

Fixed Income Update

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International Foundation
OF EMPLOYEE BENEFIT PLANS 

Topics

- Bond education
 - Glossary of terms
 - Role of fixed income
 - How do interest rates impact bond returns?
 - Bond sectors and types
 - Fixed income risks
- Fixed income approaches, expectations and trends
- Current environment
- Private credit
- Key takeaways

Glossary: Bond Fundamentals

Coupon

The regular payment a bond makes compared to its face value.

Yield (to Maturity)

The implied return of a bond at the time of purchase, based on price and coupon.

Maturity

How long until the bond becomes due.

Duration

A statistic that describes how sensitive a bond's price is to interest rate movements. If interest rates rise by 1%, a 6-year duration portfolio will decline 6%.

Issuer

The entity that has borrowed money for the bond.

Rating

A qualitative measurement by one of three firms on how likely the issuer is to repay their debt.

Glossary: Traditional Bonds

Core bond

Any investment grade bond.

**Corporate bond
(Credit)**

A bond issued by a company.

Agency bond

A bond issued by one of the government-sponsored entities.

Investment grade

A rating of BBB- or better.

High yield bond

A bond rated BB+ or worse.

Glossary: Traditional Bonds

Core plus

A combination of core and non-core bonds.

Short-term bond

A bond that will be due within the next several years.

Intermediate bond

A bond that will be due within the next 3 to 7 years.

Floating rate

A bond that changes its interest rate with the bond markets.

Treasury

A bond issued directly by the U.S. government.

The Role of Fixed Income

- Different types have different roles
- Traditional bond portfolios met multiple objectives
- Bond portfolios can structure out some of those objectives



The Role of Fixed Income

- Investment grade bonds reduce volatility, enhance diversification, and provide liquidity in a fund's portfolio. Investment grade bonds offer stability during market downturns, often appreciating in value as investors seek safer assets, a phenomenon known as "flight to quality."
- However, during inflationary spikes, even high-quality bonds may not perform as well, as seen in the recent inflationary episode and rate hike cycle starting in 2022.

Cumulative Returns During Historical US Bear Equity Markets

Historical Scenario	Investment Grade Bonds	US Equities
Post-COVID Rate Hikes (Jan 2022 – Oct 2023)	-15.4%	-11.6%
COVID-19 Market Shock (Feb 2020 – Mar 2020)	-0.9%	-35.0%
Global Financial Crisis (Oct 2007 – Mar 2009)	8.5%	-45.8%
Popping of the TMT Bubble (Apr 2000 – Sep 2002)	28.6%	-43.8%
LTCM (Jul – Aug 1998)	1.8%	-15.4%
Crash of 1987 (Sep – Nov 1987)	2.2%	-29.5%

Source: Bloomberg and Meketa calculation. Returns are cumulative for the time period over which the scenario occurred. Market downturn dates are: Crash of 1987 September-November 1987, LTCM July-August 1998, Popping of TMT Bubble April 2000-September 2002, Global Financial Crisis October 2007-March 2009, COVID-19 Market Shock February 2020-March 2020, Post-COVID Rate Hikes January 2022-October 2023.

Fixed Income Risks

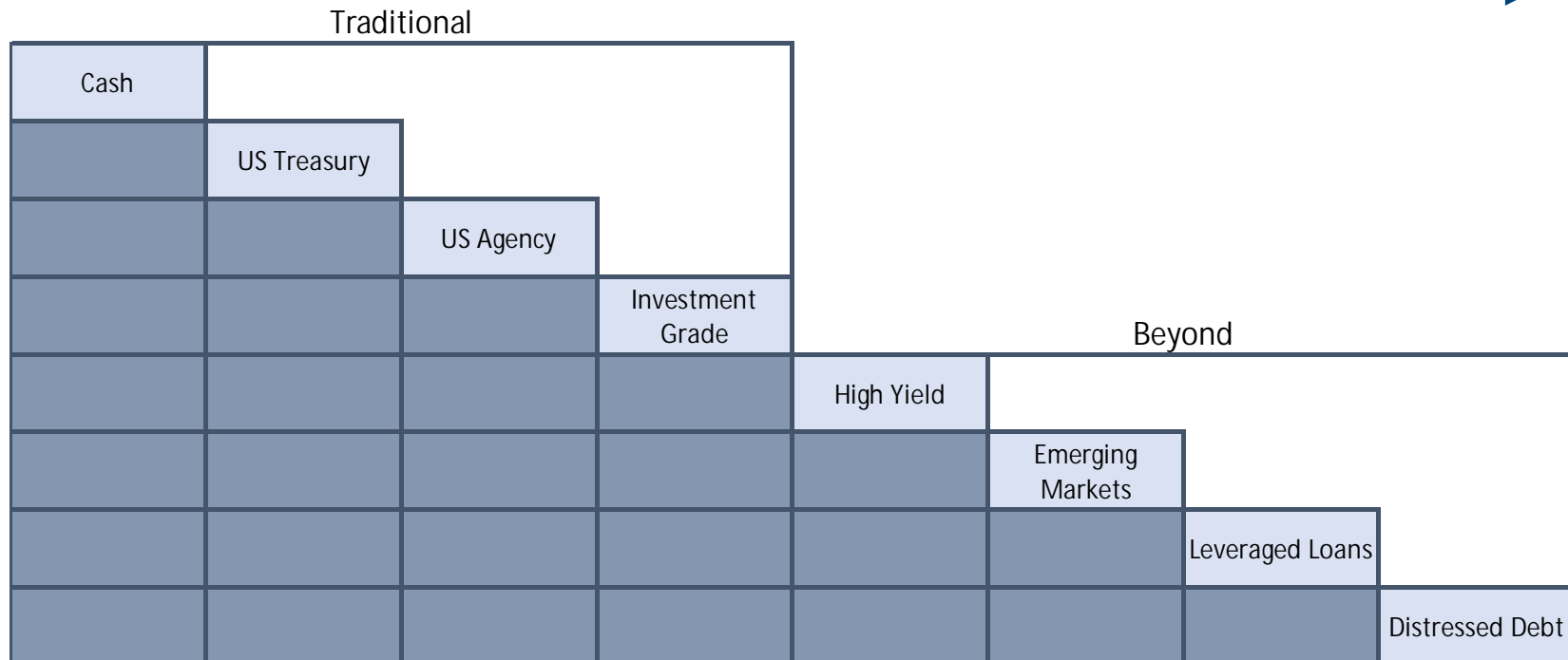
- Interest rate risk and duration
 - Rates go up, bond prices go down.
- Credit risk
 - Companies go bankrupt and you might not get paid back.
- Prepayment risk
 - Higher coupon bonds get retired, forcing you to reinvest at lower rates.
- Volatility
 - Portfolios may have unexpected volatility at inopportune times.



Traditional Risk and Beyond

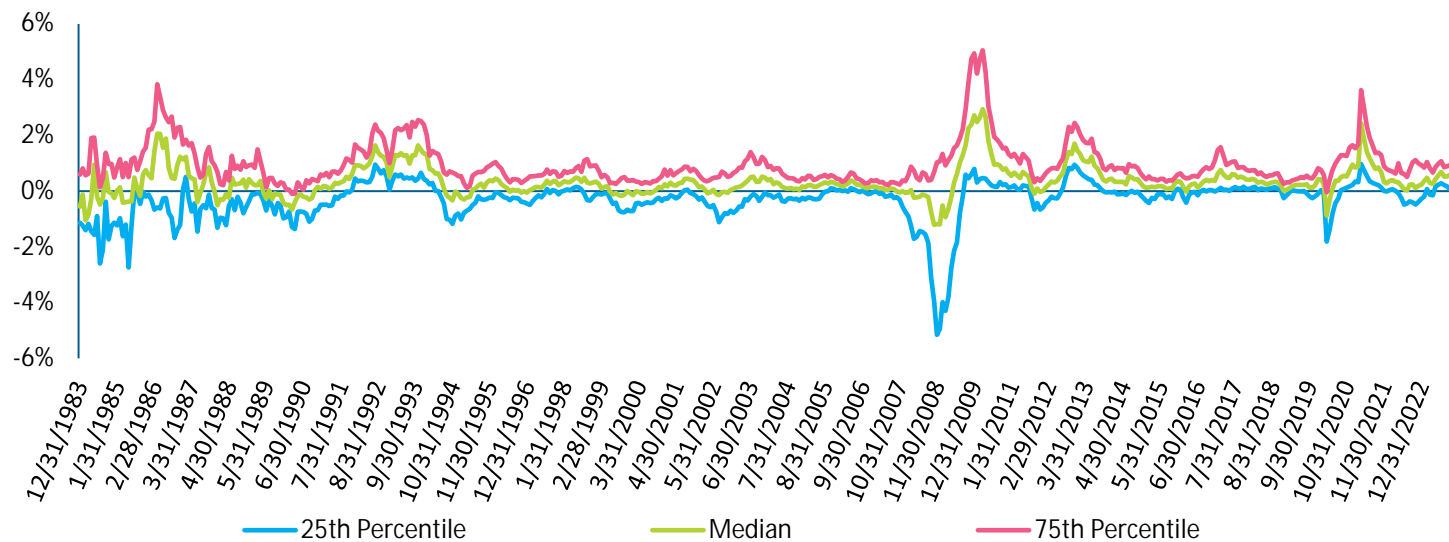
“Risk Free”

More Risk



Active vs. Passive

Active vs. Passive
Rolling Median Outperformance, gross of fees



Source: Nasdaq eVestment data as of December 31, 2023. Gross of fees. For more information, see Meketa's Manager Alpha whitepaper.

Bond Asset Class Expectations

- Return expectations for bonds have improved dramatically over the last several years.



Figures from capital market expectations from Meketa's 2021 and 2024 Asset Study.

Predicting Interest Rate Changes

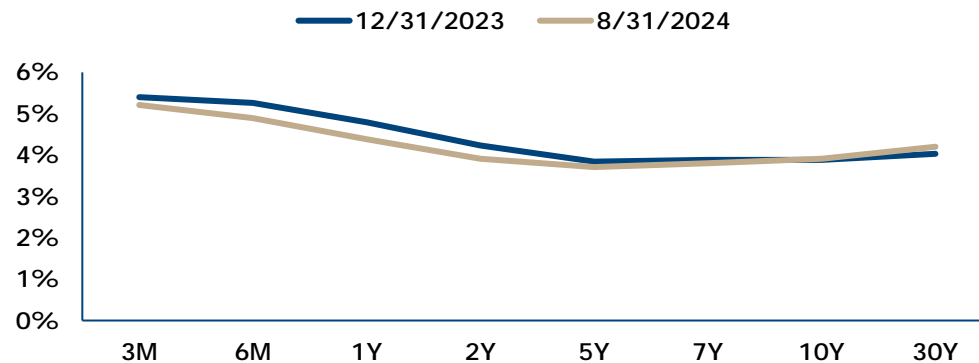
- Interest Rate Predictions¹
 - There are no shortages of opinions on forecasting future yields
 - The economists who engage in this practice have produced underwhelming results



¹ Data source: Forecasts are from Bloomberg annual economist surveys. The chart compares the actual 10-year Treasury yield to economists' predictions from December of the prior year.

Source: FRED, Multpl.com.

