

Callan

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

Performance Summary

December 31, 2022

Ann O'Bradovich
Senior Vice President

John Jackson, CFA
Senior Vice President

**County Employees' and Officers' Annuity & Benefit Fund of Cook County
Performance Evaluation Executive Summary
Fourth Quarter 2022**

Table of Contents

General Market & Economic Conditions	1
Cook County Pension Fund Commentary and Performance	6

County Employees' and Officers' Annuity & Benefit Fund of Cook County Performance Evaluation Executive Summary Fourth Quarter 2022

Macroeconomic Environment

Amidst the Wreckage, Silver Linings are Visible

Markets sank in 2022 as the Fed embarked on an aggressive path of rate hikes to combat unexpectedly high and persistent inflation. Global stock and bond markets posted double-digit losses for the year, with U.S. bonds posting record-breaking calendar year losses and several U.S. stock indices falling the most since 2008. And we would be remiss not to mention the crypto crash, which shrank the value of these digital assets from a high of \$3 trillion in November 2021 to roughly \$800 billion at year-end, according to data from CoinMarketCap. Commodities were a lone bright spot for the global economy in 4Q22, buoyed by soaring energy prices in the first half of the year and metals later in the year.

Given the sharp sell-off in stocks, valuations are more reasonable. The forward P/E ratio for the S&P 500 Index was 16.65x as of year-end versus a 16.82x average over the past 25 years, according to data from JP Morgan. For fixed income investors and savers, the sharp rise in interest rates provides immediate benefits in the form of higher income and much-improved forward-looking returns. Callan's 10-year projection for core U.S. fixed income returns more than doubled from the end of 2021, from 1.75% to 4.25%.

Major Trends in the Global Economy in 4Q22

Headline Consumer Price Index (CPI) was 7.1% (ex food and energy: +6.0%) in November, off its June peak of 9.1%; the Personal Consumption Expenditures (PCE) Index rose 5.5% (Core PCE: +4.7%). These year-over-year (YOY) figures exceed the Federal Reserve's long-run inflation target of 2%, but most CPI components showed smaller gains or declines. Energy and core goods prices fell, while food prices and shelter costs continued to rise. Gas prices dropped from \$5.00/gallon in June to around \$3.20/gallon by year-end. Lagged effects of higher rates, supply chain moderation, and falling home prices indicate that inflation has peaked. However, higher wages, a tight labor market, energy price uncertainty, and increased demand from China pose threats to inflation's downward trajectory.

The Federal Reserve raised its target range for the Fed Funds rate by 0.5% to 4.25% – 4.50% at its December meeting, the highest since 2007. The 2022 cumulative rate hike totaled 4.25%. The Fed has been explicit in its intent to aggressively fight inflation, even if it slows the economy and increases unemployment. The median Fed Funds rate projection from the Fed for year-end 2023 is now 5.1%, up 0.50% from the September projections. The median projection for unemployment rose to 4.6% (from 4.4%) while the projection for real GDP growth fell sharply to 0.5% from 1.2%. A Bloomberg survey of economists showed that 70% expect a recession in the next year, with average growth of 0.3% for the year. Inflation is expected to decrease in the long run according to both markets and the Fed; the "longer-run" median projection from the Fed for the Core PCE Index is 2.0% and the five-year breakeven inflation rate (the difference between nominal and real five-year Treasury yields) was 2.3% as of year-end. Real GDP in 3Q22 was +3.2% (annualized), improving from -0.6% in 2Q. The Conference Board forecasts 0% real growth in 2023, recovering to 1.7% in 2024.

The labor market remained strong despite well-publicized layoffs across the tech industry. Unemployment held steady at 3.7% and payroll growth, while moderating in 4Q, remained robust. Just over 260,000 jobs (non-farm payrolls) were added in November, above expectations, and while down from higher figures earlier in the year it is

County Employees' and Officers' Annuity & Benefit Fund of Cook County
Performance Evaluation Executive Summary
Fourth Quarter 2022

well above the pre-pandemic average of 150,000–200,000. Further, the ratio of job openings to job seekers remained elevated. The Job Openings and Labor Turnover Survey (JOLTS) for November showed that open positions outnumbered available workers by a ratio of 1.7 to 1, down only slightly from October, and higher than expected. Continued labor shortages, however, do pose a risk as higher wages filter through to inflation. Average hourly earnings for nonfarm payrolls were up 5.1% in November YOY.

