

Callan

County Employees' and Officers' Annuity and Benefit Fund of Cook County

Performance Summary

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**County Employees' and Officers' Annuity & Benefit Fund of Cook County
Performance Evaluation Executive Summary
Fourth Quarter 2018**

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Macroeconomic Environment

Investors' appetite for risk, while elevated for much of 2018, evaporated as the year drew to a close and wiped out positive returns for the year across broad asset classes (T-bills being a notable exception). Concerns over tighter monetary policy and the global withdrawal of stimulus measures, unresolved trade disputes, falling oil prices, slower global growth, and softer data in some U.S. indicators overshadowed other robust aspects of the domestic economy. U.S. Treasury prices rose, expectations for Fed hikes in 2019 dissipated, and the S&P 500 had its worst December since 1931. Market sentiment clearly reflected the "glass half empty" viewpoint, with the S&P 500 at one point falling nearly 20% from a record level hit only a few months earlier. Meanwhile, the "safe haven" status of U.S. Treasuries attracted investors and pushed yields lower—the yield of the 10-year Treasury dropped 55 bps from a multi-year high of 3.24% reached in early November to close the year at 2.69%.

Those who espouse a "glass half full" viewpoint point to a number of economic data points in the U.S. to support their view. The unemployment rate remained near a 50-year low at 3.7%, and wages have been growing. As of Nov. 30, average hourly earnings were up 3.2% year-over-year, the most since April 2009. Consumer confidence remains elevated, though measures of future expectations have recently begun to turn downward. Similarly, small businesses continue to be optimistic; the NFIB Small Business Survey remains significantly above its average. And early data suggests that holiday sales were the strongest in six years, according to Mastercard SpendingPulse, which tracks both online and in-store sales. While the consensus for 2019 GDP is down from the 3.4% rate registered in the 3rd quarter, the estimate among Federal Reserve officials for 2019 is 2.3%, far short of a recession.

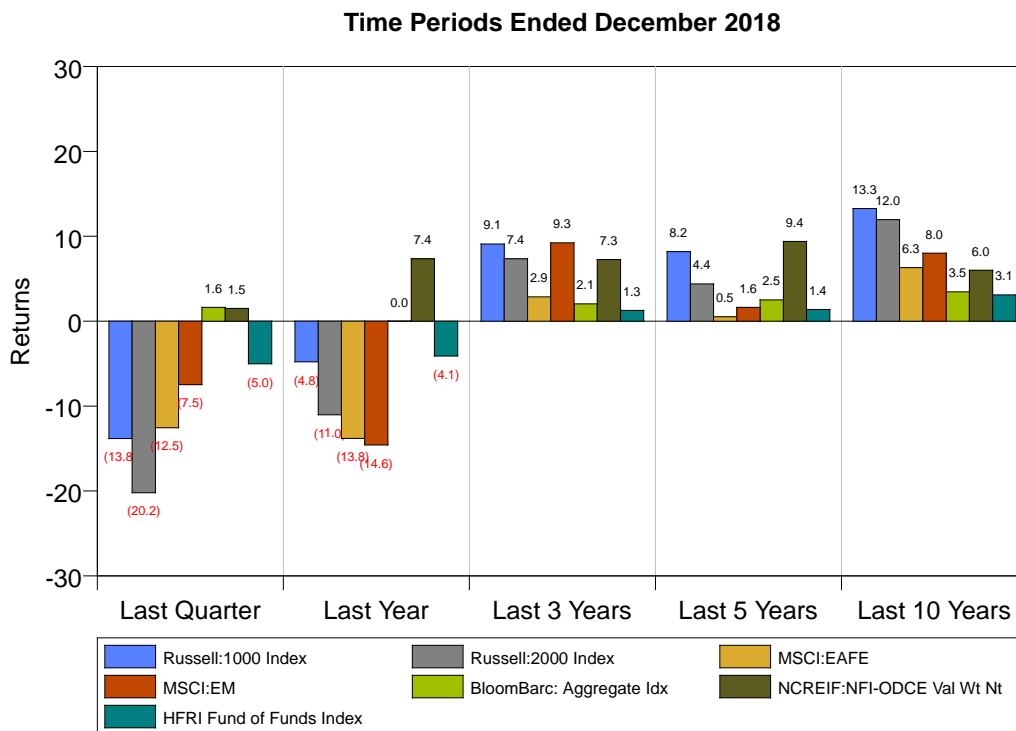
At the same time, shadows have emerged in certain sectors and dampened enthusiasm for 2019 prospects. Thus, those with a "glass half empty" viewpoint harbor worries over tightening monetary policy, the global impact of trade tariffs, and falling oil prices. Specifically, December data revealed a weakening manufacturing picture—the Federal Reserve Bank of Richmond's monthly manufacturing survey unexpectedly fell sharply and marked the fourth district bank factory survey to drop in December. The impact of tariffs has been widely cited as the key driver of weakness in manufacturing. The housing market also appears to have softened. Pending home sales fell to a four-year low as rising mortgage rates and relatively high prices deterred buyers, and spending on building and improvements has also weakened.

