TEACHERS' RETIREMENT SYSTEM
of the State of Kentucky

Special Workshop Meeting of the

TRS Board of Trustees

AGENDA

Monday, November 20, 2023

8:30	Continental breakfast	
8:45	Introduction	Gary Harbin
9:00	Kentucky ethics overview	Beau Barnes
9:30	Actuarial discussion	Ed Koebel Cavanaugh Macdonald
10:30	Break	
10:45	Health insurance benefits	Jane Gilbert
Noon	Lunch and discussion of retirement issues	
1:00	Long-term investing	Curt Scott Jack Holden Jack White Todd Asset Management
2:00	Break	
2:15	Aon's investment climate insights	P. J. Kelly Aon Investments USA
3:15	Administrative operations discussion	Gary Harbin

The meeting will be held in the Administrative Office of the Courts conference room at 1001 Vandalay Drive, Frankfort, Kentucky.

Teachers' Retirement System
of the State of Kentucky

Fiduciary and Ethics Overview

Nov. 21, 2022

Gary L. Harbin, CPA
Executive Secretary

Fiduciary Overview

Fiduciary training helps fiduciaries understand:

- What is a fiduciary?
- Sources and standards of fiduciary duties

What is a Fiduciary?

- Highest duty in law
- Undivided loyalty — Trustees must discharge duties solely in interest of plan participants and beneficiaries and for exclusive purpose of providing benefits to them.
- Trustees should avoid any conflict of interest in which the trustee’s interests conflict with interests of plan participants and beneficiaries.

Sources of Fiduciary Duty

Federal Law	Common Law
State Law	Plan and Plan-Related Documents

Fiduciaries have a duty to administer a plan in good faith in accordance with law and its written plan documents and procedures.

Fiduciary Duty in Brief

General Conduct

1. Honesty and Duty of Full Disclosure — Trustees must disclose any material fact that could influence in any way the trustee’s decisions, actions or willingness to make decisions or to take action. Abstain from votes where trustee has a conflict.
2. Avoiding Appearance of Impropriety — “Front Page Test”
3. Due Care — The standard is: “What would a prudent public pension plan trustee do?”

Fiduciary Duty in Brief

Specific Duties Owed to Plan Participants and Beneficiaries

1. Providing due process.
2. Informing about the plan.
   Summary plan description, newsletters, website and social media.
3. Protecting the fund.
   Preventing incursions into fund for political objectives.
   Requesting actuarially sound contributions to fund.
   Requiring and collecting contributions when due.
4. Investing solely to provide legal benefits to plan participants and beneficiaries.
   Trustees do not have to be investment experts. They do need to feel assured that they have employed competent investment staff and managers with adequate checks and safeguards.

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Ethics Standards

Ethics training helps trustees understand:

- Duties under Code of Conduct for Members of a Pension Scheme Governing Body
- Kentucky Executive Branch Code of Ethics
- Teachers' Retirement System of the State of Kentucky (TRS) statutes and policies

Ethics Duties

Duties Under Code for Members of Pension Governing Body

Ethics Duties

Duties for Trustees Under Code of Conduct

1. Act in good faith and in the best interest of the scheme participants and beneficiaries.
2. Act with prudence and reasonable care.
3. Act with skill, competence and diligence.
4. Maintain independence and objectivity by, among other actions, avoiding conflicts of interest, refraining from self-dealing and refusing any gift that could reasonably be expected to affect their loyalty.
5. Abide by all applicable laws, rules and regulations, including the terms of the scheme documents.
6. Deal fairly, objectively and impartially with all participants and beneficiaries.
7. Take actions that are consistent with the established mission of the scheme and the policies that support that mission.
8. Review on a regular basis the efficiency and effectiveness of the scheme's success in meeting its goals, including assessing the performance and actions of scheme service providers, such as investment managers, consultants and actuaries.
9. Maintain confidentiality of scheme, participant, and beneficiary information.
10. Communicate with participants, beneficiaries, and supervisory authorities in a timely, accurate and transparent manner.

Executive Branch Code of Ethics

Statement of Public Policy
Prohibited Conflicts of Interest
When to Abstain
Prohibited Acts
Acceptance of Gifts
Statements of Financial Disclosure

Executive Branch Code of Ethics

Statement of Public Policy

The public policy of the commonwealth requires that:

- A public servant must be independent and impartial;
- Decisions and policies must be made through the established processes of government;
- A public servant should not use public office to obtain private benefits; and
- The public has confidence in the integrity of its government and public servants.

(KRS 11A.005)

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Executive Branch Code of Ethics

Prohibited Conflicts of Interest

No public servant, by himself or through others, shall knowingly use or attempt to use his influence:

- In any matter that involves a substantial conflict between a personal/private interest and duties in public interest;
- To obtain financial gain
- To secure or create privileges, exemptions, advantages or treatment for himself or others in derogation of the public interest at large.

(KRS 11A.020)

Executive Branch Code of Ethics

When to Abstain

Some guidelines for determining whether to abstain:

- Does a personal interest create a substantial threat to independence of judgment;
- Is participation likely to have any significant effect on the disposition;
- Will the decision affect the public servant differently from the public or differently from others in similar positions (i.e., jobs);
- A public servant may request an advisory opinion from the Executive Branch Ethics Commission in accordance with the commission's rules of procedure.

(KRS 11A.030)

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Executive Branch Code of Ethics

Prohibited Acts

Examples:

- Knowingly disclosing or using confidential information gained in duties.
- Knowingly undertaking, bidding on, negotiating, or enjoying any agreement or purchase made or awarded by the agency where the public servant is employed or supervises for himself or a business where he owns at least 5%.
- Knowingly accepting compensation, other than that provided by law, for performance of official duties without the prior commission approval.
- Violating employment restrictions.
- Lobbying and representation restrictions for one year.

(KRS 11A.040)

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Executive Branch Code of Ethics

Acceptance of Gifts

Generally, Board Governance Manual says gifts should be avoided.

The Executive Branch Code provides:
"No public servant … shall accept any gifts … totaling more than $25 in a calendar year from any person or business that does business with … the agency in which the public servant is employed or which he or she supervises … ."

Not included: Gifts from family, campaign donations or prizes available to public. (KRS 11A.010(5))

BUT: Even if otherwise allowed, gifts are a problem if made quid pro quo.

(KRS 11A.045)

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Executive Branch Code of Ethics

Statement of Financial Disclosure

Each officer, each public servant listed in KRS 11A.010(9)(a) to (g), and each candidate shall file a statement of financial disclosure with the commission.

(KRS 11A.050)

TRS Conflict of Interest Statute

No trustee or employee of the board shall:

1. Have any interest, direct or indirect, in the gain or profits of any investment or transaction made by the board;
2. Use any TRS assets except to make payments authorized by the board;
3. Become endorser, surety or obligor for money loaned to or borrowed from board;
4. Have a contract with TRS individually or through a business;
5. Use his or her official position with TRS to obtain a financial benefit;
6. Use confidential TRS information to further personal economic interests; or
7. Generally, hold outside employment with any person or business that he or she has involvement as part of TRS position.

(KRS 161.460)

Policy & Form

BOARD GOVERNANCE MANUAL

APPENDIX 7
CONFLICT OF INTEREST AND CONFIDENTIALITY POLICY

INTRODUCTION

1. Adoption of Conflict of Interest and Confidentiality Policy

Pursuant to the provisions of KRS 161.250, the Board of Trustees (board) of the Teachers' Retirement System of the State of Kentucky (TRS) is vested with the responsibility for the general administration and management of the retirement system. The Board may adopt procedures necessary to conduct the business of the retirement system as needed. The law shall control if any inconsistency exists between the law and this policy.

2. Statement of Conflict of Interest and Confidentiality Policy

TRS recognizes the need to maintain the public's confidence and trust in the integrity of TRS and the Commonwealth of Kentucky. Individuals associated with TRS must not engage in activities that have the potential to become a conflict of interest in their association with TRS. Likewise, individuals associated with TRS must not release information about TRS or any of its members that would breach any duty to protect such information. TRS recognizes the need to establish procedures to prevent such conflicts or breaches.

3. Purpose

The purpose of this Conflict of Interest and Confidentiality Policy is to: establish which individuals are subject to TRS's conflict of interest provisions; establish the specific standards of conduct with regard to conflict of interest; establish standards with regard to the confidentiality of information; and establish procedures for obtaining written conflict of interest statements and confidentiality agreements from certain individuals.

4. Procedures Regarding Conflicts of Interest and Confidentiality

A. Application of Policy

1) This policy shall apply to all individuals who have a statutory, contractual or working relationship with TRS.

2) Individuals affected by this policy shall include, but are not limited to:

a) Employees of TRS;

b) The board;

c) Independent contractors of TRS;

d) Vendors of TRS;

e) Employees or Officers of the Commonwealth of Kentucky providing legal or expert advice at the request of TRS; and

f) Any person acting in a fiduciary capacity for TRS.

B. Standards of Conduct Regarding Conflicts of Interest

1) Individuals have an obligation to diligently identify, disclose, avoid and manage conflicts of interest.

2) Potential conflicts of interest exist when an ind
be directly or indirectly financially impacted, v
a decision made by TRS in which the individu

3) Individuals and their family members should n
any agency doing business with TRS for finan
contract, without full disclosure and satisfactor
of interest in accordance with the Executive B

4) Individuals should not be involved in the decis
member of their family as defined by the Exec

5) Individuals should not conduct business or par
agency in which the individual or family mem
employment.

6) Individuals should not accept campaign contri
discounts, services or other compensation und
reasonably be inferred that a major purpose of
in the performance of their duties for TRS.

7) Individuals must avoid all conduct that in any
that the individual is using his or her position
political or private interest.

8) Individuals not covered by the conflict of inte
must not violate any conflict of interest statute
their duties with TRS. These individuals must
financial or other transaction with a trustee or
standards of the Executive Branch Ethics prov
11A.

C. Standards of Conduct Regarding Confidentiality

1) Individuals associated with TRS may be granted access to confidential information in the course of being a TRS employee, board member or contractor.

2) This information may include, but is not limited to, investment trade data; individual member information, including but not limited to, Social Security numbers, names, addresses, phone numbers, birth dates, beneficiaries, health insurance information, member numbers; documents; records; programs; files; scientific or technical information; and other information made available to individuals for purposes of completing their obligations to TRS.

3) These individuals have a duty to keep confidential the information to which they are granted access as a result of their association with TRS.

4) TRS and these individuals shall also recognize that confidential member information is protected under KRS 161.585.

5. Written Statements of Conflict of Interest and Confidentiality

A. On an annual basis, the Executive Secretary, Deputy Executive Secretaries, Chief Investment Officer, Director of Investment Strategies, Chief Financial Officer, the members of the board, independent contractors, vendors of TRS and other persons identified in Section 2 (2) shall file a written conflict of interest statement on the form(s) provided by TRS and adopted by the Board of Trustees.

B. Upon proposal for contract and continuing on an annual basis, any independent contractors and vendors of TRS shall file a written confidentiality agreement on the form provided by TRS and adopted by the Board of Trustees. This form may be amended to conform to specific needs of the individual vendor or contractor as deemed necessary by general counsel or designee.

C. Other employees of TRS also may be requested to file a written conflict of interest statement as needed or requested by the board.

D. An individual who abstains from involvement in an official decision because of a personal or private interest must disclose that fact in writing to the executive secretary.

6. Ethics and Confidentiality

Individuals as set forth above shall conform to the Executive Branch Code of Ethics with regard to conflicts of interests as set forth in KRS Chapter 11A and this policy. Individuals as set forth above shall conform to the confidentiality requirements of KRS 161.585.

Adopted March 16, 2009; amended September 19, 2016

Conflict of Interest Statement

External Service Provider

TEACHERS' RETIREMENT SYSTEM
OF THE STATE OF KENTUCKY

EXTERNAL SERVICE PROVIDER
CONFLICT OF INTEREST STATEMENT

I, ______________________________, in my role as ____________________ ________________________ for the Teachers' Retirement System of the State of Kentucky (TRS), recognize the need to maintain the public's confidence and trust in the integrity of TRS and the Commonwealth of Kentucky.

I understand that I have the obligation to diligently identify, disclose, avoid and manage conflicts of interest that may arise through my relationship with TRS.

I will conduct my activities with TRS so that I do not advance or protect my own interests or the private interests of others with whom I have a relationship, in a way that is detrimental to the interests of TRS.

In every instance in which I am acting on behalf of TRS, I will conduct my activities in a manner to best promote the interests of TRS.

I agree not to attempt to influence TRS in disregard of the public interest at large.

In all matters where an official decision must be made that may favorably or detrimentally impact my own financial interests or the financial interests of other individuals or organizations with whom I have a relationship, I will reveal that relationship and abstain from involvement in the official decision.

When a conflict of interest arises, or when a potential conflict of interest arises, I will disclose that conflict or potential conflict to my contact person at TRS and seek resolution of that issue.

I agree not to violate any conflict of interest statute or principle by the performance of my duties with TRS. I will not engage directly or indirectly in any financial or other transaction with a trustee or employee of TRS that would violate the standards of the Executive Branch Ethics provisions, as set forth in KRS Chapter 11A.

Agreed this the ________ day of __________________, 20__.

____
Signature

____
Name

Title

____
Company

Read, sign & return to TRS

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Conflict of Interest Statement

Board of Trustees and Employees

Read, sign & return to TRS

TEACHERS' RETIREMENT SYSTEM
OF THE STATE OF KENTUCKY

BOARD OF TRUSTEES AND EMPLOYEES
CONFLICT OF INTEREST STATEMENT

I, ______________________________, in my role as ____________________ ______________________ for the Teachers' Retirement System of the State of Kentucky (TRS), recognize the need to maintain the public's confidence and trust in the integrity of TRS and the Commonwealth of Kentucky.

I understand that I have the obligation to diligently identify, disclose, avoid and manage conflicts of interest that may arise through my relationship with TRS.

I will conduct my activities with TRS so that I do not advance or protect my own interests or the private interests of others with whom I have a relationship, in a way that is detrimental to the interests of TRS.

In every instance in which I am acting on behalf of TRS, I will conduct my activities in a manner to best promote the interests of TRS.

I agree not to attempt to influence TRS in disregard of the public interest at large.

In all matters where an official decision must be made that may favorably or detrimentally impact my own financial interests or the financial interests of other individuals or organizations with whom I have a relationship, I will reveal that relationship and abstain from involvement in the official decision.

When a conflict of interest arises, or when a potential conflict of interest arises, I will disclose that conflict or potential conflict to the TRS Executive Secretary, or his or her designee, and seek resolution of that issue.

I agree not to violate any conflict of interest statute or principle by the performance of my duties with TRS. I will not engage directly or indirectly in any financial or other transaction with a trustee, employee of TRS or any other person or organization that would violate the standards of the Executive Branch Ethics provisions, as set forth in KRS Chapter 11A.

Agreed this the day of , 20 .

____
Signature

____
Name

____
Title

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Summary

The provisions of the Executive Branch Code of Ethics and the TRS Conflict of Interest statute provide base guidelines for conduct. As always, it is important to be mindful that TRS needs to avoid not only any actual impropriety, but also even the appearance of impropriety. Just because the code or statute may not prohibit something does not mean that it is OK.

TRS
KENTUCKY

Our Members Come First!

800-618-1687

8 a.m. – 5 p.m. ET
Monday – Friday

info@trs.ky.gov
https://trs.ky.gov

Protecting & Preserving Teachers' Retirement Benefits

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

Teachers' Retirement System of the State of Kentucky

Actuarial Principles

Board Workshop
November 20, 2023

Ed Koebel, EA, FCA, MAAA
Chief Executive Officer

Alisa Bennett, FSA, EA, FCA, MAAA
President

TEACHERS' Retirement System TRS KENTUCKY

www.CavMacConsulting.com

Agenda

- 2023 Valuation Key Findings
  - Retirement Annuity Trust
  - Health Insurance Trust
  - Life Insurance Trust

- Health Insurance Considerations

Basic Retirement Funding Formula

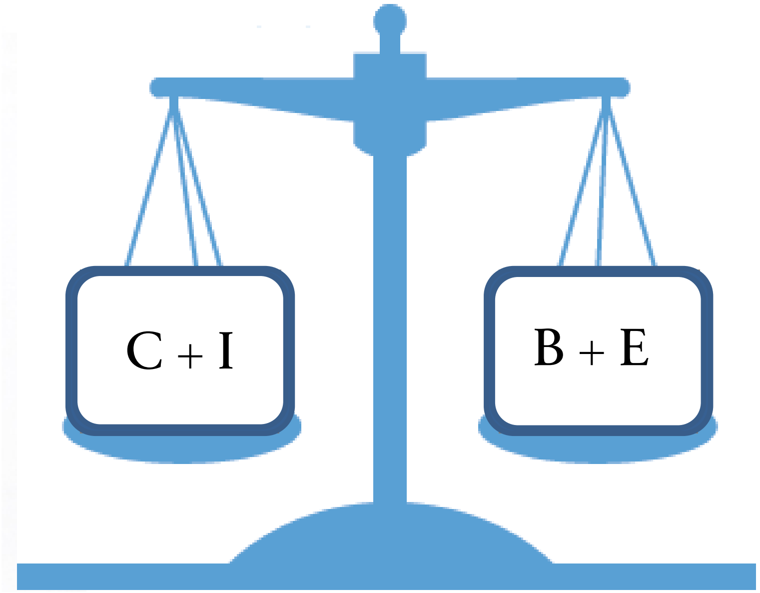
C + I = B + E

C = Contributions

I = Investment Income

B = Benefits Paid

E = Expenses



"Money In = Money Out"

Retirement Annuity Trust

Retirement Annuity Trust Key Findings

- TRS 4 is Here!!
- Over 8,000 new hires since January 1, 2023
  - Most are Part-Timers in the Non-University Group
- Contributions coming in are more than enough to cover liabilities so far, so funding mechanism is working

- Direct-Rate Smoothing is working as well!!
- Due to 2021 assumption changes, phasing in of State contributions to the Plan are increasing approximately 1.72% of payroll each year for 5 years
  - This methodology began last year for the 2021 valuation

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Retirement Annuity Trust Key Findings

- TRS received 100% of the Actuarially Determined Employer Contribution for the fiscal year ending June 30, 2023

- Net Investment Return on Market Value of 10.2%
  - Trust Fund increased $1.3 Billion due to positive investment return in addition to negative cash flow
  - Negative cash flow for 2023 as a percentage of market value of assets is (4.02)%
    - Last year's percentage of (1.19)% included additional contributions to pay off past benefit improvements that were being amortized

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Retirement Annuity Trust Key Findings

- Actuarial Value of Asset Return of 6.6%
  - Compare to 7.10% investment return assumption for period
  - Smoothing of investment gains and losses over 5-year period
- Increase of 3.64% in State Pension Contribution Requirement from last year
  - Last year was an increase of 0.34%
- Unfunded Accrued Liability (UAL) went from $16.9B to $17.5B
- Funding Ratio went from 58.8% to 58.6%

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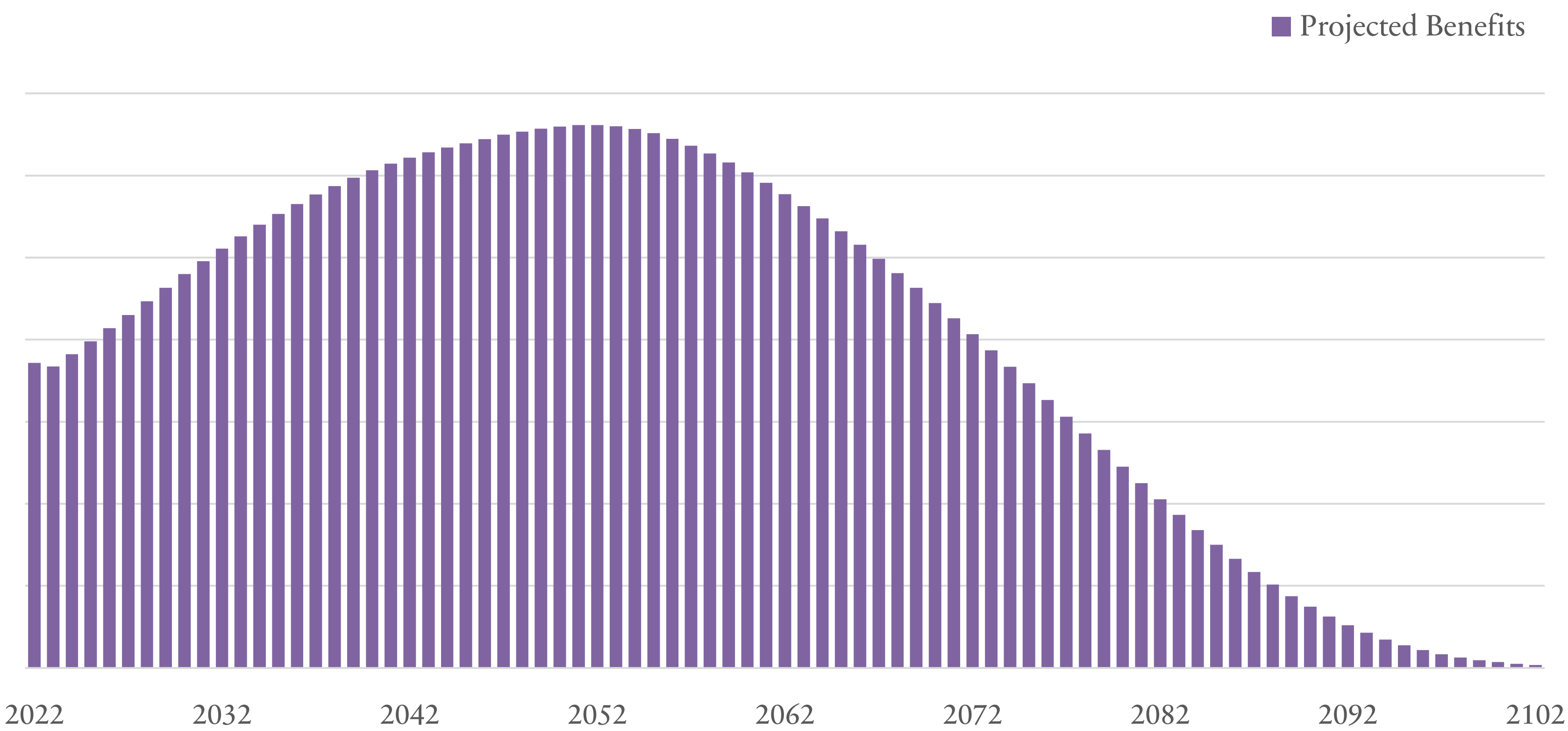
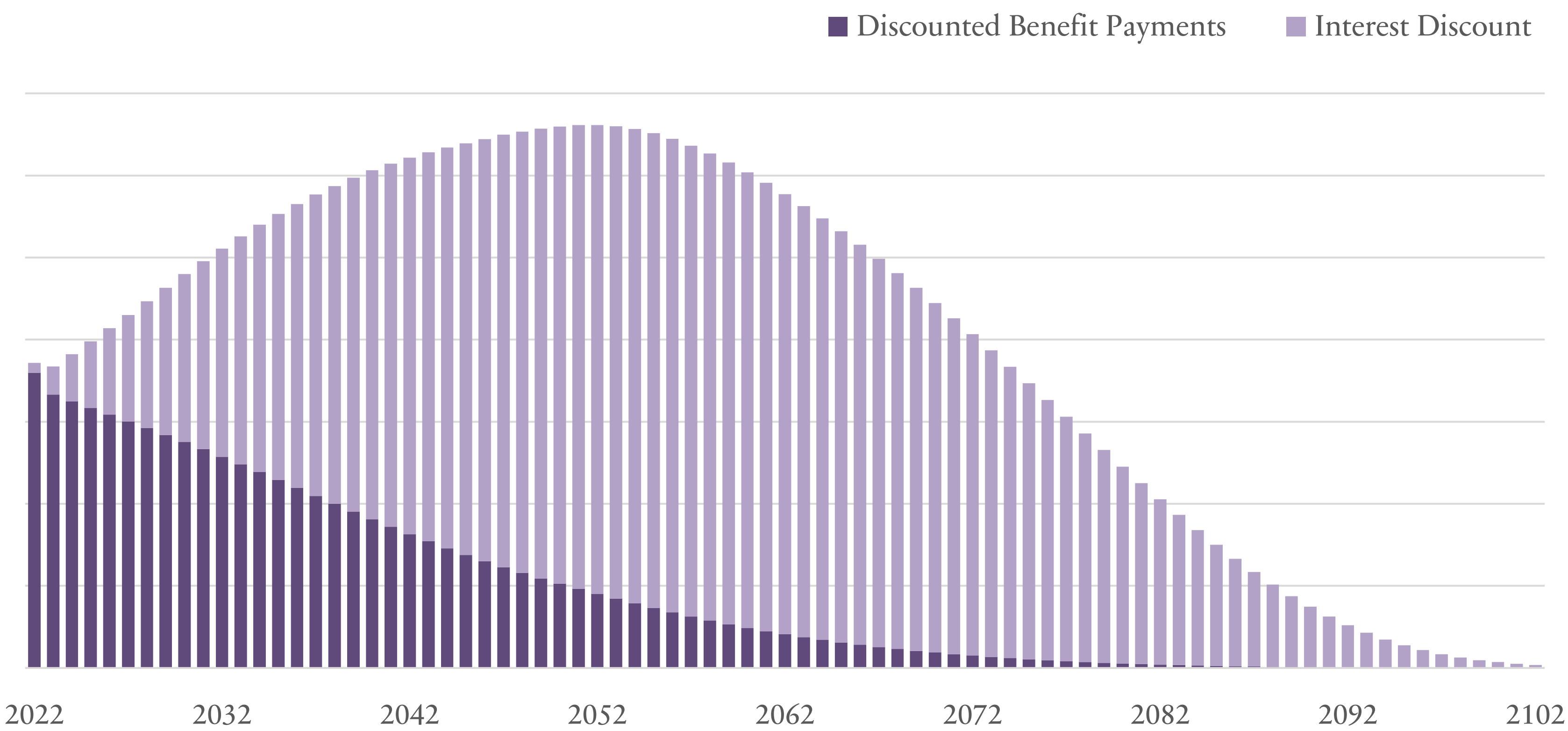
Valuation Starts With Projection of Benefit Payments



Projected Benefits Are Discounted for Interest



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Actuarial Present Value

- Example: You owe \$1,000 to 100 people one year from now. Each person is 70 years old. You expect the same return (7%) and chance each person will be alive in one year (98%). What is the present value of the debt?

$$100 \times \frac{\$1{,}000}{1.07} \times 98\% = \$91{,}589$$

- Observation: Under what circumstances will you have exactly enough money to pay the debt?