The battle to bring inflation down is not limited to the United States. Shortly after the Federal Reserve's 0.5% rate hike in mid-December, the European Central Bank (ECB), the Bank of England, and the Swiss National Bank followed suit with 0.5% rate increases of their own. As in the U.S., policymakers recognize that slower economic growth will likely be an outcome; the ECB lowered its forecast for growth for 2023 to 0.5%, down from a previous forecast of 0.9%. Economists in the U.K. expect the country to face one of the worst recessions among the G7 countries, and Kristalina Georgieva, International Monetary Fund director, recently warned that half of the European Union may experience a recession next year.

Global Equities

U.S. stock indices posted positive returns in 4Q as investor sentiment improved, but the YTD results remained dismal with most indices posting double-digit declines. The S&P 500 Index rose 7.6% for the quarter, lowering its YTD loss to 18.1%. Returns were quite mixed across sectors with Energy (+22.8%) being the best and Consumer Discretionary (-10.2%) faring the worst. Value stocks trounced growth for the quarter (Russell 1000 Value: +12.4%; Russell 1000 Growth: +2.2%) and the year (Russell 1000 Value: -7.5%; Russell 1000 Growth: -29.1%). In 4Q, the Growth Index was hurt by significant underperformance from Tesla (-54%) and Amazon (-26%). Looking back three years, growth is only modestly ahead of value (Russell 1000 Value: +6.0%; Russell 1000 Growth: +7.8%). Small cap stocks exhibited the same pattern in 4Q (Russell 2000 Value: +8.4%; Russell 2000 Growth: +4.1%) but value's full year margin is smaller in the small cap space (Russell 2000 Value: -14.5%; Russell 2000 Growth: -26.4%).

Global ex-U.S. markets also participated in the 4Q rally, and currency appreciation vs. the U.S. dollar further bolstered returns. The MSCI ACWI ex USA Index gained 14.3% (Local: +7.8%), reducing its YTD loss to 16.0% (Local: -9.6%). Across developed market countries, gains were broad-based and value outpaced growth, but by a smaller margin than in the U.S. (MSCI ACWI ex USA Value: +15.7%; MSCI ACWI ex USA Growth: +12.9%). Unlike in the U.S., all sectors of the ACWI ex USA Index delivered a positive return in 4Q of 10% or more.

Emerging markets (MSCI Emerging Markets: +9.7%; Local: +6.6%) also rebounded in 4Q, but returns were mixed across countries. While many nations were up double-digits, India (+2.0%) and Brazil (+2.4%) weighed on broad market returns. China (MSCI China: +13.5%) outperformed. Quarterly returns were also mixed across regions: Latin America (+5.7%), Emerging Europe (+43.1%), and Emerging Asia (+10.8%). The 2022 return for the MSCI EM Index was -20.1%.

Global Fixed Income

U.S. fixed income experienced its worst year—ever—in 2022, by a wide margin. The Bloomberg US Aggregate Bond Index sank 13.0%; the next worst calendar year was 1994 when the Aggregate fell 2.9%. The silver lining

County Employees' and Officers' Annuity & Benefit Fund of Cook County
Performance Evaluation Executive Summary
Fourth Quarter 2022

lies in the 4.68% yield-to-worst for the Index, up from 1.75% at the beginning of the year. The yield curve remained inverted at year-end; the 10-year Treasury yield was 3.88% and the 2-year yield was 4.41%. The inversion reflects investor expectations for the economy to slow and an eventual need for the Fed to lower rates. The fourth quarter brought some relief to bond investors as longer rates fell modestly and most “spread” sectors outperformed Treasuries. The Aggregate gained 1.9%. High yield corporates (Bloomberg High Yield Index: +4.2%) were star performers, but this Index was down 11.2% for the year.

