Subcommittee on Investment
205 East 42nd Street, 7th Floor (Room 0725)
Mar 6, 2023 5:30 PM - 6:30 PM EST

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BOARD OF TRUSTEES
THE CITY UNIVERSITY OF NEW YORK

SUBCOMMITTEE ON INVESTMENT — MINUTES OF THE MEETING NOVEMBER 14, 2022

The meeting was called to order by Committee Chair William C. Thompson, Jr. at 5:05 p.m.

The following people were present:

Committee Members:
Hon. William C. Thompson, Jr., Chair
Hon. Fernando Ferrer, Vice Chair
Hon. Kevin D. Kim
Hon. Sandra Wilkin (left @ 5:35 p.m.)

Faculty Member:
Prof. Ned Benton, faculty alternate

COP Liaison:
President Jennifer J. Raab

Trustee Staff:
Senior Advisor to the Chancellor and Secretary of the Board Gayle M. Horwitz
General Counsel and Senior Vice Chancellor Derek Davis

University Staff:
Executive Vice Chancellor and Chief Operating Officer Hector Batista
Interim Vice Chancellor and Chief Financial Officer Christina Chiappa
Vice Chancellor Doriane K. Gloria
University Executive Director Matthew Manfredi
Executive Director and Chief Procurement Officer Martin Sturla

The agenda items were considered and acted upon in the following order:

I. ACTION ITEMS:

A. APPROVAL OF THE MINUTES OF THE MEETING OF APRIL 25, 2022. Moved by Committee Chair Thompson, Jr. and seconded by Committee Vice Chair Fernando Ferrer, the minutes were unanimously approved as submitted.

B. POLICY CALENDAR:

1. Approval of extension of the Outsourced Chief Investment Officer contract with Meketa Fiduciary Management LLC. Committee Chair Thompson, Jr. requested the Committee's approval to authorize the extension of the Outsourced Chief Investment Officer contract with Meketa Fiduciary Management LLC or Meketa.

   Committee Chair Thompson, Jr. noted, "On February 3, 2017, Meketa was selected as the Outsourced Chief Investment Officer (OCIO) to provide investment management services for the University's Long-Term Investment Pool for a five (5) year term effective on October 1, 2017. The current contract expired on September 30, 2022. The OCIO advises the University on investment policy, asset allocation strategy, and manager selection and monitors the managers' performance, prepares regular reports on the portfolio's performance, and performs other ad hoc services. The current Asset Allocation, which focused on enhancing the diversification of the assets of the Investment Portfolio, was approved in 2018. Given the time required to transition to the new Board of Trustees approved Asset Allocation, and the volatility of the market, the University is seeking to extend the contract with Meketa for up to an additional five (5) years."

   A discussion about the contract extension agreement was followed, including contract term.

Committee Chair Thompson, Jr. made a motion to approve the item with an amendment to the 5-year contract extension agreement period to reflect a period of 3 years plus two (1) year options. Vice Chairperson Sandra Wilkin seconded said motion, and following discussion, the amended item was unanimously approved for submission to the Board.

2. Authorize Contracts with CapFinancial Partners, LLC d/b/a CAPTRUST Financial Advisors to Provide Investment Advisory Services for Retirement Plans of The City University of New York. Committee Chair Thompson, Jr. requested the Committee's approval to authorize contracts with CapFinancial Partners, LLC d/b/a CAPTRUST Financial Advisors to provide investment advisory services for retirement plans of The City University of New York.

   Committee Chair Thompson, Jr. noted, "The Board of Trustees established an Investment Policy Statement in 2014 establishing, among other things, guidelines for the University's management of the City of New York Optional Retirement Program and The City University of New York Tax Deferred Annuity Plan (collectively, the "Plans"). In accordance with the guidelines established under the Investment Policy Statement, the University utilizes an Investment Advisor to provide guidance and advisement on the selection, monitoring, and termination of investment options offered by the Plans. The University's current contracts for these services is scheduled to expire in January 2023. The University issued a Request for Proposals on February 7, 2022, to procure the services and selected CapFinancial Partners as the most responsive firm to provide the services required under the RFP. The contract is for a period of five years at a cost not exceed $518,363."

   Moved by Committee Chair Thompson, Jr. and seconded by Committee Vice Chair Ferrer, and following discussion, the item was unanimously approved for submission to the Board.

Committee Chair Thompson, Jr. moved to go into Executive Session at 5:11 p.m. The motion was seconded by Trustee Kevin Kim.

CONVENING OF EXECUTIVE SESSION:
Committee Chair Thompson, Jr. called for an Executive Session pursuant to Section 105h, of the New York State Open Meetings Law. The Committee met in Executive Session from 5:15 p.m. to 5:55 p.m.

Committee Chair Thompson, Jr. moved to adjourn the meeting. The motion was seconded by Trustee Kim and the meeting was adjourned at 5:55 p.m.

Board of Trustees of The City University of New York

RESOLUTION TO
Approve the FY 2024 The City University of New York's Investment Portfolio Spending Rate

March 6, 2023

WHEREAS, The City University of New York (the "University")'s policies and procedures with respect to spending from its Investment Portfolio ("Portfolio") shall comply with the New York Prudent Management of Institutional Funds Act ("NYPMIFA"); and

WHEREAS, To ensure compliance with NYPMIFA, the funds in the University's Portfolio are categorized into groups of similarly situated funds according to purpose; and

WHEREAS, Decisions with respect to spending from the Portfolio shall be made by the Board of Trustees of the City University of New York (the "Board of Trustees") after review; and

WHEREAS, In making this determination, the Board of Trustees, has acted in good faith and with the care that an ordinarily prudent person in a like position would exercise under similar circumstances; and

WHEREAS, To preserve the long-term value of the Portfolio, it has been the University's practice to keep spending from the Portfolio at or below 5% of the Portfolio's average market value; and

WHEREAS, While the market remains volatile in 2023, the Portfolio has accumulated surpluses from previous years that have been unspent; and

WHEREAS, The spending rate is determined based on the average market value of the Portfolio for the immediately preceding 60 months, which includes periods of volatility; and

WHEREAS, The University's Portfolio is managed to provide a steady and reliable source of funding over the long term; and

WHEREAS, University management will closely monitor the performance of the Portfolio; and

WHEREAS, If the Portfolio's performance becomes a concern, as outlined in the University's Investment Policy, the Board of Trustees may meet to reconsider and, if so determined, alter the spending rate decision.

NOW, THEREFORE, BE IT

RESOLVED, That the Board of Trustees of the City University of New York has determined, in accordance with the University's Investment Policy, that it is prudent and appropriate to establish a portfolio spending rate of 4% for the funds in the Portfolio for the fiscal year ending June 30, 2024.

EXPLANATION: The University's Investment Portfolio is a pooled investment vehicle for multiple individual accounts that include both endowed and non-endowed funds. The Portfolio consists of funds received by the University for its general purposes, funds received by the University for the benefit of specific Colleges, and funds belonging to one or more related entities, including but not limited to, the College Foundations that have chosen to invest in the Portfolio.

In making this spending rate determination, the Board of Trustees Subcommittee on Investments has reviewed the categories and the composition of each group to ensure funds are properly classified. It has deliberated on the prudence of the spending rate for each of the categories based upon the eight prudence factors mandated by NYPMIFA, before making its recommendation to the Board of Trustees for fiscal year 2024.

2024

CUNY INVESTMENT POOL FY2024 SPENDING DELIBERATIONS

Subcommittee on Investments (March 6, 2023)

AGENDA

- NYPMIFA
- 8 Prudence Factors
- FY2022 NACUBO Endowment Study Summary
- Historical Returns and Spending
- Spending Rate Recommendation

New York Prudent Management of Institutional Funds Act (NYPMIFA)

Governs the management and investment of funds held by not-for-profit corporations and other institutions.

Three major aspects:

1. standards governing the investment of "institutional funds,"
2. **standards governing the appropriation of "endowment funds," a sub-class of institutional funds,** and
3. standards for modifying donor-imposed restrictions on the use and investment of institutional funds.

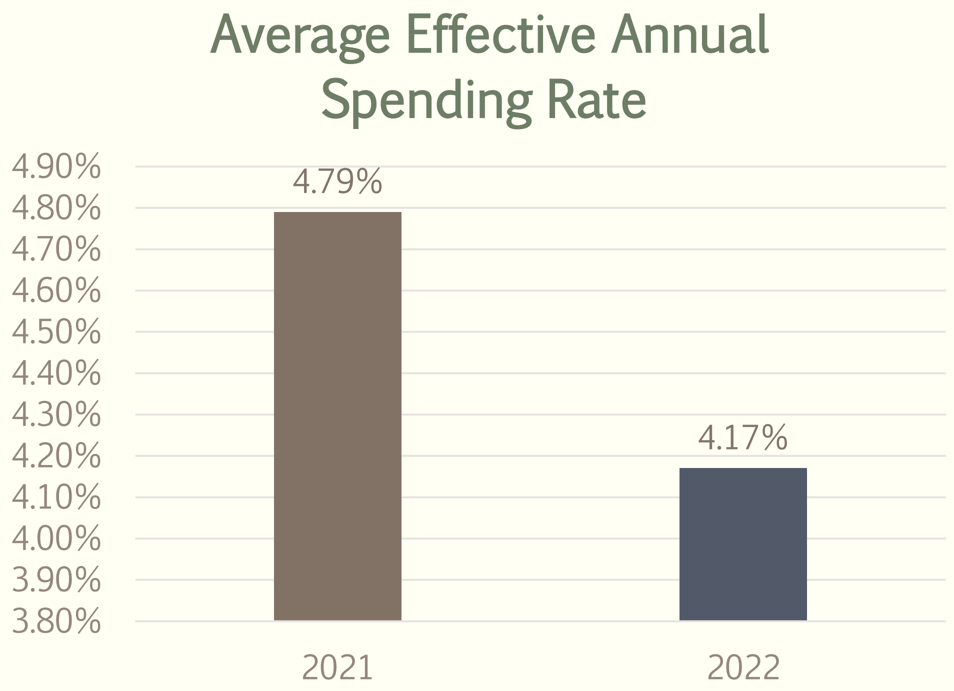
8 Prudence Factors

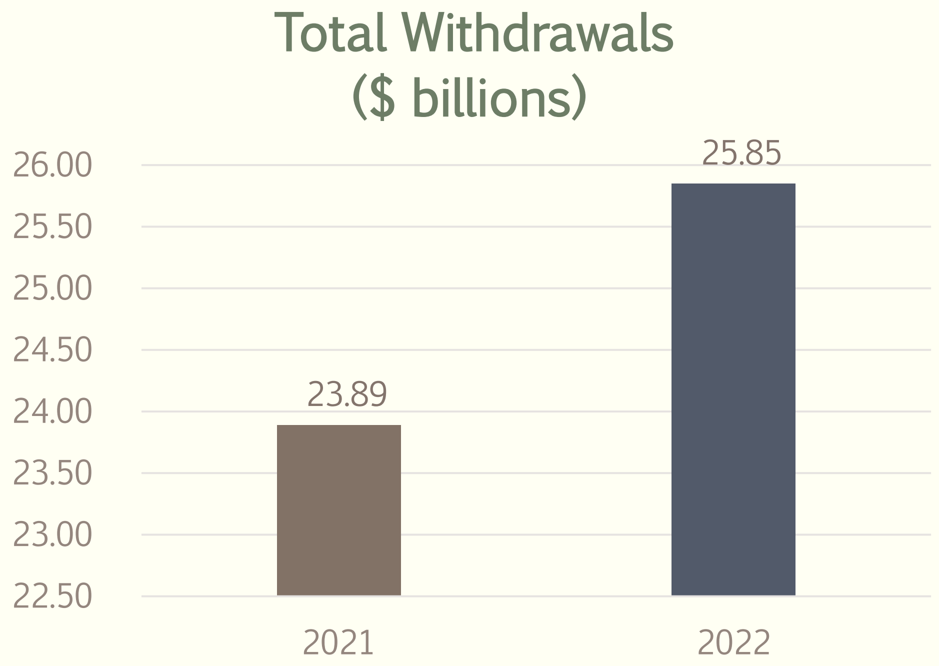
1. Duration & Preservation of the Endowment Fund
2. Purposes of the Institution & Endowment Fund
3. General Economic Conditions
4. Possible Effects of Inflation/Deflation
5. Expected Total Return from Income and Appreciation
6. Other Resources of the Institution
7. Alternatives to Expenditure of the Endowment Fund
8. The CUNY Investment Policy

FY2022 NACUBO Endowment Study Summary

Higher Education Endowments See Decline in Returns and Values but Boost Overall Spending