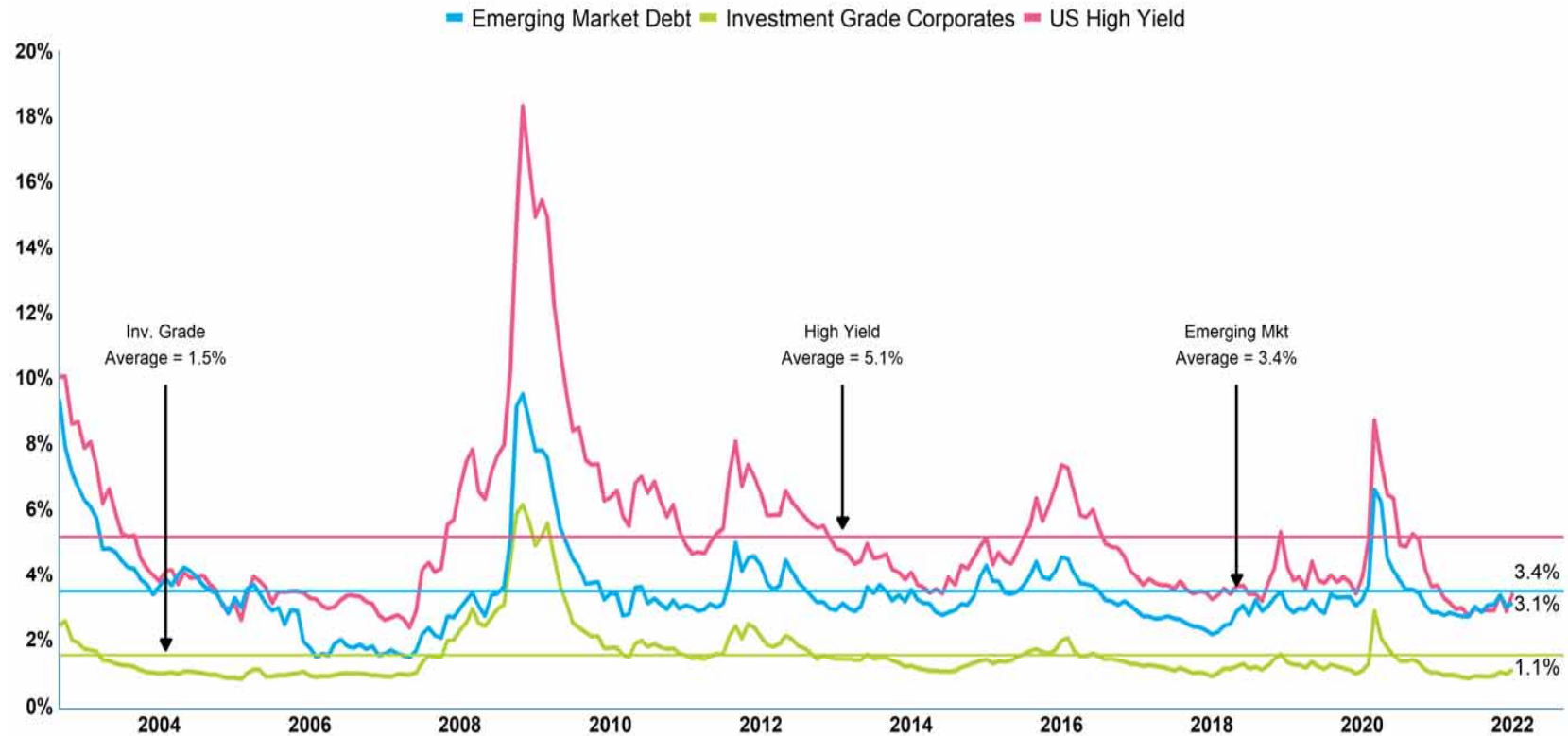
US Yield Curve¹



- Weaker economic data and comments from Chair Powell in August that rate cuts were likely coming in September supported a bond rally for the month.
- The yield curve was relatively flat at month-end after a long period of inversion, as shorter-dated yields declined the most over the month.
- An inverted yield curve has historically indicated recession, but the current economic environment has been resilient.

¹ Source: Bloomberg. Data is as of August 31, 2024.

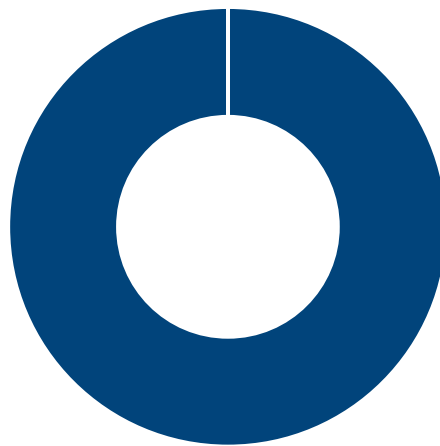
Corporate Bond Spreads



Source: Barclays Live and Bloomberg. Data is as of January 31, 2022. Average lines denote the average of the investment grade, high yield, and emerging market spread values from August 2000 to the present month-end.

Trends and Fixed Income Allocations

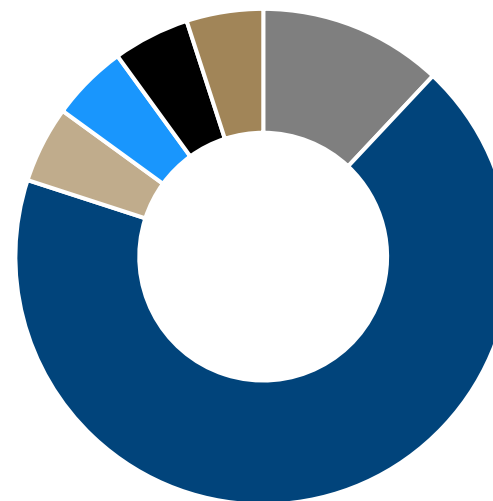
Simple Bond Allocation



■ Investment Grade Bonds

Expected Return (20 year)	4.8%
Standard Deviation	4.0%
Sharpe Ratio	0.57

Complex Bond Allocation

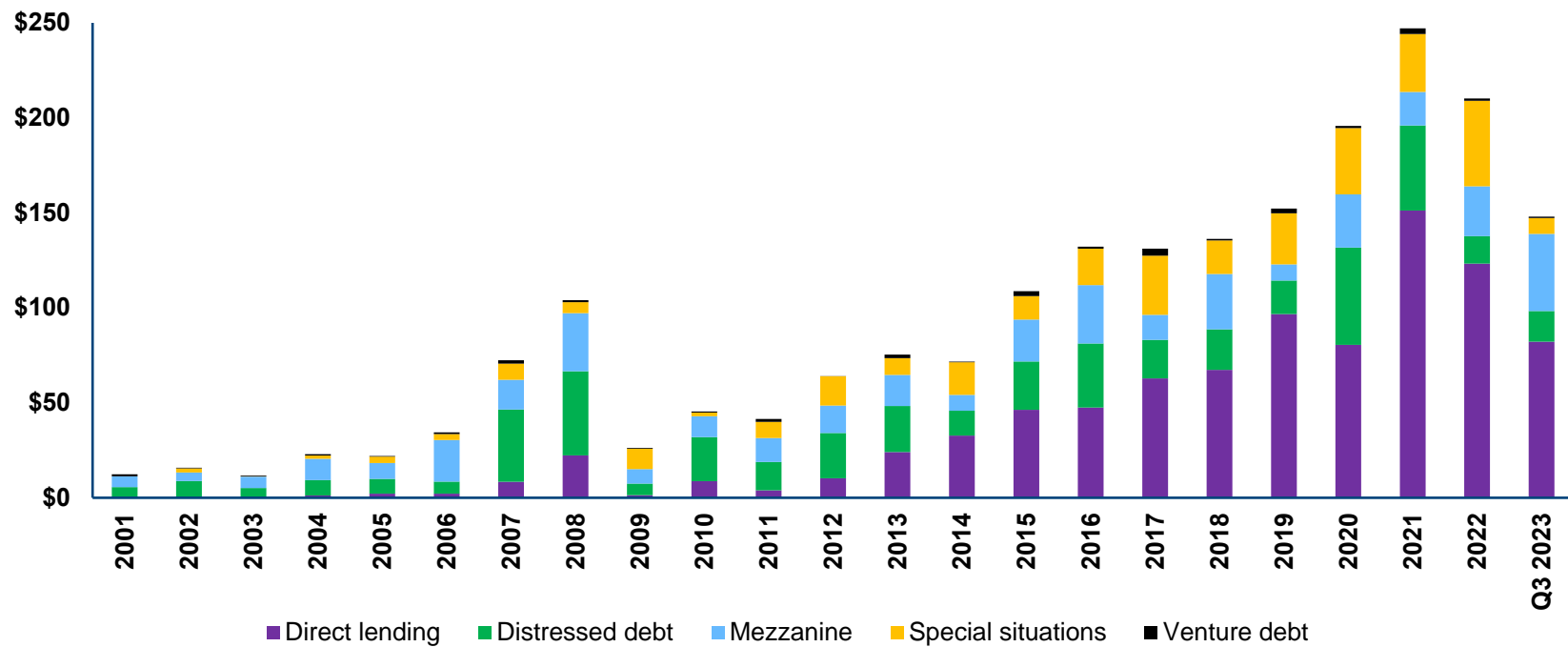


- Short-term Investment Grade Bonds
- Investment Grade Bonds
- High Yield Bonds
- Bank Loans
- Private Debt
- Emerging Market Bonds (major)

Expected Return (20 year)	5.3%
Standard Deviation	4.0%
Sharpe Ratio	0.69

Private Credit

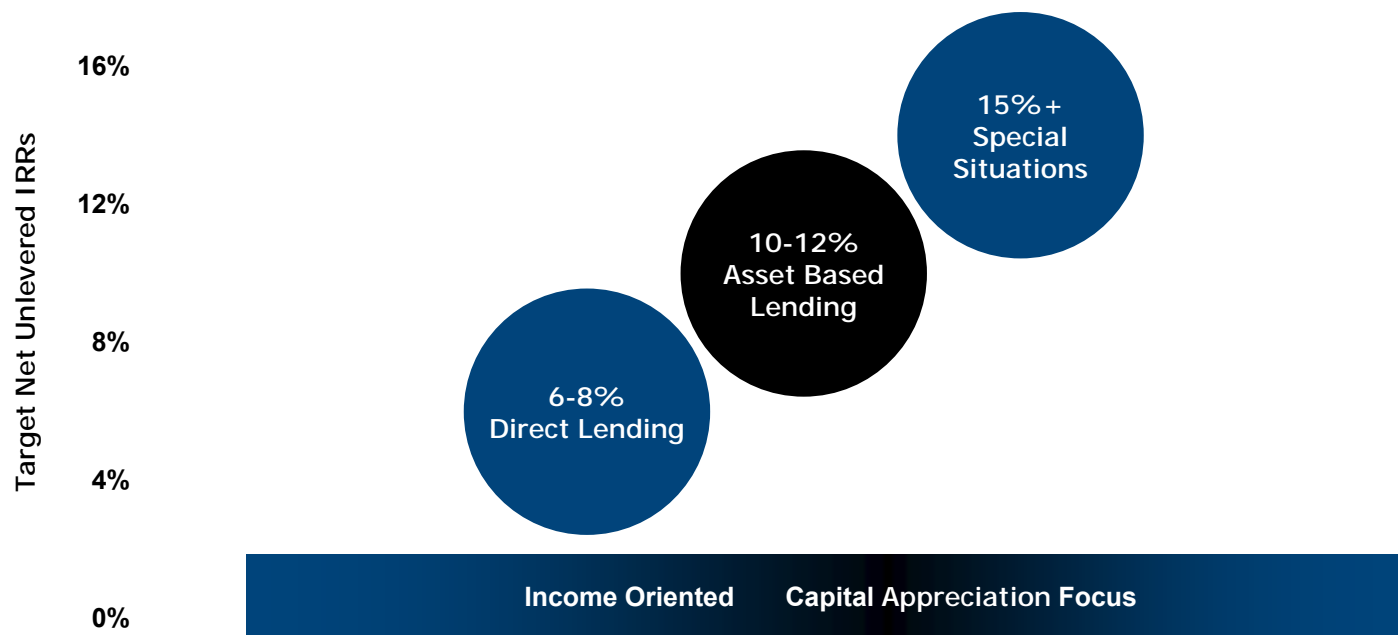
Aggregate Capital Raised in Private Credit by Strategy (\$B)



Source: Preqin, 2024 Global Private Debt Report published in December 2023. Note private debt fund-of-funds were excluded from this chart.