While rates across developed markets rose broadly in 2022, changes were mixed in 4Q. Rates fell in the U.K. but rose across most of Europe and in Japan. The Bloomberg Global Aggregate ex USD soared 6.8% (hedged: +0.2%) due largely to weakness in the U.S. dollar. Still, the YTD differential for hedged and unhedged investors is nearly 9% (unhedged: -18.7%; hedged: -9.8%).

Real Assets

Real assets as a group performed well in 4Q. The S&P GSCI Index rose 3.4%; Gold (S&P Gold Spot Price Index: +9.2%), REITs (MSCI US REIT: +5.2%), infrastructure (DJB Global Infrastructure: +9.6%), and TIPS (Bloomberg TIPS: +2.0%) all posted solid returns. Full year results remained poor, however, for most real assets outside of those related to energy. REITs posted the worst returns (MSCI US REIT: -24.5%) while MLPs (Alerian MLP Index: +30.9%) benefited from higher energy prices.

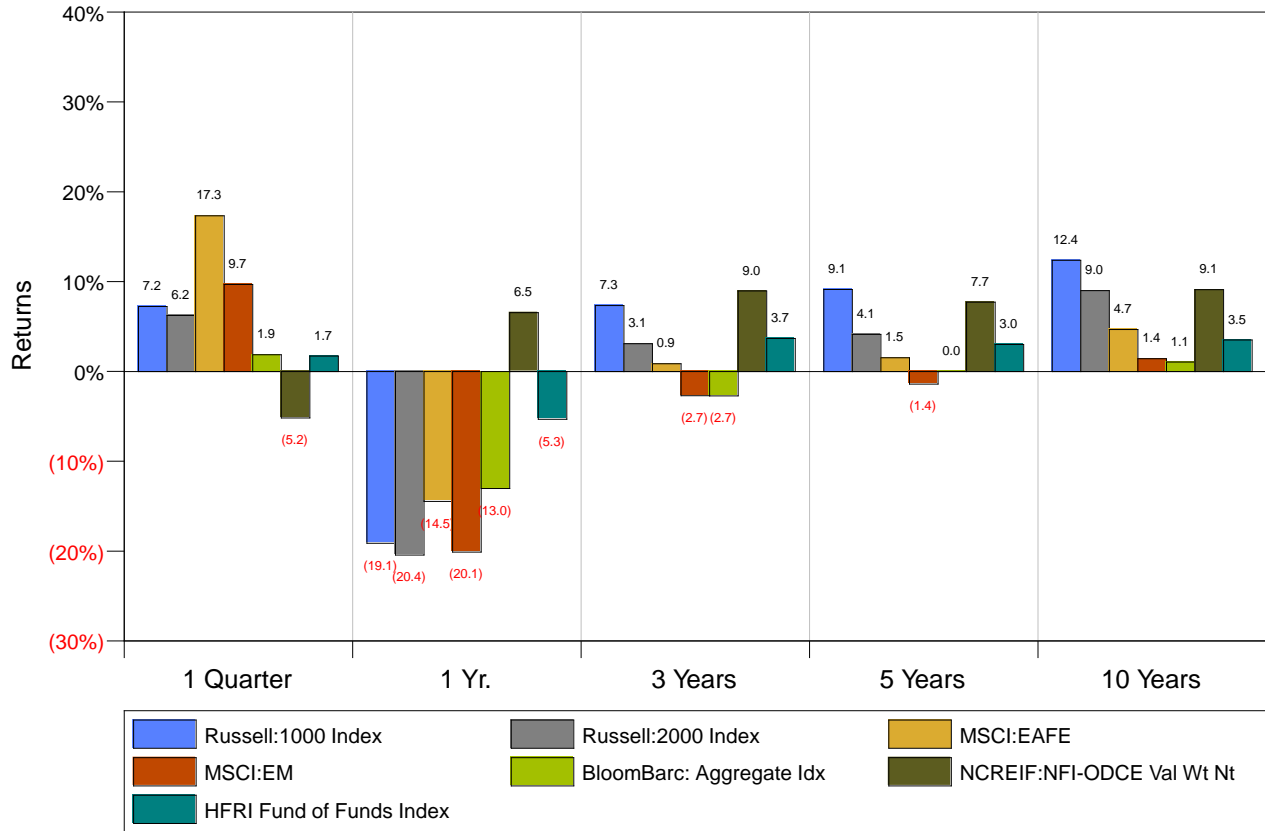
Closing Thoughts

As we enter 2023, uncertainty remains around the degree to which the Fed can navigate a “soft landing” while combatting inflation. Outside of the U.S., a war that shows no signs of ending and China’s path forward as it moves away from its “zero-COVID” policies pose challenges. However, there are a few notable silver linings and reasons for optimism that we choose to highlight to start the new year. Most importantly, valuations in both stock and bond markets have improved. Inflation, while still high, has shown signs of moderating. The labor market remains resilient despite aggressive rate hikes. And China’s reopening, albeit rocky, may lead to an economic rebound and contribute to global growth in 2023.

County Employees' and Officers' Annuity & Benefit Fund of Cook County
Performance Evaluation Executive Summary
Fourth Quarter 2022

Fourth Quarter 2022 Market Performance

Time Periods December 31, 2022