- Total spending increases despite decline in effective spending rates

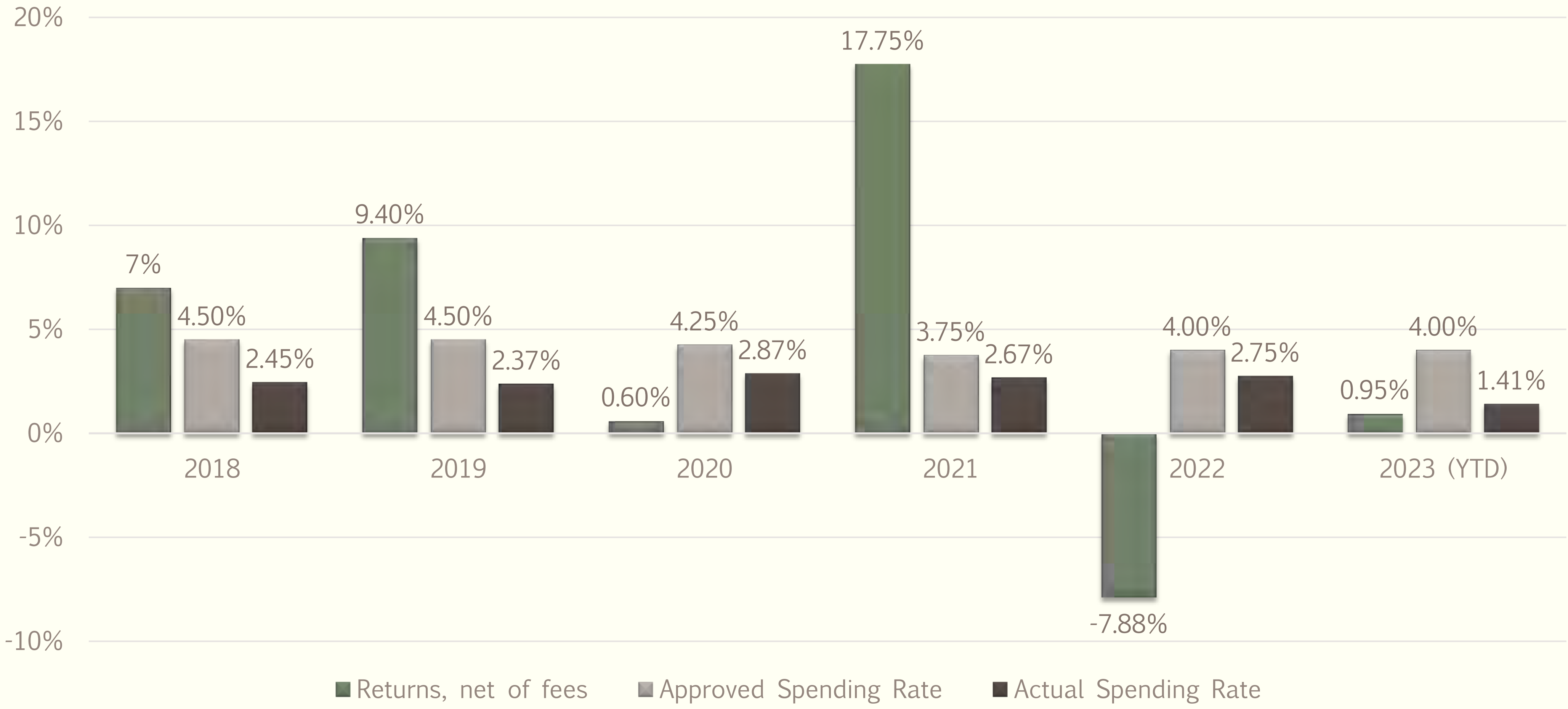




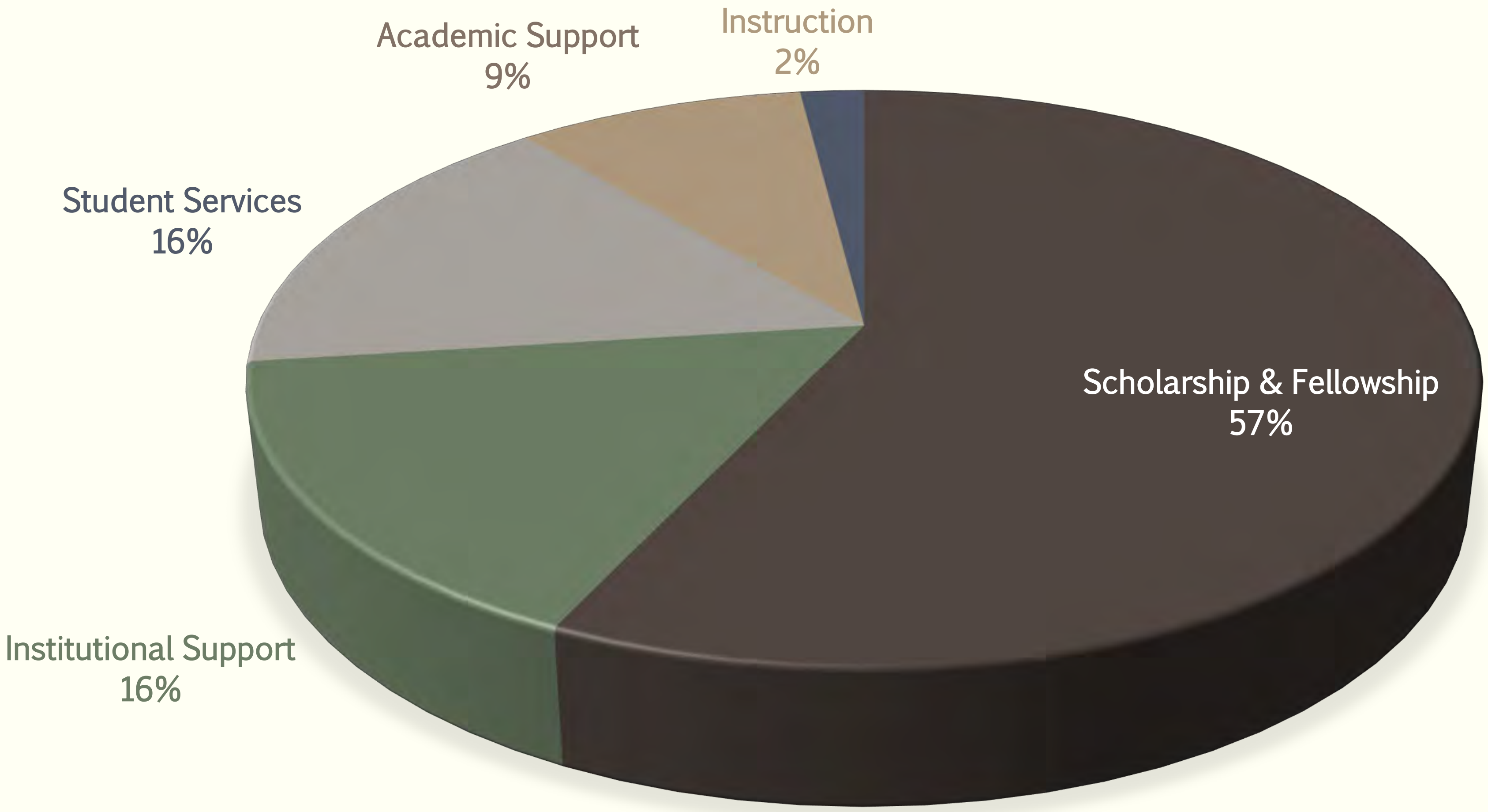
2022 NACUBO Endowment Study Summary (continued)

- Overall Spending Increases, With Emphasis on Student Financial Aid
- Values Decline, for Smallest Endowments in Particular
  - Market value of largest cohort decline by 3.8%, while the average decline for the smaller cohort was 9.6%
  - Larger Endowments continue to favor Private Markets which explain the relative outperformance.
- Returns Drop, Reflecting Fiscal Year's Turbulent Second Half
  - Tale of two markets, with positive economic tailwinds driving return higher through December 2021, followed by a down market by the year's close.
- Gifting Holds Up Well, Providing Some Downside Protection
  - Timing of gifts likely contributed to the increase in FY22 gifting. Most gifts were made in November/December 2021

Historical Returns and Spending (Approved and Actuals)



FY2022 Spending (By Purpose)




SPENDING RATE RECOMMENDATION
4%

THANK YOU

MEKETA
INVESTMENT GROUP

The City University of New York

February 27, 2023

Meeting Materials

Agenda

Economic and Market Update

Data as of December 31, 2022

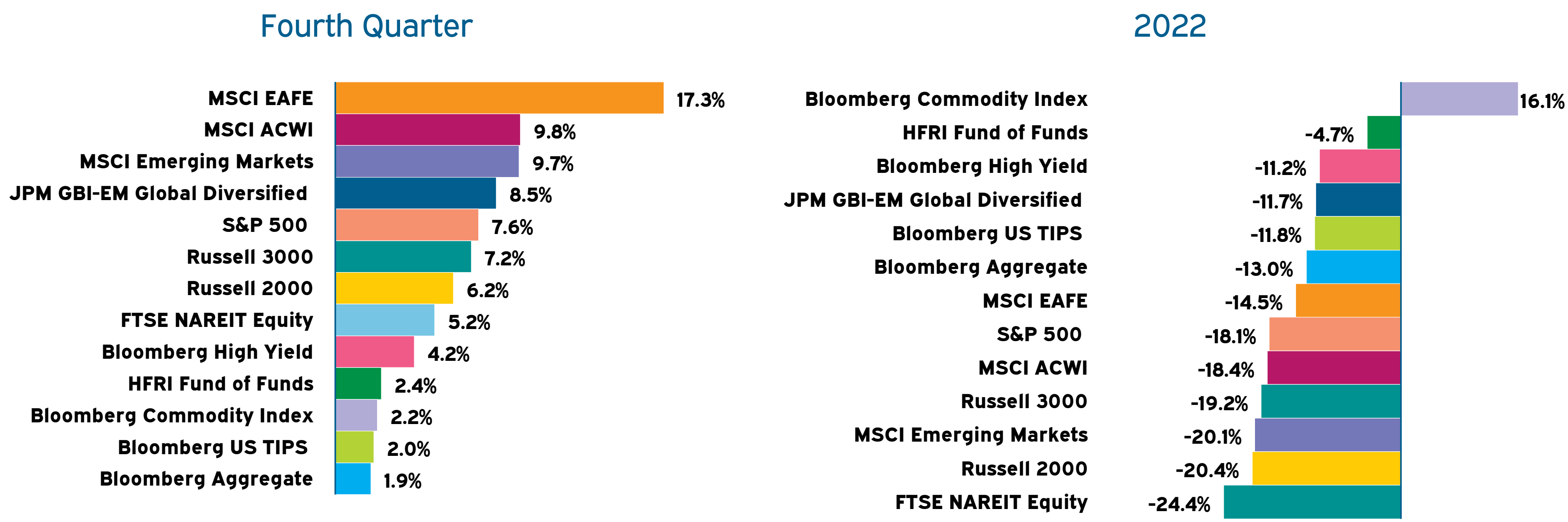
Commentary

→ Ending a very tough year, most asset classes posted gains in the fourth quarter on signs that policy tightening would slow given cooling inflation.

- Chairman Powell's testimony in November reiterated previous messaging on persistent and high inflation and the need for an extended period of monetary tightening weighing on assets in December. Markets remained focused though on signs that inflation is falling and that the size of future Fed rate hikes could be lower.
- US equity markets sold off (-5.9%) in December but returned 7.2% in the fourth quarter as investors balanced the Fed's caution with improving inflation data.
- In developed equity markets outside the US, sentiment deteriorated somewhat in December, but they posted a strong fourth quarter return of 17.3% driven by a falling US dollar and results in Europe where inflation started to slow.
- Emerging market equities declined in December too (-1.4%) but less than the US and also had a strong fourth quarter (+9.7%). A weaker US dollar, declining inflation globally, and signs of China reopening its economy all contributed to the results.
- Bonds experienced one of the worst years on record given inflation levels and the rapid rise in interest rates. Optimism over declining inflation and a slower pace of policy tightening benefited bonds overall in the fourth quarter though.

→ Looking to 2023, the path of inflation and monetary policy, slowing growth globally, China reopening its economy, and the war in Ukraine will all be key.

Index Returns[1]



→ After broad declines in Q3 driven by expectations for further policy tightening, most major asset classes were up in the fourth quarter on hopes of inflation and policy tightening peaking.

→ Outside of commodities, all other public market asset classes declined in 2022. It was the first time since the 1960s that both stocks and bonds declined together in a calendar year.

[1] Source: Bloomberg and FactSet. Data is as of December 31, 2022.

Domestic Equity Returns[1]

Domestic Equity	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
S&P 500	-5.8	7.6	-18.1	7.7	9.4	12.6
Russell 3000	-5.9	7.2	-19.2	7.1	8.8	12.1
Russell 1000	-5.8	7.2	-19.1	7.3	9.1	12.4
Russell 1000 Growth	-7.7	2.2	-29.1	7.8	11.0	14.1
Russell 1000 Value	-4.0	12.4	-7.5	6.0	6.7	10.3
Russell MidCap	-5.4	9.2	-17.3	5.9	7.1	11.0
Russell MidCap Growth	-6.0	6.9	-26.7	3.9	7.6	11.4
Russell MidCap Value	-5.1	10.5	-12.0	5.8	5.7	10.1
Russell 2000	-6.5	6.2	-20.4	3.1	4.1	9.0
Russell 2000 Growth	-6.4	4.1	-26.4	0.6	3.5	9.2
Russell 2000 Value	-6.6	8.4	-14.5	4.7	4.1	8.5

US Equities: Russell 3000 Index declined 5.9% for December but gained 7.2% for the quarter. Historic inflation and rapidly rising interest rates led to significant declines (-19.2%) for the full year.

→ US stocks fell broadly in December on the Federal Reserve signaling its continued resolve to raise rates but gained overall for the quarter on hopes that interest rates could be peaking soon given slowing inflation.

→ All sectors declined during December, led by consumer discretionary and technology with defensive sectors declining less. For the quarter though, most sectors were up led by energy and industrials.

→ In a continuation on the overall trend in 2022 value stocks outperformed growth stocks in the fourth quarter given higher interest rates and slowing growth.

[1] Source: Bloomberg. Data is as of December 31, 2022.

Foreign Equity Returns[1]

Foreign Equity	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
MSCI ACWI ex. US	-0.7	14.3	-16.0	0.1	0.9	3.8
MSCI EAFE	0.1	17.3	-14.5	0.9	1.5	4.7
MSCI EAFE (Local Currency)	-3.0	8.7	-7.0	3.6	3.8	7.6
MSCI EAFE Small Cap	1.1	15.8	-21.4	-0.9	0.0	6.2
MSCI Emerging Markets	-1.4	9.7	-20.1	-2.7	-1.4	1.4
MSCI Emerging Markets (Local Currency)	-2.0	6.6	-15.5	0.1	1.3	4.6
MSCI China	5.2	13.5	-21.9	-7.5	-4.5	2.4

Developed international equities (MSCI EAFE) rose 0.1% in December and an impressive 17.3% in the fourth quarter. Emerging markets (MSCI EM) fell -1.4% in December but gained 9.7% for the quarter. Inflation and rising rates also weighed on international equities last year, as well as a strong US dollar for most of the year.

→ International developed market equities, specifically Europe, held up better relative to the rest of the world in December with the MSCI EAFE up 0.1%. In the fourth quarter, they returned a significant 17.3% due in part to the recent weakness in the US dollar (they returned only 8.7% in local terms) leading to lower declines for the year.

→ In December emerging markets outperformed the US but trailed developed market equities as China's rally was not enough to offset weakness elsewhere (e.g., India -5.5%). For the quarter, a weakening US dollar and China reopening led to strong results (+9.7%), but emerging markets remained the weakest for 2022 due to China.

→ Like the US, value outpaced growth globally in 2022.

[1] Source: Bloomberg. Data is as of December 31, 2022.

Fixed Income Returns[1]

Fixed Income	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Years)
Bloomberg Universal	-0.3	2.2	-13.0	-2.5	0.2	1.3	5.1	6.2
Bloomberg Aggregate	-0.5	1.9	-13.0	-2.7	0.0	1.1	4.7	6.4
Bloomberg US TIPS	-1.0	2.0	-11.8	1.2	2.1	1.1	4.4	6.7
Bloomberg High Yield	-0.6	4.2	-11.2	0.0	2.3	4.0	9.0	4.4
JPM GBI-EM Global Diversified (USD)	2.2	8.5	-11.7	-6.1	-2.5	-2.0	5.8	4.9

Fixed Income: The Bloomberg Universal fell -0.3% in December but rose 2.2% for the fourth quarter. Last year was one of the worst on record, with the broad bond market declining 13%.

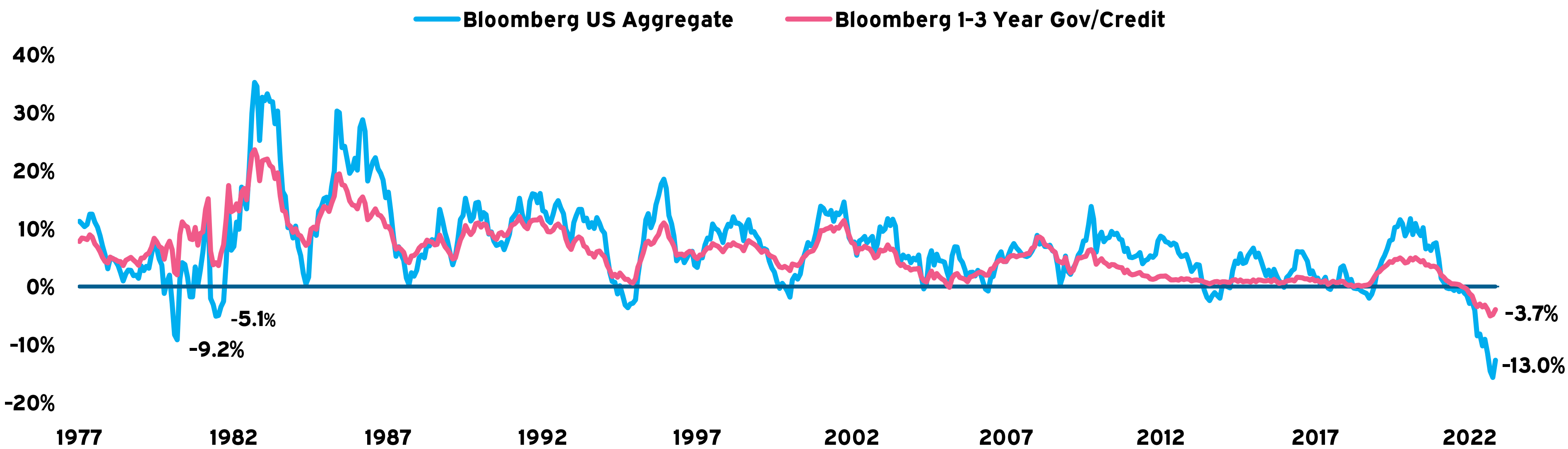
→ The Federal Reserve reconfirming its commitment to tighten policy in the face of high inflation weighed on US fixed income in December. For the quarter though the broad US bond market (Bloomberg Aggregate) was up 1.9% on hopes that inflation would continue to decline and corresponding expectations for the slowing of policy rate hikes.

→ TIPS produced similar results to the broad US bond market for the quarter but outperformed for the year given their inflation adjustment.

→ Riskier bonds outperformed for the quarter due to improving risk sentiment with emerging market bonds performing particularly well.

