

Economic and Market Review

Through Q4 2022

Economic Review – 3rd Quarter 2022

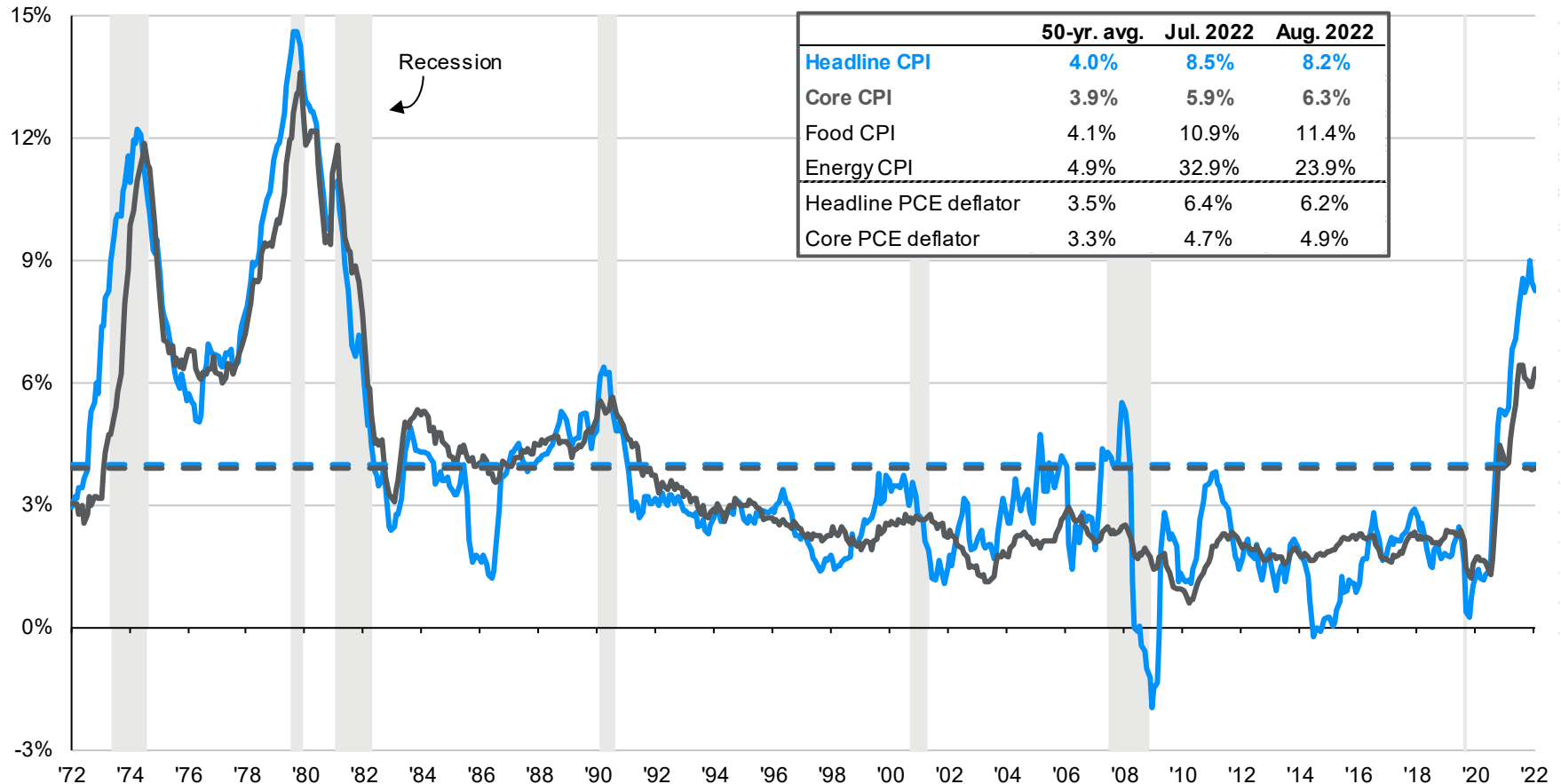
- For the 3rd consecutive meeting, the US Federal Open Market Committee raised the short-term Fed funds rate by 75 basis points. This latest hike reinforced what has been one of the most aggressive series of rate hikes in modern times. Meanwhile, investors remained focused on inflation-sensitive economic data in September, looking for signs that hawkish Fed policy was having an effect. While core inflation may have peaked, we have yet to see a meaningful decline in overall prices, with energy perhaps the exception.
- Consumer prices edged up +0.1% in August, while core CPI (ex food & energy) rose a greater than expected +0.6%. This translates into an +8.3% YoY move in headline inflation and a +6.3% YoY move in core CPI. Both numbers exceeded analyst estimates. At the producer level, we saw headline PPI drop -0.1% in August, while core PPI surged higher by +0.3%. On a trailing 12-month basis, producer prices are up +8.7% YoY while core PPI is higher by +7.2%. The Fed's favored measure of inflation, the PCE Deflator, rose +6.2% YoY while the core Deflator is higher by +4.9% versus one year ago.
- The one area where higher interest rates are beginning to have an impact is housing, with 30-year mortgage rates now firmly above 6%. The FHFA House Price Index dropped -0.4% in July, while the S&P CoreLogic CS 20-City HPI fell by -0.44%. Existing Home Sales fell by -0.4% in August while Pending Home Sales dipped -2.0%, for a YoY decline of -22.5%. Housing data tends to come with a 1 to 2 month lag and we would anticipate further declines in home prices and sales as we move further into the fall season.
- The US Dollar, as measured by the Bloomberg Dollar Spot Index, gained +3.2% in September and +6.1% during Q3. This is the best quarterly performance for the US Dollar since 2016 as the Fed continued to raise rates swiftly in response to stickier and higher than expected inflation. Additionally, the US Dollar's reserve currency status led to its relative strength versus almost all other major currencies as global economic conditions worsened. The Dollar's strength was a headwind for commodities as the Bloomberg Commodity Index finished the month down -8.3%.
- Oil prices, as measured by WTI Crude Oil, declined -10.1% during the month and -19.6% for the quarter. Dollar strength, higher interest rates, and continued COVID lockdowns in China (the world's largest crude oil importer) contributed to the decrease in demand and price decline.

Note: As of September 30, 2022

Inflation

CPI and core CPI

% change vs. prior year, seasonally adjusted



Source: BLS, FactSet, J.P. Morgan Asset Management.

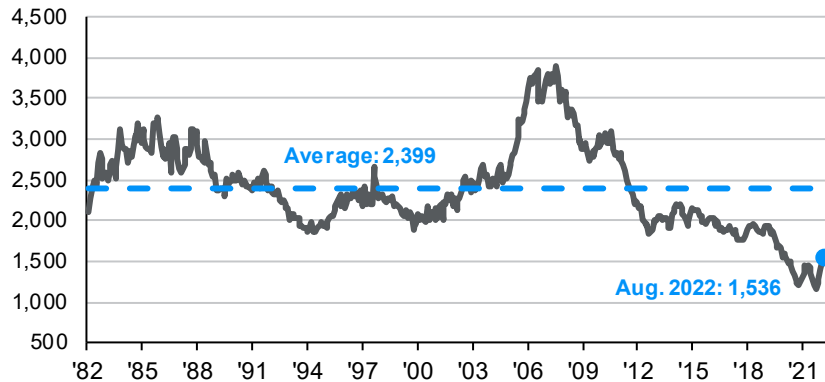
CPI used is CPI-U and values shown are % change vs. one year ago. Core CPI is defined as CPI excluding food and energy prices. The Personal Consumption Expenditure (PCE) deflator employs an evolving chain-weighted basket of consumer expenditures instead of the fixed-weight basket used in CPI calculations.

Guide to the Markets - U.S. Data are as of September 30, 2022.