County Employees' and Officers' Annuity & Benefit Fund of Cook County
Performance Evaluation Executive Summary
Fourth Quarter 2022

The Callan Periodic Table of Investment Returns
Fourth Quarter 2022

2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
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%	Cambrdg:GI Pvt Eq & Cred 10.0%	Russell:1000 Index 31.4%	Cambrdg:GI Pvt Eq & Cred 29.8%	Cambrdg:GI Pvt Eq & Cred 36.9%	NCREIF:NFI-ODCE Val Wt Nt 6.5%
Russell:1000 Index 33.1%	Cambrdg:GI Pvt Eq & Cred 11.8%	Cambrdg:GI Pvt Eq & Cred 8.7%	Russell:1000 Index 12.1%	MSCI:EAFE 25.0%	NCREIF:NFI-ODCE Val Wt Nt 7.4%	Russell:2000 Index 25.5%	Russell:1000 Index 21.0%	Russell:1000 Index 26.5%	HFRI Fund of Funds Index (5.3%)
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%	BC Aggregate 0.0%	MSCI:EAFE 22.0%	Russell:2000 Index 20.0%	NCREIF:NFI-ODCE Val Wt Nt 21.0%	Cambrdg:GI Pvt Eq & Cred (7.8%)
Cambrdg:GI Pvt Eq & Cred 21.1%	BC Aggregate 6.0%	BC Aggregate 0.5%	Cambrdg:GI Pvt Eq & Cred 9.5%	Cambrdg:GI Pvt Eq & Cred 19.9%	HFRI Fund of Funds Index (4.0%)	MSCI:EM 18.4%	MSCI:EM 18.3%	Russell:2000 Index 14.8%	BC Aggregate (13.0%)
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:1000 Index (4.8%)	Cambrdg:GI Pvt Eq & Cred 16.2%	HFRI Fund of Funds Index 10.9%	MSCI:EAFE 11.3%	MSCI:EAFE (14.5%)
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:2000 Index (11.0%)	BC Aggregate 8.7%	MSCI:EAFE 7.8%	HFRI Fund of Funds Index 6.2%	Russell:1000 Index (19.1%)
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%	MSCI:EAFE (13.8%)	HFRI Fund of Funds Index 8.4%	BC Aggregate 7.5%	BC Aggregate (1.5%)	MSCI:EM (20.1%)
MSCI:EM (2.6%)	MSCI:EAFE (4.9%)	MSCI:EM (14.9%)	HFRI Fund of Funds Index 0.5%	BC Aggregate 3.5%	MSCI:EM (14.6%)	NCREIF:NFI-ODCE Val Wt Nt 4.4%	NCREIF:NFI-ODCE Val Wt Nt 0.3%	MSCI:EM (2.5%)	Russell:2000 Index (20.4%)