Inflation remained benign. The CPI was up 2.2% in November (year-over-year) for both the headline and core statistic. While energy prices are up over the last 12 months, recent declines will be reflected in inflation measures in coming months. The Fed's preferred inflation gauge, the PCE Deflator, rose 1.8% over the trailing year. As widely expected and in spite of political pressure aiming to curb rate hikes, the Federal Open Market Committee (FOMC) voted unanimously to increase its federal funds rate target by 25 bps, bringing it to 2.25%–2.50%. The Fed further indicated that "risks to the economic outlook are roughly balanced," providing no help to the "half full vs half empty" debate. That said, investors took a much more gloomy view – the year-end read of fed funds futures prices indicated a nearly 90% probability of no Fed hikes in 2019, a view that has shifted sharply from just two months ago when futures signaled a 90% likelihood of at least one hike in 2019. The FOMC also reduced its projections for 2019 rate hikes from three to two.

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News from overseas also contributed to investors' slate of worries. Uncertainty over the details of a Brexit deal (or lack thereof), the magnitude of the slowdown in China, and numerous geopolitical worries weighed on markets. The UK faces the prospect of a "no deal" Brexit in March, an event that would likely have severe repercussions for the country. Political and fiscal turmoil in Italy, protests in France, and withdrawal of stimulus measures also weighed on markets. The European Central Bank confirmed that it would discontinue its monthly bond purchases at the end of December 2018 but will continue to reinvest maturities. Euro zone GDP rose just 0.2% in the 3rd quarter (+1.6% year-over-year). Meanwhile, the Japanese economy contracted 0.6% in the 3rd quarter (-2.5% annualized), the most in over four years. Japan was hurt by several natural disasters as well as a decline in exports. China's 3Q GDP post was +1.6% (+6.5% year-over-year), but the impact of trade tariffs appears to be taking a toll; its manufacturing index fell below 50, a level that signals a contraction, and retail sales in November grew at the slowest pace in 15 years.

Fourth Quarter 2018 Market Performance



The 4th quarter saw volatility return with a vengeance, especially in December. The S&P 500 gained/lost more than 1% in a day 10 times in December alone; in the entire year of 2017 this occurred only eight times. The Index fell nearly 20% from its high in only 11 weeks and the VIX closed the year at 25.4, up sharply from prior years but only modestly above the average over the past 12 years. While the economic worries mentioned above played a role, a government shutdown, continued trade rhetoric, and broad-based risk aversion also fueled the sell-off.

For the quarter, the S&P 500 Index fell 13.5%, its worst quarterly result since 3Q2011 and more than erasing its gains for the year (2018: -4.4%). Small cap stocks suffered the most (R2000: -20.2% vs R1000: -13.8%) during the quarter and also underperformed for the full year (R2000: -11.0% vs R1000: -4.8%). Growth stocks also fared the worst in 4Q (R1000 Growth: -15.9%; R1000 Value: -11.7%) but did best for the full year (R1000 Growth: -

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1.5% vs R1000 Value: -8.3%). From a sector perspective, falling oil prices pummeled Energy stocks (-23.8%), the worst sector by a wide margin, while Utilities (+1.4%) was the only sector to produce a positive quarterly result.