[1] Source: Bloomberg. JPM GBI-EM data is from InvestorForce. Data is as of December 31, 2022. The yield and duration data from Bloomberg is defined as the index's yield to worst and modified duration respectively.

Fixed Income
Rolling One-year Returns[1]



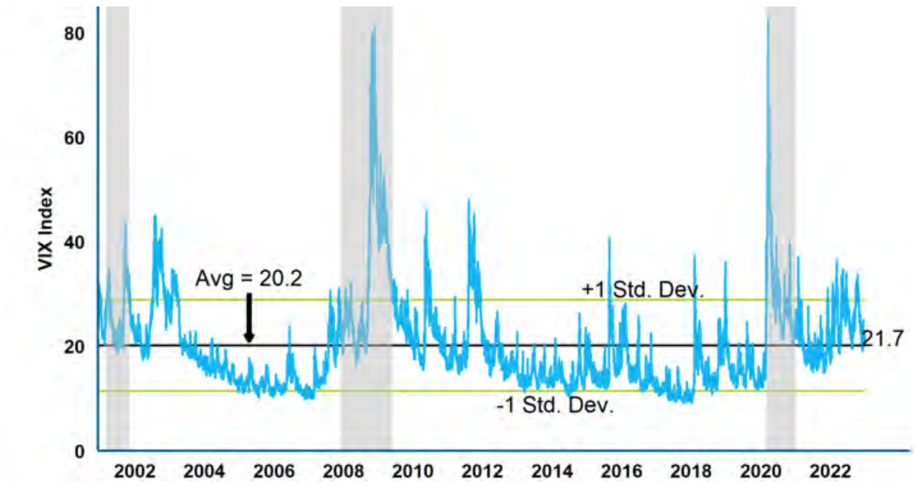
→ Last year was one of the worst return periods for the US bond market given the historic inflation levels and the corresponding rapid rise in interest rates.

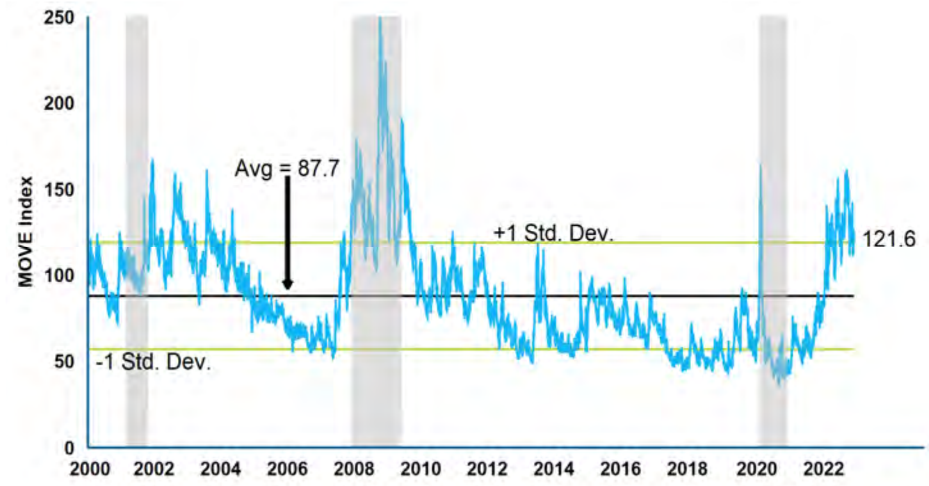
→ The broad bond market (Bloomberg US Aggregate) declined 13% in 2022 making it one of the worst periods on record.

→ Short-term bond declines were far smaller (-3.7%) last year, but also were one of the worst on record.

[1] Source: Bloomberg. Data is as of December 31, 2022.

Equity and Fixed Income Volatility[1]



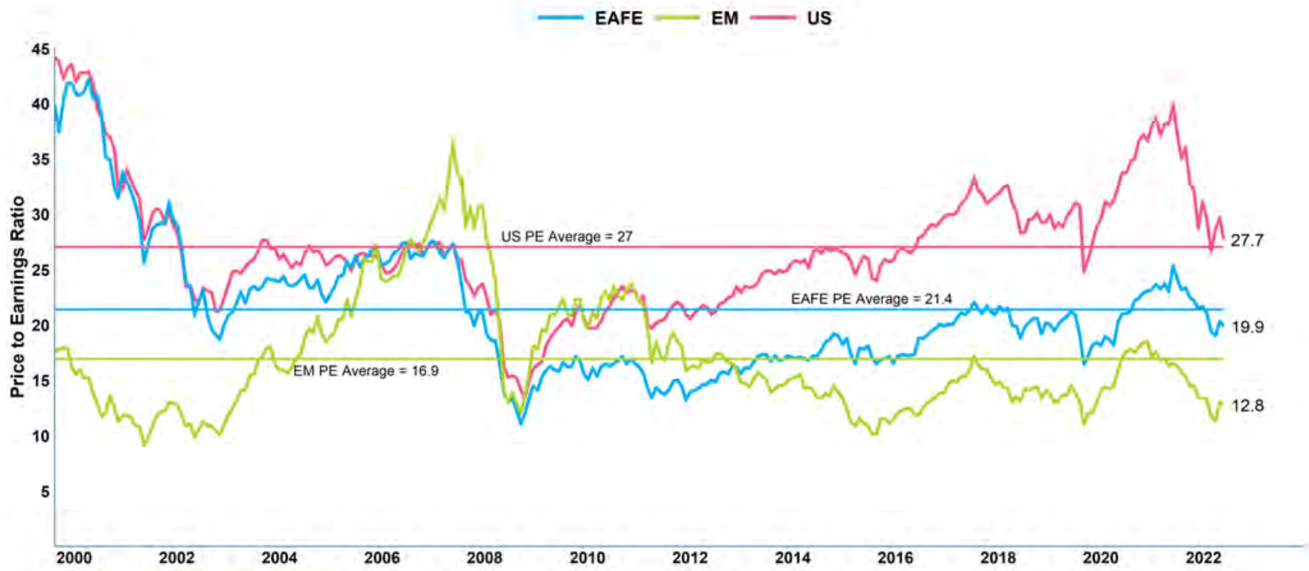


→ Volatility in equities (VIX) finished the year down from its highs and near its long run average as investors anticipated the potential end of Fed rate hikes this year.

→ Fixed income (MOVE) remained elevated and well above its long-run average at year-end due to the uncertain path of US interest rates as the Federal Reserve continues its hawkish stance on inflation.

[1] Equity and Fixed Income Volatility – Source: Bloomberg. Implied volatility as measured using VIX Index for equity markets and the MOVE Index to measure interest rate volatility for fixed income markets. Data is as of December 2022. The average line indicated is the average of the VIX and MOVE values between January 2000 and the recent month-end respectively.

Equity Cyclically Adjusted P/E Ratios[1]



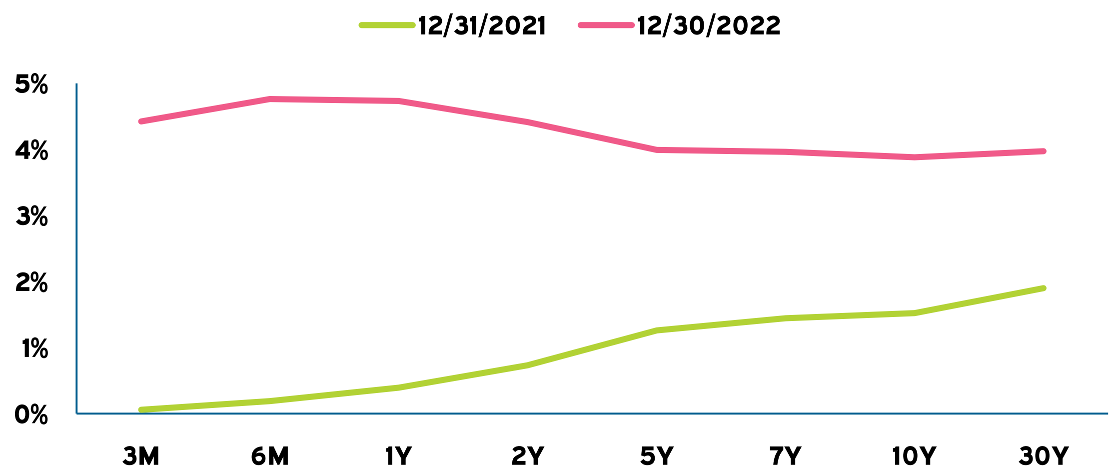
→ After December's sell-off, US equity price-to-earnings ratio finished the year near its long-term (21st century) average.

→ International developed market valuations rose but remain below their own long-term average, with those for emerging markets the lowest and well under the long-term average.

→ Price declines have been the main driver of recent multiple compression as earnings have remained resilient. Concerns remain over whether earnings strength will continue in the face of slowing growth.

[1] US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group. Developed and Emerging Market Equity (MSCI EAFE and EM Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years. Data is as of December 2022. The average line is the long-term average of the US, EM, and EAFE PE values from December 1999 to the recent month-end respectively.

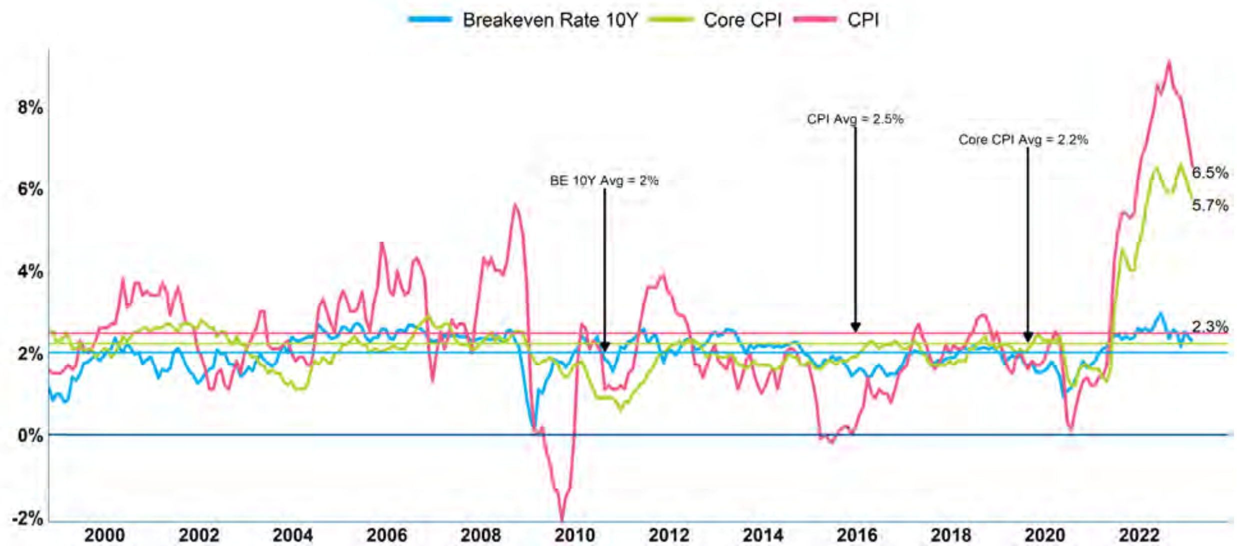
US Yield Curve[1]



- → In December, policy-sensitive interest rates at the front-end of the curve continued to rise with the two-year Treasury yield increasing from 4.3% to 4.4%. Longer dated ten-year Treasury yields also increased (3.6% to 3.9%). For the year, the yield curve rose dramatically across maturities and moved from steep to inverted.
- → The Fed remains strongly committed to fighting inflation, as it increased rates another 50 basis points to a range of 4.0% to 4.5% at its December meeting. This brought the total number of increases for 2022 to seven.
- → The yield spread between two-year and ten-year Treasuries narrowed somewhat to -0.54% after finishing November at -0.70%. The more closely watched measure by the Fed of three-month and ten-year Treasuries also remained inverted. Historically, inversions in the yield curve have often preceded recessions.

[1] Source: Bloomberg. Data is as of December 31, 2022.

Ten-Year Breakeven Inflation and CPI[1]



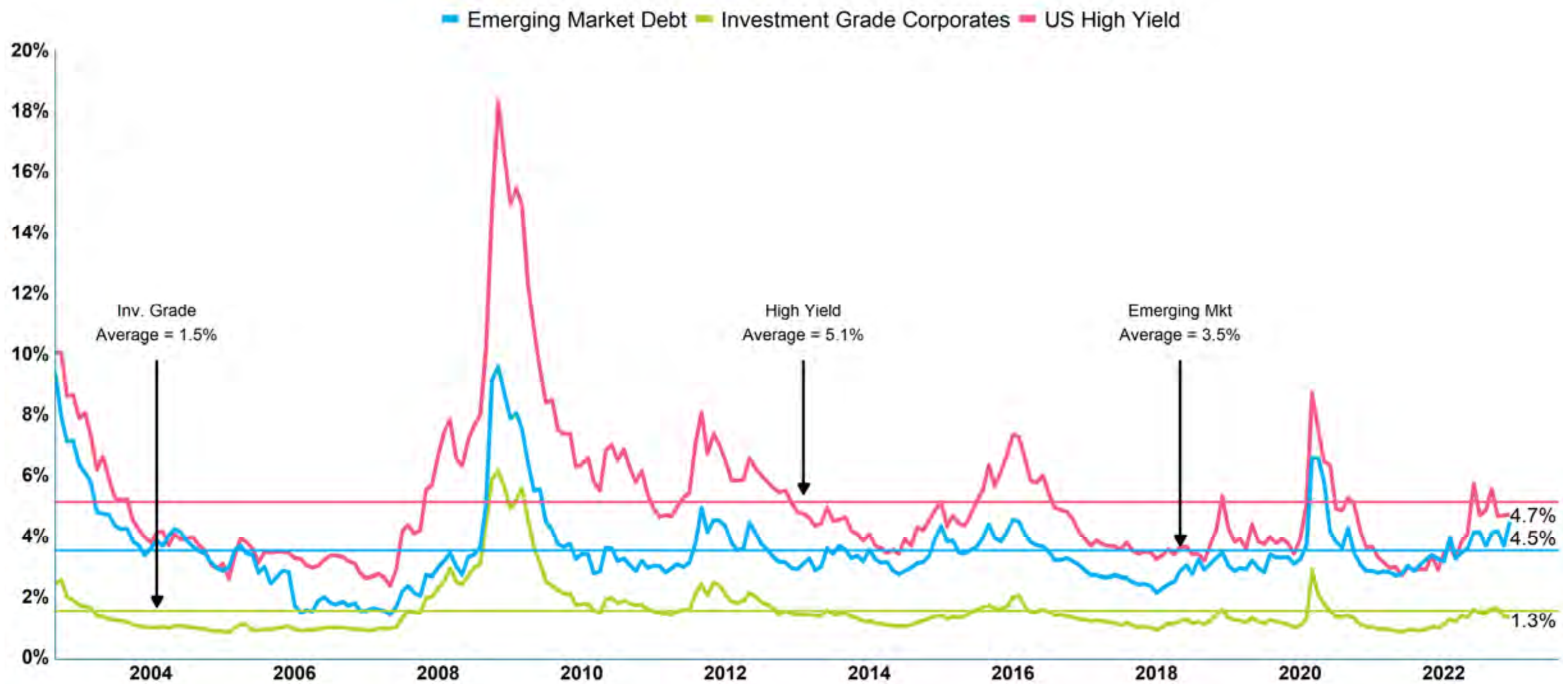
→ In December inflation continued to decline (6.5% versus 7.1%) matching expectations and providing support for the Fed to slow the pace of policy tightening. Energy prices fell again for the month but remain up 7.3% from a year prior, while food prices fell slightly, and stickier service prices continued to increase.

→ Core inflation – excluding food and energy – also continued to decline in December (5.7% versus 6.0%) and matched estimates.

→ Inflation expectations (breakevens) declined slightly for the month (2.3% versus 2.4%) and remain well below current inflation levels as investors anticipate a significant moderation in inflation.

[1] Source: Bloomberg. Data is as of December 2022. The CPI and 10 Year Breakeven average lines denote the average values from August 1998 to the present month-end respectively. Breakeven values represent month-end values for comparative purposes.

