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
Third 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
Third Quarter 2022

Macroeconomic Environment

Mayhem Continues in the Capital Markets

Capital markets abhor uncertainty, and we have seen nothing but uncertainty this year. The Russian invasion of Ukraine threw expectations for an orderly transition from the pandemic era out the window. Kinks in supply chains were expected to be smoothed, energy prices and inflation in general were projected to calm and subside after surging in 2021, and market participants anticipated an orderly transition from zero interest rate policy to a more "normal" yield curve. All these were key components to a consensus view that U.S. and global economies, and their capital markets, would slow gradually toward trend growth and reach the proverbial "Goldilocks" scenario: not too hot, not too cold. Like a soft landing for the Fed, the Goldilocks scenario is aspirational and has never really been achieved.

Instead, inflation is burning out of control. Global energy markets are surging and volatile. Geopolitical uncertainty is moving toward a level some experts liken to the period after World War II, when the United States and the Soviet Union were trying to figure out a new world order. This time, China represents a third axis of power with another agenda. Stock and bond markets around the globe are down together for three quarters in a row through September 2022. The S&P 500 plunged 24% year-to-date, and developed and emerging market equities are down a similar amount, punished by the strong dollar. While painful, such a drawdown in the equity markets is expected periodically. What is not expected is the 14.6% loss in the bond market (Bloomberg Aggregate) at the same time. The nine-month returns for the Aggregate are the worst in its history. There is no place to hide for a diversified portfolio.

The losses in both the bond and stock markets this year are primarily due to the sharp rise in interest rates. The lack of any yield cushion at the start of 2022 makes the rise in rates particularly painful for bonds. Rates have risen this much in the past, but the last time was during the regime change for monetary policy in the early 1980s. The giant capital losses were cushioned by yields as high as 14%. We began this year with the yield on the Aggregate at 1.75%; by Sept. 30, it reached 4.75%. With a duration of over six years for the Aggregate, the capital loss implied by such a rate rise is close to 20%. The rising yield collected offsets some of this capital loss.

The Fed announced plans to raise rates aggressively in 2022, targeting a Fed Funds rate of 3.25% to 3.5% by December, but the market didn't really believe it until the Russian invasion in February. Then investors fully priced in the Fed's plans all at once. During the long period of zero interest rate policy over the past decade, we often mused that the best way to return to normal in the bond market would be to rip the "low-rate bandage" off and move at once to the new normal. Get the pain over with, absorb the capital loss, and start collecting the higher yield. Be careful what you wish for.

Still, U.S. Economy Stays Healthy

Underneath this mayhem in the capital markets, the U.S. economy has been strong, with a particularly robust job market and healthy consumer spending. The economy added 263,000 jobs in September, down from the torrid pace set earlier this year, but for the quarter nonfarm employment increased by more than 1.1 million jobs. Even more importantly, we finally reached the pre-pandemic level for total employment in August 2022. Personal income growth has recovered from the withdrawal of pandemic support (transfer payments), rising 5.9% in 2Q and 5.5% in 3Q. Disposable income (after tax) rose by similar rates. However, inflation has taken a toll this year; real disposable income is 4% to 5% lower than the same month one year ago starting in May 2022, while real consumption expenditures are 6% to 7% higher.

Inflation reports continue to scare. CPI-U, known as headline inflation, it is still up 8.2% year-over-year through September. The energy component is up 19.8%, food is up 11.2%. Core CPI, which removes the volatile food and energy sectors, is up 6.6%. This 12-month rise in core CPI is the highest since 1982. The only good news is that after hitting 9.1% year-over-year in June, month-to-month changes in the CPI are essentially flat in July, August, and September. The year-over-year changes are influenced by the base effect, as prices really began to rise in early 2021, but were still depressed. The Fed's preferred measure of inflation, PCE, is up 6.2% through September, and core PCE is up 5.1%, both year-over-year measures. Both measures of PCE have flattened month-to-month since early summer.