Residential Real Estate

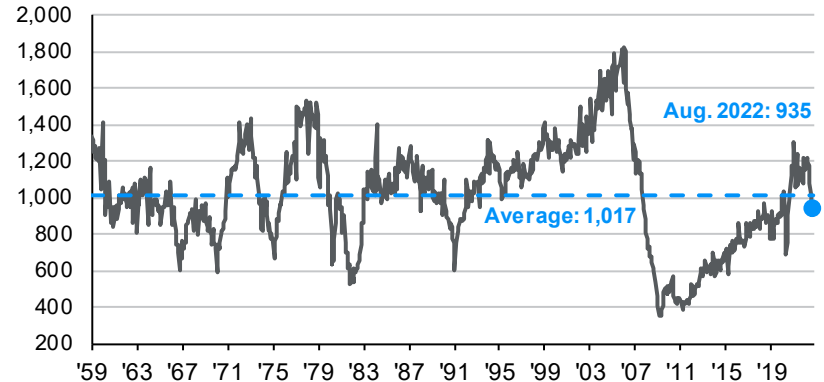
Housing inventories

Inventory of new and existing single family homes for sale, thous, SA*



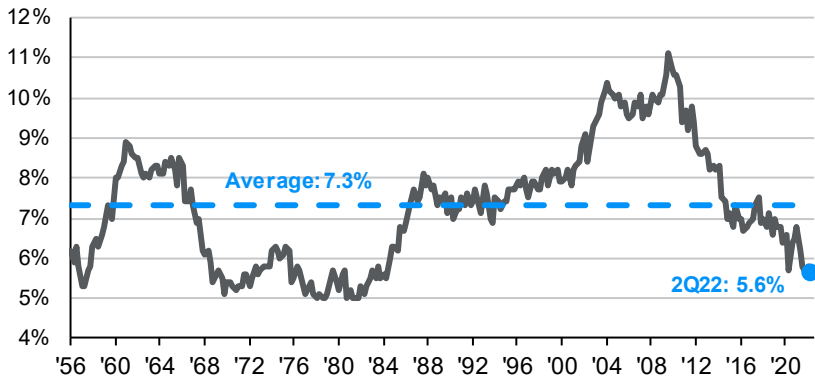
Single-family housing starts

Seasonally adjusted annual rate (SAAR), thous houses



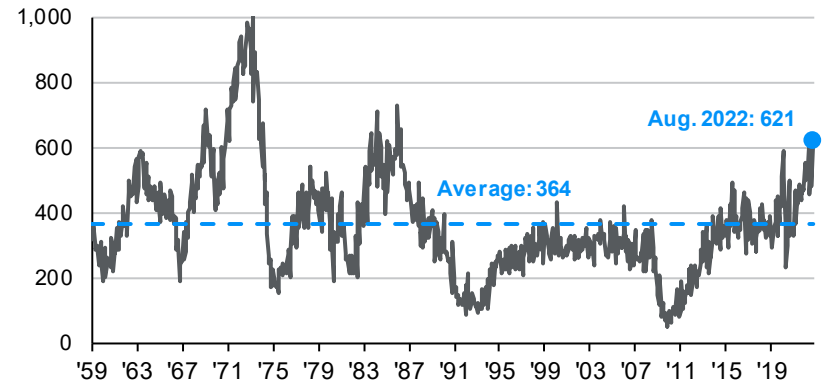
Rental vacancy rate

Percent



Multi-family housing starts

Seasonally adjusted annual rate (SAAR), thous houses



Source: U.S. Census Bureau, U.S. National Association of Realtors, J.P. Morgan Asset Management. *Inventory of new and existing single family homes for sale is seasonally adjusted by J.P. Morgan Asset Management.

Guide to the Markets – U.S. Data are as of September 30, 2022.

Dollar Drivers

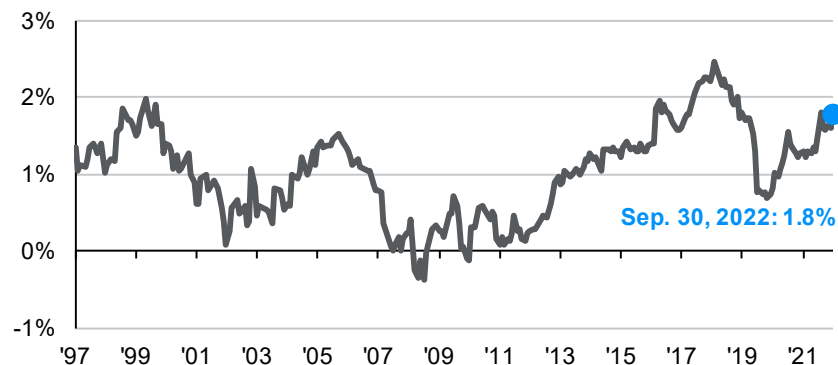
The U.S. dollar U.S. Dollar Index



The U.S. trade balance Current account balance, % of GDP



Developed markets interest rate differentials Difference between U.S. and international 10-year yields*



Source: J.P. Morgan Asset Management; (Left) FactSet, ICE; (Top right) Bureau of Economic Analysis, FactSet; (Bottom right) Tullett Prebon. Currencies in the DXY Index are: British pound, Canadian dollar, euro, Japanese yen, Swedish krona and Swiss franc. *Interest rate differential is the difference between the 10-year U.S. Treasury yield and a basket of the 10-year yields of each major trading partner (Australia, Canada, Europe, Japan, Sweden, Switzerland and UK). Weights in the basket are calculated using the 10-year average of total government bonds outstanding in each region. Europe is defined as the 19 countries in the euro area.

Oil Markets

Change in production & consumption of liquid fuels

Production, consumption & inventories, millions of barrels per day

Production	2019	2020	2021	2022*	2023*	Growth since '19
U.S.	19.5	18.6	19.0	20.2	21.4	9.7%
OPEC	34.6	30.7	31.7	34.1	34.5	-0.3%
Russia	11.5	10.5	10.8	10.9	9.3	-18.7%
Global	100.3	93.9	95.7	100.1	101.3	1.0%
Consumption						
U.S.	20.5	18.2	19.9	20.4	20.8	1.0%
China	14.0	14.4	15.3	15.3	16.0	13.9%
Global	100.7	91.8	97.4	99.5	101.5	0.8%
Inventory Change						
	-0.4	2.1	-1.7	0.6	-0.2	

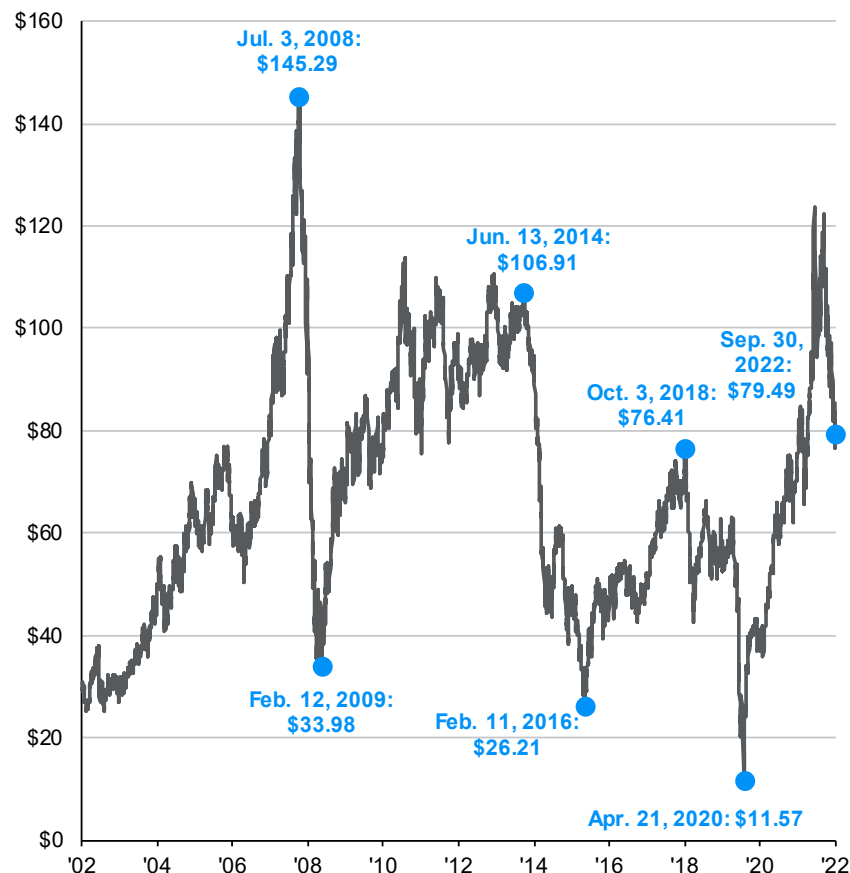
U.S. crude oil inventories & rig count**

