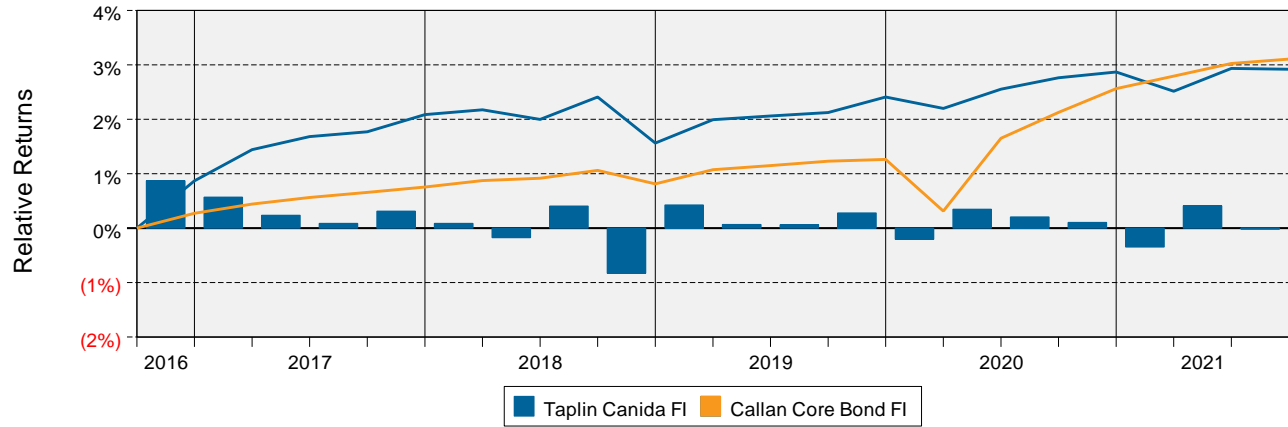
Chicago Teachers' Pension Fund Performance Evaluation Executive Summary Third Quarter 2021

Manager Watch List: BMO Fixed Income

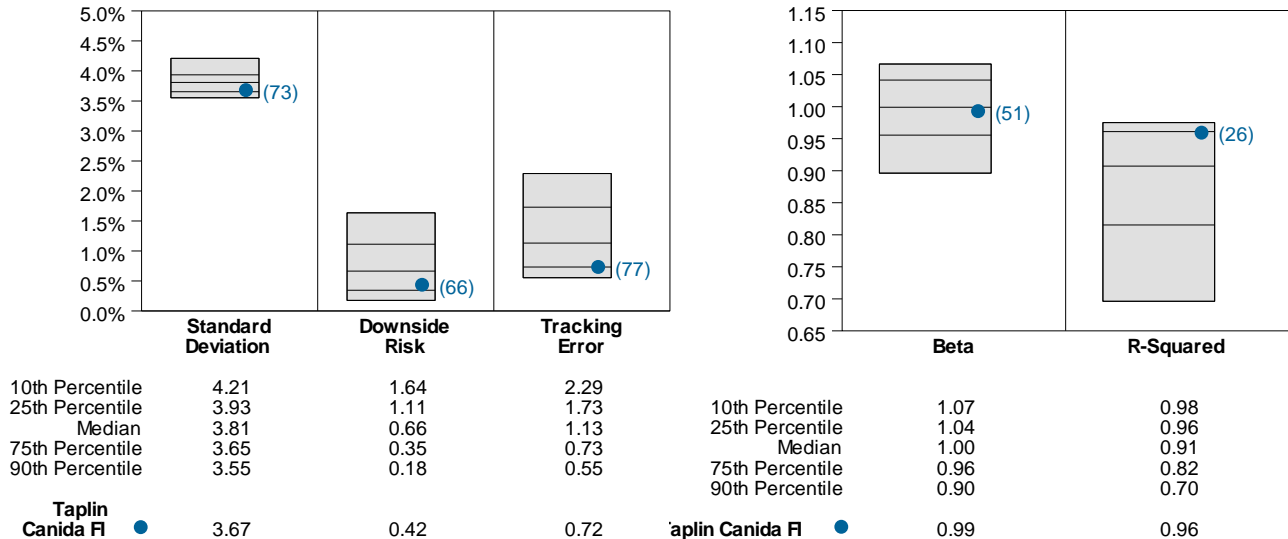
Performance vs Callan Core Bond Fixed Income (Gross)



