APOLLON

Market Insights

November 2022

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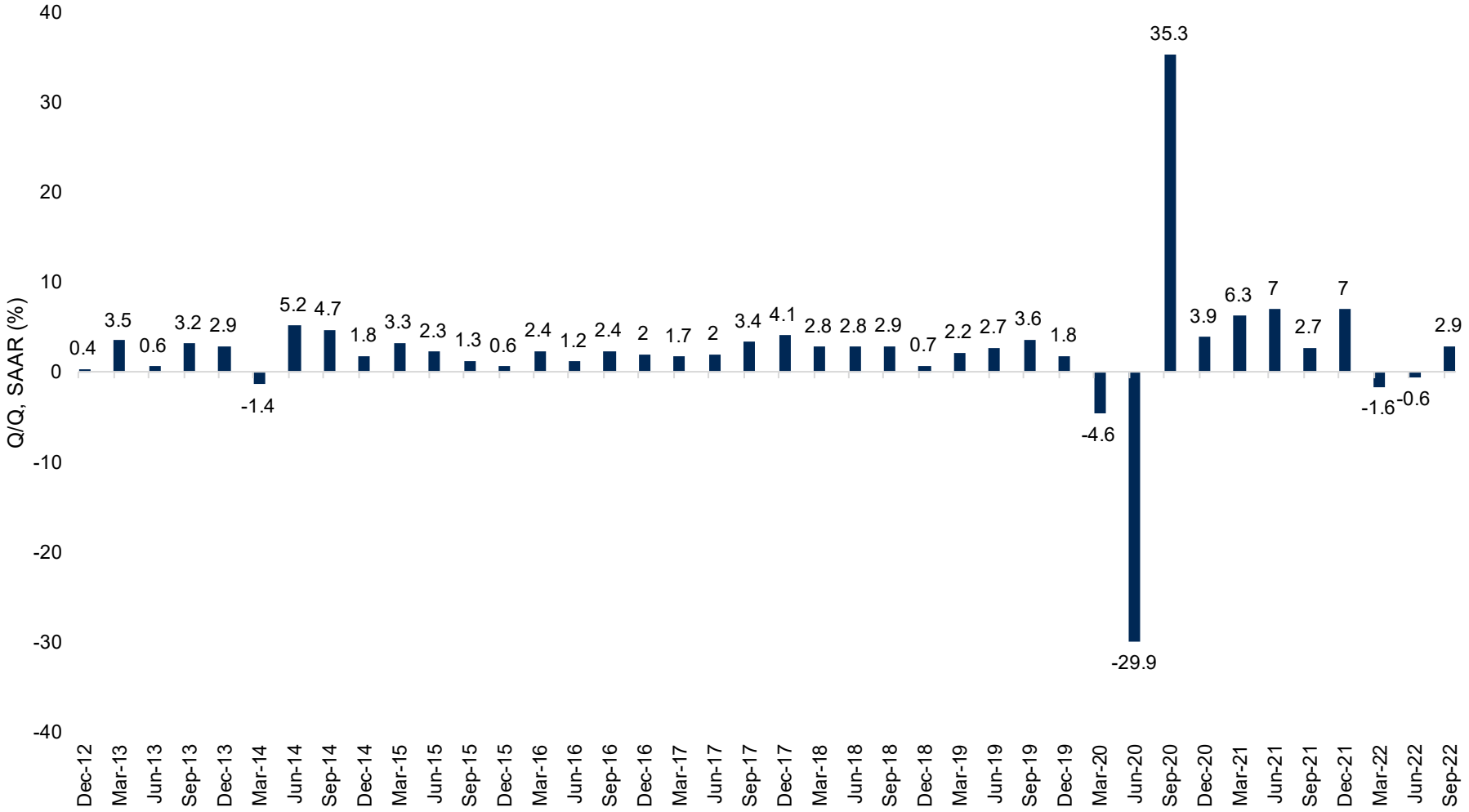
Macro

Economic Growth

U.S. Real GDP Growth

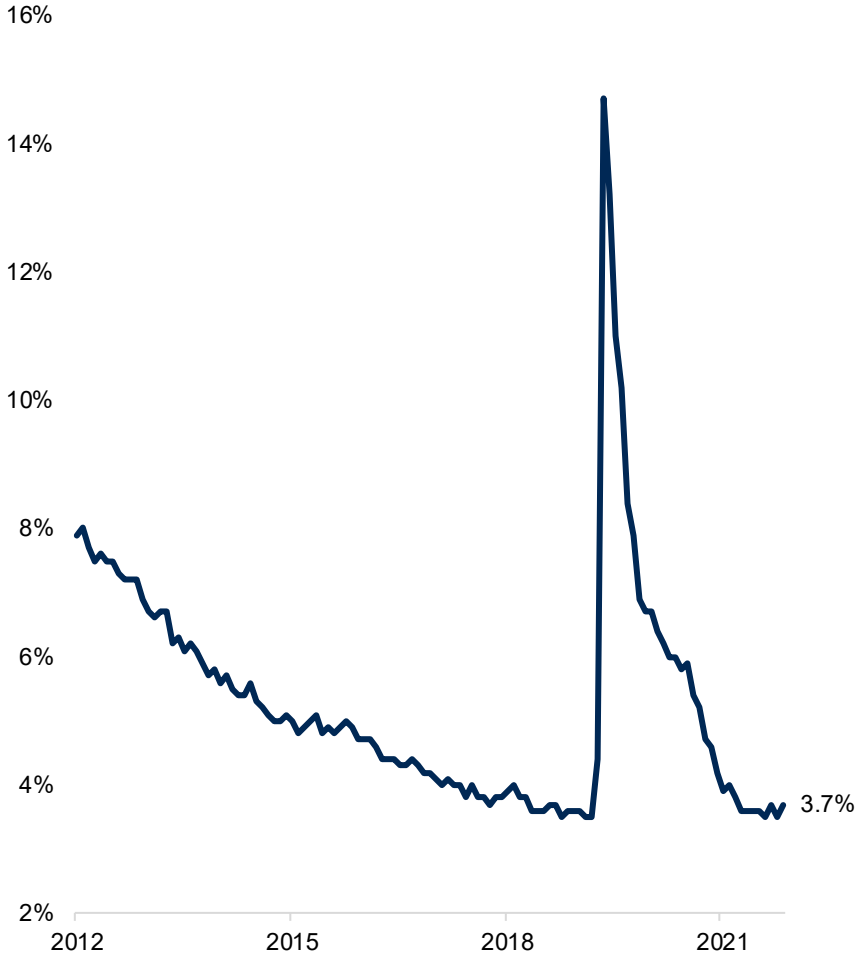


Sources: FactSet, BEA. As of September 30, 2022.

See disclosures for list of indices representing each asset class. Past performance does not indicate future performance and there is a possibility of a loss.

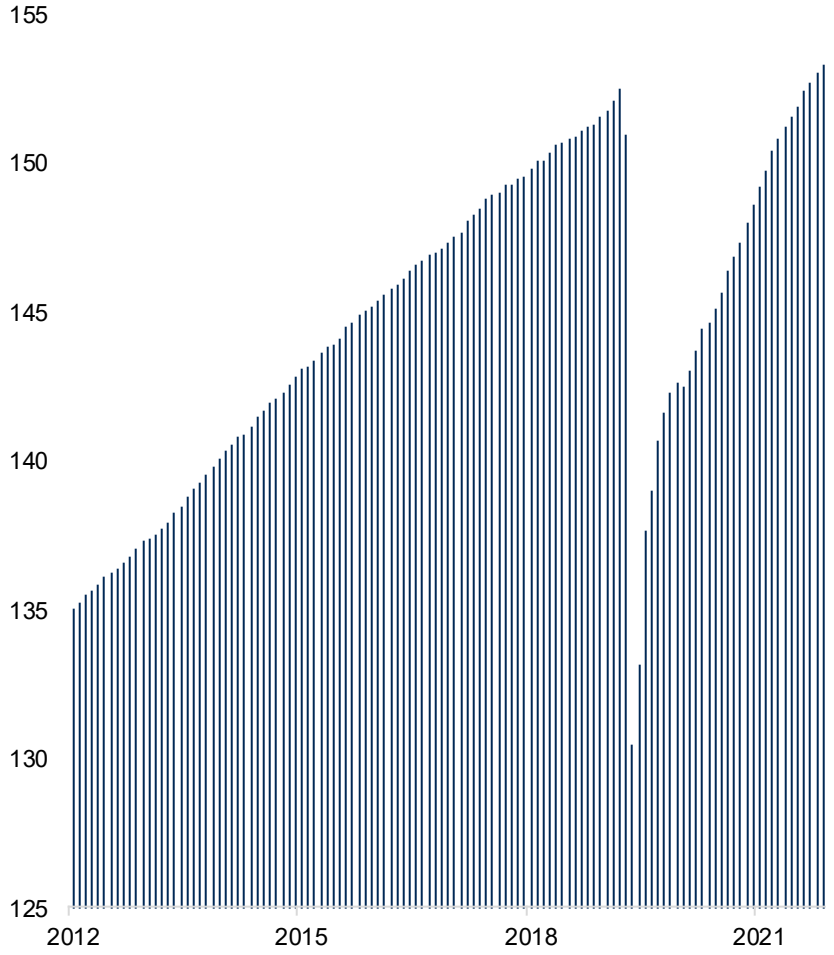
U.S. Labor Market

U.S. Unemployment Rate (Seasonally Adj.)



Sources: FactSet, DOL. As of October 31, 2022.

Total Non-Farm Payrolls (Millions, Seasonally Adj.)



Sources: FactSet, DOL. As of October 31, 2022.

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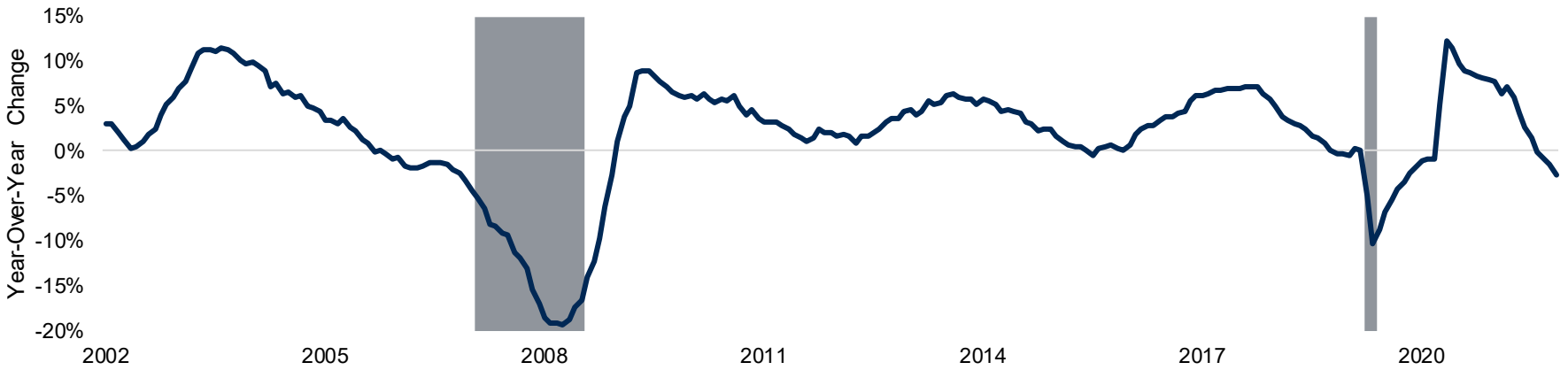
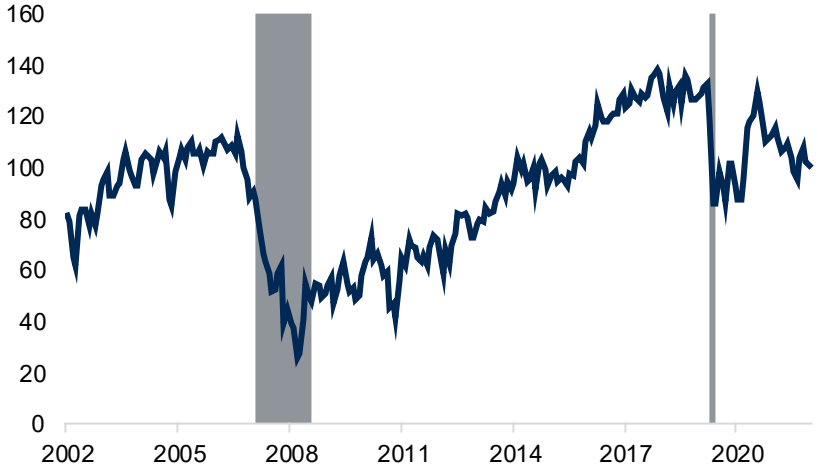
U.S. Economic Indicators

U.S. Leading Economic Indicator Index



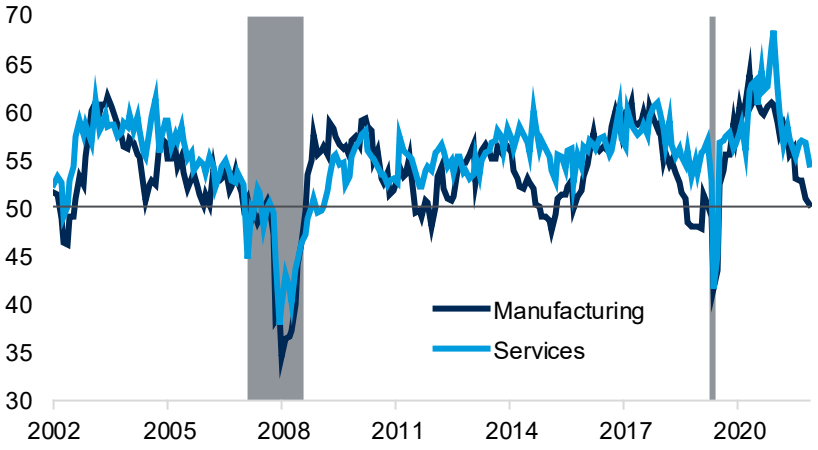
Sources: FactSet, Conference Board, ECRI. As of October 31, 2022. Grey bars indicate recession period.

U.S. Consumer Confidence



Sources: FactSet, Conference Board, ECRI. As of November 30, 2022. Grey bars indicate recession period.