Traditional measures of economic health are still out of whack as they often were during the pandemic. GDP is the biggest puzzle so far this year. GDP fell 1.6% in 1Q and another 0.6% in 2Q, while at the same time we generated more than 2 million new jobs. The GDP declines were deemed to be anomalies driven by inventory swings and net exports, not underlying economic weakness. Third quarter GDP grew by 2.6%, with strong contributions from exports, business fixed investment (equipment and intellectual property), and a resumption of government spending. However, fourth quarter GDP is now projected to fall. After all the mayhem, GDP growth will likely end up being positive in 2022—but it is projected to be negative in 2023, signaling more challenges ahead and the potential for a recession to extend through 2Q23.

Global Equities

The S&P 500 Index sank 4.9% in 3Q22 and is down 23.9% year-to-date (YTD). Returns were quite mixed across sectors with Energy (+2.3%) and Consumer Discretionary (+4.4%) posting positive results and Communication Services (-12.7%) and Real Estate (-11.0%) delivering the lowest returns. Somewhat counterintuitively, value underperformed growth (Russell 1000 Value: -5.6%; Russell 1000 Growth: -3.6%) but value remains ahead on a YTD basis (Russell 1000 Value: -17.8%; Russell 1000 Growth: -30.7%). Small caps outperformed large (Russell 2000: -2.2%; Russell 1000: -4.6%), narrowing the YTD differential (Russell 2000: -25.1%; Russell 1000: -24.6%).

Global ex-U.S. markets fared worse, driven mostly by U.S. dollar strength. The MSCI ACWI ex USA Index fell 9.9% (Local: -4.9%), bringing its YTD loss to 26.5% (Local: -16.2%). The U.S. dollar continued to strengthen, benefiting from its "safe haven" status as well as attractive interest rates relative to other developed markets. The yen and euro lost 6% versus the greenback and the British pound fell 8%. Across developed market countries, losses were broad-based with several posting double-digit declines. As in the U.S., value (MSCI ACWI ex USA Value: -10.4%) underperformed growth (MSCI ACWI ex USA Growth: -9.4%). Unlike the U.S., no sectors delivered a positive return in 3Q.

Emerging markets (MSCI Emerging Markets: -11.6%; Local: -8.2%) underperformed developed markets for the quarter but returns were mixed across countries. China (MSCI China: -22.5%) was one of the worst performers while several countries posted positive returns; two of the best were India (+6.5%) and Brazil (+8.5%). Returns were also mixed across regions: Latin America (+3.6%), Emerging Europe (-12.4%), and Emerging Asia (-14.0%).

Global Fixed Income

The 10-year U.S. Treasury briefly touched an intra-quarter high of 4.0% in late September, the highest since 2008, before closing the quarter at 3.83%. At quarter-end, the yield curve was inverted by about 40 bps with the 10-year at 3.8% and the 2-year at 4.2%. The Bloomberg US Aggregate Bond Index fell 4.8% in 3Q, bringing its YTD loss to a startling 14.6%, a historic worst for the first nine months of a year. Notably, the sharp sell-off has eroded gains over the past 10 years; the Aggregate's 10-year annualized gain is now a muted 0.9%.

Mortgages and corporates underperformed U.S. Treasuries, with mortgage-backed securities doing especially poorly, underperforming like-duration U.S. Treasuries by 160 bps on poor technicals and rising rates. The yield-to-worst of the Aggregate Index climbed to 4.75%, up sharply from 1.75% at the beginning of the year. TIPS (Bloomberg TIPS: -5.1%; -13.6% YTD) were not immune from the sell-off. High yield corporates (Bloomberg High Yield: -0.6%) fared better, but the Index is down a similar 14.7% YTD. The yield-to-worst was 9.7% as of quarter-end.

