

Callan



**Chicago Teachers' Pension Fund**

## **Executive Summary**

**September 30, 2017**

**Mr. Angel G. Haddad**  
Senior Vice President

**Ms. Brianne Weymouth, CAIA**  
Senior Vice President

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Table of Contents**

Total Fund Commentary	3
Select Market Returns	5
Quarterly Review	7
Asset Allocation	9
Investment Manager Asset Allocations	11
Total Fund Performance vs. Target	15
Manager Performance	17
Manager Watch List	25
General Market & Economic Conditions	31
Appendix: Watch List Criteria	34

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Total Fund Commentary**

The Fund was valued at \$10.8 billion at the end of the third quarter, representing an increase of \$295 million from June 30, 2017. Investment gains of \$408 million exceeded net cash outflow activity of \$113 million during the quarter. Overall, the portfolio's asset allocation was close to its strategic targets at quarter-end. The S&P 500, Russell 2000 and Nasdaq indices registered record highs on the final trading day of the third quarter. It was the Nasdaq's 50th record close this year. Non-U.S. stocks posted solid single-digit returns during the quarter, bolstered by improving economic conditions as well as a weakening U.S. dollar. The risk-on environment continued this quarter, as evidenced by the strong performance of emerging markets and other relatively risky asset classes. Commodity indices also rose, as crude oil prices surged nearly 20% after falling during the first half of the year.

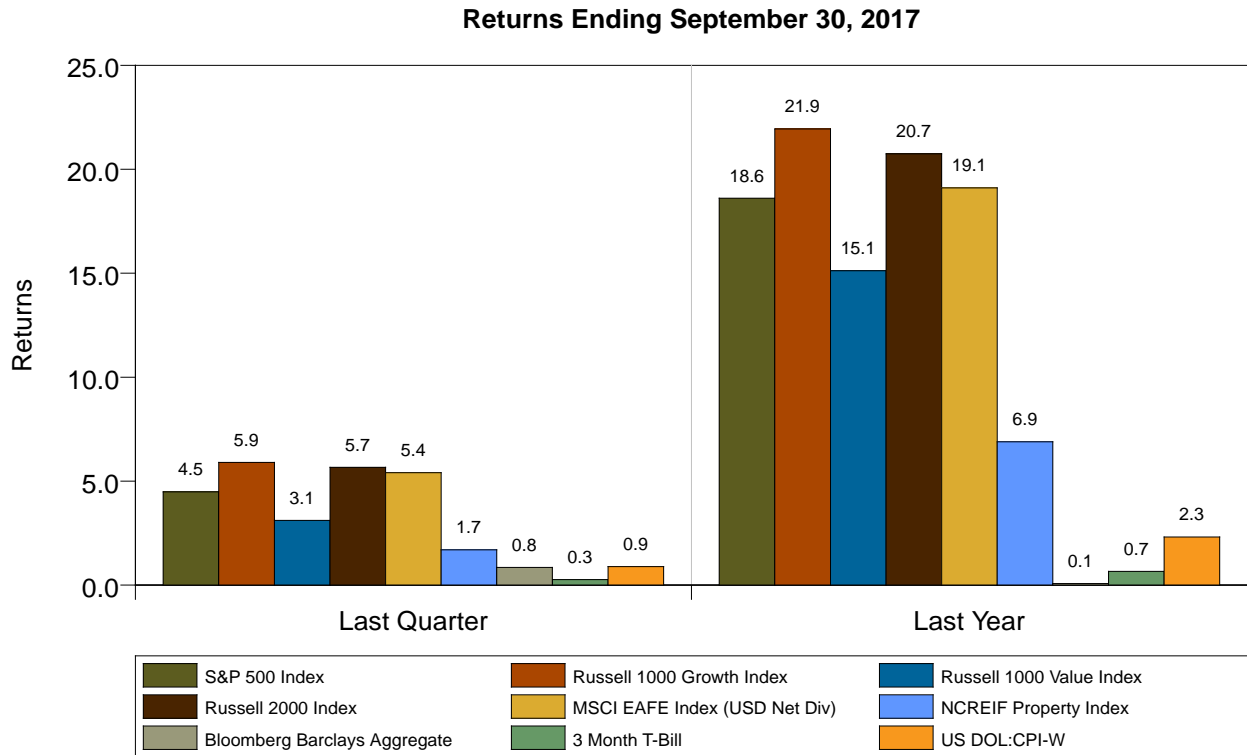
In this environment, the Fund had a gross return of 3.88% over the quarter (3.82% net of fees), outperforming the peer group median by 24 basis points, but falling short of the Policy Benchmark by 9 basis points, net of fees. Performance was mixed over the trailing one-year period, particularly for domestic small cap and international equity managers. We have experienced a reversal in leadership between the performance of domestic and international stocks as well as value and growth stocks so far in 2017. Contrary to what we observed last year, international stocks have outperformed the broad U.S equity market, and growth stocks outperformed value stocks by a comfortable margin. While active management has generally improved, it continues to be challenging in some areas, particularly within the domestic small cap segment of the market. It is difficult for quality managers to keep up in a high momentum market rally that inflates the value of stocks despite the fundamental characteristics of those stocks. This helps explain the underperformance of the Fund's small cap managers, as well as the mixed performance experienced by the international equity products in the portfolio.

The Fund posted competitive performance versus the Policy Benchmark over all longer periods measured, ranking in the top third of its peer group over the trailing 5- and 7-year periods.

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Select Market Returns**



**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**QUARTERLY REVIEW**

- **Third Quarter, 2017 Investment Performance Update:**
  - **Performance:** For the third quarter, the Fund posted unfavorable performance relative to the market benchmark, but outperformed 69% of its peers (31<sup>st</sup> percentile ranking).
  
- **Watch Status Report:** The following managers are on the Watch List:
  - Ivy: Included on the Watch List due to inconsistent rolling three- and seven-year performance relative to benchmarks, and deteriorating risk-adjusted performance. The concentrated nature of this portfolio makes it susceptible to prolonged periods of underperformance and high tracking error. Performance has improved considerably in recent months. On a year-to-date basis through October 31<sup>st</sup>, the portfolio outperformed the Russell 1000 Index by 209 basis points. Continue to monitor this strategy, but expect it to continue to exhibit high tracking error going forward.
  - Zevenbergen: Included on the Watch List due to inconsistent rolling three-year and seven-year performance relative to the market index and peer group median and missing the five-year down market capture criteria. This is also a high conviction strategy, which is susceptible to high tracking error relative to its benchmark. On a year-to-date basis through October 31<sup>st</sup>, the strategy outperformed the Russell 3000 Index by 764 basis points. Continue to monitor this strategy closely, but expect it to continue to exhibit high tracking error going forward.
  - LM Capital: Included on the Watch List due to personnel turnover.
  - Channing Capital: Channing announced that effective December 1, 2017, co-founder Eric McKissack has decided to begin a 13-month transition from his current role as portfolio manager of Channing to CEO Emeritus in 2019. McKissack is the co-portfolio manager for CTPF's All Cap Value strategy. In addition to giving up portfolio management responsibilities, McKissack has transitioned his ownership of the firm to co-founders Wendell Mackey and Rodney Herenton. Due to the upcoming change to the portfolio management team and the firm ownership structure, the firm should be added to the watch list.
  
- **RFP Activity:** The following RFPs have been approved by the Board. The items in **bold** characters are currently in progress or completed:
  1. **Passive Core Fixed Income**
  2. **Active Core Fixed Income**
  3. Active Small Cap Growth Equity
  4. **Private MWDBE Real Estate**
  5. Private Non-Core Real Estate
  6. **Private Equity MWDBE**
  7. **Private Equity Direct Fund**

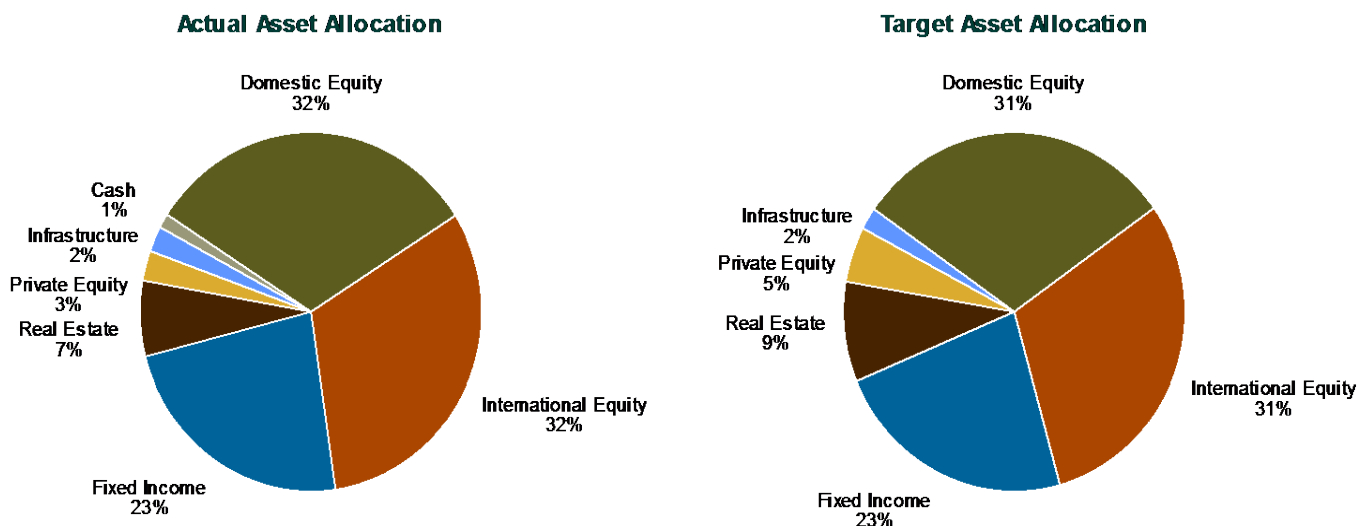
**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**



**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Asset Allocation**

The Fund was valued at \$10.8 billion at the end of the third quarter, representing an increase of \$295 million from June 30, 2017. Investment gains of \$408 million exceeded net cash outflow activity of \$113 million during the quarter. Overall, the portfolio's asset allocation was close to its strategic targets at quarter-end, following a disciplined rebalancing process undertaken by CTPF Staff during the year.



Asset Class	\$Millions Actual	Weight Actual	Target	Percent Difference	\$Millions Difference
Domestic Equity	3,450	32.0%	30.5%	1.5%	158
International Equity	3,419	31.7%	30.5%	1.2%	127
Fixed Income	2,510	23.3%	23.0%	0.3%	27
Real Estate	736	6.8%	9.0%	(2.2%)	(235)
Private Equity	289	2.7%	5.0%	(2.3%)	(251)
Infrastructure	250	2.3%	2.0%	0.3%	34
Cash	140	1.3%	0.0%	1.3%	140
<b>Total</b>	<b>10,794</b>	<b>100.0%</b>	<b>100.0%</b>		