Million barrels, number of active rigs



Price of oil

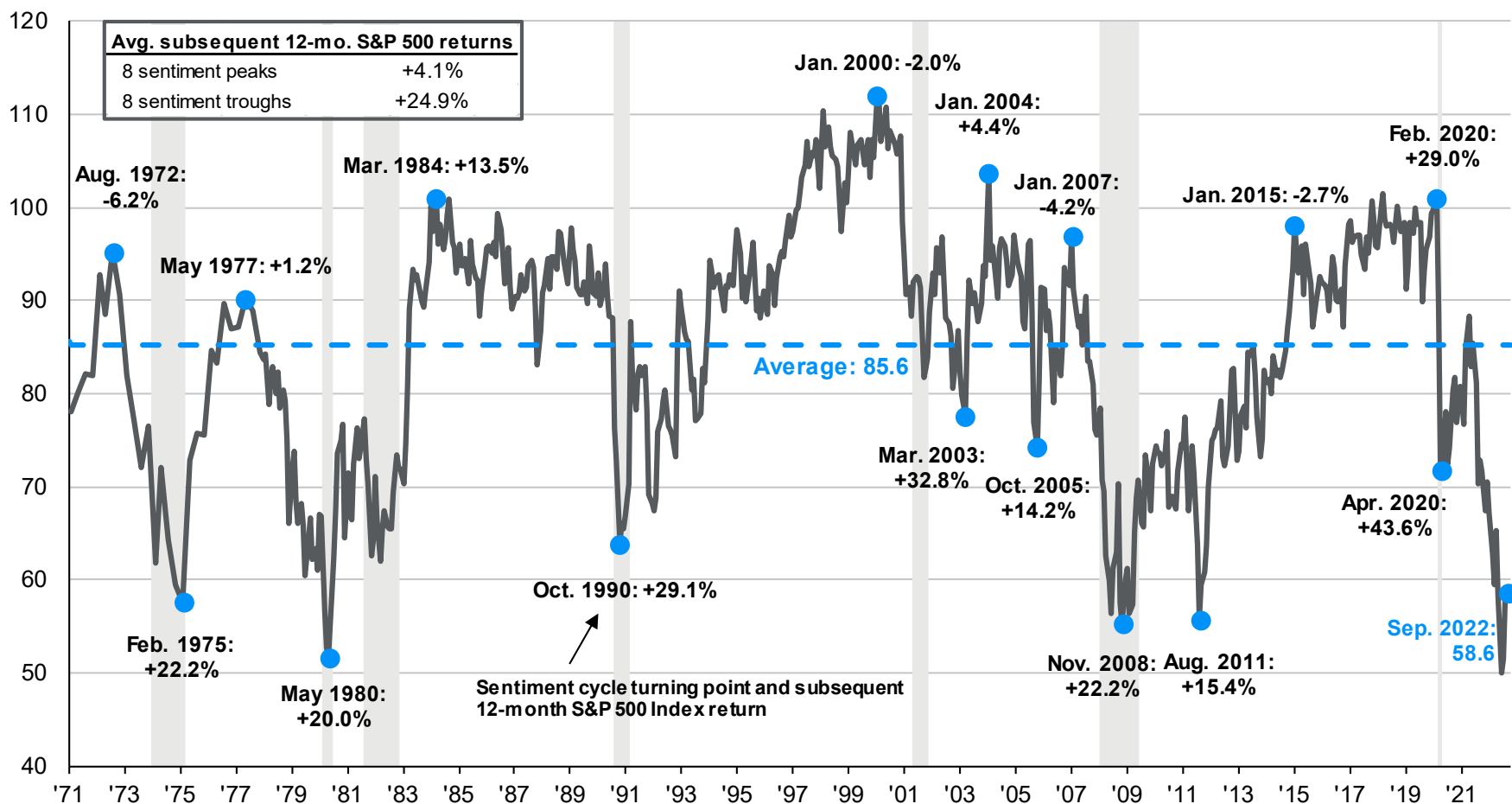
WTI crude, nominal prices, USD/barrel



Source: J.P. Morgan Asset Management; (Top and bottom left) EIA; (Right) FactSet; (Bottom left) Baker Hughes.

*Forecasts are from the September 2022 EIA Short-Term Energy Outlook and start in 2022. **U.S. crude oil inventories include the Strategic Petroleum Reserve (SPR). Active rig count includes both natural gas and oil rigs. WTI crude prices are continuous contract NYM prices in USD.

Consumer Sentiment Index & subsequent 12-month S&P 500 returns



Source: FactSet, Standard & Poor's, University of Michigan, J.P. Morgan Asset Management.

Peak is defined as the highest index value before a series of lower lows, while a trough is defined as the lowest index value before a series of higher highs. Subsequent 12-month S&P 500 returns are price returns only, which excludes dividends. Past performance is not a reliable indicator of current and future results.

Guide to the Markets - U.S. Data are as of September 30, 2022.

Equity Market Review – 3rd Quarter 2022

- U.S. equities closed out the month of September on a low note, with the benchmark S&P 500 Index falling -9.2% on the month to close at 3,586. September's closing print marked a new year to date low for the Index, which lost -4.9% during the quarter, and is down -23.9% for the year. Markets fell sharply in September as the Federal Reserve remained steadfast in its quest to quash inflation. The Federal Open Market Committee's (FOMC) summary of economic projections showed a Committee that expects GDP growth to slow markedly in 2022, unemployment to tick up, and inflation to remain more elevated than previously projected.
- From a sector standpoint, 9 of 11 sectors finished the quarter in negative territory, while Consumer Discretionary and Energy were the only 2 positive sectors, returning +4.4% and +2.3% respectively. Traditional defensive sectors such as Utilities and Consumer Staples lost -6.0% and -6.6%, respectively, as their dividend yields now appear less attractive than short-term Treasuries.
- Equity valuations reflect not only the higher short-term yields, but also a level of market uncertainty not seen in a long time. The S&P 500 trades at 15.1x 2023 earnings estimates, while the S&P 600 SmallCap trades at a mere 10.7x, both attractive starting points for long-term investors ahead of key company updates in October. During earnings season, all eyes will be on forward guidance and whether 2023 bottoms-up earnings estimates are too high or not. They've remained somewhat resilient this year, only down about 4% from their highs; however, companies are likely to blame a strong USD and a soft Chinese economy in their numbers, perhaps more so than blaming inflation in past quarters. How much of that is priced in already remains to be seen, given both are widely known at this point.
- International risk assets underperformed their US counterparts and continued their decline during the 3rd quarter, as the MSCI ACWI ex-USA Index fell -9.8% in USD terms. Emerging Markets (EM), as measured by the MSCI EM Index, fell -11.5% in Q3 while Developed Markets (DM), as measured by the MSCI EAFE Index, fell -9.3%.
- Every MSCI ACWI ex-U.S. sector posted negative returns during the quarter. As rising rates continue to discount the earnings of Tech companies more than any other sector, International Tech companies are down -42.2% year-to-date. Energy is the best performing International equity sector this year, down only -3.9% YTD.
- The MSCI China Index posted a staggering -22.4% drop in USD terms during the quarter, contributing to EM's underperformance relative to DM. Beijing's Zero COVID quest, regulatory crackdowns, tensions with the West, and a strengthening U.S. Dollar all contributed to the negative performance. Year-to-date, the MSCI China Index is down -31.1% in USD terms.