U.S. ISM PMI Levels



Sources: FactSet, ISM, ECRI. As of October 31, 2022. Grey bars indicate recession period. A level over 50 indicates expansion.

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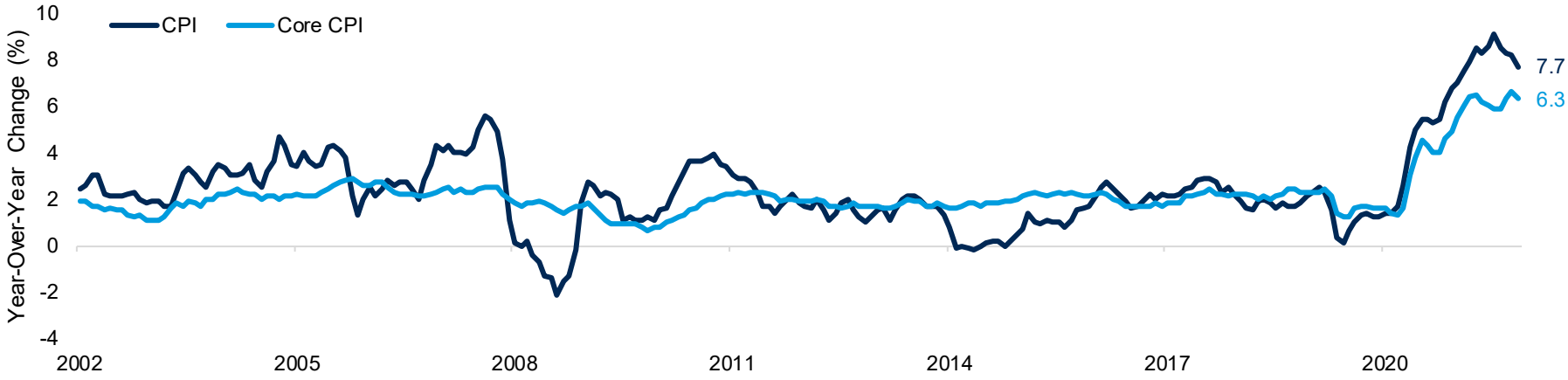
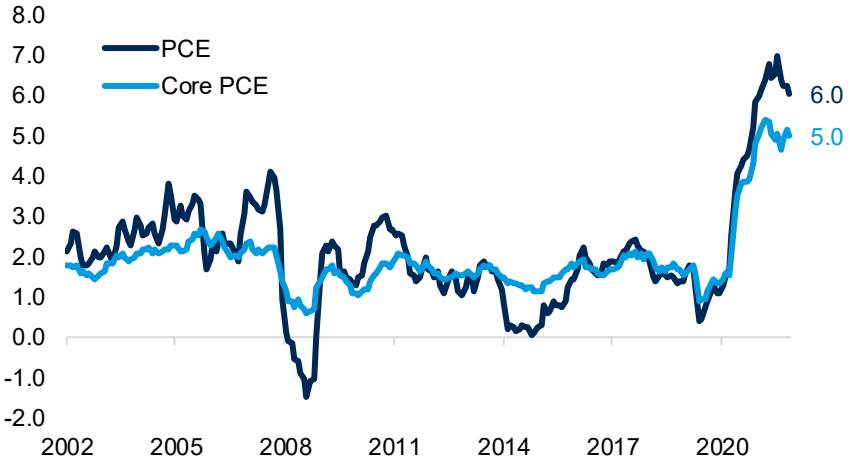
U.S. Inflation

U.S. Consumer Price Index



Sources: FactSet, BLS. As of October 31, 2022.

U.S. PCE Index



Sources: FactSet, BEA. As of October 31, 2022.

U.S. Breakeven Inflation

Sources: FactSet, Federal Reserve. As of November 30, 2022.

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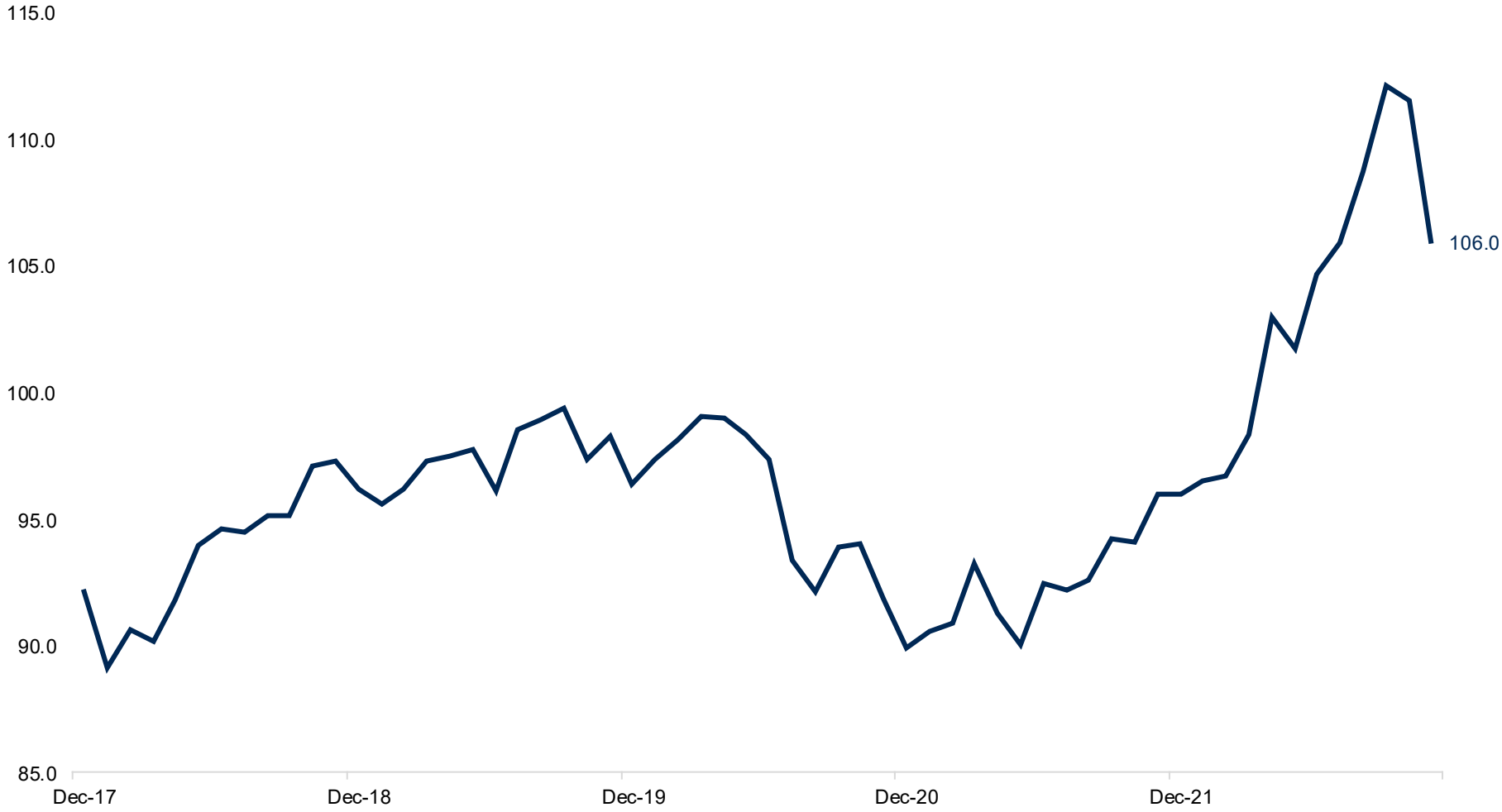
U.S. Dollar

U.S. Dollar Index (DXY) - Last 5 Years



Source: FactSet. As of November 30, 2022.

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Fixed Income

Fixed Income Performance and Yields

Trailing Returns	MTD	QTD	YTD	1Yr
Bloomberg US Agg Bond	3.7%	2.3%	-12.6%	-12.8%
Bloomberg Gbl Agg Ex USD	5.6%	5.4%	-19.7%	-19.8%
Bloomberg US Corporate High Yield	2.2%	4.8%	-10.6%	-9.0%
Bloomberg US Govt/Credit 1-3 Yr	0.8%	0.7%	-3.9%	-4.0%
Bloomberg US Govt/Credit Long	8.1%	4.0%	-26.1%	-26.7%
Bloomberg US Treasury TIPS	1.8%	3.1%	-10.9%	-10.7%
Bloomberg Municipal	4.7%	3.8%	-8.8%	-8.6%
Bloomberg HY Muni	5.8%	3.7%	-13.0%	-12.7%
JPM GBI-EM Global Diversified	7.1%	6.2%	-13.6%	-12.2%

Source: Morningstar Direct. As of November 30, 2022. Returns are total return in USD. Annualized greater than one year.

Index Yields and Durations	Yield to Worst				Duration (years)			
	11/30/2022	10/31/2022	12/31/2021	11/30/2021	11/30/2022	10/31/2022	12/31/2021	11/30/2021
Bloomberg US T-Bills (1-3M)	4.1%	3.8%	0.0%	0.0%	0.2	0.2	0.2	0.2
Bloomberg US Gov/Credit (1-3Yr)	4.6%	4.8%	0.8%	0.7%	1.9	1.9	1.9	1.9
Blomberg US Inter Gov/Credit	4.5%	4.8%	1.3%	1.2%	3.9	3.8	4.1	4.2
Bloomberg US Agg	4.6%	5.0%	1.8%	1.7%	6.2	6.1	6.8	6.8
Bloomberg US Gov/Credit Long	4.8%	5.3%	2.6%	2.5%	14.5	14.0	16.5	16.6
Bloomberg US Treasury	4.1%	4.4%	1.2%	1.1%	6.2	5.9	7.1	7.2
Bloomberg US Corporate IG	5.3%	5.9%	2.3%	2.3%	7.2	7.0	8.7	8.7
Bloomberg US Corporate HY	8.6%	9.1%	4.2%	4.8%	3.9	4.0	3.8	4.1
Bloomberg Municipal	3.6%	4.2%	1.1%	1.1%	6.2	7.3	5.1	5.1
Bloomberg Municipal HY	5.8%	6.3%	3.1%	3.1%	7.8	10.7	6.5	6.1
JP Morgan GBI EM Global Diversified*	6.9%	7.4%	5.7%	5.7%	4.9	4.8	5.2	5.2
Bloomberg Global Agg	3.5%	3.8%	1.3%	1.2%	6.8	6.7	7.5	7.6
Bloomberg Global Agg ex USD	2.6%	2.7%	0.9%	0.8%	7.4	7.3	8.2	8.3
Bloomberg US TIPS	4.3%	4.6%	1.3%	1.3%	5.0	5.5	4.4	5.0

*Source: FactSet. As of November 30, 2022. *Yield to Maturity.*

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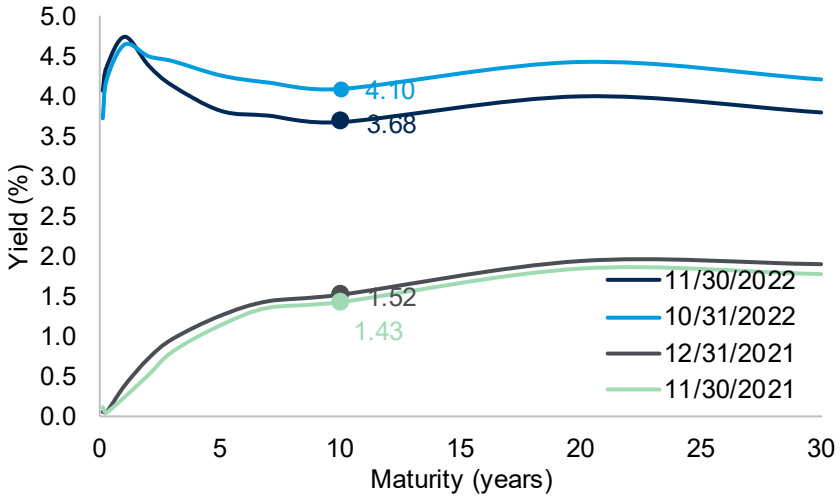
U.S. Treasury Market

U.S. Treasury Yield Curve



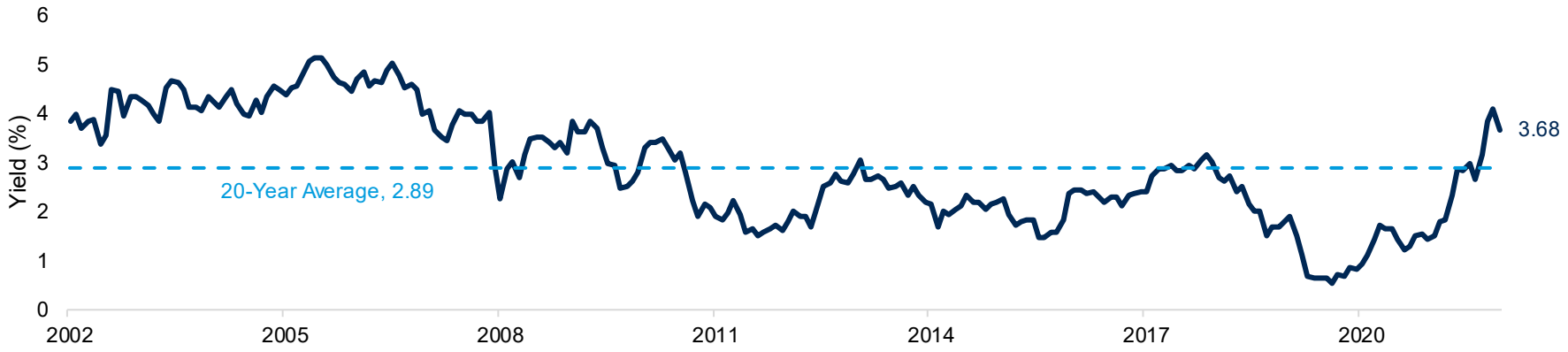
Source: FactSet. As of November 30, 2022.

Treasury Curve Levels (%) and Change (bps)

	3m	1y	2y	5y	10y	2-10 Spread
11/30/2022	*4.37%*	*4.74%*	*4.38%*	*3.82%*	*3.68%*	*-0.70%*
MTD Change	15	8	-13	-45	-42	-29
YTD Change	431	435	365	256	216	-149
1-Year Change	432	450	386	268	225	-161

Source: FactSet. As of November 30, 2022.