Private Credit

Targeted Net Unlevered IRRs by Strategy



Source: Meketa Investment Group, 2024.

Fixed Income Returns

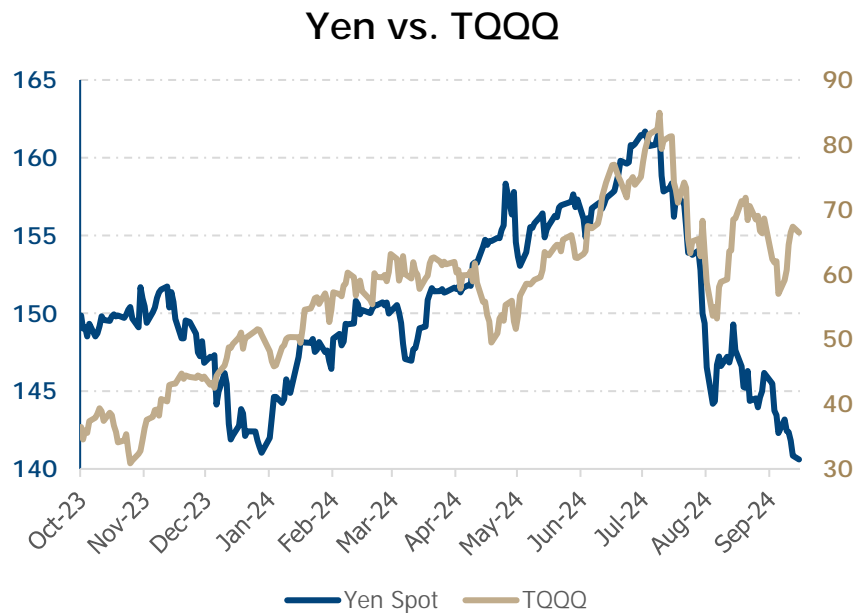
Fixed Income (August 2024)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Yrs)
Bloomberg Universal	7.9	-1.8	0.3	1.9	4.7	6.0
Bloomberg Aggregate	7.3	-2.1	0.0	1.6	4.4	6.2
Bloomberg US TIPS	6.2	-1.3	2.0	2.1	4.0	6.9
Bloomberg Short-Term TIPS	6.3	2.2	3.3	2.2	4.1	2.5
Bloomberg High Yield	12.6	2.5	4.5	4.6	7.3	3.5
JPM GBI-EM Global Diversified (USD)	6.0	-1.7	0.1	-0.3	--	--

¹ Source: Bloomberg. Data is as of August 31, 2024. The yield and duration data from Bloomberg is defined as the index's yield to worst and modified duration, respectively. JPM GBI-EM data is from J.P. Morgan. Current yield and duration data is not available.

Discussion Highlights

- The early volatility of August was epic and, thankfully, didn't last long...
- One reason for the fleeting nature of early August volatility is the resilient U.S. economy...
- While the U.S. economy is resilient, the Fed's focus has shifted...just in time
- Meanwhile, the Fed should thank China...
- Global fixed income warrants consideration
- A stock pickers market
- International equities are "paradigm shift" beneficiaries
- T. Rowe Price Multi-Asset positioning

Yes, Events in Early August Represented “History”, But It Didn’t Last Long...



As of September 16th, 2024

Source: Bloomberg, L.P.

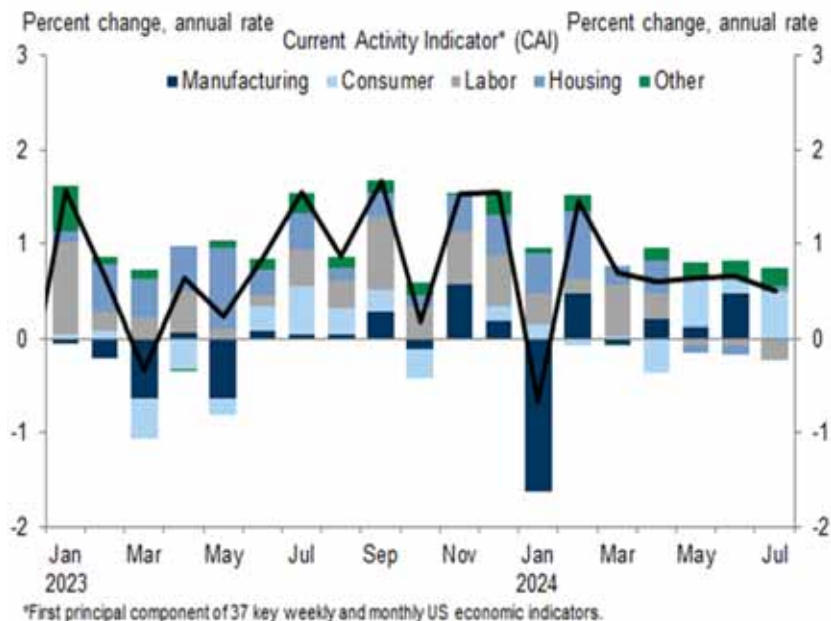
Note: TQQQ is the symbol for ProShares UltraPro QQQ which is an exchange-traded fund incorporated in the USA. The Fund seeks investment results which correspond to three times (300%) the daily performance of the NASDAQ-100 Index

Performance data quoted represents past performance and is not a reliable indicator of future performance. Investment return and principal value will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Current performance may be lower or higher than the performance data quoted. To obtain the most recent month-end performance, visit www.proshares.com.

- As of August 5th, the one-week yield drop in the 10 Year U.S. Treasury Yield is the largest since the Global Financial Crisis
- The TOPIX Index in Japan has just suffered its worst one-day sell-off since October of 1987
- The rotation into small caps a few back and the scale of the propulsion experienced in that part of the market, as a result, ranks among the quickest rotations in market history
- And the developments referenced above happened in the month of August...

Source: Deutsche Bank, T. Rowe Price

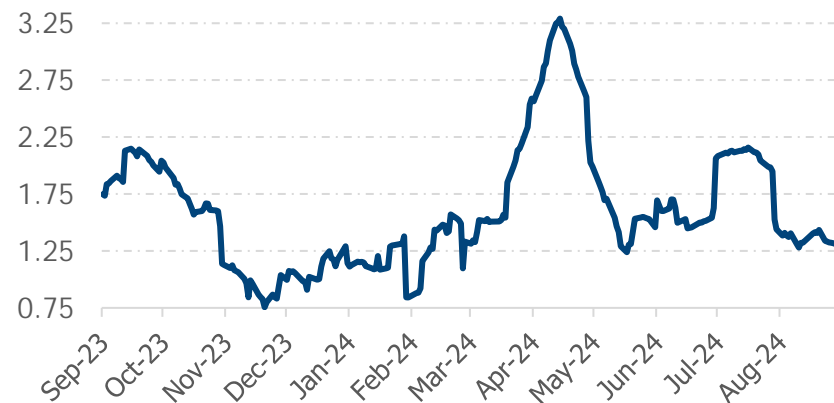
The U.S. Economy Continues to Demonstrate Resilience as 2024 Progresses



As of August 5th, 2024

Sources: Left Chart—Goldman Sachs Global Investment Research—Used in this presentation with the permission of Goldman Sachs Investment Research; Right Chart—Bloomberg Finance, L.P., analysis by T. Rowe Price.

JP Morgan Smoothed US GDP Nowcast

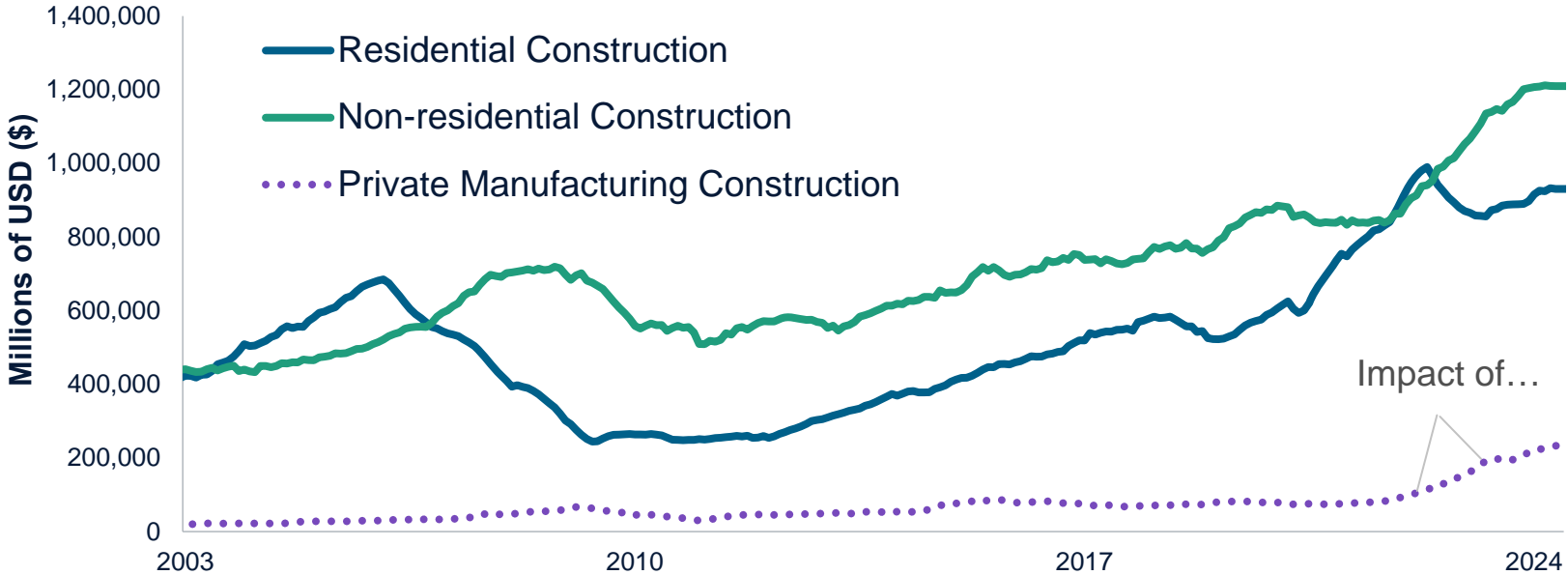


As of September 17th, 2024

Source: Bloomberg Finance, L.P.

U.S. Fiscal Policy Has Been Supportive of the U.S. Economy

U.S. Construction Activity

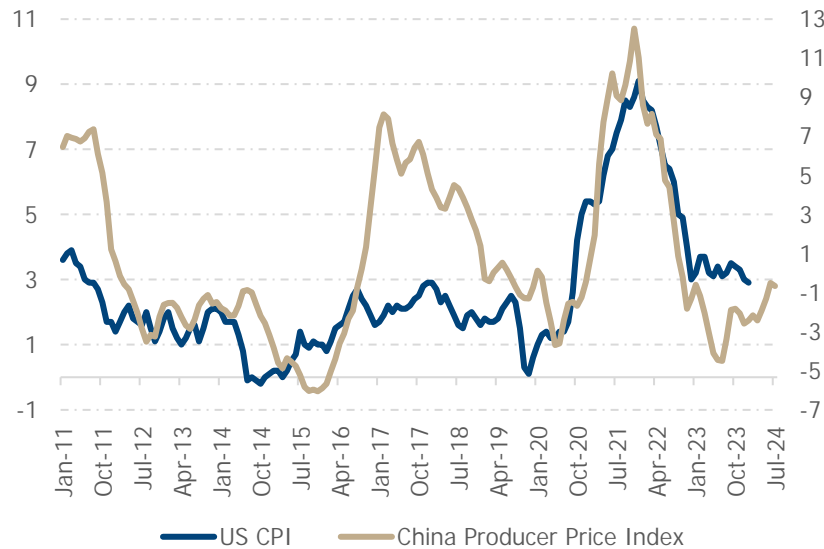


January 2003 to June 2024

Sources: Bloomberg Finance L.P. Please see Additional Disclosures page for additional legal notices and disclaimers.