Non-U.S. developed markets were down in a similar fashion over the quarter. The MSCI ACWI ex-US lost 11.5%, with most countries posting losses. For the full year, the non-U.S. developed equity markets trailed the U.S. by a significant margin; the ACWI ex-US fell 14.2% and not one of the constituents posted a positive return for the year in U.S. dollar terms. Emerging market performance was mixed; while the MSCI EM Index lost 7.5% during the quarter, a number of countries did well. Brazil (+13.4%), Turkey (+4.8%), and India (+2.5%) fell into that category. Mexico (-18.8%) was the worst performer, and China (-10.7%) and Russia (-9.0%) also underperformed the broad Index. For the full year, the MSCI EM Index (-14.6%) trailed the developed markets by only a small margin. Again, results were mixed with Turkey (-41.4%) on one end and Russia (-0.7%) on the other.

Global fixed income benefited from a tumultuous equity market and concerns over slowing growth. In the U.S., the Bloomberg Barclays US Aggregate Bond rose 1.6% for the quarter, with U.S. Treasuries (Bloomberg Barclays US Treasury: +2.6%) leading the pack. The 10-year U.S. Treasury yield closed the quarter at 2.69%, down sharply from the multi-year high of 3.24% hit in early November. Portions of the yield curve inverted, but the widely watched spread between the 2- and 10-year Treasury note remained positive at 21 bps. TIPS (Bloomberg Barclays US TIPS: -0.4%) sharply underperformed nominal Treasuries on diminished expectations for inflation. Investment grade corporates (Bloomberg Barclays Corporate: -0.2%) underperformed in spite of muted supply as risk appetite faded and worries mounted over rising corporate leverage. Investment grade spreads widened to levels (+153 bps) not seen since July 2016. The high yield corporate bond market (Bloomberg Barclays High Yield: -4.5%) was also down sharply as demand and liquidity evaporated against the volatile equity backdrop. For the first time in 10 years, there was no high yield bond supply for the month of December. High yield corporates underperformed Treasuries by nearly 700 bps for the quarter as the sector's average yield-to-worst approached 8%. Leveraged loans did not escape the carnage and sank 3.5% (S&P LSTA) for the quarter as the sector saw record outflows. Municipal bonds (Bloomberg Barclays Municipal Bond +1.7%) fared reasonably well but could not keep pace with U.S. Treasuries. For the year, the Index rose 1.3%.

Overseas, yields also generally fell but U.S. dollar strength detracted from unhedged non-U.S. returns. The Global Aggregate Index rose 1.2% for the quarter on an unhedged basis and was up 1.7% hedged. The dollar appreciated vs most currencies during the quarter, with the notable exception being the yen. Emerging market debt was a relatively bright spot given the risk-off environment. Local currency emerging market debt, as measured by the JPM GBI-EM Global Diversified Index, gained 2.1%, with notable outperformers being Turkey (+29.8%), Argentina (+16.7%), and Brazil (+11.4%). The U.S. dollar-denominated JPM EMBI Global Diversified Index fell 1.3%, with performance mixed across its 60+ countries.

With the exception of gold (S&P Gold Spot Price Index: +7.1%), liquid real asset investors found few places to hide during the quarter. Commodities indices were off sharply. The Bloomberg Commodity Index lost 9.4% and the S&P GSCI Commodity Index plunged 22.9%; the deviation between the two indices was largely attributable to the plummeting price of oil (down 40% and a much larger allocation within the S&P GSCI Index) from a 4-year peak of \$76/barrel in October to close at \$45/barrel on concerns over both supply and waning demand. Meanwhile, MLPs could not avoid the knock-on effects of lower oil prices (Alerian MLP Index: -17.3%); REITs

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were down 6-7% abroad and in the U.S., and the DJ-Brookfield Infrastructure Index suffered a decline of 6%. TIPS also delivered a negative return as the 10-year breakeven spread narrowed to 1.71% from 2.14% as of 9/30 on reduced expectations for inflation.