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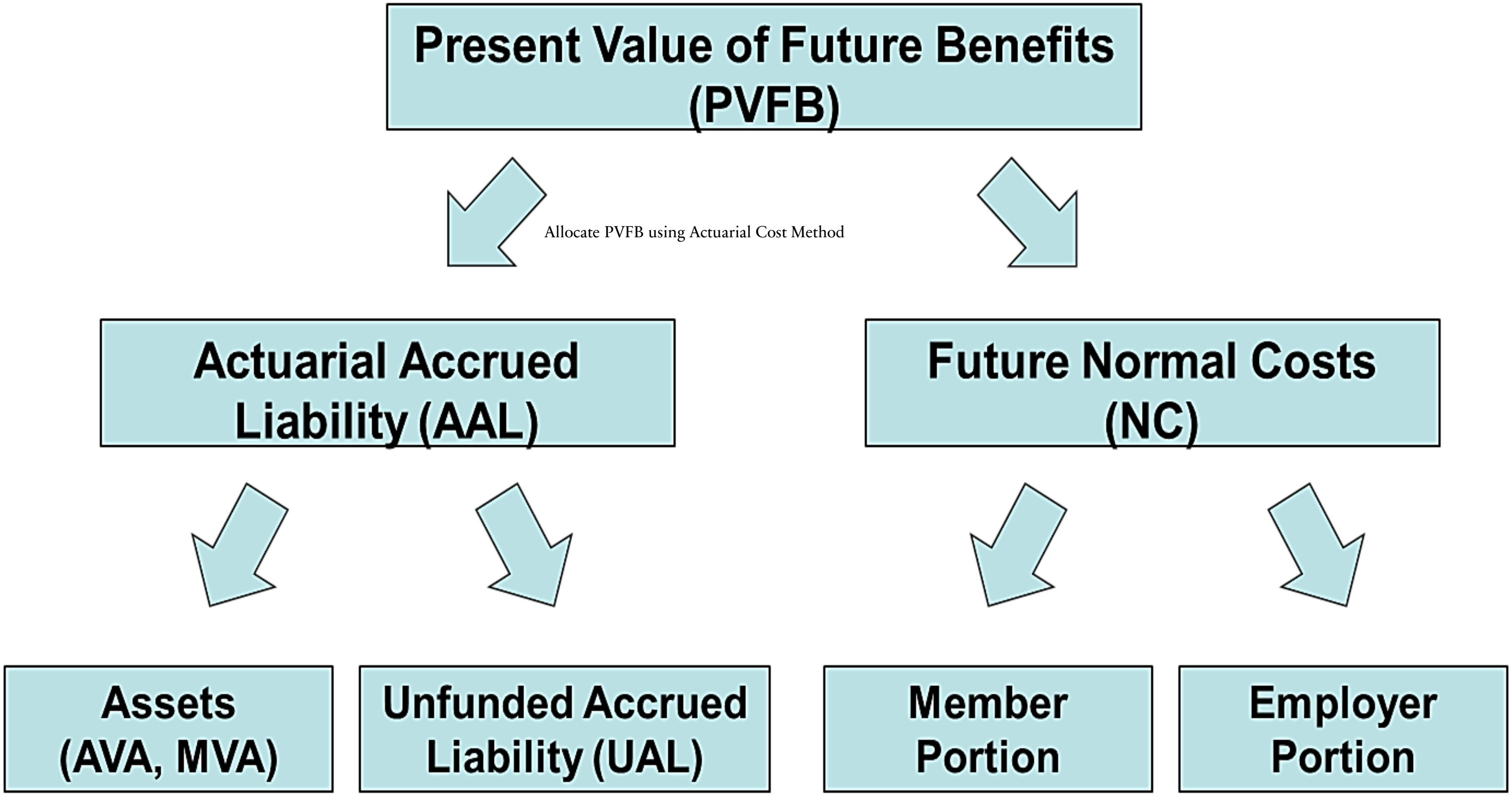
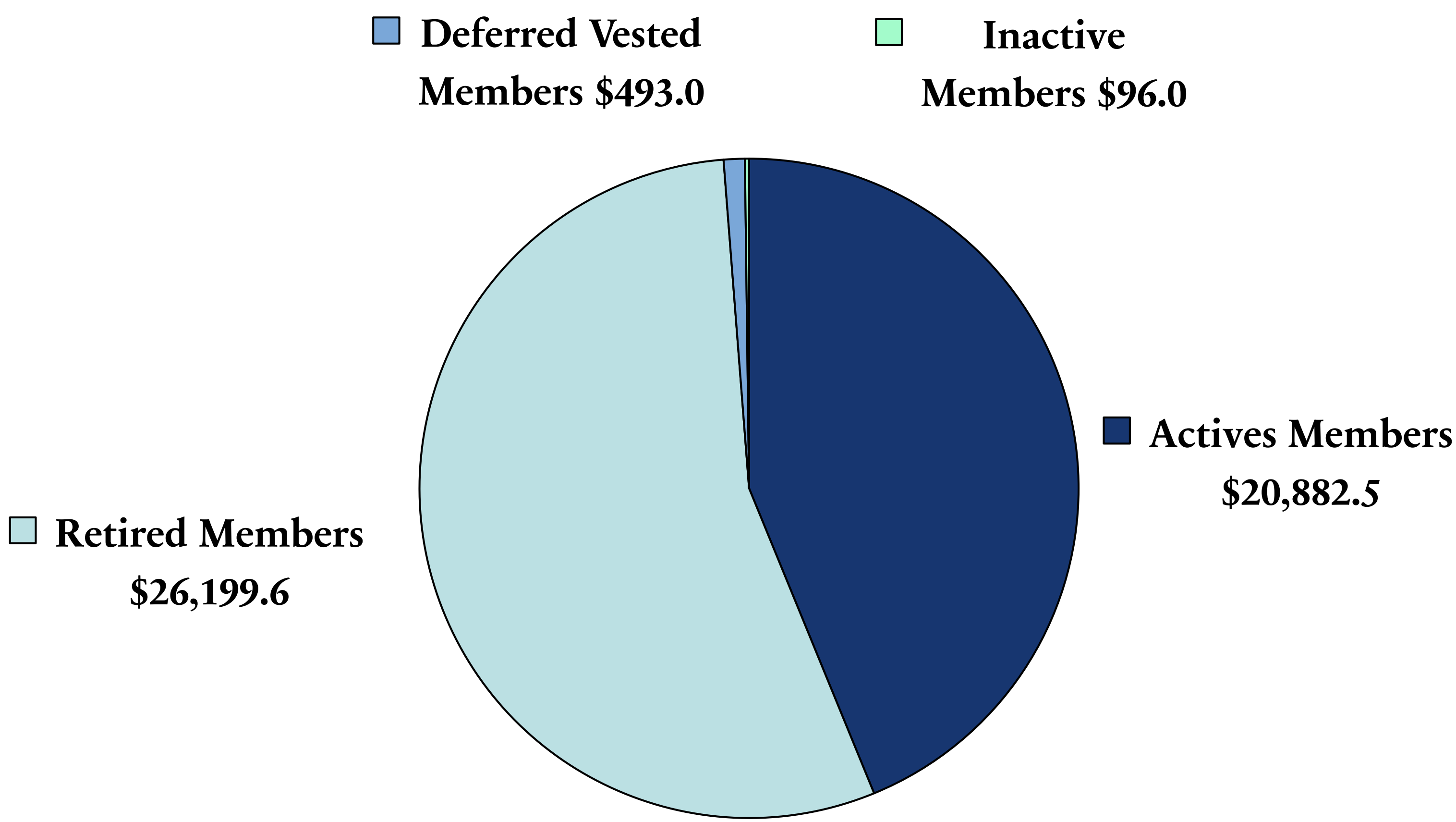
Valuation Process



Present Value of Future Benefits ($ Millions)



Total - $47,671.1

Retirement Annuity Trust Required Increase

Valuation Year End June 30	Fiscal Year End June 30	Special Appropriations Rate	Cumulative Required Increase Rate	Cumulative Total State Additional Contribution Rate	Cumulative Total State Required Contribution Amounts
2005	2008	4.17%	1.32%	5.49%	$162,062,900
2006	2009	4.25	1.88	6.13	197,267,800
2007	2010	4.28	2.46	6.74	225,574,200
2008	2011	4.15	3.59	7.74	261,860,000
2009	2012	3.88	5.81	9.69	347,988,000
2010	2013	3.69	7.27	10.96	393,444,000
2011	2014	3.50	8.02	11.52	430,090,000
2012	2015	3.00	10.42	13.42	497,648,000
2013	2016	2.90	12.97	15.87	596,397,000
2014	2017	2.70	13.80	16.50	622,184,000
2015	2018	2.94	13.49	16.43	624,660,000
2016	2019	2.83	14.61	17.44	660,830,000
2017	2020	3.00	14.10	17.10	652,775,000
2018	2021	2.89	14.27	17.16	662,701,000
2019	2022	3.05	14.82	17.87	698,411,000
2020	2023	2.61	15.78	17.39	733,520,000
2021	2024	2.38	16.18	18.56	741,547,000
2022	2025	0.00	18.92	18.92	805,690,000
2023	2026	0.00	22.56	22.56	948,600,000

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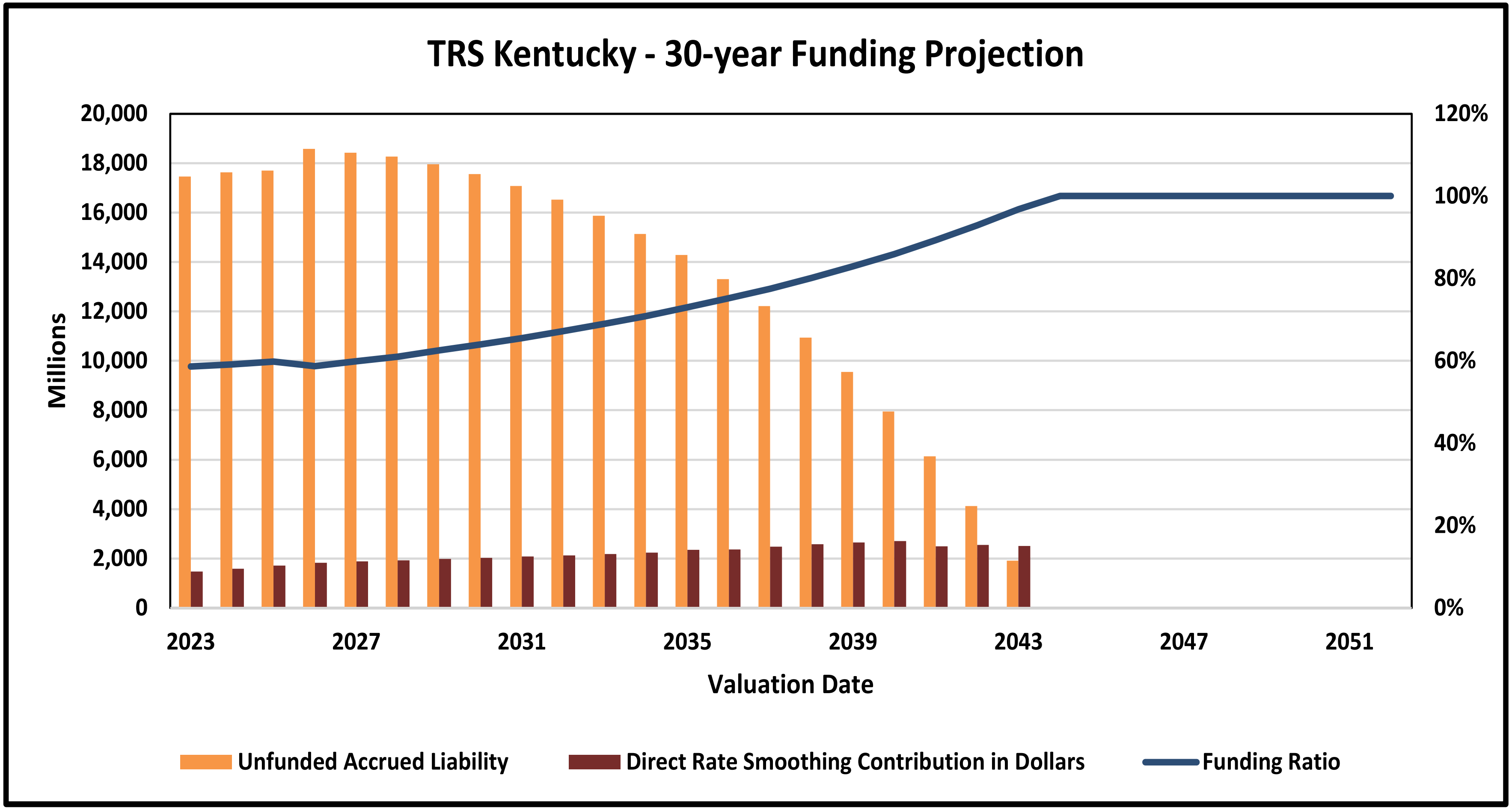
Retirement Annuity Trust Projections



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"Recent" Shared Pressures – Generational Mortality Improvement

- Current approach is generational mortality
  - Base mortality rates are projected each year with improvements
  - Each future year uses a different set of mortality rates from the year before
  - No margin needed

- Sample Life Expectancy at Age 60 using Generational Mortality Assumptions

Year of Age 60	Sample Life Expectancy	
	Male	Female
2025	81.9	83.8
2035	82.8	84.6
2045	83.7	85.4
2055	84.6	86.2
2065	85.4	86.9

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Assumption Trends – Mortality Tables

- Base Rates of Mortality
  - Older mortality tables based on RP-2014 tables
    - Published by the Society of Actuaries (SOA) in 2014
    - Central year of study data was 2006
    - Included adjustments for Blue Collar and White-Collar
    - Only included uninsured private pension plans
  - Newer mortality tables based on Pub-2010 tables
    - Published by the SOA in 2019
    - Central year of study data was 2010
    - Separate tables for Teachers, General Employees, and Public Safety
      - Also broken down by benefit class (e.g. above/below median)
    - Included only public sector data from across U.S.
    - Approximately 46 million life-years of exposure and 580,000 deaths

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Recent Shared Pressures – INFLATION

- If you haven't noticed, inflation has been high.
- What does that do to your plan?
  - COLAs
    - If you have an inflation-related COLA provision, creates liability losses (new unfunded liability)
    - **If you don't have an inflation-related COLA, Increases demand**
  - Salaries
    - Plans with significant portions of continuing actives receiving 20/25% increases
    - Increases projected benefits
      - Increased unfunded liability
      - Decreased funded ratio
    - BUT
    - Increases contributions if funding policy is based on rate of pay
      - May come out in the wash over longer-term (funding period, etc.)

Health Insurance Trust

Key Results for 2023

Health Insurance Trust

- Funded status went from 63.7% to 71.3% on an actuarial value of assets basis
- If all assets were used to fund benefits for members over age 65, the funded status for that group alone would be 100% on an actuarial value of assets basis
- Plan is funded on statutory basis rather than actuarially determined contribution
- Target Rate of Return is 7.10%
  - Market Value Return of 11.52%
  - Actuarial Value of Asset Return of 6.22%
    - Reflects smoothing of investment gains and losses over 5-year period

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Statutory Rates for Health Insurance Trust

	Member	Employer	State
University Hired before 1/1/2022	2.775% of Payroll	2.775% of Payroll	
University Hired on/after 1/1/2022	2.775% of Payroll	2.000% of Payroll	
Non-Federal School District	3.750% of Payroll	3.000% of Payroll	
All Others	3.750% of Payroll	3.750% of Payroll	
State			0.750% of Payroll for Non-Federal School District
State Shared Responsibility			Pre-Medicare Benefit Payments for All Members who Retired on/after 7/1/2010
Average	3.700% of Payroll	2.990% of Payroll	2.590% of Payroll

The plan is expected to be fully funded in 5 years based on current assumptions and statutory contributions.

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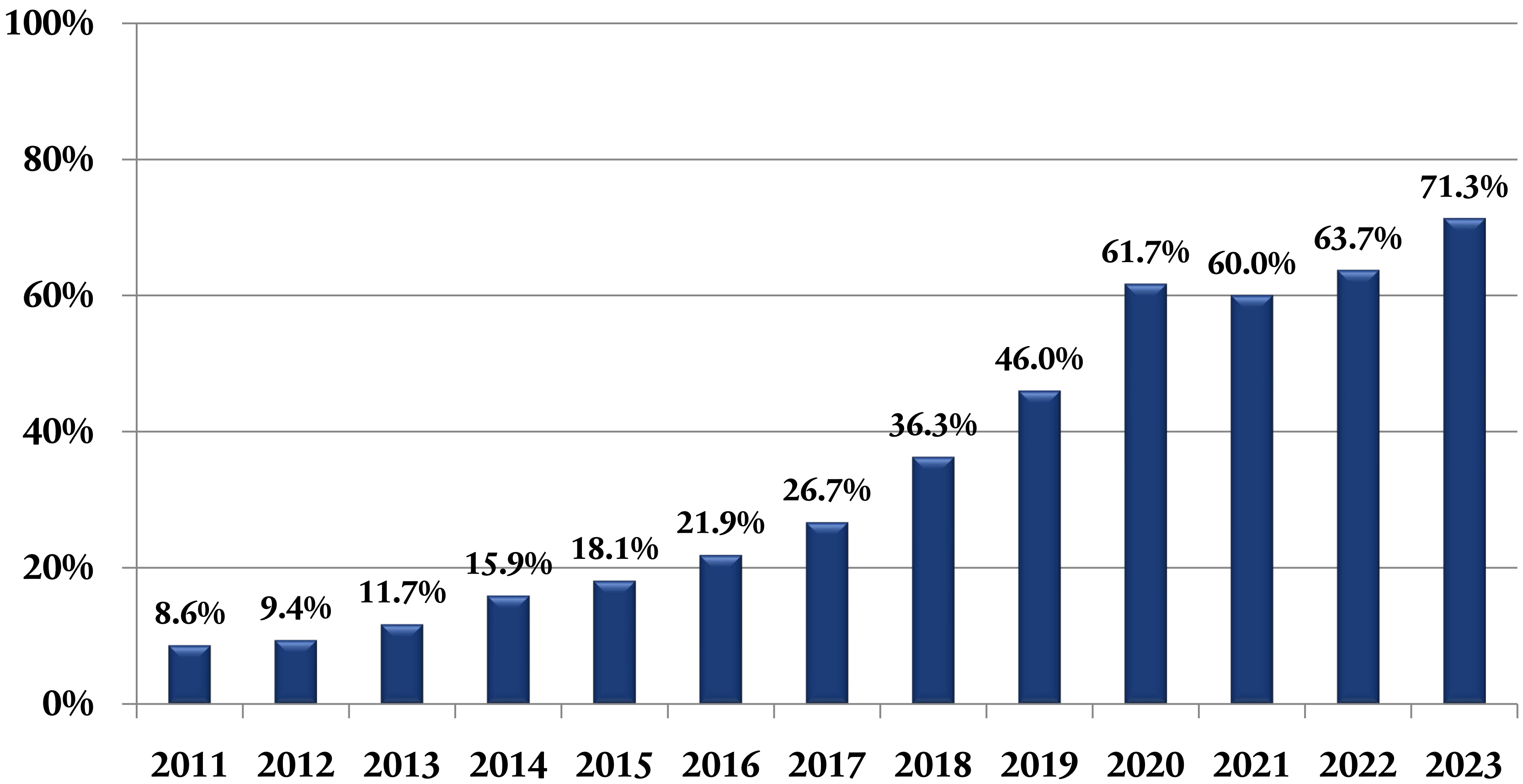
Health Insurance Trust Funded Percentage



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Life Insurance Trust

Life Insurance Trust Key Results for 2023

Life Insurance Trust

- Funded status went from 81.3% to 80.8% on an actuarial value of assets basis
- Total actuarially determined contribution rate unchanged
  - Recommend remaining at 0.08%
- Target Rate of Return is 7.10%
  - Market Value Return of 9.63%
  - Actuarial Value of Asset Return of 5.38%
    - Reflects smoothing of investment gains and losses over 5-year period

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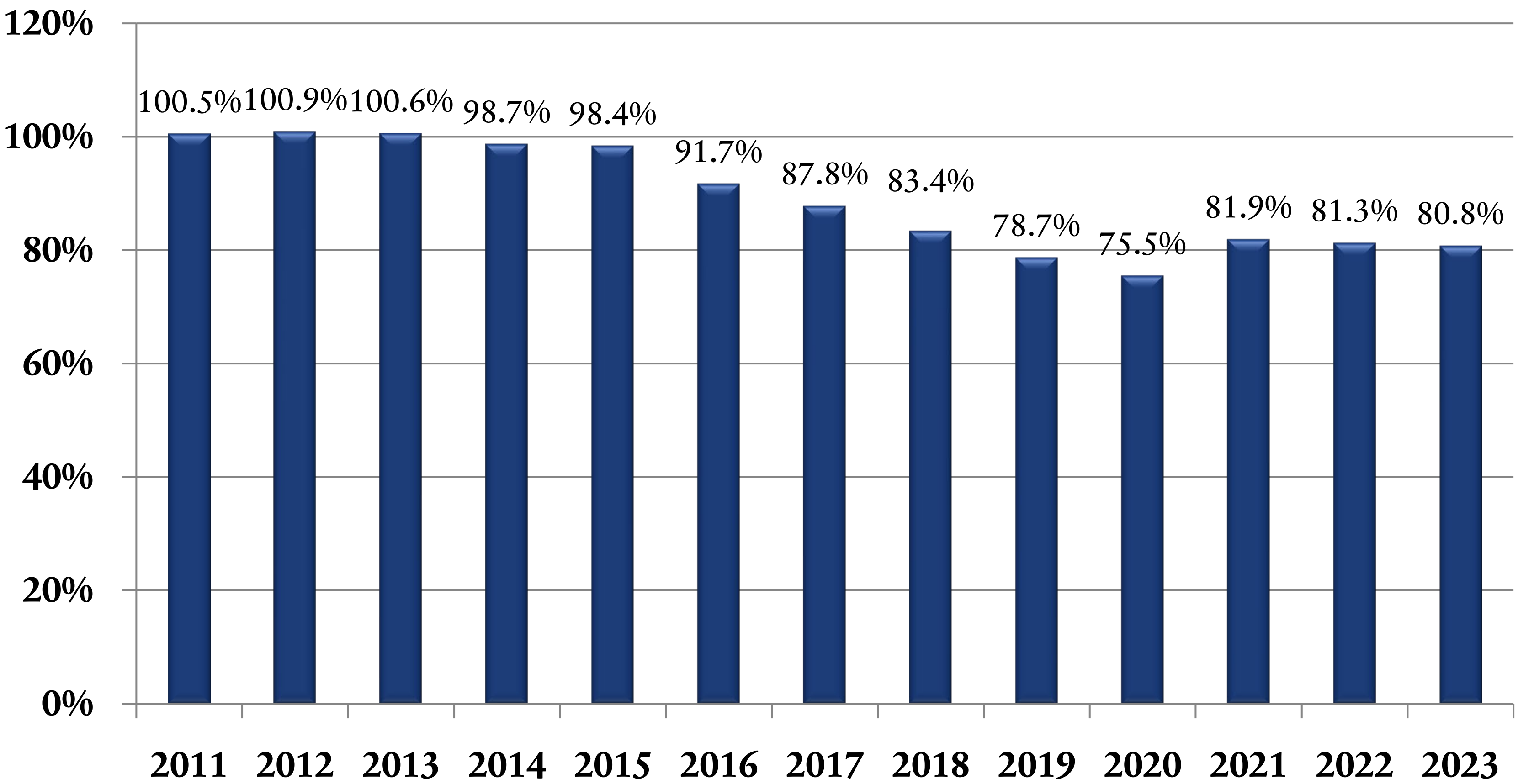
Life Insurance Trust Funded Percentage



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Health Insurance Considerations

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Impact of COVID-19 and Federal Legislation

Current Valuations

- The impacts of the COVID-19 pandemic, the ACA and the Inflation Reduction Act were considered in this valuation; however, no explicit changes were incorporated at this time due to the level of uncertainty regarding the impact on both plan costs and contribution levels going forward.

- We considered scenarios regarding economic factors, health care trend adjustments and changes to Medicare Part D reimbursements in our sensitivity analysis.

- Continued monitoring of the impact of these and any future such events on the Plan's liability will be required.

Impact of COVID-19 – SOA Study

- Society of Actuaries Research Institute released ***Quantifying Long Term Effects of COVID-19 on Health Care Costs*** in April 2023
- Based on commercial health data from January 2019 through July 2021
- There was a noticeable ramp up of costs 6 months prior to COVID-19 diagnosis. Ramp up may be due to deferral of care or not receiving necessary care
- There was a ramp down of costs 6 months after but ending at a noticeable higher level than pre-COVID baseline.
- Ramp up or down and ending baseline increases more significant for sicker patients. Almost no ramp up and almost immediate ramp down for healthy patients with no underlying conditions.

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Impact of COVID-19 – SOA Study

- We do not know yet if any increased costs are due to worsening of underlying conditions, new conditions, or long COVID.

- Limitations of the data are that much of the experience period is pre-vaccine and also does not include longer tail claims periods to determine if post-COVID increased costs are temporary or permanent.

General Health Care Cost Considerations

Drug Prices and Medicare Rates

- A top concern of retiree health plans is the double digit increases in prescription drug, particularly for specialty drugs.
- One response to that is the Inflation Reduction Act passed in August 2022 which makes changes to Medicare Part D.
- Medicare Advantage (MA) rates have been dropping in recent years, lowering costs for the Health Insurance Trust.
- Future MA costs uncertain but are considered every year with the annual valuation.

TEACHERS' Retirement System TRS KENTUCKY

Inflation Reduction Act

The bill's health reforms primarily impact those with Medicare coverage. Specifically, the bill implements the following measures:

- It allows the Secretary of Health and Human Services to negotiate the prices of certain Medicare drugs each year. The negotiations will take effect in 2026 for 10 drugs covered by Medicare, increasing to 20 drugs in 2029.

- Beginning in 2023, the cost of insulin will be capped at $35 per month for people with diabetes enrolled in Medicare.

Inflation Reduction Act

- Eliminates 5% coinsurance for catastrophic coverage in Medicare Part D in 2024, adds a $2,000 cap on Part D out-of-pocket spending in 2025, and limits annual increases in Part D premiums for 2024-2030.

- Requires drug companies to pay rebates if prices rise faster than inflation for drugs used by Medicare beneficiaries

- The bill also implements a three-year extension on increased health insurance subsidies for coverage purchased through an Exchange. These enhanced subsidies were originally provided as part of the American Rescue Plan Act, a COVID-19 relief bill, and were set to expire at the end of 2022.

Inflation Reduction Act – Drug Pricing

- The hope is that drug costs will go down due to price negotiation and the introduction of more biosimilar drugs.
- A worry is that the drug companies will attempt to make up any lost revenue on Medicare beneficiaries by increasing costs for everyone else. This would impact the active employee population as well as pre-Medicare retirees.
- The limits on price increases to that of general inflation could impact launch prices, meaning that the drug manufacturers could increase the initial price of a new drug that enters the market to protect against restrictions on their ability to increase prices later.