Cumulative and Quarterly Relative Return vs Blmbg Aggregate



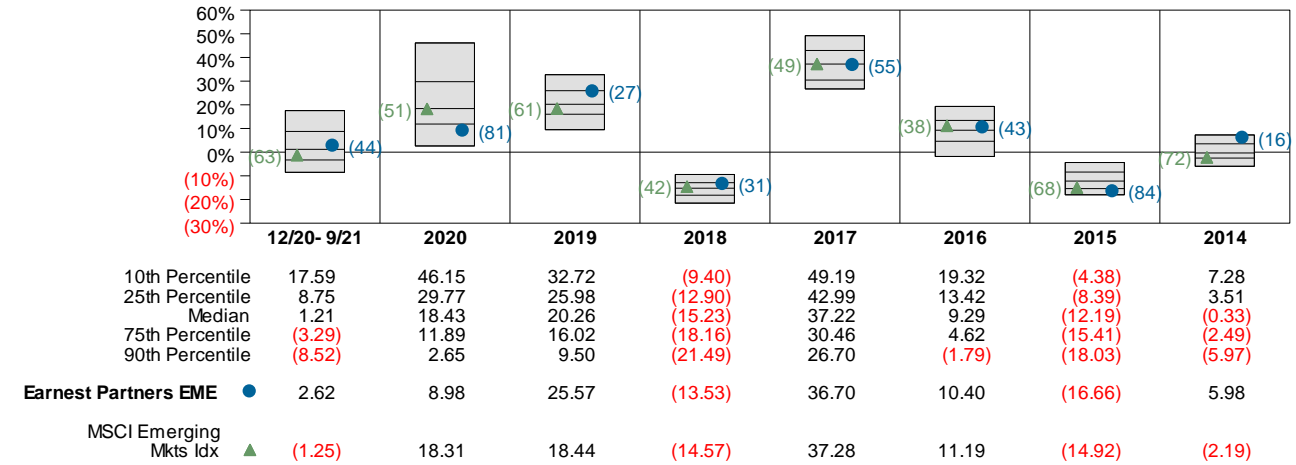
Risk Statistics Rankings vs Bloomberg Aggregate Rankings Against Callan Core Bond Fixed Income (Gross) Five Years Ended September 30, 2021



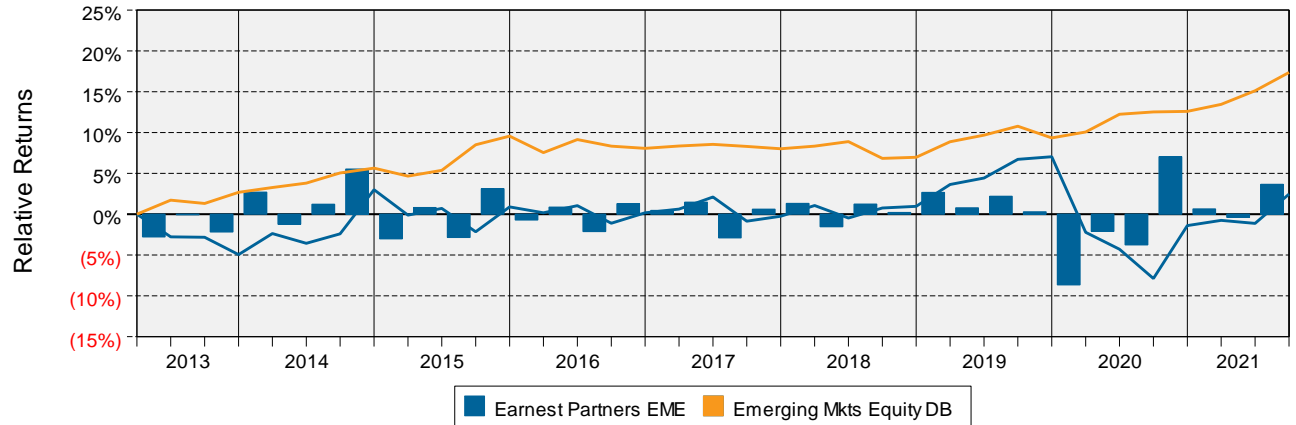
**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

Manager Watch List: Earnest Partners EM

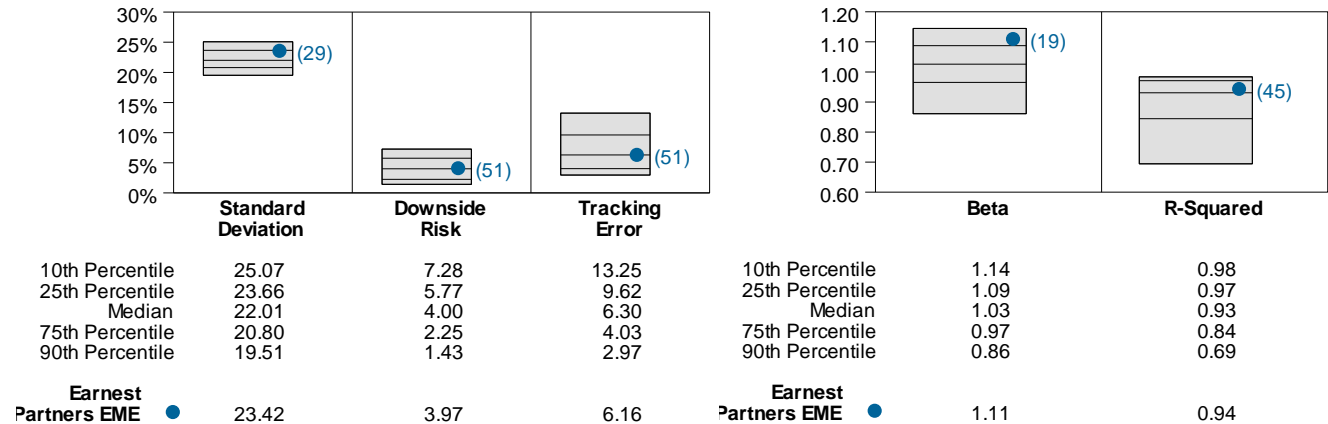
Performance vs Emerging Markets Equity DB (Gross)