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**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, 2017, with the distribution as of June 30, 2017. 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, 2017		Net New Inv.	Inv. Return	June 30, 2017	
	Market Value	Weight			Market Value	Weight
<b>DOMESTIC EQUITY</b>	<b>\$3,450,226,265</b>	<b>31.96%</b>	<b>\$(16,701,085)</b>	<b>\$157,953,865</b>	<b>\$3,308,973,484</b>	<b>31.52%</b>
<b>Large Cap</b>	<b>\$3,069,636,600</b>	<b>28.44%</b>	<b>\$(14,921,554)</b>	<b>\$138,514,413</b>	<b>\$2,946,043,740</b>	<b>28.06%</b>
<b>Large Cap Core Index</b>	<b>\$2,077,043,048</b>	<b>19.24%</b>	<b>\$(10,928,805)</b>	<b>\$88,876,352</b>	<b>\$1,999,095,501</b>	<b>19.04%</b>
NTGI 500 Index LCC	519,562,056	4.81%	(3,033,934)	22,071,454	500,524,535	4.77%
Rhumbline Rsl 1000 LCC	1,557,480,992	14.43%	(7,894,871)	66,804,898	1,498,570,965	14.27%
<b>Large Cap Core Equity</b>	<b>\$128,031,492</b>	<b>1.19%</b>	<b>\$(514,396)</b>	<b>\$8,511,695</b>	<b>\$120,034,193</b>	<b>1.14%</b>
Ivy LCC	128,031,492	1.19%	(514,396)	8,511,695	120,034,193	1.14%
<b>Large Cap Growth Equity</b>	<b>\$425,962,371</b>	<b>3.95%</b>	<b>\$(1,173,916)</b>	<b>\$16,132,489</b>	<b>\$411,003,799</b>	<b>3.91%</b>
Holland Capital LCG	82,974	0.00%	(284,028,355)	7,349,576	276,761,753	2.64%
Rhumbline Rsl 1000 LCG	286,914,546	2.66%	283,026,712	3,887,834	-	-
Zevenbergen US ACE	138,964,851	1.29%	(172,273)	4,895,078	134,242,046	1.28%
<b>Large Cap Value Equity</b>	<b>\$438,599,689</b>	<b>4.06%</b>	<b>\$(2,304,438)</b>	<b>\$24,993,879</b>	<b>\$415,910,248</b>	<b>3.96%</b>
Channing US ACE	139,293,700	1.29%	(622,391)	7,903,771	132,012,319	1.26%
BMO Global-Harris LCV	299,305,989	2.77%	(1,682,047)	17,090,108	283,897,928	2.70%
<b>Small Cap Equity</b>	<b>\$315,096,388</b>	<b>2.92%</b>	<b>\$(1,512,622)</b>	<b>\$16,971,653</b>	<b>\$299,637,356</b>	<b>2.85%</b>
NTGI Structured SCC	164,448,384	1.52%	(627,225)	8,384,401	156,691,208	1.49%
Phocas SCV	150,648,003	1.40%	(885,398)	8,587,252	142,946,148	1.36%
<b>Attucks Domestic Equity (Mgr of Mgrs)</b>	<b>\$65,493,278</b>	<b>0.61%</b>	<b>\$(266,909)</b>	<b>\$2,467,799</b>	<b>\$63,292,388</b>	<b>0.60%</b>
Attucks Matain SCC	21,469,229	0.20%	(63,428)	738,316	20,794,341	0.20%
Attucks Paradigm LCV	21,673,096	0.20%	(101,872)	1,000,790	20,774,177	0.20%
Attucks Stoneridge LCE	22,203,629	0.21%	(101,475)	721,755	21,583,350	0.21%
<b>INTERNATIONAL EQUITY</b>	<b>\$3,418,935,029</b>	<b>31.67%</b>	<b>\$(22,549,322)</b>	<b>\$206,068,904</b>	<b>\$3,235,415,448</b>	<b>30.82%</b>
Ariel EAFE ILCV	79,759,254	0.74%	(703,789)	2,202,969	78,260,074	0.75%
DFA ISCV	194,886,593	1.81%	(481,476)	13,755,367	181,612,702	1.73%
Earnest Partners EME	179,892,324	1.67%	(1,461,945)	8,264,282	173,089,988	1.65%
Earnest Partners ILCE	604,988,214	5.60%	(4,171,246)	40,693,531	568,465,930	5.41%
Lazard Asst Mgt ILCE	603,167,351	5.59%	(2,939,851)	32,474,120	573,633,082	5.46%
Leading Edge IE MOM	132,672,245	1.23%	(1,193,913)	8,744,293	125,121,865	1.19%
Morgan Stanley ILCE	609,585,166	5.65%	(2,810,226)	22,060,536	590,334,856	5.62%
NTGI EAFE ILCE	1,926	0.00%	0	388	1,538	0.00%
NTGI EAFE ILCV	2,295	0.00%	0	4,512	-2,217	(0.00%)
Strategic Global Adv. EAFE	80,451,574	0.75%	(684,288)	4,455,243	76,680,619	0.73%
William Blair ILCG	614,863,649	5.70%	(5,090,607)	48,586,198	571,368,058	5.44%
William Blair ISCE	204,203,372	1.89%	(1,923,005)	16,410,020	189,716,358	1.81%
<b>TOTAL FUND</b>	<b>\$10,794,064,399</b>	<b>100.0%</b>	<b>\$(112,739,746)</b>	<b>\$407,870,060</b>	<b>\$10,498,934,084</b>	<b>100.0%</b>

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Asset Distribution Across Investment Managers**

	September 30, 2017			Inv. Return	June 30, 2017	
	Market Value	Weight	Net New Inv.		Market Value	Weight
<b>Attucks Int'l Equity</b>	<b>\$114,461,066</b>	<b>1.06%</b>	<b>\$(1,088,976)</b>	<b>\$8,417,446</b>	<b>\$107,132,596</b>	<b>1.02%</b>
Attucks APEX Int'l ACC	13,311	0.00%	(1,962)	2,430	12,843	0.00%
Attucks GlobeFlex Int'l ACC	10,455	0.00%	(5,331)	65	15,720	0.00%
Attucks GlobeFlex Global Eq	25,453,720	0.24%	(213,505)	2,130,057	23,537,167	0.22%
Attucks Brown Capital Int'l SCG	25,501,773	0.24%	(418,734)	2,005,817	23,914,689	0.23%
Attucks Ativo Capital EM	20,556,862	0.19%	(286,157)	1,586,089	19,256,930	0.18%
Attucks Glovista EM	20,219,159	0.19%	(106,318)	1,344,849	18,980,628	0.18%
Attucks Redwood Int'l ACC	22,705,788	0.21%	(56,970)	1,348,139	21,414,619	0.20%
<b>FIXED INCOME</b>	<b>\$2,509,861,372</b>	<b>23.25%</b>	<b>\$460,113,551</b>	<b>\$22,919,704</b>	<b>\$2,026,828,117</b>	<b>19.31%</b>
NT GI Gov/Credit Index FI	948,113,144	8.78%	(6,227,501)	7,710,962	946,629,683	9.02%
Garcia Hamilton FIC	228,569,224	2.12%	123,855,535	1,038,163	103,675,525	0.99%
LM Capital FICP	210,567,867	1.95%	(1,978,671)	2,397,828	210,148,710	2.00%
Pugh FIC	228,530,581	2.12%	58,632,397	2,114,669	167,783,516	1.60%
Taplin Canada FI	228,510,191	2.12%	104,086,027	1,019,687	123,404,478	1.18%
WAMCO FICP	612,139,874	5.67%	182,117,492	7,612,611	422,409,771	4.02%
<b>Attucks Fixed Income</b>	<b>\$53,430,491</b>	<b>0.49%</b>	<b>\$(371,727)</b>	<b>\$1,025,785</b>	<b>\$52,776,434</b>	<b>0.50%</b>
Attucks New Century GI TIPS	20,314,192	0.19%	(50,486)	417,846	19,946,832	0.19%
Attucks LM Capital EMD	14,567,044	0.13%	(193,442)	408,660	14,351,826	0.14%
Attucks Ramirez Fixed Income	18,549,255	0.17%	(127,799)	199,279	18,477,776	0.18%
<b>INFRASTRUCTURE</b>	<b>\$249,928,638</b>	<b>2.32%</b>	<b>\$612,037</b>	<b>\$5,585,101</b>	<b>\$243,731,500</b>	<b>2.32%</b>
JP Morgan Infr-OE	90,488,445	0.84%	0	0	90,488,445	0.86%
Macquarie Fd II Infr	75,658,817	0.70%	0	1,416,303	74,242,514	0.71%
Macquarie European Fund III Infr	70,401,346	0.65%	(96,163)	3,954,987	66,542,521	0.63%
<b>TOTAL FUND</b>	<b>\$10,794,064,399</b>	<b>100.0%</b>	<b>\$(112,739,746)</b>	<b>\$407,870,060</b>	<b>\$10,498,934,084</b>	<b>100.0%</b>

**Public School Teachers' Pension and Retirement Fund of Chicago**  
**Performance Evaluation Executive Summary**  
**Third Quarter 2017**