Meanwhile, Should the Fed Thank China?

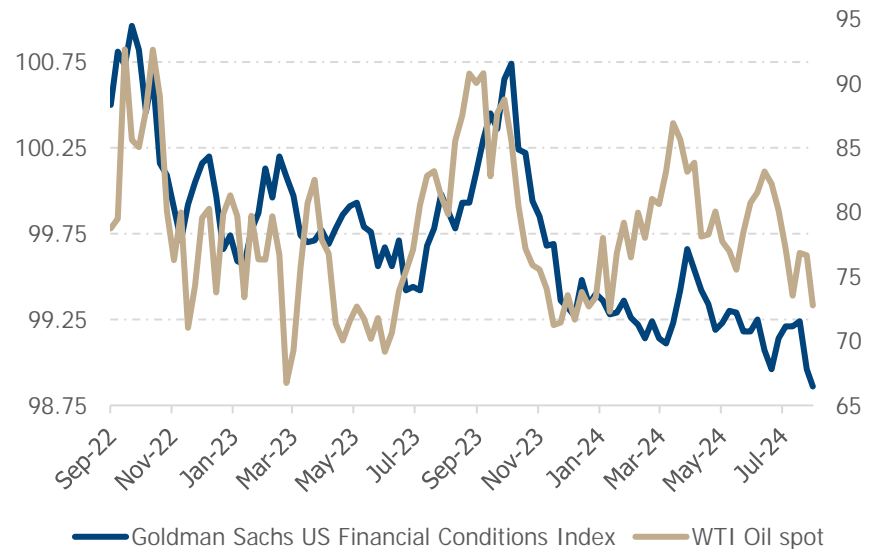
U.S. Inflation on a 6 month lag vs. China PPI



As of July 31st, 2024

Source: Bloomberg Finance, L.P.

U.S. Financial Conditions vs. Oil

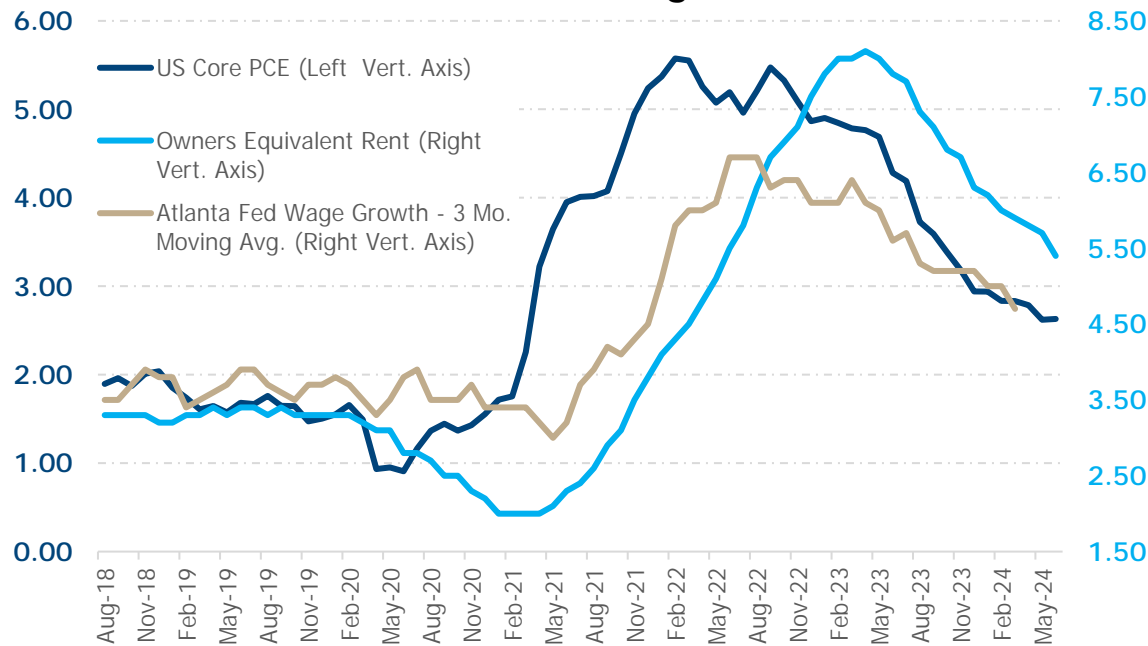


As of August 22nd, 2024

Source: Bloomberg Finance, L.P.

With Inflation Trending Favorably, September Became a "Live" Fed Meeting

Domestic Inflation is moving in the direction...



"The Fed's preferred measure of inflation has fallen within striking distance of the central bank's 2 percent target, while the job market has stayed relatively strong..."

Powell said at a press conference on Wednesday that policymakers have made no firm decision on what they will do when they meet next on Sept. 17-18. But he said if economic indicators stay on a similar path, a rate cut is "on the table."

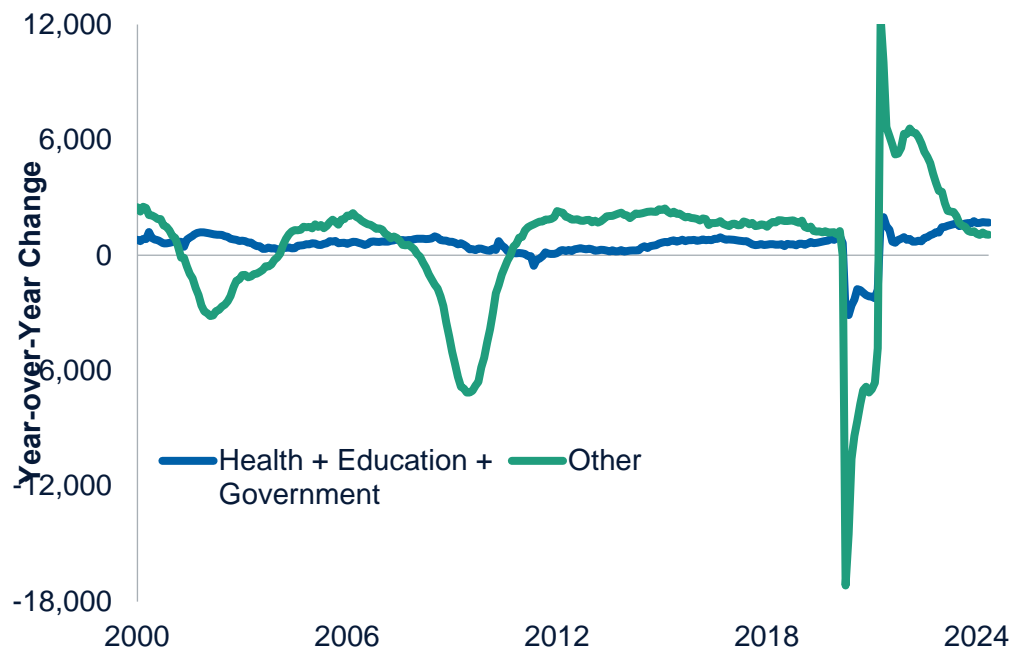
As of 08/05/24

Source: Bloomberg, L.P.

Source: "Fed's Powell signals inflation fight is nearly over, in boon to Harris" Politico July 31, 2024

The Fed's Priorities Began to Shift During the Summer

Non-farm Payrolls by Category



January 2000 to May 2024

Sources: Bureau of Labor Statistics/Haver Analytics

"...Over the past two years, the Fed has discussed its two goals—Low inflation and stable employment—In a lopsided way, in favor of inflation. Policymakers previously have said they were "highly attentive" to prices.

The language in the latest Fed statement suggests its priorities are shifting. The committee tweaked past phrasing to say they are now attentive to "both sides of its dual mandate."

Source: "The Federal Reserve's Priorities Have Shifted as It Eyes September Rate Cut", August 1, 2024, <https://www.inc.com/phil-rosen/fed-rate-cut-jerome-powell-stock-market-outlook-investors-bank.html>

And a Race to Find R^* Appears to Have Begun... In Earnest

Laubach- Williams r^* model as of May 2024

LW Estimates for the United States



Source: Laubach and Williams (2003).
Note: We plot estimates of the natural rate of interest (r^*) along with those for the trend growth rate of the U.S. economy, a source of change driving r^* .

The **Laubach-Williams (2003) model** uses data on real GDP, inflation, and the federal funds rate to extract trends in U.S. economic growth and other factors influencing the natural rate of interest. Holston, Laubach, and Williams (2023) adapts the model following the COVID-19 pandemic.

Source: <https://www.newyorkfed.org/research/policy/rstar>

“...Think of r^* as the level of the real federal funds rate once all the cyclical ups and downs of the economy have been factored out, including near-term policy tightening or loosening that sometimes is necessary to move employment and inflation back to the FOMC's goals.

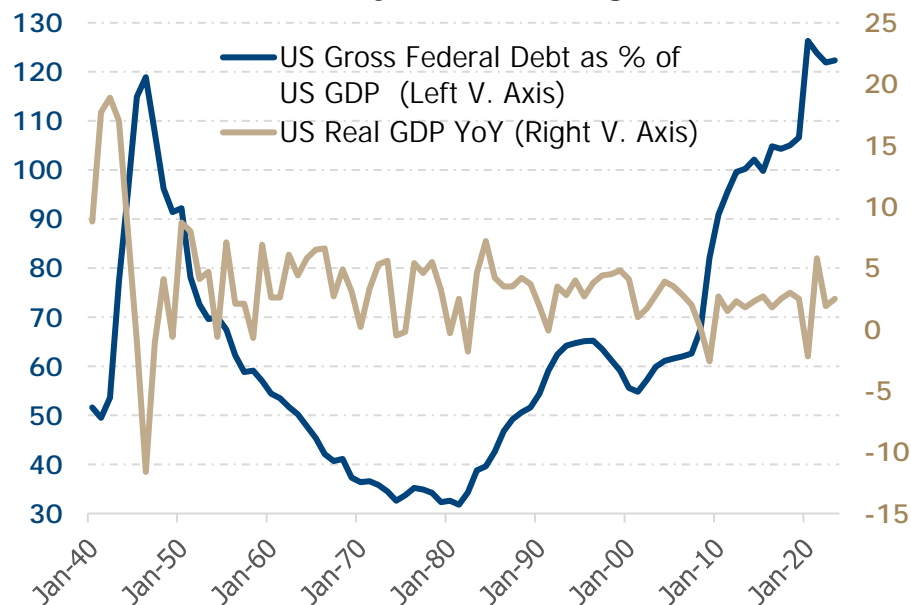
Someone buying or selling a 10-year Treasury security must determine the appropriate price (or yield) by thinking about not only the near-term policy rate, but also how the policy rate will evolve over the next 10 years. Thinking about the evolution of the policy rate, most forecasts expect near-term shocks to die out and the economy to move toward the FOMC's goals, so the policy rate—Absent future shocks—Will move toward and eventually reach r^* .

This means the 10-year Treasury yield embeds a value of r^* . Since 10-year Treasury securities are widely traded, their price (and yield) is reflective of current market views of the value of r^* ...

Source: <https://www.federalreserve.gov/newsevents/speech/waller20240524a.htm>

But One Material Challenge for the U.S. Has Emerged

Questions around U.S. Debt Sustainability have emerged



As of 12/31/2023

Source: Bloomberg Finance, L.P.

“The **Triffin dilemma** is the conflict of economic interests that arises between short-term domestic and long-term international objectives for countries whose currencies serve as global reserve currencies...”