Inflation Reduction Act – Drug Pricing

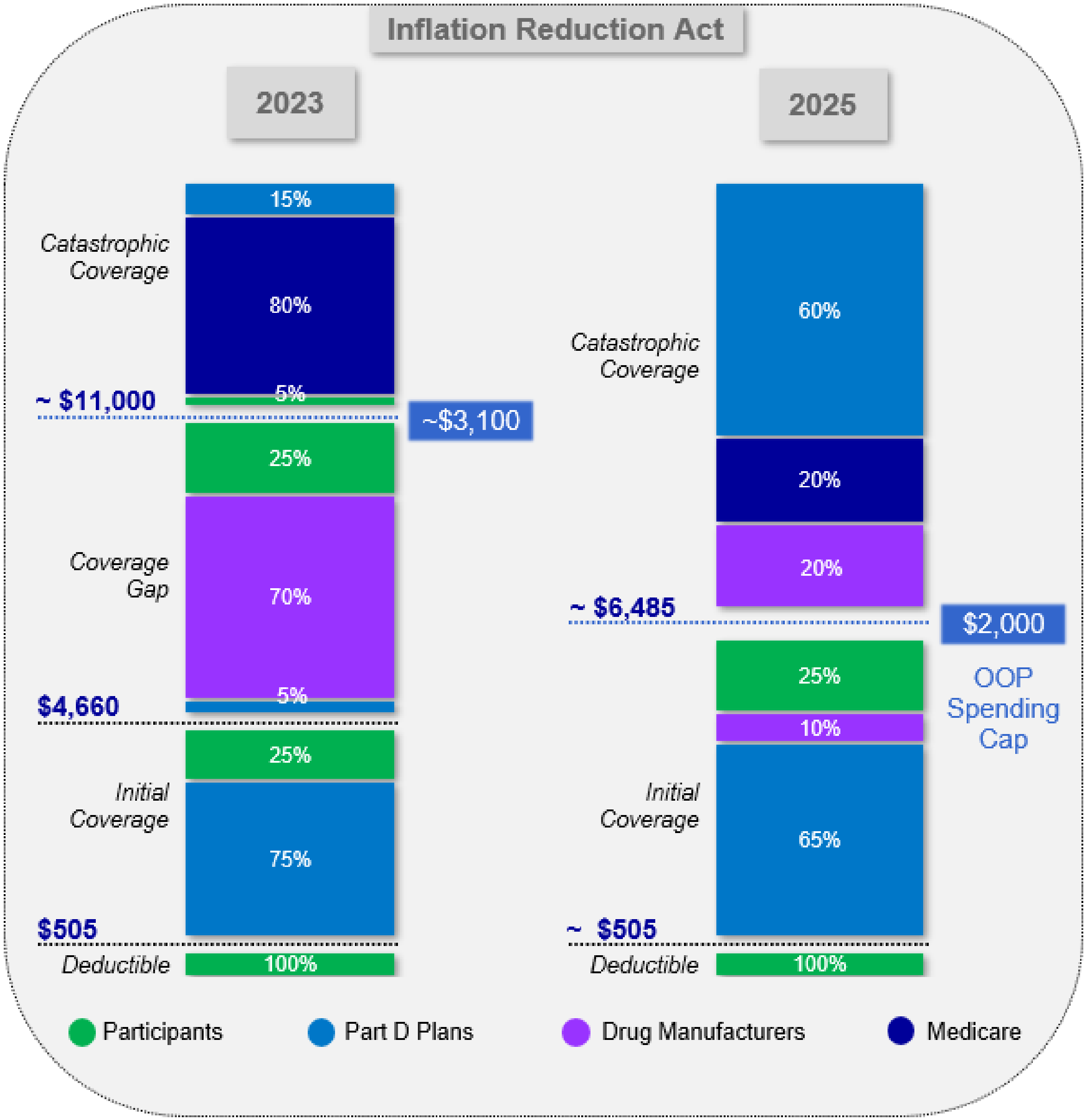
- Drug negotiations do have the potential to pave the way for additional lower cost biosimilars.
- The law, while it will allow the government to negotiate some drug prices, limits biologics eligible for Medicare negotiation to those which have been on the market for 11 years and which do not have a biosimilar version in the pipeline.
- So, drug manufacturers may opt to produce more biosimilars rather than allow their biologics to be open to price negotiation.

Inflation Reduction Act – Changes to Part D

- Eliminates 5% coinsurance for catastrophic coverage in Medicare Part D in 2024, adds a $2,000 cap on Part D out-of-pocket spending in 2025, and limits annual increases in Part D premiums for 2024-2030.
- Charts on following pages show 2025 plan design for Standard Medicare Part D.
- Many employer plans already offer enhanced coverage however Federal reinsurance and reimbursements as well as pharmacy rebates or dependent on Standard Part D amounts.
- The charts on following page shows 2025 plan design for Standard Medicare Part D. The MEHP already offers enhanced coverage but will still be affected by changes in Federal Reimbursements.

TEACHERS' Retirement System TRS KENTUCKY

Federal Health Care Policy



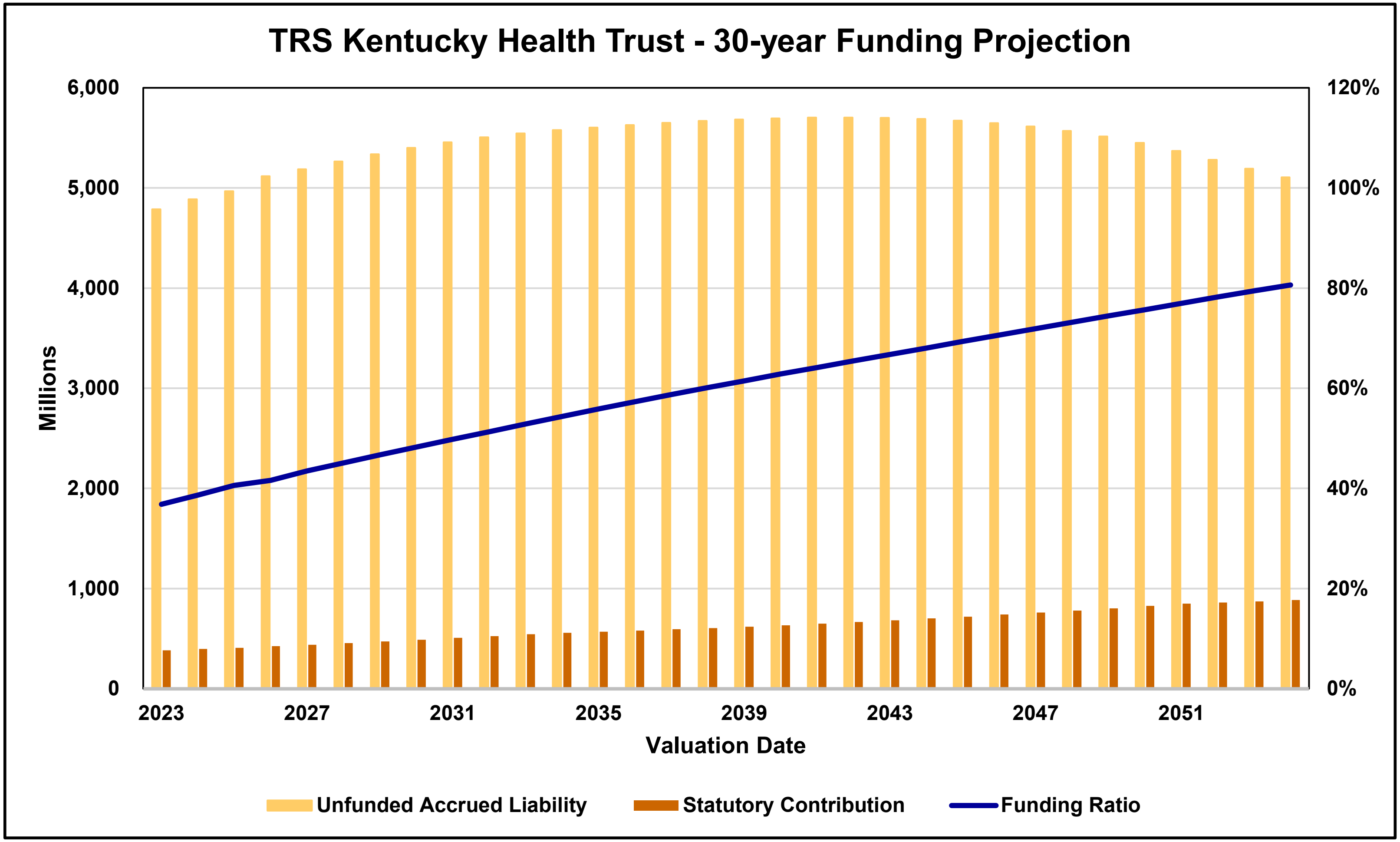
TEACHERS' Retirement System TRS KENTUCKY

TRS MEHP Costs

- The 2024 monthly TRS MEHP rate of $207 includes $196 in EGWP prescription drug costs.
- The EGWP prescription drug costs are based on projected total drug costs minus projected reimbursements from CMS and drug manufacturers for Medicare Part D rebates, subsidies and reinsurance.
- If these reimbursements were not to continue at the current rate, TRS MEHP costs could increase to $552 per month.

TEACHERS' Retirement System TRS KENTUCKY

Sensitivity to MEHP Costs: MA Rate = $552 instead of $207



Questions?

TEACHERS' Retirement System TRS KENTUCKY

Teachers' Retirement System
of the State of Kentucky

Insurance
2023

Gary L. Harbin, CPA
Executive Secretary

Two Plans for TRS Health Benefits

MEHP **Medicare Eligible Health Plan**	• Medicare-eligible or 65 & over • Exclusively TRS members • One Plan
KEHP **Kentucky Employees' Health Plan**	• Under 65 and not Medicare-eligible • Same fund as active teachers and state employees • 3 Coverage options

What is a PPO? Did you Know that all 4 Plans Offered to TRS Retirees are PPOs?

MEHP

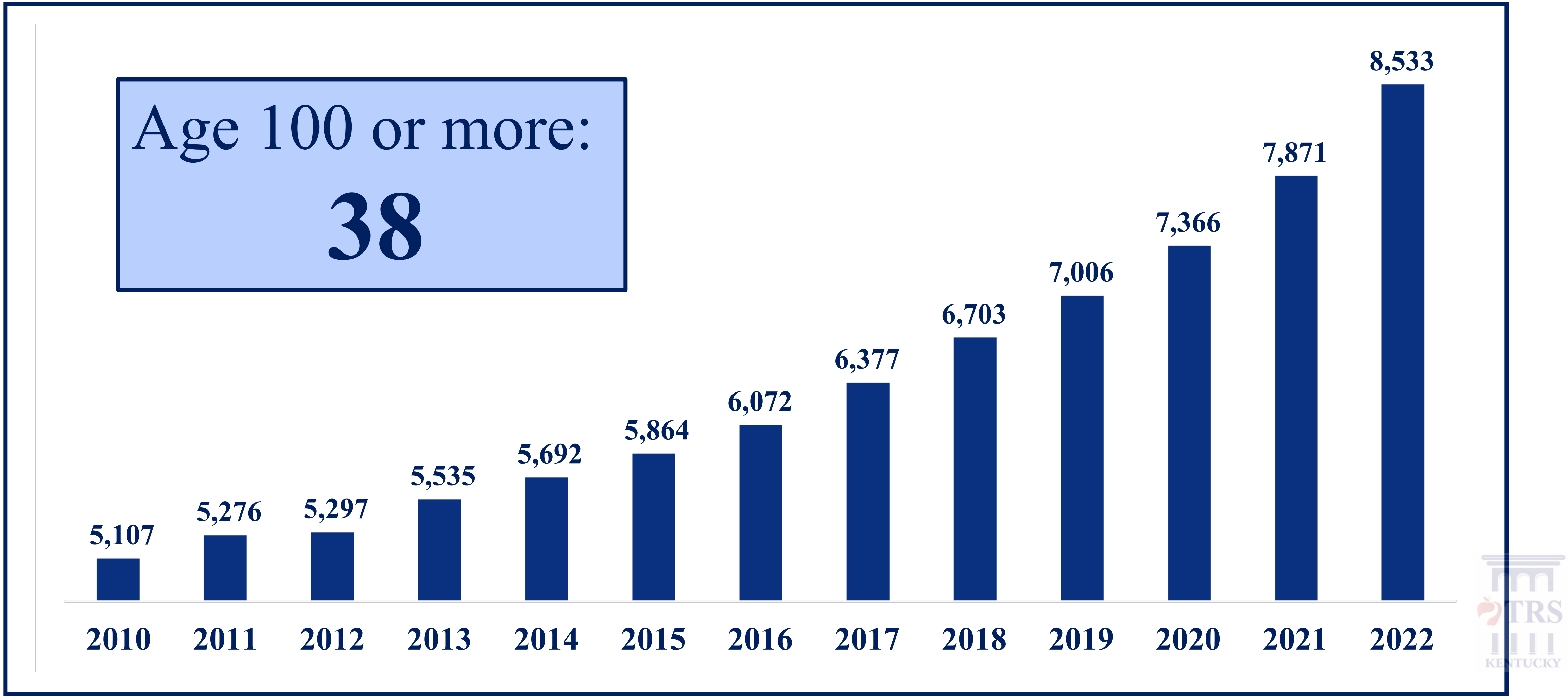
- Preferred Provider Organization
    1. Medicare Advantage Plan with UnitedHealthcare
- National Passive PPO since 2011
    - Go to any Provider Accepting Medicare
    - Go to any Provider Agreeing to Bill UnitedHealthcare
    - Our retired patients are ***not*** financially incentivized to go in-network and are ***not*** financially penalized to go out-of-network
    - It is Okay if Baptist Health is not in-network for 2024

KEHP

- Preferred Provider Organization
    1. LivingWell CDHP PPO
    2. LivingWell PPO
    3. LivingWell Basic CDHP PPO
- PPOs been around since the late 80s
- Our retired patients are financially incentivized to go in-network and are financially penalized to go out-of-network

TRS Benefits Protect Teachers

Retirees over 80 as of Dec. 31



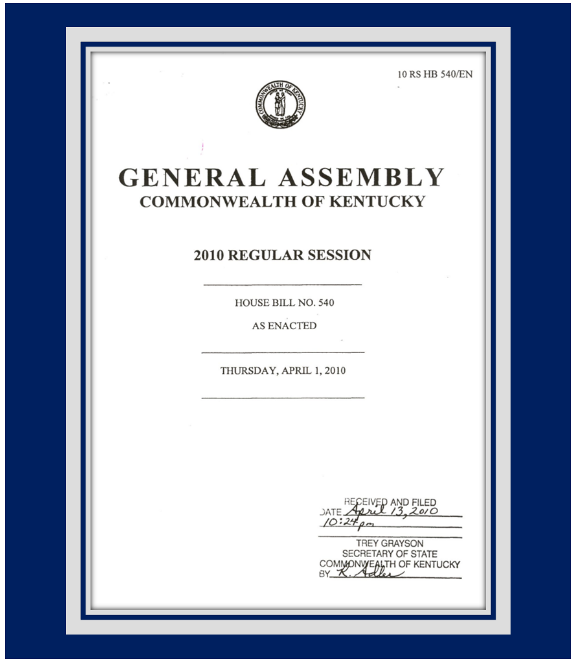
Health Insurance Details Subject to Change

Kentucky law guarantees retired teachers access to group coverage, but the details of that coverage – including costs and level of coverage – can change.

Shared Responsibility

In Second Decade

Shared solution providing permanent funding for retiree health care


10 RS HB 540/EN

GENERAL ASSEMBLY
COMMONWEALTH OF KENTUCKY

2010 REGULAR SESSION

HOUSE BILL NO. 540
AS ENACTED

THURSDAY, APRIL 1, 2010

RECEIVED AND FILED
DATE April 13, 2010
10:24 pm
TREY GRAYSON
SECRETARY OF STATE
COMMONWEALTH OF KENTUCKY
BY K. Adler

Shared Responsibility Results

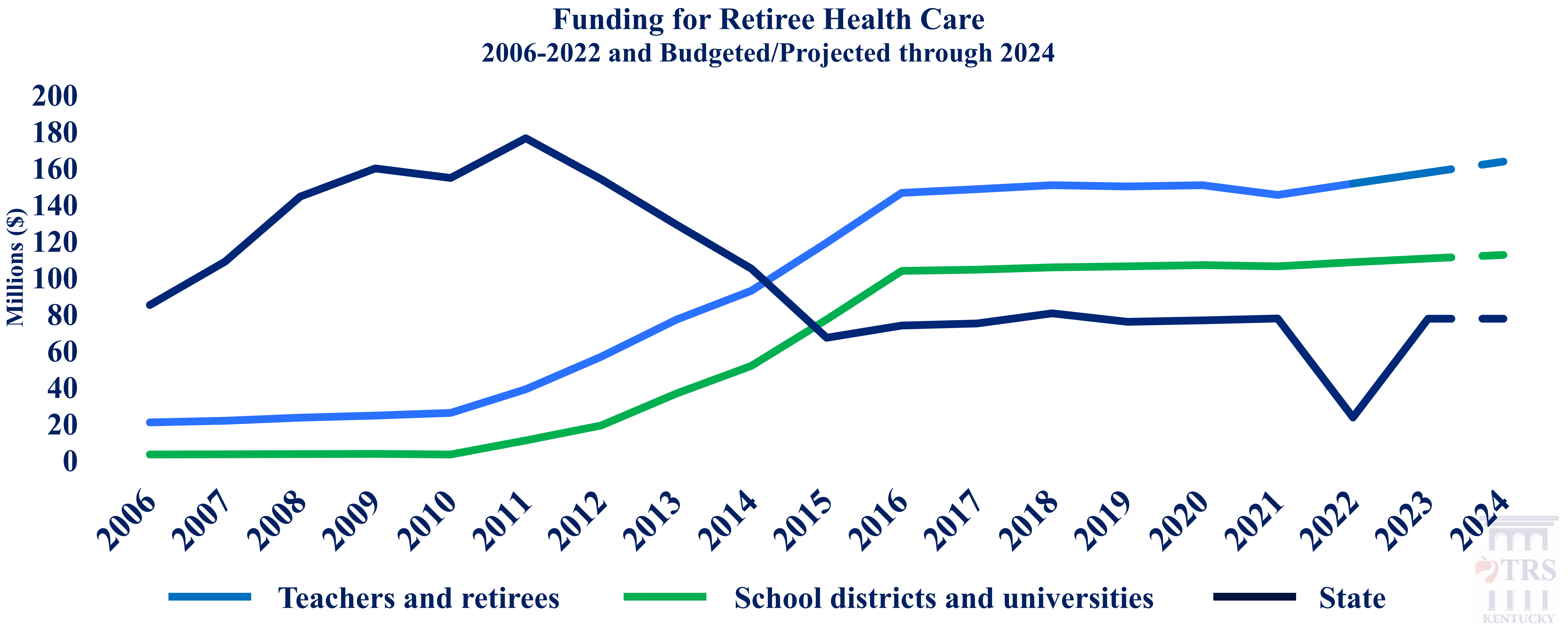
Prefunds Benefits

In 2010, board spearheaded Shared Responsibility passage to fund retiree health insurance, lowering state’s cost from $170 million in 2010 to $70 million in 2020.

With implementation of Shared Responsibility and federal subsidy solutions, the state’s $6.2 billion share of unfunded liability fell to $1.2 billion.

Shared Responsibility

How the Cost Has Been Shared



TRS Health Insurance

Funded Status

TRS Health Policy Education

Jane—Don't Forget the Newly Reunited and Renamed Pharmacy Benefits Works Coalition with ESI

Public Sector HealthCare Roundtable

SALGBA
State & Local Government Benefits Association

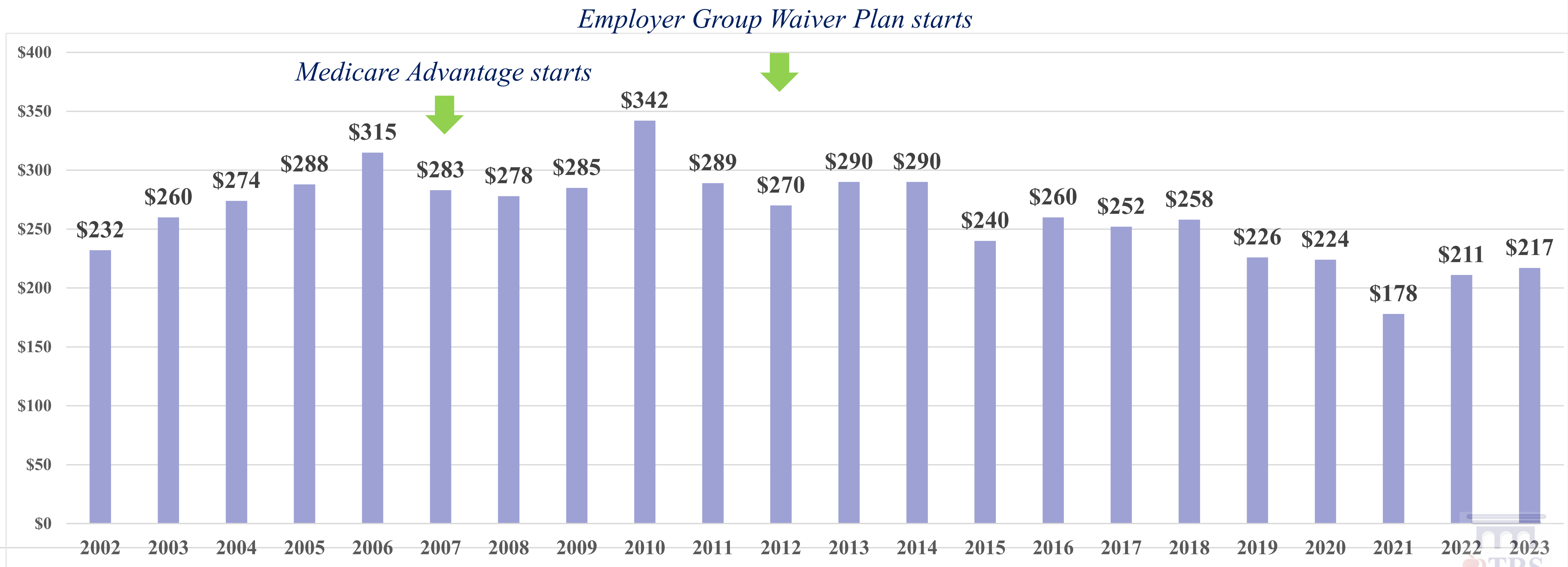
PMC Personalized Medicine Coalition

GTMRx Institute™
Get the medications right™

Better Medicare Alliance

Coalition for Affordable Prescription Drugs

MEHP Premiums



Premiums Held Almost Constant For 20 Years

MEHP

Success and Stability with Medicare Advantage

- Now in our 17th year with Medicare Advantage, TRS currently covers more than 38,000 retired Kentucky teachers and their spouses on a Medicare Advantage Employer Group Waiver Plan (EGWP)
- Medicare Advantage has enabled TRS to better serve our retired members via an EGWP which provides:
  - Care coordination,
  - Part D drug coverage,
  - Stable benefits and high satisfaction rates among our members
- With a Medicare Advantage EGWP, TRS has achieved stability with premiums, and the 2023 premium is less than the premium 21 years ago, with no material changes to the existing plan benefit design
- The TRS Other Post Employment Benefit (OPEB) actuarial liability was reduced by $1.9 billion with the move to Medicare Advantage

MEHP Favorable Health Outcomes

Better health outcomes help keep healthcare costs down. TRS has favorable outcomes with the utilization of Medicare Advantage. Some examples are:

*In **2021:***

- *Retiree patients received over 9,567 HouseCalls visits per year allowing thousands of referrals to clinical management and case management programs*
  - *85% of eligible female retirees had their breast cancer screening*
  - *80% of eligible retirees had a colon cancer screening*
  - *82% of eligible retirees completed a diabetic eye exam*
  - *56% of retirees had a Medicare Annual Wellness Visit*
  - *73% of retirees had a Hemoglobin A1X*

*In **2020**:*

- *7,856 open care gaps were addressed in the diabetic population*
- *734 home screening kits mailed*
- *1,880 inpatient cases supported by transitional care*

TEACHERS' Retirement System TRS KENTUCKY

MEHP

Care Coordination is Non-Existent in Medicare FFS

TRS ensures that the Medicare Advantage carrier uses the Medicare subsidy revenue to:

- lower premiums;
- offer supplemental value-added benefits;
- perform care and case management;
- offer incentive wellness programs;
- and supply heightened customer service.

None of this exists in original Medicare FFS.

TRS ensures that greater medical management strategies and programs are designed and utilized for more effective

- clinical intervention,
- coordinated care
- and member engagement.

MEHP Consists of:

United Healthcare

EXPRESS SCRIPTS

CORIELL LIFE SCIENCES

KNOW YOUR Rx COALITION

Renew Active by UnitedHealthcare

MEHP Additional Features

Register at retiree.uhc.com/trs to see these features available to you or call 844-518-5877 for more information.

United Healthcare

- Routine hearing exam
- HouseCalls in-home assessment
- Hearing aids discount
- Diabetes support program

Renew Rewards

Gift cards for completing certain activities

Real Appeal

Weight loss program

Mom's Meals NourishCare

Post-hospitalization meals delivered

Quit For Life®

Tobacco Cessation Program

TELADOC. DOCTOR ON DEMAND amwell

Virtual visits with doctor

Renew Active by UnitedHealthcare

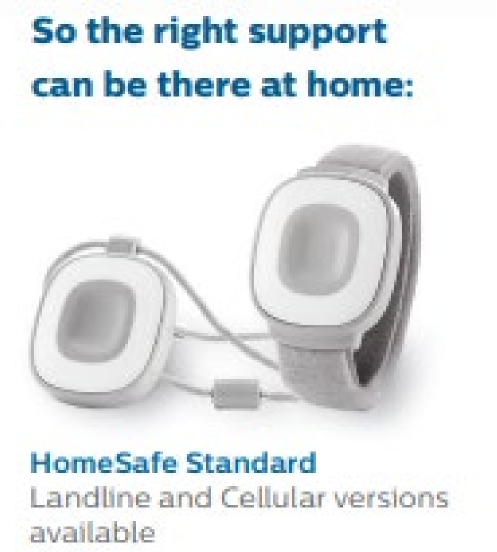
Fitness program

Lifeline

Medical Alert Systems

UnitedHealthcare

Lifeline®



Call: 1-855-595-8485, TTY 771

Enroll online: https://www.lifeline.com/uhcgroup

MEHP Mental Health Awareness

Top Three Behavioral Health Diagnoses

Depression disorders

Anxiety disorders

Trauma and stressor-related disorders

- Housecalls provides depression screening as part of assessment
- Access to self-guided care and mindfulness activities
- Online platforms to help navigate behavioral health needs
- 4% coinsurance for individual therapy visits in network
- 4% coinsurance for virtual behavioral visits in network

United Healthcare

DOCTOR ON DEMAND

TELADOC.

amwell

MEHP 2023 Important Info

VISA Gift Card HouseCalls in-home assessment reward remains a VISA reward card of $50

Renew Active by UnitedHealthcare

Fitness program – no ID cards in future

Renew Rewards Gift Cards

- In 2023 will still be reloadable Visa Cards.
- Funds are loaded within 24 hours of activity completion
- Don’t have to track multiple reward card balances and expiration dates
- Consolidated rewards on one card for larger purchases
- Can now see reward card balance and transaction details every time you log-in to Renew Rewards
- Must be used within 12 months

Annual Wellness Visit rewards is now $25

MEHP VISA Reloadable Gift Card

Visa® Reloadable Reward Card Restrictions:

To align with new CMS guidelines, members will have some card restrictions.

Restrictions include but are not limited to:

- Alcohol, Tobacco, and Firearms
- Bookstores and Computer Services, including Amazon
- Drug Stores, Pharmacies and Wholesale Distributors of Prescription Drugs
- Medical Services, Equipment, and Health Care Providers
- Insurance Providers

MEHP

What's Jane Say

If Some Old Quarterback Says You Need More Coverage …

Tell Joe (and others like him), "No!"

If you are enrolled in the TRS Medicare Eligible Health Plan (MEHP), enrolling in another Medicare Advantage plan would "dyn-o-mite" your TRS MEHP coverage.