Credit Spreads vs. US Treasury Bonds[1]

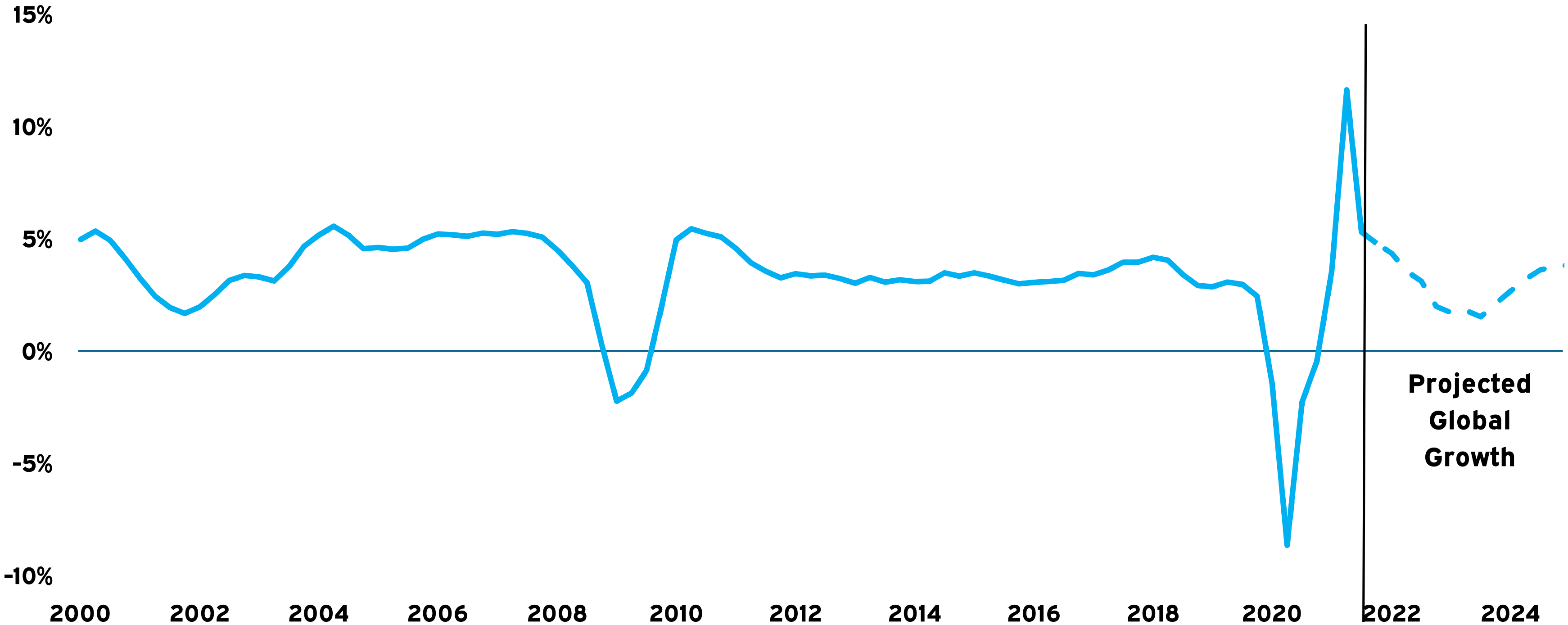


→ High yield spreads (the added yield above a comparable maturity Treasury) finished December at 4.7% (the same as the end of November) remaining below their long-run average.

→ Investment grade spreads also held steady at 1.3% as attractive yields and strong balance sheets continued to attract investors, while emerging market spreads rose (4.5% versus 3.6%) due to concerns regarding slower growth and lower commodity prices.

[1] Sources: Bloomberg. Data is as of December 31, 2022. Average lines denote the average of the investment grade, high yield, and emerging market spread values from August 2000 to the recent month-end respectively.

Global Real Gross Domestic Product (GDP) Growth[1]



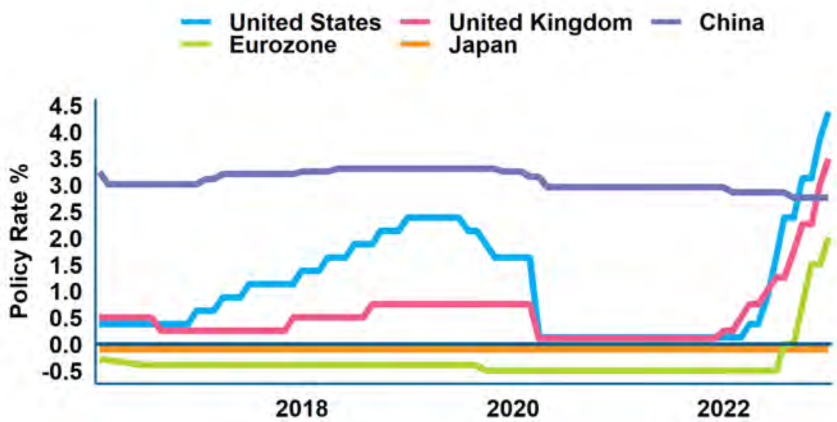
→ Global economies are expected to slow in 2023 compared to 2022, with risks of recession increasing given persistently high inflation and related tighter monetary policy.

→ The delicate balancing act of central banks trying to reduce inflation without dramatically impacting growth will remain key.

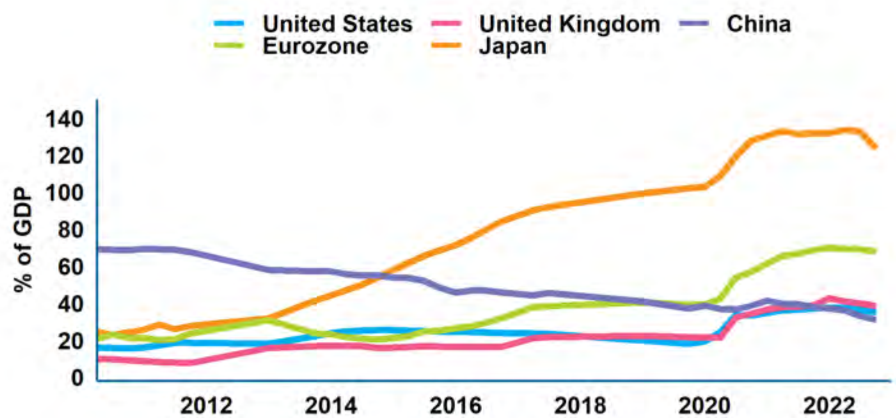
[1] Source: Oxford Economics (World GDP, US$ prices & PPP exchange rate, real, % change YoY). Updated December 2022.

Central Bank Response[1]

Policy Rates



Balance Sheet as % of GDP



→ In 2022 many central banks aggressively reduced pandemic-era policy support in the face of high inflation with the US taking a more aggressive approach.

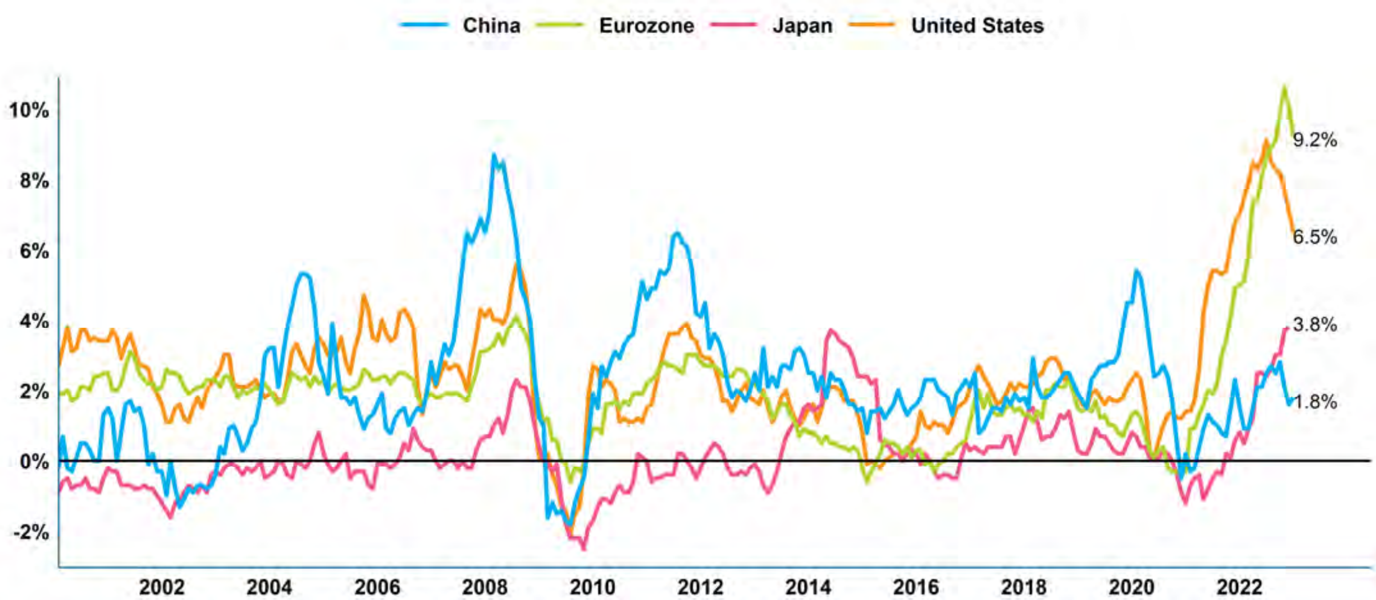
→ In December, the Bank of Japan relaxed its target yield for the 10-year bond which may mark an incremental step toward policy normalization after eight years of quantitative easing.

→ The one notable central bank outlier is China, where the central bank has lowered rates and reserve requirements in response to slowing growth.

→ The risk remains for a policy error, particularly overtightening, as record inflation and aggressive tightening to date could heavily weigh on global growth. The Federal Reserve's policy rate path could diverge from others this year given their strong early start to tightening.

[1] Source: Bloomberg. Policy rate data is as of December 31, 2022. China policy rate is defined as the medium-term lending facility 1 year interest rate. Balance sheet as % of GDP is based on quarterly data and is as of December 31, 2022.

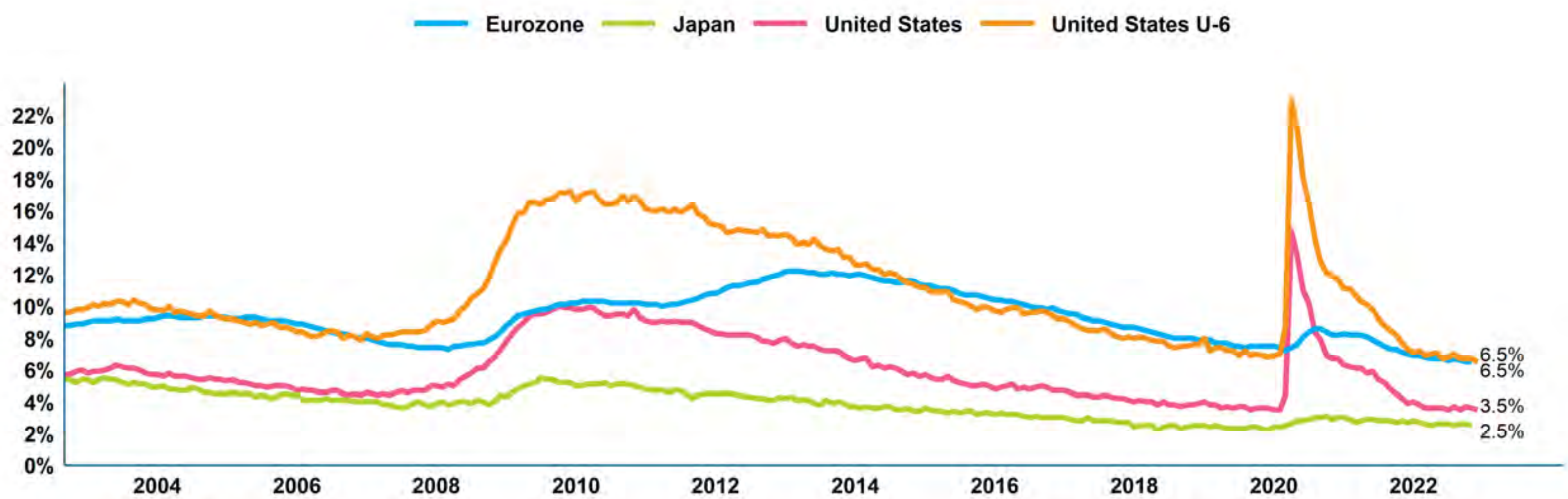
Inflation (CPI Trailing Twelve Months)[1]



- → Inflation increased dramatically from the lows of the pandemic, particularly in the US and Eurozone where it has reached levels not seen in many decades.
- → Inflation pressures are slowly declining in the US, but they remain elevated, while in Europe they have reached historic levels due to skyrocketing energy prices and a weak euro.
- → Supply issues related to the pandemic, record monetary and fiscal stimulus, strict COVID-19 restrictions in China, and higher commodity prices driven by the war in Ukraine have been key global drivers of inflation.

[1] Source: Bloomberg. Data is as of December 2022. The most recent Japanese inflation data is as of November 2022.

Unemployment[1]



→ As economies have largely reopened, helped by vaccines for the virus, improvements have been seen in the labor market.

→ Despite slowing growth and high inflation, the US labor market remains a bright spot. Unemployment in the US, which experienced the steepest rise from the pandemic, has remained in a tight 3.5%-3.7% range for most of the year.

→ The strong labor market and higher wages, although beneficial for workers, motivates the Fed's efforts to fight inflation, likely leading to higher unemployment.

[1] Source: Bloomberg. Data is as December 31, 2022, for the US. The most recent data for Eurozone and Japanese unemployment is as of November 30, 2022.

US Dollar versus Broad Currencies[1]

- → Overall, the US dollar continued to weaken from its recent peak in December as declining inflation supported the case for the Federal Reserve to slow its tightening.
- → The dollar finished the year much higher than it started though due to the increased pace of policy tightening, stronger relative growth, and safe-haven flows.
- → As we look to 2023, the track of inflation across economies and the corresponding monetary policy will likely be key drivers of currency moves.

[1] Source: Bloomberg. Data as of December 31, 2022.

Summary

Key Trends:

→ The impacts of record high inflation will remain key, with market volatility likely to stay high.

→ Monetary policy could diverge in 2023 with the Fed pausing and others continuing to tighten. The risk of policy errors in both directions remains.

→ Growth will continue to slow globally next year, with many economies likely falling into recessions. Inflation, monetary policy, and the war will all be key.

→ In the US the end of many fiscal programs is expected to put the burden of continued growth on consumers. Higher energy and food prices could weigh on consumer spending.

→ Valuations have significantly declined in the US to around long-term averages, largely driven by price declines. The key going forward will be whether earnings can remain resilient if growth continues to slow.

→ Outside the US, equity valuations remain lower in both emerging and developed markets, but risks remain, including potential continued strength in the US dollar, higher inflation particularly weighing on Europe, and China's rushed exit from COVID-19 restrictions and on-going weakness in the real estate sector.