U.S. 10-Year Treaury Yield



Source: FactSet. As of November 30, 2022.

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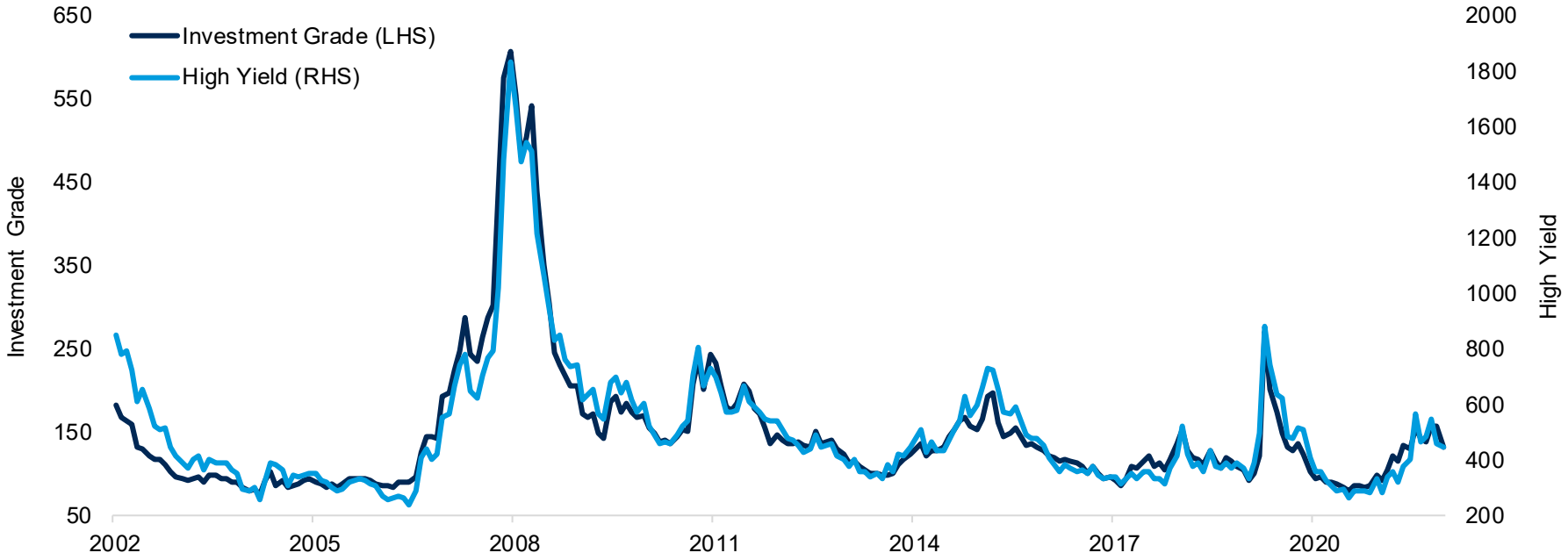
U.S. Corporate Bond Spreads

Bloomberg Corporate Bond Index Spreads (bps)



Sources: FactSet, Bloomberg. As of November 30, 2022.

Option Adjusted Spread (bps)	11/30/2022	10/31/2022	12/31/2021	11/30/2021	10Y Avg	20Y Avg
Bloomberg U.S. Corp IG	133	158	92	99	125	149
Bloomberg U.S. Corp HY	448	464	283	337	431	507

Sources: FactSet, Bloomberg. As of November 30, 2022.

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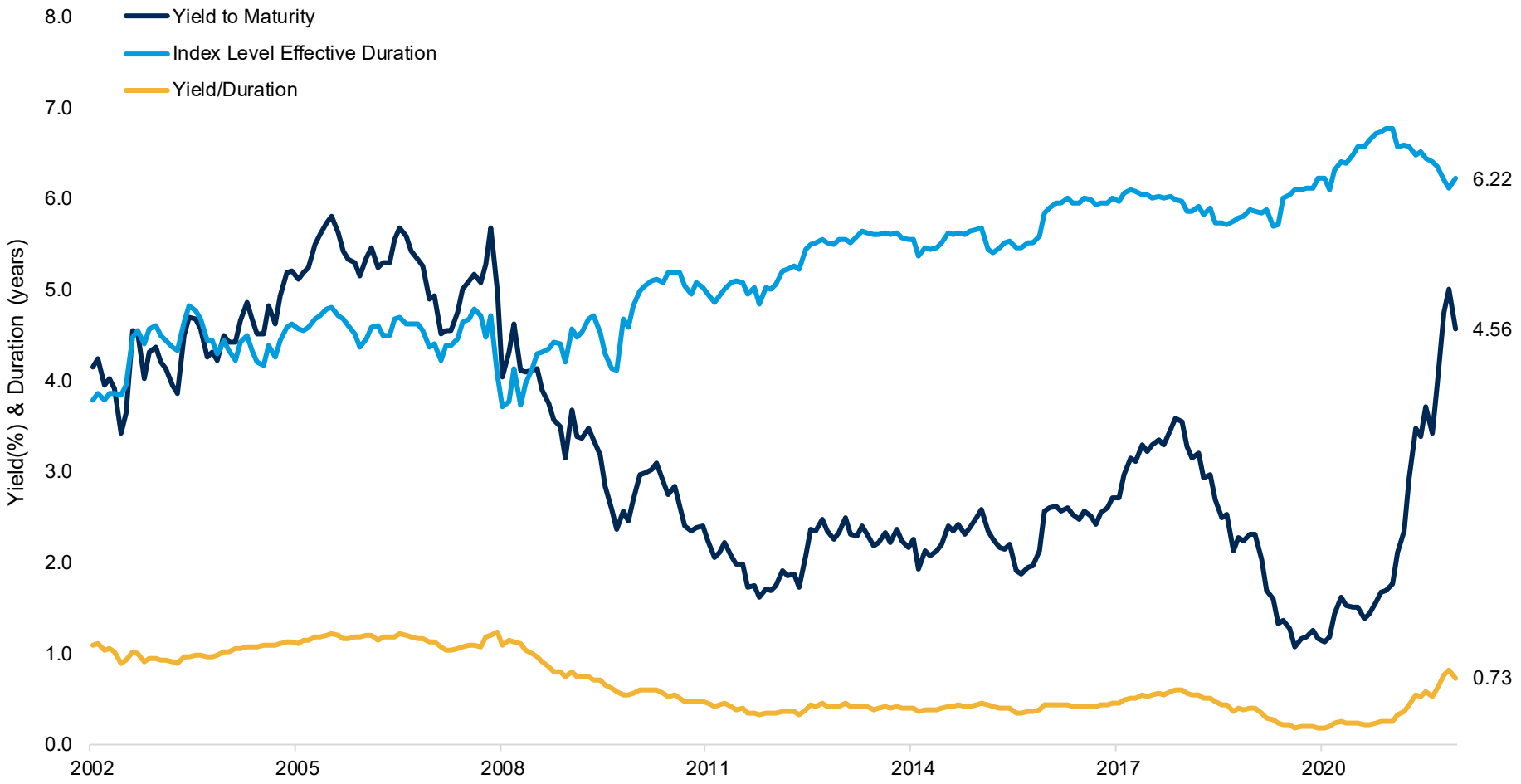
Bloomberg U.S. Aggregate Yield & Duration Profile

Bloomberg US Aggregate Bond Yield and Duration



Sources: FactSet, Bloomberg. As of November 30, 2022.

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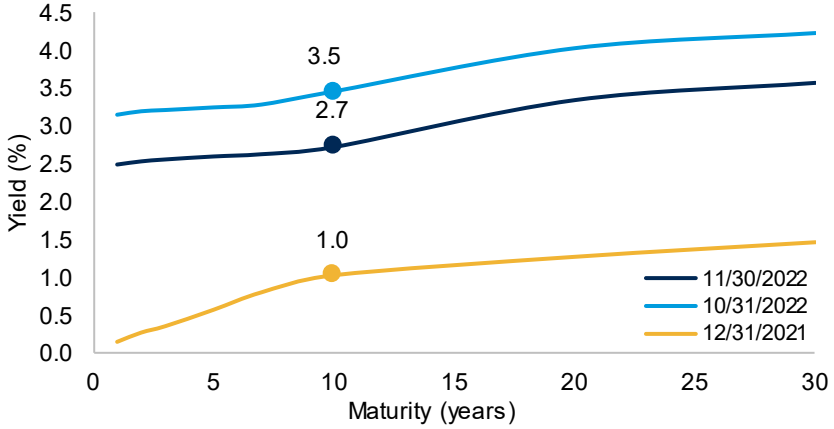
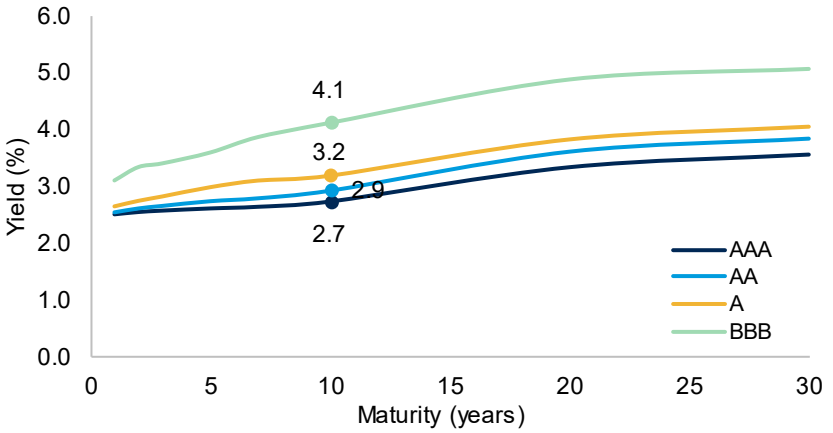
Municipal Bond Market

S&P AAA Muni Yield Curve



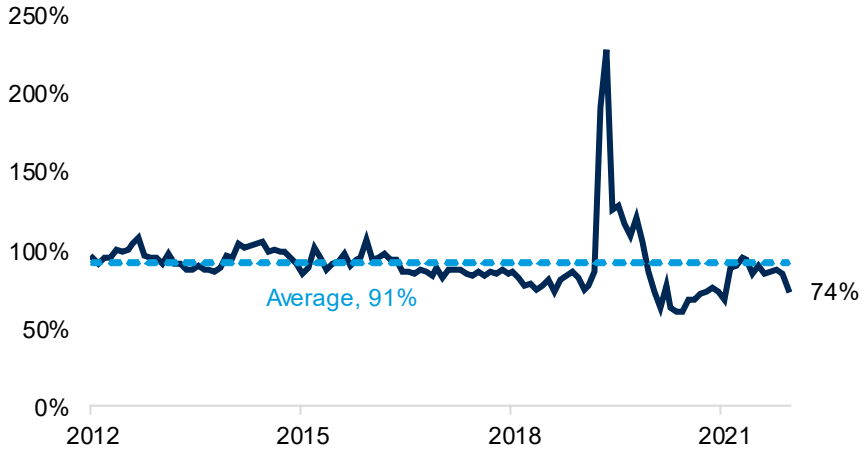
Sources: FactSet, S&P. As of November 30, 2022.

S&P U.S. Muni Curves



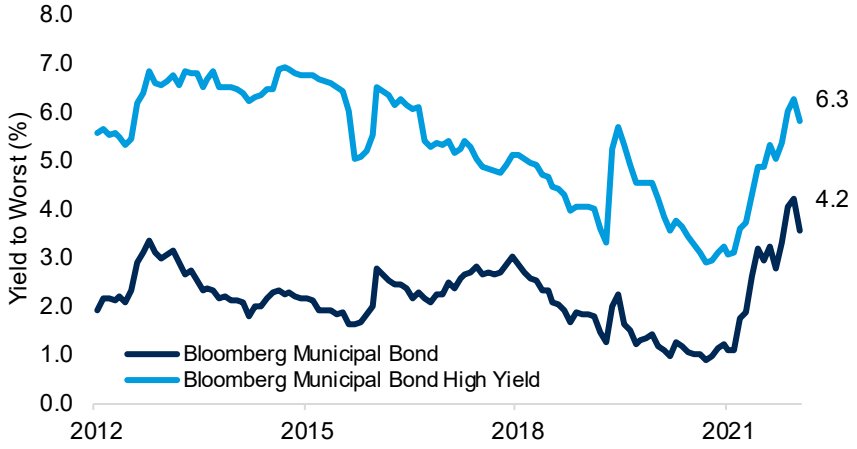
Sources: FactSet, S&P. As of November 30, 2022.

10-Year Muni/Treasury Yield Ratio



Source: FactSet. As of November 30, 2022.

Municipal Bond Yields



Sources: FactSet, Bloomberg. As of November 30, 2022.

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More Favorable Long-term Return Outlook for Fixed Income

Treasury Yields and Subsequent Fixed Income Performance

Sources: FactSet, Morningstar Direct, Fiducient Advisors. For the period January 1, 1976 to November 30, 2022.