**Asset Distribution Across Investment Managers**

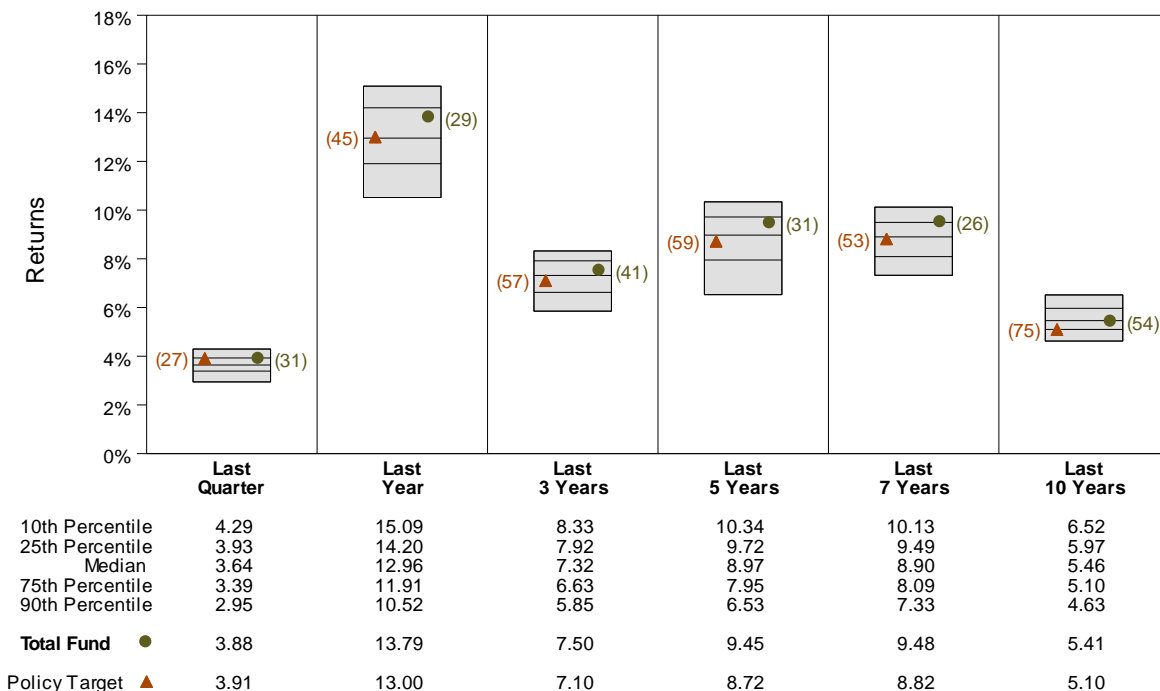
	September 30, 2017			June 30, 2017		
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
<b>REAL ESTATE</b>	<b>\$736,325,524</b>	<b>6.82%</b>	<b>\$(12,430,743)</b>	<b>\$4,659,775</b>	<b>\$744,096,491</b>	<b>7.09%</b>
Capri Select Fd II PRE	51,112	0.00%	0	0	51,112	0.00%
City View PRE	15,646,885	0.14%	(213,818)	267,148	15,593,555	0.15%
Clarion Lion Indus Tr	47,536,005	0.44%	(440,457)	(100,100)	48,076,562	0.46%
Europa Fd III PRE	8,031,311	0.07%	(1,143,456)	(1,116,009)	10,290,775	0.10%
Fortress Japan PRE	8,021,247	0.07%	(238,995)	281,287	7,978,955	0.08%
Fortress Japan Fd II PRE	7,143,072	0.07%	(2,368,559)	593,916	8,917,715	0.08%
Franklin Temp PREMOM	17,384,078	0.16%	(192,929)	47,950	17,529,056	0.17%
Fremont Realty PRE	1,718,874	0.02%	0	(20,761)	1,739,635	0.02%
Greystar Equity PRE	0	0.00%	(35,179)	(1,902)	37,081	0.00%
Hudson Realty Fd V PRE	4,121,427	0.04%	0	88,463	4,032,964	0.04%
IC Berkeley Partners III	7,212,481	0.07%	(1)	401,273	6,811,209	0.06%
Intercontinental PRE	491,065	0.00%	0	12,765	478,300	0.00%
JP Morgan Strat PRE-OE	151,966,587	1.41%	(1,497,049)	2,574,900	150,888,736	1.44%
LaSalle Property PRE-OE	102,226,751	0.95%	(1,190,462)	40	103,417,173	0.99%
MB Asia RE Fd PRE	914,467	0.01%	0	59,298	855,169	0.01%
Newport Cap Fund II	23,728,985	0.22%	(3,536,310)	596,650	26,668,645	0.25%
Newport/DV Urban PRE	1,224,526	0.01%	0	(33,009)	1,257,535	0.01%
PRISA Fd I PRE-OE	140,642,444	1.30%	0	0	140,642,444	1.34%
PRISA Fd II PRE-OE	21,643,623	0.20%	0	0	21,643,623	0.21%
UBS Realty PRE-OE	149,825,704	1.39%	(1,573,529)	1,573,529	149,825,704	1.43%
Walton St Fd III PRE	142,995	0.00%	0	(1,301)	144,296	0.00%
Walton St Fd IV PRE	1,163,071	0.01%	0	3,811	1,159,260	0.01%
Walton St Fd V PRE	9,929,556	0.09%	0	55,330	9,874,226	0.09%
Walton St Fd VI PRE	10,499,498	0.10%	0	(569,672)	11,069,170	0.11%
Walton St Mexico Fd I PRE	5,059,760	0.05%	0	(53,831)	5,113,591	0.05%
<b>PRIVATE EQUITY</b>	<b>\$288,521,906</b>	<b>2.67%</b>	<b>\$(4,722,999)</b>	<b>\$9,459,508</b>	<b>\$283,785,397</b>	<b>2.70%</b>
Adams St Many Fd PE	137,075,292	1.27%	(1,345,841)	3,984,414	134,436,719	1.28%
HarbourVest Ptrs VI PE	6,067,785	0.06%	(917,811)	205,412	6,780,184	0.06%
HarbourVest Ptrs VII PE	8,004,220	0.07%	663,717	541,731	6,798,772	0.06%
HarbourVest Ptrs VIII PE	10,409,271	0.10%	(1,087,406)	660,781	10,835,896	0.10%
HVP Buyout X PE	2,825,675	0.03%	0	295,685	2,529,990	0.02%
HVP Venture X PE	1,764,865	0.02%	360,000	159,384	1,245,481	0.01%
Hispania Fd II PE	3,342,934	0.03%	156,249	33,182	3,153,503	0.03%
ICV Capital Ptrs PE	1,590,983	0.01%	(100,784)	60,598	1,631,169	0.02%
ICV III Capital Ptrs PE	10,009,204	0.09%	(50,125)	151,421	9,907,908	0.09%
Mesirow Fd I PE	2,248,768	0.02%	0	(57,034)	2,305,802	0.02%
Mesirow Fd II PE	7,990,865	0.07%	(900,000)	284,410	8,606,455	0.08%
Mesirow Fd IV PE	12,159,446	0.11%	(1,300,002)	418,373	13,041,075	0.12%
Mesirow Fd V PE	17,167,116	0.16%	(1,526,044)	701,797	17,991,363	0.17%
Mesirow Fd VII A PE	162,500	0.00%	162,500	0	-	-
Mesirow Fd VII B PE	1,303,750	0.01%	1,303,750	0	-	-
Mesirow Fd VIII PE	2,470,538	0.02%	0	182,024	2,288,514	0.02%
Mesirow Fd X PE	15,029,577	0.14%	(24)	391,955	14,637,646	0.14%
Muller M2 ILPEFF PE	495,905	0.00%	0	(6,609)	502,514	0.00%
Muller M2 MPEFF PE	3,701,896	0.03%	12,794	199,951	3,489,152	0.03%
Palladium Ptrs PE	3,466,952	0.03%	8,295	134,283	3,324,374	0.03%
Palladium IV	7,538,869	0.07%	108,060	251,681	7,179,128	0.07%
Pantheon Asia Fd V PE	2,684,332	0.02%	(570,000)	155,080	3,099,252	0.03%
Pantheon Europe Fd II PE	75,919	0.00%	0	1,624	74,294	0.00%
Pantheon Europe Fd VI PE	5,747,522	0.05%	(230,546)	463,656	5,514,412	0.05%
Pantheon GI Fd 2014	5,773,566	0.05%	900,000	0	4,873,566	0.05%
Pantheon USA Fd III PE	353,935	0.00%	0	(8,677)	362,612	0.00%
Pantheon USA Fd IV PE	937,328	0.01%	0	16,085	921,243	0.01%
Pharos Fd II PE	4,482,927	0.04%	(269,537)	(242,231)	4,994,695	0.05%
Pharos Fd III PE	9,497,844	0.09%	(106,099)	401,664	9,202,279	0.09%
RLJ Equity Fund II	1,974,794	0.02%	0	62,063	1,912,731	0.02%
Syncom Venture PE	2,167,328	0.02%	5,856	16,804	2,144,668	0.02%
<b>CASH</b>	<b>\$140,265,665</b>	<b>1.30%</b>	<b>\$(517,061,183)</b>	<b>\$1,223,202</b>	<b>\$656,103,646</b>	<b>6.25%</b>
Cash Equivalent CTPF	71,646,702	0.66%	(517,061,183)	1,011,843	587,696,041	5.60%
STEP Holding	12,741	0.00%	0	1,255	11,486	0.00%
Cash Appropriation Acct	67,165,745	0.62%	0	205,343	66,960,403	0.64%
<b>TOTAL FUND</b>	<b>\$10,794,064,399</b>	<b>100.0%</b>	<b>\$(112,739,746)</b>	<b>\$407,870,060</b>	<b>\$10,498,934,084</b>	<b>100.0%</b>

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Total Fund Performance vs. Target**

**Callan Public Fund Sponsor - Large Datab**



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 and 2% Annualized 8% Return.

For the third quarter, the Fund underperformed the market benchmark by a slight margin, but ranked in the 31<sup>st</sup> percentile of its peers. For the trailing one-year period, the Fund outperformed the Policy Target by 79 basis points, gross of investment management fees (49 basis points net of investment management fees) and ranked in the top 29 percent of its peer group.

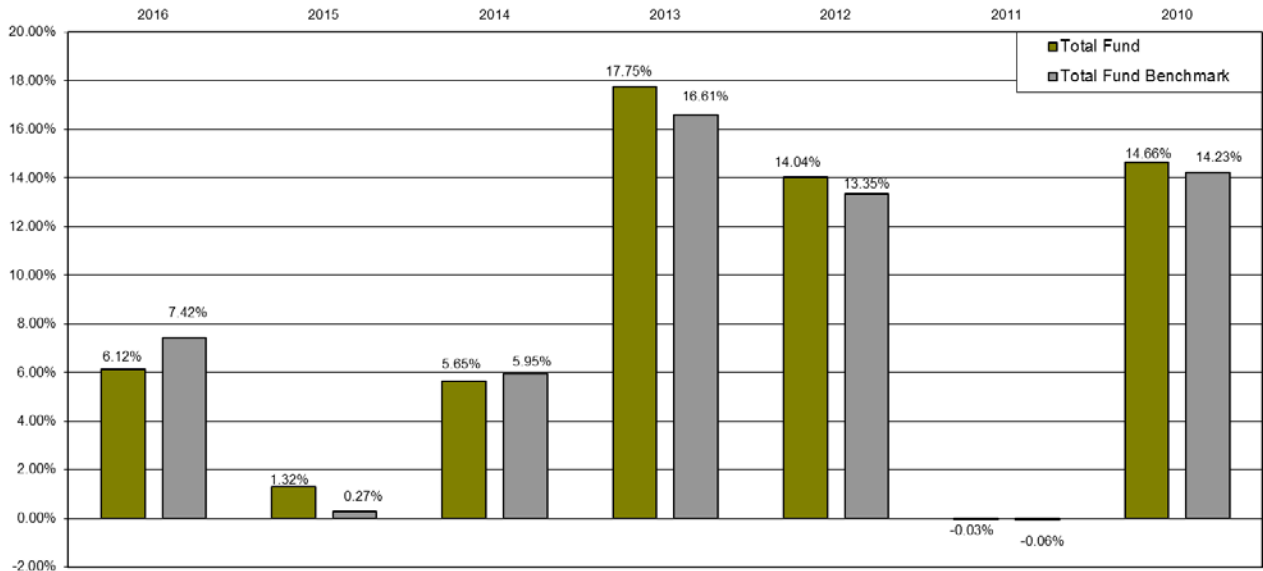
Cash, private equity and real estate detracted most from the Fund's performance relative to the Policy Target for the quarter. The following is a brief synopsis of the contribution of each major asset class over the period (performance commentary relative to benchmarks is net of fees and performance commentary relative to peers is gross of fees):

- International Equity:** The international equity composite outperformed its MSCI ACWI Ex-US IMI benchmark by 2 basis points for the third quarter, ranking in the 16<sup>th</sup> percentile of the peer group. Performance was mixed for the international equity managers over the quarter. Earnest Partners EME, Ariel Investments, and Lazard posted the weakest relative performance over the period.
- Fixed Income:** The fixed income composite outperformed its market benchmark by 7 basis points for the quarter, ranking in the 87<sup>th</sup> percentile of its peers. Most of the active fixed income managers outperformed their respective benchmarks this quarter, except for Garcia Hamilton.

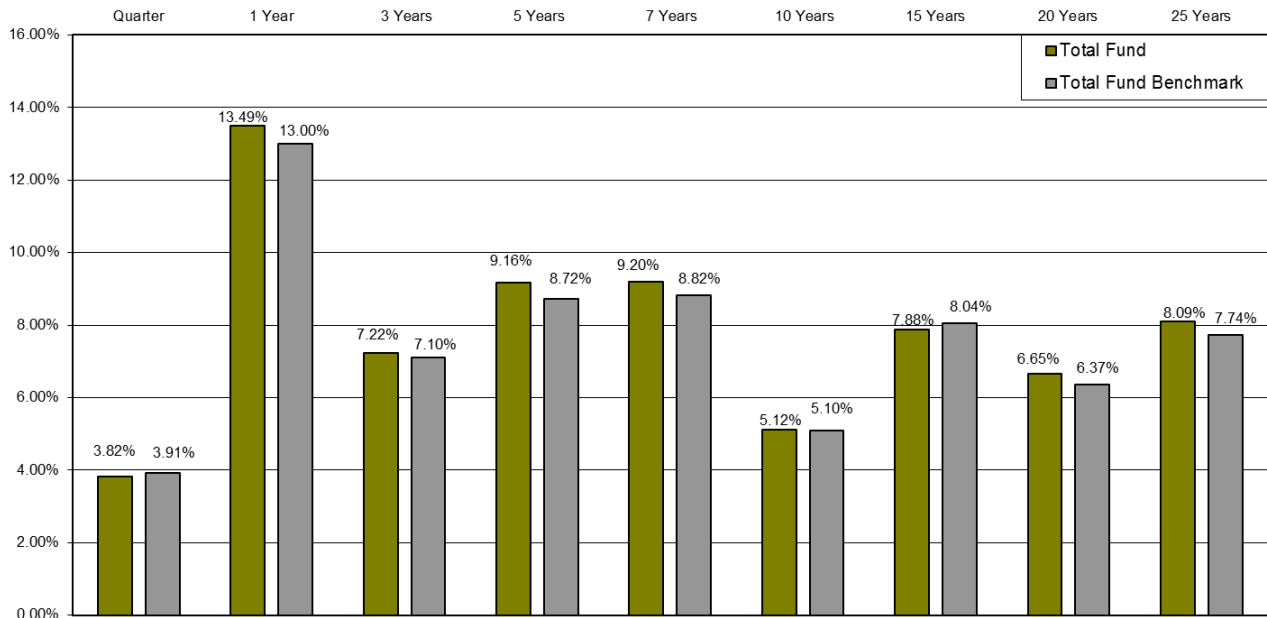
**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

- Alternative Investments:** The alternatives portfolio registered positive absolute returns for the quarter, though the private equity and real estate portfolios underperformed their respective targets. By contrast, the infrastructure portfolio outperformed its target return this quarter.