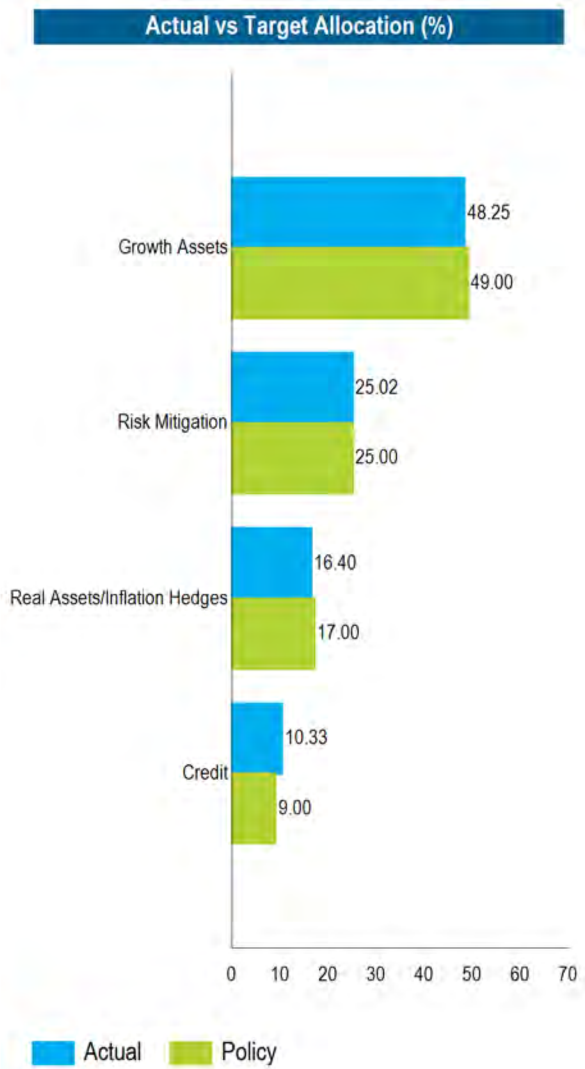
Portfolio Performance
As of December 31, 2022

	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Fund	**-1.26**	**4.26**	**0.95**	**-7.26**	**4.59**	**4.73**	**5.80**	**4.21**	**Jan-00**
Long-Term Policy Benchmark	*-2.78*	*2.55*	*-0.15*	*-7.16*	*6.02*	*6.22*	*6.96*	*6.25*	*Jan-00*
Interim Policy Benchmark	*-2.17*	*5.48*	*0.85*	*-12.28*	*2.40*	*3.08*	*4.85*	*4.31*	*Jan-00*
Allocation Benchmark	*-2.25*	*3.69*	*-0.48*	*-10.51*	*3.00*	*4.07*	*5.70*	*4.46*	*Jan-00*

Major Benchmark Returns

Name	Dec-22 %	QTD %	Fiscal YTD %	1 Yr %	3 Yrs %	5 Yrs %	10 Yrs %
US Equity							
Russell 3000	-5.86	7.18	2.40	-19.21	7.07	8.79	12.13
S&P 500	-5.76	7.56	2.31	-18.11	7.66	9.42	12.56
Russell 1000	-5.81	7.24	2.30	-19.13	7.35	9.13	12.37
Russell MidCap	-5.40	9.18	5.43	-17.32	5.88	7.10	10.96
Russell 2000	-6.49	6.23	3.91	-20.44	3.10	4.13	9.01
International Equity							
MSCI EAFE	0.08	17.34	6.36	-14.45	0.87	1.54	4.67
MSCI Emerging Markets	-1.41	9.70	-2.99	-20.09	-2.69	-1.40	1.44
Fixed Income							
91 Day T-Bills	0.36	0.84	1.31	1.46	0.64	1.19	0.73
Bloomberg US Aggregate TR	-0.45	1.87	-2.97	-13.01	-2.71	0.02	1.06
Bloomberg US Govt/Credit TR	-0.48	1.80	-2.84	-13.58	-2.57	0.21	1.16
Bloomberg US Municipal TR	0.29	4.10	0.50	-8.53	-0.77	1.25	2.13
Bloomberg US High Yield TR	-0.62	4.17	3.50	-11.19	0.05	2.31	4.03
Real Estate							
FTSE NAREIT All REIT	-5.09	4.51	-7.18	-25.10	-0.46	3.91	6.86
Inflation							
Consumer Price Index	-0.31	0.00	0.16	6.45	4.92	3.78	2.60

Fiscal Year begins July 1.
Meketa was retained in October 2017. The performance listed prior to this period is for illustrative purposes only.
Effective October 1, 2021, the Long Term Policy benchmark became the Fund's primary benchmark. Prior to October 2021, the Fund was positioned in accordance with the Interim Policy benchmark.



Allocation vs. Targets and Policy

	Current Balance	Current Allocation	Policy	Difference
Growth Assets	**$169,213,361**	**48.25%**	**49.00%**	**-0.75%**
Public Global Equity	$126,524,529	36.08%	34.00%	2.08%
Private Equity/Debt	$42,688,832	12.17%	15.00%	-2.83%
Risk Mitigation	**$87,733,726**	**25.02%**	**25.00%**	**0.02%**
Investment Grade Bonds	$54,564,360	15.56%	15.00%	0.56%
Hedge Funds	$32,665,829	9.31%	10.00%	-0.69%
Cash	$503,537	0.14%	0.00%	0.14%
Real Assets/Inflation Hedges	**$57,531,763**	**16.40%**	**17.00%**	**-0.60%**
Private Natural Resources	$12,331,816	3.52%	5.00%	-1.48%
Core Private Real Estate	$11,966,582	3.41%	2.50%	0.91%
Value-Added Real Estate	$2,402,097	0.68%	2.50%	-1.82%
Public/Private Infrastructure	$23,838,593	6.80%	5.00%	1.80%
TIPS	$6,992,675	1.99%	2.00%	-0.01%
Credit	**$36,242,257**	**10.33%**	**9.00%**	**1.33%**
High Yield Bonds	$15,210,153	4.34%	3.00%	1.34%
Bank Loans	$7,531,572	2.15%	3.00%	-0.85%
Emerging Market Bonds	$13,500,532	3.85%	3.00%	0.85%
Total	**$350,721,107**	**100.00%**	**100.00%**	

Throughout the report, the market values for Private Market funds are based on reported NAVs published by the managers (9/30/2022), adjusted for subsequent cash flows (where applicable) through the current reported month.
The JP Morgan GBI EM Global Diversified TR USD Index Benchmark was created in 2003. The returns prior to 2003 are from the JP Morgan EMBI Global Diversified TR USD index.

Asset Class Trailing Net Performance Summary

	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Fund	**350,721,107**	**100.00**	**-1.26**	**4.26**	**0.95**	**-7.26**	**4.59**	**4.73**	**5.80**	**4.21**	**Jan-00**
Long-Term Policy Benchmark			*-2.78*	*2.55*	*-0.15*	*-7.16*	*6.02*	*6.22*	*6.96*	*6.25*	*Jan-00*
Interim Policy Benchmark			*-2.17*	*5.48*	*0.85*	*-12.28*	*2.40*	*3.08*	*4.85*	*4.31*	*Jan-00*
Allocation Benchmark			*-2.25*	*3.69*	*-0.48*	*-10.51*	*3.00*	*4.07*	*5.70*	*4.46*	*Jan-00*
Growth Assets	**169,213,361**	**48.25**	**-1.99**	**7.64**	**2.69**	**-10.24**	**8.30**	**7.92**	**--**	**--**	**Jan-00**
Risk Mitigation	**87,733,726**	**25.02**	**-0.01**	**-0.19**	**-1.19**	**-2.49**	**1.26**	**1.05**	**1.72**	**4.16**	**Jan-00**
Real Assets/Inflation Hedges	**57,531,763**	**16.40**	**-1.85**	**1.87**	**-1.06**	**-3.62**	**2.18**	**1.06**	**0.76**	**2.46**	**Aug-09**
Credit	**36,242,257**	**10.33**	**0.12**	**4.45**	**3.64**	**-9.23**	**-1.04**	**--**	**--**	**2.16**	**Dec-18**

See appendix for Policy and Allocation Benchmark descriptions.
Effective October 1, 2021, the Long Term Policy benchmark became the Fund's primary benchmark. Prior to October 2021, the fund was positioned in accordance with the Interim Policy benchmark.

Trailing Net Performance

	Market Value ($)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Fund	**350,721,107**	**100.00**	--	**-1.26**	**4.26**	**0.95**	**-7.26**	**4.59**	**4.73**	**5.80**	**4.21**	**Jan-00**
Long-Term Policy Benchmark				*-2.78*	*2.55*	*-0.15*	*-7.16*	*6.02*	*6.22*	*6.96*	*6.25*	*Jan-00*
Interim Policy Benchmark				*-2.17*	*5.48*	*0.85*	*-12.28*	*2.40*	*3.08*	*4.85*	*4.31*	*Jan-00*
Allocation Benchmark				*-2.25*	*3.69*	*-0.48*	*-10.51*	*3.00*	*4.07*	*5.70*	*4.46*	*Jan-00*
Growth Assets	**169,213,361**	**48.25**	**48.25**	**-1.99**	**7.64**	**2.69**	**-10.24**	**8.30**	**7.92**	--	--	**Jan-00**
Public Global Equity	**126,524,529**	**36.08**	**74.77**	**-2.73**	**10.08**	**3.33**	**-14.65**	**5.50**	**6.15**	--	--	**Jan-00**
MSCI ACWI IMI Net USD				*-3.84*	*9.84*	*2.56*	*-18.40*	*3.89*	*4.96*	*7.94*	*4.71*	*Jan-00*
RhumbLine S&P 1500 Index	27,085,231	7.72	21.41	-5.77	7.80	2.75	-17.70	7.71	--	--	10.47	Nov-18
S&P Composite 1500				*-5.77*	*7.79*	*2.66*	*-17.78*	*7.59*	*9.15*	*12.40*	*10.40*	*Nov-18*
RhumbLine MSCI EAFE Index	17,104,551	4.88	13.52	0.11	17.30	6.40	-14.08	0.92	--	--	4.19	Nov-18
MSCI EAFE				*0.08*	*17.34*	*6.36*	*-14.45*	*0.87*	*1.54*	*4.67*	*4.26*	*Nov-18*
First Eagle Global Fund	16,761,384	4.78	13.25	-1.36	13.38	4.31	-6.25	4.63	--	--	6.96	Nov-18
MSCI ACWI Value NR USD				*-2.36*	*14.21*	*5.47*	*-7.55*	*3.30*	*3.47*	*6.42*	*5.62*	*Nov-18*
MSCI ACWI				*-3.94*	*9.76*	*2.28*	*-18.36*	*4.00*	*5.23*	*7.98*	*7.34*	*Nov-18*
AB Global Core Equity	11,177,437	3.19	8.83	-3.17	11.82	2.09	-20.10	--	--	--	-6.34	Mar-21
MSCI ACWI				*-3.94*	*9.76*	*2.28*	*-18.36*	*4.00*	*5.23*	*7.98*	*-2.75*	*Mar-21*
State Street Russell 1000 Value Index	11,106,745	3.17	8.78	-4.04	12.39	6.08	-7.60	--	--	--	8.41	Feb-21
Russell 1000 Value				*-4.03*	*12.42*	*6.11*	*-7.54*	*5.96*	*6.67*	*10.29*	*8.44*	*Feb-21*
Elliott International Limited	9,613,182	2.74	7.60	0.70	-0.87	0.09	5.11	10.55	8.12	8.22	8.39	Apr-12
HFRI Fund of Funds Composite Index				*0.27*	*1.67*	*1.31*	*-5.36*	*3.67*	*3.00*	*3.50*	*3.38*	*Apr-12*

Throughout the report, performance will be shown after one full month of performance

	Market Value ($)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Kopernik Global All Cap Fund	8,734,575	2.49	6.90	-1.64	12.26	6.32	-9.17	13.64	--	--	12.24	Dec-18
MSCI ACWI				*-3.94*	*9.76*	*2.28*	*-18.36*	*4.00*	*5.23*	*7.98*	*7.11*	*Dec-18*
Artisan Global	8,146,841	2.32	6.44	-5.65	4.85	--	--	--	--	--	4.85	Oct-22
MSCI ACWI Growth NR USD				*-5.56*	*5.28*	*-0.96*	*-28.61*	*3.75*	*6.37*	*9.20*	*5.28*	*Oct-22*
MSCI ACWI				*-3.94*	*9.76*	*2.28*	*-18.36*	*4.00*	*5.23*	*7.98*	*9.76*	*Oct-22*
State Street MSCI Emerging Markets	7,228,550	2.06	5.71	-1.34	9.59	-3.24	-20.21	--	--	--	-13.74	Feb-21
MSCI Emerging Markets				*-1.41*	*9.70*	*-2.99*	*-20.09*	*-2.69*	*-1.40*	*1.44*	*-13.60*	*Feb-21*
First Eagle Gold L.P.	3,926,891	1.12	3.10	2.64	14.63	5.04	-0.53	--	--	--	-0.95	Jul-21
60% Gold (Spot)/ 40% FTSE Gold Mines				*3.07*	*13.96*	*1.45*	*-5.99*	*--*	*--*	*--*	*-3.47*	*Jul-21*
ABS Emerging Markets ex China	2,700,000	0.77	2.13									
MSCI EM ex China				*-4.27*	*7.98*	*1.94*	*-19.26*	*0.00*	*0.35*	*1.57*	*--*	
State Street Russell 1000 Growth Index	2,039,143	0.58	1.61	-7.65	2.21	--	--	--	--	--	-7.74	Sep-22
Russell 1000 Growth				*-7.66*	*2.20*	*-1.48*	*-29.14*	*7.79*	*10.96*	*14.10*	*-7.74*	*Sep-22*
ABS Direct Equity Fund - China Direct	900,000	0.26	0.71									
MSCI Golden Dragon				*2.54*	*13.04*	*-9.32*	*-22.34*	*-3.41*	*-1.01*	*4.38*	*--*	
Private Equity/Debt	**42,688,832**	**12.17**	**25.23**	**0.34**	**0.55**	**0.88**	**10.88**	**23.50**	**20.21**	**--**	**12.13**	**Nov-15**
Russell 3000 + 2%				*-5.69*	*7.70*	*3.41*	*-17.56*	*9.20*	*10.95*	*14.36*	*12.72*	*Nov-15*
Ironsides Direct Fund V	12,218,274	3.48	28.62									
Ironsides Partnership Fund V	7,267,567	2.07	17.02									
StepStone VC Global Partners VII	5,829,506	1.66	13.66									
FS Equity Partners VIII	5,654,270	1.61	13.25									

ABS Emerging Markets ex China & ABS Direct Equity Fund - China Direct were funded in December 2022, but performance reporting will begin as of January 1, 2023.

	Market Value ($)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Davidson Kempner Long-Term Distressed Opportunities Fund V	3,770,195	1.07	8.83									
Vitruvian Investment Partnership IV	2,714,643	0.77	6.36									
Stellex Capital Partners II, L.P.	1,233,241	0.35	2.89									
Avance Investment Partners, L.P.	1,014,074	0.29	2.38									
Linden Capital Partners V, L.P.	927,392	0.26	2.17									
Charlesbank Equity Fund X	872,846	0.25	2.04									
Lightspeed Venture Partners Select V, L.P.	638,954	0.18	1.50									
GCM Grosvenor Co-Investment Fund	547,869	0.16	1.28									
Risk Mitigation	**87,733,726**	**25.02**	**25.02**	**-0.01**	**-0.19**	**-1.19**	**-2.49**	**1.26**	**1.05**	**1.72**	**4.16**	**Jan-00**
Investment Grade Bonds	**54,564,360**	**15.56**	**62.19**	**-0.15**	**1.34**	**-2.46**	**-12.21**	**-1.81**	**0.62**	**0.97**	**3.99**	**Jan-00**
Bloomberg US Aggregate TR				*-0.45*	*1.87*	*-2.97*	*-13.01*	*-2.71*	*0.02*	*1.06*	*3.99*	*Jan-00*
Longfellow Core Fixed Income	45,490,823	12.97	83.37	-0.22	1.36	-3.04	-13.24	-2.11	--	--	0.86	Nov-18
Bloomberg US Aggregate TR				*-0.45*	*1.87*	*-2.97*	*-13.01*	*-2.71*	*0.02*	*1.06*	*0.61*	*Nov-18*
State Street 1-3 Yr. U.S. Credit	9,073,537	2.59	16.63	0.17	1.22	-0.10	-3.23	--	--	--	-1.33	Oct-20
Bloomberg US Credit 1-3 Yr TR				*0.22*	*1.28*	*-0.05*	*-3.40*	*-0.01*	*1.31*	*1.37*	*-1.35*	*Oct-20*

Davidson Kempner market value is one-month lagged.

has been updated from FactSet Gold NYMEX to Gold Spot $/oz commodity as reported by Bloomberg.

Private Market funds should be evaluated on their respective net IRRs and multiples reported in the quarterly review.
1 month returns for the Private Equity/Debt composite reflect the monthly returns reported by Vitruvian and Davidson Kempner. Data for Preqin is as of 6/30.