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U.S. Equity

Domestic Equity Index Returns

Domestic (Russell)

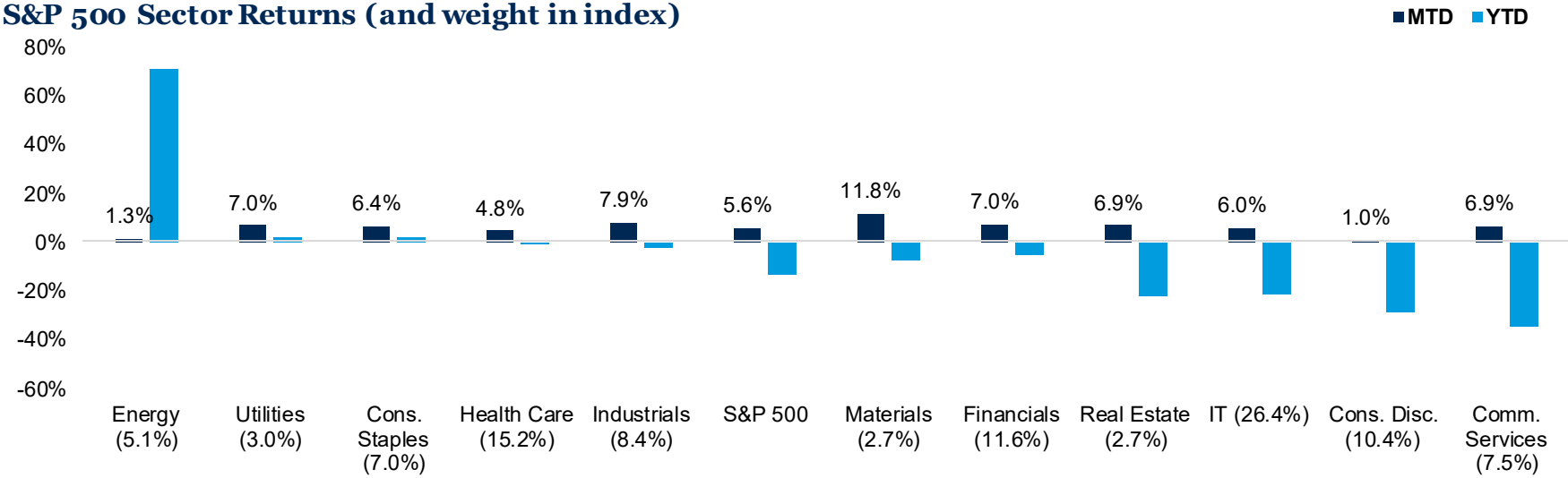
	MTD			YTD		
	Value	Blend	Growth	Value	Blend	Growth
Lrg	6.2%	5.4%	4.6%	-3.7%	-14.1%	-23.3%
Mid	6.3%	6.0%	5.4%	-7.3%	-12.6%	-22.0%
Sml	3.1%	2.3%	1.6%	-8.5%	-14.9%	-21.3%

Source: Morningstar Direct. As of November 30, 2022.

Factor Returns	MTD	QTD	YTD	1Yr
Earnings Yield	5.4%	14.2%	-15.6%	-11.7%
Low Leverage	4.8%	12.5%	-13.5%	-10.2%
Low Volatility	5.1%	11.8%	-9.6%	-4.5%
Momentum	3.8%	11.6%	-15.1%	-14.0%
Value	5.0%	13.0%	-16.3%	-12.9%

Source: Morningstar Direct. As of November 30, 2022.

S&P 500 Sector Returns (and weight in index)



Sources: FactSet, Morningstar Direct. As of November 30, 2022.

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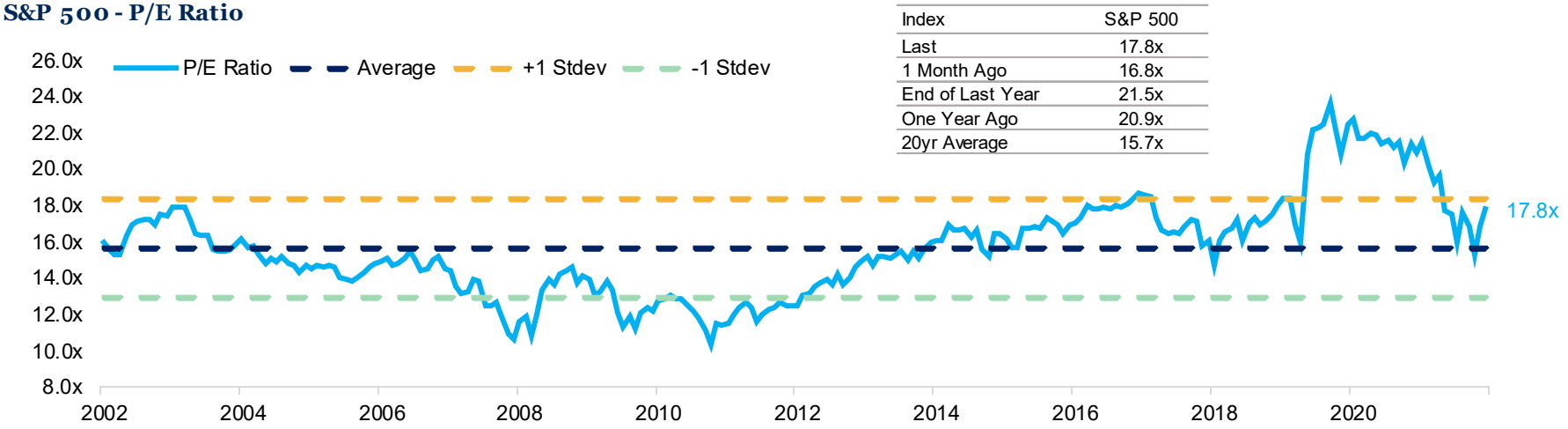
Domestic Equity – P/E Ratios

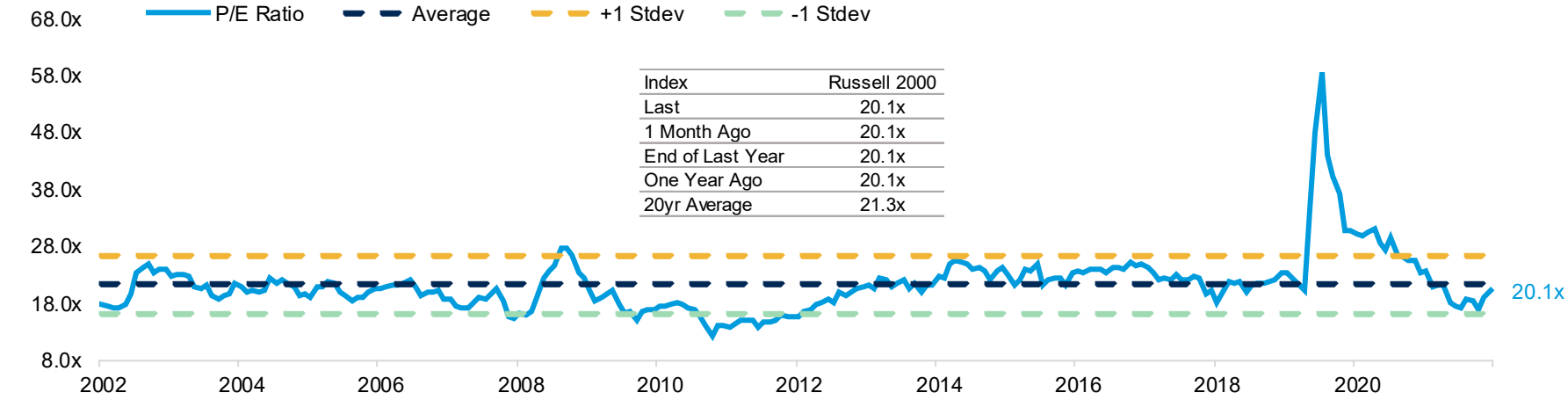
S&P 500 - P/E Ratio



Index	S&P 500
Last	17.8x
1 Month Ago	16.8x
End of Last Year	21.5x
One Year Ago	20.9x
20yr Average	15.7x

Sources: FactSet, Fiducient Advisors analysis (November 30, 2002 - November 30, 2022).

Russell 2000 - P/E Ratio

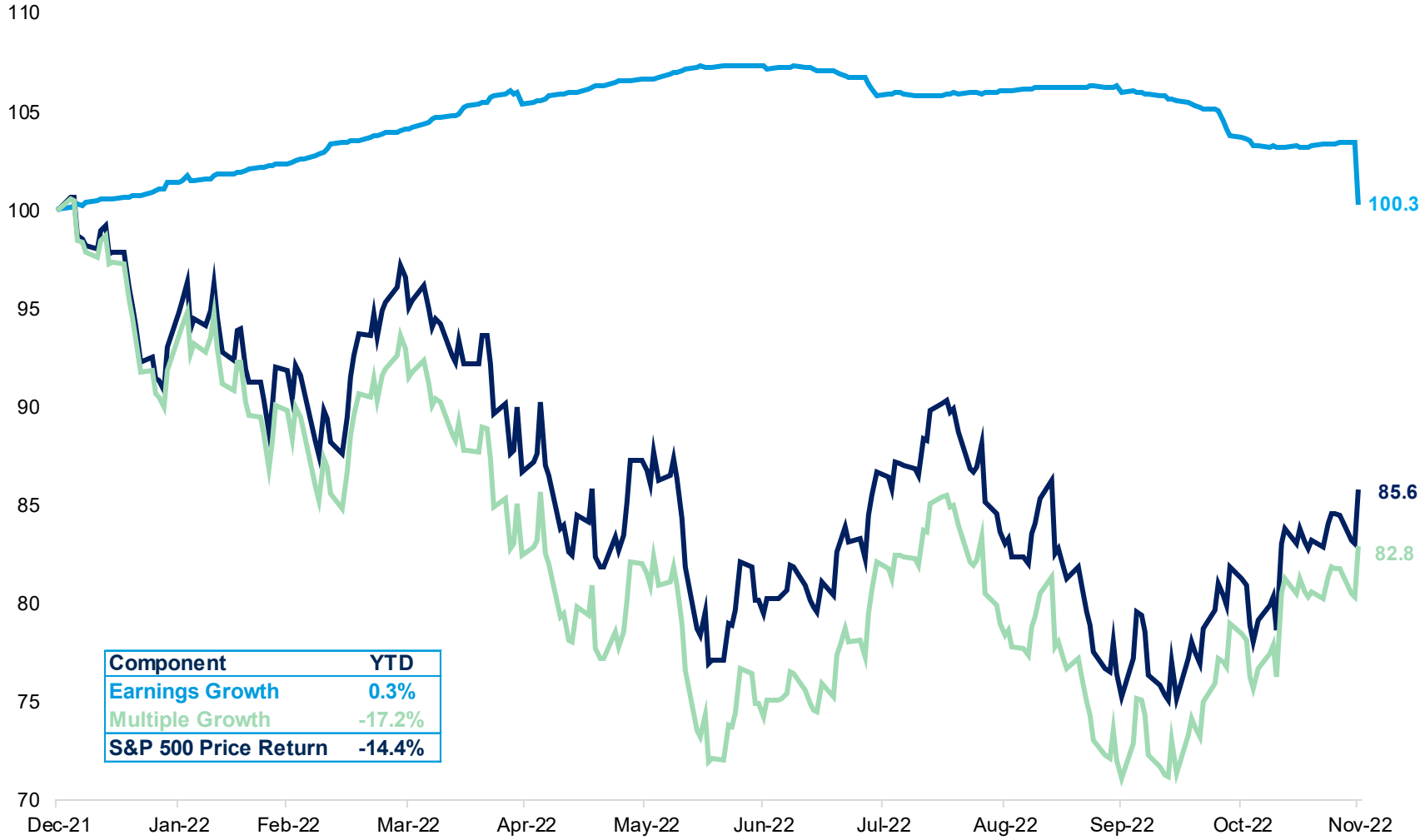


Index	Russell 2000
Last	20.1x
1 Month Ago	20.1x
End of Last Year	20.1x
One Year Ago	20.1x
20yr Average	21.3x

Sources: FactSet, Fiducient Advisors analysis (November 30, 2002 - November 30, 2022).

The Power of Earnings

S&P 500 Earnings Decomposition



Source: FactSet, Fiducient Advisors analysis. As of November 30, 2022. December 31, 2021 = 100.

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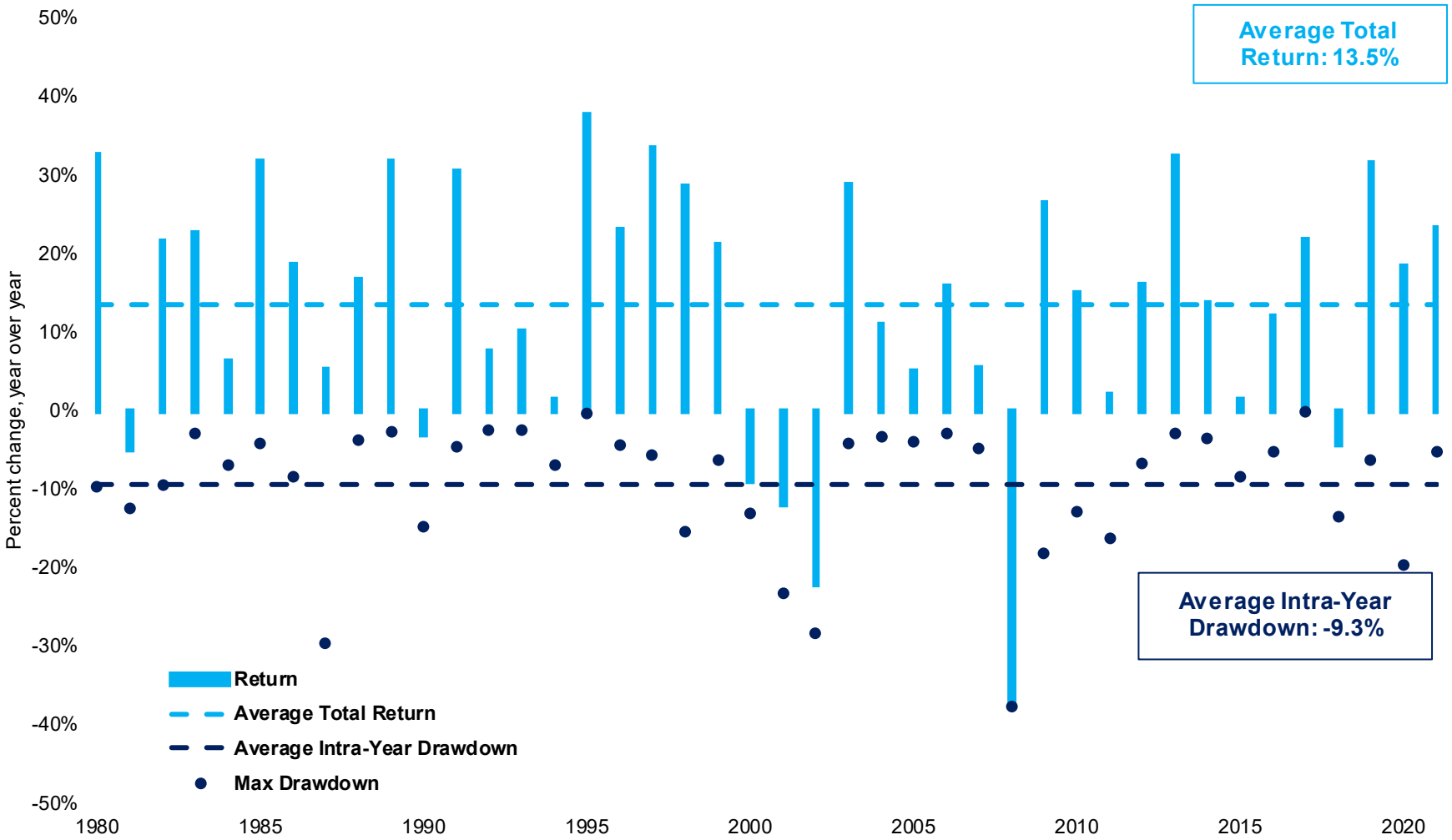
Volatility Is Not Inherently Evil

S&P 500 Annual Returns and Intra-Year Drawdowns



Source: Morningstar Direct, Fiducient Advisors Analysis (January 1, 1980 - December 31, 2021).