Cumulative and Quarterly Relative Return vs MSCI Emerging Mkts Idx



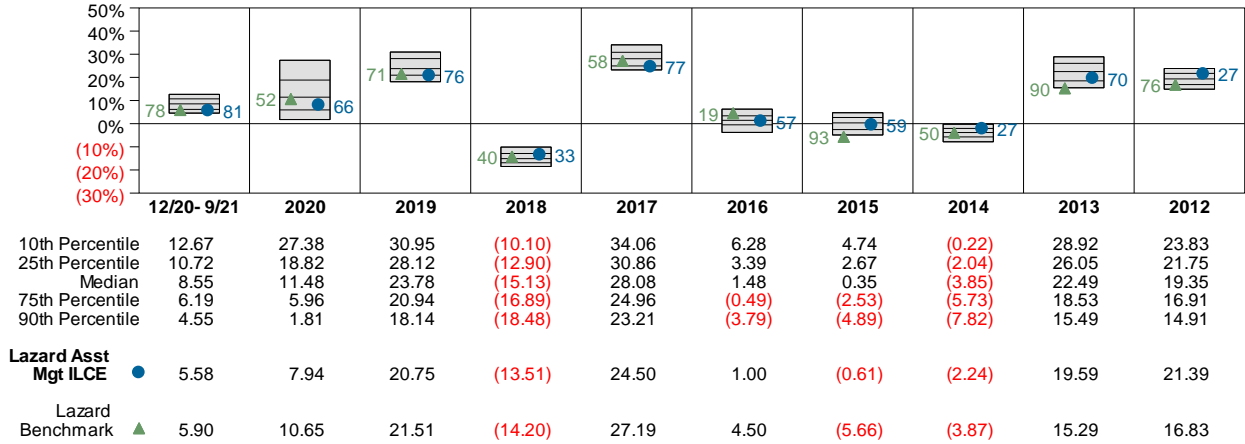
**Risk Statistics Rankings vs MSCI Emerging Mkts Idx
Rankings Against Emerging Markets Equity DB (Gross)
Five Years Ended September 30, 2021**



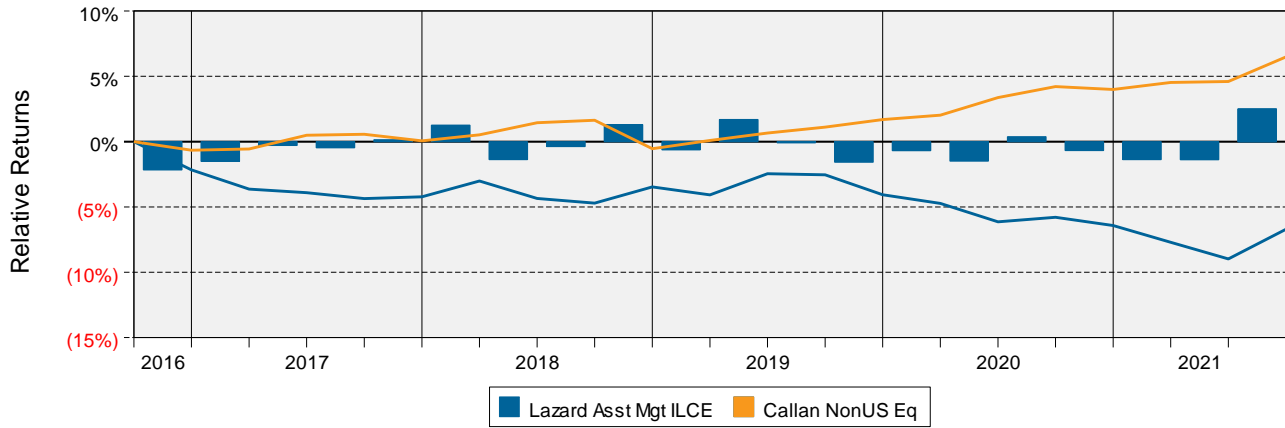
Chicago Teachers' Pension Fund Performance Evaluation Executive Summary Third Quarter 2021

Manager Watch List: Lazard

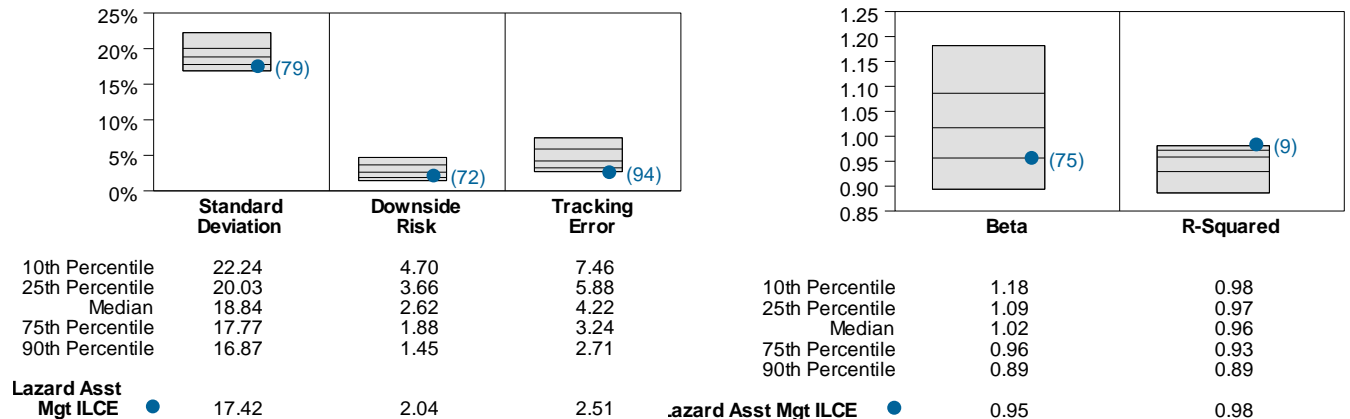
Performance vs Callan Non-US Equity (Gross)