Go to trs.ky.gov to watch an informative 4-minute video

MEHP

2024 Changes

- Mom’s Meals will now be Roots Foods
- You will receive a new UnitedHealthcare insurance card but no new Express Scripts card
- The cost for the MEHP is going down from $217 to $207
- Medicare Part B Standard Premium is $174.70

Austin Tx	Feb 8-9, 2023	Board Meeting PSHCRT
Orlando Fl	Mar 1-3, 2023	Speak at Precision Medicine Leaders Summit RE: PGx
Charlotte NC	Mar 4-4, 2023	Got Stuck Overnight Due to Storm During Layover
New Orleans LA	Apr 2-6, 2023	Spoke on MA for SALGBA Conference
Orlando FL	May 2-5, 2023	Spoke on PBM Reform for ESI Outcomes Conference
San Diego CA	May 31-Jun 3, 2023	Spoke on PGx at the American Physician's Group Conference
Washington DC	June 28-29, 2023	Legislative Conference PSHCRT
Washington DC	July 10-14, 2023	Dora and I Met with 16 Congressional Staff on PBM Reform and MA Stability
Boston MA	Aug 21-23, 2023	Spoke to PBM Reform and Legislating Away Employer's Decision Making
Washington DC	10/31 to 11/3, 2023	Attend PSHCRT Conference and NIP Conference
Washington DC	11/15 to 11/16, 2023	Dora and I to Attend Pharmacy Works Coalition and Visit More Congresspersons on PBM Reform and Smoothing

PBM Reform—Be Careful What You Wish For

- Protecting Client Contracting Choice
  - PBM negotiating tools are our negotiating tools if self-funded—we have forgotten why we self-fund
  - Let employers or plan sponsors decide the contract terms that best fit their covered population—do not let your hands be tied
  - Client to decide who keeps rebates and spreads
  - Client to decide pass-through, cost-plus, or value-based contracting
  - Lowest Net Cost of the drug is a solution until there is a better guarantee
- Be wary of ERISA Preemption that could become Medicare Preemption
- Rebates at Point-of-Sale Mandate
  - Don't forget that CBO prices this at a Part D cost to taxpayers of $177 billion
- Patent Thicketing—Patent reform is still hugely important
- Protecting Reasonable Utilization Management such as Step Therapy

TEACHERS' RETIREMENT SYSTEM
of the State of Kentucky

TRS KENTUCKY

GARY L. HARBIN, CPA
Executive Secretary

ROBERT B. BARNES, JD
Deputy Executive Secretary
Operations and General Counsel

J. ERIC WAMPLER, JD
Deputy Executive Secretary
Finance and Administration

July 6th, 2023

Sarah Levin
House Ways and Means Committee Health Subcommittee
Washington, DC 20510

Dear Ms. Levin:

The Teachers' Retirement System of the State of Kentucky (TRS) purchases health care and prescription services for approximately 38,000 Medicare eligible retired teachers from Kentucky's public school system and five Kentucky universities. The prescription services are offered through a standalone Medicare Part D Employer Group Waiver Plan (EGWP) that relies on a pharmacy benefit manager (PBM) for negotiation of prescription drug prices, formulary development, claims administration and network management.

This use of a PBM is essential in ensuring these retired teachers, almost 90% of whom still live in Kentucky, are able to afford out-of-pocket health and prescription costs. Ensuring this affordability is crucial because TRS is a Social Security replacement plan for Kentucky's retired teachers, so most depend entirely on their TRS pension in retirement as they did not contribute to Social Security while in the classroom.

As an integral part of the health care that TRS offers Kentucky's retired teachers, pharmacy benefits currently are self-funded. In 2022, TRS retirees obtained more than 2.3 million prescription drugs, and the 2023 prescription ingredient cost is estimated at $226 million after nearly 50% in PBM negotiated discounts. Then, an additional $54 million in rebate cost reductions and $65 million in Part D Medicare subsidies off the $226 million are made possible by TRS's PBM. Without those savings, instead, these would be costs passed on to retired teachers. The PBM contracts with local and national pharmacies to ensure our retired Kentucky teachers have access to their prescriptions at more than 60,000 pharmacies, both chain and independent, nationwide. The PBM is able to use the buying leverage of representing millions of lives – something TRS alone couldn't do negotiating for 38,000 people. As importantly, the PBM contracts directly with Medicare and complies with its myriad administrative and legislative requirements. By engaging a quality PBM, TRS is able to meet the needs of retired teachers, bringing the net lowest per person per month (PPPM) premium cost, which benefits both the retired teachers and their health insurance trust.

The retirees can have confidence in all this because the PBM is vetted and hired in a competitive request for proposals (RFP), periodic market checks are made, and independent audits are conducted annually. Since 2005, the TRS and PBM contract has achieved more transparent pricing, with 100% pass-through of retail spread, 100% pass-through of brand formulary national and international rebates and 100% pass-through of contractual discount pricing subject to guarantee. All these savings and Part D subsidies are applied directly to TRS members as reduced pharmacy premiums every year plus allowing a more valuable benefit design to be maintained. This transparency was maintained even when the current PBM was horizontally integrated with an insurance company in 2018 without any negative impact to TRS's retired teachers or TRS as a whole.

With the use of a PBM and the savings provided, TRS retirees maintain affordable access to a wide range of generic and brand medications using the PBM's Medicare-approved formulary at a reasonable mail order copay. PBM rebates add brand drugs to the formulary, increasing options for prescribers.

Specialty drugs are managed using prior authorization that aims to direct prescribers to lower-cost, first-line therapies that are accepted as standard of care. Retirees are incentivized to use generic drugs where possible. Very few medications are out of a retiree's financial reach. The TRS plan's $150 annual retail deductible and no annual deductible for mail order keeps retirees' copayments predictable and reasonable, with, by mail, a $10 copayment for a 90-day supply of a preferred generic and $20 copayment for 90-day supply of a preferred brand. Retirees embrace incentivized mail order and generic use. Incentivizing mail order, which has been done for three decades now, spares Kentucky's retired teachers and their health insurance trust from an additional cost of $22 million annually.

If a retiree's prescriber determines that a drug not on the formulary is needed, the prescriber or retiree can request coverage based on clinical need. PBMs also provide clinical review, another service TRS couldn't do alone.

For all the foregoing reasons, to meet retirees' needs and provide choice to their prescribing physicians, TRS depends on a PBM and relies on the PBM's expertise to manage the complex world of prescription pricing. In the current environment, no other solution adequately serves TRS retirees' prescription drug needs. Until there is such a solution, and it has Medicare's approval, TRS uses a PBM to secure millions in discounts plus $54 million annually in rebate cost reductions, $65 million per year in Medicare Part D subsidies, and $22 million annually in mail order savings. Limiting any of these tools used by TRS's PBM on behalf of Kentucky's retired public school teachers will increase costs to retired Kentucky educators unless drug manufacturers who set original list prices guarantee net neutral or better price concessions. Disrupting the drug supply chain of Kentucky's retired teachers who rely on TRS without price savings is just that — disruption.

Sincerely,

Jane C. Gilbert

Jane Cheshire Gilbert CPA
Director of Retiree Health Care
Teachers' Retirement System of Kentucky

Smoothing inside the IRA and What is Next?

TRS KENTUCKY

TEACHERS' RETIREMENT SYSTEM
of the State of Kentucky

GARY L. HARBIN, CPA
Executive Secretary

ROBERT B. BARNES, JD
Deputy Executive Secretary
Operations and General Counsel

ERIC WAMPLER, JD
Deputy Executive Secretary
Finance and Administration

September 19, 2023

SENT VIA EMAIL
PartDPaymentPolicy@cms.hhs.gov

The Honorable Chiquita Brooks-LaSure
Administrator
Centers for Medicare & Medicaid Services
U.S. Department of Health and Human Services
200 Independence Avenue SW Washington, DC 20201

Dear Administrator Brooks-LaSure:

On August 21, 2023, the Centers for Medicare & Medicaid Services (hereinafter "CMS") of the U.S. Department of Health and Human Services released *Maximum Monthly Cap on Cost-Sharing Payments Under Prescription Drug Plans: Draft Part One Guidance on Select Topics, Implementation of Section 1860D-2 of the Social Security Act for 2025, and Solicitation of Comments* (hereinafter "Draft Guidance"). This new program was established by Section 11201 of the Inflation Reduction Act (hereinafter "IRA"), Public Law 117-169.

Beginning in plan year 2025, this new program redesigns the Medicare Part D prescription drug benefit, in part, to establish a new out-of-pocket (hereinafter "OOP") annual cap of $2,000 for Medicare beneficiaries. As CMS now refers to the new Medicare OOP smoothing program as the Medicare Prescription Payment Plan (hereinafter "MPPP") and to enrollees of MPPP as participants, this comment letter adheres to that language.

On behalf of the 38,000 retirees of Teachers' Retirement System of the State of Kentucky (hereinafter "TRS"), thank you for the opportunity to provide feedback on the MPPP under Part One of the Maximum Monthly Cap on Cost-Sharing Payments Program guidance.1

TRS is a comprehensive retirement plan for Kentucky's public-school teachers that includes annuity, life insurance and retiree health insurance benefits. TRS serves 38,000 on a self-funded Medicare Part D Employer Group Waiver Plan (hereinafter "EGWP"). With 2.3 million prescriptions a year, 53% of the TRS days supply is done through mail order where TRS retirees have a zero deductible, can obtain a 90-day supply of a tier one preferred generic for a $10 copayment, and can obtain a 90-day supply of a tier two preferred brand for a $20 copayment.

[1] https://www.cms.gov/files/document/medicare-prescription-payment-plan-part-1-guidance.pdf

Issue of Unpaid Debts

TRS respectfully requests that CMS carefully consider and provide guidance on the situation that will confront Part D sponsors, including TRS, upon the death of MPPP participants. TRS strongly recommends that in order to avoid confusion on this matter such guidance be provided in both narrative form and plan calculation examples.

Specifically, in implementing the MPPP, the issue will arise whether a Part D sponsor may use certain monies to pay for an unpaid balance of a deceased participant. In the example of TRS, both state and federal law preclude using the TRS Health Insurance Trust, which is a federal Internal Revenue Code Section 115 trust, to pay the unpaid balance of the decedent. Such an obligation would constitute a private interest, i.e., debt or obligation, of the decedent for which the use of Section 115 trust funds is prohibited.

On page five of the Draft Guidance, CMS specifically solicits comments on procedures for termination of election, reinstatement and preclusion. Section 80 of the Draft Guidance provides some detail on implementation of MPPP related to these situations. In addition, Section 80.5 of the Draft Guidance discusses disenrollment, and death triggers an involuntary disenrollment under 42 CFR 423.44(b)(3)(iii).

However, the information provided in the Draft Guidance does not specifically address the situation of a deceased MPPP participant. Likewise, the plan calculation examples in the Draft Guidance do not include an example tailored to the death of a MPPP participant.

Analysis of Use of Section 115 Trust Funds

TRS manages its hospital and medical health insurance retiree plan pursuant to Kentucky state law through a federal Internal Revenue Code (hereinafter "IRC") Section 115 trust. Such trusts are often referred to as "integral part" trusts because to be tax exempt, they must constitute an essential function of the governmental employer.

Kentucky statutory law[2] creates the Kentucky Teachers' Retirement System Insurance Trust Fund intended to be established as a trust exempt from taxation under IRC Section 115 (hereinafter "TRS insurance trust fund" or "TRS Section 115 trust"). The Kentucky statute reads, in part:

> Trust fund assets are dedicated for use for health benefits as provided in KRS 161.675, and as permitted under 26 U.S.C. secs. 105 and 106,[3] for present and future eligible recipients of a retirement allowance from the Kentucky Teachers' Retirement System.

[2] KY Rev Stat §161.677(2).
[3] IRC Sections 105 and 106 provide little guidance on what types of accident or sicknesses may be covered, but the Sections refer to IRC Section 213(d) for the definition of "medical care." That section reads as follows:

KEHP MEHP **Know Your Rx Coalition**

Free counseling with live pharmacists

Know Your Rx Coalition *Pharm-Assist*

Hours: Monday to Friday, 8 a.m. to 6 p.m. ET
Phone: 855-218-5979
Email: KYRx@uky.edu
Website: www.KYRx.org

KEHP MEHP

Personalized Medicine

TRS Solution: Personalized Medicine Partnership

This personalized medicine program uses DNA testing to help you find out if your medications work for you.

You
Your Doctor
Your Pharmacist

MEHP enrollees can contact Coriell at 888-454-9024 or online at www.coriell.com/trs to request a free DNA kit.

Non-Medicare KEHP enrollees are eligible for the DNA kit at a current cost of $360. Pay through credit card or your CDHP HRA.

How it Can Help

Your DNA matters

Using DNA to see what drugs will be safe and effective — Pharmacogenomics

Steps

Collect genetic information through saliva test

Empower pharmacists

Communicate the Medication Action Plan

KEHP MEHP

Personalized Medicine

Why It Works

- Helps avoid taking ineffective medications that even could be fatal
- Saves money for retirees and their insurance trust
- Uses DNA testing to help doctors making treatment decisions
- Results help make sure medications are beneficial from the start
- Avoids traditional trial-and-error process without DNA information

KEHP MEHP

Personalized Medicine

Peer-Reviewed Initial Results Receive Attention

Journal of *Personalized Medicine*

- 66% had genetic risks detected in a current medication
- 14.9% reduction in inpatient visits
- 6.8% reduction in emergency room visits
- $37 million savings in direct medical charges over 32 months

KEHP **MEHP**

Personalized Medicine

One Retiree's Story

I am ***so grateful*** for the information that was given to me and my physician. I was taking metoprolol for my ***heart condition***. Your tests showed that it ***stayed too long in my system***. I sometimes had the feeling that I was on the verge of ***fainting***. I ***had not had that feeling since I started taking the new suggested medication***. I thank you from the bottom of my heart.

– Member, Teachers' Retirement System of the State of Kentucky

KEHP MEHP

Personalized Medicine

Genetic Testing Wellness Program Gets National Attention

Journal of Precision Medicine

A Commentary on a Precision Medicine Program: Humanistic Outcomes Are Always Key

By Jane Cheshire Gilbert, CPA, Teachers' Retirement System (TRS) of the State of Kentucky, a Member of the GTMRx Institute

Introduction: GTMRx and TRS Kentucky

Precision medicine meets personalized medicine in cases like the TRS retiree (quoted in #1) who voluntarily submitted a saliva sample for testing. Such a simple act, one of the many by TRS retirees, yields long-term returns on the scientific and financial investments made by TRS to achieve its precision medicine goals. Moreover, TRS puts those goals into human terms, showing how real people express in their own words how precision science benefits them. Are there any better words a pharmacist or doctor could hear? Or for those inside the pharmacogenomics research world and academia? Or, for that matter, the director of retiree health care for Kentucky's retired teachers?

In the past few years, TRS has made countless virtual presentations on this program to others interested in their employees' and retirees' wellness, drug cost containment and precise use of science that now is well over a decade old. In addition, TRS has presented its program to many health care professionals, including doctors and health plan administrators at the National Institutes of Health in Bethesda, Maryland; attendees at the Personalized Medicine Coalition meeting at Harvard in Massachusetts; and, now, readers of

#3 *A deep dive into our population discovered that 84% of retirees are on medications that are influenced by genetics. Medicare-eligible retirees were on an average of 15 prescriptions. Roughly 75% of the population had high blood pressure, 58% had high cholesterol and 50% were suffering from pain and inflammation. Using de-identified claims information, the PGx vendor provided an in-depth analysis of the possible return on investment with the program which found: 10% of members should stop taking a prescription immediately (potential savings: $1.7 million), 57% of members might need to adjust dosage (potential savings: $10 million) and 33% of members have a better alternative medication available.*

Doctor-Patient Reports and Consultations

CLS develops a personalized medicine report that includes the relevant genetic data as well as known drug-drug interactions, lifestyle factors and other relevant information. TRS made sure that if a retired teacher wanted to have their DNA tested, a pharmacist was in place who could communicate the results to the patient in language they understood. Pharmacists have developed medication action plans for the 7,800 program enrollees. Both the patient and the physician receive a copy of the plans, which explains the results of the testing and the pharmacist's recommendations.

After these conversations with patients, the pharmacists then reach out to the prescribing physician, with the patient's permission, and discuss the recommended medication changes. And those recommendations are taken seriously. The physicians' acceptance of the initiative is gratifying and astounding – and key to validating the program. Prescribing physicians almost universally accepted the pharmacists' recommendations — 89% of the time. Like the retirees, physicians were generally appreciative. TRS heard a lot of positive feedback, such as "you're helping me become a better doctor, to take better care of my patients and to be able to prescribe the right drug at the right time for them."

Of the medication action plans delivered for those enrolled in the program, 64% resulted in medication changes. Over 40% of the suggested medication changes are directly related to DNA-drug interactions. The rest are the result of what CLS calls the "halo effect" of working with the pharmacists and, for example, switching to a generic. Other examples from this medication therapy management process – in which the pharmacist spends about an hour with a patient – include identifying drug-to-drug interactions, side effects and other issues.

#4 *Communicating with members early and consistently contributed to the program's successful launch. The overarching message: TRS is making smarter use of the health care dollar through the program because taking medications that do not work is bad for the member's health and for the TRS health insurance fund.*

The process of "test, report, consult" avoids the possibly fatal trial-and-error type of prescribing known as titrating and playing with the dosage. In keeping with GTMRx, TRS hopes the medication is right the first time, saving members considerable pain and suffering and saving the plan a lot of money.

The outcomes have proven the concept.

According to CLS, costs grew 12% faster for those not enrolled in the PGx program than enrollees, based on charged amounts for medical claims at an 18-month evaluation. About $12 was saved on charged claims for every $1 spent on PGx program costs.

Despite these initial results, PGx still faces resistance – in no small part from the predisposition to keep doing things the same way as always. The DNA testing and medication management counseling was not reimbursable, so the TRS health insurance trust fund decided to cover the costs. Ideally, that will be a short-term solution as reimbursement improves. The goal is that this approach becomes a standard of care, and the large payers in the nation, especially those inside of Medicare Advantage and Medicare Part D, begin paying routinely as they do with any other standard of care.

A couple of positive signs toward that outcome have recently been seen. On the regulatory side, Medicare made a recent local coverage determination to allow PGx when specific criteria are met. Second, on the insurer side, some large companies, including UnitedHealthcare, have incorporated the use of PGx to include, for example, reimbursement for certain patients with depression.

In addition to these positive signs, the accumulation of data and the weight of evidence will dictate that PGx becomes the standard so that patients are not on a drug that is ineffective or unsafe for months or years.

What's next

To implement PGx, engage your medical plan carrier and your pharmacy benefits manager (PBM) in this conversation. PBMs will see the value in lives saved, improved health outcomes and reduced costs; PBMs will come to recognize the value of PGx as a tool to optimize medications through comprehensive medication management (CMM).[3,4] Introducing a pharmacist who works in collaborative practice with the physician to target correct therapies reduces the trial-and-error approach to prescribing. And TRS's experience provides a path toward getting there as a widespread, accepted standard of care.

#5 *TRS heard a lot of positive feedback, such as "you're helping me become a better doctor, to take better care of my patients and to be able to prescribe the right drug at the right time for them"*

Resources are available to guide those new to these concepts. In April, the GTMRx Institute released the GTMRx Employer Toolkit,[5] a suite of resources to equip employers with the knowledge to manage and control medication therapy problems more effectively through their pharmacy benefit programs and medical carriers. The toolkit is designed to help educate, guide and assist employers as they work with solution providers.

A pharmacist-led, person-centered, team-based, standardized and rational approach to medication use empowers employees to leverage PGx testing and moves us all toward a more precise *and* personalized care process.

TRS continues to educate Medicare Advantage carriers and PBMs of the need for PGx inside these federal programs. Including PGx in Medicare Advantage and Medicare Part D would help continue to control the TRS Medicare Eligible Health Plan premium. The 2021 monthly premium is $178, down $54 (not adjusted for inflation) from 20 years ago due to increased federal revenues and heightened care management inside these federal programs. PGx, if included in these federal programs, would bring greater cost efficiency.

In the end, the most rewarding part of the program, as indicated earlier, is not only the medication change that results from the testing and or the dollars saved; it is also the reaction of Kentucky's retired teachers who take part in the program and the thanks TRS receives for actually running these tests.

The story will get better because this wellness and savings program is a lifetime benefit for each Kentucky retired teacher who volunteered to provide a DNA sample. Testing results that already have paid dividends for the retirees and their health plan can continue to inform every aspect of their pharmaceutical treatment for the rest of their lives. JPM

Jane Cheshire Gilbert, CPA

Director of Retiree Health Care for the Teachers' Retirement System of the State of Kentucky

Jane has served TRS retirees since April 2002. She manages two retiree health plans covering 48,000 retirees. She also serves as a leader in the areas of health insurance cost containment, project management, risk management and federal health care solutions. Gilbert served in management and directorship positions for a Louisville, Kentucky law firm and a cost containment company, The Rawlings Company, from 1989 through 2002. Prior to that, she worked as an accountant for a national CPA firm. Gilbert earned a bachelor's degree in accounting from Bellarmine University in Louisville, Kentucky and is a certified public accountant and a certified government benefits administrator. She has served on the board of the State and Local Government Benefits Association and is a member of the Public Sector Healthcare Roundtable.

References

1. Cutler DM, Everett W. Thinking outside the pillbox: medication adherence as a priority for health care reform. N Engl J Med. 2010;362(17):1553-1555. PubMedGoogle ScholarCrossref
2. Watanabe J, et al. Cost of Prescription Drug–Related Morbidity and Mortality. Annals of Pharmacotherapy, March 26, 2018. Accessed 3 April 2018. http://journals.sagepub.com/eprint/ic2IH2maTdI5zfN5iUayfull
3. 10 Steps to Achieve Comprehensive Medication Management (CMM). The Get the Medications Right (GTMRx) Institute. http://16bwl028dn7zhgp35k7rzh5c-wpengine.netdna-ssl.com/wp-content/uploads/2019/04/GTMRx-CMM-10-steps-PDF.pdf
4. The Outcomes of Implementing and Integrating Pharmacogenomics within Comprehensive Medication Management in Team-Based Care: A Review of the Evidence on Quality, Access and Costs. October 2020. The Get the Medications Right (GTMRx) Institute. https://16bwl028dn7zhgp35k7rzh5c-wpengine.netdna-ssl.com/wp-content/uploads/2020/11/The-Outcomes-of-Implementing-and-Integrating-PGx-within-CMM-in-Team-Based-Care-A-Review-of-the-Evidence-on-Quality-Access-and-Costs-11252020-1.pdf
5. Comprehensive Medication Management in Benefits Design: A Toolkit for Employers. The Get the Medications Right (GTMRx) Institute. https://gtmr.org/employer-toolkit-2/

Personalized Medicine

Hurdles to Widespread Adoption

1. **PGx needs to become a standard of care**

2. **PGx should be reimbursed by Medicare and large insurance carriers via employer sponsored health plans/public purchasers of health services and drugs**

3. **PGx should be completely supported by TPAs and PBMs**

4. **We can continue to chronicle our program, but 1, 2 & 3 must become a reality**

CORIELL LIFE SCIENCES

TEACHERS' Retirement System TRS KENTUCKY

KNOW YOUR Rx COALITION

A GOVERNMENTAL PURCHASING COLLABORATIVE

KEHP MEHP

Personalized Medicine

How to Sign Up

MEHP

MEHP enrollees can contact Coriell at 888-454-9024 or www.coriell.com/trs to request free DNA kit.

KEHP

Non-Medicare KEHP enrollees can contact Coriell and use HRA funds to pay the $360 cost.

CORIELL LIFE SCIENCES

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KNOW YOUR Rx COALITION
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Jane—Remember to give update on HB 180.
Jane—Remember to give update on FDA recent rulings. CLS does not have to file as a medical device.
Jane—Remember to give update on St. Elizabeth's

KEHP Consists of:

Anthem BlueCross BlueShield

CVS CAREMARK

WebMD

KNOW YOUR Rx COALITION

HealthEquity

SmartShopper

LivingWell CDHP	LivingWell PPO	LivingWell Basic CDHP
58%	39%	3%

Catastrophic Example

Under Age 65 Only

for Single Coverage

	2023 LivingWell CDHP	2023 LivingWell PPO
Premium	$2,620.32	$3,048.48
Deductible	$1,500	$1,000
Less HRA (if used for covered expenses)	-$500†	$0
Remaining Out-of-Pocket Max	$1,000	$4,500*
Total Member Cost	**$4,620.32**	**$8,548.48**

*Can meet medical and prescription maximums separately at $3,000 & $2,500 each

† $500 HRA does not have to be used. If not used, will roll to next plan year.

LivingWell

KEHP Additional Features

LiveHealth ONLINE

Video chat with doctors and therapists

SmartShopper®

Cash for using cost-effective options for certain procedures.

rethink BENEFITS

Support for care of kids with learning or behavior challenges

- Diabetes Prevention Program (DPP)
- Mental health and stress management
- 24/7 Nurse Line
- Substance Use Disorder Support Line
- Tobacco cessation
- Weight management

More information can be found at kehp.ky.gov

KEHP Living Well Promise

- Dates to complete promise are Jan. 1 - July 1, 2023.
- Complete the online Health Assessment
- If completed, you will receive the $40 per month premium discount in 2024.

NOTE: Both spouses must complete promise if on a cross-reference plan.

More information can be found at www.webmdhealth.com/kehp

KEHP Enrolled in a CDHP Plan?

HealthEquity Healthcare Reimbursement Arrangement (HRA) helps reduce costs; remaining funds carry over to next year if remaining in a CDHP plan.

Pay for eligible healthcare expenses such as:

- Medical and pharmacy
- Deductibles
- Copayments and coinsurance
- Some over-the-counter products
- Certain dental and vision fees (does not apply to deductible or maximum out of pocket)

If you're on a CDHP plan and don't have a HealthEquity card, or to determine eligible expenses, call 877-430-5519 or visit wageworks.com.

Before moving from KEHP to Medicare

KEHP → **MEHP**

WebMD

Use or lose your bucks before KEHP coverage ends!

HealthEquity

Funds in Consumer Driven Health Plan (CDHP) HRA must be used before moving to MEHP

KEHP

2024 Changes

- WebMD will now be Castlight.
- You no longer have the option of doing the biometric screening to satisfy the Living Well Promise
- KEHP premium costs will increase between 10% to 16.5% for the Couple, Parent Plus, Cross Reference and Family plans.
- Prudent RX will be available for all plan levels.
- **Carrum**: Their Centers of Excellence provide cancer care and a range of surgical procedures such as knee, hip, heart and weight loss surgeries where the health plan covers most, if not all of the costs related to the surgery.