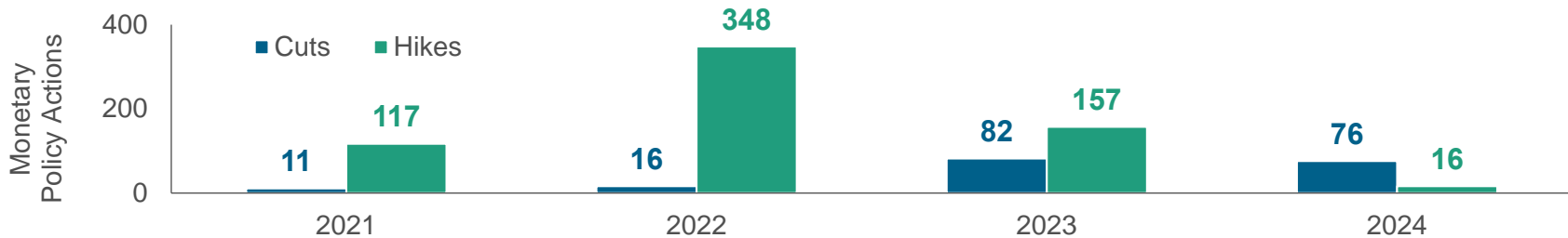
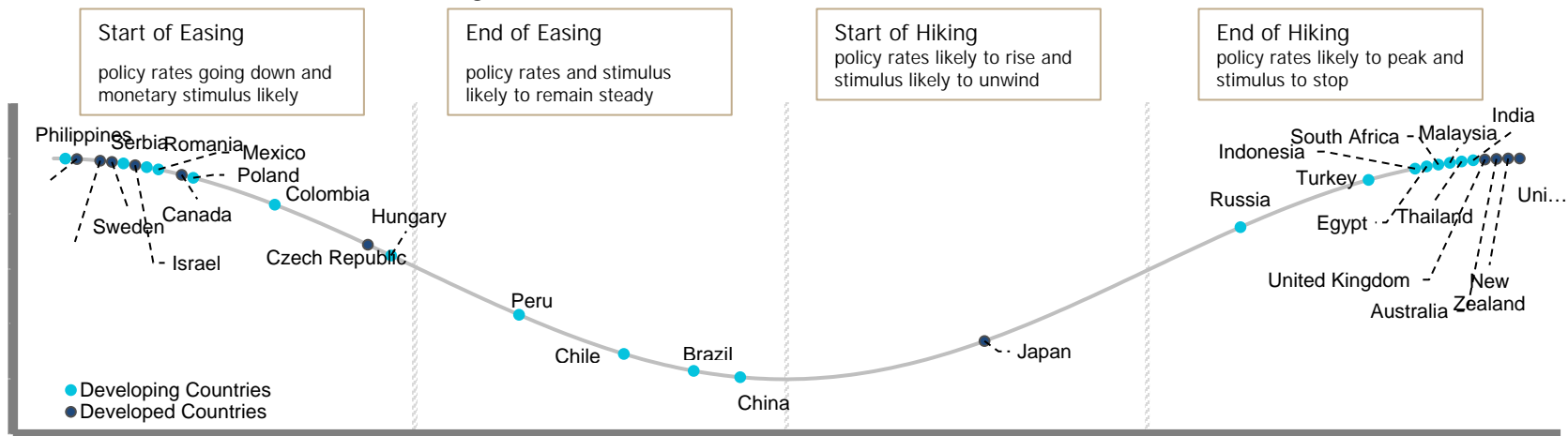
“The use of a national currency, such as the U.S. dollar, as global reserve currency leads to tension between its national and global monetary policy. This is reflected in fundamental imbalances in the balance of payments on the current account...”

“In the wake of the financial crisis of 2007–2008, the governor of the People's Bank of China named the reserve currency status of the U.S. dollar as a contributing factor to global savings and investment imbalances that led to the crisis...”

Source: Wikipedia, https://en.wikipedia.org/wiki/Triffin_dilemma

The Fed Appears Late to “Ease” ...Which Reinforces a Case for Global Fixed Income

Illustrative Interest Rate Cycle



As of 30 June 2024

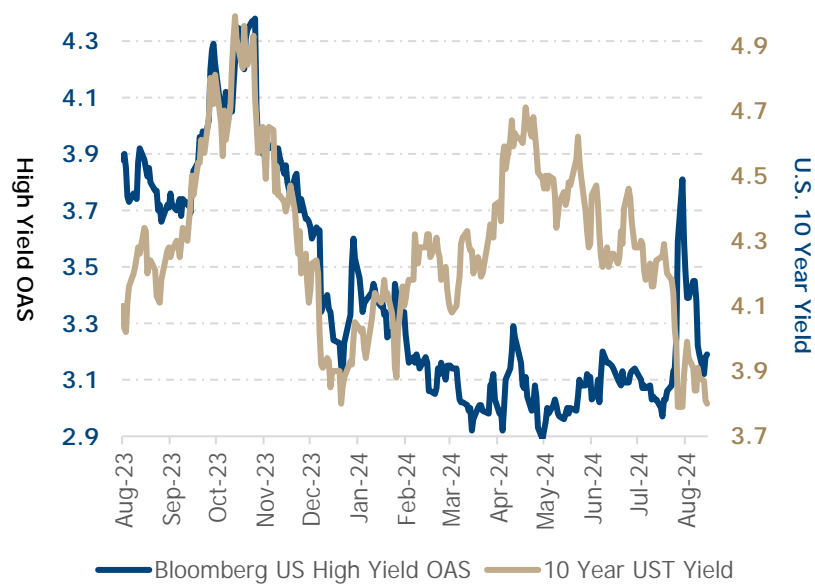
The 'Monetary Policy Actions' charts show the number of rate cuts and rate hikes made by all central banks globally. Country classifications in the chart are in line with IMF groupings as of reporting date.

Sources: IMF, CB Rates. Analysis by T. Rowe Price.

Nothing To See Here...Recently Wider Spreads Had Everything to Do With U.S. Treasury Yields

As of August 21st, 2024

U.S. High Yield OAS Analysis



Source: Bloomberg Finance, L.P.
Past performance is not a reliable indicator of future performance.

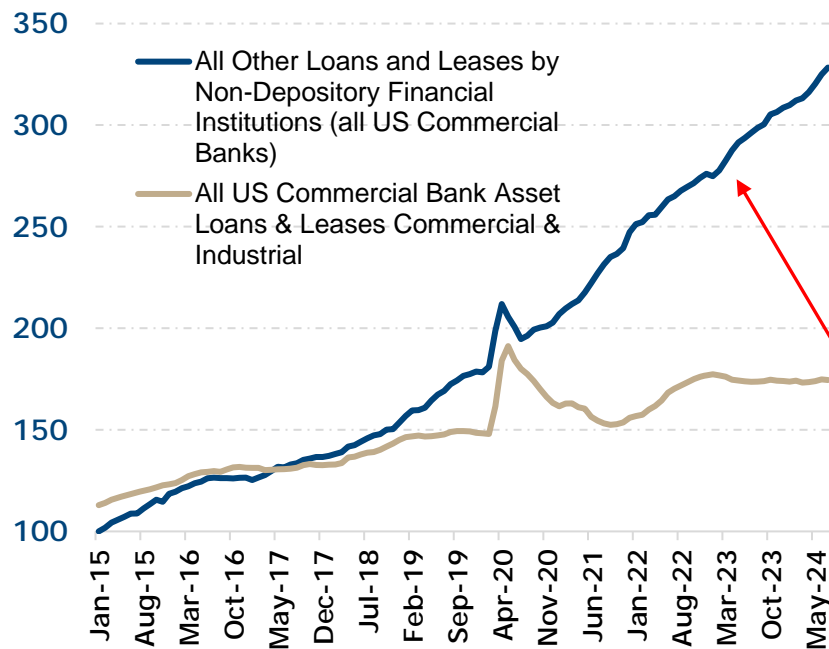
As of August 21st, 2024

U.S. Corporate IG OAS Analysis



Source: Bloomberg Finance, L.P.

The Functioning of the U.S. Banking System Has Changed



"Since the global financial crisis, an increasing share of credit is created by nonbank lenders such as mortgage originators and private credit funds.

This is a well-documented trend largely stemming from a combination of increased bank regulation and a greater ability of nonbanks to underwrite credit due to technological improvements and a larger capital base."

"...banks take advantage of their liquidity position (QE driven) by making commitments to supply liquidity, such as revolving credit facilities...."

...these facilities are often extended to the same parties that banks are losing loan share to, including mortgage originators and private credit funds..."

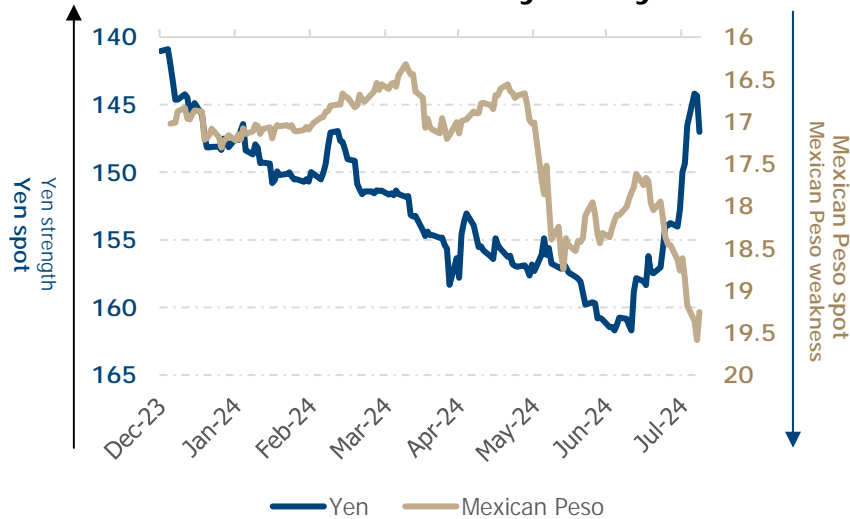
As of July 31, 2024

Source: Bloomberg Finance, LP

Source: "Ahead of the Curve "Shadow banking system" creates a trickier path for the Fed" T. Rowe Price July, 2024

Recent U.S. Dollar Weakness Ties Into Recession Fear

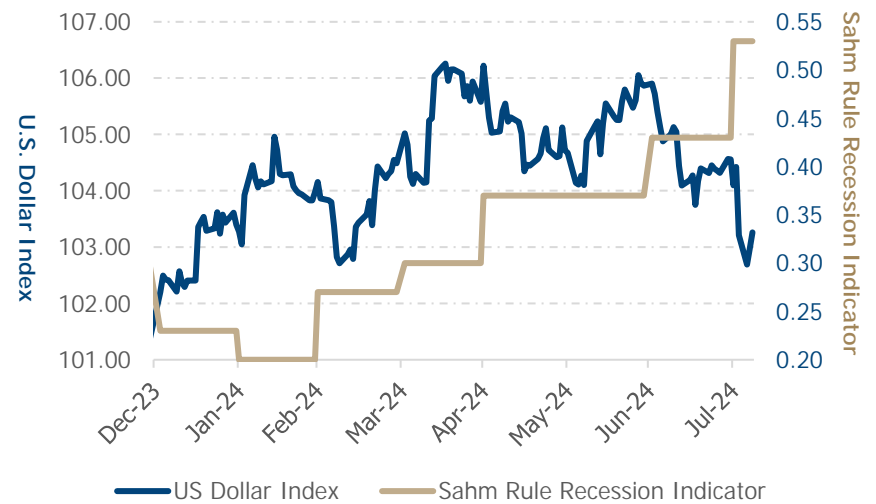
YTD Select Currency Analysis



As of August 6th, 2024

Source: Bloomberg Finance, L.P.