**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  
Third Quarter 2017**

**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 9/30/2017						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
<b>Fixed Income</b>								
<b>Northern Trust Gov/ Credit Index Fund</b>	<b>0.81</b>	<b>0.03</b>	<b>2.78</b>	<b>2.09</b>	<b>3.01</b>	<b>5.38</b>	Jan-94	\$948m
Bloomberg Barclays Gov/Credit Index	0.81	-0.01	2.83	2.10	3.03	5.36		
Variance	0.00	0.04	-0.05	-0.01	-0.02	0.02		
<b>Garcia Hamilton</b>	<b>0.40</b>	<b>0.14</b>	<b>2.94</b>	<b>3.03</b>	<b>3.99</b>	<b>3.99</b>	Oct-10	\$229m
Bloomberg Barclays Aggregate Index	0.85	0.07	2.71	2.06	2.95	2.95		
Variance	-0.45	0.07	0.23	0.97	1.04	1.04		
<b>LM Capital*</b>	<b>1.10</b>	<b>1.07</b>	<b>3.25</b>	<b>2.43</b>	<b>3.25</b>	<b>4.33</b>	Nov-04	\$211m
Bloomberg Barclays Aggregate Index	0.85	0.07	2.71	2.06	2.95	4.14		
Variance	0.25	1.00	0.54	0.37	0.30	0.19		
<b>Pugh Capital Management</b>	<b>0.86</b>	<b>0.15</b>	<b>2.76</b>	<b>2.20</b>	<b>3.19</b>	<b>3.19</b>	Oct-10	\$229m
Bloomberg Barclays Aggregate Index	0.85	0.07	2.71	2.06	2.95	2.95		
Variance	0.01	0.08	0.05	0.14	0.24	0.24		
<b>Taplin, Canida &amp; Habacht</b>	<b>0.90</b>	<b>1.69</b>	<b>2.83</b>	<b>2.54</b>	<b>3.83</b>	<b>4.13</b>	Nov-04	\$229m
Bloomberg Barclays Aggregate Index	0.85	0.07	2.71	2.06	2.95	4.14		
Variance	0.05	1.62	0.12	0.48	0.88	-0.01		
<b>Western Asset Management</b>	<b>1.14</b>	<b>2.08</b>	<b>3.96</b>	<b>3.52</b>	<b>4.67</b>	<b>5.37</b>	Feb-03	\$612m
Bloomberg Barclays Aggregate Index	0.85	0.07	2.71	2.06	2.95	4.21		
Variance	0.29	2.01	1.25	1.46	1.72	1.16		

\*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  
Performance Evaluation Executive Summary  
Third Quarter 2017**

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

CTPF Investment Strategies	Net Investment Returns as of 9/30/2017						Inception Date	Qtr-End MV
	Qtr	1 Yr	3 Yr	5 Yr	7 Yr	Since Inception		
<b>Large Cap Equity</b>								
<b>Northern Trust S&amp;P 500 Index Fund</b>	<b>4.42</b>	<b>18.55</b>	<b>10.86</b>	<b>14.24</b>	<b>14.40</b>	<b>9.79</b>	Apr-90	\$520m
S&P 500 Index	4.48	18.61	10.81	14.22	14.38	9.86		
Variance	-0.06	-0.06	0.05	0.02	0.02	-0.07		
<b>Rhumbline Russell 1000 Index Fund</b>	<b>4.36</b>	<b>18.42</b>	<b>10.55</b>	<b>14.23</b>	<b>14.33</b>	<b>7.38</b>	Jun-07	\$1,557m
Russell 1000 Index	4.48	18.54	10.63	14.27	14.35	7.30		
Variance	-0.12	-0.12	-0.08	-0.04	-0.02	0.08		
<b>Ivy</b>	<b>7.05</b>	<b>14.32</b>	<b>7.25</b>	<b>12.56</b>	<b>13.83</b>	<b>11.40</b>	Jan-91	\$128m
Russell 1000 Index	4.48	18.54	10.63	14.27	14.35	10.38		
Variance	2.57	-4.22	-3.38	-1.71	-0.52	1.02		
<b>Zevenbergen Capital Management</b>	<b>3.55</b>	<b>26.56</b>	<b>9.52</b>	<b>17.45</b>	<b>13.67</b>	<b>10.63</b>	Oct-92	\$139m
Russell 3000 Growth Index	5.93	21.87	12.65	15.18	15.31	8.95		
Variance	-2.38	4.69	-3.13	2.27	-1.64	1.68		
<b>Channing*</b>	<b>5.88</b>	<b>19.24</b>	<b>7.81</b>	<b>14.69</b>	<b>13.42</b>	<b>15.21</b>	Jul-09	\$139m
Channing Benchmark	3.27	15.53	8.79	13.20	13.17	16.15		
Variance	2.61	3.71	-0.98	1.49	0.25	-0.94		
<b>BMO Harris Investment Management</b>	<b>5.98</b>	<b>21.41</b>	<b>9.35</b>	<b>14.53</b>	<b>14.74</b>	<b>7.38</b>	Jul-99	\$299m
Harris Benchmark**	3.11	15.12	8.53	13.20	13.24	5.17		
Variance	2.87	6.29	0.82	1.33	1.50	2.21		
<b>Small Cap Equity</b>								
<b>Northern Trust Small Cap</b>	<b>5.35</b>	<b>20.36</b>	<b>12.68</b>	<b>14.76</b>	<b>14.96</b>	<b>12.43</b>	Jan-91	\$164m
Russell 2000 Index	5.67	20.74	12.18	13.79	13.51	11.01		
Variance	-0.32	-0.38	0.50	0.97	1.45	1.42		
<b>Phocas Small Cap Value</b>	<b>5.83</b>	<b>18.74</b>	-	-	-	<b>20.15</b>	Jul-16	\$151m
Russell 2000 Value Index	5.11	20.55	-	-	-	24.29		
Variance	0.72	-1.81	-	-	-	-4.14		
<b>Manager of Managers</b>								
<b>Attucks***</b>	<b>5.20</b>	<b>15.80</b>	<b>7.49</b>	--	--	<b>7.22</b>	Dec-13	\$233m
Custom Benchmark	5.13	16.75	7.79	--	--	6.91		
Variance	0.07	-0.95	-0.30	--	--	0.31		

\*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.

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

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

CTPF Investment Strategies	Net Investment Returns as of 9/30/2017						Inception Date	Qtr-End MV
	Qtr	1 Yr	3 Yr	5 Yr	7 Yr	Since Inception		
<b>FUND</b>								
<b>International Equity</b>								
<b>Ariel Investments</b>	<b>2.65</b>	<b>10.57</b>	-	-	-	<b>13.86</b>	Jul-16	\$80m
MSCI EAFE Index	5.40	19.10	-	-	-	20.89		
Variance	-2.75	-8.53	-	-	-	-7.03		
<b>EARNEST Partners</b>	<b>7.06</b>	<b>24.68</b>	<b>6.89</b>	<b>8.89</b>	<b>6.77</b>	<b>5.89</b>	Apr-07	\$605m
MSCI ACWI ex-US Index	6.16	19.61	4.70	6.97	5.25	2.41		
Variance	0.90	5.07	2.19	1.92	1.52	3.48		
<b>Lazard</b>	<b>5.62</b>	<b>14.21</b>	<b>4.79</b>	<b>7.69</b>	<b>6.93</b>	<b>5.95</b>	Jan-01	\$603m
MSCI ACWI ex-US Index	6.16	19.61	4.70	6.97	5.25	4.91		
Variance	-0.54	-5.40	0.09	0.72	1.68	1.04		
<b>Morgan Stanley</b>	<b>3.64</b>	<b>18.63</b>	<b>4.76</b>	<b>7.96</b>	<b>7.52</b>	<b>8.78</b>	Apr-95	\$610m
MSCI EAFE Index	5.40	19.10	5.04	8.38	6.38	5.22		
Variance	-1.76	-0.47	-0.28	-0.42	1.14	3.56		
<b>Strategic Global Advisors</b>	<b>5.70</b>	<b>19.76</b>	-	-	-	<b>21.11</b>	Jul-16	\$80m
MSCI EAFE Index	5.40	19.10	-	-	-	20.89		
Variance	0.30	0.66	-	-	-	0.22		
<b>William Blair Growth</b>	<b>8.44</b>	<b>19.89</b>	<b>6.78</b>	<b>9.15</b>	<b>7.75</b>	<b>9.21</b>	Feb-10	\$615m
MSCI ACWI ex-US IMI Growth Index	6.42	17.60	6.70	8.05	6.15	7.15		
Variance	2.02	2.29	0.08	1.10	1.60	2.06		
<b>William Blair International Small Cap</b>	<b>8.47</b>	<b>17.69</b>	<b>9.44</b>	<b>10.54</b>	<b>9.25</b>	<b>4.92</b>	Apr-07	\$204m
William Blair ISCE Benchmark*	6.95	17.11	8.50	9.28	7.51	3.13		
Variance	1.52	0.58	0.94	1.26	1.74	1.79		
<b>Dimensional Fund Advisors</b>	<b>7.58</b>	<b>25.15</b>	<b>9.94</b>	<b>13.60</b>	--	<b>15.41</b>	Jun-12	\$195m
MSCI World Small Cap ex-US	7.26	20.42	9.59	11.16	--	12.86		
Variance	0.32	4.73	0.35	2.44	--	2.55		
<b>EARNEST Partners Emerging Markets</b>	<b>4.64</b>	<b>22.14</b>	<b>4.92</b>	--	--	<b>2.75</b>	Mar-13	\$180m
MSCI Emerging Markets Index	7.89	22.46	4.90	--	--	3.10		
Variance	-3.25	-0.32	0.02	--	--	-0.35		
<b>International Manager of Managers</b>								
<b>Leading Edge</b>	<b>6.81</b>	<b>19.35</b>	<b>6.31</b>	<b>8.66</b>	<b>6.30</b>	<b>6.14</b>	Apr-10	\$133m
MSCI ACWI ex-US Index	6.16	19.61	4.70	6.97	5.25	5.17		
Variance	0.65	-0.26	1.61	1.69	1.05	0.97		

\* 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  
Performance Evaluation Executive Summary  
Third Quarter 2017**

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

CTPF Investment Strategies	Net Investment Returns as of 9/30/2017						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
<b>Infrastructure</b>								
<b>Infrastructure Composite</b>	<b>2.21</b>	<b>5.67</b>	<b>3.23</b>	<b>5.24</b>	<b>5.90</b>	<b>5.34</b>	Nov-08	\$250m
8% Annualized Return	1.94	8.00	8.00	8.00	8.00	8.00		
Variance	0.27	-2.33	-4.77	-2.76	-2.10	-2.66		
<b>Real Estate</b>								
<b>Real Estate Composite</b>	<b>0.51</b>	<b>5.94</b>	<b>10.13</b>	<b>10.64</b>	<b>11.14</b>	<b>7.24</b>	Jan-02	\$736m
NFI-ODCE Value Weight	1.64	6.70	9.84	10.57	11.47	7.12		
Variance	-1.13	-0.76	0.29	0.07	-0.33	0.12		
<b>Private Equity</b>								
<b>Private Equity Composite</b>	<b>3.30</b>	<b>16.39</b>	<b>9.93</b>	<b>12.02</b>	<b>11.98</b>	<b>8.75</b>	Jan-02	\$289m
Russell 3000 Index	4.57	18.71	10.74	14.23	14.28	7.64		
Variance	-1.27	-2.32	-0.81	-2.21	-2.30	1.11		

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.