Cumulative and Quarterly Relative Return vs Lazard Benchmark



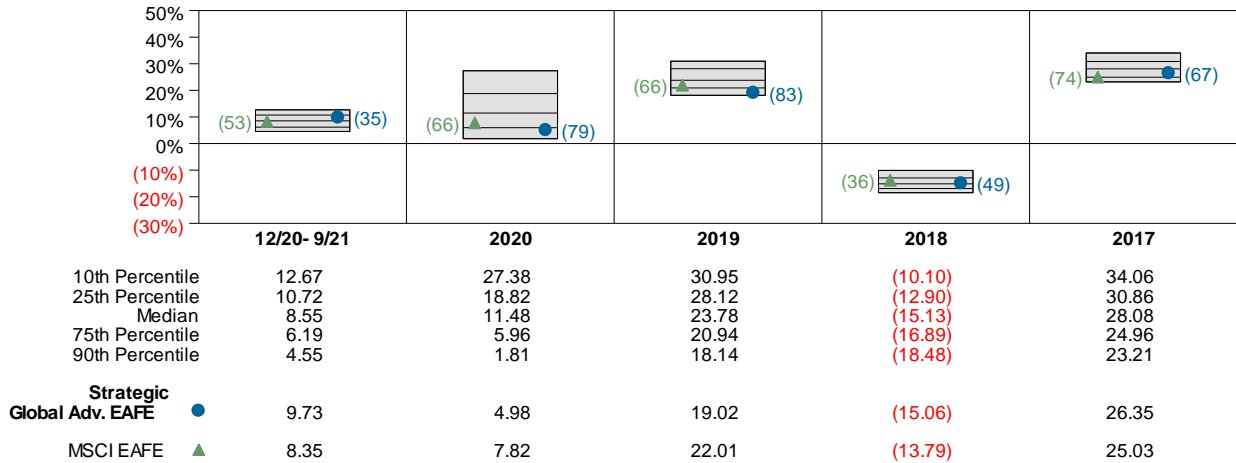
Risk Statistics Rankings vs Lazard Benchmark Rankings Against Callan Non-US Equity (Gross) Five Years Ended September 30, 2021



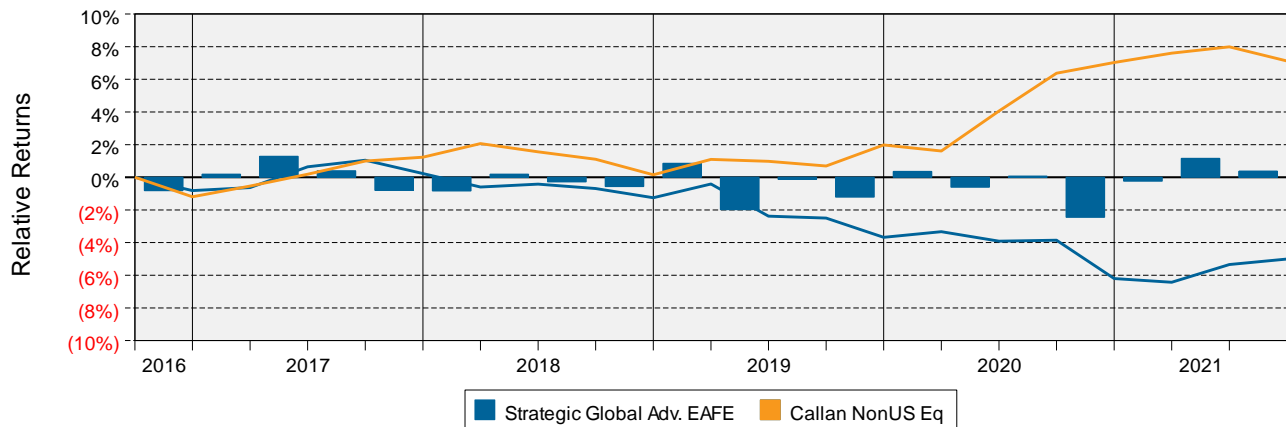
**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