	Market Value ($)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Hedge Funds	**32,665,829**	**9.31**	**37.23**	**0.23**	**-2.75**	**0.84**	**18.75**	**8.69**	**5.26**	**4.70**	**3.86**	**May-10**
HFRI Macro (Total) Index				*0.16*	*-1.34*	*0.42*	*8.98*	*7.35*	*4.79*	*3.08*	*2.65*	*May-10*
Alpstone Global Macro Fund	10,024,687	2.86	30.69	0.29	1.47	3.78	10.31	--	--	--	2.00	May-21
HFRI Macro (Total) Index				*0.16*	*-1.34*	*0.42*	*8.98*	*7.35*	*4.79*	*3.08*	*5.90*	*May-21*
BH-DG Systematic Trading Master Fund	8,911,162	2.54	27.28	0.16	-9.22	0.20	32.64	18.97	--	--	16.18	Dec-18
Barclay CTA Index				*-0.10*	*-1.86*	*-0.74*	*7.33*	*5.92*	*3.89*	*2.32*	*5.67*	*Dec-18*
36 South Kohinoor Series Three	7,749,608	2.21	23.72	-0.47	-3.53	-2.71	14.44	9.39	--	--	4.87	Dec-18
CBOE Eurekahedge Long Volatility Hedge Fund Index				*-1.30*	*-3.86*	*-1.80*	*7.56*	*6.87*	*1.87*	*-0.92*	*3.44*	*Dec-18*
Lombard Odier 1798 Bear Convexity	5,980,372	1.71	18.31	1.15	2.04	-0.11	6.48	--	--	--	5.96	Dec-21
CBOE Eurekahedge Long Volatility Hedge Fund Index				*-1.30*	*-3.86*	*-1.80*	*7.56*	*6.87*	*1.87*	*-0.92*	*4.60*	*Dec-21*
Cash	**503,537**	**0.14**	**0.57**	**0.32**	**0.79**	**1.28**	**1.45**	**0.63**	**1.15**	**0.68**	**0.66**	**Sep-12**
91 Day T-Bills				*0.36*	*0.84*	*1.31*	*1.46*	*0.64*	*1.19*	*0.73*	*0.70*	*Sep-12*
Cash	503,537	0.14	100.00	0.32	0.79	1.28	1.45	0.63	1.15	0.68	0.66	Sep-12
91 Day T-Bills				*0.36*	*0.84*	*1.31*	*1.46*	*0.64*	*1.19*	*0.73*	*0.70*	*Sep-12*
Real Assets/Inflation Hedges	**57,531,763**	**16.40**	**16.40**	**-1.85**	**1.87**	**-1.06**	**-3.62**	**2.18**	**1.06**	**0.76**	**2.46**	**Aug-09**
Private Natural Resources	**12,331,816**	**3.52**	**21.43**	**-2.18**	**-2.18**	**-0.67**	**22.46**	**14.38**	**7.49**	**--**	**10.46**	**Mar-15**
S&P Global Natural Resources + 2%				*-2.85*	*17.78*	*12.95*	*12.52*	*13.84*	*9.48*	*6.98*	*9.03*	*Mar-15*
ARA Fund I	3,148,232	0.90	25.53									
EnCap Energy Capital Fund X	2,958,269	0.84	23.99									

Lombard Odier 1798 Bear Convexity valuation reflects 11/30 Statement.
The market values for Private Natural Resources are based on reported NAVs published by the managers (9/30/2022) and adjusted for subsequent cash flows (where applicable) through the current reported month.

	Market Value ($)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
EMR Capital Resources Fund I	1,875,915	0.53	15.21									
PGIM US Agriculture, L.P.	1,140,156	0.33	9.25	0.00	0.02	0.02	--	--	--	--	0.02	Jul-22
Ara Fund II, L.P.	1,123,929	0.32	9.11									
EnCap Energy Capital Fund IX	1,111,136	0.32	9.01									
Tailwater Energy Fund IV	974,179	0.28	7.90									
Core Real Estate	**11,966,582**	**3.41**	**20.80**	**-3.95**	**-1.81**	**-4.23**	**-24.10**	--	--	--	**-10.44**	**Aug-21**
NCREIF ODCE				*-4.96*	*-4.96*	*-4.46*	*7.47*	*9.93*	*8.68*	*10.11*	*16.22*	*Aug-21*
Morgan Stanley Prime Property Fund, LLC	9,625,481	2.74	80.44	-3.69	-3.69	-3.75	--	--	--	--	-3.75	Jul-22
NCREIF ODCE				*-4.96*	*-4.96*	*-4.46*	*7.47*	*9.93*	*8.68*	*10.11*	*-4.46*	*Jul-22*
State Street U.S. REIT Index NL CTF	2,341,100	0.67	19.56	-4.94	5.05	-5.94	-25.75	--	--	--	-11.82	Aug-21
DJ US Select REIT TR USD				*-5.24*	*4.76*	*-6.11*	*-25.96*	*-1.37*	*2.50*	*5.74*	*-12.00*	*Aug-21*
Value-Added Real Estate	**2,402,097**	**0.68**	**4.18**									
The Green Cities Company IV, L.P.	1,227,982	0.35	51.12									
Crow Holdings Realty Partners IX	1,174,115	0.33	48.88									
Public/Private Infrastructure	**23,838,593**	**6.80**	**41.44**									
State Street S&P Global Infrastructure Index NL	10,078,614	2.87	42.28	-2.10	10.99	0.13	-0.76	--	--	--	2.81	Aug-21
S&P Global Infrastructure Net TR USD				*-2.28*	*10.83*	*-0.05*	*-0.99*	*0.93*	*2.99*	*5.61*	*2.64*	*Aug-21*
KKR Diversified Core Infrastructure Fund, L.P.	9,527,527	2.72	39.97	0.21	0.21	0.88	--	--	--	--	0.88	Apr-22
DJ Brookfield Listed Public Infrastructure +1%				*-3.11*	*9.81*	*-2.16*	*-5.66*	*2.38*	*--*	*--*	*-8.79*	*Apr-22*

KKR Diversified Core Infrastructure Fund returns are reported on a quarterly basis, but for the December 31, 2022 report, the returns were reported on a quarterly lagged cash flow adjusted basis.

	Market Value ($)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Climate Adaptive Infrastructure Fund, L.P.	1,113,435	0.32	4.67									
Global Infrastructure Partners Fund IV	994,174	0.28	4.17									
Grain Communications Opportunity Fund III, L.P.	985,054	0.28	4.13									
JLC Infrastructure Fund I	814,321	0.23	3.42									
ISQ Global Infrastructure Fund III (USTE), L.P.	194,227	0.06	0.81									
Blackrock Global Infra IV, LP	131,241	0.04	0.55									
TIPS	**6,992,675**	**1.99**	**12.15**	**-1.02**	**2.00**	**-3.15**	**-11.83**	**0.89**	**--**	**--**	**2.82**	**Dec-18**
Bloomberg US TIPS TR				*-1.02*	*2.04*	*-3.21*	*-11.85*	*1.21*	*2.11*	*1.11*	*3.04*	*Dec-18*
RhumbLine U.S. TIPS Index	6,992,675	1.99	100.00	-1.02	2.00	-3.15	-11.83	0.89	--	--	2.82	Dec-18
Bloomberg US TIPS TR				*-1.02*	*2.04*	*-3.21*	*-11.85*	*1.21*	*2.11*	*1.11*	*3.04*	*Dec-18*
Credit	**36,242,257**	**10.33**	**10.33**	**0.12**	**4.45**	**3.64**	**-9.23**	**-1.04**	**--**	**--**	**2.16**	**Dec-18**
High Yield Bonds	**15,210,153**	**4.34**	**41.97**	**-0.51**	**0.55**	**3.12**	**-1.56**	**9.34**	**--**	**--**	**7.25**	**Dec-18**
Bloomberg US High Yield TR				*-0.62*	*4.17*	*3.50*	*-11.19*	*0.05*	*2.31*	*4.03*	*2.82*	*Dec-18*
American Century High Income	8,202,314	2.34	53.93	-0.78	4.35	3.76	-11.20	--	--	--	4.60	May-20
Bloomberg US High Yield TR				*-0.62*	*4.17*	*3.50*	*-11.19*	*0.05*	*2.31*	*4.03*	*3.55*	*May-20*
Sculptor Credit Opportunities Overseas Fund	7,007,839	2.00	46.07	-0.18	-3.41	-3.97	-3.75	--	--	--	8.47	Jul-20
Bloomberg Global High Yield TR				*0.66*	*7.97*	*5.01*	*-12.71*	*-1.92*	*0.38*	*2.99*	*-0.42*	*Jul-20*
Bank Loans	**7,531,572**	**2.15**	**20.78**	**0.17**	**2.78**	**4.26**	**-0.76**	**4.64**	**--**	**--**	**4.90**	**Dec-18**
Credit Suisse Leveraged Loans				*0.36*	*2.33*	*3.55*	*-1.06*	*2.34*	*3.24*	*3.78*	*3.10*	*Dec-18*
PAM Bank Loans	7,531,572	2.15	100.00	0.17	2.79	4.27	-0.75	--	--	--	5.06	May-20
Credit Suisse Leveraged Loans				*0.36*	*2.33*	*3.55*	*-1.06*	*2.34*	*3.24*	*3.78*	*6.53*	*May-20*

	Market Value ($)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Emerging Market Bonds	**13,500,532**	**3.85**	**37.25**	**0.80**	**10.32**	**4.69**	**-17.40**	**-5.02**	**--**	**--**	**0.09**	**Dec-18**
JP Morgan EMBI Global Diversified				*0.33*	*8.11*	*3.17*	*-17.78*	*-5.28*	*-1.31*	*1.59*	*-0.23*	*Dec-18*
Payden Emerging Markets Debt	13,500,532	3.85	100.00	0.80	10.32	4.69	-17.40	-5.02	--	--	0.09	Dec-18
JP Morgan EMBI Global Diversified				*0.33*	*8.11*	*3.17*	*-17.78*	*-5.28*	*-1.31*	*1.59*	*-0.23*	*Dec-18*

Benchmark History
As of December 31, 2022

Total Fund		
12/1/2022	Present	34% MSCI ACWI IMI Net USD / 15% Russell 3000 + 2% / 15% Bloomberg US Aggregate TR / 10% HFRI Macro (Total) Index / 5% S&P Global Natural Resources + 2% / 2% Bloomberg US TIPS TR / 3% Bloomberg US High Yield TR / 3% Credit Suisse Leveraged Loans / 1.5% JP Morgan EMBI Global Diversified / 1.5% JP Morgan EMBI Global Diversified / 5% NCREIF ODCE / 5% DJ Brookfield Listed Public Infrastructure +1%

Benchmark History
As of December 31, 2022

Total Fund		
12/1/2022	Present	34% MSCI ACWI IMI Net USD / 15% Russell 3000 + 2% / 15% Bloomberg US Aggregate TR / 10% HFRI Macro (Total) Index / 5% S&P Global Natural Resources + 2% / 2% Bloomberg US TIPS TR / 3% Bloomberg US High Yield TR / 3% Credit Suisse Leveraged Loans / 1.5% JP Morgan EMBI Global Diversified / 1.5% JP Morgan EMBI Global Diversified / 5% NCREIF ODCE / 5% DJ Brookfield Listed Public Infrastructure +1%
1/1/2003	11/30/2022	34% MSCI ACWI IMI Net USD / 15% Preqin Private Equity 1Q Lagged / 15% Bloomberg US Aggregate TR / 10% HFRI Macro (Total) Index / 5% Preqin Natural Resources 2Q Lagged / 2% Bloomberg US TIPS TR / 3% Bloomberg US High Yield TR / 3% Credit Suisse Leveraged Loans / 1.5% JP Morgan EMBI Global Diversified / 1.5% JP Morgan GBI EM Global Diversified TR USD / 5% NCREIF ODCE Equal Weighted Net (1-quarter lagged) / 5% CPI + 3.75%

Benchmark History
As of December 31, 2022

Total Fund		
12/1/2022	Present	34% MSCI ACWI IMI Net USD / 15% Russell 3000 + 2% / 15% Bloomberg US Aggregate TR / 10% HFRI Macro (Total) Index / 5% S&P Global Natural Resources + 2% / 2% Bloomberg US TIPS TR / 3% Bloomberg US High Yield TR / 3% Credit Suisse Leveraged Loans / 1.5% JP Morgan EMBI Global Diversified / 1.5% JP Morgan EMBI Global Diversified / 5% NCREIF ODCE / 5% DJ Brookfield Listed Public Infrastructure +1%
1/1/2003	11/30/2022	34% MSCI ACWI IMI Net USD / 15% Preqin Private Equity 1Q Lagged / 15% Bloomberg US Aggregate TR / 10% HFRI Macro (Total) Index / 5% Preqin Natural Resources 2Q Lagged / 2% Bloomberg US TIPS TR / 3% Bloomberg US High Yield TR / 3% Credit Suisse Leveraged Loans / 1.5% JP Morgan EMBI Global Diversified / 1.5% JP Morgan GBI EM Global Diversified TR USD / 5% NCREIF ODCE Equal Weighted Net (1-quarter lagged) / 5% CPI + 3.75%
1/1/2000	12/31/2002	34% MSCI ACWI IMI Net USD / 15% MSCI ACWI IMI + 150bps / 15% Bloomberg US Aggregate TR / 10% HFRI Macro (Total) Index / 5% CPI + 4% / 2% Bloomberg US TIPS TR / 3% Bloomberg US High Yield TR / 3% Credit Suisse Leveraged Loans / 3% JP Morgan EMBI Global Diversified / 5% NCREIF ODCE (lagged one quarter) / 5% CPI + 3.75%

Natural Resources uses CPI + 4% from 01/01/2000 - 12/31/2002 and then Preqin Natural Resources from 01/01/2002 - 11/30/2022.

Private Market Managers' Commitment Overview[1]

Managers	Strategy	Vintage Year	Commitment Amount ($M)	Contributed ($M)
Private Equity/Credit Managers				
FS Equity Partners VIII	Buyout	2018	4.7	3.5
Greenspring Global Partners VII	Fund of Funds	2015	3.0	2.9
Ironsides Direct Investment Fund V	Buyout	2018	8.0	8.1
Ironsides Partnership Fund V	Fund of Funds	2018	8.0	5.4
Davidson Kempner Fund V	Distressed Credit	2020	3.9	3.4
Vitruvian Investment Partnership IV	Buyout	2020	4.1	2.5
Stellex Capital Partners II	Special Situations /Turnaround	2020	2.0	1.2
Charlesbank Equity Fund X	Buyout	2020	2.0	0.8
Avance Investment Partners	Buyout	2021	4.0	1.4
Linden V	Buyout	2021	4.0	0.9
Lightspeed Select Fund V	Venture Capital	2021	3.0	0.4
GCM Custom Co-Investment	Buyout	2022	4.0	0.5
Greenbrair Equity Fund VI,	Buyout	2022	4.0	0.0
Ridgemont Equity Partners IV	Buyout	2022	4.0	0.0
Vitruvian Investment Partnership V	Buyout	2022	4.4	0.0
Real Estate				
The Green Cities Company IV	Value-Added	2020	1.5	1.2
Crow Holdings Realty Partners Fund IX-A	Value-Added	2020	1.5	1.3
Crow Holding Realty Partners X	Value-Added	2021	1.5	0.0
Morgan Stanley Prime Property	Core	1973	10.0	10.0
DRA Growth and Income Fund Xi	Value-Added	2021	2.0	0.0
Natural Resources Managers				
EnCap Energy Capital Fund IX	Natural Resources	2013	2.8	3.1
EMR Capital Resources Fund I	Natural Resources	2014	3.5	6.1
EnCap Energy Capital Fund X	Natural Resources	2015	3.5	3.5
Tailwater Energy Fund IV	Natural Resources	2019	2.0	1.3
Ara Fund I	Natural Resources	2020	2.0	2.2
Ara Fund II	Natural Resources	2021	2.0	1.2
PGIM U.S. Agriculture Fund	Natural Resources	2021	2.0	1.1

[1] The commitments and contributions amounts are approximate and are as of December 31, 2022.