Note: As of September 30, 2022



Fixed Income Review – 3rd Quarter 2022

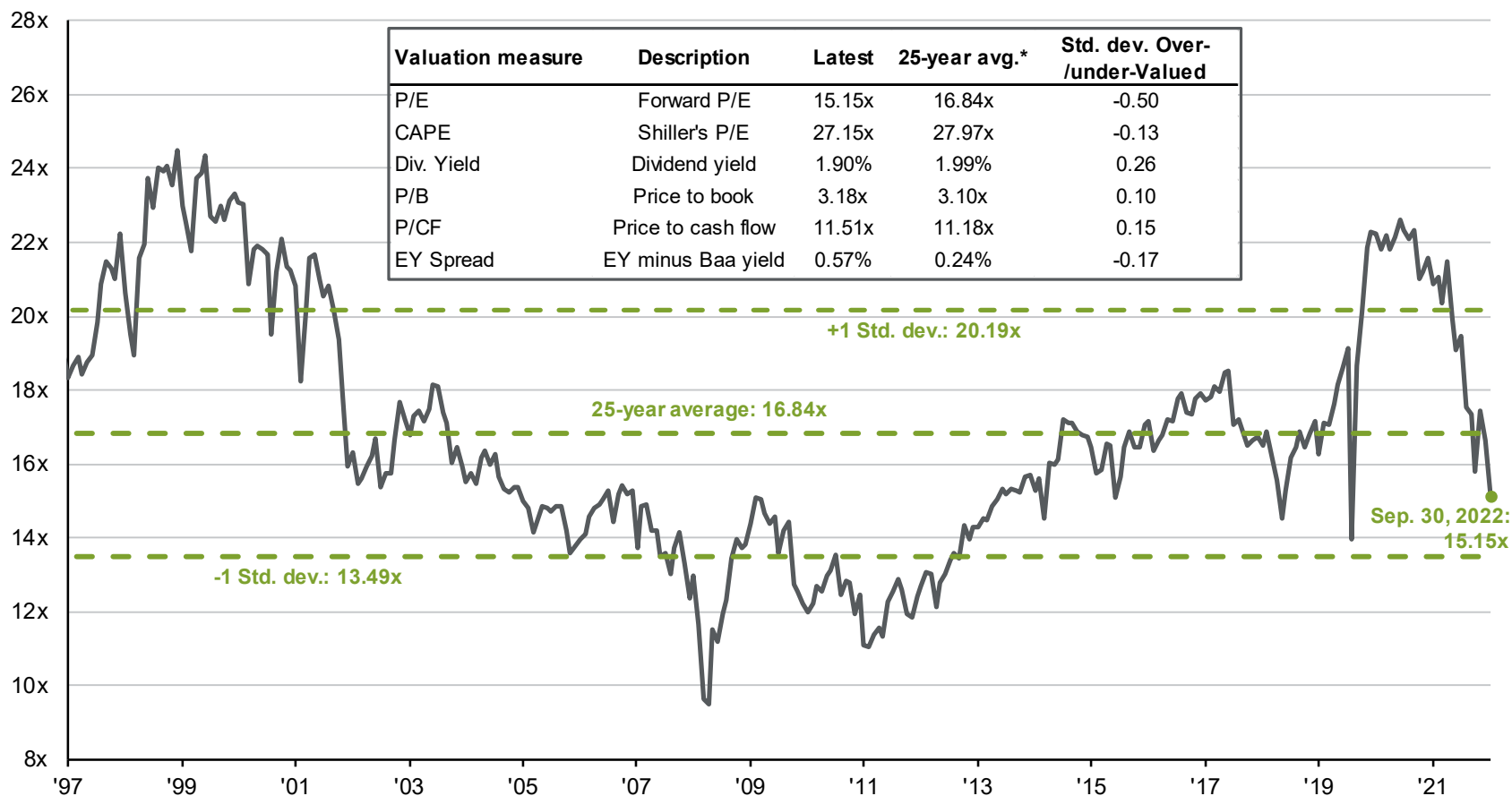
- Fixed income returns were broadly negative for the 3rd quarter as rates continued to rise and credit spreads widened. The Bloomberg Barclays US Aggregate Index finished down -4.7% for the quarter, bringing its YTD return to -14.6%.
- The FOMC's aggressive rate tightening shows little sign of abating any time soon, at least according to FOMC members. Most support a terminal rate somewhere in the 4% to 4.5% range, with an intention of getting there sooner rather than later.
- The 10-year Treasury yield hit a high of 4.019% briefly in September, the highest level since October of 2008. The front end of the yield curve saw the largest moves once again this quarter with the 2 year moving higher from 2.92% in June to 4.35% to end the quarter. Yields are now significantly higher than they have been in many years, offering more income generation potential for a given level or risk.
- With the old adage being that “the Fed tends to tighten until something breaks”, that “something” may be upon us shortly as volatility picks up and credit availability dissipates. More benign inflation readings may sway the Fed to ease up on the pace of hikes, but that data has not been reported yet.

U.S. Equity Returns

	Energy	Materials	Financials	Industrials	Cons. Disc.	Tech.	Comm. Services*	Real Estate	Health Care	Cons. Staples	Utilities	S&P 500 Index	
S&P weight	4.5%	2.5%	11.0%	7.9%	11.7%	26.4%	8.1%	2.8%	15.1%	6.9%	3.1%	100.0%	Weight
Russell Growth weight	1.6%	1.4%	3.0%	7.2%	17.1%	42.9%	7.4%	1.6%	12.2%	5.7%	0.0%	100.0%	
Russell Value weight	7.8%	4.1%	20.0%	10.0%	6.0%	8.8%	8.0%	4.8%	17.3%	7.2%	6.0%	100.0%	
Russell 2000 weight	6.1%	4.0%	17.3%	14.8%	10.2%	12.8%	2.7%	6.4%	18.9%	3.4%	3.4%	100.0%	
QTD	2.3	-7.1	-3.1	-4.7	4.4	-6.2	-12.7	-11.0	-5.2	-6.6	-6.0	-4.9	Return (%)
YTD	34.9	-23.7	-21.2	-20.7	-29.9	-31.4	-39.0	-28.8	-13.1	-11.8	-6.5	-23.9	
Since market peak (February 2020)	52.0	19.0	3.4	3.3	9.3	18.4	-14.0	-4.5	21.8	12.9	1.8	10.4	
Since market low (March 2020)	244.7	86.1	81.1	77.1	60.1	72.0	20.4	53.3	69.0	48.7	58.2	66.8	
Beta to S&P 500	1.3	1.1	1.1	1.1	1.2	1.1	1.1*	0.8	0.8	0.6	0.5	1.0	β
Correl. to Treas. yields	-0.1	-0.4	-0.4	-0.4	-0.6	-0.7	-0.6	-0.5	-0.5	-0.3	-0.3	-0.6	ρ
Foreign % of sales	38.6	56.3	21.6	32.5	34.3	58.2	41.7	16.6	36.9	44.5	1.8	40.2	%
NTM earnings growth	6.5%	-2.8%	6.6%	20.1%	23.7%	7.8%	7.4%	7.4%	0.6%	5.7%	4.9%	7.6%	EPS
20-yr avg.	86.4%	17.1%	20.9%	13.9%	16.6%	13.8%	10.3%*	6.6%	8.6%	7.8%	4.1%	11.3%	
Forward P/E ratio	7.9x	12.4x	10.8x	15.1x	23.1x	18.5x	13.4x	15.7x	15.0x	18.6x	17.8x	15.1x	P/E
20-yr avg.	13.8x	14.7x	12.4x	16.2x	19.1x	18.1x	19.2x*	16.6x	15.1x	17.2x	15.2x	15.5x	
Buyback yield	1.9%	3.3%	4.1%	2.5%	2.0%	2.3%	4.5%	-1.9%	1.7%	1.2%	-0.4%	2.4%	Bbk
20-yr avg.	1.5%	0.8%	0.3%	2.2%	2.4%	2.9%	1.5%	-1.3%	1.9%	1.8%	-1.0%	1.7%	
Dividend yield	3.6%	2.5%	2.5%	2.1%	1.0%	1.2%	1.2%	3.8%	1.8%	3.0%	3.4%	1.9%	Div
20-yr avg.	2.7%	2.4%	2.3%	2.2%	1.4%	1.1%	1.2%*	4.0%	1.9%	2.8%	3.9%	2.1%	

Source: FactSet, Refinitiv Datastream, Russell Investment Group, Standard & Poor's, J.P. Morgan Asset Management. All calculations are cumulative total return, not annualized, including dividends for the stated period. Since market peak represents period from February 19, 2020 to September 30, 2022. Since market low represents period from March 23, 2020 to September 30, 2022. Correlation to Treasury yields are trailing 2-year monthly correlations between S&P 500 sector price returns and 10-year Treasury yield movements. Next 12 months (NTM) earnings growth is the percent change in next 12-months earnings estimates compared to last 12-months earnings provided by brokers. Forward P/E ratio is a bottom-up calculation based on the most recent S&P 500 Index price, divided by consensus estimates for earnings in the next 12 months (NTM), and is provided by FactSet Market Aggregates and J.P. Morgan Asset Management. Buyback yield is net of share issuance and is calculated as last 12-months net buybacks divided by market cap. Dividend yield is calculated as the next 12-months consensus dividend divided by most recent price. Beta calculations are based on 10-years of monthly price returns for the S&P 500 and its sub-indices. *Communication Services (formerly Telecom) averages and beta are based on 5-years of backtested data by JPMAM. Past performance is not indicative of future returns.