Manager Watch List: Strategic Global Advisors

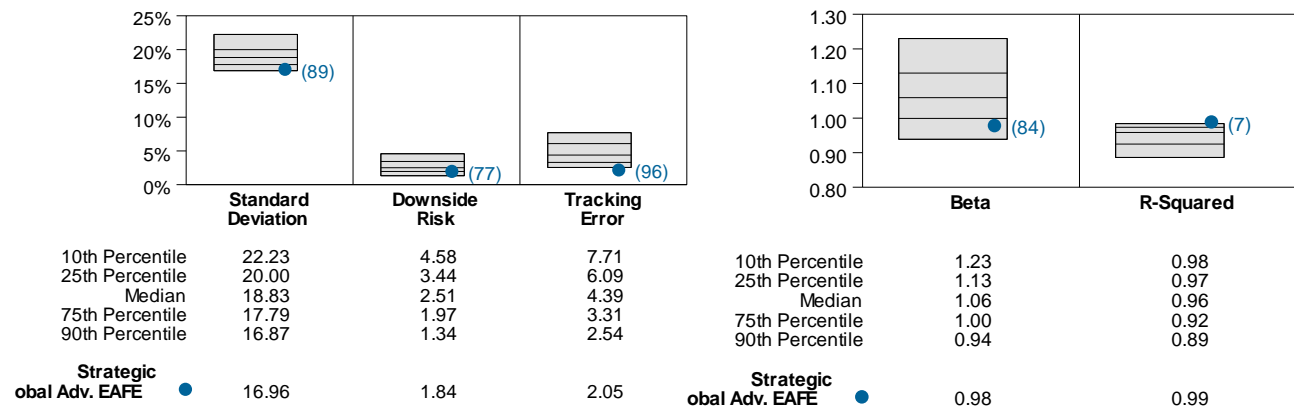
Performance vs Callan Non-US Equity (Gross)



Cumulative and Quarterly Relative Return vs MSCI EAFE



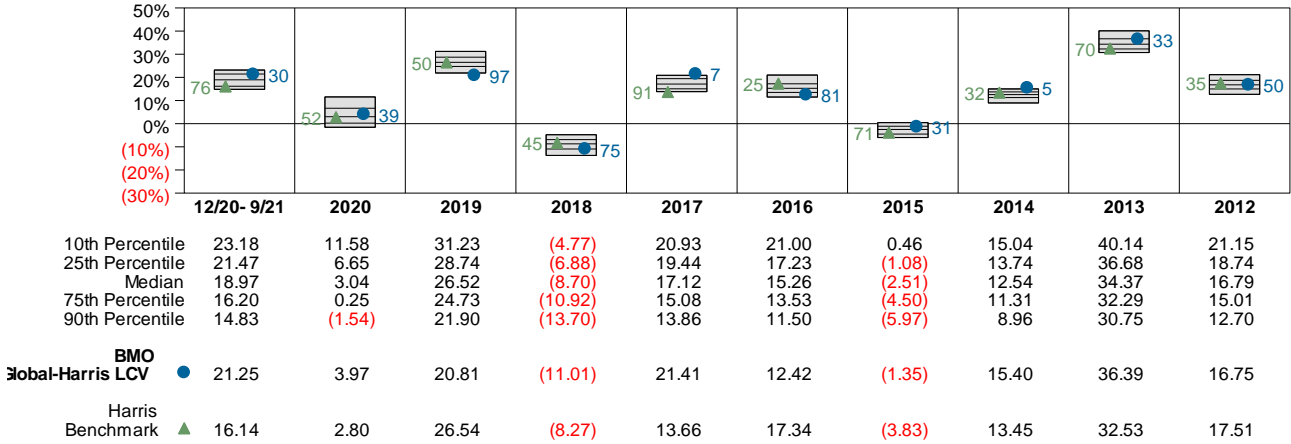
**Risk Statistics Rankings vs MSCI EAFE Index (USD Net Div)
Rankings Against Callan Non-US Equity (Gross)
Five Years Ended September 30, 2021**



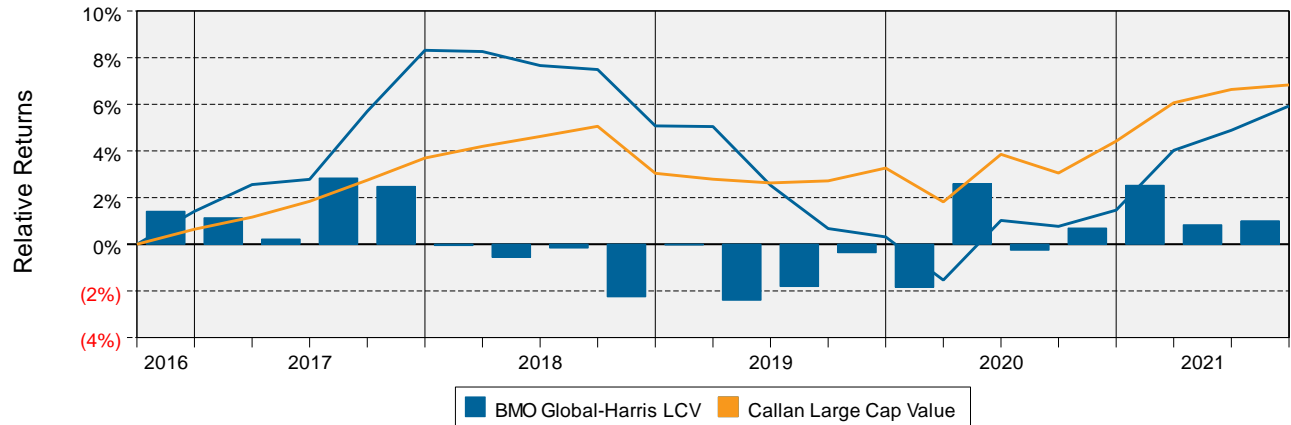
**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