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**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 9/30/2017						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
<b>Fixed Income</b>								
<b>Northern Trust Gov/ Credit Index Fund</b>	<b>0.81</b>	<b>0.05</b>	<b>2.79</b>	<b>2.10</b>	<b>3.01</b>	<b>5.39</b>	Jan-94	\$948m
Bloomberg Barclays Gov/Credit Index	0.81	-0.01	2.83	2.1	3.03	5.36		
Variance	0.00	0.06	-0.04	0.00	-0.02	0.03		
Peer Ranking – CAI Core Bond	84	92	86	91	94			
<b>Garcia Hamilton</b>	<b>0.43</b>	<b>0.31</b>	<b>3.13</b>	<b>3.23</b>	<b>4.17</b>	<b>4.17</b>	Oct-10	\$229m
Bloomberg Barclays Aggregate Index	0.85	0.07	2.71	2.06	2.95	2.95		
Variance	-0.42	0.24	0.42	1.17	1.22	1.22		
Peer Ranking – CAI Core Bond	99	79	49	4	12			
<b>LM Capital*</b>	<b>1.14</b>	<b>1.23</b>	<b>3.42</b>	<b>2.60</b>	<b>3.42</b>	<b>4.52</b>	Nov-04	\$211m
Bloomberg Barclays Aggregate Index	0.85	0.07	2.71	2.06	2.95	4.14		
Variance	0.29	1.16	0.71	0.54	0.47	0.38		
Peer Ranking - CAI Core Plus Bond	53	76	48	87	99			
<b>Pugh Capital Management</b>	<b>0.89</b>	<b>0.30</b>	<b>2.91</b>	<b>2.38</b>	<b>3.37</b>	<b>3.37</b>	Oct-10	\$229m
Bloomberg Barclays Aggregate Index	0.85	0.07	2.71	2.06	2.95	2.95		
Variance	0.04	0.23	0.20	0.32	0.42	0.42		
Peer Ranking - CAI Core Bond	62	79	73	63	64			
<b>Taplin, Canida &amp; Habacht</b>	<b>0.94</b>	<b>1.84</b>	<b>2.98</b>	<b>2.69</b>	<b>3.99</b>	<b>4.29</b>	Nov-04	\$229m
Bloomberg Barclays Aggregate Index	0.85	0.07	2.71	2.06	2.95	4.14		
Variance	0.09	1.77	0.27	0.63	1.04	0.15		
Peer Ranking - CAI Core Bond	47	7	63	30	17			
<b>Western Asset Management</b>	<b>1.18</b>	<b>2.25</b>	<b>4.14</b>	<b>3.71</b>	<b>4.85</b>	<b>5.56</b>	Feb-03	\$612m
Bloomberg Barclays Aggregate Index	0.85	0.07	2.71	2.06	2.95	4.21		
Variance	0.33	2.18	1.43	1.65	1.90	1.35		
Peer Ranking - CAI Core Plus Bond	49	36	10	15	16			

\*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  
Performance Evaluation Executive Summary  
Third Quarter 2017**

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

CTPF Investment Strategies	Gross Investment Returns as of 9/30/2017						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
<b>Large Cap Equity</b>								
<b>Northern Trust S&amp;P 500 Index Fund</b>	<b>4.42</b>	<b>18.56</b>	<b>10.87</b>	<b>14.25</b>	<b>14.41</b>	<b>9.80</b>	Apr-90	\$520m
S&P 500 Index	4.48	18.61	10.81	14.22	14.38	9.86		
Variance	-0.06	-0.05	0.06	0.03	0.03	-0.06		
Peer Ranking – CAI Large Cap	58	61	40	53	46			
<b>Rhumbline Russell 1000 Index Fund</b>	<b>4.36</b>	<b>18.43</b>	<b>10.56</b>	<b>14.24</b>	<b>14.34</b>	<b>7.39</b>	Jun-07	\$1,557m
Russell 1000 Index	4.48	18.54	10.63	14.27	14.35	7.30		
Variance	-0.12	-0.11	-0.07	-0.03	-0.01	0.09		
Peer Ranking – CAI Large Cap	59	62	46	53	47			
<b>Ivy</b>	<b>7.10</b>	<b>14.57</b>	<b>7.47</b>	<b>12.79</b>	<b>14.06</b>	<b>11.62</b>	Jan-91	\$128m
Russell 1000 Index	4.48	18.54	10.63	14.27	14.35	10.38		
Variance	2.62	-3.97	-3.16	-1.48	-0.29	1.24		
Peer Ranking - CAI Large Cap Core	1	94	97	85	57			
<b>Zevenbergen Capital Management</b>	<b>3.65</b>	<b>27.04</b>	<b>9.95</b>	<b>17.91</b>	<b>14.12</b>	<b>11.07</b>	Oct-92	\$139m
Russell 3000 Growth Index	5.93	21.87	12.65	15.18	15.31	8.95		
Variance	-2.28	5.17	-2.70	2.73	-1.19	2.12		
Peer Ranking - CAI All Cap	66	4	48	4	52			
<b>Channing*</b>	<b>6.01</b>	<b>19.80</b>	<b>8.33</b>	<b>15.23</b>	<b>13.98</b>	<b>15.80</b>	Jul-09	\$139m
Channing Benchmark	3.27	15.53	8.79	13.20	13.17	16.15		
Variance	2.74	4.27	-0.46	2.03	0.81	-0.35		
Peer Ranking – CAI All Cap Value	10	39	63	26	26			
<b>BMO Harris Investment Management</b>	<b>6.04</b>	<b>21.68</b>	<b>9.59</b>	<b>14.78</b>	<b>14.99</b>	<b>7.66</b>	Jul-99	\$299m
Harris Benchmark**	3.11	15.12	8.53	13.20	13.24	5.17		
Variance	2.93	6.56	1.06	1.58	1.75	2.49		
Peer Ranking - CAI Large Cap Value	62	38	36	24	22			
<b>Small Cap Equity</b>								
<b>Northern Trust Small Cap</b>	<b>5.37</b>	<b>20.49</b>	<b>12.78</b>	<b>14.84</b>	<b>15.02</b>	<b>12.52</b>	Jan-91	\$164m
Russell 2000 Index	5.67	20.74	12.18	13.79	13.51	11.01		
Variance	-0.30	-0.25	0.60	1.05	1.51	1.51		
Peer Ranking - CAI Small Cap	47	45	46	55	46			
<b>Phocas Small Cap Value</b>	<b>6.05</b>	<b>19.68</b>	-	-	-	<b>20.91</b>	Jul-16	\$151m
Russell 2000 Value Index	5.11	20.55	-	-	-	24.29		
Variance	0.94	-0.87	-	-	-	-3.38		
Peer Ranking - CAI Small Cap Value	36	64	-	-	-			
<b>Manager of Managers</b>								
<b>Attucks***</b>	<b>5.35</b>	<b>16.48</b>	<b>8.07</b>	--	--	<b>7.82</b>	Dec-13	\$233m
Custom Benchmark	5.13	16.75	7.79	--	--	6.91		
Variance	0.22	-0.27	0.28	--	--			

\*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.

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

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

CTPF Investment Strategies	Gross Investment Returns as of 9/30/2017						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
<b>International Equity</b>								
<b>Ariel Investments</b>	<b>2.82</b>	<b>11.32</b>	-	-	-	<b>14.48</b>	Jul-16	\$80m
MSCI EAFE Index	5.40	19.10	-	-	-	20.89		
Variance	-2.58	-7.78	-	-	-	-6.41		
Peer Ranking - CAI Non-US Equity	99	99	-	-	-			
<b>EARNEST Partners</b>	<b>7.17</b>	<b>25.17</b>	<b>7.33</b>	<b>9.33</b>	<b>7.20</b>	<b>6.40</b>	Apr-07	\$605m
MSCI ACWI ex-US Index	6.16	19.61	4.70	6.97	5.25	2.41		
Variance	1.01	5.56	2.63	2.36	1.95	3.99		
Peer Ranking - CAI Non-US Equity	28	7	37	52	64			
<b>Lazard</b>	<b>5.67</b>	<b>14.40</b>	<b>4.98</b>	<b>7.87</b>	<b>7.11</b>	<b>6.32</b>	Jan-01	\$603m
MSCI ACWI ex-US Index	6.16	19.61	4.70	6.97	5.25	4.91		
Variance	-0.49	-5.21	0.28	0.90	1.86	1.41		
Peer Ranking - CAI Non-US Equity	62	96	79	82	66			
<b>Morgan Stanley</b>	<b>3.75</b>	<b>19.11</b>	<b>5.20</b>	<b>8.42</b>	<b>7.98</b>	<b>9.25</b>	Apr-95	\$610m
MSCI EAFE Index	5.40	19.10	5.04	8.38	6.38	5.22		
Variance	-1.65	0.01	0.16	0.04	1.60	4.03		
Peer Ranking - CAI Non-US Equity	94	64	74	69	43			
<b>Strategic Global Advisors</b>	<b>5.83</b>	<b>20.34</b>	-	-	-	<b>21.58</b>	Jul-16	\$80m
MSCI EAFE Index	5.40	19.10	-	-	-	20.89		
Variance	0.43	1.24	-	-	-	0.69		
Peer Ranking - CAI Non-US Equity	58	50	-	-	-			
<b>William Blair Growth</b>	<b>8.53</b>	<b>20.30</b>	<b>7.17</b>	<b>9.53</b>	<b>8.15</b>	<b>9.61</b>	Feb-10	\$615m
MSCI ACWI ex-US IMI Growth Index	6.42	17.60	6.70	8.05	6.15	7.15		
Variance	2.11	2.70	0.47	1.48	2.00	2.46		
Peer Ranking - CAI Core Growth Int'l Equity	17	47	63	47	44			
<b>William Blair International Small Cap</b>	<b>8.68</b>	<b>18.66</b>	<b>10.36</b>	<b>11.49</b>	<b>10.18</b>	<b>5.94</b>	Apr-07	\$204m
William Blair ISCE Benchmark*	6.95	17.11	8.50	9.28	7.51	3.13		
Variance	1.73	1.55	1.86	2.21	2.67	2.81		
Peer Ranking - CAI Int'l Small Cap Equity	47	86	69	80	74			
<b>Dimensional Fund Advisors</b>	<b>7.58</b>	<b>25.15</b>	<b>9.94</b>	<b>13.74</b>	--	<b>15.55</b>	Jun-12	\$195m
MSCI World Small Cap ex-US	7.26	20.42	9.59	11.16	--	12.86		
Variance	0.32	4.73	0.35	2.58	--	2.69		
Peer Ranking - CAI Int'l Small Cap Equity	71	32	73	52	--			
<b>EARNEST Partners Emerging Markets</b>	<b>4.77</b>	<b>22.77</b>	<b>5.45</b>	--	--	<b>3.26</b>	Mar-13	\$180m
MSCI Emerging Markets Index	7.89	22.46	4.90	--	--	3.10		
Variance	-3.12	0.31	0.55	--	--	0.16		
Peer Ranking - CAI EM Equity	82	50	60	--	--			
<b>International Manager of Managers</b>								
<b>Leading Edge</b>	<b>7.01</b>	<b>20.28</b>	<b>7.13</b>	<b>9.51</b>	<b>7.13</b>	<b>6.97</b>	Apr-10	\$133m
MSCI ACWI ex-US Index	6.16	19.61	4.70	6.97	5.25	5.17		
Variance	0.85	0.67	2.43	2.54	1.88	1.80		
Peer Ranking - CAI Non-US Equity	29	51	41	45	65			

\* 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  
Performance Evaluation Executive Summary  
Third Quarter 2017**

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

CTPF Investment Strategies	Gross Investment Returns as of 9/30/2017						Inception Date	Qtr-End MV
	FUND	Qtr	1 Yr	3 Yr	5 Yr	7 Yr		
<b>Infrastructure</b>								
<b>Infrastructure Composite</b>	<b>2.29</b>	<b>6.27</b>	<b>3.82</b>	<b>5.81</b>	<b>6.57</b>	<b>5.86</b>	Nov-08	\$250m
8% Annualized Return	1.94	8.00	8.00	8.00	8.00	8.00		
Variance	0.35	-1.73	-4.18	-2.19	-1.43	-2.14		
<b>Real Estate</b>								
<b>Real Estate Composite</b>	<b>0.63</b>	<b>6.70</b>	<b>10.92</b>	<b>11.40</b>	<b>11.88</b>	<b>7.69</b>	Jan-02	\$736m
NFI-ODCE Value Weight	1.64	6.70	9.84	10.57	11.47	7.12		
Variance	-1.01	0.00	1.08	0.83	0.41	0.57		
<b>Private Equity</b>								
<b>Private Equity Composite</b>	<b>3.36</b>	<b>16.85</b>	<b>10.17</b>	<b>12.25</b>	<b>12.15</b>	<b>8.84</b>	Jan-02	\$289m
Russell 3000 Index	4.57	18.71	10.74	14.23	14.28	7.64		
Variance	-1.21	-1.86	-0.57	-1.98	-2.13	1.20		

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.