TRS News & Information

https://trs.ky.gov

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PATHWAY

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Monday – Friday

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Protecting & Preserving Teachers' Retirement Benefits

TRS of Kentucky
Trustee Workshop

November 20, 2023

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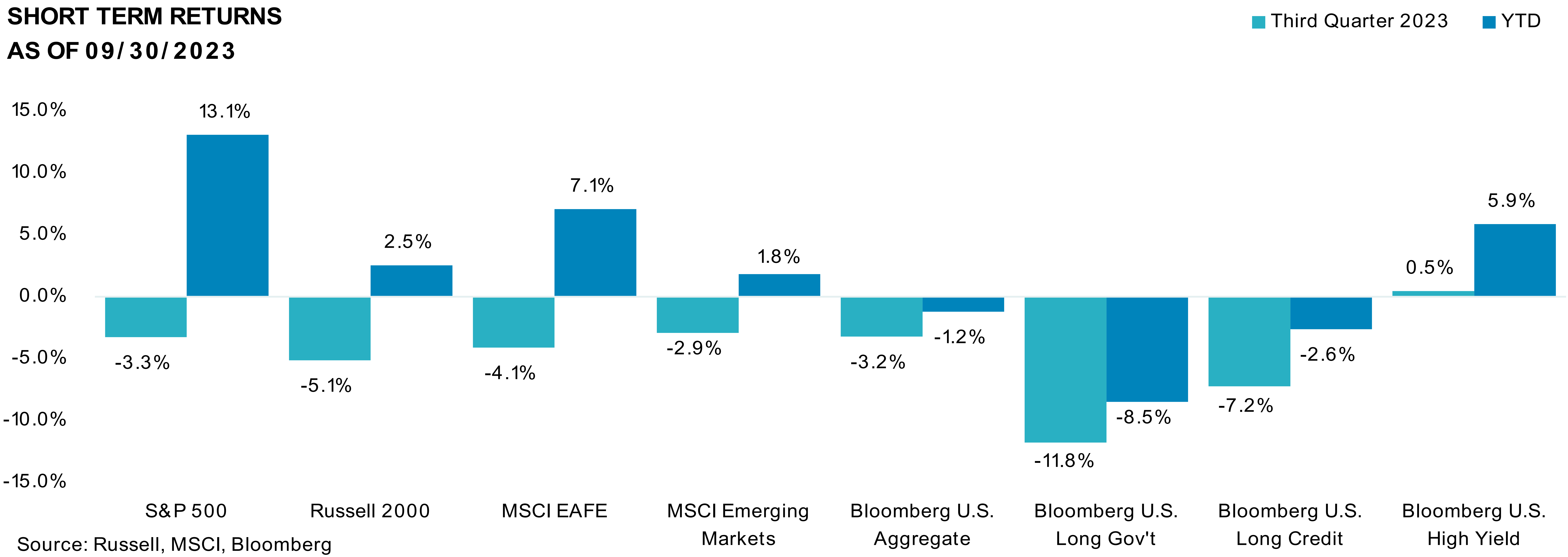
Empower Results®

Table of Contents

1

Market Environment

Market Highlights



Source: Russell, MSCI, Bloomberg

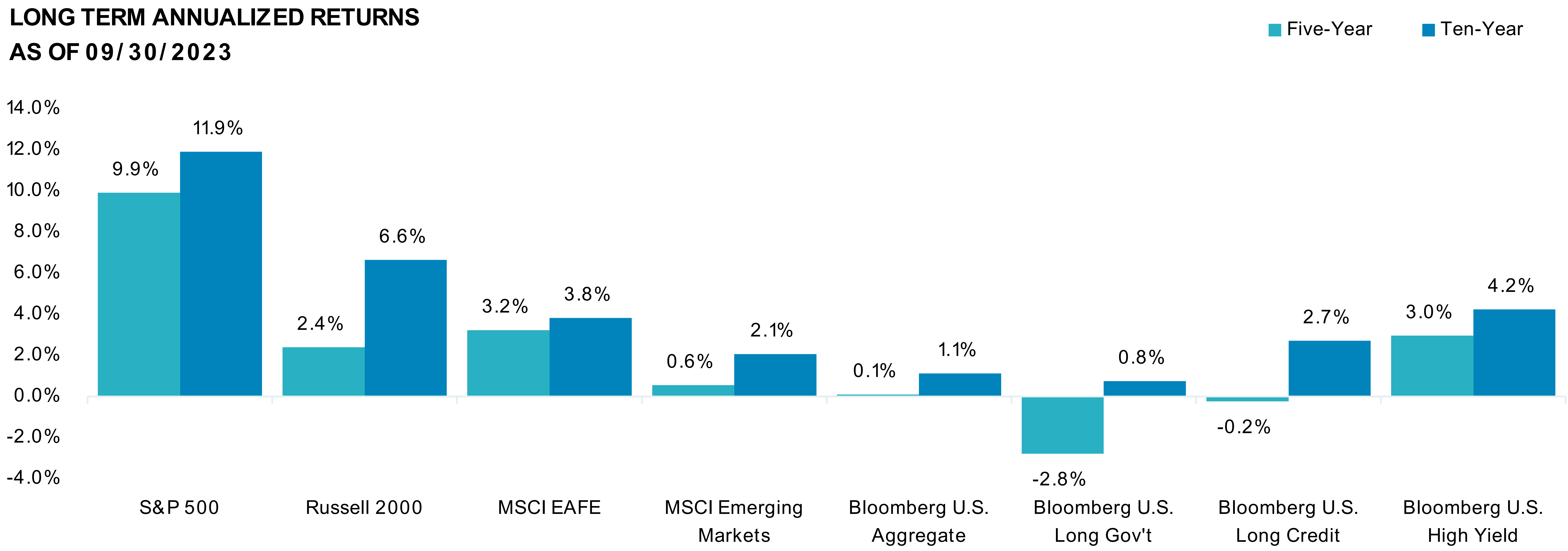
MSCI Indices show net total returns throughout this report. All other indices show gross total returns.

Equity markets fell as market sentiment turned to accepting that interest rates are expected to stay higher for longer

- Markets see the current Middle East conflict as largely a contained regional problem but will take more notice should it start to widen out to involve more countries and bring economic consequences in its wake
- Inflation U.S. inflation rose more than expected as the U.S. annual consumer price index (CPI) increased by 3.7% in August, up from the 3.2% recorded in July and slightly higher than economists' expectation of a 3.6% increase. Higher price pressure was driven by rising fuel and housing costs
- As the table on the above illustrates, returns were negative in the overwhelming majority of asset classes

Past performance is no guarantee of future results. Indices cannot be invested in directly. Unmanaged index returns assume reinvestment of any and all distributions and do not reflect fees and expenses. Please see appendix for index definitions and other general disclosures.

Market Highlights



Source: Russell, MSCI, Bloomberg

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Market Highlights

Equity markets fell as market sentiment turned to accepting that interest rates are expected to stay higher for longer

- Markets see the current Middle East conflict as largely a contained regional problem but will take more notice should it start to widen out to involve more countries and bring economic consequences in its wake
- U.S. inflation rose more than expected as the U.S. annual consumer price index (CPI) increased by 3.7% in August, up from the 3.2% recorded in July and slightly higher than economists' expectation of a 3.6% increase. Higher price pressure was driven by rising fuel and housing costs
- As the table above illustrates, returns were negative in the overwhelming majority of asset classes

Monetary Policy

- The Fed increased its benchmark interest rate by 25bps over the quarter to a range of 5.25%- 5.50%
- The Federal Open Market Committee (FOMC) indicated that inflation remained "elevated" and that the economy was growing at a "moderate pace"

U.S. Treasury yields rose significantly across maturities as the yield curve shifted upwards over the quarter

- The 10-year US treasury yield ended the quarter +78bps at 4.59%, the 30-year yield ended +88bps at 4.73%

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U.S. Equity Markets

- U.S. equities had weak performance during the quarter with the S&P 500 index falling by 3.3% amidst expectations of interest rates staying higher for a longer duration.
- The U.S. Congress averted a government shutdown in a last-minute deal which saw U.S. lawmakers agree to pass a short-term deal to keep the government funded until mid-November. This deal however excludes aid for Ukraine, which House Speaker Kevin McCarthy pledged earlier this year. The House of Representatives voted 335-91 and the Senate voted 88-9 to pass the bill. The agreement marks a dramatic turnabout as the U.S. avoided a shutdown that would have furloughed hundreds of thousands of workers and stopped basic government functions.
- Earlier, Fitch downgraded the U.S. debt rating from AAA to AA+, citing “erosion of governance” over the past two decades. Fitch blamed worsening fiscal conditions for the U.S. government’s repeated debt limit stand-offs and last-minute resolutions.
- U.S. economic growth was relatively healthy as the economy expanded by an annualized rate of 2.1% in the second quarter, meeting economists’ expectations and slightly lower than the upwardly revised 2.2% growth recorded in the previous quarter. Despite a slowdown in consumer spending, strong business investment in inventories and fixed assets and encouraging government spending supported economic growth.
- The Russell 3000 Index fell 3.3% during the third quarter but rose 12.4% on a YTD basis. Energy (11.8%) and Financials (0.7%) were the best performers while Utilities (-9.5%) and Real Estate (-8.5%) were the worst performers.
- Medium-cap stocks underperformed in value while Small-cap stocks underperformed in growth over the quarter. On a style basis, growth underperformed value across market capitalization over the quarter.

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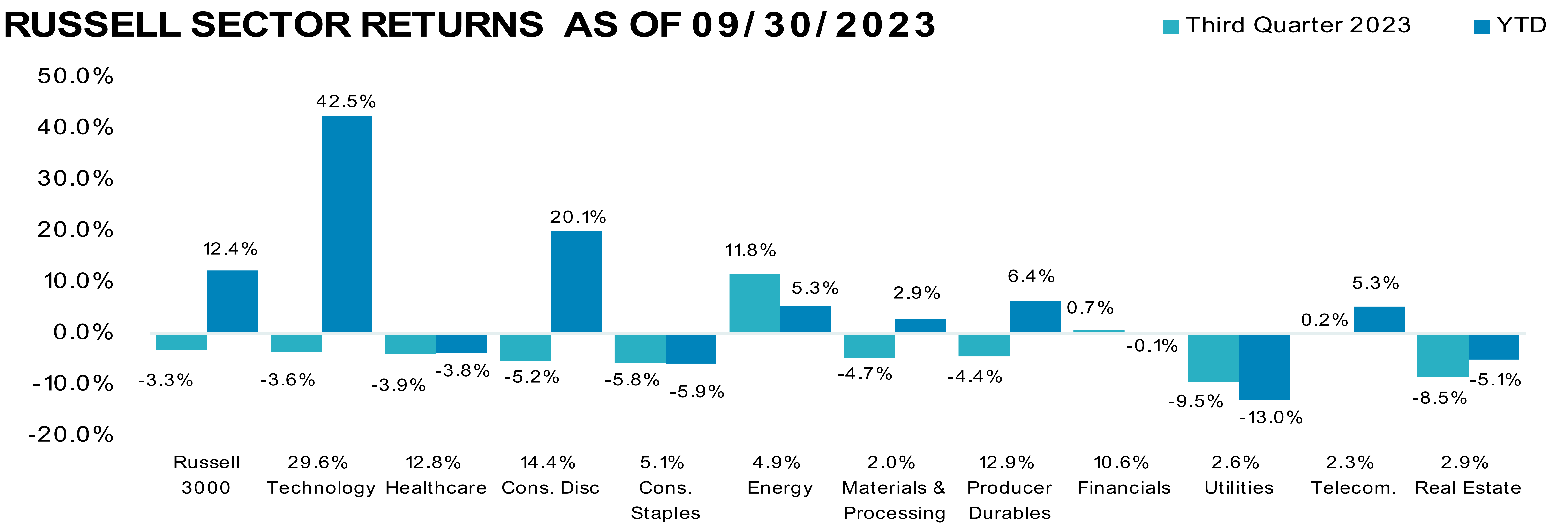
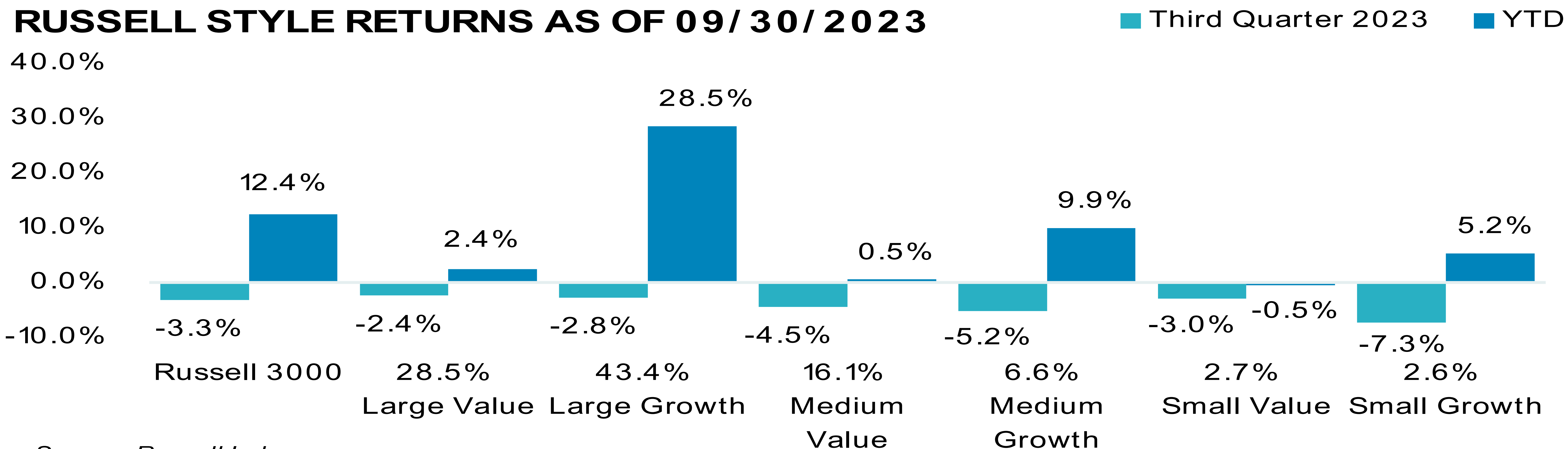
U.S. Equity Markets



Source: Russell Indexes



Source: Russell Indexes

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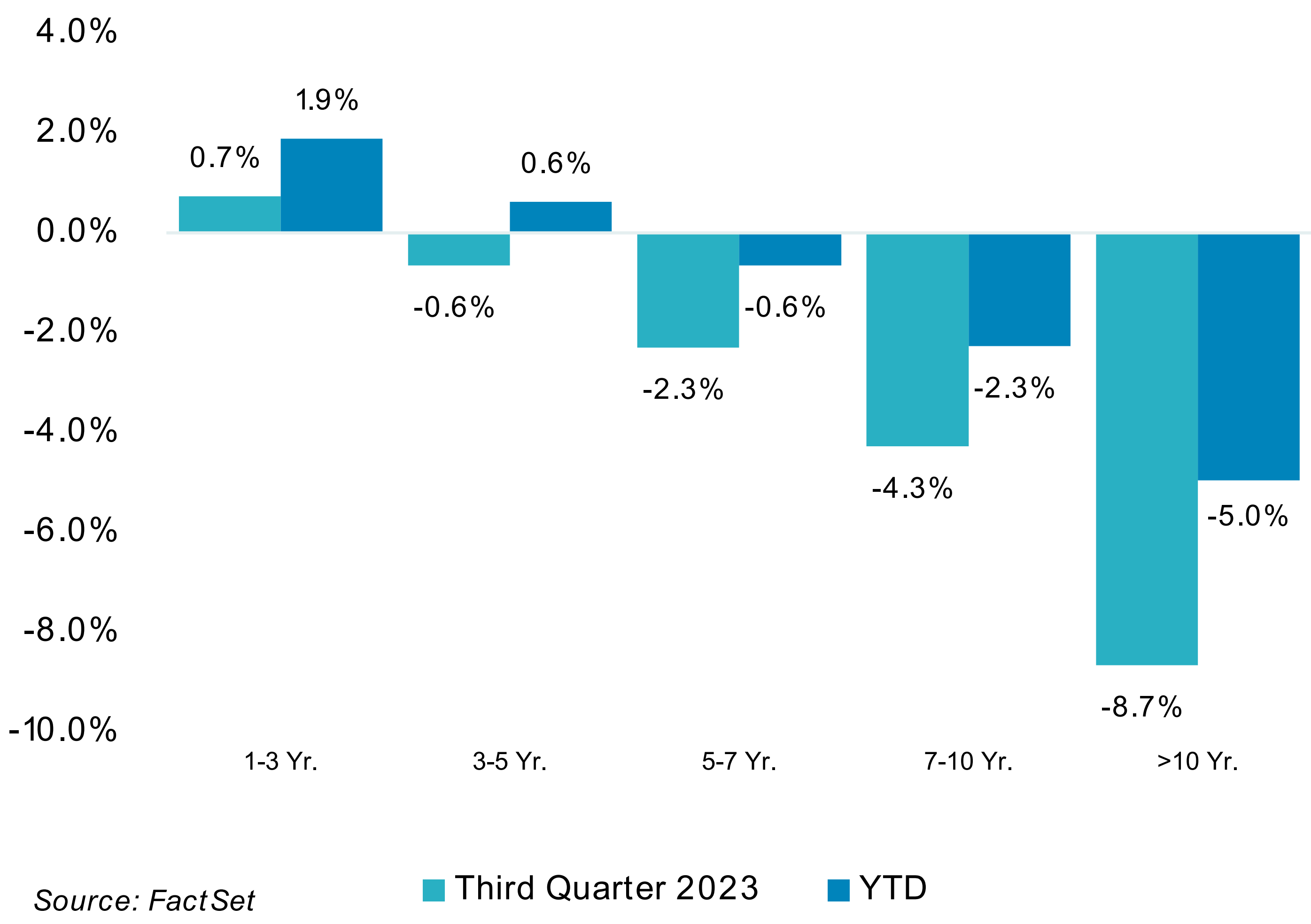
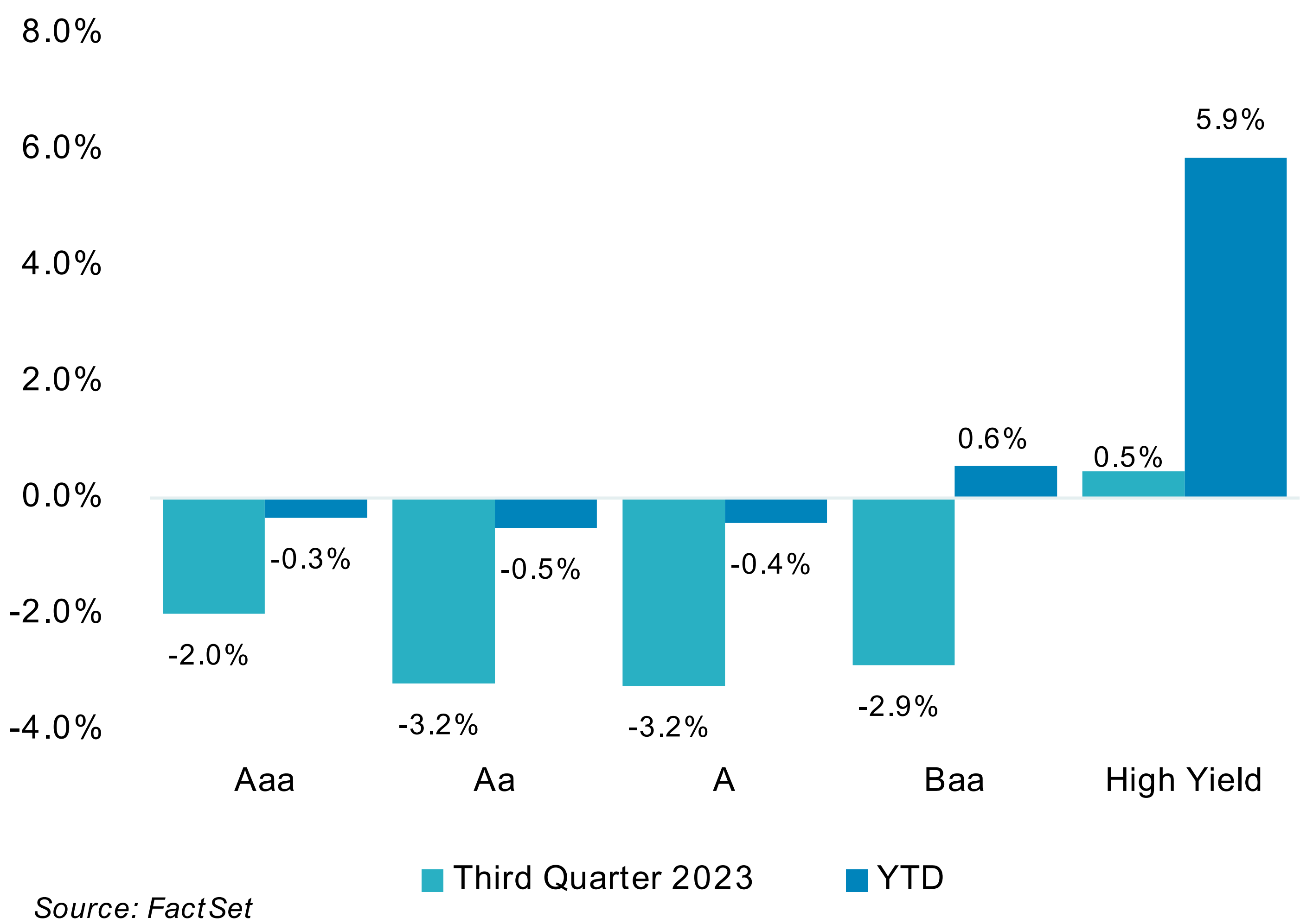
U.S. Fixed Income Markets

BLOOMBERG AGGREGATE RETURNS BY MATURITY AS OF 09/30/2023



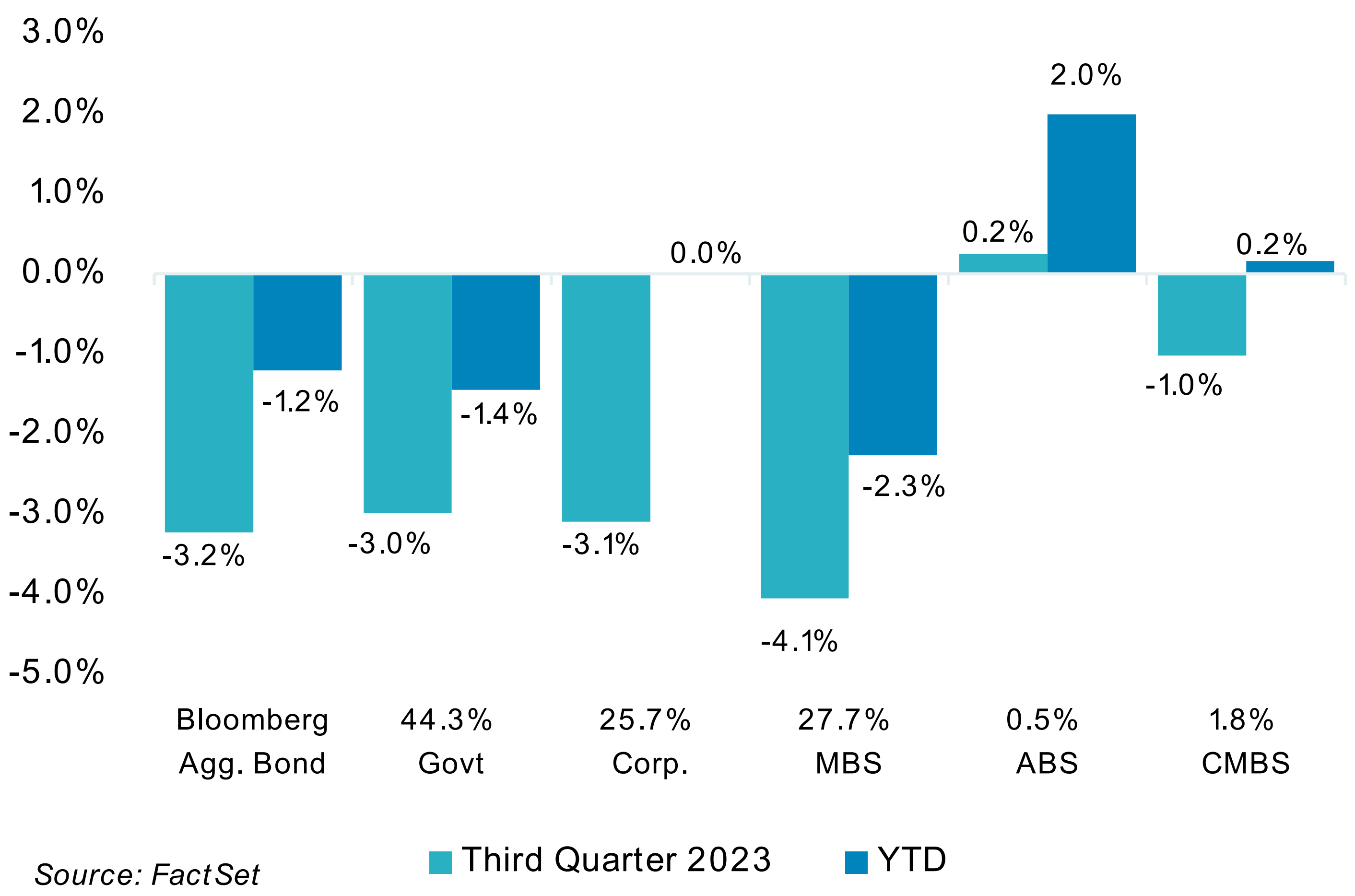
Source: FactSet

BLOOMBERG AGGREGATE RETURNS BY QUALITY AND HIGH YIELD RETURNS AS OF 09/30/2023



Source: FactSet

BLOOMBERG AGGREGATE RETURNS BY SECTOR AS OF 09/30/2023



Source: FactSet

- The U.S. Federal Reserve (Fed) increased its benchmark interest rate by 25bps to a range of 5.25%-5.5% over the quarter, representing the highest level in more than 22 years. The Federal Open Market Committee (FOMC) indicated that inflation remained “elevated” and that the economy was growing at a “moderate pace”. Fed chair Jerome Powell signaled that future Fed decisions would be based on “careful assessments” on a “meeting by meeting” basis.
- The Bloomberg U.S. Aggregate Bond Index was down 3.2% over the quarter and down 1.2% on a YTD basis.
- Across durations, all maturities finished the quarter in negative territory except the short-term maturities.
- Within investment-grade bonds, higher credit quality generally outperformed lower-quality issues, with Aaa bonds comparatively falling less. High-yield bonds rose by 0.5%.