Manager Watch List: BMO Large Cap Value

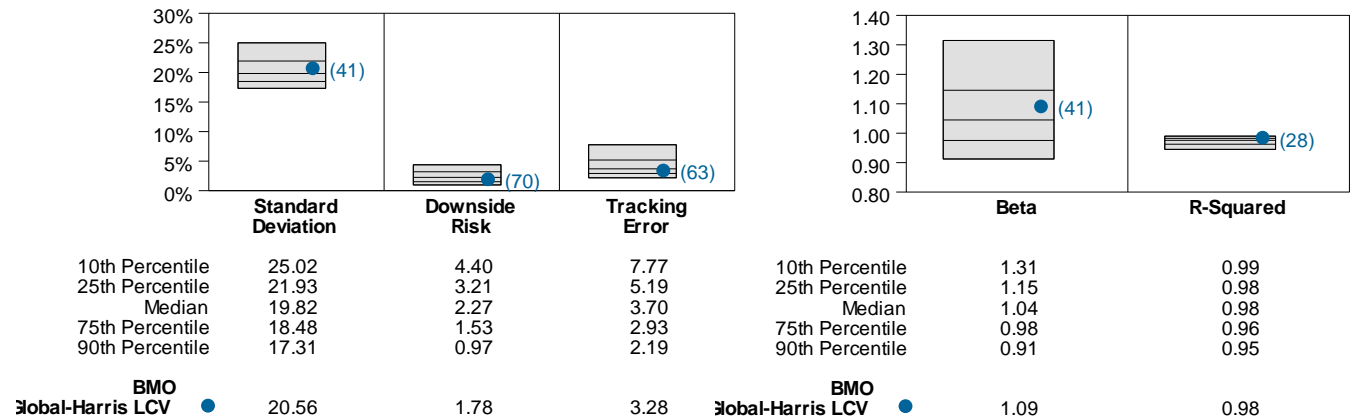
Performance vs Callan Large Cap Value (Gross)



Cumulative and Quarterly Relative Return vs Harris Benchmark



**Risk Statistics Rankings vs Harris Benchmark
Rankings Against Callan Large Cap Value (Gross)
Five Years Ended September 30, 2021**



Chicago Teachers' Pension Fund Performance Evaluation Executive Summary Third Quarter 2021

General Market and Economic Conditions

So much for the summer doldrums. The third quarter ended with a host of potential headwinds as well as some notable tailwinds. In the headwinds category, political gridlock around lifting the debt ceiling and infrastructure/social spending bills, massive supply chain issues, real estate woes in China, and repercussions from the Fed's likely 4Q21 "taper" of bond purchases topped the list. At the same time, the Delta surge appears to be abating, the consumer is in excellent shape, job openings are at record highs, and near-term growth prospects remain solid. The prospect for inflation remains uncertain and will likely be a key driver for asset class returns in coming quarters.

Risk appetite was mixed during the quarter, with September results being the bleakest across asset classes; the notable exception was commodities (specifically natural gas). For the quarter, broad developed market equity and fixed income returns were flat, with U.S. dollar strength being a headwind for overseas investments. The dollar gained about 2% vs. a basket of developed market currencies. Emerging market equities sank, led by sharply lower returns from China and Brazil.

GDP for 3Q21 came in at an annualized 2.0%, down from the 6.7% growth rate from 2Q21. Muted 3Q21 GDP reflects how the Delta variant impacted consumer spending over the summer and the pace and consistency of the "re-opening" around the country. Cities and states differed with respect to re-openings, but across the nation many employees continued to work remotely. Worries over the Delta variant affected consumer sentiment; the Conference Board Consumer Confidence Index weakened for the third consecutive month in September and is down more than 15% over this period (though still much higher than its low in 2020). As further evidence of the moderation in growth, the Citigroup Economic Surprise Index has been below zero since July 2021 (a reading of zero indicates that data are meeting estimates).

On the COVID-19 front, we faced a grim reminder of the toll taken with deaths surpassing 700,000 in the U.S. alone. In the tailwind category, the vaccination rate continued to slowly climb, and confirmed cases and fatalities continued to ebb. A vaccine for children is in the works, and the recently announced antiviral pill from Merck adds to the list of reasons to be optimistic that the worst is behind us. Retail spending was up over 15% in August from one year prior; gas stations (+36%) and restaurants/bars (+32%) notched the biggest gains.

The Federal Open Market Committee (FOMC) left rates on hold at its September meeting, but Fed Chair Jerome Powell suggested that bond purchases would likely be cut back in 4Q with the goal of ending them by mid-2022. The FOMC has been transparent about its plans in this regard, so a repeat of the "taper tantrum" witnessed in 2013 seems unlikely. Nevertheless, fiscal and monetary stimulus will be reduced in coming quarters, and the economic ramifications of less support remain to be seen. The Fed's new "dot plot" revealed that half of the 18 FOMC members now expect at least one rate hike in 2022. This is a significant change from the December 2020 meeting, when only one saw a hike in 2022 and five slated 2023 for the first hike. Notably, Powell disassociated the taper of bond purchases from rate hikes, suggesting that they would be considered separately.