U.S. Dollar vs. Recession Risk



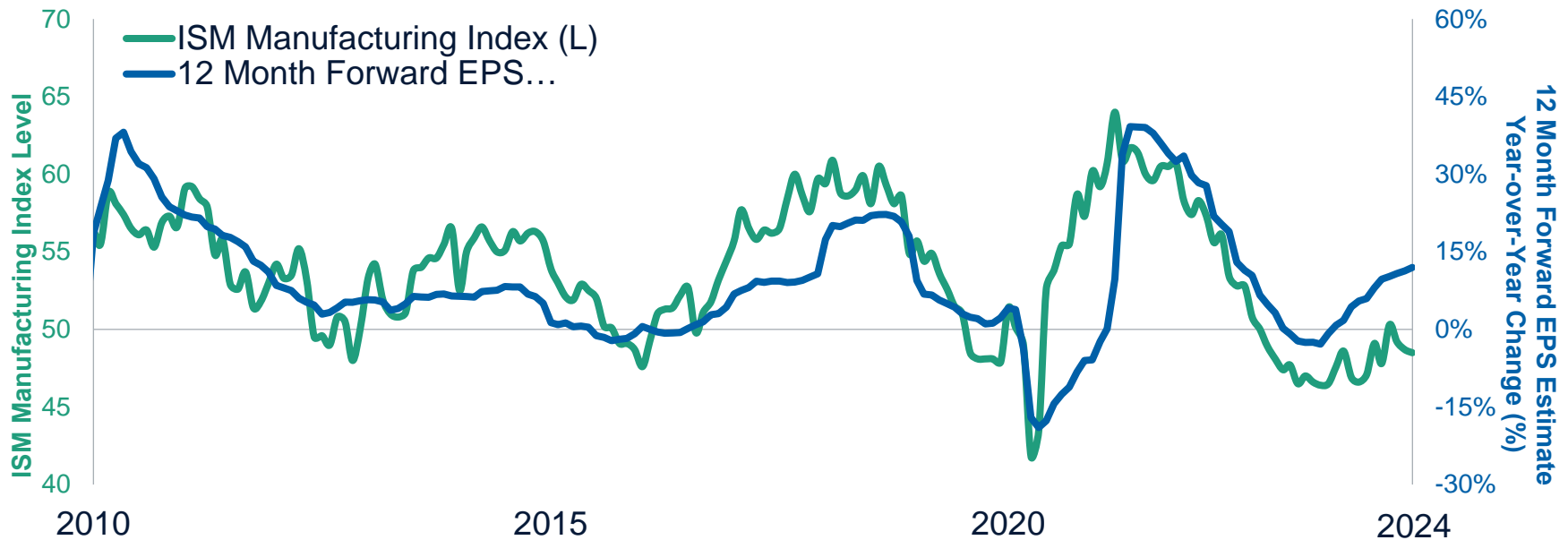
As of August 6th, 2024

Source: Bloomberg Finance, L.P., Cleveland Fed

Note: Sahn Recession Indicator signals the start of a recession when the three-month moving average of the national unemployment rate (U3) rises by 0.50 percentage points or more relative to the minimum of the three-month averages from the previous 12 months.

A Stock Pickers Market— Earnings Expectations Have Re-accelerated

S&P 500 Earnings Estimates vs. ISM Manufacturing Index



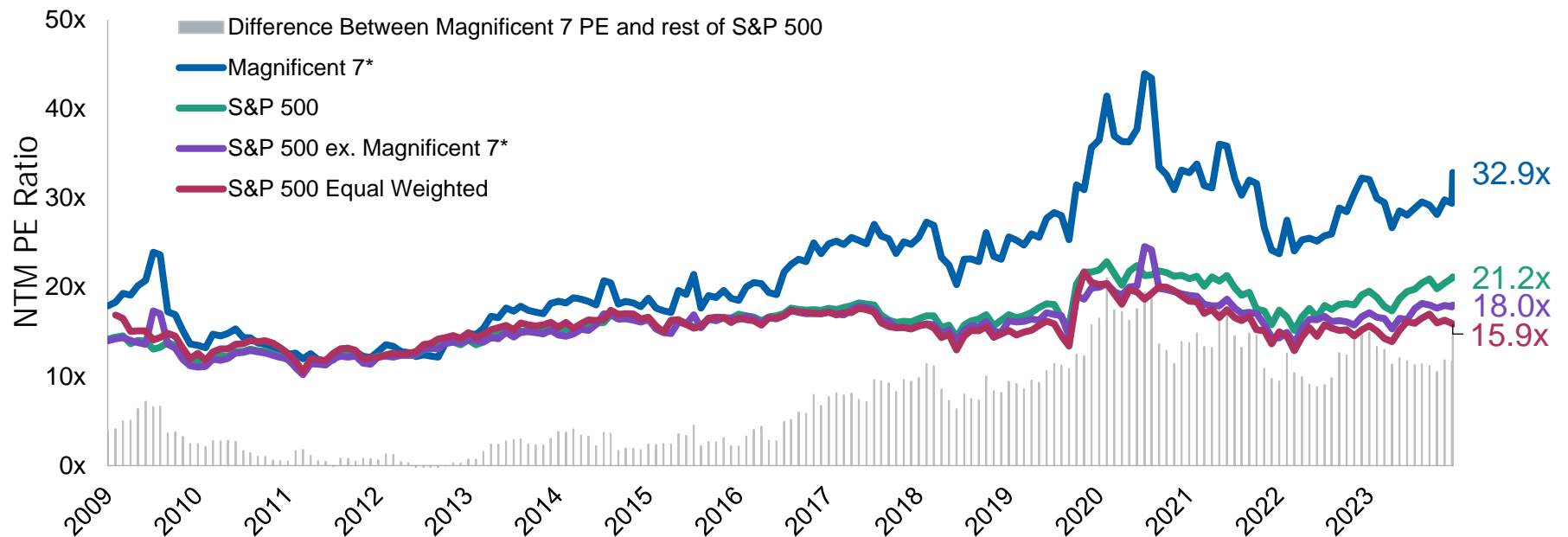
January 2010 to June 2024

Sources: T. Rowe Price analysis using data from FactSet Research Systems Inc. All rights reserved. Institute for Supply Management/Haver Analytics, J.P. Morgan/IHS Markit. Please see Additional Disclosures page for additional legal notices and disclaimers.

For illustrative purposes only. There can be no assurance that the estimates will be achieved or sustained. Actual results may vary.

Are Stocks Expensive? Or Just Mega-Caps?

Impact of Mega-cap Tech on Market Valuation



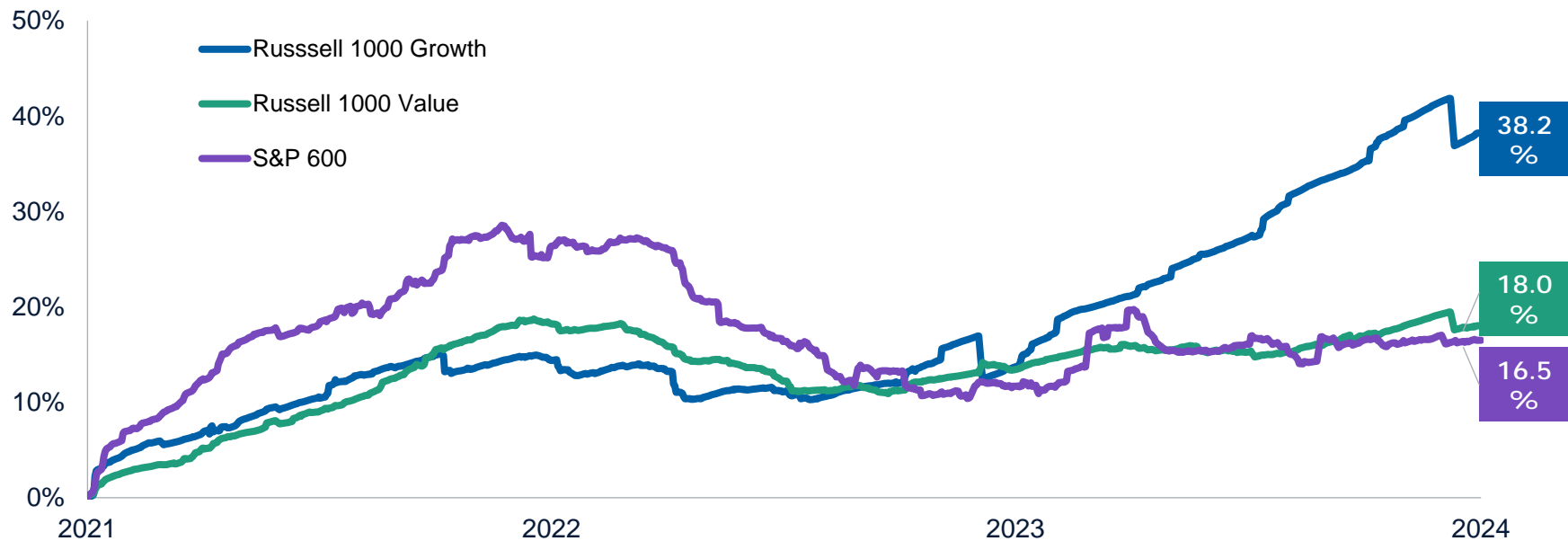
15 Years Ending 31 May 2024

*The "Magnificent 7" is Alphabet (Google), Amazon, Apple, Meta, Microsoft, NVIDIA, Tesla. The specific securities identified and described are for informational purposes only and do not represent recommendations.

Sources: T. Rowe Price analysis using data from FactSet Research Systems Inc. All rights reserved. Standard and Poor's. Please see Additional Disclosures page for sourcing information.

A Stock Pickers Market— But Earnings Acceleration Has Yet to Broaden

Cumulative Growth of 12 Month Forward EPS



3 Years ending 22 July 2024

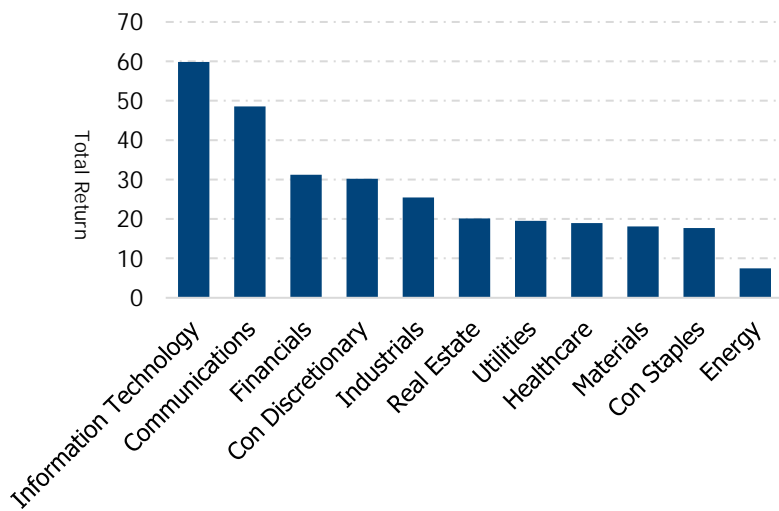
Sources: T. Rowe Price analysis using data from FactSet Research Systems Inc. All rights reserved. Institute for Supply Management/Haver Analytics, J.P. Morgan/IHS Markit. Please see Additional Disclosures page for additional legal notices and disclaimers.