**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Manager Watch List**

MANAGER	DATE WATCH STARTED, REASON	LAST DUE DILIGENCE MEETING	ACTIONS TAKEN	POLICY/ RECOMMENDED ACTIONS	AUM as of 9/30/2017	Current Quarter Watch List Score	Previous Quarter Watch List Score
Ivy	February – 16 Performance	Nov - 17	Monitor	Monitor	\$128 mil.	1.0	1.0
Channing	January - 18 Personnel Turnover	Jan - 17	Monitor	Monitor	\$139 mil.	0.1	0.1
Zevenbergen	December – 16 Performance	Jan - 17	Monitor	Monitor	\$139 mil.	0.6	0.4
LM Capital	March - 17 Personnel Turnover	March - 17	Monitor	Monitor	\$211 mil.	0.2	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

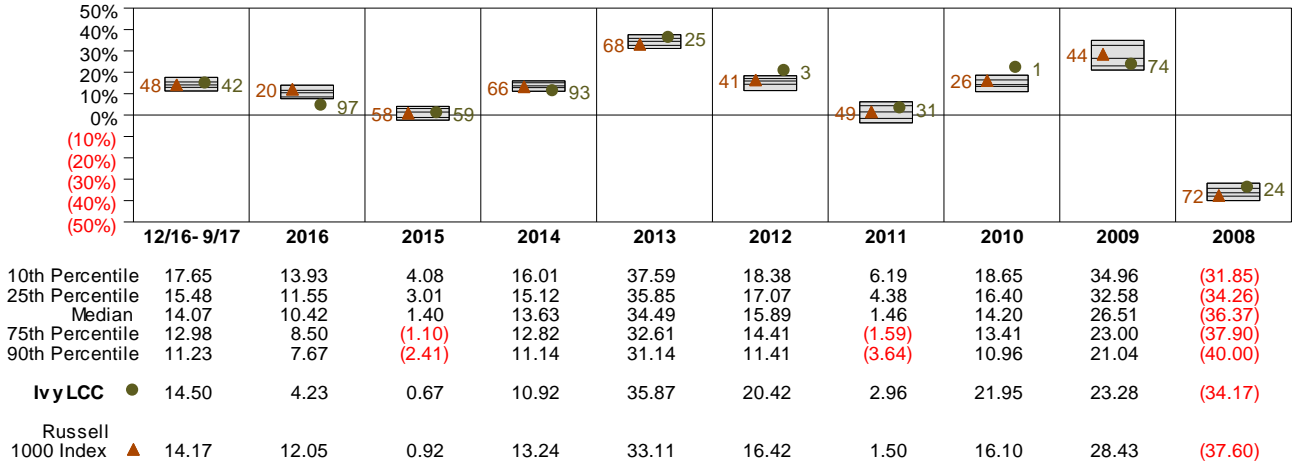
Monitor = Recommended action for the Board

Search = Board authorized a manager search

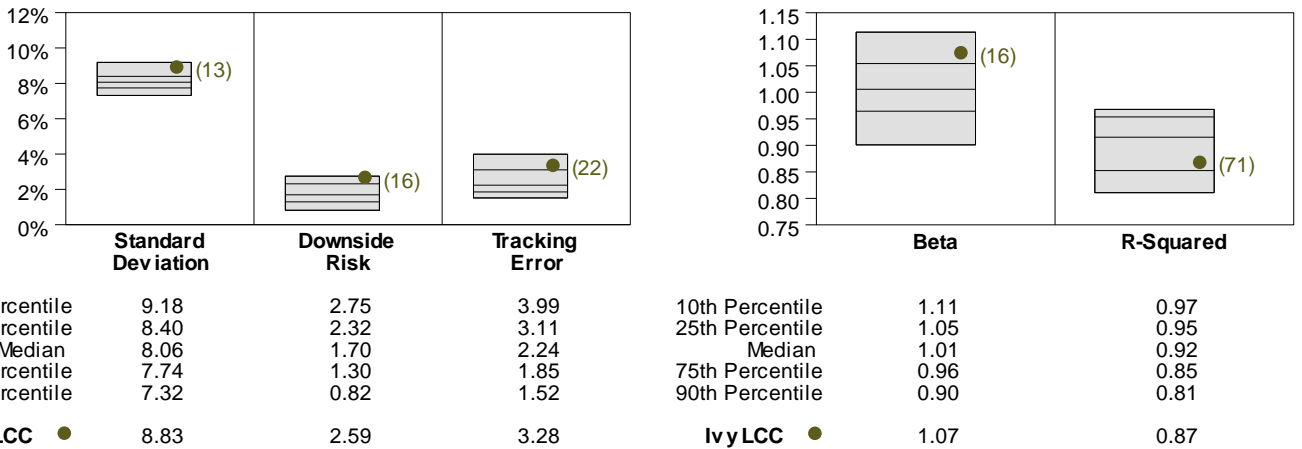
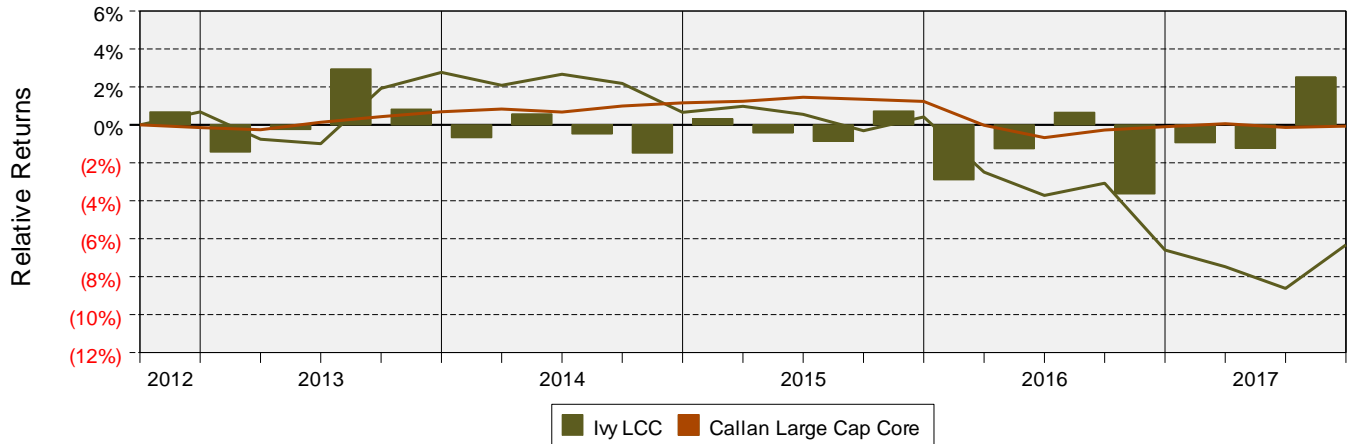
**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Manager Watch List: Ivy**

**Performance vs Callan Large Cap Core (Gross)**



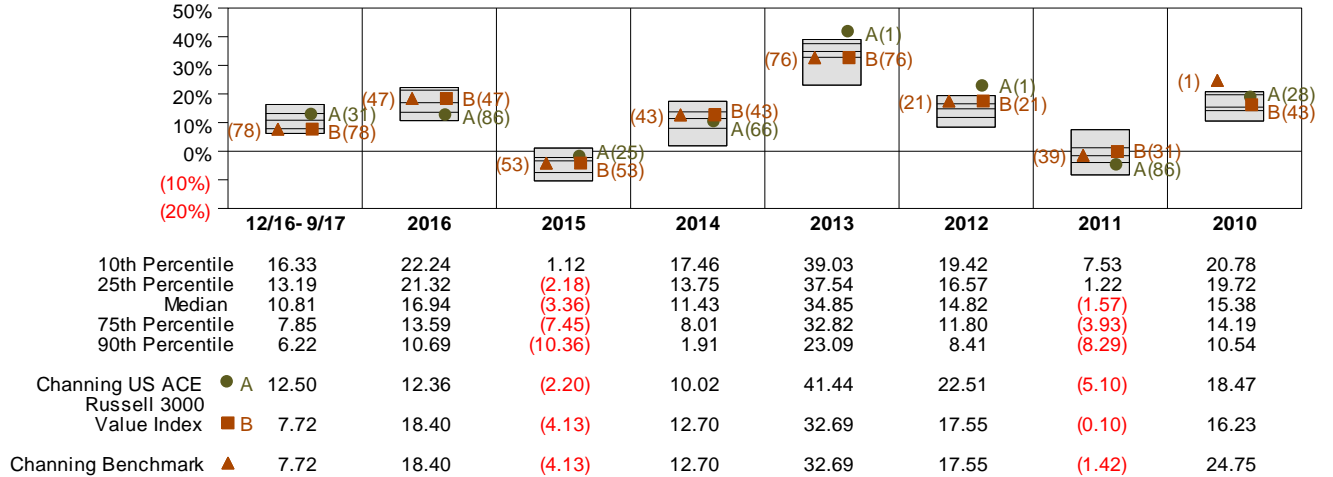
**Cumulative and Quarterly Relative Return vs Russell 1000 Index**



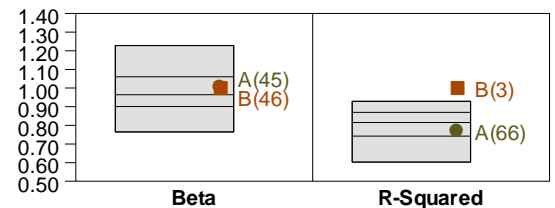
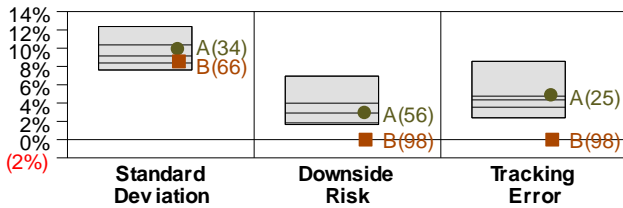
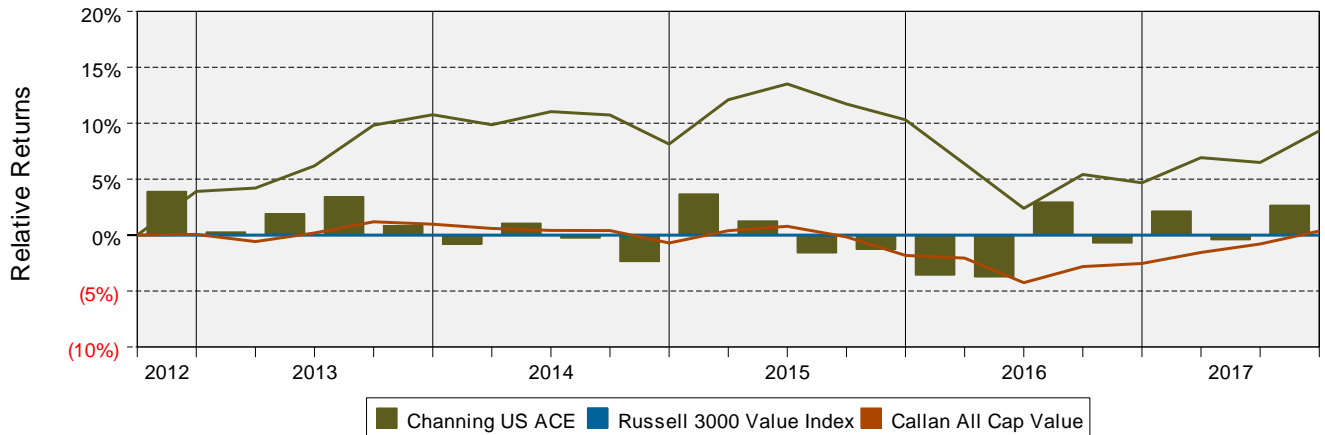
**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Manager Watch List: Channing**