Closing Thoughts

Recent volatility is not remarkable from a historical standpoint and could well be a harbinger of 2019 market performance given a wide array of economic, political, and market-related scenarios that are currently vexing investors. That said, 2018 was an unusual year where virtually all asset classes posted negative returns and one that is unlikely to be repeated in 2019. As we have stated in the past, adherence to an appropriate and well-defined asset allocation (including periodic rebalancing) remains the best course of action to manage the path to successful attainment of long term investment goals.

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The Callan Periodic Table of Investment Returns
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2009	2010	2011	2012	2013	2014	2015	2016	2017	1Q 2018	2Q 2018	3Q 2018	4Q 2018	2018
MSCI:EM 78.5%	Russell:2000 Index 26.9%	NCREIF:NFI- ODCE Val Wt Nt 15.0%	MSCI:EM 18.2%	Russell:2000 Index 38.8%	Russell:1000 Index 13.2%	NCREIF:NFI- ODCE Val Wt Nt 14.0%	Russell:2000 Index 21.3%	MSCI:EM 37.3%	Cambridge:PE Idx 2.9%	Russell:2000 Index 7.8%	Russell:1000 Index 7.4%	BC Aggregate 1.6%	NCREIF:NFI- ODCE Val Wt Nt 7.4%
MSCI:EAFE 31.8%	Cambridge:PE Idx 19.2%	BC Aggregate 7.8%	MSCI:EAFE 17.3%	Russell:1000 Index 33.1%	Cambridge:PE Idx 11.9%	Cambridge:PE Idx 8.6%	Russell:1000 Index 12.1%	MSCI:EAFE 25.0%	NCREIF:NFI- ODCE Val Wt Nt 2.0%	Cambridge:PE Idx 4.6%	Russell:2000 Index 3.6%	NCREIF:NFI- ODCE Val Wt Nt 1.5%	BC Aggregate 0.0%
Russell:1000 Index 28.4%	MSCI:EM 18.9%	Cambridge:PE Idx 7.1%	Russell:1000 Index 16.4%	MSCI:EAFE 22.8%	NCREIF:NFI- ODCE Val Wt Nt 11.5%	Russell:1000 Index 0.9%	MSCI:EM 11.2%	Russell:1000 Index 21.7%	MSCI:EM 1.4%	Russell:1000 Index 3.6%	Cambridge:PE Idx 3.4%	HFRI Fund of Funds Index (5.0%)	HFRI Fund of Funds Index (4.1%)
Russell:2000 Index 27.2%	Russell:1000 Index 16.1%	Russell:1000 Index 1.5%	Russell:2000 Index 16.3%	Cambridge:PE Idx 21.2%	BC Aggregate 6.0%	BC Aggregate 0.5%	Cambridge:PE Idx 9.3%	Cambridge:PE Idx 19.5%	HFRI Fund of Funds Index 0.3%	NCREIF:NFI- ODCE Val Wt Nt 1.8%	NCREIF:NFI- ODCE Val Wt Nt 1.9%	MSCI:EM (7.5%)	Russell:1000 Index (4.8%)
Cambridge:PE Idx 17.4%	NCREIF:NFI- ODCE Val Wt Nt 15.3%	Russell:2000 Index (4.2%)	Cambridge:PE Idx 13.7%	NCREIF:NFI- ODCE Val Wt Nt 12.9%	Russell:2000 Index 4.9%	HFRI Fund of Funds Index (0.3%)	NCREIF:NFI- ODCE Val Wt Nt 7.8%	Russell:2000 Index 14.6%	Russell:2000 Index (0.1%)	HFRI Fund of Funds Index 0.5%	MSCI:EAFE 1.4%	MSCI:EAFE (12.5%)	Russell:2000 Index (11.0%)
HFRI Fund of Funds Index 11.5%	MSCI:EAFE 7.8%	HFRI Fund of Funds Index (5.7%)	NCREIF:NFI- ODCE Val Wt Nt 9.8%	HFRI Fund of Funds Index 9.0%	HFRI Fund of Funds Index 3.4%	MSCI:EAFE (0.8%)	BC Aggregate 2.6%	HFRI Fund of Funds Index 7.8%	Russell:1000 Index (0.7%)	BC Aggregate (0.2%)	HFRI Fund of Funds Index 0.2%	Russell:1000 Index (13.8%)	MSCI:EAFE (13.8%)
BC Aggregate 5.9%	BC Aggregate 6.5%	MSCI:EAFE (12.1%)	HFRI Fund of Funds Index 4.8%	BC Aggregate (2.0%)	MSCI:EM (2.2%)	Russell:2000 Index (4.4%)	MSCI:EAFE 1.0%	NCREIF:NFI- ODCE Val Wt Nt 6.7%	BC Aggregate (1.5%)	MSCI:EAFE (1.2%)	BC Aggregate 0.0%	Russell:2000 Index (20.2%)	MSCI:EM (14.6%)
NCREIF:NFI- ODCE Val Wt Nt (30.4%)	HFRI Fund of Funds Index 5.7%	MSCI:EM (18.4%)	BC Aggregate 4.2%	MSCI:EM (2.6%)	MSCI:EAFE (4.9%)	MSCI:EM (14.9%)	HFRI Fund of Funds Index 0.5%	BC Aggregate 3.5%	MSCI:EAFE (1.5%)	MSCI:EM (8.0%)	MSCI:EM (1.1%)	Private Equity Not yet available	Private Equity Not yet available