For the 2022 calendar year, Real Estate was the top performing asset class (NCREIF: NFI-ODCE Value Weighted Net Index: +6.5%), leading Hedge Funds (HFRI Fund of Funds Index: -5.3%) and Private Equity & Credit (Cambridge Glb Pvt Eq & Credit -7.8%). Fixed Income (Bloomberg Aggregate Index: -13.0%) finished with its worst calendar year in history. Large Caps (Russell: 1000 Index: -19.1%) led Small Caps (Russell: 2000 Index: -20.4%) for the year. Developed International Equities (MSCI: EAFE Index: -13.0%) outperformed Emerging Markets (MSCI: EM: -20.1%).

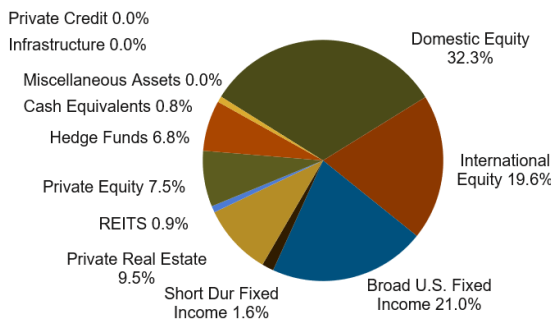
County Employees' and Officers' Annuity & Benefit Fund of Cook County
Performance Evaluation Executive Summary
Fourth Quarter 2022

Cook County Pension Fund Commentary

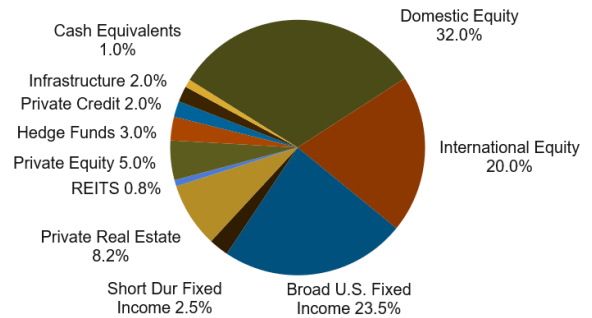
Asset Allocation

The Cook County Fund (“Fund”) ended 2022 with a market value of \$11.8 billion, a \$523 million increase from the 3rd quarter ending value of \$11.3 billion. The Fund experienced investment returns of \$613.4 million and net outflows of -\$90.7 million in the 4th quarter . The Long-Term Target was established in June 2022; however, the benchmark will be modified in accordance with the actual implementation of the new asset classes (private infrastructure and credit). The Hedge Fund allocation is overweighted versus its long-term target by 3.8%, but a redemption request has been submitted. All other allocations are within their target ranges. The Hedge Fund overweight is offset by the underweights to Infrastructure and Private Credit, which have not yet been implemented.

Actual Asset Allocation



Long-Term Target Asset Allocation



Asset Class	\$000s Actual	Weight Actual	Min Target	Long-Term Target	Max Target	Percent Difference	\$000s Difference
Domestic Equity	3,818,167	32.3%	28.0%	32.0%	37.0%	0.3%	36,179
International Equity	2,312,487	19.6%	16.0%	20.0%	25.0%	(0.4%)	(51,256)
Broad U.S. Fixed Income	2,487,642	21.0%	19.5%	23.5%	27.4%	(2.5%)	(289,756)
Short Dur Fixed Income	188,605	1.6%	0.0%	2.5%	5.0%	(0.9%)	(106,863)
Private Real Estate	1,125,970	9.5%	5.0%	8.2%	13.0%	1.3%	156,835
REITS	102,401	0.9%	0.0%	0.8%	2.6%	0.1%	7,851
Private Equity	885,059	7.5%	1.0%	5.0%	9.0%	2.5%	294,123
Hedge Funds	803,796	6.8%	0.0%	3.0%	6.0%	3.8%	449,235
Private Credit	-	0.0%	0.0%	2.0%	4.0%	(2.0%)	(236,374)
Infrastructure	-	0.0%	0.0%	2.0%	4.0%	(2.0%)	(236,374)
Cash Equivalents	94,584	0.8%	0.0%	1.0%	5.0%	(0.2%)	(23,603)
Miscellaneous Assets	3	0.0%	0.0%	0.0%	0.0%	0.0%	3
Total	11,818,714	100.0%		100.0%		0.0%	-