Private Market Managers' Commitment Overview[1] (Continued)

Managers	Strategy	Vintage Year	Commitment Amount ($M)	Contributed ($M)
Infrastructure Managers				
KKR Diversified Core Infrastructure Fund	Core	2020	10.0	6.5
Climate Adaptive Infrastructure Fund I	Value-Added	2021	3.0	0.9
JLC Infrastructure Fund I	Value-Added	2019	2.0	1.4
Global Infrastructure Partners Fund IV	Value-Added	2017	1.3	0.7
ISQ Global Infrastructure Fund III	Valued-Added	2020	2.0	0.2
BlackRock Global Infrastructure Fund IV	Value-Added	2021	2.0	0.1
Grain Communications Opportunity III	Valued-Added	2020	2.0	1.2
Total			119.7	73.0

[1] The commitments and contributions amounts are approximate and are as of December 31, 2022.

Update on Portfolio Activity

Portfolio Activity (October 2022 – February 2023)

	Strategy	% Total Portfolio[1] (%)	Action
Growth			
ABS China Direct Equity	Global Equities	<1	Hired
ABS Emerging Markets Ex-China Equity	Global Equites	<1	Hired
Risk Mitigation			
None			
Credit			
Sculptor Capital Credit Opportunity Fund	High Yield Bonds	<3	Share Class Change
Real Assets			
Global Infrastructure Partners V	Value-Added Infrastructure	<1	Hired
JLC Infrastructure Fund II	Value-Added Infrastructure	<1	Hired
DRA Growth & Income Master Fund XI, LLC	Value-Added Real Estate	<1	Hired

→ The commentary on the following pages highlights the notable public markets transactions. The new and potential private markets commitments are discussed later in the document.

[1] Based on the total committed and total portfolio market value as of December 31, 2022.

Commentary

→ Invested a portion of the SSgA Emerging markets index fund into two ABS EM strategies (December 2022)
Rationale: Meketa implemented an active multi-manager emerging markets approach to provide access to specific country and regional markets through local experts as opposed to teams located in the US, or other large financial centers. This approach also provides the opportunity to explicitly control China market exposure. ABS Investment Management was chosen due to the firm's considerable experience in emerging markets and flexible implementation options.

→ Share class change of Sculptor Capital Credit Opportunity (SCCO) Fund (November 2022)
Rationale: Due to its outperformance, Sculptor's allocation size grew larger than its target weighting. Therefore, Meketa engaged Sculptor to evaluate liquidity options and subsequently agreed to transition to a distribution share class that maintains the fee discount but allows some liquidity before the lock-up period expires.

Portfolio Activity – New Manager Details

Infrastructure

→ Global Infrastructure Partners V - $2.5 million committed.

Fund Name	Manager	Office Location(s)	Target Market	Target Geography
Global Infrastructure Partners v	Global Infrastructure Partners	New York, London, Stamford, Australia, India, Hong Kong, and South Korea	Value-Added Infrastructure	North America, Europe, Australia, and Asia

Background

→ Global Infrastructure Partners ("GIP") is an independent infrastructure fund manager founded in 2006 by a team of former senior executives from Credit Suisse ("CS") and General Electric ("GE"). The Firm's 22 Partners have an average of 31 years of experience, with 12 of the 15 investment Partners having been with the Firm for more than 10 years.

→ GIP currently comprises 170 investment professionals, 39 Business Improvement Team members, a 9-person ESG Team, 17 legal, tax and compliance professionals, and 64 operations professionals. GIP team members are located across seven offices.

→ GIP has raised $51.8 billion across the four prior flagship funds between 2006 and 2019, of which $38 billion has been invested, $37 billion has been realized, and $37 billion remains unrealized. GIP I held its final close in March 2008 with aggregate commitments of $5.6 billion. As of June 2022, GIP I is fully committed across 12 portfolio investments, all of which are fully exited.

Summary of Terms and Strategy

→ GIP V will continue the strategy deployed by prior flagship funds, targeting investments across the energy, transport, digital, and water/waste sectors, predominantly in North America, Europe, Australia, and Asia.

→ The Fund will target long-life, real infrastructure assets in markets with high barriers to entry that exhibit: (i) favorable policy support and supportive regulation; and (ii) alignment with initiatives surrounding the energy transition and decarbonization. In line with GIP's value-added approach, the Fund will primarily target brownfield assets which require significant investments to further develop their existing infrastructure. However, the Fund may also opportunistically pursue greenfield projects, likely in the renewable energy sector.

→ GIP expects equity checks for the Fund to range from $1.0 billion to $2.5 billion, resulting in 10 to 15 investments. This is the same size range that was targeted by GIP IV. GIP anticipates five- to seven-year hold periods on average, with potential exits through sales to strategic and/or financial buyers, possibly in combination with continuation funds or through an IPO and subsequent public offerings. Similar to its predecessor fund (GIP IV), GIP V will target gross returns of 15% to 20% IRR (net IRR of 11% to 15%), with mid-single digit average annual cash yields.

Fund Size	Management Fee[1]	Carry and Carry Structure	Preferred Return	Fee Income	Inv. Period and Total Term
$25 billion, no hard cap yet	1.75%	20%; Whole Fund	8%	100% off-set	5 years and 10 years

[1] 2.0% per annum of aggregate commitments during the Investment Period; thereafter, 2.0% per annum of net invested capital for Fund V. The Co-Investment V fee is based on unreturned invested capital and guarantees, less complete write-offs.

Global Infrastructure Partners Track Record
as of June 30, 2022
($ in Millions)

	Vintage Year	Invested Capital ($)	Realized Value ($)	Total Value ($)	Net TVM (X)	Net IRR (%)	Top Quartile[1] (%)
GIP I	2007	5,033	16,123	16,123	2.3	16.9	14.0
GIP II	2012	8,289	15,754	19,998	1.9	16.5	15.1
GIP III	2016	13,863	4,833	25,560	1.5	12.7	11.8
GIP IV	2020	10,994	12	12,069	1.0	0.1	NM
Total		**38,179**	**36,721**	**73,750**	**1.7**	**15.5**	

[1] Cambridge Associates | Infrastructure | All Geographies | Top Quartile | As of June 30, 2022

Portfolio Activity – New Manager Details

Infrastructure

→ JLC Infrastructure Fund II - $3 million committed.

Fund Name	Manager	Office Location(s)	Target Market	Target Geography
JLC Infrastructure Fund II	JLC GP II LLC c/o MJE-Loop Capital Partners LLC	New York City & Chicago	Value-Added Infrastructure	U.S & Canada

Background

→ JLC's origin begins when Loop Capital ("Loop") started contemplating expanding beyond its municipal and corporate finance business. They felt infrastructure was a logical place to start, and so in 2014 began advising on selected deals and started thinking about how they could approach principal investing and asset management.

→ Loop Partners had relationships and prior business experience with Magic Johnson Enterprises ("MJE"), which was also interested in expanding into the urban/regional infrastructure sector. The result was the formation of JLC, established in 2015, as a differentiated partnership joining two unique entities: Loop with 20 years of experience in municipal and corporate finance; and MJE with a more than 20-year track record of community development and urban-focused institutional investing.

→ The Fund's investment team is employed by JLC and shares some support services with Loop. JLC investment, operations, and senior leadership professionals primarily work out of the Firm's New York office as well as Loop's office in Chicago.

Summary of Terms and Strategy

→ JLC will invest in a roughly 50:50 combination of greenfield public-private partnerships ("P3s") and non-P3 brownfield opportunities mostly in energy, power, and communications, all predominantly in the U.S., positioning the Fund for a value-add risk return profile overall.

→ JLC has deep experience and extensive network relationships in each of these distinct market segments and believes the blended portfolio will take advantage of each segment's beneficial attributes, while mitigating their drawbacks. Additionally, JLC is seeking to make a unique contribution to the communities in which they invest, generally including positive environmental, social, and governance ("ESG") impacts, and more specifically creating job opportunities and other benefits for minority, urban, and underserved constituencies.

→ The strategy focuses on the middle market, defined as equity checks between $50 million and $150 million. JLC targets 12% to 15% gross IRR (~2x MOIC) which is consistent with the stated strategy and underwriting approach.

→ The P3 strategy will focus primarily on transportation opportunities, including airports and airport-related assets, roads, and transit. Other types of P3 projects the Fund will be targeting, but which have a smaller opportunity set, include social P3s, such as schools, hospitals, and civic buildings, as well as public communication projects, involving municipal and state broadband and wireless programs.

Fund Size	Management Fee	Carry and Carry Structure	Preferred Return	Fee Income	Inv. Period and Total Term
$750 million	1.5%	20%; whole-fund	8%	100% off-set	5 years; 12 years

JLC Infrastructure
as of June 30, 2022
($ in Millions)

Fund	Vintage Year	Invested ($M)	Realized Value ($M)	Total Value ($M)	Net Multiple (X)	Net IRR (%)	Top Quartile[1] (%)
Fund I	2017	235.7	149.3	300.2	1.1	8.4	16.3
Total	**2017**	**235.7**	**149.3**	**300.2**	**1.1**	**8.4**	**16.3**

[1] Preqin (IS: Global; Top Quartile) as of March 31, 2022. Robust June 30, 2022 benchmark data is not yet available.

Portfolio Activity – New Manager Details

Real Estate

→ DRA Growth & Income Master Fund XI, LLC- $3 million committed.

Fund Name	Manager	Office Location(s)	Target Market	Target Geography
DRA Growth & Income Master Fund XI, LLC	DRA Advisors LLC	New York, Miami, and San Francisco	Value-Added Real Estate	United States

Background

→ DRA Advisors, originally Dreyfus Realty Advisors, was previously the real estate advisory arm and subsidiary of The Dreyfus Corporation. After Dreyfus' merger with Mellon Bank in 1994, Dreyfus was required to divest its real estate operations and the two founding Partners continued the real estate investment business as DRA, a privately owned company since 1994.

→ DRA remains 100% independently owned by its 14 Partners and the majority of the firm is minority/woman-owned. Currently, the firm has nearly $12 billion in assets under management.

→ Throughout DRA's history, the manager has maintained discipline with a singular focus on investing in value-add real estate through its series of value-add commingled funds. DRA has 96 employees across its New York City headquarters and satellite offices in Miami and San Francisco. DRA's senior partners have an average 27 years of real estate experience and 23 years of tenure at the firm.

Summary of Terms and Strategy

→ Fund XI will continue DRA's value-added strategy of building a diversified portfolio of real estate assets across the United States. The Fund will invest in office, retail, multifamily, industrial and other real estate properties.

→ In investing Fund XI, DRA will seek to capitalize on inefficiencies to acquire operating assets at discounts to replacement cost. After acquisition, DRA leverages its team's expertise in real estate operations and capital markets to pursue value enhancement strategies that may improve the investment's potential for capital appreciation.

→ Value enhancement strategies include physical upgrades to properties, leasing and operational improvements to increase revenues and decrease expenses, risk management initiatives and proactive asset management, and the use of leverage to enhance returns and optimize capital structures. Joint ventures are also a significant aspect of DRA's approach to investing.

→ DRA will typically use local or regional operating partners for day-to-day management while DRA maintains overall control over major decisions. Fund XI will seek to generate a net IRR of 12% to 15% to investors with a significant portion of this return generated from cash flow.

Fund Size	Management Fee[1]	Carry and Carry Structure	Preferred Return	Fee Income	Inv. Period and Total Term
€2.25 billion target	1.50%	20% whole-fund	8%	100% off-set	3 years; 10 years

[1] During the Investment Period, 1.90% of committed capital; thereafter, 1.85% of net invested capital. Early closers will be eligible for a discount of 5 bps (to 1.85% of committed capital) on the Management Fee during the Investment Period and a discount of 2.5 bps (to 1.825% of net invested capital) thereafter. This rate will be available until otherwise notified by the Manager.

DRA Track Record
as of June 30, 2022
(€ in Millions)

Fund	Vintage Year	Invested ($M)	Realized Value ($M)	Total Value ($M)	Net Multiple (X)	Net IRR (%)	Top Quartile (%)[1]	Median (%)[2]
Opp Fund	1995	83	177	177	2.1	16.1	29.6	24.8
Fund I	1997	175	340	340	1.9	12.3	16.5	13.5
Fund II	1998	130	290	290	2.2	15.7	17.1	11.7
Fund III	2000	250	681	681	2.7	24.2	28.2	20.1
Fund IV	2003	368	624	624	1.7	12.4	28.5	15.6
Fund V	2005	1000	1,489	1,489	1.5	5.2	8.7	2.1
Fund VI	2007	836	1,412	1,412	1.7	10.3	13.2	6.9
Fund VII	2011	1,066	2,369	2,450	2.3	21.1	28.3	22.0
Fund VIII	2014	1,597	1,657	2,134	1.3	8.6	32.8	14.3
Fund IX	2016	1,598	1,411	2,613	1.7	19.0	32.6	21.0
Fund X	2019	1,147	388	1,492	1.3	32.6	29.3	19.5
Total		**8,250**	**10,838**	**13,702**	**1.7**	**12.9**		

[1] Preqin, Global Value-Add Real Estate, Upper Quartile, Net. As of June 30, 2022.
[2] Preqin, Global Value-Add Real Estate, Upper Quartile, Net. As of June 30, 2022.

Portfolio Activity

Meketa will continue to evaluate managers to include in the CUNY LTIP Portfolio.
The below are strategies and actions Meketa is considering implementing on behalf of the Pool.

Natural Resource

→ BCP Fund III

Private Equity Update

Private Equity Performance
As of 06/30/2022

By Investment	Vintage	Strategy	Committed ($M)	Contributed ($M)	Unfunded ($M)	Distributed ($M)	Remaining Value ($M)	TVPI (X)	IRR (%)
Greenspring VII	2015	Fund of Funds	3.0	2.9	0.1	0.9	6.1	2.38	20.0
Ironsides Direct V	2018	Buyout	8.0	7.6	1.1	0.8	13.4	1.85	23.8
Ironsides V	2018	Fund of Funds	8.0	4.3	4.1	0.5	5.9	1.47	42.9
FS Equity VIII	2019	Buyout	4.7	2.9	1.8	0.1	4.8	1.67	34.3
Vitruvian IV	2020	Buyout	4.0	2.5	1.8	0.0	2.5	1.03	NM
Davidson Kempner V	2020	Distressed	3.9	3.4	0.5	0.0	3.8	1.13	NM
Stellex II	2021	Distressed	2.0	0.7	1.3	0.0	0.7	1.11	NM
Avance Partners	2021	Buyout	4.0	1.5	2.7	0.1	1.3	0.97	NM
Charlesbank X	2021	Buyout	2.0	0.5	1.5	0.0	0.5	1.01	NM
Linden V	2021	Buyout	4.0	0.0	4.0	0.0	NM	NM	NM
Ridgemont IV	2022	Buyout	4.0	0.0	4.0	0.0	NM	NM	NM
Lightspeed Select V	2021	Venture Capital	3.0	0.2	2.8	0.0	0.5	2.62	NM
Total			50.6	26.4	25.4	2..4	39.4	1.58	23.6

Market Update

→ Private Equity valuations and performance are lagged, so the returns reflect activities through June 30, 2022.

→ Fundraising activity for private equity funds has pulled back meaningfully in 2022 relative to 2021 with fundraising softness continuing in Q4. Notably, 2022 has seen a shift toward backing fewer but larger funds as the annual average fund size sits at all-time highs this year.

→ Purchase price multiples among buyout deals increased through 2021 but declined in Q2 2022 and into Q3. However, the valuation declines seen so far in 2022 have been modest in comparison with public equities.

→ After a record year for private equity in 2021 across a range of metrics including fundraising, closed deals, exits, and performance, the overall PE environment has generally settled down over the course of 2022.

→ While experiencing a slowdown this year, private equity hasn't been as impacted as the public equity space where many broad stock indices saw 20%-30% declines this year along with substantial decreases in IPO/SPAC merger activity.

→ Perhaps the most notable overlap between private/public equity has been in venture capital. Following a very strong year for venture returns and realizations in 2021, many venture capital funds have seen exit options dry up and public stakes (potentially still in lock-up periods) plummet in value during 2022.