The FOMC also lowered real growth expectations from 7.0% to 5.9% for 2021 but raised its inflation forecast for the year to 4.2% from 3.4%. The Fed continues to expect price pressures to be transitory and for inflation to fall back to 2.2% next year. As of August, U.S. headline CPI was up 5.3% year-over-year (core +4.0%), with Energy up 25% over the period. The PPI soared 8.3%, the highest 12-month

Chicago Teachers' Pension Fund Performance Evaluation Executive Summary Third Quarter 2021

rate in more than 10 years. Supply chain bottlenecks have affected prices for shipping, materials, labor, parts, and equipment. Ports and rail yards are clogged and ships are anchored offshore, waiting to unload. Truck drivers are in short supply, as are the chassis needed to offload containers. A prolonged shortage of semiconductor chips persists due to increased demand for electronics from automakers and is further exacerbated by a host of issues facing suppliers as well as transportation glitches. This supply chain dysfunction could persist through 2022 and falls distinctly into the headwinds category.

The labor market also shows signs of dysfunction. A large disconnect exists between job openings—which are at record levels—and labor shortages reported by employers. According to the U.S. JOLTS report, there were a record 10.9 million job openings on the last day of July. At the same time, there are more than 8 million people actively looking for work. The National Federation of Independent Business recently reported that 50% of small businesses have job openings they cannot fill. "Help wanted" signs proliferate in many of our communities. As the shopping season approaches, the largest employers will seek to hire hundreds of thousands of workers. There are a number of factors that have contributed to the mismatch between job seekers and job providers, some of which may be resolved with higher wages. Market participants are closely watching wage growth for its important contribution to inflation; the August jobs report showed average hourly earnings rose 4.3% YOY.

Inflation and supply chain issues are also evident overseas. Natural gas prices have surged in Asia, Europe, and Latin America as demand for the "cleaner" fuel and for manufactured goods that rely on this input has increased while supply has been constrained. In the U.K., post-Brexit issues and a dearth of truckers have resulted in a shortage of even basic supplies. But the economic picture has improved; euro zone growth was 9.2% (annualized) in 2Q21, ending five quarters of contracting growth. The ECB announced that it would "recalibrate" (i.e., lower) its asset purchases and also raised its GDP forecast for 2021, expecting it to reach the pre-pandemic level by 4Q21. The outlook for inflation was also raised, with the headline number expected to be 3.1% in 4Q before falling to 1.7% in 2022.

China faces several headwinds and remains top of mind given its part in the global economy. Its massive real estate sector (30% of its economy) is under stress, with the fate of property giant Evergrande unknown at this juncture. Widespread power outages have resulted from coal production not keeping pace with demand, and the country's regulatory crackdown has taken a toll on several companies, erasing roughly \$3 trillion in market capitalization.

While the recovery remains intact for much of the world, tailwinds from consumer spending and unprecedented stimulus may be thwarted by any number of headwinds in coming quarters.

Third Quarter 2021 Market Performance

The S&P 500 Index was up a modest 0.6% in 3Q with results mixed across sectors. Industrials (-4.2%) and Materials (-3.5%) were at the bottom of the pack while Financials (+2.7%) were the best performers. Since the market low in February 2020, the S&P is up 97.3%. Growth stocks outperformed value (R1000 Growth: +1.2%; R1000 Value: -0.8%) but lag for the YTD period (+14.3% vs. +16.1%). Small cap stocks underperformed (R2000: -4.4% vs. R1000: +0.2%) and now lag YTD (12.4% vs. 15.2%).

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

The MSCI ACWI ex-USA Index lost 3.0% for the quarter, hurt primarily by U.S. dollar strength and the benchmark's exposure to emerging markets. The best-performing sector was Energy (+7%), while Consumer Discretionary (-11%) and Communication Services (-10%) posted steep declines. Note that these sectors include some of the Chinese stocks that have been hit hard by the country's regulatory crackdown (Alibaba, Tencent, and Baidu). The MSCI EAFE Index (Europe, Australia, and Far East) lost 0.4% but in local terms it was up 1.3%. Japan (+4.6%) performed relatively well while many of the larger constituents were down for the quarter. The MSCI Emerging Markets Index sank 8.1%, making it the worst-performing asset class for the quarter. Within emerging markets, Brazil (-20%), China (-18%), and Korea (-13%) fell sharply while India (+13%), Russia (+10%), and Colombia (+10%) were up strongly.

Yields in the U.S. were relatively unchanged from 6/30/21, masking intra-quarter volatility. The 10-year U.S. Treasury closed the quarter at 1.52%, up sharply from early August when it traded at 1.19%. TIPS outperformed nominal Treasuries for the quarter (Bloomberg US TIPS Index: +1.8%; Bloomberg US Treasury Index: +0.1%). The Bloomberg US Aggregate Bond Index returned 0.1% but remains down 1.6% YTD. Lower quality continued to outperform. The Bloomberg High Yield Index rose 0.9% and leveraged loans (S&P LSTA Lev Loan: +1.1%) also performed well. Municipals (Bloomberg Municipal Bond Index: -0.3%) underperformed Treasuries for the quarter.