County Employees' and Officers' Annuity & Benefit Fund of Cook County
Performance Evaluation Executive Summary
Fourth Quarter 2022

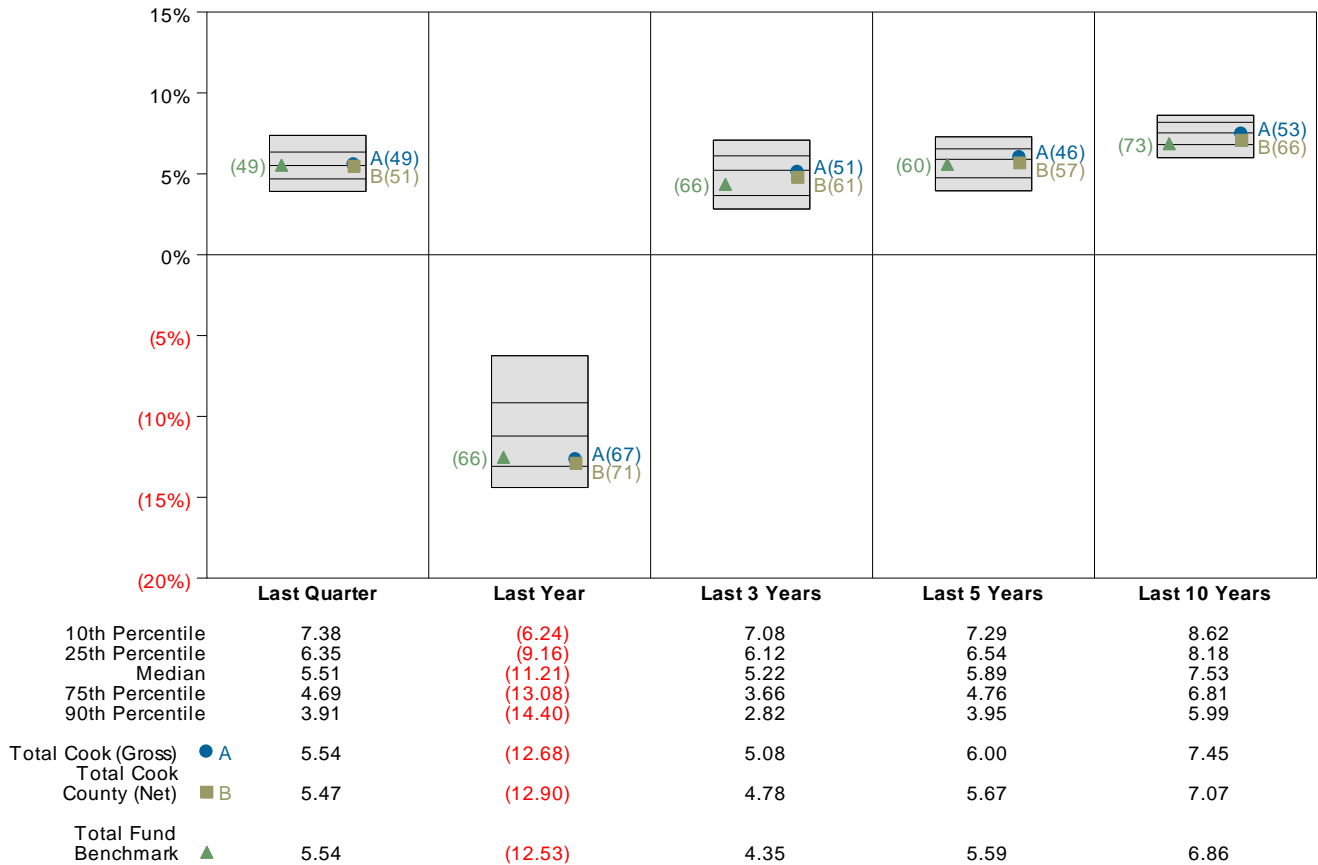
Cook County Performance vs. Target

The Total Fund returned 5.47% (Net of Fees) in the fourth quarter versus the benchmark return of 5.54%. Active management in Domestic Equity, International Equity, Broad US Fixed Income, and Private Real Estate added value. Overweights to Private Real Estate and Private Equity, and an underweight to International Equity posed the largest headwind to relative performance.

Over the trailing year, the Total Fund fell 12.90% and underperformed the benchmark return of -12.53%. Over the trailing three-, five-, and ten-year periods, the Fund has outperformed its benchmark on an annualized basis and ranks near the median of peers (GOF basis).

Table 1.0

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



County Employees' and Officers' Annuity & Benefit Fund of Cook County
Performance Evaluation Executive Summary
Fourth Quarter 2022

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	Last 10 Years
Domestic Equity	\$3,818,166,513	32.31%	7.92%	(18.04%)	6.99%	8.29%	11.55%
Domestic Equity Benchmark (2)	-	-	7.18%	(19.21%)	7.07%	8.79%	12.13%
International Equity	\$2,312,486,963	19.57%	14.51%	(17.20%)	(0.91%)	0.56%	4.26%
International Equity Benchmark (3)	-	-	14.15%	(16.58%)	0.20%	0.85%	3.78%