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But a Rotation Has Begun

S&P 500 GIC Sector Total Returns

10/31/23 to 07/10/24

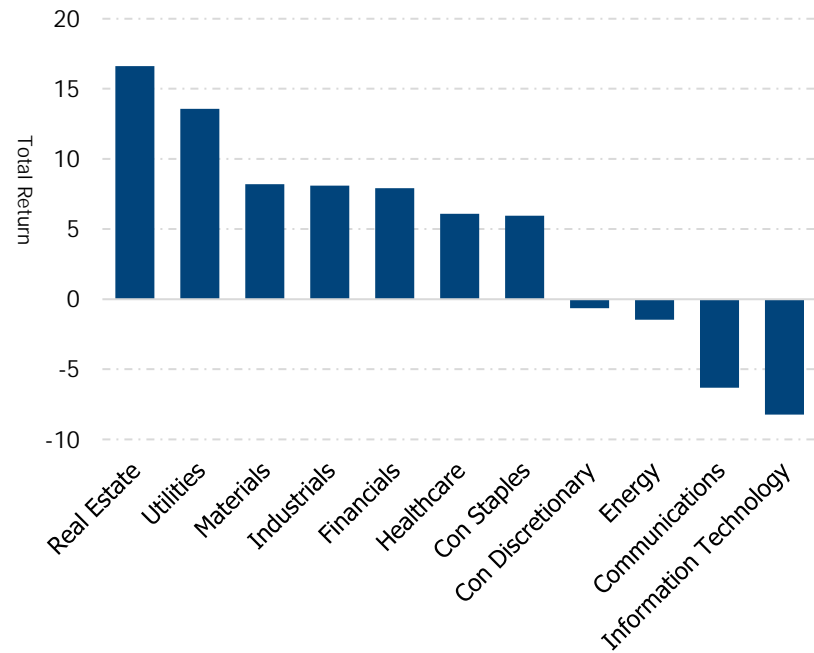


Source: Bloomberg Finance, L.P.

Past performance is not a reliable indicator of future performance

S&P 500 GIC Sectors

07/10/24 to 09/17/2024

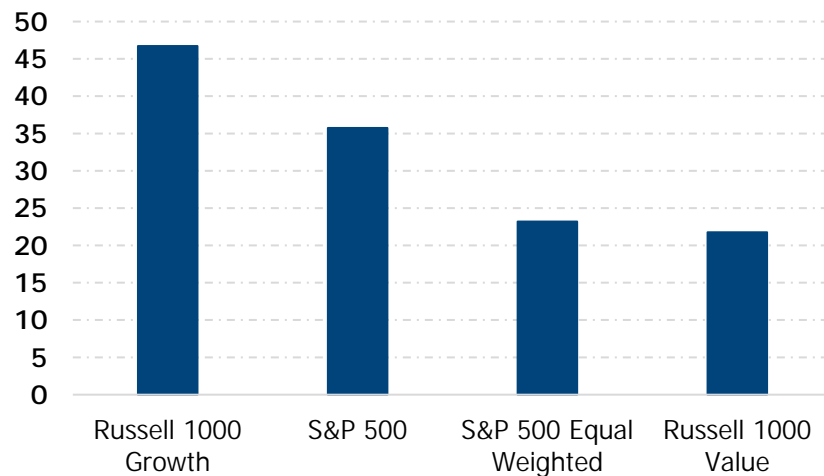


Source: Bloomberg Finance, L.P.

Growth vs. Value...Yes, but Also...

Equity Index Total Return Analysis

10/31/23 to 07/10/24

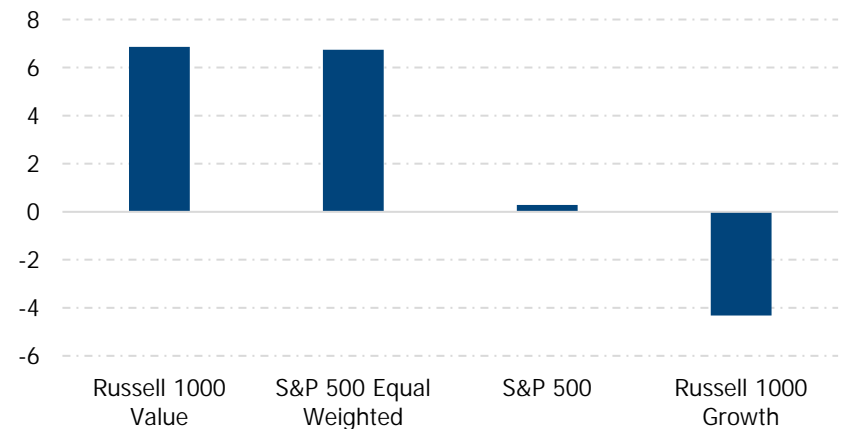


Source: Bloomberg Finance, L.P.

Past performance is not a reliable indicator of future performance

Equity Index Total Return Analysis

07/10/24 to 09/17/24

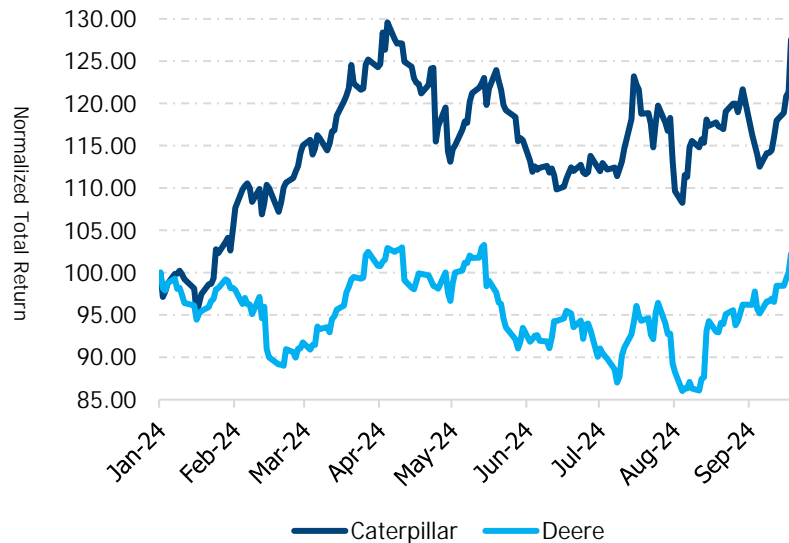


Source: Bloomberg Finance, L.P.

A Stock Pickers Market Has Emerged

Caterpillar vs. Deere

December 31, 2023 to September 20th, 2024



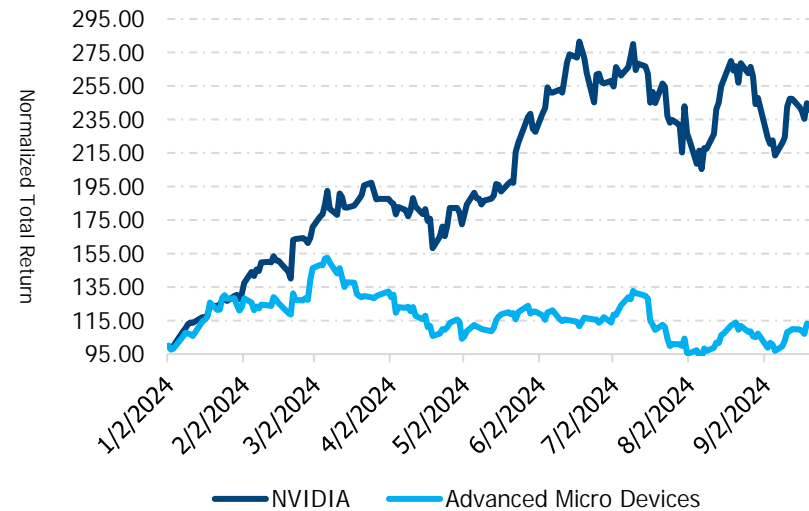
Source: Bloomberg Finance, L.P.

Past performance is not a reliable indicator of future performance

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NVIDIA vs. AMD

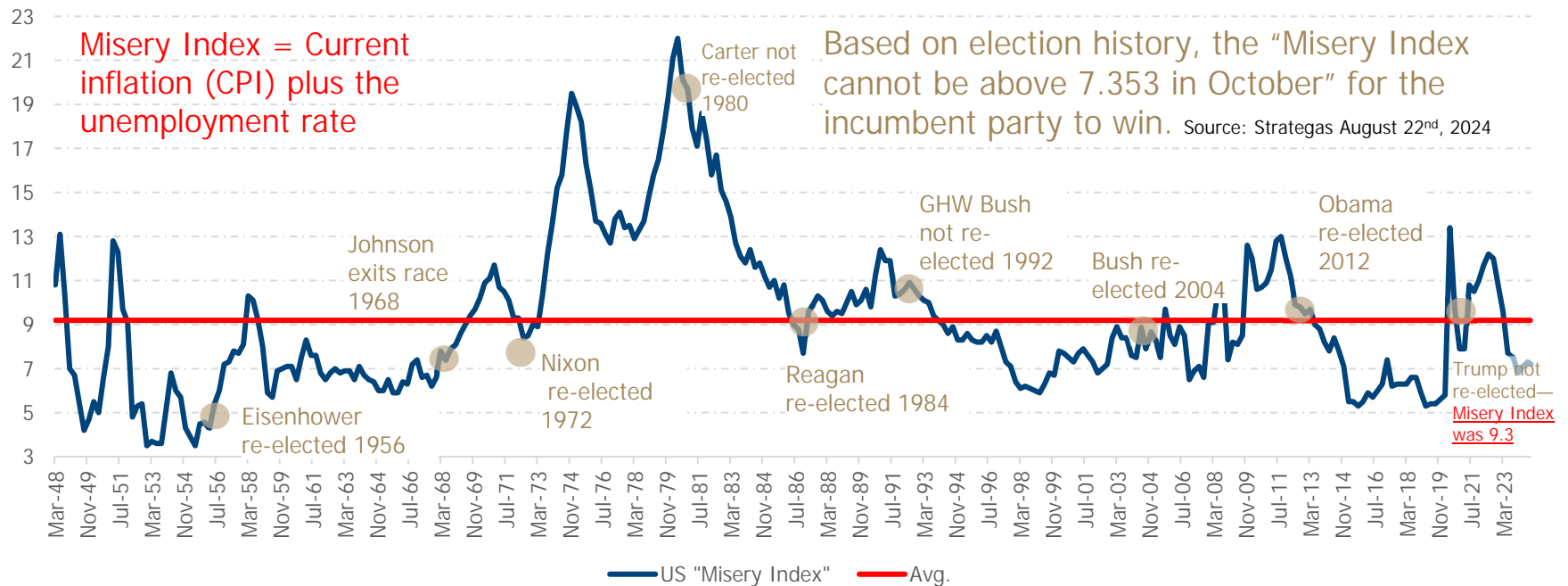
December 31st, 2023 to September 20th, 2024



Source: Bloomberg Finance, L.P.