**Performance vs Callan All Cap Value (Gross)**



**Cumulative and Quarterly Relative Return vs Channing Benchmark**

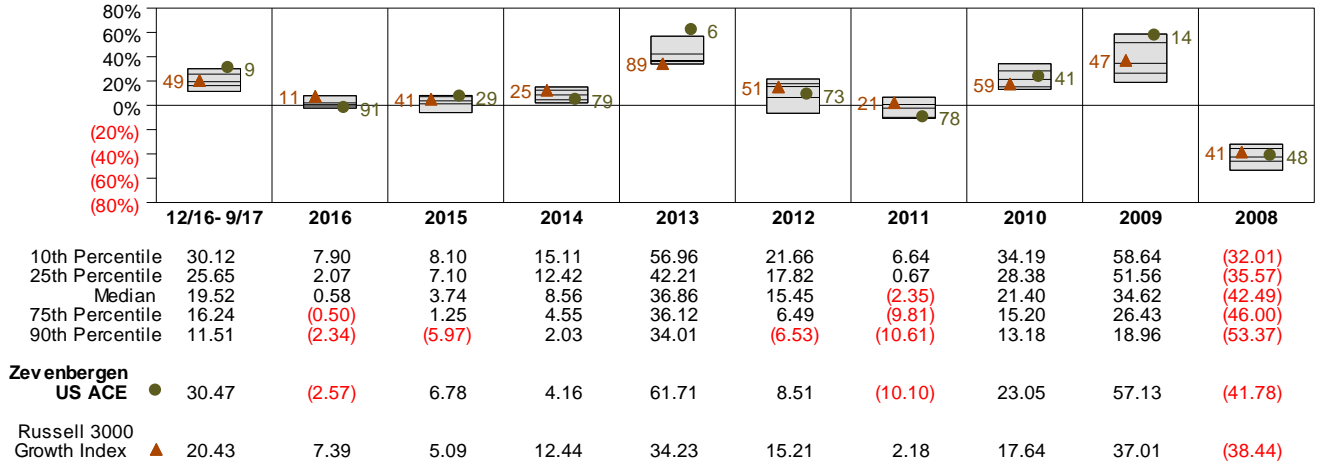


10th Percentile	12.37	6.95	8.56	10th Percentile	1.23	0.93
25th Percentile	10.35	3.98	4.76	25th Percentile	1.06	0.87
Median	9.15	2.91	4.34	Median	0.96	0.81
75th Percentile	8.39	1.83	3.55	75th Percentile	0.90	0.74
90th Percentile	7.61	1.64	2.38	90th Percentile	0.76	0.60
Channing US ACE ● A	9.79	2.83	4.74	Channing US ACE ● A	1.00	0.77
Russell 3000 Value Index ■ B	8.56	0.00	0.00	Russell 3000 Value Index ■ B	1.00	1.00

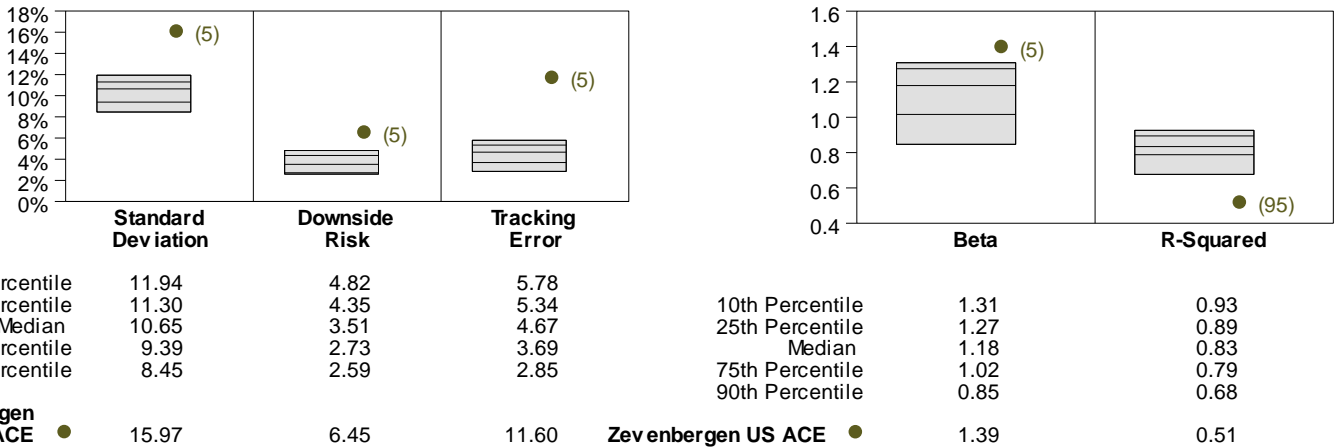
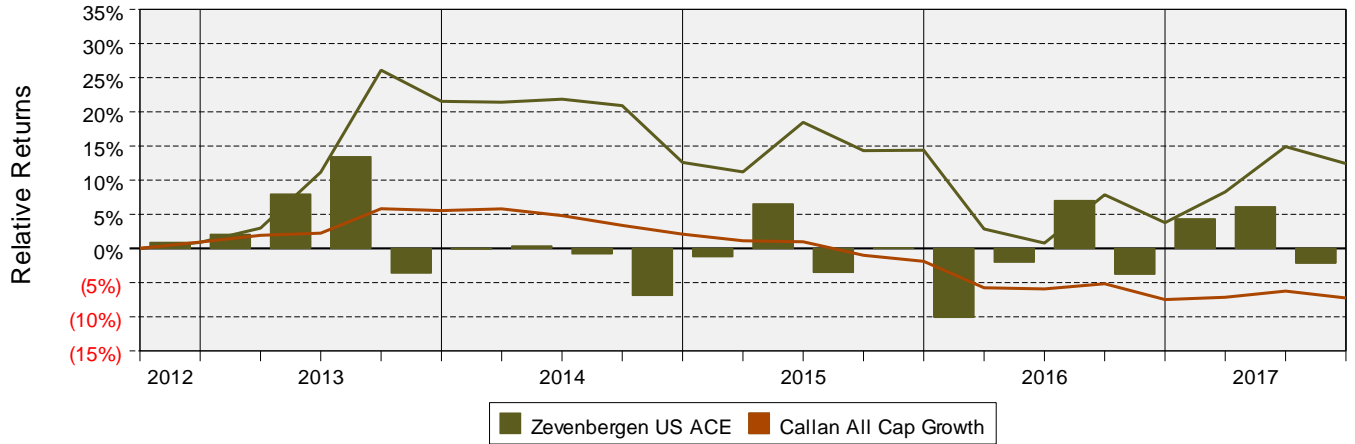
**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Manager Watch List: Zevenbergen**

**Performance vs Callan All Cap Growth (Gross)**



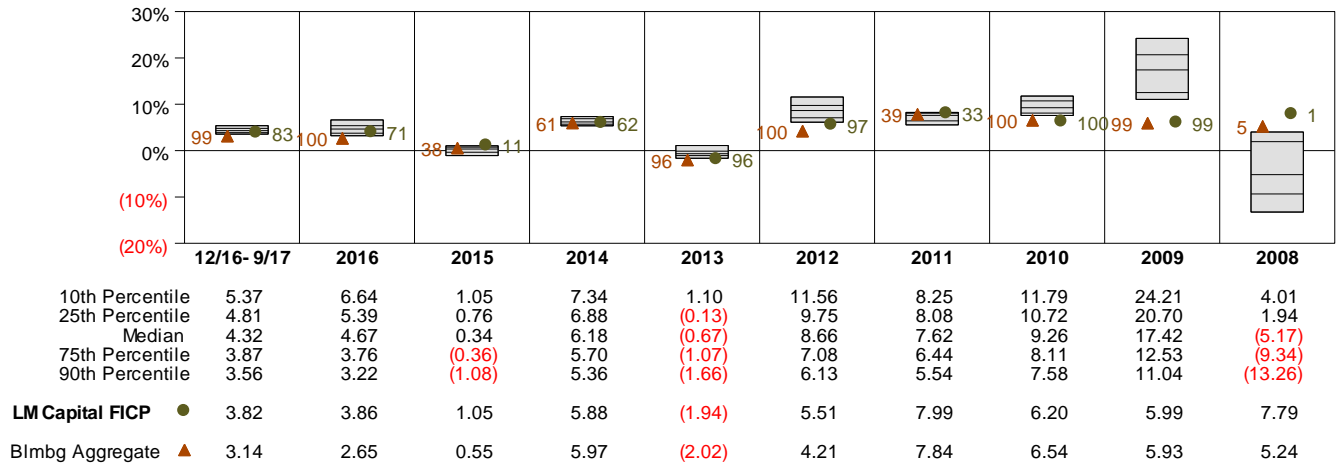
**Cumulative and Quarterly Relative Return vs Russell 3000 Growth Index**



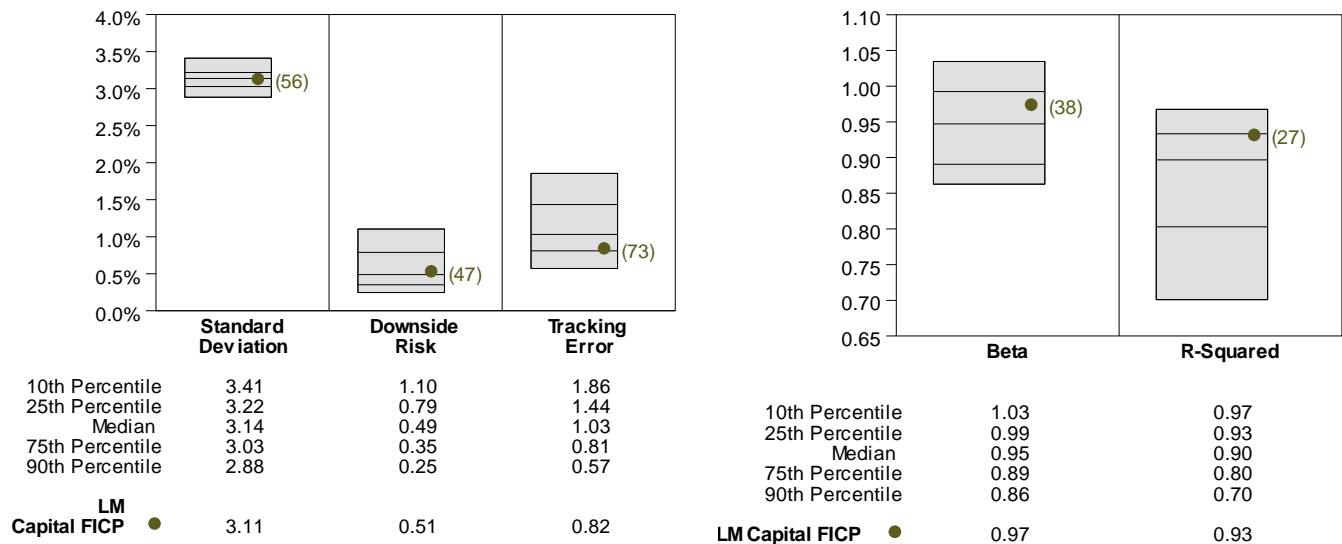
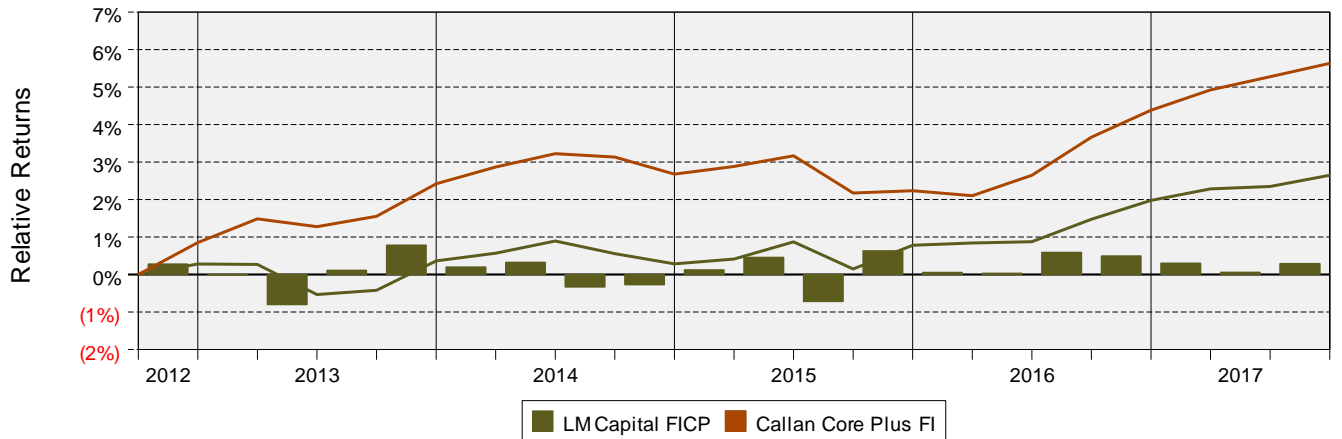
**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Manager Watch List: LM Capital**

**Performance vs Callan Core Plus Fixed Income (Gross)**



**Cumulative and Quarterly Relative Return vs Blmbg Aggregate**



**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**General Market and Economic Conditions**

After a relatively weak first quarter in the U.S. (1.4% growth), GDP was revised up to 3.1% in the second quarter and grew an astounding 3.0% in the third quarter after accounting for the impact of hurricanes Harvey and Irma. Without the hurricanes, real GDP would likely have seen a robust gain in excess of 4%, perhaps as strong as 4.5%. Initial estimates for fourth quarter growth are equally lofty. And in a relatively new development, the Institute for Supply Management (ISM) manufacturing index is showing signs of strength. In August, the Index hit 58.8 (anything above 50 signals expansion). The September reading, released in early October, rose to 60.8 with both its employment and new orders components signaling broad-based strength. This marked the highest level in thirteen years. Unemployment ticked up slightly in August to 4.4%, but labor conditions remain tight. Headline inflation rose 2.2% (year over year) in September and has been accelerating since it was 1.6 percent in June. The Fed's favored measure, the PCE price deflator, gained 1.6% year-over-year, up from 1.4% in June. The Fed left rates unchanged at its September meeting, but 12 of the 16 FOMC members expect one more hike this year and markets put that probability at about 70%. The Fed also announced that its previously communicated plan to reduce the size of its balance sheet would begin in October of this year. It will reduce reinvestment of its holdings by \$10 billion per month, increasing this amount gradually each quarter to \$50 billion per month at the end of 2018. In other Fed news, Vice Chairman Stanley Fischer resigned for "personal reasons," leaving a fourth vacancy on the Fed's governing board. Further, Janet Yellen's term as chair expires in February, 2018 with no clear replacement as of yet.