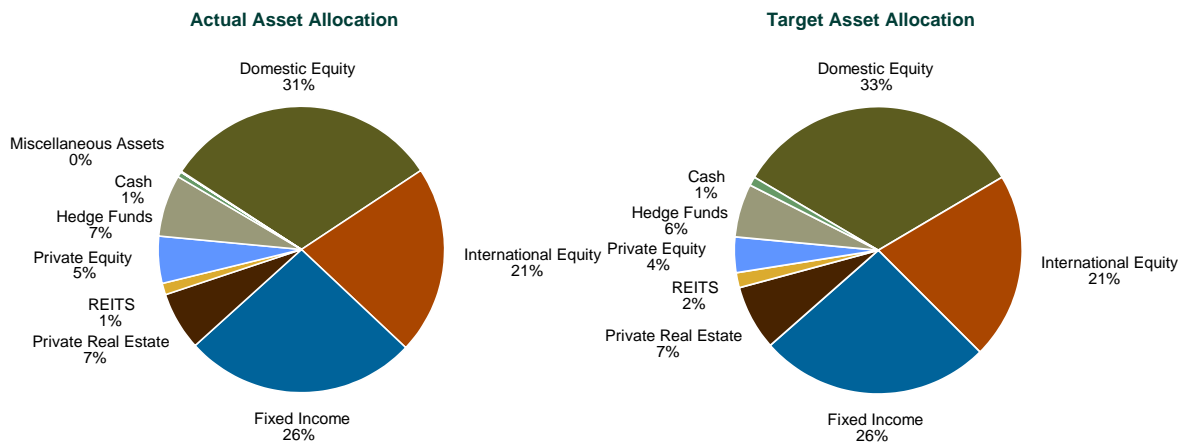
In the fourth quarter of 2018, Fixed Income led all asset classes with the Bloomberg Barclays Aggregate returning 1.6%. U.S. Equity struggled for the quarter (Russell 1000 Index: -13.8% and Russell 2000 Index: -20.2%), underperforming International Equity (MSCI EAFE: -12.5%) and Emerging Markets (MSCI Emerging Markets: -7.5%). Real Estate had a strong fourth quarter and 2018, in total, as illustrated by the NCREIF: NFI-ODCE Value Weighted Net Index returns of 1.5% and 7.4%, respectively.