Overseas developed market returns were similarly muted, and U.S. dollar strength eroded returns for unhedged U.S. investors. The Bloomberg Global Aggregate ex-US Bond Index fell 1.6% but was flat (+0.1%) on a hedged basis. Emerging market debt posted negative returns; the JPM EMBI Global Diversified Index fell 0.7% and the local JPM GBI-EM Global Diversified Index lost 3.1%, most of which was due to currency depreciation. In local terms, this Index was down only 0.2% for the quarter.

**Chicago Teachers' Pension Fund
Performance Evaluation Executive Summary
Third Quarter 2021**

Appendix

Appendix - 9/30/21

Manager	<u>Watch List Criteria:</u> Rolling three year returns rank below median (Gross of Fees). If the above statement is true, then column reads "Yes". If not, then "No".		<u>Watch List Criteria:</u> 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. If the above statements are true, then column reads "Yes". If not, then "No".		<u>Watch List Criteria:</u> Rolling seven year returns rank below median (Gross of Fees). If the above statement is true, then column reads "Yes". If not, then "No".		<u>Watch List Criteria:</u> Rolling seven year returns are below the return of the index (Net of Fees). If the above statement is true, then column reads "Yes". If not, then "No".		<u>Watch List Criteria:</u> Five year information ratio is negative and ranks below median. If the above statement is true, then column reads "Yes". If not, then "No".		<u>Watch List Criteria:</u> Five year up market capture is below 90% and ranks below median. If the above statement is true, then column reads "Yes". If not, then "No".		<u>Watch List Criteria:</u> Five year down market capture is above 90% and ranks below median. If the above statement is true, then column reads "Yes". If not, then "No".		Weighted Averages	
	06/30/2021	09/30/2021	06/30/2021	09/30/2021	06/30/2021	09/30/2021	06/30/2021	09/30/2021	06/30/2021	09/30/2021	06/30/2021	09/30/2021	06/30/2021	09/30/2021	06/30/2021	09/30/2021
<i>Large Cap Value Equity</i> BMO-Harris	Yes	Yes	No	No	No	No	No	No	No	No	No	Yes	Yes	0.20	0.20	
<i>Small Cap Growth Equity</i> BMO** Conestoga**	Yes Yes	Yes Yes	No No	No No	Yes No	Yes No	No No	No No	No No	No No	No No	Yes No	Yes No	0.40 0.10	0.40 0.10	
<i>Small Cap Value Equity</i> Phocas*	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No	No	No	0.60	0.40	
<i>Small Cap Equity</i> NTGI Structured Small Cap	No	No	No	No	No	Yes	No	No	Yes	No	No	No	No	0.20	0.20	
<i>All Cap Growth Equity</i> Zevenbergen	No	No	No	No	No	No	No	No	No	No	No	No	No	0.00	0.00	
<i>All Cap Value Equity</i> Channing	No	No	No	No	No	No	No	No	No	Yes	No	Yes	Yes	0.10	0.30	
<i>International Equity</i> EARNEST Partners Lazard Morgan Stanley Leading Edge William Blair Ariel* Strategic Global*	No Yes Yes Yes No Yes Yes	No Yes Yes Yes No Yes Yes	No No No Yes No Yes Yes	No No No No No Yes Yes	No Yes Yes Yes No Yes Yes	No Yes Yes Yes No Yes Yes	No Yes No Yes No No Yes	No Yes Yes No No No Yes	No Yes No No No No Yes	No Yes No No No No Yes	No Yes No No No No Yes	No Yes No No No No Yes	Yes Yes No No No No No	Yes Yes No No No No No	0.10 0.90 0.30 0.60 0.00 0.90 0.80	0.10 0.90 0.50 0.30 0.00 0.90 0.80
<i>International Small Cap</i> William Blair DFA	No Yes	No Yes	No Yes	No No	No Yes	No Yes	No Yes	No Yes	No Yes	No Yes	No No	Yes Yes	Yes Yes	0.10 0.90	0.10 0.80	
<i>Emerging Market Equity</i> EARNEST Partners	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	0.80	0.40	
<i>Active Core Fixed Income</i> Taplin, Canida & Habacht Pugh Garcia Hamilton Wellington**	Yes Yes Yes Yes	Yes Yes Yes Yes	No No Yes No	No No Yes No	Yes Yes Yes No	Yes Yes Yes No	No No No No	No No No No	No No No No	No No No No	No No No No	Yes Yes No No	Yes Yes No No	0.40 0.40 0.40 0.00	0.40 0.40 0.40 0.00	
<i>Active Core Plus Fixed Income</i> LM Capital	Yes	Yes	No	No	Yes	Yes	No	No	No	No	No	Yes	Yes	0.40	0.40	
<i>Active Opportunistic Fixed Income</i> WAMCO	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes	0.10	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 columns requiring at least 7 years of data in the analysis above.

**Manager does not yet have 3 years of portfolio data. CTPF portfolio data has been linked with a representative historical manager composite to populate all columns in the analysis above.