S&P 500 valuation measures



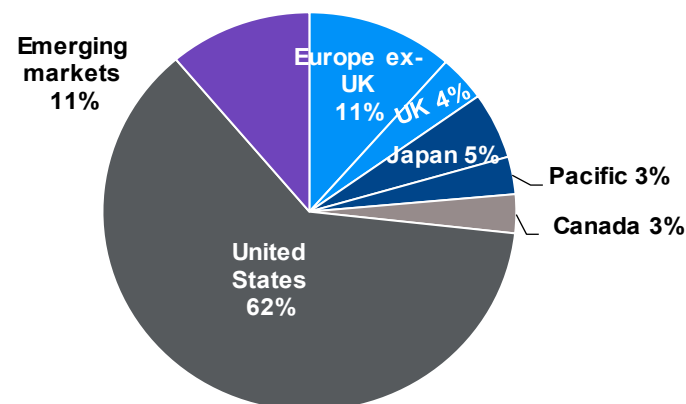
Source: FactSet, FRB, Refinitiv Datastream, Robert Shiller, Standard & Poor's, Thomson Reuters, J.P. Morgan Asset Management.

Price-to-earnings is price divided by consensus analyst estimates of earnings per share for the next 12 months as provided by IBES since August 1997 and by FactSet since January 2022. Current next 12-months consensus earnings estimates are \$241. Average P/E and standard deviations are calculated using 25 years of history. Shiller's P/E uses trailing 10-years of inflation-adjusted earnings as reported by companies. Dividend yield is calculated as the next 12-months consensus dividend divided by most recent price. Price-to-book ratio is the price divided by book value per share. Price-to-cash flow is price divided by NTM cash flow. EY minus Baa yield is the forward earnings yield (consensus analyst estimates of EPS over the next 12 months divided by price) minus the Moody's Baa seasoned corporate bond yield. Std. dev. over-/under-valued is calculated using the average and standard deviation over 25 years for each measure. *P/CF is a 20-year average due to cash flow availability.

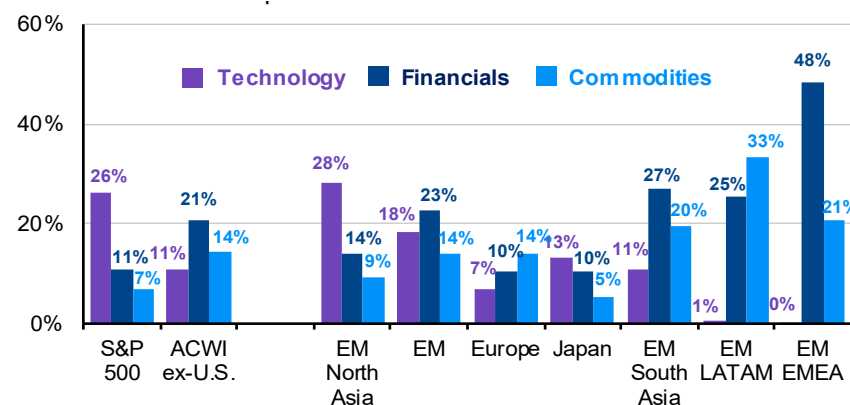
Global Equity Returns

Returns	2022 YTD		2021		15-years	
	Local	USD	Local	USD	Ann.	Beta
Regions						
U.S. (S&P 500)	-	-23.9	-	28.7	10.7	0.90
AC World ex-U.S.	-15.8	-26.2	13.5	8.3	4.2	1.07
EAFE	-14.1	-26.8	19.2	11.8	4.1	1.04
Europe ex-UK	-21.0	-31.2	24.4	16.5	4.8	1.18
Emerging markets	-20.5	-26.9	0.1	-2.2	4.8	1.18
Selected Countries						
United Kingdom	-1.3	-18.6	19.6	18.5	2.3	1.02
France	-17.1	-28.6	29.7	20.6	4.7	1.22
Germany	-27.0	-37.1	13.9	5.9	4.7	1.31
Japan	-7.1	-26.1	13.8	2.0	3.4	0.72
China	-29.4	-31.1	-21.6	-21.6	5.8	1.10
India	-0.8	-9.4	28.9	26.7	6.7	1.26
Brazil	8.6	11.8	-11.2	-17.2	0.9	1.50
Korea	-27.8	-40.0	0.8	-7.9	5.9	1.49

Weights in MSCI All Country World Index
% global market capitalization, float adjusted



Representation of key sectors in international markets
% of index market capitalization



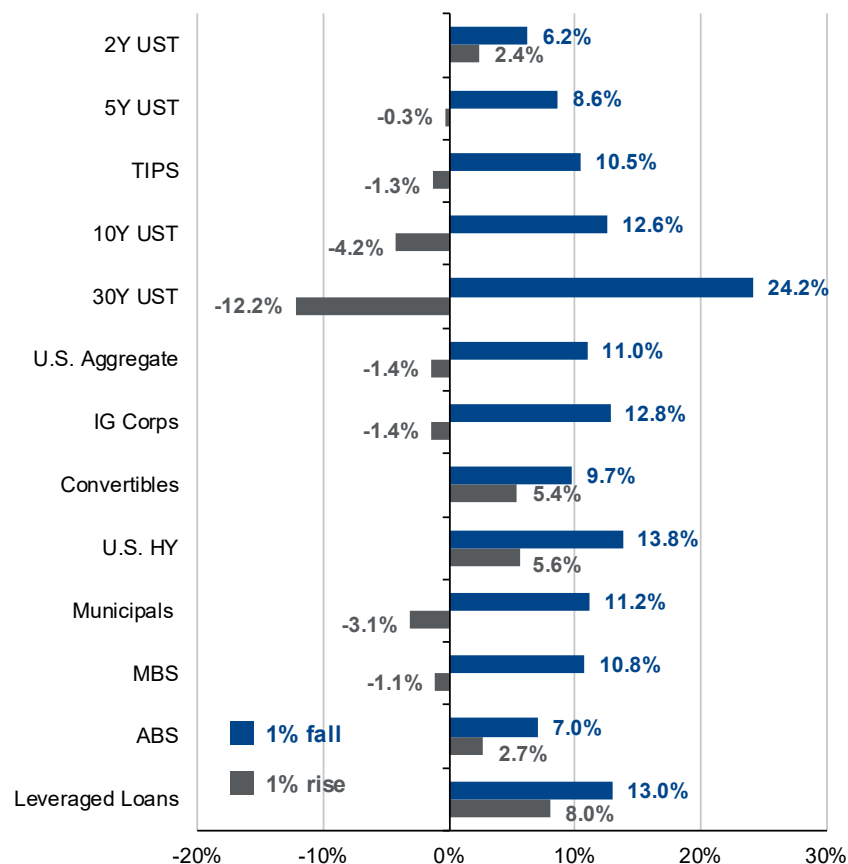
Source: FactSet, Federal Reserve, MSCI, Standard & Poor's, J.P. Morgan Asset Management. All return values are MSCI Gross Index data. 15-year return and beta figures are calculated for the time period 12/31/2006 to 12/31/2021. Beta is for monthly returns relative to the MSCI AC World Index. Annualized volatility is calculated as the standard deviation of quarterly returns multiplied by the square root of 4. Chart is for illustrative purposes only. Please see disclosure page for index definitions. Past performance is not a reliable indicator of current and future results. EM North Asia includes China, Taiwan and South Korea. EM South Asia includes India, Indonesia, Malaysia, Pakistan, Philippines, Taiwan and Thailand.