Interest rates also rose overseas and the U.S. dollar continued to strengthen, hurting unhedged fixed income returns. The Bloomberg Global Aggregate ex USD fell 8.8% (hedged: -2.2%). The YTD differential for hedged and unhedged investors is 14 percentage points (unhedged: -23.9%; hedged: -9.9%). Losses were broad-based but the U.K. fell the most sharply; 13.2% in local currency terms and 20.2% in US$ in response to announced plans for massive fiscal stimulus in the form of unfunded tax cuts. Emerging markets performed similarly, with the JPM EMBI Global Diversified down 4.6% and the local currency JPM GBI-EM Global Diversified off 4.7%. Negative returns were broad-based across countries for both indices, with Brazil being a notable exception. Brazil was up 0.5% in the EMBI Global Diversified (debt issued in U.S. dollars) and up 1.8% in the GBI-EM Global Diversified (issued in local currency).

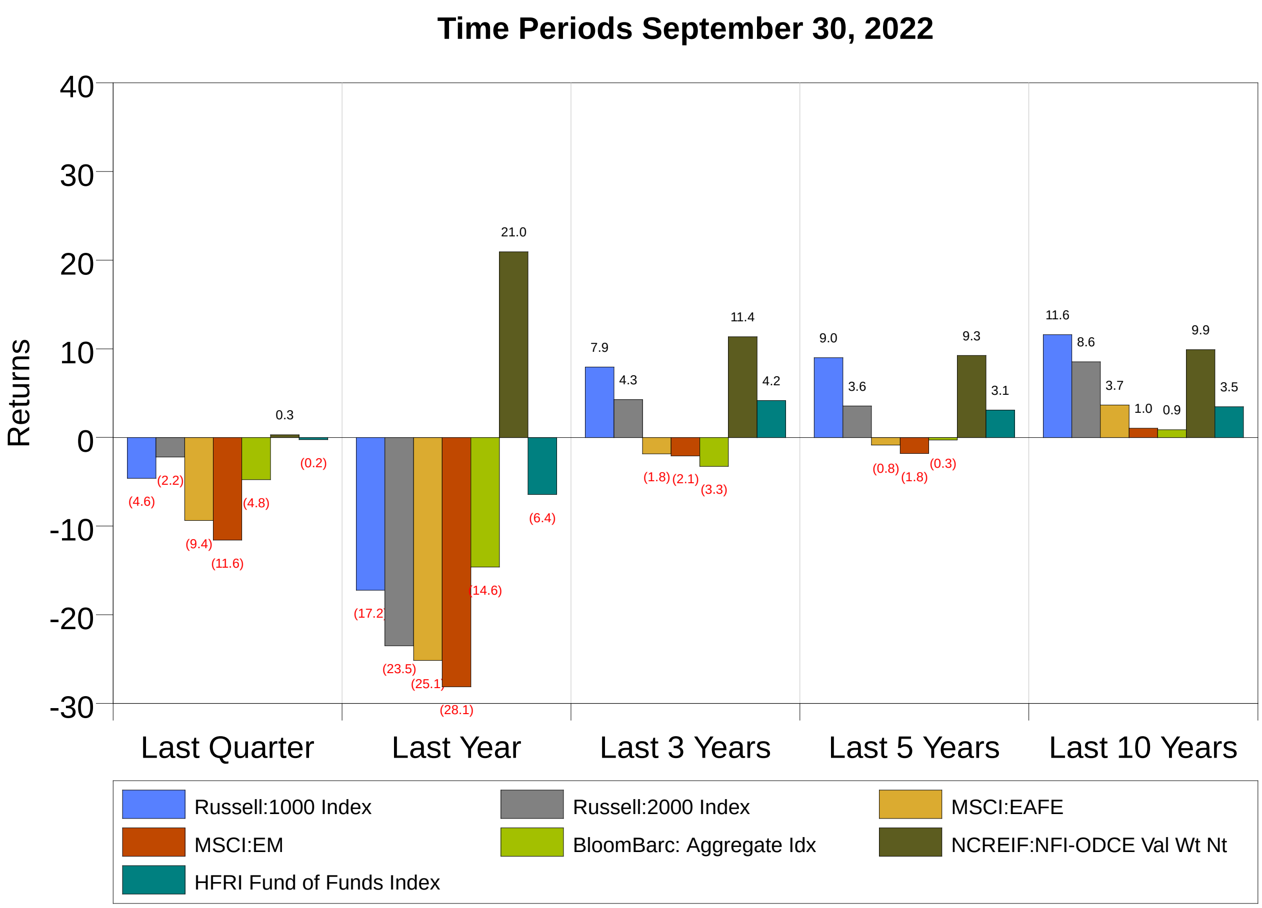
Real Assets

Real assets as a group posted negative returns in 3Q. Commodity prices, especially metals and oil, declined on concerns over slowing global growth; the S&P GSCI Index fell 10.3%. WTI Crude closed the quarter at $79/barrel, down more than 20% from 2Q. Gold (S&P Gold Spot Price Index: -7.5%), listed infrastructure (DJB Global Infrastructure: -1.1%), REITs (MSCI US REIT: -10.0%), and TIPS (Bloomberg TIPS: -5.1%) declined.

Closing Thoughts

Markets have been both punishing and humbling in 2022, and the ability of central banks to dampen high and widespread inflation without causing recessions remains a key question for investors. The war in Ukraine and its ultimate implications also weighs heavily. Stock and bond markets have undergone significant corrections, and both represent much better forward-looking opportunities than we have seen in some time, but we expect volatility to continue to be a key theme given significant tail risks. As always, Callan continues to advise adherence to a disciplined investment process that includes a well-defined long-term asset allocation policy.