Fixed Income	\$2,676,246,859	22.64%	2.26%	(13.32%)	(2.71%)	(0.16%)	1.01%
Fixed Income Benchmark (4)	-	-	1.78%	(12.10%)	(2.47%)	0.17%	1.13%
REITS	\$102,401,110	0.87%	2.49%	(27.17%)	0.61%	3.99%	6.16%
NAREIT Equity Index	-	-	5.24%	(24.37%)	(0.11%)	3.68%	6.53%
**Private Real Estate	\$1,125,970,400	9.53%	(3.22%)	9.40%	12.37%	10.31%	10.22%
NFI-ODCE Value Weight Net	-	-	(5.17%)	6.55%	8.97%	7.72%	9.11%
**Private Equity	\$885,058,624	7.49%	(1.23%)	(8.74%)	30.20%	28.60%	15.08%
**Hedge Funds	\$803,796,395	6.80%	1.33%	2.10%	3.97%	3.99%	4.61%
LIBOR + 4%	-	-	2.09%	6.25%	5.06%	5.59%	5.07%
HFRI Fund of Funds Index (5)	-	-	(0.17%)	(5.20%)	4.17%	3.15%	3.60%
Cash Equivalents	\$94,583,967	0.80%	0.93%	1.61%	0.83%	1.47%	0.95%
3-month Treasury Bill	-	-	0.84%	1.46%	0.72%	1.26%	0.76%
Total Cook County Fund	\$11,818,713,677	100.00%	5.47%	(12.90%)	4.78%	5.67%	7.07%
Total Fund Benchmark (1)	-	-	5.54%	(12.53%)	4.35%	5.59%	6.86%

**Represents trailing data.

Footnotes found on the back page

Table 1.1 illustrates the Cook County Fund's asset class performance against associated benchmarks. The Cook County Fund's Domestic Equity allocation achieved a quarterly return of 7.92%, surpassing the benchmark return of 7.18%. Over the past year, Domestic Equity (-18.04%) outperformed the benchmark return (-19.21%). However, Domestic Equity trailed the benchmark over longer periods.