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Cook County Pension Fund Commentary

Asset Allocation

The Cook County Fund (“Fund”) decreased \$835.9 million in the fourth quarter, from \$10.469 billion to \$9.633 billion. During the quarter, the Fund lost \$794.4 million from investment returns and experienced net outflows of \$41.4 million.



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equity	3,030,293	31.5%	33.0%	(1.5%)	(148,631)
International Equity	2,050,145	21.3%	21.0%	0.3%	27,194
Fixed Income	2,535,421	26.3%	26.0%	0.3%	30,814
Private Real Estate	639,644	6.6%	7.3%	(0.7%)	(65,499)
REITS	126,296	1.3%	1.7%	(0.4%)	(35,540)
Private Equity	511,001	5.3%	4.0%	1.3%	125,677
Hedge Funds	679,085	7.0%	6.0%	1.0%	101,098
Cash	61,206	0.6%	1.0%	(0.4%)	(35,126)
Miscellaneous Assets	13	0.0%	0.0%	0.0%	13
Total	9,633,103	100.0%	100.0%		

Cook County Performance vs. Target

The Cook County Pension Fund generated a -7.63% return in the fourth quarter, underperforming its custom benchmark. Domestic Equity returned -15.55% for the quarter, underperforming the benchmark return of -14.30%. International Equity modestly led its benchmark, while Fixed Income and REITs trailed their respective benchmarks. Private Equity and Private Real Estate had the largest absolute returns for the quarter returning 6.32% and 3.60%, respectively. Asset allocation decisions to Private Equity led to the asset class outperforming its benchmark. At the Fund level, both active management and asset allocation decisions detracted for the quarter.

The Fund has exceeded its custom benchmark over the last three-year period with an annualized return of 6.11%. Long-term, active management in International Equity and Private Real Estate provided the strongest contribution to outperformance while an underweight to Fixed Income also contributed to positive relative performance.