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International Equity

International Performance

International Developed (MSCI EAFE)

MTD	Value	Blend	Growth
Lrg	11.2%	11.5%	11.8%
Mid	10.2%	10.4%	10.6%
Sml	9.8%	9.9%	10.0%

YTD	Value	Blend	Growth
Lrg	-4.8%	-12.9%	-20.7%
Mid	-14.1%	-20.5%	-26.8%
Sml	-16.7%	-22.2%	-27.7%

Source: Morningstar Direct. As of November 30, 2022.

International (MSCI ACWI ex USA)

MTD	Value	Blend	Growth
Lrg	11.3%	12.2%	13.1%
Mid	10.6%	10.2%	9.8%
Sml	9.4%	9.6%	9.7%

YTD	Value	Blend	Growth
Lrg	-7.5%	-14.5%	-21.3%
Mid	-13.4%	-18.8%	-24.0%
Sml	-14.5%	-20.1%	-25.6%

Source: Morningstar Direct. As of November 30, 2022.

Emerging Markets (MSCI EM)

MTD	Value	Blend	Growth
Lrg	13.7%	15.6%	17.4%
Mid	12.5%	11.1%	9.4%
Sml	9.0%	9.4%	9.8%

YTD	Value	Blend	Growth
Lrg	-15.0%	-19.6%	-23.6%
Mid	-12.4%	-15.6%	-19.1%
Sml	-12.3%	-17.2%	-21.8%

Source: Morningstar Direct. As of November 30, 2022.

G10	MTD	QTD	YTD	1Yr
Belgium	9.6%	18.5%	-15.4%	-10.1%
Canada	6.1%	13.0%	-8.4%	-4.0%
France	11.8%	22.4%	-13.2%	-7.0%
Germany	14.0%	24.6%	-22.3%	-18.0%
Italy	13.6%	26.4%	-14.4%	-8.1%
Japan	9.7%	12.9%	-16.9%	-15.3%
Netherlands	17.3%	24.2%	-25.8%	-23.6%
Sweden	11.0%	18.6%	-28.1%	-23.1%
Switzerland	7.9%	11.2%	-17.7%	-11.3%
UK	10.8%	17.4%	-4.5%	2.5%
USA	5.4%	13.7%	-14.8%	-11.5%

Source: Morningstar Direct. As of November 30, 2022.

Emerging Markets	MTD	QTD	YTD	1Yr
Brazil	-2.9%	5.5%	17.6%	22.8%
China	29.7%	7.9%	-25.8%	-28.1%
India	5.2%	7.9%	-2.6%	1.0%
Mexico	6.0%	20.7%	5.1%	18.9%
South Korea	14.9%	24.5%	-25.5%	-20.8%

Source: Morningstar Direct. As of November 30, 2022.

Indices	MTD	QTD	YTD	1Yr
ACWI ex USA	11.8%	15.1%	-15.4%	-11.9%
EAFE	11.3%	17.2%	-14.5%	-10.1%
EM	14.8%	11.3%	-19.0%	-17.4%

Source: Morningstar Direct. As of November 30, 2022.

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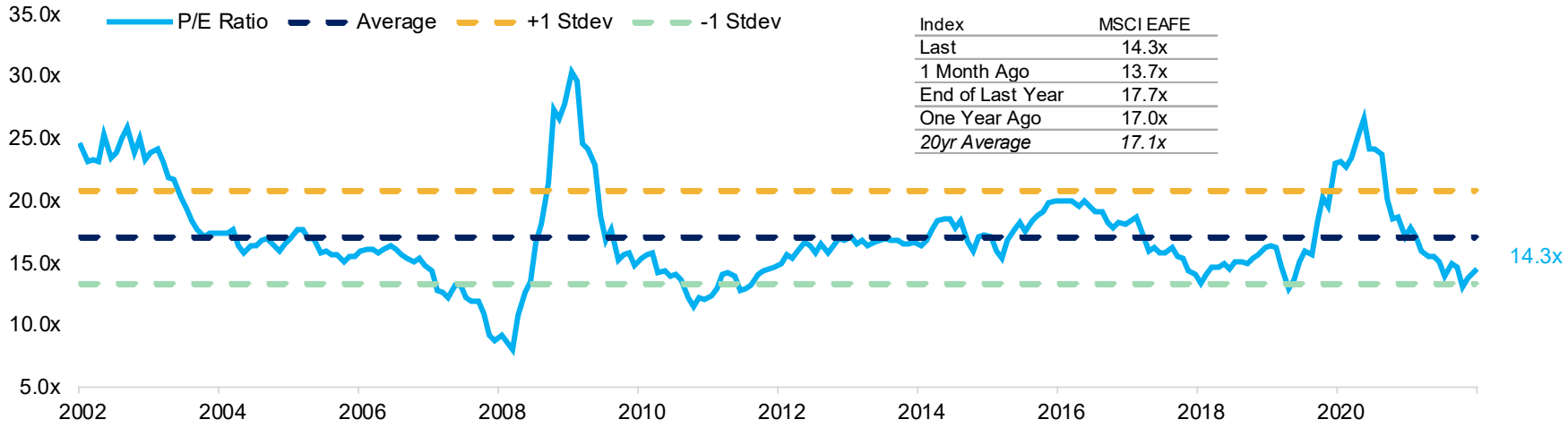
International Developed

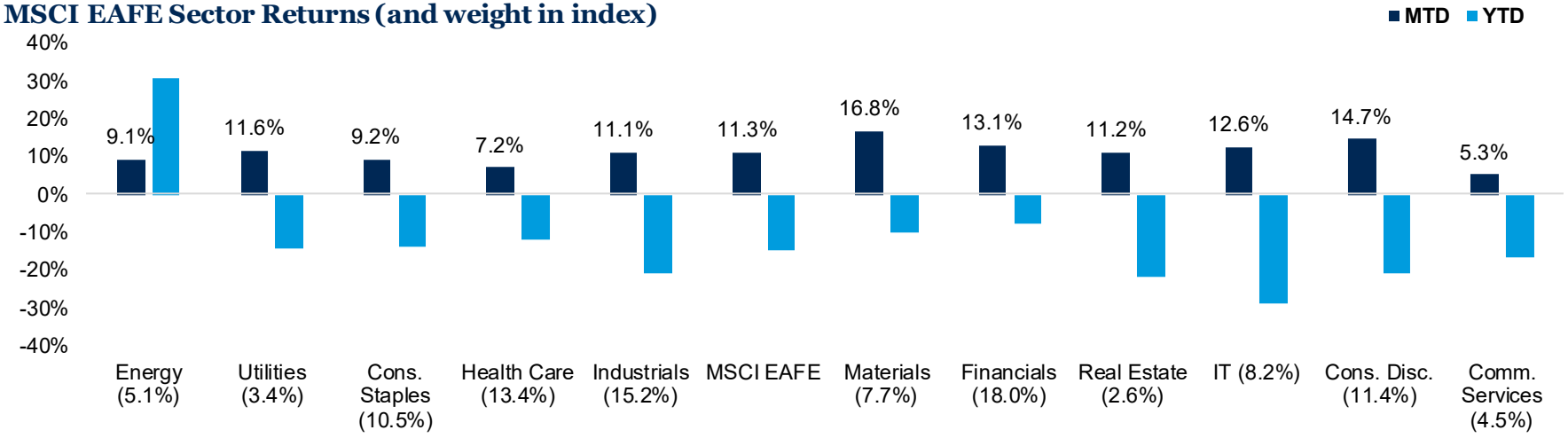
MSCI EAFE - P/E Ratio



Index	MSCI EAFE
Last	14.3x
1 Month Ago	13.7x
End of Last Year	17.7x
One Year Ago	17.0x
20yr Average	*17.1x*

Sources: FactSet, Fiducient Advisors analysis (November 30, 2002 - November 30, 2022).

MSCI EAFE Sector Returns (and weight in index)



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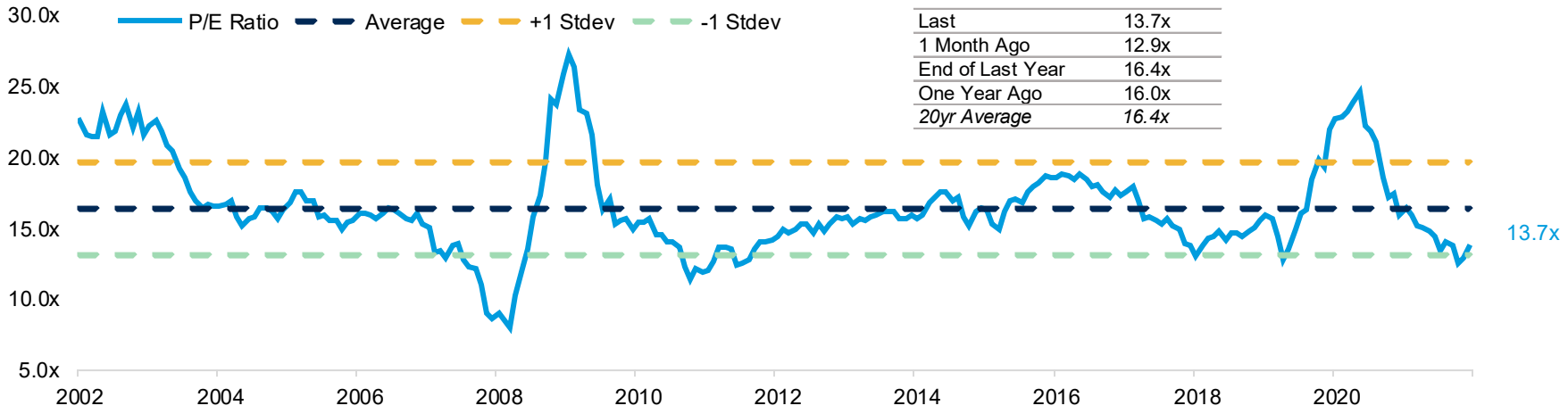
International

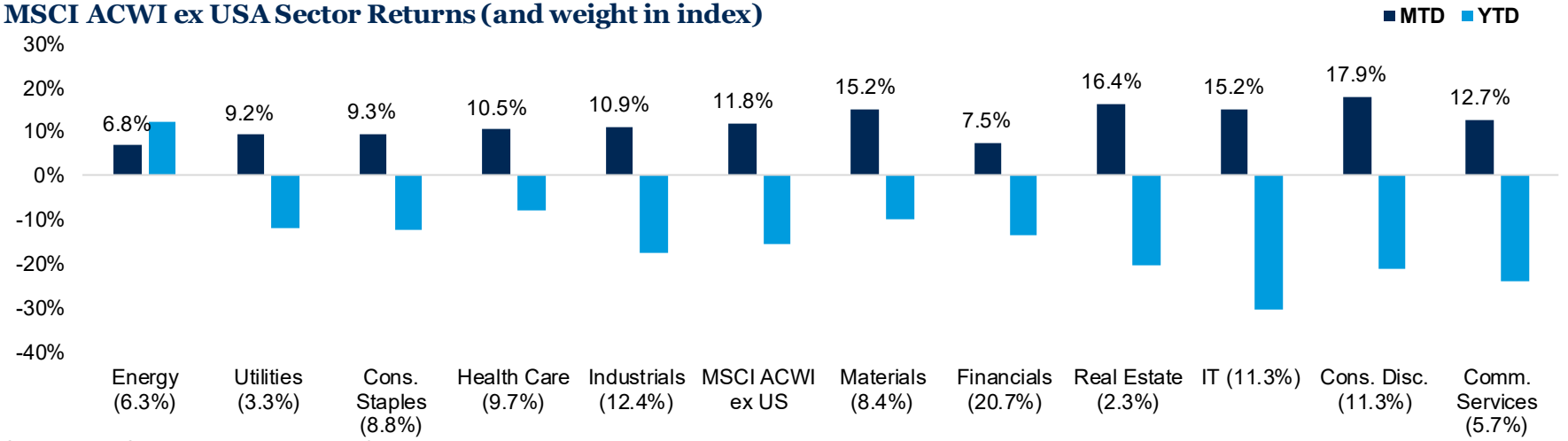
MSCI ACWI ex USA - P/E Ratio



Last	13.7x
1 Month Ago	12.9x
End of Last Year	16.4x
One Year Ago	16.0x
20yr Average	*16.4x*

Sources: FactSet, Fiducient Advisors analysis (November 30, 2002 - November 30, 2022).

MSCI ACWI ex USA Sector Returns (and weight in index)

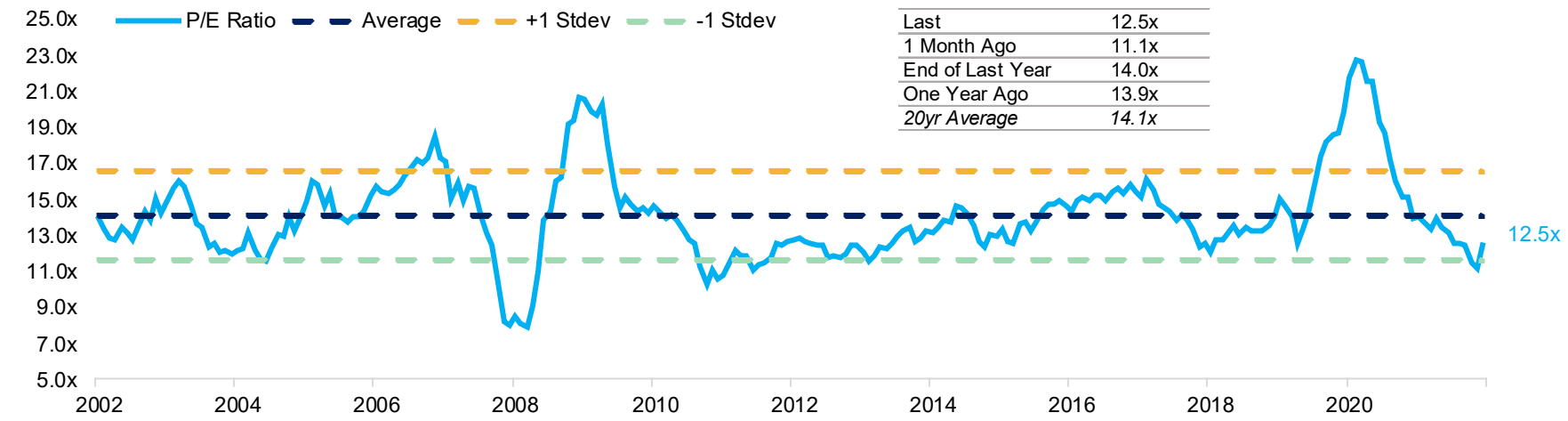


Sources: FactSet, Morningstar Direct. As of November 30, 2022.