Third Quarter 2022 Market Performance



The Callan Periodic Table of Investment Returns
Third Quarter 2022

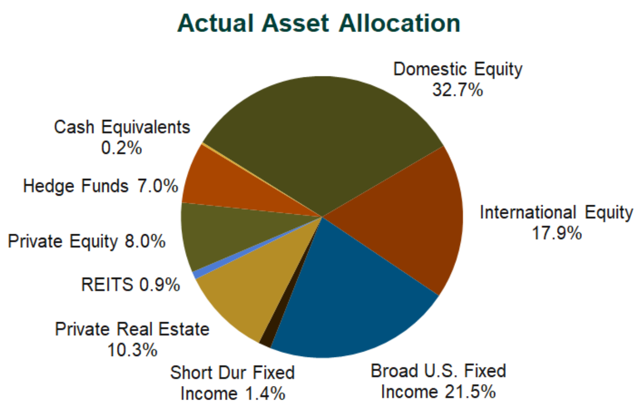
2013	2014	2015	2016	2017	2018	2019	2020	2021	3 Qtrs. 2022
Russell:2000 Index **38.8%**	Russell:1000 Index **13.2%**	NCREIF:NFI-ODCE Val Wt Nt **14.0%**	Russell:2000 Index **21.3%**	MSCI:EM **37.3%**	Cambrdg:Gl Private Equity **10.0%**	Russell:1000 Index **31.4%**	Cambrdg:Gl Private Equity **29.5%**	Cambrdg:Gl Private Equity **36.6%**	NCREIF:NFI-ODCE Val Wt Nt **12.4%**
Russell:1000 Index **33.1%**	Cambrdg:Gl Private Equity **11.8%**	Cambrdg:Gl Private Equity **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 (6.8%)
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%**	BC Aggregate **(14.6%)**
Cambrdg:Gl Private Equity **21.1%**	BC Aggregate **6.0%**	BC Aggregate **0.5%**	Cambrdg:Gl Private Equity **9.5%**	Cambrdg:Gl Private Equity **19.9%**	HFRI Fund of Funds Index (4.0%)	MSCI:EM **18.4%**	MSCI:EM **18.3%**	Russell:2000 Index **14.8%**	Russell:1000 Index **(24.6%)**
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:Gl Private Equity **16.2%**	HFRI Fund of Funds Index 10.9%	MSCI:EAFE **11.3%**	Russell:2000 Index **(25.1%)**
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%	MSCI:EAFE **(27.1%)**
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 **(27.2%)**
MSCI:EM **(2.6%)**	MSCI:EAFE **(4.9%)**	MSCI:EM **(14.9%)**	HFRI Fund of Funds Index 0.5%	BC Aggregate **3.5%**	MSCI:EM **(14.6%)**	NCREIF:NFI-ODCE Val Wt Nt **4.4%**	NCREIF:NFI-ODCE Val Wt Nt **0.3%**	MSCI:EM **(2.5%)**	**PE Idx Not Yet Reported**