The International Equity allocation delivered a quarterly return of 14.51%, exceeding the benchmark return of 14.15%. For the last year, International Equity (-17.20%) lagged behind the benchmark return (-16.58%). The International Equity composite has outperformed the benchmark over the last ten-year period.

The Fixed Income allocation returned 2.26% for the quarter, outperforming the benchmark return of 1.78%. For the last year, the Fixed Income allocation (-13.32%) underperformed the benchmark return (-12.10%). Fixed Income also lagged the benchmark over the trailing three-, five-, and ten-year periods.

The Real Estate allocation is comprised of investments in public real estate securities (REITS) and Private Real Estate. Private Real Estate contains primarily core investments (income producing real estate) and a small allocation to non-core, closed-end funds. Private Real Estate returned -3.22% for the quarter, surpassing the benchmark return of -5.17%. For the year, Private Real Estate returned 9.40%, outperforming the benchmark return of 6.55%. The allocation has consistently outperformed across all periods shown in the table above.

REITS achieved a quarterly return of 2.49%, while the benchmark return was 5.24%. Over the year, REITS (-27.17%) underperformed the benchmark return (-24.37%). However, the REITS allocation led the benchmark over the last three- and five-year periods.

The Private Equity allocation declined for a third consecutive quarter, returning -1.23%. Over the past year, the asset class fell 8.74%, but Private Equity has posted double-digit returns over longer periods.

Hedge Funds (+1.33%) underperformed its absolute return benchmark (+2.09%) for the quarter. The Hedge Fund allocation has also trailed its benchmark over longer periods shown above.

County Employees' and Officers' Annuity & Benefit Fund of Cook County
Performance Evaluation Executive Summary
Fourth Quarter 2022

Benchmarks

1. **Total Fund Benchmark (Target):** Blend of asset class benchmarks at policy weights. The Long-Term Target was established in June 2022; however, the benchmark will be modified in accordance with the actual implementation. This process reflects the practical implementation of non-publicly traded investments.

	Long Term <u>Target</u>	4Q 2022 <u>Target</u>
Russell 3000	32.0%	33.0%
MSCI ACWI ex US IMI	20.0	21.0
Bloomberg Aggregate	23.4	23.4
Blmbg Gov/Cred 1-3yr	2.6	2.6
Libor 3 Month + 4.0%	3.0	6.0
Real Estate*	9.0	9.0
Private Equity**	5.0	4.0
Private Credit	2.0	0.0
Infrastructure	2.0	0.0
Cash (90 day T-Bill)	1.0	1.0
Total Target	100.0%	100.0%

2. **Domestic Equity Benchmark:** Russell 3000 Index; Prior to 9/31/2011 Blend of 40% S&P 500, 16% Russell 2000 Value, 16% Russell Mid Cap Growth, 14% Russell 1000 Growth, and 14% Russell 1000 Value.
3. **International Benchmark:** MSCI ACWI ex-US IMI Index; Prior to 12/31/2017 MSCI ACWI ex-US Index; Prior to 12/31/2012 Blend of 85% MSCI ACWI ex-US, 15% Global ex US under \$2 billion; Prior to 9/30/2011 Blend of 80% MSCI ACWI ex-US, 20% Global ex US under \$2 billion
4. **Fixed Income Benchmark:** Blend of 90% Bloomberg Aggregate Index and 10% Bloomberg Gov/Credit 1-3 Year Index; Prior to 12/31/2019 Bloomberg Aggregate Index; Prior to 12/31/2012 Blend of 62.5% Bloomberg Aggregate Index, 12.5% Bloomberg US TIPs Index, and 25% Bloomberg Gov/Credit Intermediate Index.
5. **HFRI Fund of Funds Composite Index:** Returns are lagged 1 month.

***Real Estate Benchmark:** Returns are calculated by weighting the benchmark return for each asset class (i.e. Private RE and Public RE). The Private RE benchmark is the NCREIF NFI-ODCE Value Weight Net Index and the Public RE benchmark is the FTSE NAREIT Equity Index.

****Private Equity Benchmark:** is set equal to actual returns.