→ It may prove to be a good time to invest in earlier stage venture strategies as round valuations have corrected somewhat and startups funded today may be well-positioned to build their business over the next few years as potential competitors with limited runway are challenged in an environment where capital has become more scarce.

→ CUNY has fully deployed its 2022 private equity allocation as dictated by pacing study.

Moving Forward

→ Meketa remains cautious about private equity valuations, excessive dry powder and certain market sectors that have experienced a run up in the last few years.

→ However, market volatility encourages market opportunities as seen with the 2009 and 2010 vintage years being some of the strongest performing years in private equity post the GFC in 2008.

→ As Meketa recommends that CUNY maintain its current pacing plan, it will proactively re-evaluate market conditions frequently. There are still attractive investment opportunities in small to mid-market buyouts and surprisingly, early-stage venture capital. However, Q4 2022 is expected to reflect a correction in private equity performance.

→ The CUNY portfolio continues to be well positioned for future growth and strong returns.

Appendices

MWBE Overview

Portfolio Activity – MWBE/SDVOB Manager Status[1]

Manager	Strategy	Registration	MWBE Status	% of Portfolio
Longfellow	Core Fixed Income	New York	Woman	12.97
Rhumbline	S&P 1500 Index	New York (In Process)	Woman	7.72
Rhumbline	MSCI EAFE Index	New York (In Process)	Woman	4.88
Rhumbline	U.S. TIPS Index	New York (In Process)	Woman	1.99
Payden & Rygel	Emerging Markets Debt	None at this time	Woman	3.85
JLC Partners (1 & II)	Value-Add Infrastructure	None at this time	Minority & Emerging	0.23
Stellex Capital Partners	Private Equity	None at this time	Minority & Emerging	0.35
Gerding Edlen Green Cities IV	Value-Add Real Estate	None at this time	Minority & Woman	0.35
ISQ Global Infrastructure Fund III	Value-Add Infrastructure	None at this time	Minority & Emerging	0.06
Grain Communication Opportunity III	Value-Add Infrastructure	None at this time	Minority	0.28
Avance Investment Partners Fund I	Private Equity	None at this time	Minority & Emerging	0.29
DRA Growth & Income Fund XI	Value-Add Real Estate	None at this time	Minority & Woman	TBD
Total NYS Registered*				**27.6**
Total MWBE Manager Exposure				**32.9**

[1] As of December 31, 2022.
*Includes in process registrations
*Capital for DRA Growth & Income Fund XI has not been called

ESG-Related Manager Monitoring

CUNY – Public Manager Monitoring

Manager	ESG Themes	CU-200 Free[1]	MWBE
36 South	N	Y	N
AB Global Core	N	N	N
ABS Emerging Markets	N	N	N
Alpstone Global Macro Fund	N	Y	N
American Century	N	Y	N
Artisan Global Opportunities	N	Y	N
BH-DG	N	Y	N
Elliott International	N	N/A	N
First Eagle	N	N	N
Kopernik	N	N	N
Longfellow	N	N/A	Y
Payden & Rygel	Y	N/A	Y
PAM Bank Loans	N	N/A	N
RhumbLine	N	N	Y
SSgA	N	N	N
Sculptor	N	N/A	N

[1] The Carbon-Underground 200 ("CU 200") is maintained by Fossil Free Indexes and identifies the top 100 coal and the top 100 oil and gas publicly traded reserve holders globally, ranked by the potential carbon emissions content of their reported reserves. The above data lists the managers with CU-200 names in their portfolios.

CUNY – Private Markets Monitoring

Manager	ESG Themes	MWBE
Ara Fund I and II	Y	N
Avance Investment Partners Fund	N	Y
Crow Holdings Realty Partners IX	Y	N
The Green Cities Company IV	Y	Y
Stellex II	Y	Y
ISQ Global Infrastructure Fund III	Y	Y
Grain Communication Opportunity III	N	Y
Climate Adaptive Infrastructure Fund I	Y	N
KKR Diversified Core Infrastructure	Y	N
BCP Fund III, L.P.	Y	N
Global Infrastructure Partners V	Y	N
DRA Growth & Income Fund XI	N	Y

ESG-Related Manager Overviews

→ Current ESG-related managers in CUNY portfolio

- ARA Fund I and II ($2.0 million commitments each)
  - Ara seeks to execute a strategy of investing in companies that seek to decarbonize the industrial, chemicals and materials, and energy sectors – areas that have historically accounted for a large portion of greenhouse gas emissions. Because sustainability and addressing global climate change are becoming important considerations for companies and consumer, Ara believes there is significant momentum and investment opportunity for the Fund's strategy.
- Crow Holdings Realty Partners IX ($1.5 million commitment)
  - Crow considers a variety of ESG issues within its operations, and where appropriate, in the execution of the diversified value-add strategy. Crow has developed an ESG policy and guidelines that align with the United Nations Principles for Responsible Investment ("UNPRI") and the Global Real Estate Sustainability Benchmark ("GRESB") that support equal treatment, human rights, public health, safety, and the reduction of environmental impacts. Crow does not have a formal Responsible Contractors Policy; however, signing a Responsible Contractor Policy is still under consideration. Crow will support local unions when economically reasonable within their fiduciary responsibility to investors to achieve the best financial outcome.

ESG Manager Overviews (continued)

- Stellex Capital Partners II ($2.0 million commitment)
  - Stellex is majority minority-owned firm. The Fund will seek to make control investments in underperforming, undervalued or special situation middle-market businesses and operating assets in the US and Europe. While looking for private equity returns, the team applies a flexible approach to make investments through either a direct equity investment or a structured transaction with the use of debt type securities in order to gain control and drive operational improvements. The Firm also uses the secondary market to buy debt for loan-to-own strategies as well as small toehold positions to gain more information. The firm is very labor-friendly.
- The Green Cities Company IV ($1.5 million commitment)
  - Green Cities is a privately held, majority minority and women-owned real estate investment, development, and property management firm. The firm's early investments were build-to-suit office developments, however the firm expanded their capabilities over the years into for-sale condominiums, multifamily, and mixed-use assets. Green Cities is a leader in the development of green and sustainable buildings as certified by the Leadership in Energy and Environmental Design ("LEED") standard. To date, Green Cities built or retrofitted over 75 LEED properties. GEIM remains committed to best in class ethics and ESG practices including the use of 100% union-labor.

ESG Manager Overviews (continued)

- Payden Emerging Markets Debt ($14.9 million as of 2/28/22)
  - Payden embeds ESG considerations in all aspects of their investment process. Whether in the sovereign, quasi-sovereign, or corporate research process, evaluating environmental, social and governance issues is part of sound fundamental analysis in their viewpoint. In particular, Payden often uses the Sustainable Accounting Standards Board's (SASB) "industry standards" as a touchstone for organizing their ESG thinking at the issuer level and Payden utilizes MSCI ESG research to aid in monitoring and ranking the ESG elements of their portfolios. Payden has an ESG committee that regularly meets with analysts to review new holdings. These quarterly reviews promote information sharing across the firm and allows Payden to highlight and understand both the risks and positive ESG related aspects of clients' portfolios. Payden is also a UN-PRI signatory.

ESG Manager Overviews (continued)

- Climate Adaptive Infrastructure Fund I ($3.0 million commitment)
  - Climate Adaptive Infrastructure ("CAI") has an affirmative requirement that the Fund's investments be climate adaptive, with a mandate to avoid or mitigate negative ESG impacts. To implement this prime directive, CAI has developed a dual set of climate adaptive and ESG screening criteria with scoring systems that are designed to evaluate climate adaptive investments for the physical, policy, and political risks of the climate crisis to secure traditional infrastructure downside protection. The climate screen is a standardized set of seven criteria that are used to rate benefits and risks and identify any mitigation actions necessary to support an investment. For the ESG screen, CAI applies sector-specific factors to each investment reflecting United Nations Sustainable Development goals ("UN SDGs") and other appropriate considerations.
- ISQ Global Infrastructure Fund III ($2.0 million commitment)
  - ISQ established a Code of Responsible Investing (the "Code") at its founding outlining the firm's philosophy about the interconnectedness of financial performance and sustainability and commits the firm to managing the ESG aspects of its investments in an environmentally and socially responsible manner. ISQ also established an ESG Policy (the "Policy") that it describes as underpinning the Code with a set of eight distinct objectives that more specifically translate the Code into broad sets of actions. ISQ reports having used the United Nations Principles of Responsible Investment (UNPRI) as a guide for its Policy and became an approved signatory in May 2020.

ESG Manager Overviews (continued)

ISQ implements its Code and Policy throughout the investment process, across sourcing, due diligence, approval, management, monitoring, and exit. Portfolio companies have been required to track and report on applicable ESG performance indicators, which are documented for investors in fund quarterly reports, and in the Annual ESG Report with aggregated ESG metrics and case studies across the entire portfolio.

- KKR Diversified Core Infrastructure Fund ($10.0 million commitment)
  - KKR has been publicly committed to responsible investing since it became a signatory of the UN Principles for Responsible Investment ("UNPRI") in 2009. The Firm published a global Private Equity ESG Policy in 2014, outlining its processes and procedures related to responsible investing. In 2020 the Firm published KKR's Responsible Investment Policy, replacing its prior ESG policy, and formalizing their approach to integrating environmental, social, and governance risks and value creation opportunities into investment processes across asset classes globally. KKR believes that ESG matters are business matters and thus incorporated into the decision-making process. The Firm's ESG approach has materiality focus, where specific initiatives will need to be developed depending on the industry, geography, and/or specific company/asset.
- BCP Fund III, L.P. ($2.0 million commitment)
  - BCP has an environmental, social, and governance ("ESG") policy that is based on guidelines and principally consistent with United Nation Principles of Responsible Investment and Private Equity Growth Council Guidelines for Responsible Investment. BCP seeks to implement the ESG Policy across its investment fund while also endeavoring to maximize investment returns. In 2020, BCP made a commitment to establish and strengthen its formal ESG processes at the fund level. BCP engaged Bridge House Advisors, a third-party ESG consulting firm, to assist with this process. Seven core ESG topics and nineteen metrics were identified for all of its portfolio companies to report on bi-annually.

- Global Infrastructure Partners (GIP) V ($2.5 million commitment)
  - GIP has had a formal ESG policy in place since 2010. Given the nature of its investment, GIP believes ESG should be embraced thought the entire life cycle of an investment. GIP became a signatory of the United Nations Principled for Responsible Investing ("UNPRI") in 2010 to formally align with UNPRI principals. GIP conducts and implements detailed assessment of ESG risks and considerations into investment analysis to enhance investment decision making and to better understand the impact of ESG related risks, including climate change risk. GIP has a dedicated nine-person ESG team.

MEKETA
INVESTMENT GROUP

Risk Mitigating Strategies (RMS)

A dynamic program of diversifying strategies with multiple applications

Risk mitigating strategies are often overlooked by institutional investors, but when incorporated into asset allocation, can significantly improve expected portfolio outcomes. RMS typically provides diversification with defensive characteristics relative to economic growth sensitive assets such as equities and credit.

Expected Benefits

PROTECTION	against various types of market shocks
POSITIVE RETURNS	expected over the long-term and during most periods of volatility
CUSTOMIZATION	and scalability based on specific needs of the investor
PORTFOLIO EFFICIENCY	and diversification that is difficult to achieve in traditional asset classes

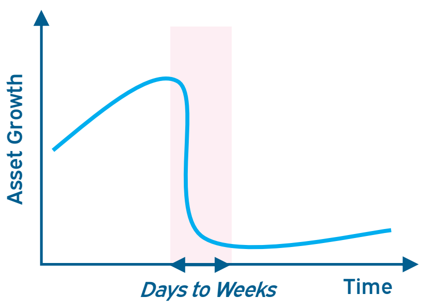
Potential Considerations

PERFORMANCE	May lag in extended bull markets
COMPLEXITY	Requires expertise in implementation and monitoring
LEVERAGE	Additional exposure to leverage through managers
MANAGER SELECTION REQUIRED	Active on-going selection and monitoring of managers

Building Blocks

- Three main components: (i) first responders, (ii) second responders, and (iii) diversifiers
- RMS typically provides diversification by having modest positive or negative correlations to traditional assets such as equities and credit
- Each RMS component plays a role in increasing the probability of adding value to overall asset allocation

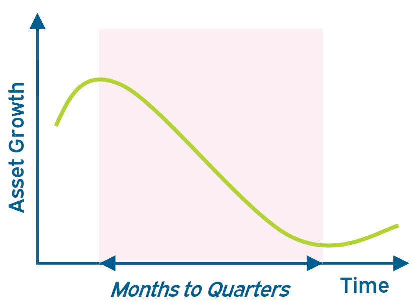
Sharp Drawdown



1st Responders

Primary Role: First line of protection in an equity drawdown
Strategies Used: Long Duration US Treasuries, Long Volatility, Tail Risk Strategies

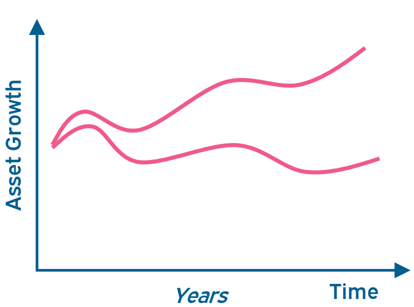
Extended Drawdown



2nd Responders

Primary Role: Second line of protection in an equity drawdown
Strategies Used: Trend Following, CTAs, Managed Futures

Bull & Flat Markets



Diversifiers

Primary Role: Provide uncorrelated returns to stabilize 1st and 2nd responders
Strategies Used: Global Macro, Alternative Risk Premia, Multi-Strategy, Equity Market Neutral, Relative Value, Insurance Linked, etc.

Implementation(s)

- As a standalone allocation to replace the shortcomings of traditional "hedge fund" allocations and enhance portfolio efficiency
- Combine with duration beta to complement traditional LDI and fixed income portfolios
- Combine with equity beta or multi-asset beta to complement traditional long-only active equity portfolios and total asset allocations

Key Inputs

COST
negative versus positive expected return

ASSET CLASS COVERAGE
explicit hedge versus correlation hedge

CAPITAL EFFICIENCY
line-item risk versus capital deployment

CONVEXITY
linear versus exponential

Disclaimer, Glossary, and Notes

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Credit Risk: Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security).

Duration: Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

Information Ratio: This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

Jensen's Alpha: A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk. Portfolio Return- [Risk Free Rate+Beta*(market return-Risk Free Rate)].

Market Capitalization: For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

Market Weighted: Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

Maturity: The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

Prepayment Risk: The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

Price-Book Value (P/B) Ratio: The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

Price-Earnings (P/E) Ratio: A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about is future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

Quality Rating: The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

Sharpe Ratio: A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

STIF Account: Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

Standard Deviation: A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

Style: The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

Tracking Error: A divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark, as defined by the difference in standard deviation.

Yield to Maturity: The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a "basis book." For example, a 5% bond pays $5 a year interest on each $100 par value. To figure its current yield, divide $5 by $95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay $100 for the bond that can be bought now for $95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

$$\frac{5\%\ \text{(discount)}}{5\ \text{(yrs. to maturity)}} = \begin{array}{l}1\%\ \text{pro rata, plus}\\ 5.26\%\ \text{(current yield)}\end{array} = 6.26\%\ \text{(yield to maturity)}$$

Yield to Worst: The lowest potential yield that can be received on a bond without the issuer actually defaulting. The yield to worst is calculated by making worst-case scenario assumptions on the issue by calculating the returns that would be received if provisions, including prepayment, call, or sinking fund, are used by the issuer.

NCREIF Property Index (NPI): Measures unleveraged investment performance of a very large pool of individual commercial real estate properties acquired in the private market by tax-exempt institutional investors for investment purposes only. The NPI index is capitalization-weighted for a quarterly time series composite total rate of return.

NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE): Measures the investment performance of 28 open-end commingled funds pursuing a core investment strategy that reflects funds' leverage and cash positions. The NFI-ODCE index is equal-weighted and is reported gross and net of fees for a quarterly time series composite total rate of return.

Sources: Investment Terminology, International Foundation of Employee Benefit Plans, 1999.
The Handbook of Fixed Income Securities, Fabozzi, Frank J., 1991

Throughout this report, numbers may not sum due to rounding.

Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.