Fixed Income Returns

U.S. Treasuries	Yield		Return			
	9/30/2022	12/31/2021	2022 YTD	Avg. Maturity	Correlation to 10-year	Correlation to S&P 500
2-Year	4.22%	0.73%	-4.59%	2 years	0.71	-0.25
5-Year	4.06%	1.26%	-10.79%	5	0.93	-0.21
TIPS	1.68%	-1.04%	-13.61%	10	0.61	0.30
10-Year	3.83%	1.52%	-16.85%	10	1.00	-0.19
30-Year	3.79%	1.90%	-31.49%	30	0.93	-0.20
Sector						
U.S. Aggregate	4.75%	1.75%	-14.61%	8.5	0.85	0.18
IG Corps	5.69%	2.33%	-18.72%	11.0	0.50	0.46
Convertibles	7.14%	3.66%	-19.85%	-	-0.20	0.87
U.S. HY	9.68%	4.21%	-14.74%	5.7	-0.14	0.75
Municipals	4.04%	1.11%	-12.13%	12.8	0.47	0.20
MBS	4.83%	1.98%	-13.66%	8.1	0.78	0.09
ABS	5.50%	1.96%	-3.66%	2.3	0.11	-0.03
Leveraged Loans	10.52%	4.60%	-2.66%	2.5	-0.04	0.24

Impact of a 1% rise or fall in interest rates

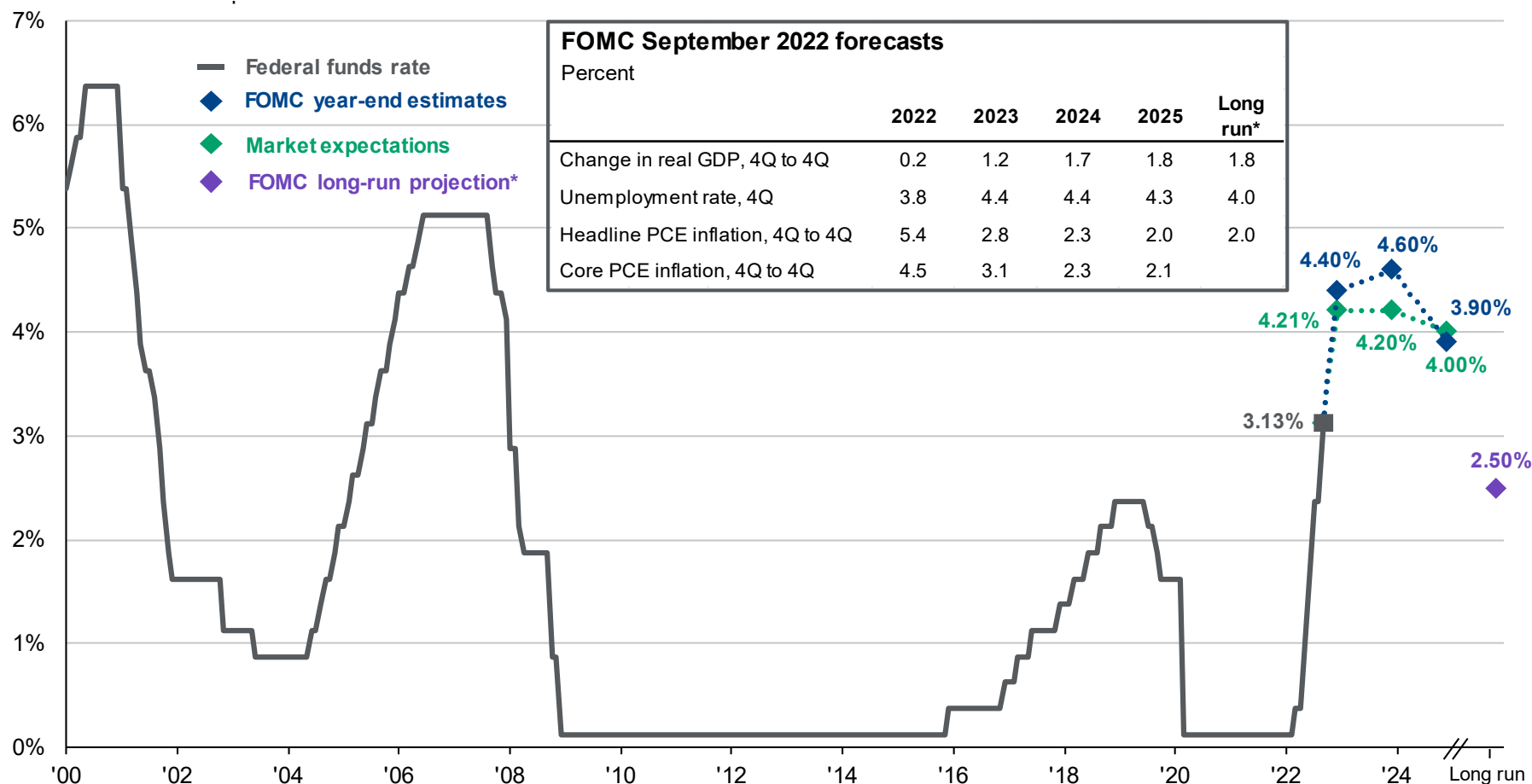
Total return, assumes a parallel shift in the yield curve



Source: Bloomberg, FactSet, Standard & Poor's, U.S. Treasury, J.P. Morgan Asset Management. Sectors shown above are provided by Bloomberg unless otherwise noted and are represented by - U.S. Aggregate; MBS: U.S. Aggregate Securitized - MBS; ABS: J.P. Morgan ABS Index; Corporates: U.S. Corporates; Municipals: Muni Bond; High Yield: Corporate High Yield; Leveraged Loans: J.P. Morgan Leveraged Loan Index; TIPS: Treasury Inflation-Protected Securities; Convertibles: U.S. Convertibles Composite. Convertibles yield is as of most recent month end and is based on U.S. portion of Bloomberg Global Convertibles Index. Yield and return information based on bellwethers for Treasury securities. Sector yields reflect yield-to-worst. Convertibles yield is based on U.S. portion of Bloomberg Global Convertibles. Correlations are based on 15-years of monthly returns for all sectors. Past performance is not indicative of future results.

Federal funds rate expectations

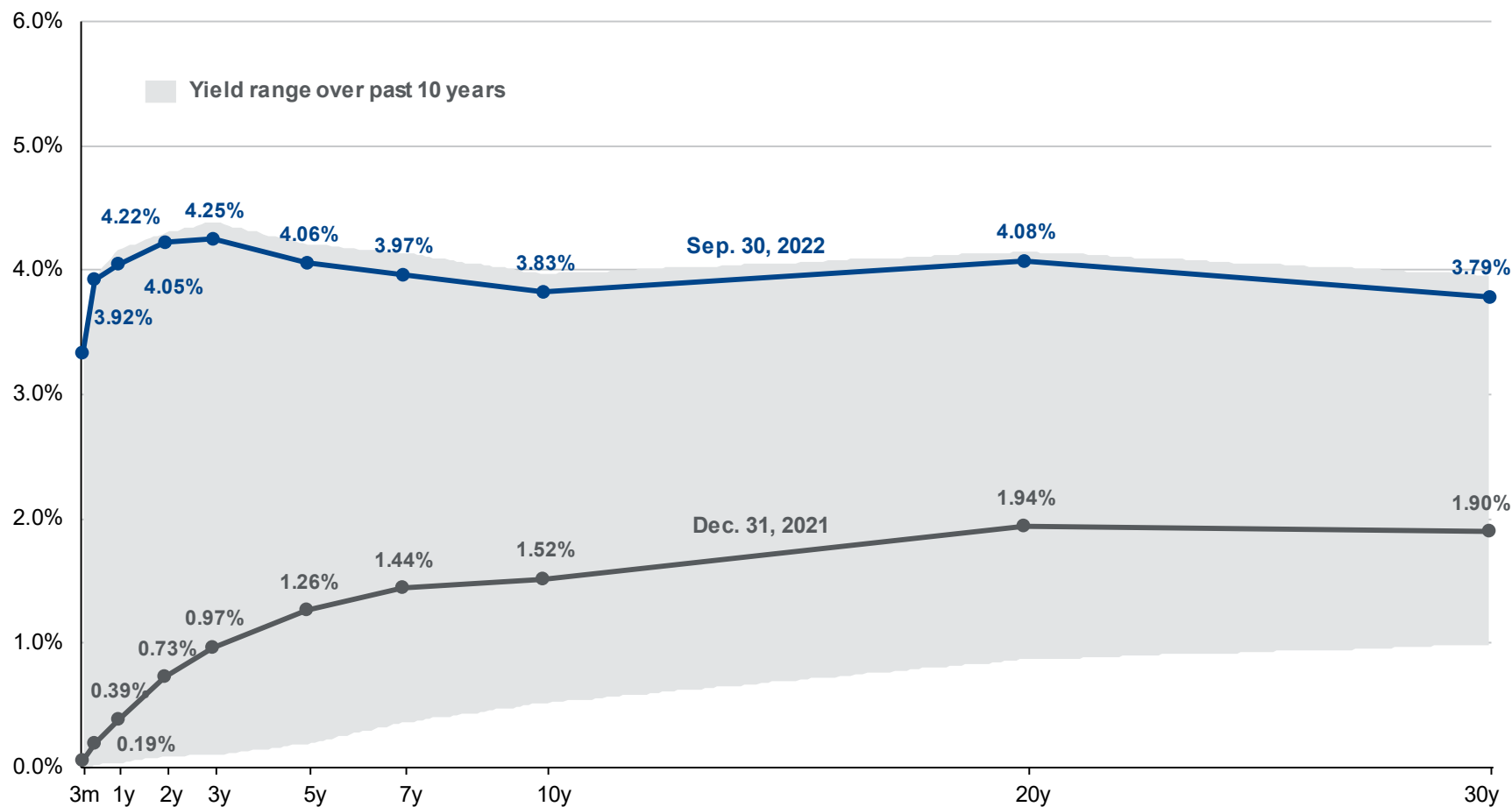
FOMC and market expectations for the federal funds rate