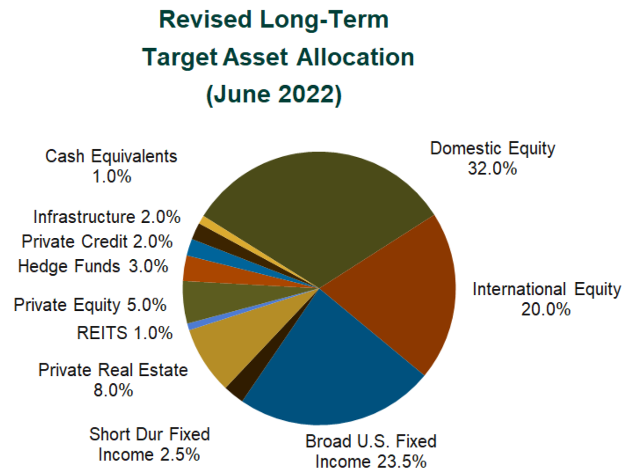
Through the third quarter of 2022, Real Estate was the top performing asset class (NCREIF: NFI-ODCE Value Weighted Net Index: +12.4%), leading Hedge Funds (HFRI Fund of Funds Index: -6.8%). Fixed Income (Bloomberg Aggregate Index: -14.6%) finished with its worst nine-month start to a year in history. Large Caps (Russell: 1000 Index: -24.6%) lead Small Caps (Russell: 2000 Index: -25.1%) year to date. Developed International Equities (MSCI: EAFE Index: -27.1%) performed in line with Emerging Markets (MSCI: EM: -27.2%).

Cook County Pension Fund Commentary

Asset Allocation

The Cook County Fund ("Fund") ended September with a market value of $11.3 billion, a $716 million decline from the 2nd quarter ending value of $12.0 billion. The Fund experienced investment returns of -$564 million and outflows of -$153 million in the 3rd quarter. Trustees approved a revised Long-term policy at the June Board 2022 meeting; however, the implementation of this policy is expected to occur in 2023 when investment staff is in place and manager searches are completed for new asset classes (private infrastructure and credit). The Total Fund benchmark will remain based on prior target allocation until the new allocation is implemented. The Hedge Fund allocation is overweighted versus its long-term target by 4.0%. 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 been implemented.





Asset Class	Weight Actual	Min Target	Long-Term Target	Max Target	Percent Difference	$000s Difference
Domestic Equity	32.7%	28.0%	32.0%	36.0%	0.7%	76,358
International Equity	17.9%	16.0%	20.0%	24.0%	(2.1%)	(241,050)
Broad U.S. Fixed Income	21.5%	19.5%	23.5%	27.5%	(2.0%)	(221,278)
Short Dur Fixed Income	1.4%	0.0%	2.5%	5.0%	(1.1%)	(119,651)
Private Real Estate	10.3%	5.0%	8.0%	11.0%	2.3%	261,447
REITS	0.9%	0.0%	1.0%	2.0%	(0.1%)	(13,196)
Private Equity	8.0%	1.0%	5.0%	9.0%	3.0%	342,529
Hedge Funds	7.0%	0.0%	3.0%	6.0%	4.0%	454,380
Private Credit	0.0%	0.0%	2.0%	4.0%	(2.0%)	(225,920)
Infrastructure	0.0%	0.0%	2.0%	4.0%	(2.0%)	(225,920)
Cash Equivalents	0.2%	0.0%	1.0%	5.0%	(0.8%)	(87,762)
Miscellaneous Assets	0.0%	0.0%	0.0%	0.0%	0.0%	64
Total	100.0%		100.0%		0.0%	-