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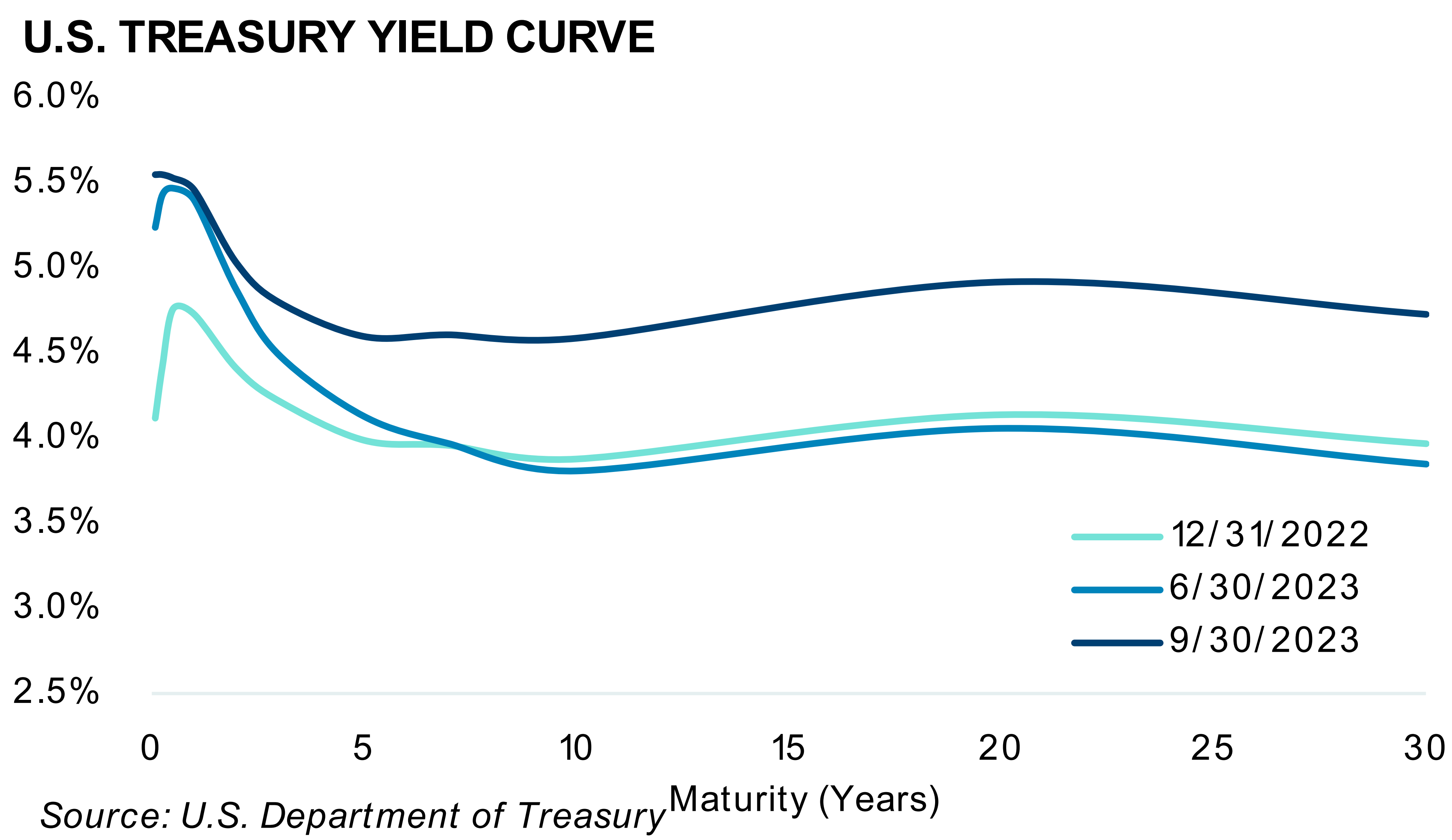
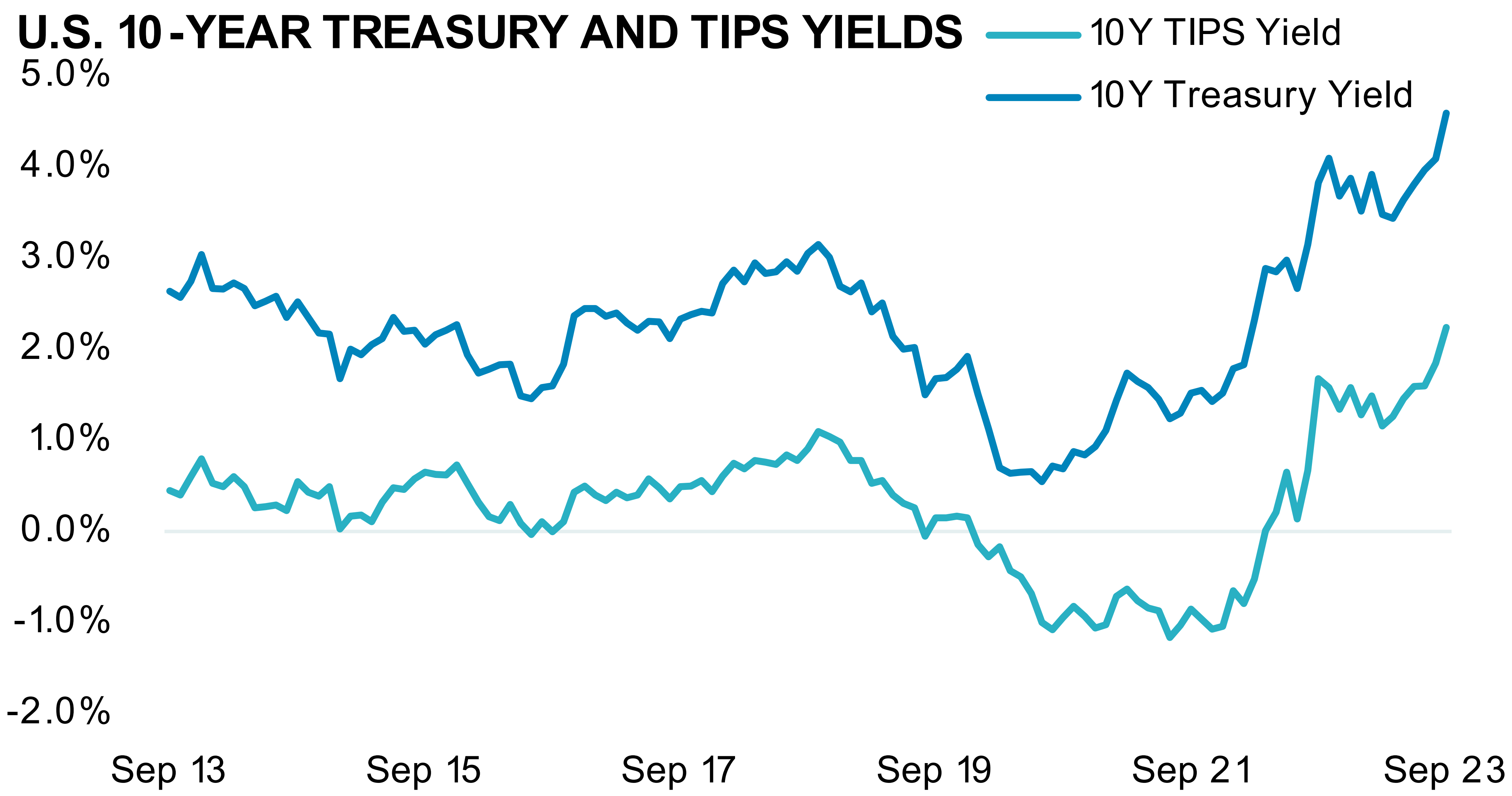
U.S. Fixed Income Markets



Source: U.S. Department of Treasury



Source: U.S. Department of Treasury

- U.S. Treasury yields rose significantly across maturities as the yield curve shifted upwards over the quarter. The 10-year Treasury yield was up by 78bps to 4.59%, and the 30-year Treasury yield was up by 88bps to 4.73% over the quarter.
- U.S. inflation rose more than expected as the U.S. annual consumer price index (CPI) increased by 3.7% in August, up from the 3.2% recorded in July and slightly higher than economists' expectation of a 3.6% increase. Higher price pressure was driven by rising fuel and housing costs. However, core CPI, which excludes food and energy costs, rose 4.3% year-on-year in August, slowing from the 4.7% recorded in July.
- The 10-year TIPS yield rose by 65bps over the quarter to 2.24%.

2

Bond Market Views

AON

Market Returns and Bond Yields Through 2023

The traditional 60/40 has come under pressure

U.S. 10 and 2 Year Treasury Yields

Source: Macrobond, Bloomberg

Note: Index constructed using Bloomberg US Large cap (60%) and Bloomberg US Agg (40%). This blended benchmark is a hypothetical portfolio that represents simulated performance. **Please see appendix for additional disclosures.**

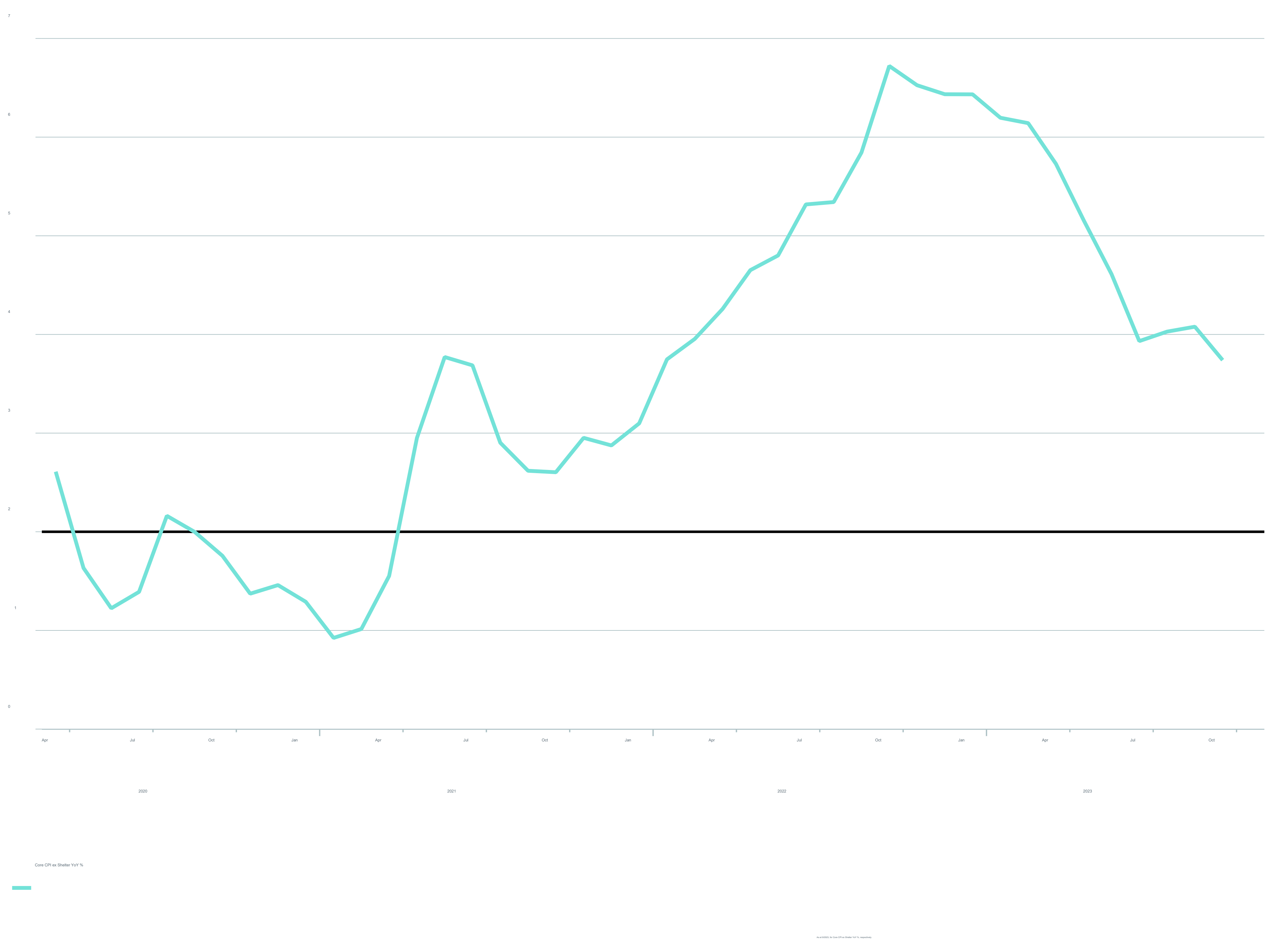
Source: Macrobond

What Has Happened To Long Rates?
Markets are starting to believe in ‘higher for longer’

The market is no longer pricing in large cuts over 2024

Source: Macrobond

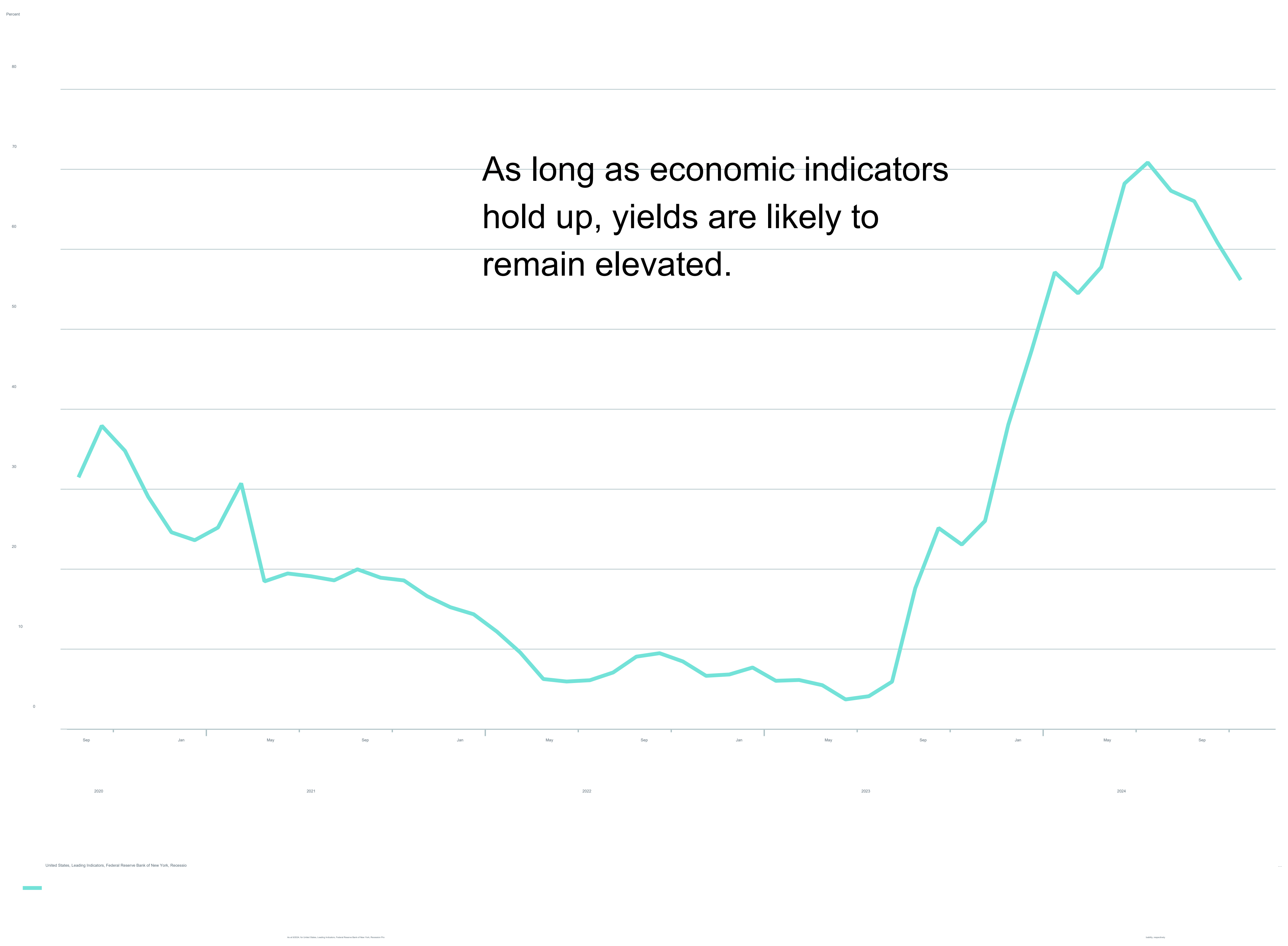
Inflation will take time to return to target



Source: Macrobond

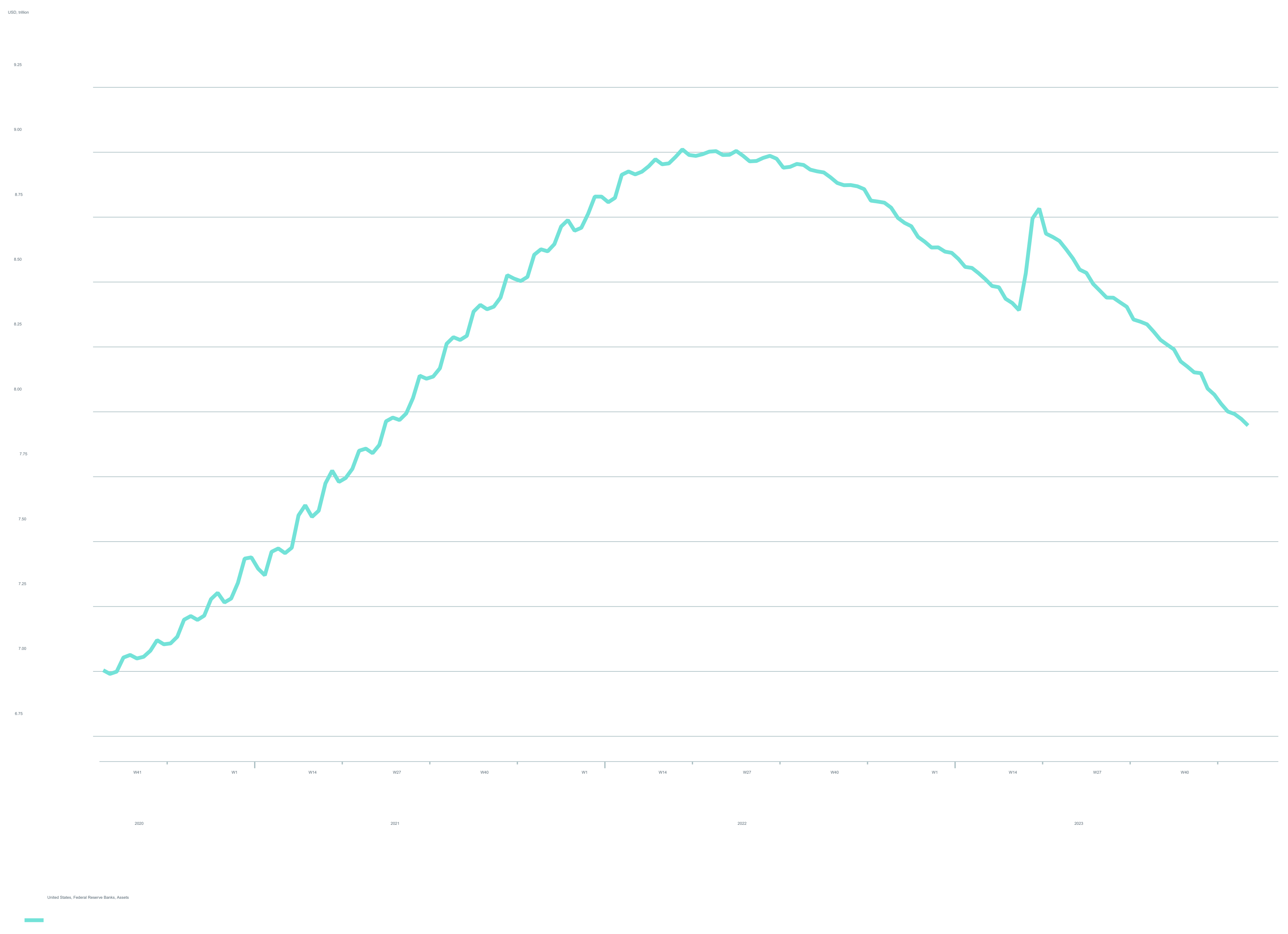
Why Have Long Rates Moved Up?
Yields will remain elevated in the short term

Recession probability has fallen slightly



Source: Macrobond

The Fed continues to shrink its balance sheet



Source: Macrobond

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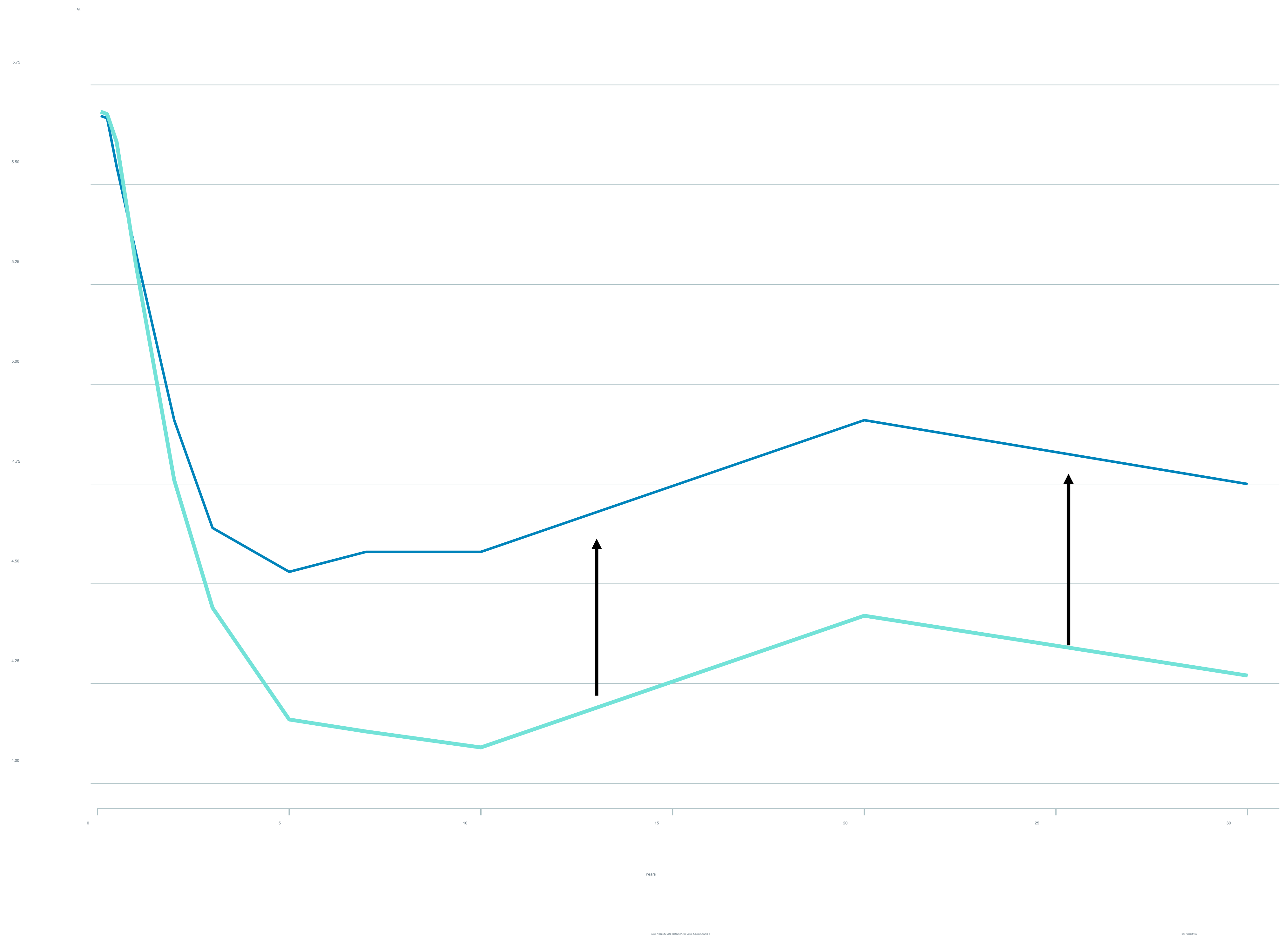
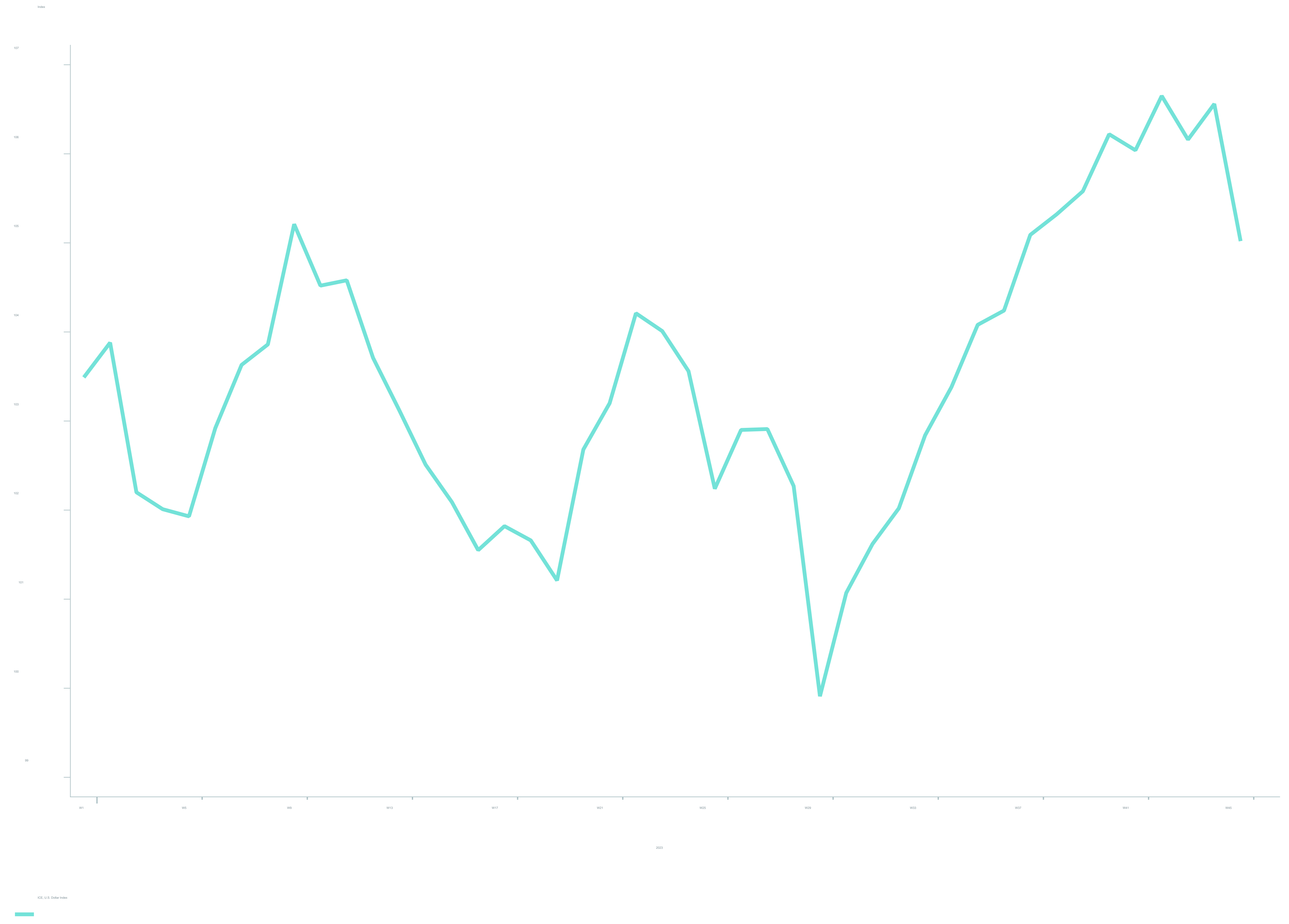
What has the Market Reaction Been?

Yields have risen across most terms since the start of Q3



Source: Macrobond. Data as of 11/07/2023

The US Dollar has strengthened substantially



Source: Macrobond

Key Issues in Markets Today

1

How long will the Treasury rout continue?

The spike in yields has tightened financial conditions further and hence we think that the Fed can now end its hiking cycle. We think that most yield curves will be lower than they are today on a 2-year view .

2

Will we see a clear deceleration in global growth?

The US economy is currently running hot. However, Europe looks to be rolling over and we suspect the US will slow too. Whether this will be just a downturn or something more serious remains unknown, but we cannot rule out further slowdown in global growth.

3

Do equities have further to adjust?

Global equity markets are down over 10% from their peak at the start of 2022 but this is still above the October 2022 lows: could these be rechallenged?

3

Medium-Term Views

Core Views

Upgrading US Treasuries

Longer dated US Treasury yields have been above our estimates for long-term fair value for a while, but we have been reluctant to upgrade while shorter-term rates markets were pricing in a rate cutting cycle which we felt was too aggressive and too soon, while acknowledging the risk that government deficit related increased issuance may struggle to be absorbed easily. If implied rates back in July 2022 had been right today's Fed Funds rate would be below 3% and the Fed would be on its second or third cut. The market now anticipates the first cut in March 2024 and a shallower pace of cuts. While we still think this is too soon, the unwind of 15-year duration in 10-years is now at over 5% versus a long-term fair value of yields which we think is at 3.5%. This level of term premium should compensate investors for any shorter-term disappointment on the timing and pace of rate hikes.

2024 downturn likely

The US economy looks to be currently growing around 3% versus the Fed's estimate of long-term trend growth of 1.8%. Assuming that an extended shut down of the US government is avoided, we think that momentum will continue into Q4, but that growth will be much weaker through 2024. Growth across the world is also weak, with the Chinese recovery from lockdown having disappointed many analysts.

Risky assets headwinds remain

A Fed pivot will require much lower inflation and the US labor market to be substantially weaker than it is now. The latter will only happen if the economy is also weak, which will likely further squeeze profits that remain below 2021 highs on a reported basis.