Source: Bloomberg, FactSet, Federal Reserve, J.P. Morgan Asset Management.

Market expectations are based off of the respective Federal Funds Futures contracts for December expiry. *Long-run projections are the rates of growth, unemployment and inflation to which a policymaker expects the economy to converge over the next five to six years in absence of further shocks and under appropriate monetary policy. Forecasts are not a reliable indicator of future performance. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.

U.S Treasury yield curve



Source: FactSet, Federal Reserve, J.P. Morgan Asset Management.

Guide to the Markets - U.S. Data are as of September 30, 2022.

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	YTD	2007 - 2021	
																Ann.	Vol.
EM Equity 39.8%	Fixed Income 5.2%	EM Equity 79.0%	REITs 27.9%	REITs 8.3%	REITs 19.7%	Small Cap 38.8%	REITs 28.0%	REITs 2.8%	Small Cap 21.3%	EM Equity 37.8%	Cash 1.8%	Large Cap 31.5%	Small Cap 20.0%	REITs 41.3%	Comdty. 13.6%	Large Cap 10.6%	REITs 23.2%
Comdty. 16.2%	Cash 1.8%	High Yield 59.4%	Small Cap 26.9%	Fixed Income 7.8%	High Yield 19.6%	Large Cap 32.4%	Large Cap 13.7%	Large Cap 1.4%	High Yield 14.3%	DM Equity 25.6%	Fixed Income 0.0%	REITs 28.7%	EM Equity 18.7%	Large Cap 28.7%	Cash 0.6%	Small Cap 8.7%	EM Equity 22.9%
DM Equity 11.6%	Asset Alloc. -25.4%	DM Equity 32.5%	EM Equity 19.2%	High Yield 3.1%	EM Equity 18.6%	DM Equity 23.3%	Fixed Income 6.0%	Fixed Income 0.5%	Large Cap 12.0%	Large Cap 21.8%	REITs -4.0%	Small Cap 25.5%	Large Cap 18.4%	Comdty. 27.1%	Fixed Income -14.6%	REITs 7.5%	Small Cap 22.5%
Asset Alloc. 7.1%	High Yield -26.9%	REITs 28.0%	Comdty. 16.8%	Large Cap 2.1%	DM Equity 17.9%	Asset Alloc. 14.9%	Asset Alloc. 5.2%	Cash 0.0%	Comdty. 11.8%	Small Cap 14.6%	High Yield -4.1%	DM Equity 22.7%	Asset Alloc. 10.6%	Small Cap 14.8%	Asset Alloc. -19.1%	High Yield 6.6%	Comdty. 19.1%
Fixed Income 7.0%	Small Cap -33.8%	Small Cap 27.2%	Large Cap 15.1%	Cash 0.1%	Small Cap 16.3%	High Yield 7.3%	Small Cap 4.9%	DM Equity -0.4%	EM Equity 11.6%	Asset Alloc. 14.6%	Large Cap -4.4%	Asset Alloc. 19.5%	DM Equity 8.3%	Asset Alloc. 13.5%	High Yield -19.1%	Asset Alloc. 6.1%	DM Equity 18.9%
Large Cap 5.5%	Comdty. -35.6%	Large Cap 23.5%	High Yield 14.8%	Asset Alloc. -0.7%	Large Cap 16.0%	REITs 2.9%	Cash 0.0%	Asset Alloc. -2.0%	REITs 8.6%	High Yield 10.4%	Asset Alloc. -5.8%	EM Equity 18.9%	Fixed Income 7.5%	DM Equity 11.8%	Large Cap -23.9%	EM Equity 4.8%	Large Cap 16.9%
Cash 4.8%	Large Cap -37.0%	Asset Alloc. 25.0%	Asset Alloc. 13.3%	Small Cap -4.2%	Asset Alloc. 12.2%	Cash 0.0%	High Yield 0.0%	High Yield -2.7%	Asset Alloc. 8.3%	REITs 8.7%	Small Cap -11.0%	High Yield 12.6%	High Yield 7.0%	High Yield 1.0%	Small Cap -25.1%	DM Equity 4.1%	High Yield 12.2%
High Yield 3.2%	REITs -37.7%	Comdty. 18.9%	DM Equity 8.2%	DM Equity -11.7%	Fixed Income 4.2%	Fixed Income -2.0%	EM Equity -1.8%	Small Cap -4.4%	Fixed Income 2.6%	Fixed Income 3.5%	Comdty. -11.2%	Fixed Income 8.7%	Cash 0.5%	Cash 0.0%	DM Equity -26.8%	Fixed Income 4.1%	Asset Alloc. 11.7%
Small Cap -1.6%	DM Equity -43.1%	Fixed Income 5.9%	Fixed Income 6.5%	Comdty. -13.3%	Cash 0.1%	EM Equity -2.3%	DM Equity -4.5%	EM Equity -14.6%	DM Equity 1.5%	Comdty. 1.7%	DM Equity -13.4%	Comdty. 7.7%	Comdty. -3.1%	Fixed Income -1.5%	EM Equity -26.9%	Cash 0.8%	Fixed Income 3.3%
REITs -15.7%	EM Equity -53.2%	Cash 0.1%	Cash 0.1%	EM Equity -18.2%	Comdty. -1.1%	Comdty. -9.5%	Comdty. -17.0%	Comdty. -24.7%	Cash 0.3%	Cash 0.8%	EM Equity -14.2%	Cash 2.2%	REITs -5.1%	EM Equity -2.2%	REITs -27.9%	Comdty. -2.6%	Cash 0.7%

Source: Bloomberg, FactSet, MSCI, NAREIT, Russell, Standard & Poor's, J.P. Morgan Asset Management.

Large cap: S&P 500, Small cap: Russell 2000, EM Equity: MSCI EME, DM Equity: MSCI EAFE, Comdty: Bloomberg Commodity Index, High Yield: Bloomberg Global HY Index, Fixed Income: Bloomberg US Aggregate, REITs: NAREIT Equity REIT Index, Cash: Bloomberg 1-3m Treasury. The "Asset Allocation" portfolio assumes the following weights: 25% in the S&P 500, 10% in the Russell 2000, 15% in the MSCI EAFE, 5% in the MSCI EME, 25% in the Bloomberg US Aggregate, 5% in the Bloomberg 1-3m Treasury, 5% in the Bloomberg Global High Yield Index, 5% in the Bloomberg Commodity Index and 5% in the NAREIT Equity REIT Index. Balanced portfolio assumes annual rebalancing. Annualized (Ann.) return and volatility (Vol.) represents period from 12/31/2006 to 12/31/2021. Please see disclosure page at end for index definitions. All data represents total return for stated period. The "Asset Allocation" portfolio is for illustrative purposes only. Past performance is not indicative of future returns.