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Third Quarter 2022

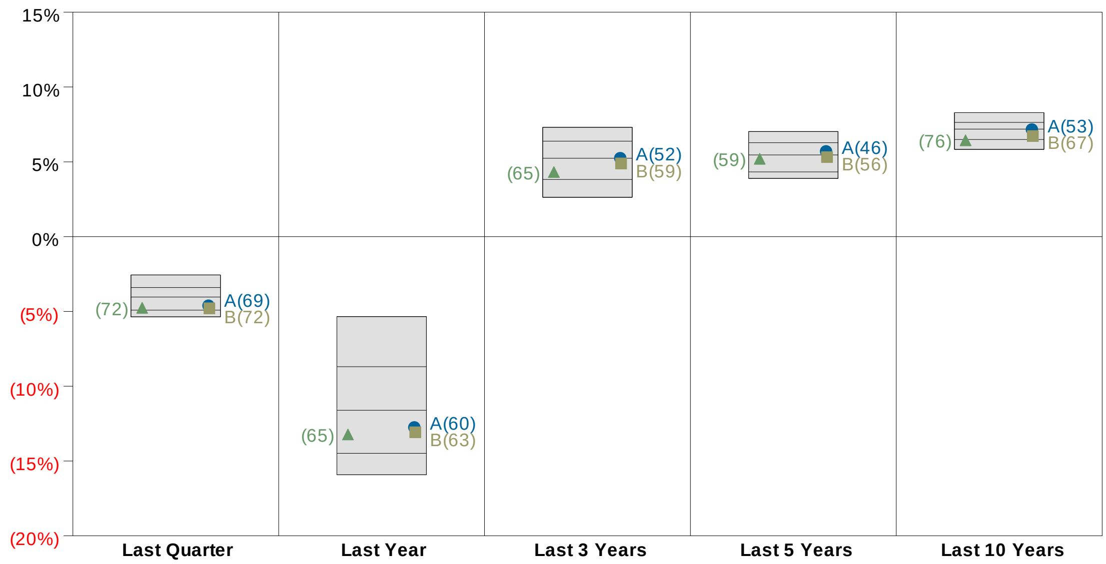
Cook County Performance vs. Target

The Cook County Pension Fund returned -4.79% (Net of Fees) for the quarter, in line with its custom benchmark return of -4.76%. Active management in Private Real Estate added the most value for the quarter, while Fixed Income, International Equity, and Domestic Equity managers detracted overall.

Over the trailing year, the Fund decreased 13.07% but finished ahead of its benchmark return of -13.22%. 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). An overweight to Private Equity and active management in Private Real Estate have been the largest contributors to outperformance over longer time periods.

Table 1.0

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



	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(2.56)	(5.35)	7.31	7.03	8.29
25th Percentile	(3.40)	(8.69)	6.38	6.28	7.63
Median	(4.04)	(11.60)	5.24	5.46	7.19
75th Percentile	(4.92)	(14.48)	3.82	4.33	6.49
90th Percentile	(5.36)	(15.92)	2.62	3.89	5.83
Total Cook (Gross) ● A	(4.67)	(12.81)	5.18	5.64	7.10
Total Cook County (Net) ■ B	(4.79)	(13.07)	4.89	5.31	6.72
Total Fund Benchmark ▲	(4.76)	(13.22)	4.32	5.20	6.44