See disclosures for list of indices representing each asset class. Past performance does not indicate future performance and there is a possibility of a loss. Indices cannot be invested in directly.

Emerging Markets

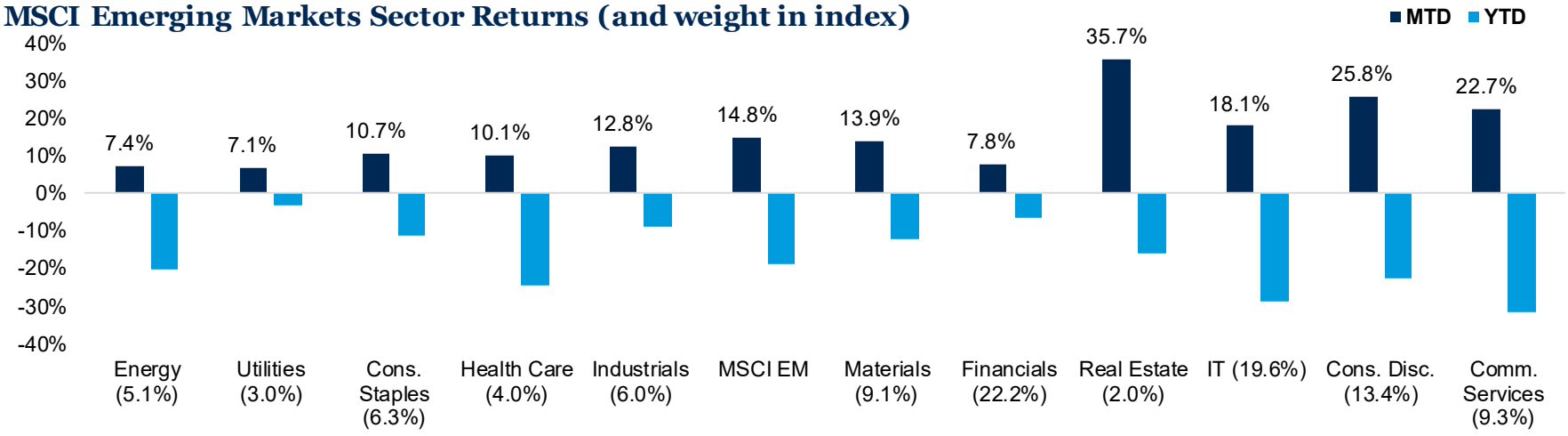
MSCI EM - P/E Ratio



Last	12.5x
1 Month Ago	11.1x
End of Last Year	14.0x
One Year Ago	13.9x
20yr Average	*14.1x*

Sources: FactSet, Fiducient Advisors analysis (November 30, 2002 - November 30, 2022).

MSCI Emerging Markets Sector Returns (and weight in index)



Sources: FactSet, Morningstar Direct. As of November 30, 2022.

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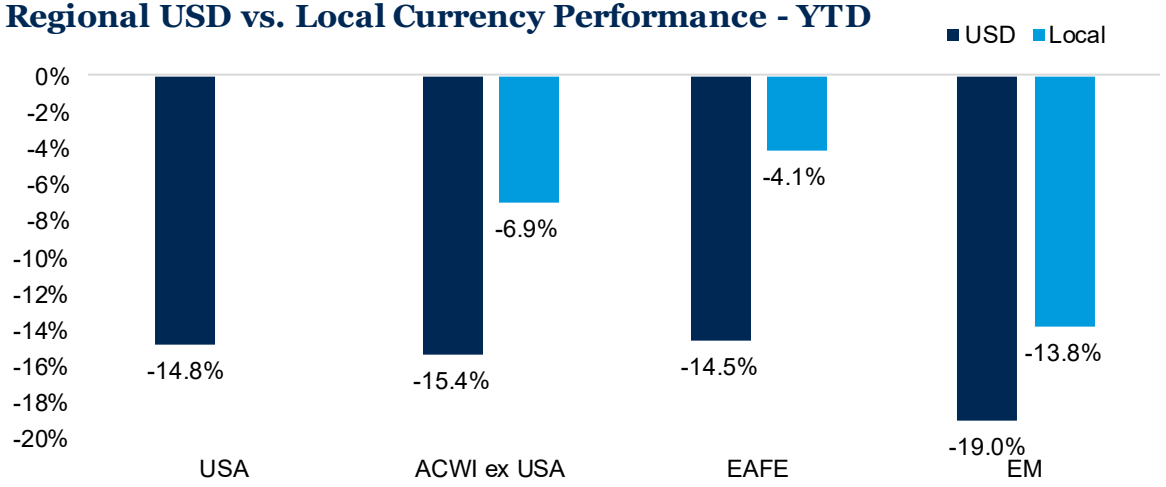
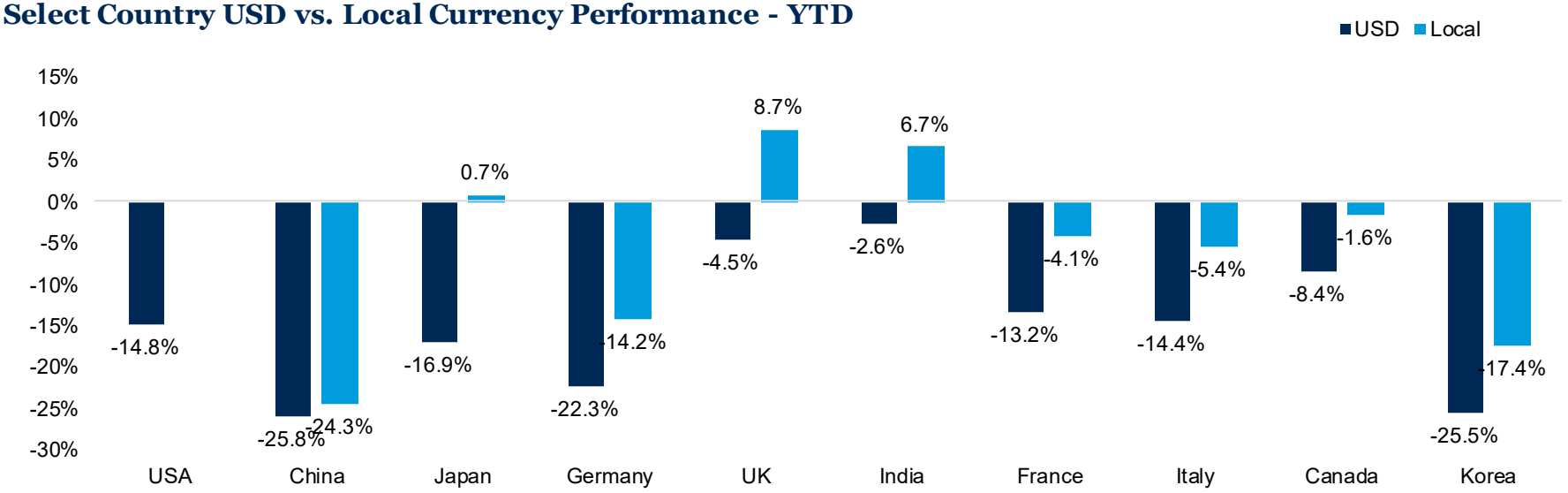
U.S. Dollar vs. Local Performance

Regional USD vs. Local Currency Performance - YTD



Source: Morningstar Direct. As of November 30, 2022. Based on respective USD and local currency MSCI indexes.

Select Country USD vs. Local Currency Performance - YTD



Source: Morningstar Direct. As of November 30, 2022. Based on respective USD and local currency MSCI indexes.

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Select Currency Returns vs. U.S. Dollar

Developed Markets				
Dollar Bloc	**MTD**	**YTD**	**1Yr**	**3Yr**
Canadian Dollar	0.62	(6.83)	(5.38)	(0.68)
Australian Dollar	4.73	(7.89)	(5.55)	(0.33)
New Zealand Dollar	6.91	(9.28)	(8.49)	(1.09)

Developed Europe	**MTD**	**YTD**	**1Yr**	**3Yr**
Euro	4.18	(9.46)	(8.52)	(2.25)
Norwegian Krone	4.27	(11.56)	(8.62)	(2.61)
Swedish Krona	3.63	(15.10)	(14.90)	(3.53)
Swiss Franc	5.04	(4.37)	(2.87)	1.60
British Pound	3.44	(12.08)	(9.98)	(2.71)

Developed Asia	**MTD**	**YTD**	**1Yr**	**3Yr**
Japanese Yen	6.52	(17.48)	(18.63)	(7.75)
Singapore Dollar	3.27	(1.62)	0.06	(0.07)
South Korean Won	8.01	(9.86)	(9.93)	(3.60)

Emerging Markets				
EM Europe/Africa	**MTD**	**YTD**	**1Yr**	**3Yr**
Czech Koruna	4.75	(7.59)	(4.43)	(0.67)
Hungarian Forint	4.22	(18.59)	(18.49)	(8.67)
Polish Zloty	5.10	(11.22)	(8.89)	(4.84)
Russian Ruble	1.31	23.16	22.14	1.81
South African Rand	8.12	(6.10)	(5.73)	(4.82)
Turkish New Lira	0.05	(28.58)	(28.59)	(32.37)

Emerging Asia	**MTD**	**YTD**	**1Yr**	**3Yr**
Chinese Renminbi	2.18	(10.77)	(10.81)	(0.55)
Indonesian Rupiah	(0.85)	(9.40)	(8.96)	(3.57)
Indian Rupee	1.65	(8.72)	(7.72)	(4.13)
Malaysian Ringgit	6.31	(6.33)	(5.31)	(2.07)
Philippine Peso	2.46	(9.84)	(10.92)	(3.50)

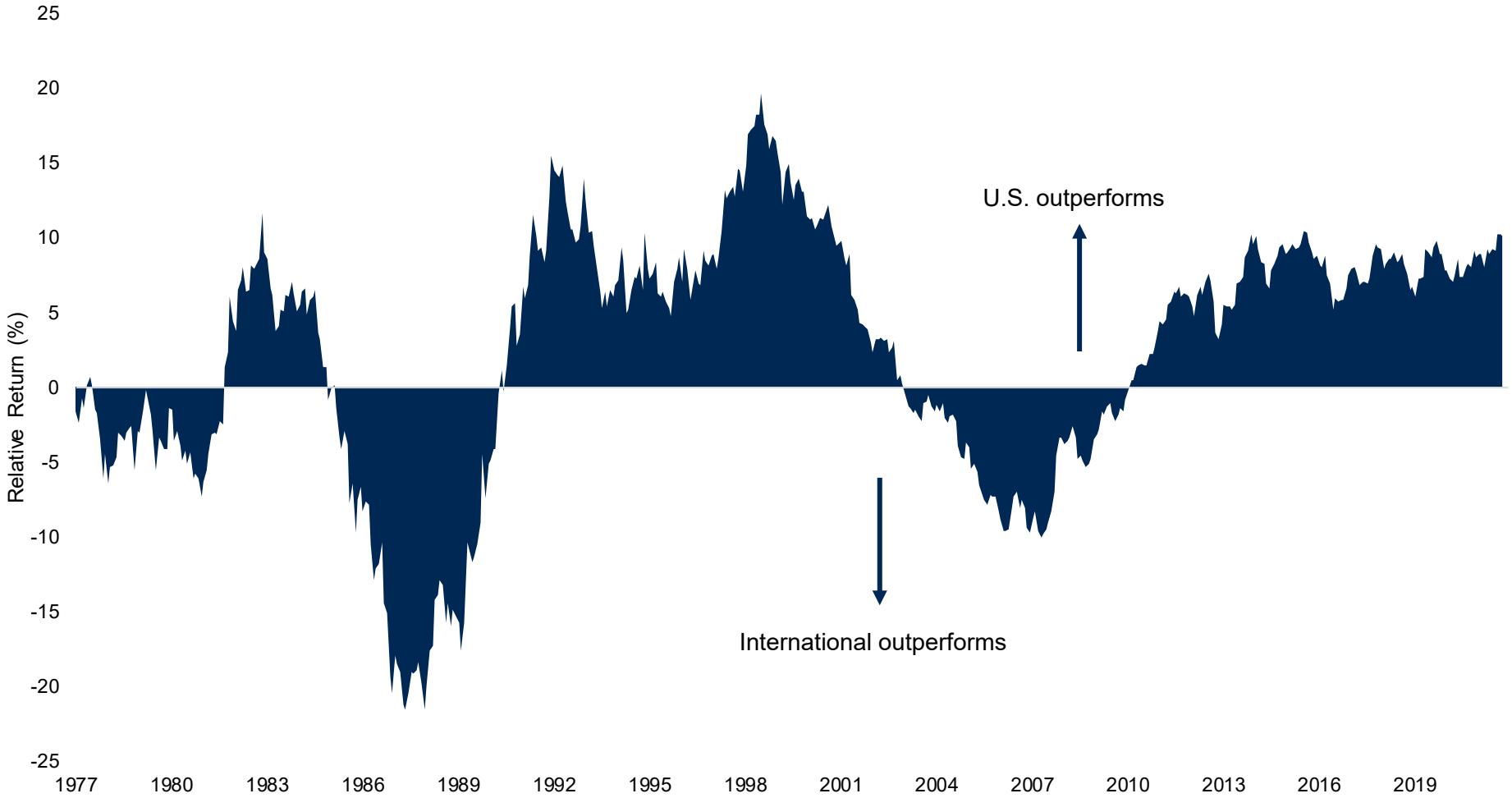
Latin America	**MTD**	**YTD**	**1Yr**	**3Yr**
Argentine Peso	(6.20)	(38.60)	(39.66)	(28.95)
Brazilian Real	(0.22)	5.92	7.41	(7.00)
Chilean Peso	5.31	(4.94)	(7.05)	(3.44)
Columbian Peso	1.37	(15.51)	(16.81)	(9.88)
Mexican Peso	2.45	5.63	10.92	0.23
Peruvian New Sol	3.65	3.77	5.62	(4.02)

Source: FactSet. As of November 30, 2022. Returns are in percent and relative to the U.S. dollar.