Guide to the Markets - U.S. Data are as of September 30, 2022.

Market Returns as of September 30, 2022

Asset Class	1 Month	Qtr	YTD	Annualized				Calendar Years				
				1 Yr	3 Yr	5 Yr	10 Yr	2021	2020	2019	2018	2017
S&P 500	-9.21	-4.88	-23.87	-15.47	8.16	9.24	11.70	28.71	18.40	31.49	-4.38	21.83
Dow Jones Ind. Avg.	-8.76	-6.17	-19.72	-13.40	4.36	7.42	10.45	20.95	9.72	25.34	-3.48	28.11
NASDAQ Composite	-10.44	-3.91	-32.00	-26.25	10.63	11.25	14.22	22.18	44.92	36.69	-2.84	29.64
Large Cap Stocks	-9.25	-4.61	-24.59	-17.22	7.95	9.00	11.60	26.45	20.96	31.43	-4.78	21.69
Large Cap Growth Stocks	-9.72	-3.60	-30.66	-22.59	10.67	12.17	13.70	27.60	38.49	36.39	-1.51	30.21
Large Cap Value Stocks	-8.77	-5.62	-17.75	-11.36	4.36	5.29	9.17	25.16	2.80	26.54	-8.27	13.66
Mid Cap Stocks	-9.27	-3.44	-24.27	-19.39	5.19	6.48	10.30	22.58	17.10	30.54	-9.06	18.52
Mid Cap Growth Stocks	-8.49	-0.65	-31.45	-29.50	4.26	7.62	10.85	12.73	35.59	35.47	-4.75	25.27
Mid Cap Value Stocks	-9.70	-4.93	-20.36	-13.56	4.50	4.76	9.44	28.34	4.96	27.06	-12.29	13.34
Small Cap Stocks	-9.58	-2.19	-25.10	-23.50	4.29	3.55	8.55	14.82	19.96	25.52	-11.01	14.65
Small Cap Growth Stocks	-9.00	0.24	-29.28	-29.27	2.94	3.60	8.81	2.83	34.63	28.48	-9.31	22.17
Small Cap Value Stocks	-10.19	-4.61	-21.12	-17.69	4.72	2.87	7.94	28.27	4.63	22.39	-12.86	7.84
International Stocks	-9.35	-9.36	-27.09	-25.13	-1.83	-0.84	3.67	11.26	7.82	22.01	-13.79	25.03
Emerging Markets	-11.72	-11.57	-27.16	-28.11	-2.07	-1.81	1.05	-2.54	18.31	18.44	-14.58	37.28
US Real Estate	-12.67	-10.41	-28.35	-17.90	-1.67	3.66	6.40	38.99	-5.29	28.92	-4.03	9.84
Commodities	-8.11	-4.11	13.57	11.80	13.45	6.96	-2.14	27.11	-3.12	7.69	-11.25	1.70
Bonds (US Aggregate)	-4.32	-4.75	-14.61	-14.60	-3.26	-0.27	0.89	-1.54	7.51	8.72	0.01	3.54
3 month T-Bill	0.25	0.46	0.61	0.62	0.59	1.15	0.68	0.05	0.67	2.28	1.87	0.86

Source: Morningstar Direct

Index definitions & disclosures

All indexes are unmanaged and an individual cannot invest directly in an index. Index returns do not include fees and expenses.

Domestic Equity Indexes:

- The Russell 1000 Index® measures the performance of the 1,000 largest companies in the Russell 3000.
- The Russell 1000 Growth Index® measures the performance of those Russell 1000 companies with higher price-to-book ratios and higher forecasted growth values.
- The Russell 1000 Value Index® measures the performance of those Russell 1000 companies with lower price-to-book ratios and lower forecasted growth values.
- The Russell 2000 Index® measures the performance of the 2,000 smallest companies in the Russell 3000 Index.
- The Russell 2000 Growth Index® measures the performance of those Russell 2000 companies with higher price-to-book ratios and higher forecasted growth values.
- The Russell 2000 Value Index® measures the performance of those Russell 2000 companies with lower price-to-book ratios and lower forecasted growth values.
- The Russell 3000 Index® measures the performance of the 3,000 largest U.S. companies based on total market capitalization.
- The Russell Midcap Index® measures the performance of the 800 smallest companies in the Russell 1000 Index.
- The Russell Midcap Growth Index® measures the performance of those Russell Midcap companies with higher price-to-book ratios and higher forecasted growth values. The stocks are also members of the Russell 1000 Growth index.
- The Russell Midcap Value Index® measures the performance of those Russell Midcap companies with lower price-to-book ratios and lower forecasted growth values. The stocks are also members of the Russell 1000 Value index.
- The S&P 500 Index is widely regarded as the best single gauge of the U.S. equities market. The index includes a representative sample of 500 leading companies in leading industries of the U.S. economy. The S&P 500 Index focuses on the large-cap segment of the market; however, since it includes a significant portion of the total value of the market, it also represents the market.
- The Dow Jones Industrial Average is a price-weighted average of 30 actively traded blue-chip U.S. stocks.

International Equity Indexes:

- The MSCI EAFE Index(Europe, Australasia, Far East)is a free float-adjusted market capitalization index that is designed to measure the equity market performance of developed markets, excluding the US & Canada.
- The MSCI Emerging Markets Index is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets.

Fixed Income Indexes:

- The Bloomberg 1-3 Month U.S. Treasury Bill Index includes all publicly issued zero-coupon US Treasury Bills that have a remaining maturity of less than 3 months and more than 1 month, are rated investment grade, and have \$250 million or more of outstanding face value. In addition, the securities must be denominated in U.S. dollars and must be fixed rate and non convertible.
- The Bloomberg Global High Yield Index is a multi-currency flagship measure of the global high yield debt market. The index represents the union of the US High Yield, the Pan-European High Yield, and Emerging Markets (EM) Hard Currency High Yield Indices. The high yield and emerging markets sub-components are mutually exclusive. Until January 1, 2011, the index also included CMBS high yield securities.
- The Bloomberg Municipal Index: consists of a broad selection of investment-grade general obligation and revenue bonds of maturities ranging from one year to 30 years. It is an unmanaged index representative of the tax-exempt bond market.
- The Bloomberg US Dollar Floating Rate Note (FRN) Index provides a measure of the U.S. dollar denominated floating rate note market.
- The Bloomberg US Corporate Investment Grade Index is an unmanaged index consisting of publicly issued US Corporate and specified foreign debentures and secured notes that are rated investment grade (Baa3/BBB or higher) by at least two ratings agencies, have at least one year to final maturity and have at least \$250 million par amount outstanding. To qualify, bonds must be SEC-registered.
- The Bloomberg US High Yield Index covers the universe of fixed rate, non-investment grade debt. Eurobonds and debt issues from countries designated as emerging markets (sovereign rating of Baa1/BBB+/BBB+ and below using the middle of Moody's, S&P, and Fitch) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included.
- The Bloomberg US Mortgage Backed Securities Index is an unmanaged index that measures the performance of investment grade fixed-rate mortgage backed pass-through securities of GNMA, FNMA and FHLMC.
- The Bloomberg US TIPS Index consists of Inflation-Protection securities issued by the U.S. Treasury.

Commodities & Real Estate Indexes:

- The Bloomberg Commodity Index and related sub-indices are composed of futures contracts on physical commodities and represents twenty two separate commodities traded on U.S. exchanges, with the exception of aluminum, nickel, and zinc
- The NAREIT EQUITY REIT Index is designed to provide the most comprehensive assessment of overall industry performance, and includes all tax-qualified real estate investment trusts (REITs) that are listed on the NYSE, the American Stock Exchange or the NASDAQ National Market List.

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SOURCES: Morningstar, S&P, FRB, BLS, JP Morgan, Russell, NBER, Marketwatch.com and Goldman Sachs among others noted on individual slides.