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	**$3,691,085,702**	**32.68%**	**(4.86%)**	**(16.91%)**	**7.32%**	**7.84%**	**10.84%**
Domestic Equity Benchmark (2)	-	-	(4.46%)	(17.63%)	7.70%	8.62%	11.39%
International Equity	**$2,018,155,072**	**17.87%**	**(10.24%)**	**(27.42%)**	**(2.51%)**	**(1.14%)**	**3.45%**
International Equity Benchmark (3)	-	-	(9.69%)	(25.72%)	(1.27%)	(0.82%)	2.99%
Fixed Income	**$2,596,037,819**	**22.98%**	**(5.03%)**	**(15.29%)**	**(3.26%)**	**(0.57%)**	**0.85%**
Fixed Income Benchmark (4)	-	-	(4.42%)	(13.68%)	(2.98%)	(0.10%)	0.99%
REITS	**$99,763,589**	**0.88%**	**(10.13%)**	**(17.19%)**	**(0.44%)**	**3.93%**	**6.09%**
NAREIT Equity Index	-	-	(9.94%)	(16.41%)	(2.05%)	2.93%	6.26%
****Private Real Estate**	**$1,165,128,697**	**10.31%**	**4.74%**	**30.22%**	**14.40%**	**11.70%**	**10.81%**
NFI-ODCE Value Weight Net	-	-	0.31%	20.96%	11.38%	9.26%	9.91%
****Private Equity**	**$907,330,070**	**8.03%**	**(6.49%)**	**2.56%**	**34.09%**	**29.55%**	**15.24%**
****Hedge Funds**	**$793,261,486**	**7.02%**	**1.77%**	**1.63%**	**4.02%**	**3.98%**	**4.69%**
LIBOR + 4%	-	-	1.78%	5.45%	4.90%	5.45%	4.98%
HFRI Fund of Funds Index (5)	-	-	(0.00%)	(4.80%)	4.58%	3.52%	3.73%
Cash Equivalents	**$25,197,956**	**0.22%**	**0.49%**	**0.89%**	**0.69%**	**1.37%**	**0.86%**
3-month Treasury Bill	-	-	0.46%	0.62%	0.59%	1.15%	0.68%
Total Cook County Fund	**$11,296,024,234**	**100.00%**	**(4.79%)**	**(13.07%)**	**4.89%**	**5.31%**	**6.72%**
Total Fund Benchmark (1)	-	-	(4.76%)	(13.22%)	4.32%	5.20%	6.44%

**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 fell 4.86% in the quarter and trailed its benchmark return of -4.46%. Domestic Equity (-16.91%) outperformed its benchmark (-17.63%) over the last year, but trails the benchmark over longer periods.

The International Equity allocation (-10.24%) lagged its benchmark return of -9.69% for the quarter, and trails the benchmark over the last one-, three-, and five-year periods. International Equity has outperformed the benchmark over the last ten-year period on an annualized basis.

The Fixed Income allocation posted a -5.03% return for the quarter, trailing the benchmark return of -4.42%. Underperformance in recent periods has weighed on longer-term results, as Fixed Income lags the benchmark over the trailing one- , three-, five-, and ten-year periods.

The Real Estate allocation is comprised of investments in public real estate securities (REITS) and Private Real Estate. 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 (+4.74%) outperformed the benchmark return of 0.31% for the quarter, and the allocation has outperformed over all periods shown in the table above.

REITS returned -10.13% in the quarter versus the benchmark return of -9.94%. Despite underperformance over the last year, the REITS allocation leads the benchmark over the last three- and five-year periods.

The Private Equity allocation declined for a second consecutive quarter, returning -6.49%. The asset class generated a 2.56% return over the last year and has posted double-digit returns over longer periods.

Hedge Funds (+1.77%) finished in line with its absolute return benchmark for the quarter. Over longer periods shown above, the Hedge Fund allocation trails its benchmark.

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.

Benchmarks	Long-Term Target	3Q 2022
Russell 3000	32.0	33.0
MSCI ACWI ex US IMI	20.0	21.0
Bloomberg Aggregate	26.0	26.0
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.