See disclosures for list of indices representing each asset class. Past performance does not indicate future performance and there is a possibility of a loss.

U.S. vs. International Performance

U.S. vs. International - Rolling 5-Year Relative Performance



Sources: Morningstar Direct, Fiducient Advisors analysis (December 31, 1977 to November 30, 2022). U.S. represented by the S&P 500 Index, international represented by the MSCI EAFE Index.

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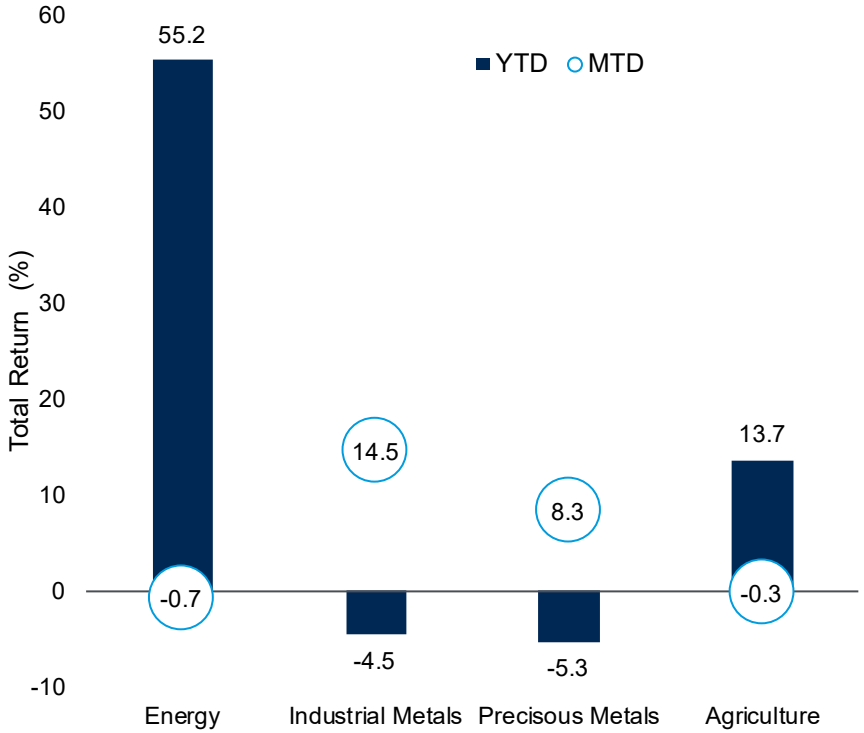
Real Assets

Real Assets Performance

Trailing Returns	MTD	QTD	YTD	1Yr
S&P Real Asset	6.0%	9.1%	-8.4%	-4.5%
Bloomberg Commodity	2.7%	4.8%	19.0%	23.2%
FTSE Nareit Equity REITs	5.8%	10.9%	-20.3%	-13.2%

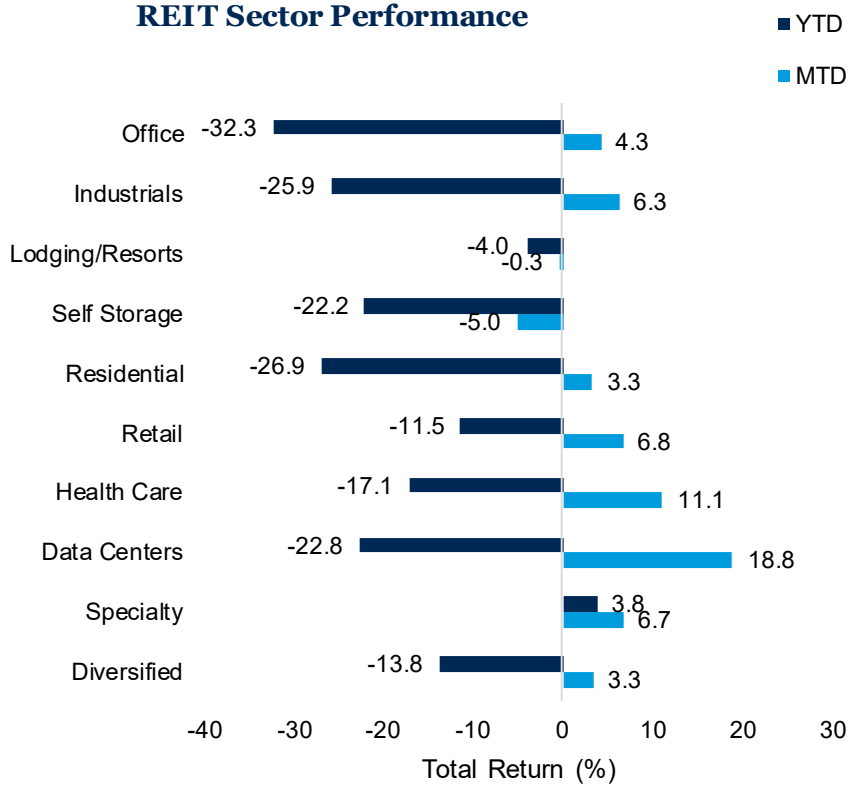
Source: Morningstar Direct. As of November 30, 2022. Returns are total return in USD.

Commodity Performance



Source: Morningstar Direct. As of November 30, 2022. Returns are total return in USD.

REIT Sector Performance



Source: Morningstar Direct. As of November 30, 2022. Returns are total return in USD.

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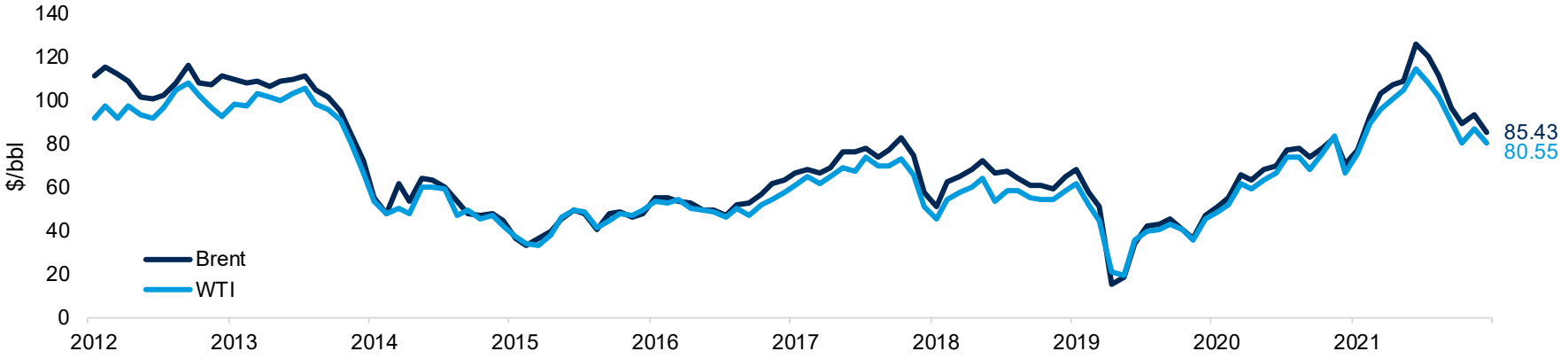
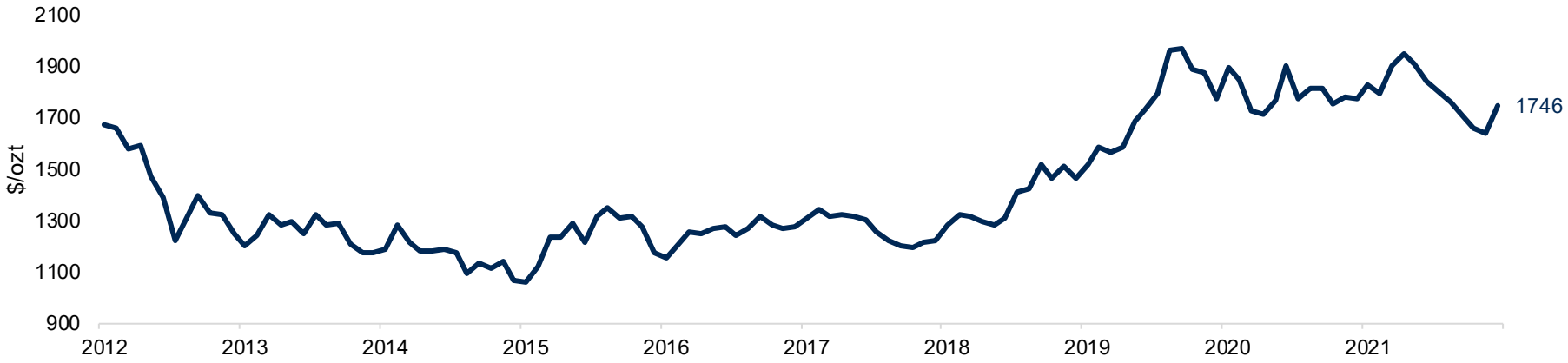
Oil and Gold Prices

Oil Prices



Source: FactSet. As of November 30, 2022.

Gold Price



Source: FactSet. As of November 30, 2022.

See disclosures for list of indices representing each asset class. Past performance does not indicate future performance and there is a possibility of a loss.

Disclosures

This report is intended for the exclusive use of clients or prospective clients (the “recipient”) of Apollon and the information contained herein is confidential and the dissemination or distribution to any other person without the prior approval of Apollon is strictly prohibited. Information has been obtained from sources believed to be reliable, though not independently verified. Any forecasts are hypothetical and represent future expectations and not actual return volatilities and correlations will differ from forecasts. This report does not represent a specific investment recommendation. The opinions and analysis expressed herein are based on Apollon research and professional experience and are expressed as of the date of this report. Please consult with your advisor, attorney and accountant, as appropriate, regarding specific advice. Past performance does not indicate future performance and there is risk of loss.

When referencing asset class returns or statistics, the following indices are used to represent those asset classes, unless otherwise noted. Each index is unmanaged, and investors can not actually invest directly into an index:

Domestic equity returns based on the following indices: Large Value: Russell 1000 Value TR USD, Large Core: Russell 1000 TR USD, Large Growth: Russell 1000 Growth TR USD, Mid Value: Russell Mid Cap Value TR USD, Mid Core: Russell Mid Cap TR USD, Mid Growth: Russell Mid Cap Growth TR USD, Small Value: Russell 2000 Value TR USD, Small Core: Russell 2000 TR USD, Small Growth: Russell 2000 Growth TR USD

Factor returns based on the following indices: Earnings Yield: MSCI USA Barra Earnings Yield NR USD, Low Leverage: MSCI USA Barra Low Leverage NR USD, Low Volatility: MSCI USA Barra Low Volatility NR USD, Momentum: MSCI USA Barra Momentum NR USD, Value: MSCI USA Barra Value NR USD

S&P 500 sector performance based on the following indices: S&P 500 Sec/Commun Services TR USD, S&P 500 Sec/Financials TR USD, S&P 500 Sec/Energy TR USD, S&P 500 Sec/Industrials TR USD, S&P 500 TR USD, S&P 500 Sec/Health Care TR USD, S&P 500 Sec/Cons Disc TR USD, S&P 500 Sec/Utilities TR USD, S&P 500 Sec/Cons Staples TR USD, S&P 500 Sec/Materials TR USD, S&P 500 Sec/Information Technology TRUSD, S&P 500 Sec/Real Estate TR USD

International Developed equity returns based on the following indices: Large Value: MSCI EAFE Large Value NR USD, Large Core: MSCI EAFE Large NR USD, Large Growth: MSCI EAFE Large Growth NR USD, Mid Value: MSCI EAFE Mid Value NR USD, Mid Core: MSCI EAFE Mid NR USD, Mid Growth: MSCI EAFE Mid Growth NR USD, Small Value: MSCI EAFE Small Value NR USD, Small Core: MSCI EAFE Small Cap NR USD, Small Growth: MSCI EAFE Small Growth NR USD

International equity returns based on the following indices: Large Value: MSCI ACWI ex USA Large Value NR USD, Large Core: MSCI ACWI ex USA Large NR USD, Large Growth: MSCI ACWI ex USA Large Growth NR USD, Mid Value: MSCI ACWI ex USA Mid Value NR USD, Mid Core: MSCI ACWI ex USA Mid NR USD, Mid Growth: MSCI ACWI ex USA Mid Growth NR USD, Small Value: MSCI ACWI ex USA Small Value NR USD, Small Core: MSCI ACWI ex USA Small NR USD, Small Growth: MSCI ACWI ex USA Small Growth NR USD

Emerging Markets equity returns based on the following indices: Large Value: MSCI EM Large Value NR USD, Large Core: MSCI EM Large NR USD, Large Growth: MSCI EM Large Growth NR USD, Mid Value: MSCI EM Mid Value NR USD, Mid Core: MSCI EM Mid NR USD, Mid Growth: MSCI EM Mid Growth NR USD, Small Value: MSCI EM Small Value NR USD, Small Core: MSCI EM Small NR USD, Small Growth: MSCI EM Small Growth NR USD

Equity country returns based on the following indices: Belgium: MSCI Belgium NR USD, Canada: MSCI Canada NR USD, France: MSCI France NR USD, Germany: MSCI Germany NR USD, Italy: MSCI Italy NR USD, Japan: MSCI Japan NR USD, Netherlands: MSCI Netherlands NR USD, Sweden: MSCI Sweden NR USD, Switzerland: MSCI Switzerland NR USD, UK: MSCI United Kingdom NR USD, USA: MSCI USA NR USD, Brazil: MSCI Brazil NR USD, China: MSCI China NR USD, India: MSCI India NR USD, Mexico: MSCI Mexico NR USD, South Korea: MSCI Korea NR USD, ACWI ex US: MSCI ACWI ex USA NR USD, EAFE: MSCI EAFE NR USD, EM: MSCI EM NR USD