Actions

View Shifts

Upgraded our core fixed income view to single +, focused on upgrades to **Treasuries** and **TIPS**. We believe that US yields are close to a peak and a slowdown/moderate recession is still possible next year

Adjusted our return-seeking fixed income relative views. We have upgraded our **US High Yield** view to neutral, as it tends to perform better as a Fed rate hiking cycle comes to an end, especially if a deep recession is avoided, as we expect. We have also downgraded our **Local EMD** view to neutral

Upgraded our **Commodity** view to single positive, with an emphasis on **active exposures**. This is due to tight inventories, the impending Northern hemisphere winter and ongoing geopolitical uncertainty

Cross Asset Views

---	--	-	=	+	++	+++
		Equities				
				Core fixed income		
		Return-seeking fixed income				
				Alts		
				Cash		

- Actual reported earnings have struggled since the end of 2021, with Q2 reported earnings for the S&P 500 down by 10% relative to Q4 2021. This earnings pressure, coupled with a weaker economic outlook and headwinds from higher yields, keep us cautious on equities overall.

- We are upgrading our US duration view to single positive. We suspect that yields have overshot fair values and will be lower in a year's time although supply-demand imbalances may mean that the peak in yields has not yet arrived.

- We are keeping our preference for government bonds and less risky credit over return-seeking fixed income While there is upward pressure on credit spreads. We consider that there will be a better buying opportunity once spreads widen despite currently attractive yield levels.

- Cash rates continue to be attractive relative to the uncertain outlook of traditional asset classes, so a small cash allocation makes sense. We continue to recommend alternative diversifiers as they should provide resilience to portfolios.

Equities

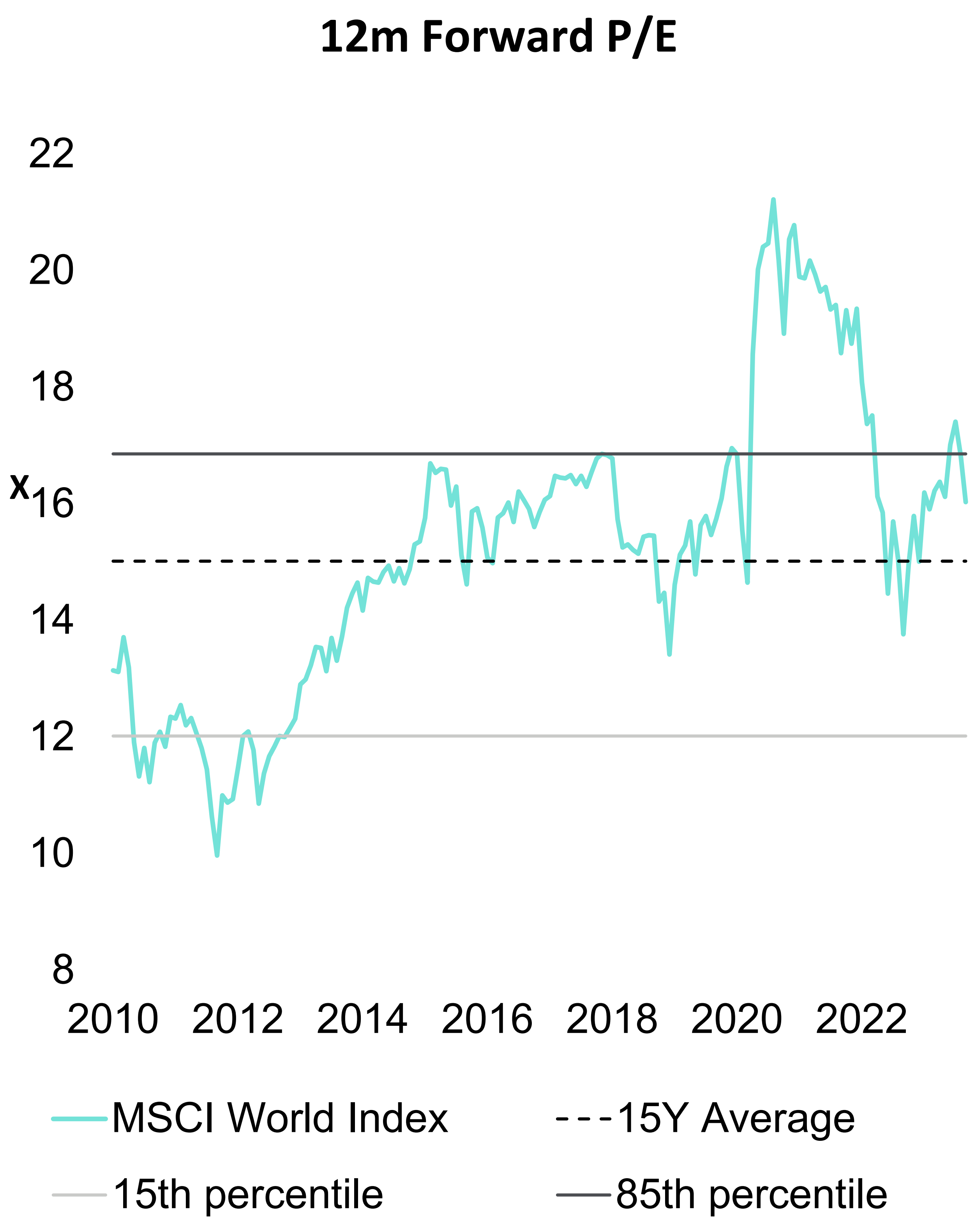
Valuations less expensive as markets struggle but high interest rates and recession risk remain key headwinds

The equity market rally since the start of the year lost momentum over the summer months despite still resilient economic data and the continued fall of inflation figures in the major economies. One major cause for the weaker performance was the sharp rise in yields as markets adjusted their expectations to a scenario of tighter monetary policy, persistently higher yields and sticky core inflation measures.

The impact on valuations, however, has been to move the common metrics away from historically expensive territory as earnings expectations remain near 10% growth for next year and 2025. For this scenario to be realised, one would need to assume that the US and the developed world avoids a recession and demand remains healthy.

Our view is that the risk of a recession has not gone away completely, although we are assuming that any recession would be shallow and short-lived. At the same time, higher yields compared with the 2010s are likely to present a persistent headwind to equity markets over the coming year. Overall, therefore, we are maintaining our caution on global equities.

In a reversal from last quarter, valuations moved into less expensive territory in Q3



Source: Factset

Higher interest rates are an important headwind to equities

Source: FactSet

Relative Fixed Income Views*

*Asset class views are relative to others within the asset class and not relative to other asset types. There should be no read-across from equities to credit, for example.

U.S. Core Fixed Income

---	--	-	=	+	++	+++
				Treasuries		
			Inv. Grade			
				TIPS		

Return-Seeking Fixed Income

---	--	-	=	+	++	+++
			USD EMD			
			Local EMD			
		Bank Loans				
				Selected ABS		
			US High Yield			

Our overall upgrade on fixed income is predominantly driven by our duration view and hence a slight preference for fixed Treasuries and TIPS over IG as (i) credit spreads are not particularly attractive, and (ii) Treasury benchmarks have greater exposure to the key rate durations which we prefer.

Rising yields and changing conditions have prompted us to adjust our relative views of credit sectors. As such, we have upgraded our view on US High Yield bonds to neutral. Meanwhile, US-denominated yields have risen more than local EM debt yields While economic and geopolitical risks could be challenging for local EMD debt.

Investment Grade Credit

Attractive yields, mediocre spreads

Although overall yield levels for corporate IG are attractive, we think that the spread over government bonds is not particularly compelling. Consequently, IG has now become the least preferred area of US core fixed income.

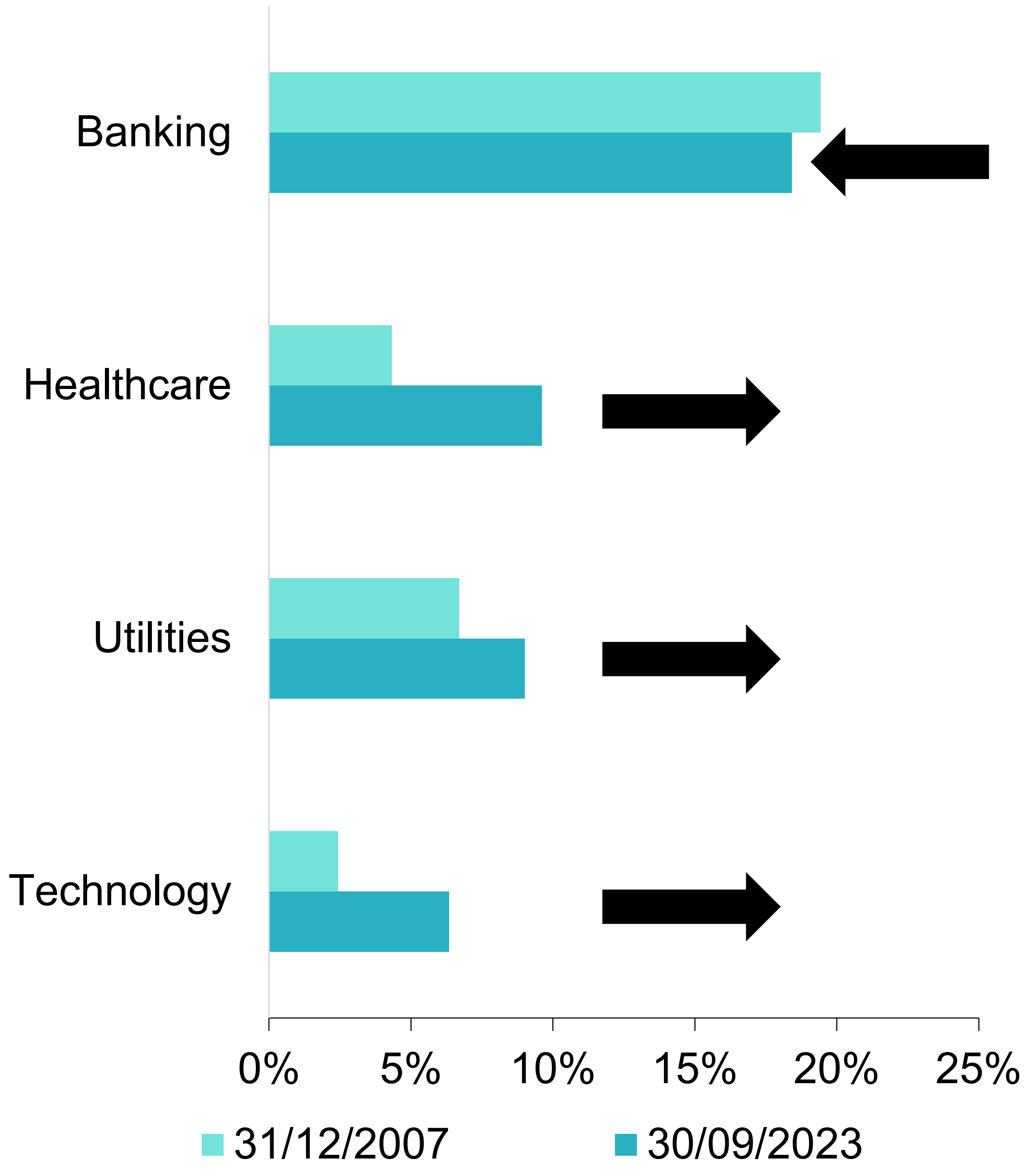
That said, While 130 bps is low, it should be seen in the context of (i) a relatively low equity risk premium, so reward for taking risk is compressed in other asset classes too (ii) relatively robust balance sheets with a shift towards higher quality sectors. For buy and maintain investors, IG is therefore reasonable, but we would not suggest being overweight strategic targets at this point. Our base case is that economic growth will deteriorate in 2024 but we don't anticipate a recession sufficiently deep to cause large credit losses within the IG space.

However, US-based investors should consider 'going global' when allocating to fixed income given higher spreads being available in Europe.

Spreads are at reasonable levels for the position in the cycle

Source: Macrobond, ICE BofA.

US IG has less exposure to risky sectors, such as banking, but more in less risky sectors, like Healthcare, Utilities and Tech



Source: ICE BofA.

Core Fixed Income: Global Yields Climb

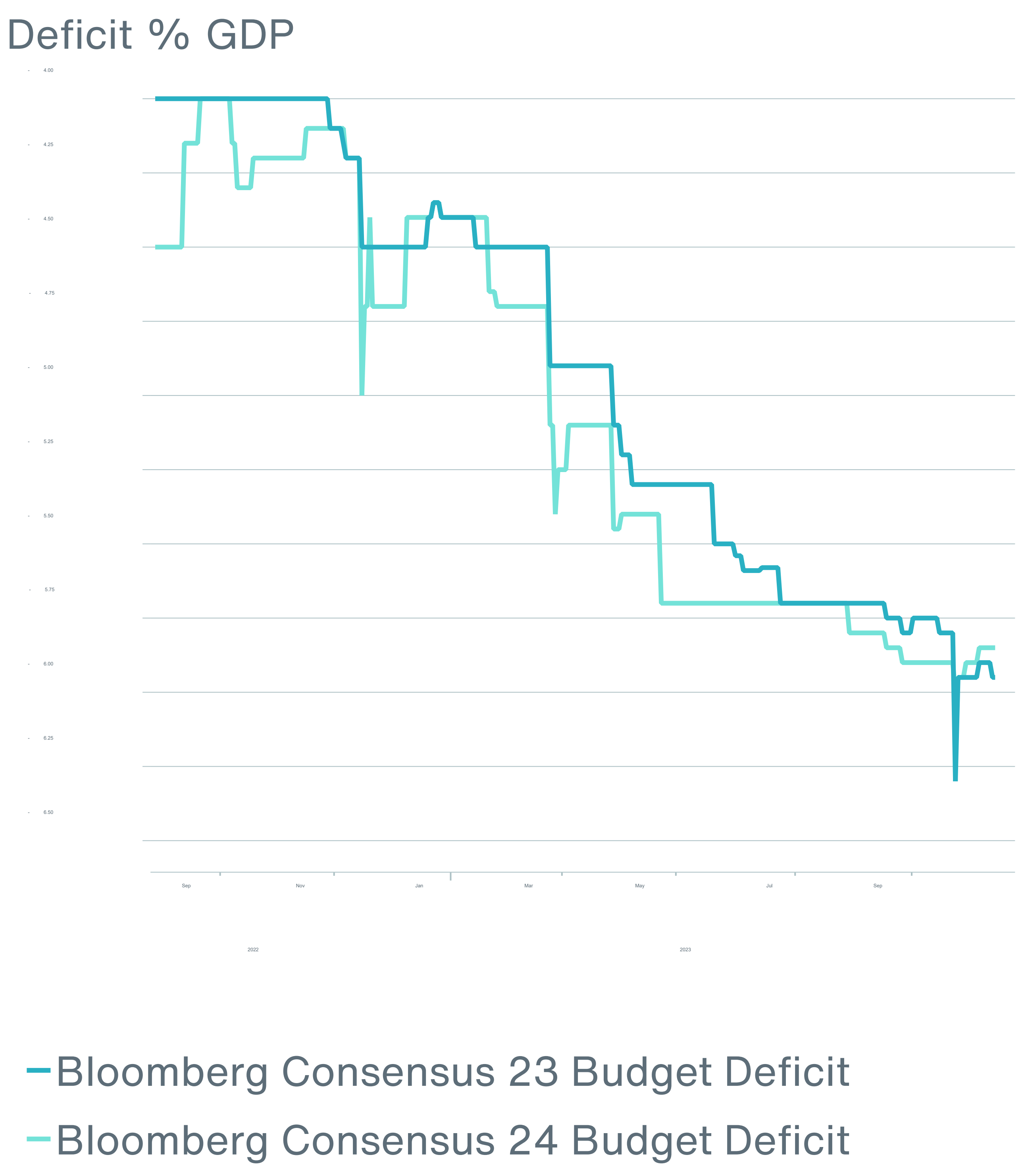
Upgrading US Treasury view

Global yields have continued to rise through 2023 reaching new post-2007 peaks in October. The exact catalyst for the increase in global yields is debated but high levels of issuance (from higher budget deficits, as well as a backlog resulting from the debt ceiling stand-off earlier in the year), quantitative tightening from central banks (where they sell assets including Treasuries), and expectations of 'higher for longer' policy rates from central banks have been some of the major drivers.

While we have been long-standing members of the 'higher for longer' policy rates camp, we think that central bank rates are now very close to peak levels. Higher Treasury yields, combined with a lower equity market have tightened financial conditions and, while they remain at these levels, we think that rate hikes are no longer needed in the US. We therefore think yields will be lower over a 2-year horizon and have upgraded our US Treasury view to single positive.

Perhaps one of the biggest unknowns for the US Treasury market is the actions of official purchasers such as overseas central banks and sovereign wealth funds. Chinese demand has declined as shifts in capital account flows and smaller current account surpluses mean there is no longer a build-up of FX reserves. Geopolitical risks could also see selling by other large official holders, creating shorter term volatility.

Higher than originally expected deficits have driven greater issuance



Source: Macrobond

20-year yields have been trending upwards

Source: Macrobond

Return-Seeking Credit

Yields have risen but economic and rates uncertainty keeps us cautious

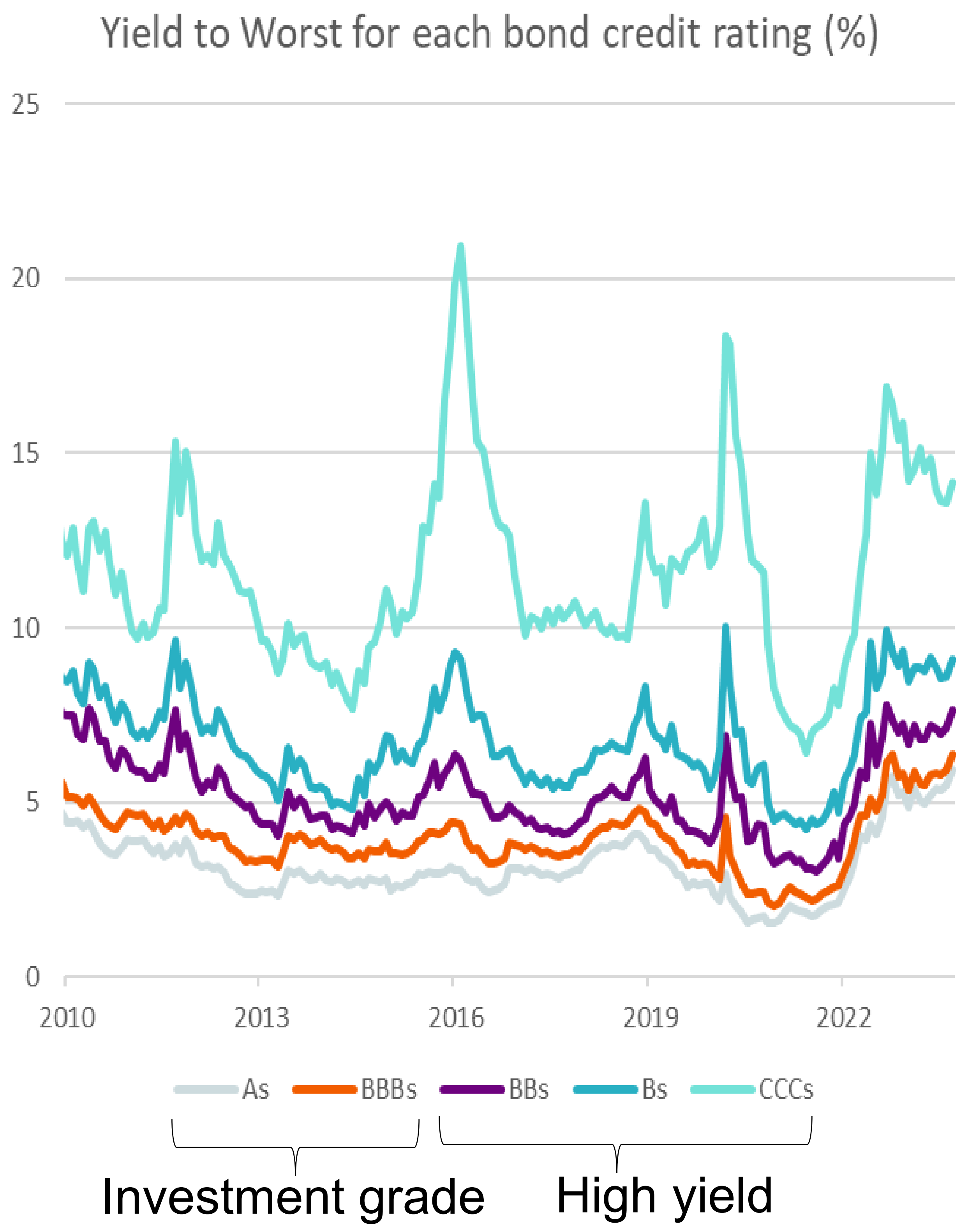
Rising yields may have increased the attractiveness of some areas within return-seeking bonds, but we remain relatively cautious overall as there is still uncertainty related to the economic outlook.

We still expect credit spreads to widen as global growth deteriorates and default rates rise but yield levels and duration will likely offset at least some of the losses from spread expansion. Given the strong move up in US yields, we are upgrading our US HY bond view.

US loans have outperformed HY bonds over the last quarter, benefiting from their floating rates and the US recession delay. Loans should start to underperform HY bonds when there are more signs that US growth is deteriorating so we have decided to keep the view here relatively cautious.

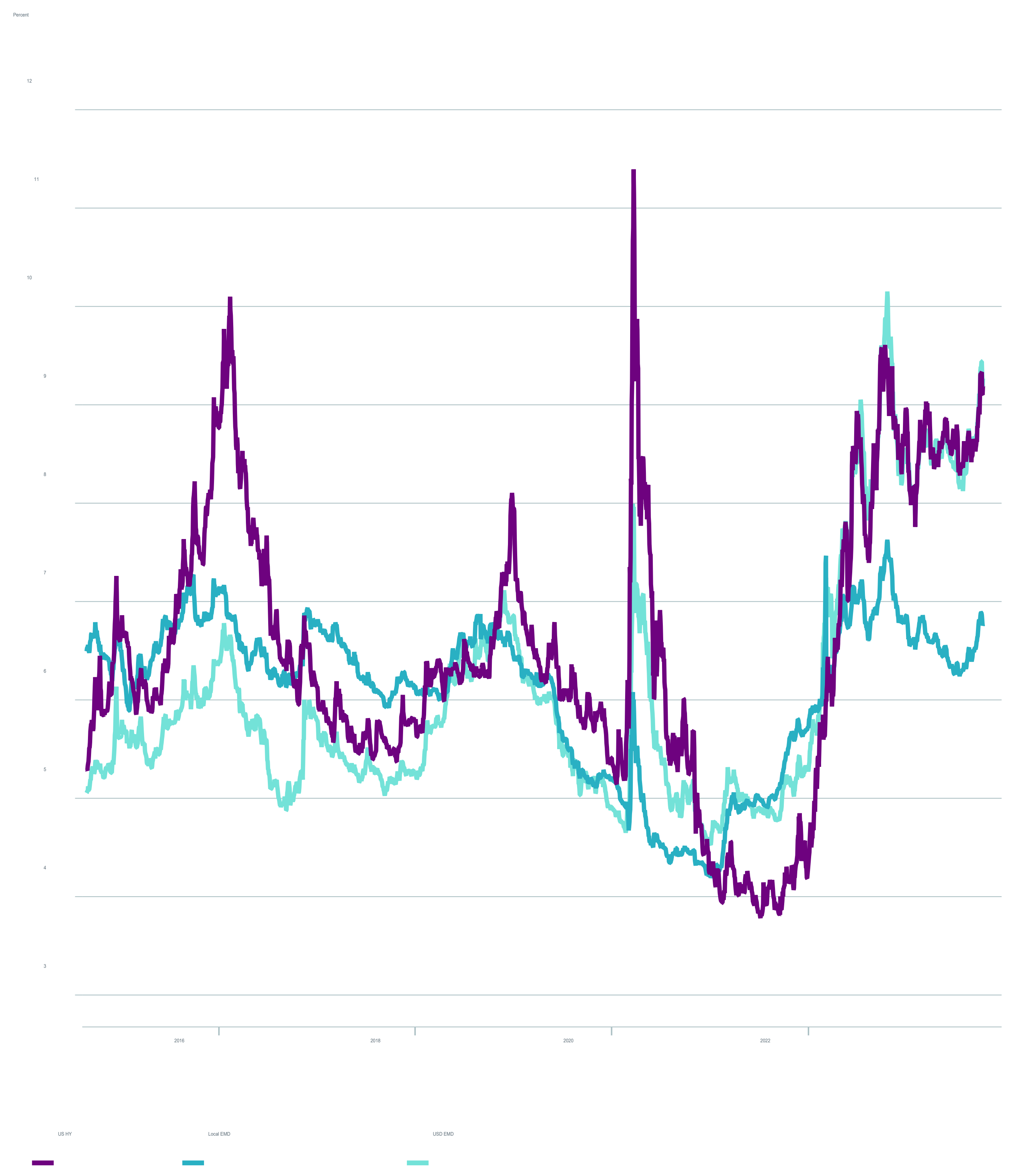
US EMD yields have risen much more than local EMD yields and are now above 9%. Inflation has also been falling in many EM countries, so for these two reasons, local EMD has outperformed this year. We now think that it is a good time to remove our local EMD preference, especially given USD EMD's higher yield and longer duration. EM debt has limited Middle Eastern exposure, but the geopolitical risks could have a negative impact on investor risk appetite.

US yields are at post GFC highs (except for bonds with the lowest HY credit ratings)



Source: BoA

US EMD yields have tracked US HY yields higher while local EMD has been quite resilient to higher real US yields



Source: Macrobond

4
Appendix

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Disclosures

Certain information contained herein concerning economic trends and/or data is (may be) based on or derived from information provided by independent third-party sources. AIUSA believes that the sources from which such information has been obtained are reliable; however, it cannot guarantee the accuracy of such information and has not independently verified the accuracy or completeness of such information of the assumptions on which such information is based.

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Commodities

Commodities look set to remain volatile, but active managers may add value

Commodity prices have fluctuated sharply over the last three years driven by surging demand after the relaxation of pandemic-related lockdowns, global inflation reaching multi-decade highs and raw material prices being pushed up by the ongoing conflict in Ukraine.

Oil prices (Brent) had fallen somewhat from a high of $139/bbl to just above $70/bbl. However, OPEC+ has continued to cut its oil production in an attempt to keep oil prices from falling due to weaker global demand. This has pushed prices to above $88/bbl, in part due to the ongoing situation in the Middle East, as well as the war in Ukraine.

We expect energy prices to remain elevated over the medium term even in a mild recession scenario. This is in large part due to tight inventory levels and low capital expenditure into exploration, suggesting volatility will continue to remain elevated into the upcoming winter.

Industrial metals have had mixed performance over the short term, due to the fears over an economic slowdown and the ongoing property crisis in China (the largest consumer of metals in the world). The sector could perform well over the medium term but remain very sensitive to short-term economic conditions and the success and speed of an energy transition.

We believe active commodity strategies may provide diversification and benefit from dislocations within commodity markets. In addition, these strategies may reduce volatility associated with exposure to sectors such as energy and metals, as well as economic conditions.

Oil spike coincides with low inventories

Source: Macrobond, Federal Reserve

Diversification does not ensure profit nor does it protect against loss of principal. Diversification among investment options and asset classes may help to reduce overall volatility.

Currencies

US interest rate and growth advantage now fully priced in

US bond yields have risen strongly on decent US economic data and the Fed's continued narrative that interest rates will stay high. This stands in contrast with the European Central Bank and Bank of England which have started to indicate they may have completed their rate hikes. Eurozone core inflation is now moving down while growth is much weaker than in the US.