The "Misery Index" as an Election Guide

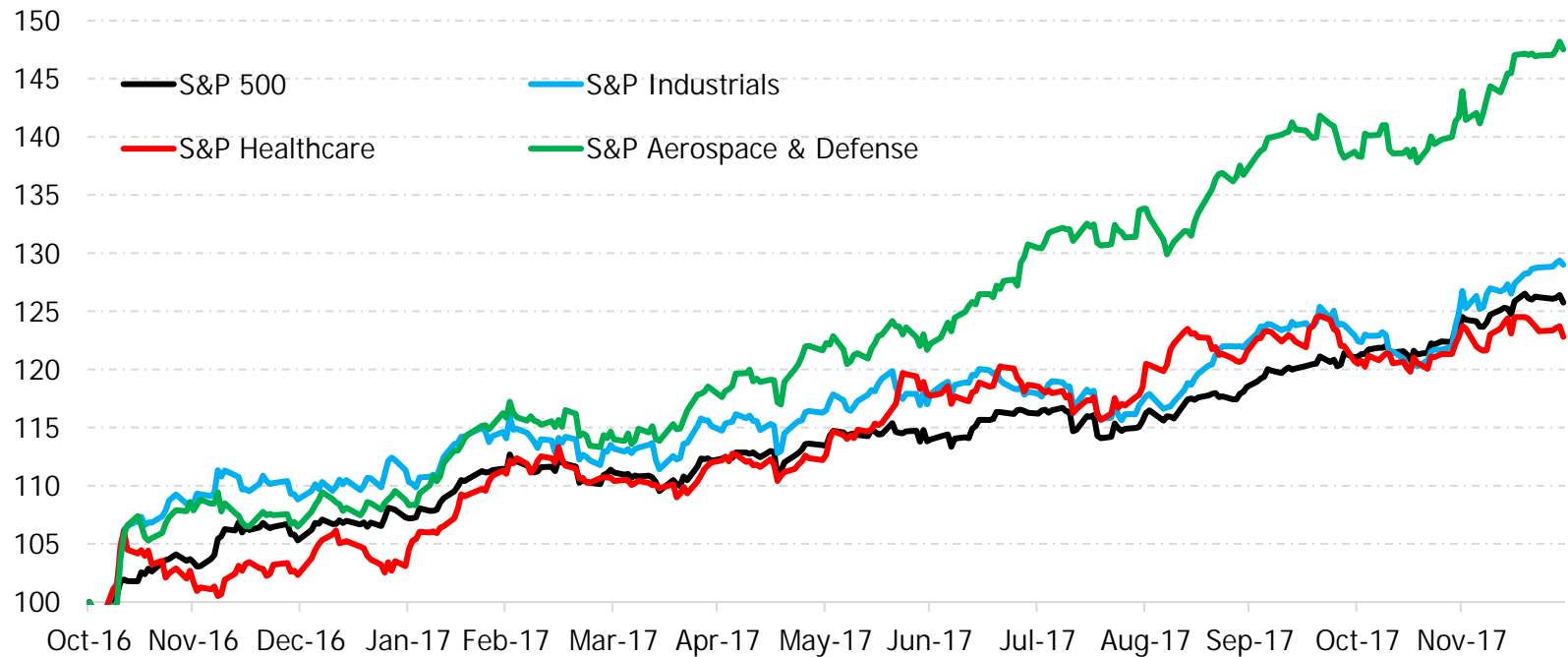
"It's the economy stupid..." Source: Jim Carville, 1992



As of 08/26/2024

Source: Bloomberg Finance, L.P.

Remembering Late 2016 Market Action and What Followed in 2017



From October 31st, 2016 to December 31st, 2017

Source: Bloomberg Finance, L.P.

Past performance is not a reliable indicator of future performance

International Equity PMS Believe We Are Transitioning to a New Paradigm

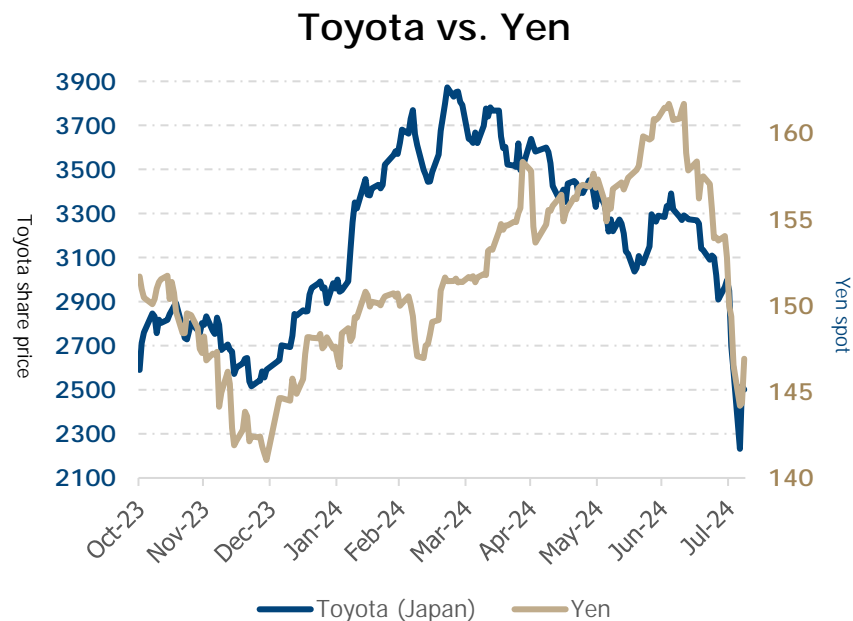
Post-GFC Era	Post-Pandemic Era	Tailwind to International?
Benign Disinflation	Higher Trend Inflation	✓
Low and Falling Bond Yields	Rate Normalization	✓
Maintenance Level Capex	Higher Capital Spending	✓
Max Globalization	Reshoring	?
Disruptive Innovation	Disruptive Innovation	✗

Beneficiaries:
Secular Growth, Leverage

Beneficiaries:
Real Assets, Valuations

This is not intended to be investment advice or a recommendation to take any specific investment action

Manufacturers in Japan Have Benefitted From a Weak Yen



As of August 7th, 2024

Source: Bloomberg Finance, L.P.

Past performance is not a reliable indicator of future performance

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“...Ten of Japan’s biggest companies are likely to pocket an extra ¥1.4 trillion (\$9.3 billion) in profits this fiscal year if the yen continues to hover around the ¥150 mark to the dollar, a Bloomberg calculation shows.

The calculation is based on figures from 10 of the Japan’s 30 largest firms by market capitalization that specify the impact of exchange-rate movements on their earnings.

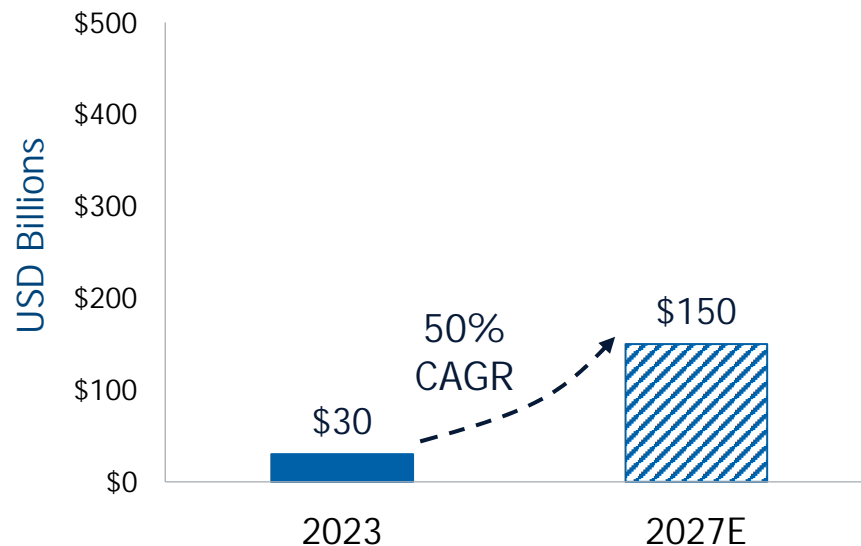
Many of Japan’s largest businesses are exporters that benefit from a weaker yen. The biggest beneficiary among the 10 companies from a weaker currency is Toyota Motor. The automaker says it gains ¥45 billion in operating profit for every ¥1 of additional weakness against the dollar..”

Source: <https://www.japantimes.co.jp/business/2023/10/30/companies/japan-big-firms-weak-yen/>

AI-Related Demand Remains Hard to Fathom

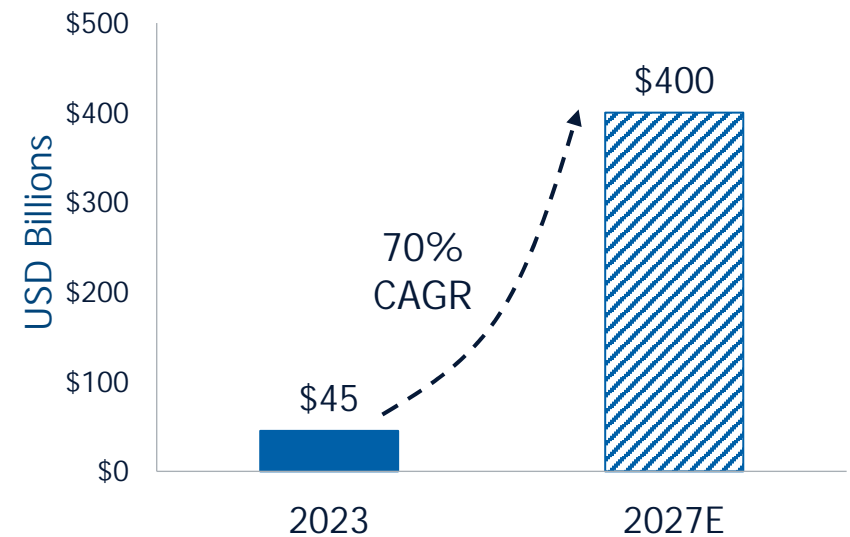
AI Total Addressable Market

30 June 2023



AI Total Addressable Market

30 November 2023



In less than 6 months, AMD (Advanced Micro Devices, Inc.) increased their estimate—Materially

Source: AI Chip Market—AMD Data Center and AI Technology Premier; Software Forecast—William Blair Research based on data from IDC; Worldwide Semiannual Artificial Intelligence Tracker, 2H21.

There is no guarantee that any forecasts made will come to pass.

Mega-Cap Growth Valuation in Context

As of 30 June 2024

	Size		Valuation		
	Market weight	Market Cap (\$ Bn)	*24m fwd. P/E	24m fwd. EV/Sales	
Big Tech	Microsoft	7.2%	3322	28.5	10.3
	Apple	7.0%	3230	26.9	7.6
	NVIDIA	6.6%	3039	32.2	17.7
	Alphabet	4.6%	2100	19.9	2.4
	Amazon	4.4%	2011	29.2	2.8
	Meta Platforms	2.4%	1105	20.3	5.7
	Tesla	1.4%	631	52.0	4.8
	Big Tech Aggregate	33.7%	\$15,438	27.0	5.5
Tech Bubble	Microsoft	4.5%	581	53.2	19.2
	Cisco Systems	4.2%	543	101.7	17.5
	Intel	3.6%	465	42.1	11.5
	Oracle	1.9%	245	84.6	19.0
	IBM	1.7%	218	23.5	2.3
	Lucent	1.6%	206	37.9	4.1
	Nortel Networks	1.5%	199	86.4	6.4
	Tech Bubble Aggregate	19.0%	\$2,457	52.0	8.2
Nifty 50	IBM	7.1%	48	35.5	
	Eastman Kodak	3.6%	24	43.5	
	Sears Roebuck	2.7%	18	29.2	
	General Electric	2.0%	13	23.4	
	Xerox	1.8%	12	45.8	
	3M	1.4%	10	39.0	
	Procter & Gamble	1.4%	9	29.8	
	Nifty 50 Aggregate	19.9%	\$135	34.3	

Source: Datastream, Factset, Goldman Sachs Global Investment Research

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T. Rowe Price Multi-Asset Positioning— Equities



REGIONS



U.S.



Global ex-U.S.



Europe



Japan



Emerging Markets

STYLE AND MARKET CAPITALIZATION

INFLATION-SENSITIVE



U.S. Growth
vs. Value



Global Ex-U.S.
Growth vs. Value



U.S. Small-cap
vs. Large-cap



Global Ex-U.S.
Small- vs. Large-cap



Real Asset
Equities

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T. Rowe Price Multi-Asset Positioning— Bonds



U.S. Investment
Grade (IG)



Developed Ex-U.S.
IG (Hedged)



U.S. Treasury
Long



Inflation-
linked



Global
High Yield



Floating Rate
Loans



EM Dollar
Sovereigns



EM Local
Currency

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Key Takeaways

- Fixed Income plays an important role in most institutional portfolios, providing stability, income, diversification, and liquidity.
- Fixed Income comes in many different types, so know what you own. Core Fixed Income is very different than Core Plus or High Yield.
- Yields have risen dramatically over the last several years, and therefore future return expectations for Fixed Income has improved.
- Fixed Income is a diverse asset class. Many sub-asset classes have the potential to enhance returns, reduce risk, and hedge against inflation.

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Session Evaluation



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