Commodity Performance based on the following indices: Energy: Bloomberg Sub Energy TR USD, Industrial Metals: Bloomberg Sub Industrial Metals TR USD, Precious Metals: Bloomberg Sub Precious Metals TR USD, Agriculture: Bloomberg Sub Agriculture TR USD

REIT sector performance is based on the following indices: FTSE Nareit Equity Health Care TR,FTSE Nareit Equity Lodging/Resorts TR, FTSE Nareit Equity Office TR, FTSE Nareit Equity Data Centers TR, FTSE Nareit Equity Diversified TR, FTSE Nareit Equity Specialty TR, FTSE Nareit Equity Retail TR, FTSE Nareit Equity Residential TR, FTSE Nareit Equity Industrial TR, FTSE Nareit Equity Self Storage TR

Disclosures – Index & Benchmark Definitions

Index & Benchmark Definitions

Fixed Income

- **Bloomberg 1-3 Month U.S. Treasury Bill Index** is designed to measure the performance of public obligations of the U.S. Treasury that have a remaining maturity of greater than or equal to 1 month and less than 3 months.
- **Bloomberg U.S. Aggregate Index** covers the U.S. investment grade fixed rate bond market, with index components for government and corporate securities, mortgage pass-through securities, and asset-backed securities.
- **Bloomberg Global Aggregate ex. USD Indices** represent a broad-based measure of the global investment-grade fixed income markets. The two major components of this index are the Pan-European Aggregate and the Asian-Pacific Aggregate Indices. The index also includes Eurodollar and Euro-Yen corporate bonds and Canadian government, agency and corporate securities.
- **Bloomberg U.S. Corporate 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.
- **Bloomberg US Government/Credit 1-3 Year Index** is the 1-3 year component of the U.S. Government/Credit Index, which includes securities in the Government and Credit Indices. The Government Index includes treasuries and agencies, while the credit index includes publicly issued U.S. corporate and foreign debentures and secured notes that meet specified maturity, liquidity, and quality requirements.
- **Bloomberg US Government/Credit Long Index** is the Long component of the U.S. Government/Credit Index, which includes securities in the Government and Credit Indices. The Government Index includes treasuries and agencies, while the credit index includes publicly issued U.S. corporate and foreign debentures and secured notes that meet specified maturity, liquidity and quality requirements.
- **Bloomberg US Treasury Inflation Protected Securities Index** consists of Inflation-Protection securities issued by the U.S. Treasury.
- **Bloomberg Muni Index** is a rules-based, market-value-weighted index engineered for the long-term tax-exempt bond market. Bonds must be rated investment-grade by at least two ratings agencies.
- **Bloomberg High Yield Municipal Bond Index** covers the universe of fixed rate, non-investment grade debt.
- **Bloomberg Intermediate U.S. Gov't/Credit** is the Intermediate component of the U.S. Government/Credit index, which includes securities in the Government and Credit Indices. The Government Index includes treasuries and agencies, while the credit index includes publicly issued U.S. corporate and foreign debentures and secured notes that meet specified maturity, liquidity, and quality requirements.
- **JPMorgan GBI-EM Global Diversified t**racks the performance of local currency debt issued by emerging market governments, whose debt is accessible by most of the international investor base.

Equity

- **The S&P 500 Index** is a capitalization-weighted index designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries.**Russell 3000 Index** is a market-cap-weighted index which consists of roughly 3,000 of the largest companies in the U.S. as determined by market capitalization. It represents nearly 98% of the investable U.S. equity market.
- **Russell 1000 Index** consists of the largest 1000 companies in the Russell 3000 Index.
- **Russell 1000 Growth Index** measures the performance of those Russell 1000 companies with higher P/B ratios and higher forecasted growth values.
- **Russell 1000 Value Index** measures the performance of those Russell 1000 companies with lower P/B ratios and lower forecasted growth values.
- **Russell Mid Cap Index** measures the performance of the 800 smallest companies in the Russell 1000 Index.
- **Russell Mid Cap Growth Index** measures the performance of those Russell Mid Cap companies with higher P/B ratios and higher forecasted growth values.
- **Russell Mid Cap Value Index** measures the performance of those Russell Mid Cap companies with lower P/B ratios and lower forecasted growth values.
- **Russell 2000** consists of the 2,000 smallest U.S. companies in the Russell 3000 index.
- **Russell 2000 Growth Index** measures the performance of the Russell 2000 companies with higher P/B ratios and higher forecasted growth values.
- **Russell 2000 Value Index** measures the performance of those Russell 2000 companies with lower P/B ratios and lower forecasted growth values.
- **MSCI USA Barra Earnings Yield Index** is a long/short (130/30) index that targets high exposure to the earnings yield factor, low exposure to other style and industry factors, and low tracking error relative to the MSCI USA Index, its parent index. The earnings yield factor combines current and historical earnings-to-price ratios with a measure of analyst-predicted earnings-to price ratios.
- **MSCI USA Barra Low Leverage Index** The index is derived from the parent index, MSCI Investable Market, and seeks to target exposure to low leverage companies as defined by the Barra Equity Model. The index is rebalanced monthly subject to tracking error and turnover constraints.
- **MSCI USA Barra Low Volatility Index** aims to reflect the performance characteristics of a minimum variance strategy applied to the large and mid cap USA equity universe. The index is calculated by optimizing the MSCI USA Index, its parent index, in USD for the lowest absolute risk (within a given set of constraints). Historically, the index has shown lower beta and volatility characteristics relative to the MSCI USA Index.
- **MSCI USA Barra Momentum Index** is derived from the parent index, MSCI Investable Market, and seeks to target exposure to companies with positive price momentum as defined by the Barra Equity Model. The index is rebalanced monthly subject to tracking error and turnover constraints.
- **MSCI USA Barra Value Index** is derived from the parent index, MSCI Investable Market, and seeks to target exposure to companies with value characteristics as defined by the Barra Equity Model. The index is rebalanced monthly subject to tracking error and turnover constraints.

Disclosures – Index & Benchmark Definitions

- **MSCI ACWI (All Country World Index) ex. U.S. Index** captures large and mid-cap representation across Developed Markets countries (excluding the United States) and Emerging Markets countries. The index covers approximately 85% of the global equity opportunity set outside the U.S.
- **MSCI EAFE Index** is an equity index which captures large and mid-cap representation across Developed Markets countries around the world, excluding the U.S. and Canada. The index covers approximately 85% of the free float-adjusted market capitalization in each country.
- **MSCI Emerging Market**s Index captures large and mid-cap representation across Emerging Markets countries. The index covers approximately 85% of the free-float adjusted market capitalization in each country.
- **MSCI EAFE Large Value Index** captures large cap securities exhibiting overall value style characteristics across Developed Markets countries around the world, excluding the US and Canada. 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 EAFE Large Cap Index** is an equity index which captures large cap representation across Developed Markets countries around the world, excluding the US and Canada. The index covers approximately 70% of the free-float adjusted market capitalization in each country.
- **MSCI EAFE Large Growth Index** captures large cap securities exhibiting overall growth style characteristics across Developed Markets countries around the world, excluding the US and Canada. 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.
- **MSCI EAFE Mid Value Index** captures mid cap securities exhibiting overall value style characteristics across Developed Markets countries around the world, excluding the US and Canada. 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 EAFE Mid Cap Index** is an equity index which captures mid cap representation across Developed Markets countries around the world, excluding the US and Canada. The index covers approximately 15% of the free-float adjusted market capitalization in each country.
- **MSCI EAFE Mid Cap Growth Index** captures mid cap securities exhibiting overall growth style characteristics across Developed Markets countries around the world, excluding the US and Canada. 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.
- **MSCI EAFE Small Cap Value Index** captures small cap securities exhibiting overall value style characteristics across Developed Markets countries around the world, excluding the US and Canada. 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.
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- **MSCI ACWI (All Country World Index) ex USA Large Value Index** captures large-cap securities exhibiting overall value style characteristics across Developed Markets countries (excluding the US) and Emerging Markets (EM) 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.
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Disclosures – Index & Benchmark Definitions

- **MSCI ACWI (All Country World Index) ex. U.S. Small Cap Index** captures small cap representation across Developed Markets countries (excluding the US) and Emerging Markets countries. The index covers approximately 14% of the global equity opportunity set outside the U.S.
- **MSCI ACWI (All Country World Index) ex U.S. Small Growth Index** captures mid-cap securities exhibiting overall growth style characteristics across Developed Markets countries (excluding the US) and Emerging Markets 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.
- **MSCI Emerging Markets (EM) Large Value Index** captures large-cap securities exhibiting overall value style characteristics across Emerging Markets (EM) 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 Emerging Markets (EM) Large Index** includes large-cap representation across Emerging Markets countries. The index covers approximately 70% of the free float-adjusted market capitalization in each country.
- **MSCI Emerging Markets (EM) Large Growth Index** captures large-cap securities exhibiting overall growth style characteristics across Emerging Markets (EM) 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.
- **MSCI Emerging Markets (EM) Mid Value Index** captures mid cap securities exhibiting overall value style characteristics across Emerging Markets (EM) 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 Emerging Markets (EM) Mid Index** includes mid-cap representation across Emerging Markets countries. The index covers approximately 15% of the free float-adjusted market capitalization in each country.
- **MSCI Emerging Markets (EM) Mid Growth Index** captures mid cap securities exhibiting overall growth style characteristics across Emerging Markets (EM) 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.
- **MSCI Emerging Markets (EM) Small Value Index** captures small cap securities exhibiting overall value style characteristics across Emerging Markets (EM) 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 Emerging Markets (EM) Small Cap Index** includes small cap representation across Emerging Markets countries. The index covers approximately 14% of the free float-adjusted market capitalization in each country. The small cap segment tends to capture more local economic and sector characteristics relative to larger Emerging Markets capitalization segments.
- **MSCI Emerging Markets (EM) Small Growth Index** captures small cap securities exhibiting overall growth style characteristics across Emerging Markets (EM) 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.

Alternatives & Miscellaneous

- **S&P Real Asset Index** is designed to measure global property, infrastructure, commodities, and inflation-linked bonds using liquid and investable component indices that track public equities, fixed income, and futures. In the index, equity holds 50% weight, commodities 10%, and fixed income 40%.
- **FTSE Nareit Equity REITs Index** contains all Equity REITs not designed as Timber REITs or Infrastructure REITs.
- **FTSE EPRA Nareit Developed Index** is designed to track the performance of listed real estate companies and REITS worldwide.
- **FTSE EPRA Nareit Developed ex US Index** is a subset of the FTSE EPRA Nareit Developed Index and is designed to track the performance of listed real estate companies and REITS in developed markets excluding the US.**Bloomberg Commodity Index** is calculated on an excess return basis and reflects commodity futures price movements. The index rebalances annually weighted 2/3 by trading volume and 1/3 by world production and weight-caps are applied at the commodity, sector and group level for diversification.
- **HFRI Fund Weighted Composite Index** is a global, equal-weighted index of over 2,000 single-manager funds that report to the HFR Database. Constituent funds report monthly net of all fees performance in U.S. Dollars and have a minimum of $50 million under management or a twelve (12) month track record of active performance. The HFRI Fund Weighted Composite Index does not include Funds of Hedge Funds.
- **HFRI Fund of Funds Composite Index** is a global, equal-weighted index of all fund of hedge funds that report to the HFR Database. Constituent funds report monthly net of all fees performance in U.S. Dollars and have a minimum of $50 million under management or a twelve (12) month track record of active performance.
- **The Alerian MLP Index** is a float adjusted, capitalization-weighted index, whose constituents represent approximately 85% of total float-adjusted market capitalization, is disseminated real-time on a price-return basis (AMZ) and on a total-return basis.

Additional Information

- Equity sector returns are calculated by S&P, Russell, and MSCI for domestic and international markets, respectively. S&P and MSCI sector definitions correspond to the GICS® classification (Global Industry Classification System); Russell uses its own sector and industry classifications.
- MSCI country indices are free float-adjusted market capitalization indices that are designed to measure equity market performance of approximately 85% of the market capitalization in each specific country.
- Currency returns are calculated using FactSet's historical spot rates and are calculated using the U.S. dollar as the base currency.

Disclosures – Material Risks & Limitations

Fixed Income securities are subject to interest rate risks, the risk of default and liquidity risk. U.S. investors exposed to non-U.S. fixed income may also be subject to currency risk and fluctuations.
- Liability Driven Investing (LDI) Assets

Cash may be subject to the loss of principal and over longer period of time may lose purchasing power due to inflation.
- Short Term Liquidity

Domestic Equity can be volatile. The rise or fall in prices take place for a number of reasons including, but not limited to changes to underlying company conditions, sector or industry factors, or other macro events. These may happen quickly and unpredictably.

International Equity can be volatile. The rise or fall in prices take place for a number of reasons including, but not limited to changes to underlying company conditions, sector or industry impacts, or other macro events. These may happen quickly and unpredictably. International equity allocations may also be impact by currency and/or country specific risks which may result in lower liquidity in some markets.

Real Assets can be volatile and may include asset segments that may have greater volatility than investment in traditional equity securities. Such volatility could be influenced by a myriad of factors including, but not limited to overall market volatility, changes in interest rates, political and regulatory developments, or other exogenous events like weather or natural disaster.

Private Equity involves higher risk and is suitable only for sophisticated investors. Along with traditional equity market risks, private equity investments are also subject to higher fees, lower liquidity and the potential for leverage that may amplify volatility and/or the potential loss of capital.

Private Credit involves higher risk and is suitable only for sophisticated investors. These assets are subject to interest rate risks, the risk of default and limited liquidity. U.S. investors exposed to non-U.S. private credit may also be subject to currency risk and fluctuations.

Private Real Estate involves higher risk and is suitable only for sophisticated investors. Real estate assets can be volatile and may include unique risks to the asset class like leverage and/or industry, sector or geographical concentration. Declines in real estate value may take place for a number of reasons including, but are not limited to economic conditions, change in condition of the underlying property or defaults by the borrow.

Marketable Alternatives involves higher risk and is suitable only for sophisticated investors. Along with traditional market risks, marketable alternatives are also subject to higher fees, lower liquidity and the potential for leverage that may amplify volatility or the potential for loss of capital. Additionally, short selling involved certain risks including, but not limited to additional costs, and the potential for unlimited loss on certain short sale positions.

APOLLON

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