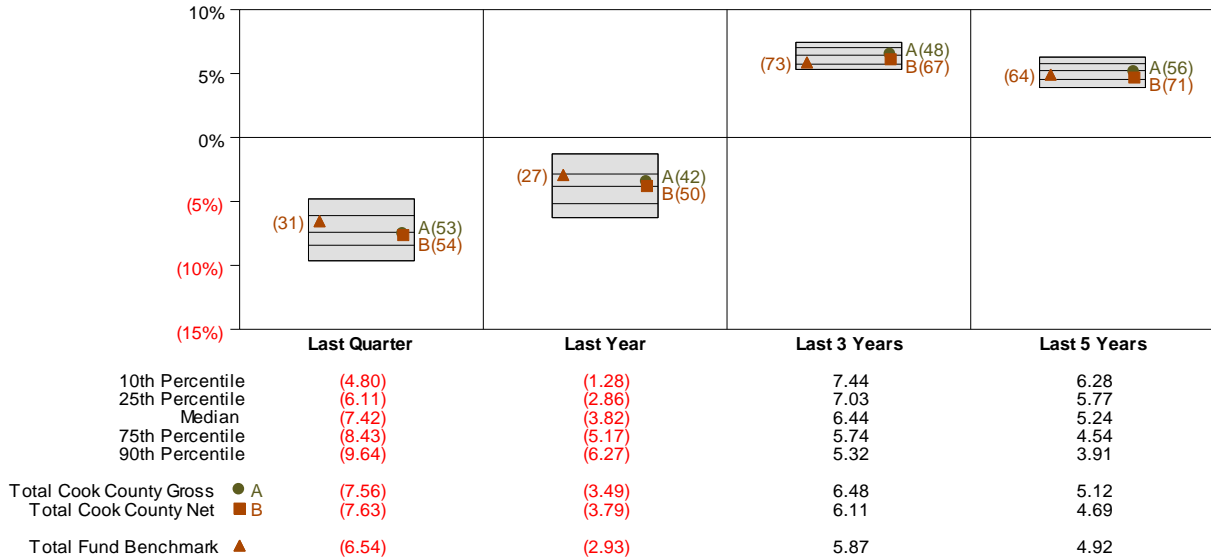
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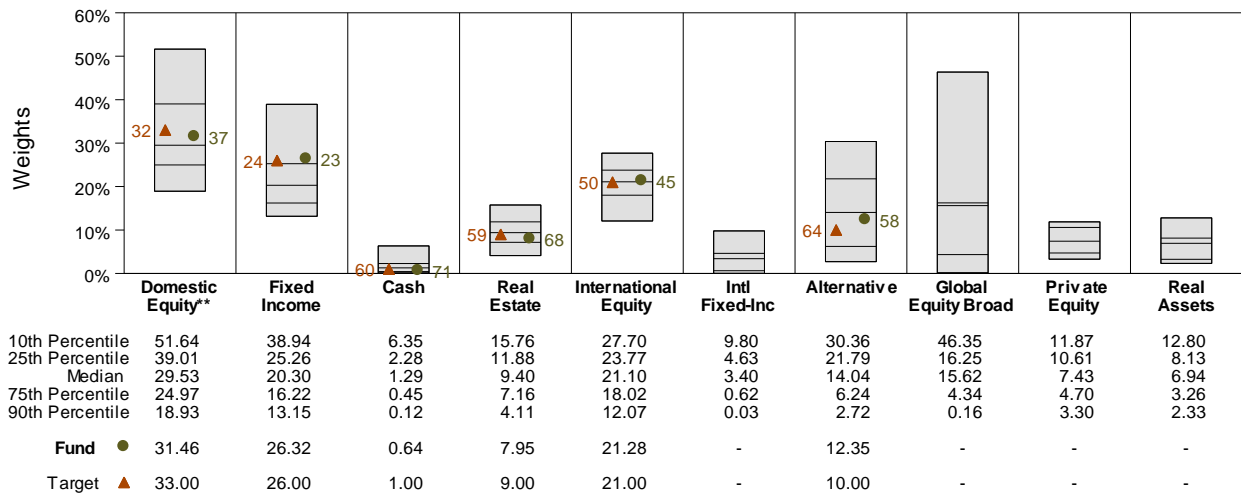
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Table 1.0

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



Asset Class Weights vs Callan Public Fund Sponsor - Large (>1B)



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Table 1.1
Asset Class Performance vs. Target (Net of Fees)

	Market Value \$(Dollars)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Domestic Equity	\$3,030,292,713	31.46%	(15.55%)	(6.78%)	8.56%	6.69%
Domestic Equity Benchmark (2)	-	-	(14.30%)	(5.24%)	8.97%	7.91%
International Equity	\$2,050,145,203	21.28%	(11.74%)	(13.59%)	4.59%	1.52%
International Equity Benchmark (3)	-	-	(11.88%)	(14.76%)	4.25%	0.54%
Fixed Income	\$2,535,420,611	26.32%	1.04%	(0.49%)	2.56%	2.51%
Fixed Income Benchmark (4)	-	-	1.64%	0.01%	2.06%	2.52%
REITS	\$126,296,226	1.31%	(6.15%)	(6.21%)	2.47%	6.72%
NAREIT Equity Index	-	-	(6.32%)	(4.62%)	2.89%	7.90%
**Private Real Estate	\$639,644,379	6.64%	3.60%	8.68%	7.94%	9.83%
NFI-ODCE Value Weight Net	-	-	1.52%	7.36%	7.27%	9.41%
**Private Equity	\$511,000,991	5.30%	6.32%	29.77%	17.83%	7.53%
**Hedge Funds	\$679,084,576	7.05%	(1.43%)	1.75%	3.80%	3.82%
LIBOR + 4%	-	-	1.66%	6.35%	5.45%	4.97%
HFRI Fund of Funds Index	-	-	(5.00%)	(4.08%)	1.29%	1.38%
Cash Equivalents	\$61,205,512	0.64%	0.67%	2.33%	1.39%	0.87%
3-month Treasury Bill	-	-	0.56%	1.87%	1.02%	0.63%
Total Cook County Fund	\$9,633,102,976	100.00%	(7.63%)	(3.79%)	6.11%	4.69%
Total Fund Benchmark (1)	-	-	(6.54%)	(2.93%)	5.87%	4.92%