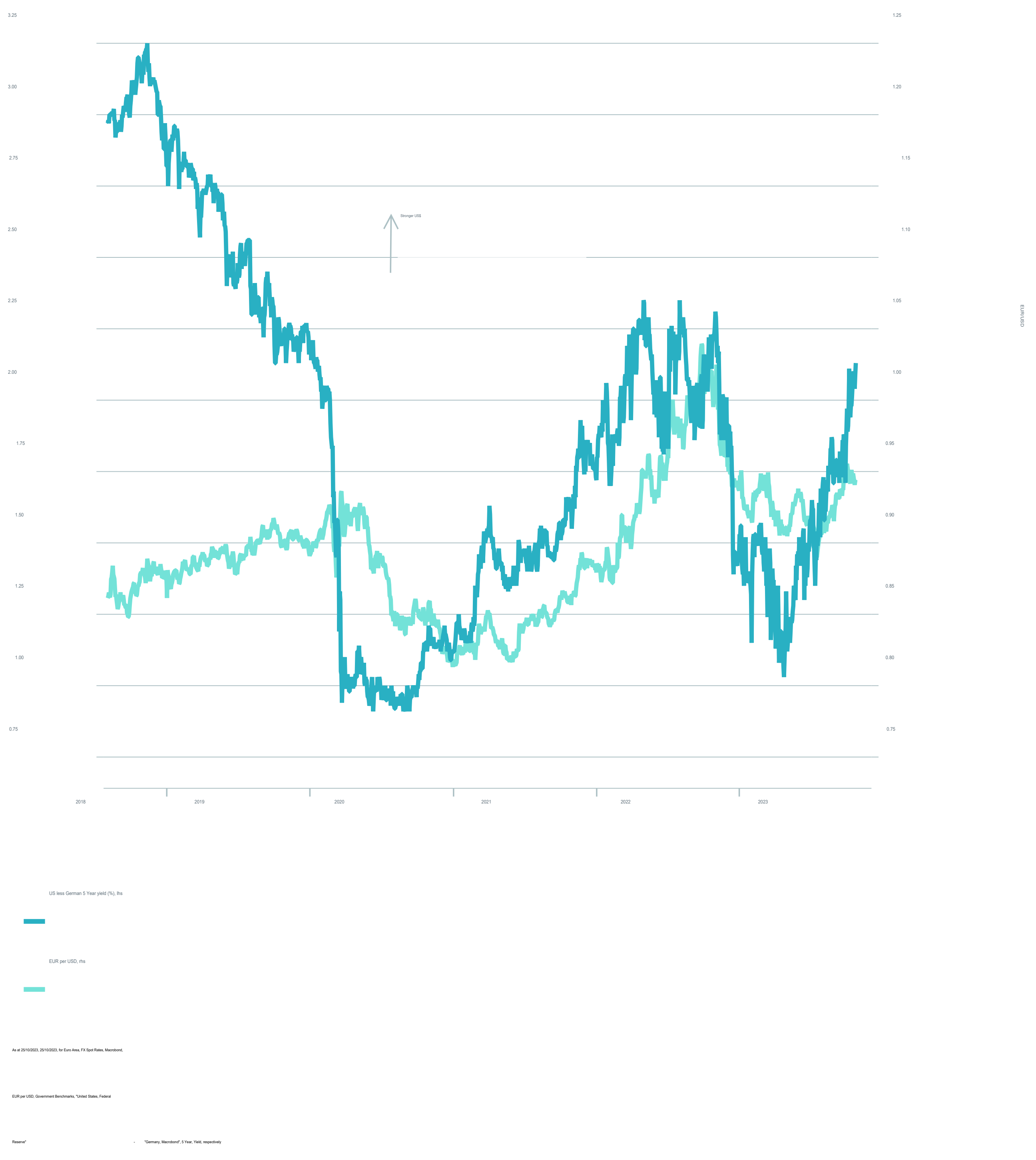
We have long held the view that the market was too optimistic in expecting imminent US rate cuts. However, 'higher for longer' rates have now been priced in (see right chart) which removes a support for the US dollar, reinforced by our view that US bond yields are close to peaking.

While short-term risks remain to support the dollar - an unexpected US rate hike or an extension of the current geopolitical tensions. We think the US dollar's extreme overvaluation will cause it to fall over the medium-term. We therefore remain moderately positive on the euro against the US dollar which we put in place at a similar exchange rate at the start of the year.

We are most positive on the yen as the continuance of ultra easy monetary policy is unsustainable especially now core inflation has risen. The ¥150 level looks promising as a potential turning point for the yen/dollar exchange rate.

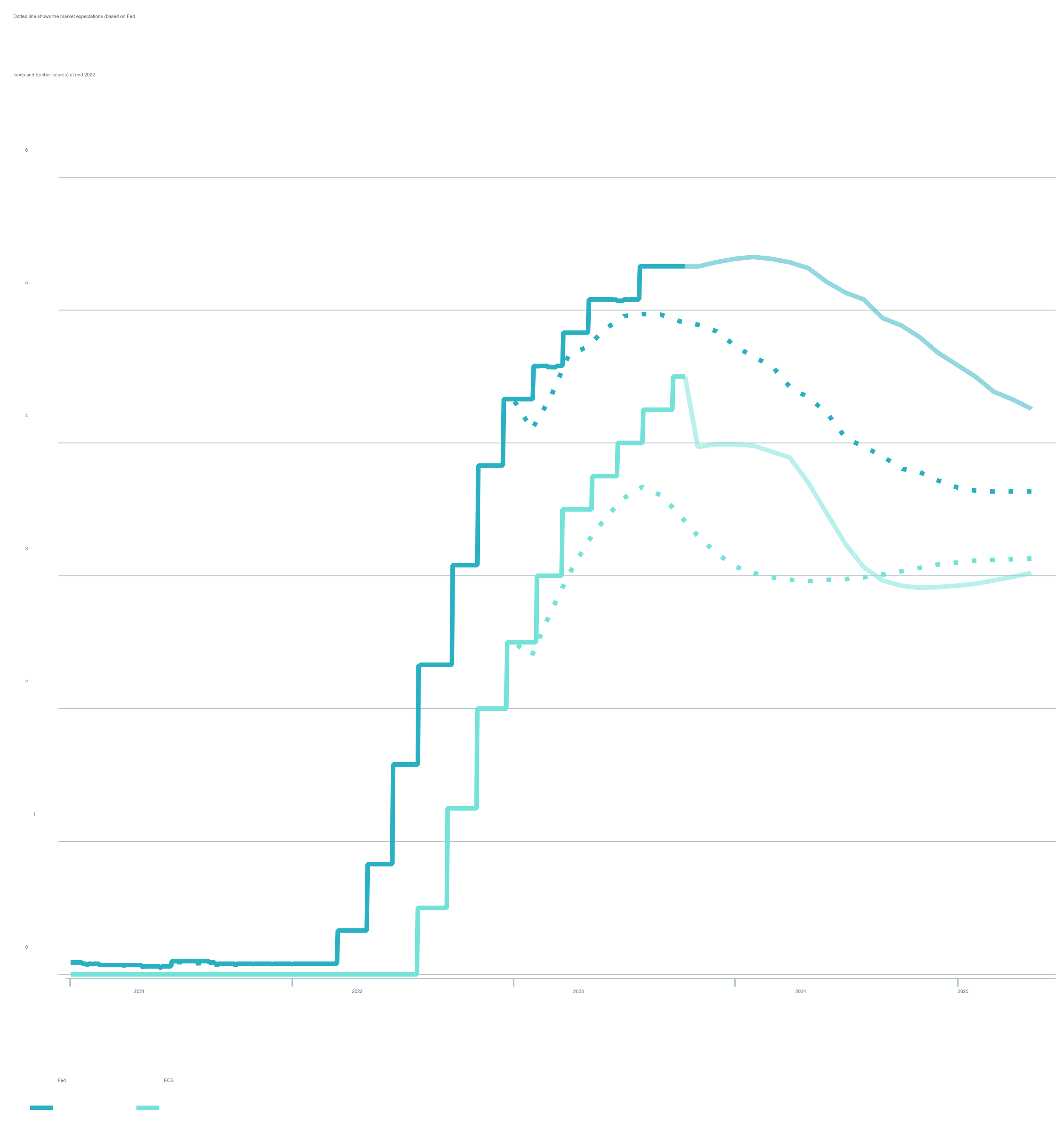
We moved to neutral on sterling last quarter on the back of UK stagflation fears.

Higher US yields have strengthened the dollar…5-year yields are at 16-year highs



Source: Macrobond

US interest rates are now expected to stay higher for longer



Source: Macrobond

Economic Highlights

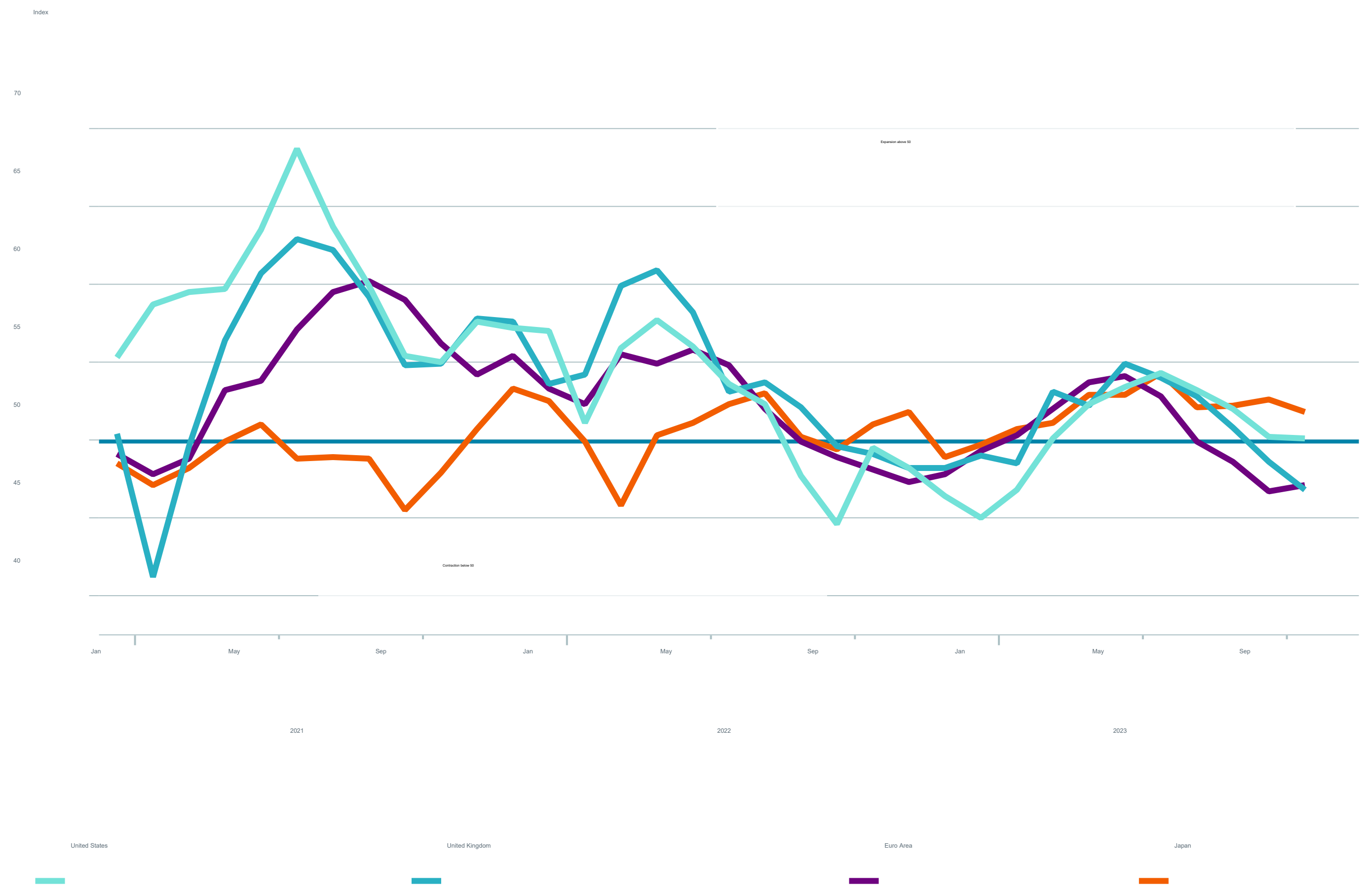
Market momentum was checked over the third quarter as bond yields surged higher. Macroeconomic data continued to show resilience, with little sign of a US recession so far. However, core inflation measures have not fallen back as quickly as headline figures and the major central banks continued to indicate that further rate increases are possible over the coming months. Nonetheless, the Federal Reserve, Bank of England and the Bank of Canada decided to pause their monetary policy tightening programmes in Q3 in order to monitor the impact of higher interest rates on the economy.

We still think that a global recession is likely at some point over the coming year, although it may be relatively shallow and short-lived. Meanwhile, inflation will likely continue to fall, but we do not expect the key measures to fall back to pre-pandemic rates any time soon. Extreme uncertainty continues to make predictions especially difficult.

Global yields surged higher over Q3 – US and UK 10-year yields hit multi-decade highs, for example

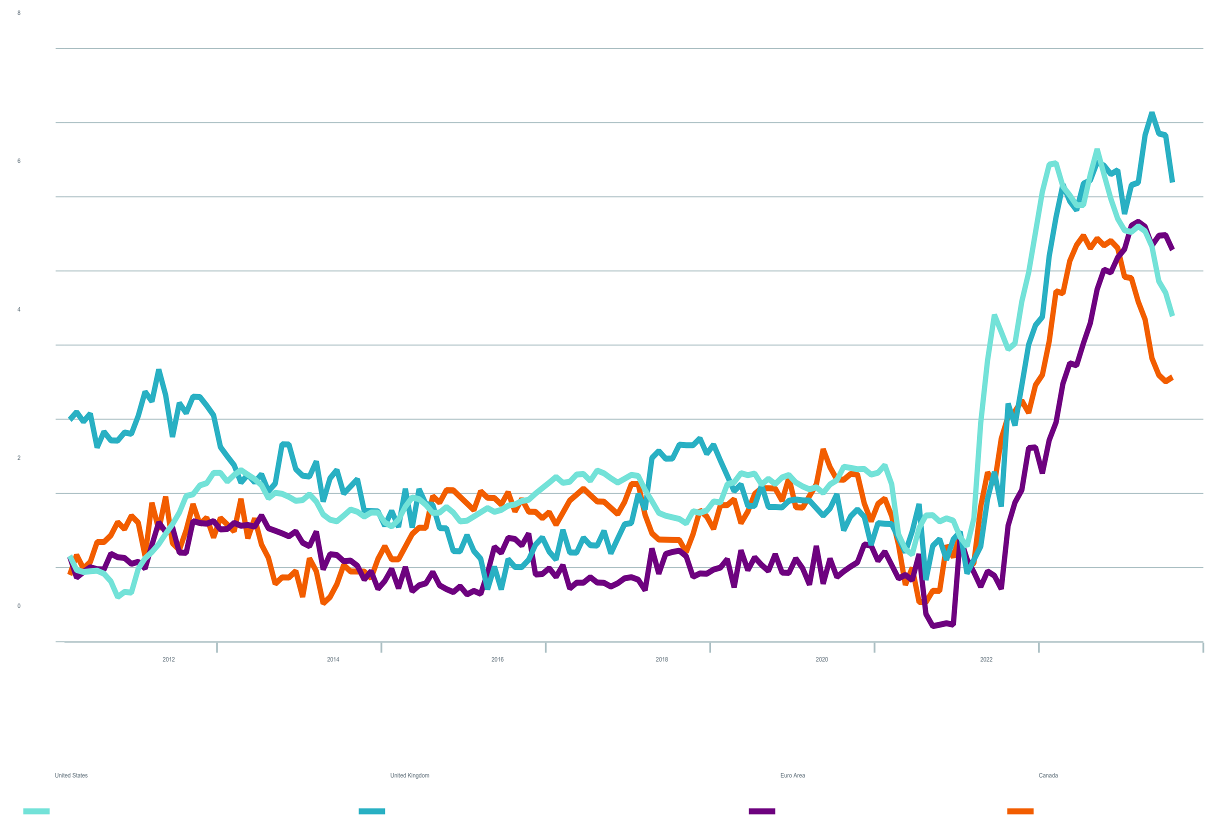
Source: Macrobond

Economic activity continued to weaken over Q3 – Selected regional composite PMIs



Source: Macrobond

Core inflation has eased over Q3 but remains elevated – Core CPI YoY



Source: Macrobond

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Relative Asset Class Views*

*Asset class views are relative to others within the asset class and not relative to other asset types. There should be no read-across from equities to credit, for example.

Regional Equity views

---	--	-	=	+	++	+++
			USA			
			EAFE			
				Emerging		

Core Fixed Income

---	--	-	=	+	++	+++
				Treasuries		
			Inv. Grade			
				TIPS		

Liquid Alternatives

---	--	-	=	+	++	+++
				Active commodities		
				Alternative Risk Premia		
						Insurance-linked securities
					Diversifying hedge funds	
			Return seeking hedge funds			

Factor views

---	--	-	=	+	++	+++
				Low Vol.		
			Quality			
			Value			
			Growth			

Return-Seeking Fixed Income

---	--	-	=	+	++	+++
			USD EMD			
			Local EMD			
		Bank Loans				
				Selected ABS		
			US High Yield			

Currency views vs USD

---	--	-	=	+	++	+++
				EUR		
			GBP			
					JPY	
				EM		

Selected economic data releases

Date	Country/Region	Event	Period	Actual	Consensus	Surprise	Prior
07/03/2023	United States	ISM Manufacturing SA	JUN	46.0	47.2	-1.2	46.9
07/05/2023	Eurozone	Markit PMI Composite SA (Final)	JUN	49.9	50.3	-0.40	50.3
07/05/2023	United Kingdom	CIPS Composite PMI SA (Final)	JUN	52.8	52.8	0.03	52.8
07/06/2023	United States	ISM Services PMI SA	JUN	53.9	51.0	2.9	50.3
07/07/2023	United States	Nonfarm Payrolls SA	JUN	209.0K	215.0K	-6.0K	306.0K
07/10/2023	China	CPI NSA Y/Y	JUN	0.0%	0.20%	-0.20%	0.20%
07/12/2023	United States	CPI ex-Food & Energy NSA Y/Y	JUN	4.8%	5.0%	-0.20%	5.3%
07/12/2023	United States	CPI NSA Y/Y	JUN	3.0%	3.1%	-0.10%	4.0%
07/12/2023	Canada	BoC Overnight Rate Target	-	5.00%	5.00%	0.00%	4.75%
07/17/2023	China	GDP NSA Y/Y	Q2	6.3%	7.3%	-1.0%	4.5%
07/18/2023	Canada	CPI All Items (NSA Y/Y)	JUN	2.8%	3.0%	-0.19%	3.4%
07/19/2023	United Kingdom	CPI Core NSA Y/Y	JUN	6.9%	7.1%	-0.15%	7.1%
07/19/2023	United Kingdom	CPI EU Harmonized NSA Y/Y	JUN	7.9%	8.1%	-0.25%	8.7%
07/19/2023	Eurozone	CPI Core EU Harmonized NSA Y/Y (Final)	JUN	5.5%	5.4%	0.10%	5.4%
07/19/2023	Eurozone	CPI EU Harmonized Y/Y (Final)	JUN	5.5%	5.5%	0.0%	5.5%
07/21/2023	Japan	CPI Core National Y/Y	JUN	3.3%	3.5%	-0.20%	3.2%
07/21/2023	Japan	CPI National Y/Y	JUN	3.3%	3.2%	0.10%	3.2%
07/26/2023	United States	Fed Funds Target Upper Bound	-	5.50%	5.50%	0.00%	5.25%
07/27/2023	Eurozone	ECB Refi Rate	-	4.25%	4.25%	0.00%	4.00%
07/31/2023	Eurozone	GDP SA Y/Y (Preliminary)	Q2	0.60%	0.50%	0.10%	1.1%
08/01/2023	Japan	Markit/JMMA PMI Manufacturing SA (Final)	JUL	49.6	49.7	-0.10	49.4
08/01/2023	China	Markit/Caixin PMI Manufacturing SA	JUL	49.2	50.2	-0.94	50.5
08/01/2023	United States	ISM Manufacturing SA	JUL	46.4	46.9	-0.50	46.0
08/03/2023	Eurozone	Markit PMI Composite SA (Final)	JUL	48.6	48.9	-0.30	48.9
08/03/2023	United Kingdom	CIPS Composite PMI SA (Final)	JUL	50.8	50.7	0.09	50.7
08/03/2023	United Kingdom	BoE Official Bank Rate	-	5.25%	5.25%	0.00%	5.00%
08/03/2023	United States	ISM Services PMI SA	JUL	52.7	53.0	-0.30	53.9
08/04/2023	United States	Nonfarm Payrolls SA	JUL	187.0K	195.0K	-8.0K	185.0K
08/09/2023	China	CPI NSA Y/Y	JUL	-0.30%	-0.30%	0.0%	0.0%
08/10/2023	United States	CPI ex-Food & Energy NSA Y/Y	JUL	4.7%	4.8%	-0.10%	4.8%

US labour market data remained strong over the quarter

All the major central banks continued to raise policy rates in early Q3

Source: Bloomberg

Selected economic data releases

Date	Country/Region	Event	Period	Actual	Consensus	Surprise	Prior
08/10/2023	United States	CPI NSA Y/Y	JUL	3.2%	3.3%	-0.10%	3.0%
08/11/2023	United Kingdom	GDP SA Y/Y (Preliminary)	Q2	0.40%	0.20%	0.20%	0.20%
08/15/2023	Canada	CPI All Items (NSA Y/Y)	JUL	3.3%	3.0%	0.27%	2.8%
08/16/2023	United Kingdom	CPI Core NSA Y/Y	JUL	6.9%	6.8%	0.10%	6.9%
08/16/2023	United Kingdom	CPI EU Harmonized NSA Y/Y	JUL	6.8%	6.8%	-0.0%	7.9%
08/18/2023	Japan	CPI Core National Y/Y	JUL	3.1%	3.1%	0.0%	3.3%
08/18/2023	Japan	CPI National Y/Y	JUL	3.3%	3.0%	0.25%	3.3%
08/18/2023	Eurozone	CPI Core EU Harmonizated NSA Y/Y (Final)	JUL	5.5%	5.5%	0.0%	5.5%
08/18/2023	Eurozone	CPI EU Harmonized Y/Y (Final)	JUL	5.3%	5.3%	-0.0%	5.3%
09/01/2023	Japan	Markit/JMMA PMI Manufacturing SA (Final)	AUG	49.6	49.7	-0.10	49.7
09/01/2023	China	Markit/Caixin PMI Manufacturing SA	AUG	51.0	49.3	1.7	49.2
09/01/2023	United States	Nonfarm Payrolls SA	AUG	187.0K	170.0K	17.0K	157.0K
09/01/2023	United States	ISM Manufacturing SA	AUG	47.6	46.8	0.80	46.4
09/05/2023	Eurozone	Markit PMI Composite SA (Final)	AUG	46.7	47.0	-0.30	47.0
09/05/2023	United Kingdom	CIPS Composite PMI SA (Final)	AUG	48.6	47.9	0.73	47.9
09/06/2023	Canada	BoC Overnight Rate Target	-	5.00%	5.00%	0.00%	5.00%
09/06/2023	United States	ISM Services PMI SA	AUG	54.5	52.3	2.2	52.7
09/07/2023	Eurozone	GDP SA Y/Y (Final)	Q2	0.50%	0.60%	-0.10%	0.60%
09/08/2023	Japan	GDP Y/Y (Final)	Q2	1.6%	2.0%	-0.40%	2.0%
09/09/2023	China	CPI NSA Y/Y	AUG	0.10%	0.05%	0.05%	-0.30%
09/13/2023	United States	CPI ex-Food & Energy NSA Y/Y	AUG	4.3%	4.3%	-0.0%	4.7%
09/13/2023	United States	CPI NSA Y/Y	AUG	3.7%	3.6%	0.10%	3.2%
09/14/2023	Eurozone	ECB Refi Rate	-	4.50%	4.25%	0.25%	4.25%
09/19/2023	Eurozone	CPI Core EU Harmonized NSA Y/Y (Final)	AUG	5.3%	5.3%	-0.0%	5.3%
09/19/2023	Eurozone	CPI EU Harmonized Y/Y (Final)	AUG	5.2%	5.3%	-0.10%	5.3%
09/19/2023	Canada	CPI All Items (NSA Y/Y)	AUG	4.0%	3.8%	0.25%	3.3%
09/20/2023	United Kingdom	CPI Core NSA Y/Y	AUG	6.2%	6.8%	-0.60%	6.9%
09/20/2023	United Kingdom	CPI EU Harmonized NSA Y/Y	AUG	6.7%	7.1%	-0.40%	6.8%
09/20/2023	United States	Fed Funds Target Upper Bound	-	5.50%	5.50%	0.00%	5.50%
09/21/2023	United Kingdom	BoE Official Bank Rate	-	5.25%	5.50%	-0.25%	5.25%
09/22/2023	Japan	CPI National Y/Y	AUG	3.2%	3.0%	0.20%	3.3%

Source: Bloomberg

Inflation data continued to slow but there was a jump in US core inflation due to rising energy prices and statistical effects

The US Fed, BoE and BoC all decided to pause monetary policy while still indicating that further hikes may be warranted in coming months

Index Definitions

MSCI AC World Index - The MSCI ACWI captures large and mid-cap representation across 23 Developed Markets (DM) and 24 Emerging Markets (EM) countries. With 2,897 constituents, the index covers approximately 85% of the global investable equity opportunity set.

MSCI USA Index - The MSCI USA Index is designed to measure the performance of the large and mid-cap segments of the US market. With 624 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in the US.

MSCI UK Index – The MSCI United Kingdom Index is designed to measure the performance of the large and mid-cap segments of the UK market. With 82 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in the UK.

MSCI European Union Index – The MSCI European Union (EU) Index captures large and mid-cap representation across the 13 Developed Markets (DM) countries and 4 Emerging Markets (EM) countries in Europe. With 322 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in the European equity universe.

MSCI Japan Index – The MSCI Japan Index is designed to measure the performance of the large and mid-cap segments of the Japanese market. With 237 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in Japan.

MSCI Canada Index - The MSCI Canada Index is designed to measure the performance of the large and mid-cap segments of the Canada market. With 88 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in Canada.

MSIC Emerging Markets index - The MSCI Emerging Markets Index captures large and mid cap representation across 24 Emerging Markets (EM) countries. With 1,377 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

MSCI World Value Index - The MSCI World Value Index captures large and mid-cap securities exhibiting overall value style characteristics across 23 Developed Markets (DM) countries. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield.

MSCI World Growth Index - The MSCI World Growth Index captures large and mid-cap securities exhibiting overall growth style characteristics across 23 Developed Markets (DM) countries. The growth investment style characteristics for index construction are defined using five variables: long-term forward EPS growth rate, short-term forward EPS growth rate, current internal growth rate and long-term historical EPS growth trend and long-term historical sales per share growth trend.

ICE BofAML Global Government Index - An unmanaged index considered representative of fixed-income obligations issued by global governments.

ICE BofAML Global Large Cap Corporate Index - An unmanaged index considered representative of fixed-income obligations issued by global large cap corporates.

JPMorgan EMBI Global Diversified Index - The index is an unmanaged, market-capitalization weighted, total-return index tracking the traded market for U.S.-dollar-denominated Brady bonds, Eurobonds, traded loans, and local market debt instruments issued by sovereign and quasi-sovereign entities within the emerging markets.

JPMorgan GBI-EM Global Diversified Index – A comprehensive emerging market debt benchmark that tracks local currency bonds issued by Emerging market governments.

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