Non-U.S. developed economies continued to gain traction. Second quarter GDP growth in the euro zone was 2.3% (year-over-year) with consumer confidence and demand both showing strength. The European Central Bank's Governing Council left monetary policy unchanged, but Bank President Mario Draghi indicated that decisions around the timing of a tapering program would be made in October. The euro gained ground versus the U.S. dollar and the pound continued to strengthen on hawkish comments from the Bank of England. German Chancellor Angela Merkel's party won an impressive fourth term but her victory was tarnished by the showing of the right-wing nationalist party. The "AfD" attracted 13% of voters, marking the first entry of a far-right party into Parliament in more than 60 years. Also noteworthy was Catalonia's overwhelming vote for independence from Spain as the quarter ended. The outcome remains uncertain but is a reminder that the cohesion of the European Union continues to face challenges. Outside of Europe, Japan's economy continued to slowly recover; second quarter GDP growth was 2.5% (annualized). While this was lower than expected, the economy has now expanded for six consecutive quarters. In China, economic news has generally been positive but the country was downgraded to A+ by S&P, which cited growing concerns over credit growth.

**Public School Teachers' Pension and Retirement Fund of Chicago**  
**Performance Evaluation Executive Summary**  
**Third Quarter 2017**

**Third Quarter 2017 Market Performance**

The S&P 500 Index gained 4.5% in the third quarter and is up 14.2% for the year. Several U.S. stock market indices hit record highs going into quarter-end as investors shrugged off bad news and pinned their hopes on meaningful tax reform. Small caps outperformed large caps across styles for the quarter, but trail on a year-to-date basis. Growth outperformed value for the quarter and year-to-date, growth has outperformed value by more than 10 percentage points across the cap spectrum. Technology, namely a handful of stocks, continued to fuel the growth indices' returns, especially in the large cap space (see below). The "FAAMG" stocks have an average return of 31% year-to-date and have contributed 7.3% of the 20.7% year-to-date return for the Russell 1000 Growth Index. Technology stocks now comprise 23% of the S&P 500 Index and 38% of the Russell Growth Index. Along with Technology (+8.6%), Energy (+6.8%) and Telecommunications (+6.8%) were strong sectors. Consumer Staples (-1.3%) was the sole sector to deliver a negative result for the third quarter.

	<u>3Q</u>	<u>Y-T-D</u>
Facebook	13.2%	48.5%
Apple	7.4%	34.7%
Amazon	-0.7%	28.2%
Microsoft	8.6%	21.9%
Google (Alphabet A & C shs)	5.1%	23.6%
R1000G	5.9%	20.7%
S&P 500	4.5%	14.2%

Overseas, the MSCI EAFE Index (+5.4%) outperformed the U.S. market in the third quarter and its year-to-date return is a lofty 20.0%. Gains were broad-based with several countries (Austria, Portugal, Italy, and Norway) posting double-digit returns. The U.S. dollar continued to weaken, down 3-4% versus the euro, Canadian dollar, and the U.K. pound. Within the MSCI EAFE, Europe ex-U.K. was up 6.9%, the U.K. gained 5.2%, and Japan returned +4.0%. From a sector perspective, Energy and Materials posted double-digit gains while Health Care and Consumer Staples were laggards with results of less than 1%. Emerging markets modestly outperformed developed (MSCI EM USD: +7.9%) and the Index is up an impressive 28% year-to-date. Emerging Asia continued to be the key driver (as was the case in the first and second quarters) with China (+14.7%) taking the lead. The only emerging markets country to deliver a negative return was Greece (-12.1%). Elsewhere, Russia and Brazil (+17.6% and +22.9%) both posted sharp gains as their economies improved, reversing second quarter declines. India, where second quarter growth did not meet expectations, posted a more muted return at +3.0%.

Interest rates were range-bound during the third quarter. The yield on the 10-year U.S. Treasury closed the quarter at 2.33%, only two basis points higher than at the end of the second quarter. The yield curve continued its flattening trend and the 2-year Treasury yield ended the quarter at 1.47%, its highest level since August 2008. The Bloomberg Barclays Aggregate U.S. Bond Index posted a +0.8% result with corporate bonds outperforming other investment grade sectors. The Bloomberg Barclays U.S. Corporate Index was up 1.3% for the quarter. High yield corporates fared



## **Public School Teachers' Pension and Retirement Fund of Chicago Performance Evaluation Executive Summary Third Quarter 2017**

even better, with the Bloomberg Barclays U.S. Corporate High Yield Index up 2.0%. TIPS regained some of their underperformance from the previous quarter. The Bloomberg Barclays U.S. TIPS Index rose 0.9% and the 10-year breakeven spread (the difference between nominal and real yields) rose to 1.84% as of quarter-end from 1.73% at the end of the second quarter.

Rates were also steady overseas, though dollar weakness boosted returns. The U.S. dollar lost nearly 3% versus a broad basket of developed markets currencies. The Bloomberg Barclays Global Aggregate Index returned +1.8% (unhedged) versus +0.8% for the hedged version. Emerging markets debt posted solid returns. The JPM EMBI Global Diversified Index (\$ denominated) was up 2.6%. Gains were broad-based with only beleaguered Venezuela (-11%) posting a negative return. The local currency JPM GBI-EM Global Diversified Index returned +3.6%. Returns were mixed for this Index with Brazil (+11%) being the best performer on improving economic and political news and Argentina's first-ever local bonds (-4%) being the worst on worries over the success of reforms. Year-to-date, the two emerging markets debt indices are up 9.0% and 14.3%, respectively.

The municipal bond market also performed well, benefiting from favorable supply/demand dynamics and steady rates. New issue supply was down 17% from 2016 (through the first three quarters of 2017). The Bloomberg Barclays Municipal Bond Index returned 1.1% for the quarter and the shorter duration 1-10 Year Blend Index was up 0.7%. Puerto Rico remained in the headlines in the aftermath of the devastating hurricane with its bonds trading at less than 50 cents on the dollar.

Brent crude oil prices rose nearly 20% for the quarter on relatively strong demand and signs that OPEC's production cuts may be easing the supply glut. The energy-heavy S&P GSCI Commodity Index gained 7.2% while the more diversified Bloomberg Commodity Index was up 2.5%. The Alerian MLP Index (-3%) was hurt by one of its larger constituents cutting its dividend, and its performance illustrates that MLP prices do not always move in tandem with oil prices. Gold gained 3.4% and REITs were up modestly (S&P Global REIT: +1.4%; MSCI US REIT: +0.9%). U.S. TIPS outperformed nominal Treasuries; the Bloomberg Barclays U.S. TIPS Index returned +0.9%. The DJB Global Infrastructure Index gained 3.3% and is up 15.2% year-to-date.

### **Closing Thoughts**

We entered 2017 with U.S. stock markets at record highs and historically low volatility. We approach year-end with markets at new record highs, continued low volatility, and valuations stretched across most areas of the investment markets. Meanwhile, challenges remain both geopolitically as well as with respect to the domestic legislative agenda. Hopes for tax reform (read "cuts") remain high, but President Trump's framework is only a first step in what is likely to be a long and contentious process. Finally, inflows from overseas buyers have contributed to the appreciation in markets, but it is impossible to predict what will cause these flows to reverse course. Callan cautions investors to temper return expectations and, as always, we encourage investors to maintain a long-term perspective and prudent asset allocation with appropriate levels of diversification.

**Public School Teachers' Pension and Retirement Fund of Chicago  
Performance Evaluation Executive Summary  
Third Quarter 2017**

**Appendix**

Appendix

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	
	06/30/2017	09/30/2017	06/30/2017	09/30/2017	06/30/2017	09/30/2017	06/30/2017	09/30/2017	06/30/2017	09/30/2017	06/30/2017	09/30/2017	06/30/2017	09/30/2017	06/30/2017	09/30/2017
<b>Manager</b>																
<i>Large Cap Core Equity</i>																
Ivy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	1.00	1.00
<i>Large Cap Value Equity</i>																
Harris	No	No	No	No	No	No	No	No	No	No	No	No	No	No	0.00	0.00
<i>Small Cap Value Equity</i>																
Phocas***	Yes	Yes	No	No	Yes	Yes	No	No	No	No	No	No	No	No	0.30	0.30
<i>Small Cap Equity</i>																
NTGI Structured Small Cap	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	0.10	0.00
<i>All Cap Growth Equity</i>																
Zevenbergen	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No	No	No	Yes	Yes	0.40	0.60
<i>All Cap Value Equity</i>																
Channing	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	0.10	0.10
<i>International Equity</i>																
EARNEST Partners	No	No	No	No	Yes	Yes	No	No	No	No	No	No	Yes	Yes	0.30	0.30
Lazard	Yes	Yes	No	No	Yes	Yes	No	No	No	No	No	No	No	No	0.30	0.30
Morgan Stanley	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	0.10	0.10
Leading Edge	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No	0.20	0.20
William Blair	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	0.10	0.10
Ariel***	No	No	No	No	Yes	Yes	No	Yes	No	No	No	No	No	No	0.20	0.40
Strategic Global***	No	No	No	No	No	No	No	No	No	No	No	No	No	No	0.00	0.00
<i>International Small Cap</i>																
William Blair	Yes	Yes	No	No	Yes	Yes	No	No	No	No	No	No	No	No	0.30	0.30
DFA**	Yes	Yes	No	No	Yes	Yes	No	No	No	No	No	No	No	No	0.30	0.30
<i>Emerging Market Equity</i>																
EARNEST Partners*	No	Yes	No	No	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes	0.30	0.60
<i>Active Core Fixed Income</i>																
Taplin, Canida & Habacht	Yes	Yes	No	No	No	No	No	No	No	No	No	No	Yes	Yes	0.20	0.20
Pugh	Yes	Yes	No	No	Yes	Yes	No	No	No	No	No	No	Yes	Yes	0.40	0.40
Garcia Hamilton Jackson	No	No	No	No	No	No	No	No	No	No	No	No	No	No	0.00	0.00
<i>Active Core Plus Fixed Income</i>																
LM Capital	Yes	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No	0.30	0.20
<i>Active Opportunistic Fixed Income</i>																
WAMCO	No	No	No	No	No	No	No	No	No	No	No	No	No	No	0.00	0.00

\*Manager does not yet have 5 years of portfolio data. CTPF portfolio data has been linked with a representative historical manager composite to populate Information Ratio, Up Market Capture, and Down Market Capture Watch List decisions as well as 7-year gross returns relative to a peer group and 7-year net returns relative to a market index.

\*\*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 6/30/17, we have used 5 and 1/2 year figures dating back to the 1st quarter of 2012.