**Represents trailing data.

Footnotes found on the back page

Table 1.1 illustrates the Cook County Fund's asset class performance versus associated benchmarks. The Cook County Fund's Domestic Equity allocation underperformed the benchmark for the quarter due to detracting active management. International Equity outperformed its benchmark, returning -11.74% for the quarter, and has outperformed the benchmark on a trailing one-, three-, and five-year basis.

During the fourth quarter, the Fixed Income allocation returned 1.04% compared to the 1.64% return of the Bloomberg Barclays Aggregate Index. The Fixed Income allocation has exceeded the benchmark over the trailing three-year period by an annualized 0.50%. For longer periods, active management and an underweight to Fixed Income has been additive.

The Real Estate allocation is comprised of investments in public real estate securities (REITS) and private real estate. Private Real Estate has been one of the stronger performing asset classes over the last three- and five-year periods with returns of 7.94% and 9.83%, respectively. The Private Real Estate allocation contains primarily core investments (income producing real estate) and a small allocation to non-core, closed-end funds. Private Real Estate continued its success in the fourth quarter, returning 3.60% compared to the benchmark return of 1.52%.

REITs returned -6.15% for the fourth quarter, leading its respective benchmark by 17 basis points. The REIT portfolio has trailed its benchmark on both a three- and five-year basis. Active management has contributed to underperformance on a long-term basis.

Presently, the Private Equity program is pursuing a fund-of-funds approach. Private Equity was funded in the fourth quarter and the weight is currently in line with its strategic allocation target. The Private Equity allocation

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posted a strong absolute return for the quarter, returning 6.32%. The Private Equity allocation has performed well on both a short- and long-term basis.

The Hedge Fund allocation trailed its absolute return benchmark for the quarter by 3.09%. In the last year, it returned 1.75%, trailing its benchmark's return of 6.35%. The Hedge Fund allocation has consistently outperformed its industry peers as measured by the HFRI Fund-of-Funds Index.

Notes and Observations

Notes

1. **Total Fund Benchmark (Target):** Blend of asset class benchmarks at policy weights. The Domestic Equity and Private Equity target weights are adjusted each month such that the Private Equity Interim benchmark weight is set to approximate the invested capital. The uninvested capital is allocated to Domestic Equity. This process reflects the practical implementation of non-publicly traded investments.

	Strategic <u>Target</u>	Interim <u>Target</u>
Russell 3000	33.0%	33.0%
MSCI ACWI ex US	21.0	21.0
BloomBarc Aggregate	26.0	26.0
Libor 3 Month + 4.0%	6.0	6.0
Real Estate	9.0	9.0
Private Equity	4.0	4.0
Cash	1.0	1.0
Total Target	100.0%	100.0%

2. **Domestic Equity Benchmark:** Russell 3000. Previously a blend of 17% S&P 500, 7% Russell 2000 Value, 7% Russell Mid Cap Growth, 6% Russell 1000 Growth, and 6% Russell 1000 Value through 9/31/2011.
3. **International Benchmark:** MSCI ACWI ex-US. Previously a blend of 12% MSCI ACWI ex-US, and 3% Global ex US under \$2 billion through 9/30/2011; then 17% MSCI ACWI ex-US and 3% Global ex US under \$2 billion through 12/31/12.
4. **Fixed Income Benchmark:** BloomBarc Aggregate Index. Previously a blend of 25% BloomBarc Aggregate Index, 5% BloomBarc US TIPs Index, and 10% BloomBarc Gov/Credit Intermediate Index through 12/31/2012.