DECADES OF DATA: UNITED STATES

1900–2022

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Key Points

- Basing investment decisions on the extrapolation of capital markets returns from recent, relatively short periods is a common mistake. A core tenet of our research process is to "know the history," which is the underlying theme of our Decades of Data publication.
- US equity investors are compensated for the additional risk of holding stocks in the long run. US equities have also consistently outpaced inflation over long-term holding periods.
- Earnings growth and dividend reinvestment are the primary contributors to equity returns, while the impact of valuation rerating is ultimately negligible due to mean reversion.
- Starting equity valuations are a useful indicator for long-term subsequent equity returns. For bonds, starting yields are a reasonable proxy for setting nominal return expectations.
- We also provide context around the historic market environment in 2022, including the inflation surge to 40-year highs, record bond market declines, and equity market drawdown.

CAMBRIDGE ASSOCIATES

Executive Summary

- **Basing investment decisions on the extrapolation of capital markets returns from recent, relatively short periods is a common mistake.** Viable conclusions about long-term expected returns cannot be drawn from return data for periods shorter than several decades, and even then, investors should be mindful that long-term statistics are beginning- and end-point sensitive and that returns are more variable than commonly assumed. Still, consideration of shorter time periods within a longer-term context can provide a powerful framework for evaluating current market conditions.
- **US equities (-18.1%) and bonds (-17.0%) declined in 2022, buffeted by surging inflation, tightening central bank policy, and slowing economic growth.** US stocks posted their first annual decline since 2018 (-4.4%) and their largest drawdown since the Global Financial Crisis (GFC) in 2008 (-37.0%). In addition, the US bond drawdown was the worst on record, as low starting yield levels failed to offset capital losses from the 236-basis point (bp) surge in ten-year Treasury yields (also the largest on record.) Still, the US equity correction in 2022 followed a strong performance run in the three years prior when US shares effectively doubled, returning 100% cumulative. Looking ahead, US equities typically bounce back after drawdowns in a given calendar year. Since 1900, US stocks declined in consecutive years only nine times. Such instances are even rarer, given the size of 2022's correction. The only time US stocks declined the year after a drawdown of 18% or more was during the Great Depression. We know that many factors will influence performance, but history argues in favor of gains for US stocks in 2023.
- **US consumer price inflation was a prominent market theme in 2022.** Inflation accelerated to a peak of 9.1% year-over-year (YOY) in June, the highest rate since 1981. The inflationary spike resulted from a confluence of factors—including the strong post-COVID demand recovery, supply-chain constraints, and Russia's invasion of Ukraine—that catalyzed higher commodity prices. Resurgent consumer prices bucked their long-term downtrend since the high inflation environment of the 1970s and 1980s. In fact, June's inflation reading was more than 4x its trailing ten-year average, a reversal that was nearly unprecedented and the largest since 1947. This rapid inflation spike was a key factor behind the increased correlation of equity and bond returns, leading to steep losses for both asset classes. And although inflation climbed to extreme levels based on recent memory, higher levels were reached historically. Inflation peaked at nearly 24% YOY in 1920.

Executive Summary (continued)

- **US equities have enjoyed stronger-than-average returns in the post-GFC period.** For the full history analyzed, investors in US equities (1900–2022) earned a 9.6% nominal average annual compound return (AACR). Over the past ten years, however, US equities have posted a nominal AACR of 12.6%, notwithstanding the bear market in 2022. Monthly rolling ten-year AACRs reached their highest point this cycle in February 2019 at 16.7%, the strongest ten-year return period since the ten years ended January 2001. The February 2019 peak coincided with the period when the largest declines during the GFC fell out of the data set, beginning in March 2009 when the S&P 500 Index hit its trough. This highlights the impact of beginning- and end-point sensitivity and reminds investors that even over periods as long as ten years, returns can be skewed by short-term market fluctuations. The COVID-19 period also presents an interesting case study. Despite the 30%+ market drawdown, trailing ten-year returns remained above average at the market's nadir in March 2020.
- **Equities have consistently outpaced inflation over the long term.** Across all rolling 50-year periods since 1900, real AACRs for US stocks ranged from 4.2% to 9.5%, whereas the range for benchmark government bonds (-0.9% to 3.6%) and cash (-0.7% to 1.8%) indicated the potential for diminished purchasing power. Benchmark US government bonds and cash produced full-period AACRs of 4.4% and 3.7%, respectively, since 1900, which represents a significantly narrower spread vis-à-vis the average inflation rate of 3.1% per annum. Interestingly, US government bonds had a lower minimum real return over the very long term relative to cash, which is likely a result of greater duration risk.
- **Over the long term, US equity investors are compensated for the additional risk of holding stocks.** Since 1900, US equity returns exceeded bond returns during 78% of all five-year periods, 87% of all ten-year periods, and 100% of all 25-year periods (calculated on a nominal basis using rolling monthly data). While equities tend to outperform in the long term, underperformance over five-year periods is not uncommon, as equities are more volatile and prone to larger drawdowns than bonds. Such periods are a reminder of the ballast that fixed income allocations have traditionally provided portfolios in terms of diversification. The experience for investors in 2022 challenged this conventional wisdom, although the key differentiator in this episode was that bond yields started at historically low levels. In such cases, investors may need to consider other avenues to effectively diversify portfolios.

Executive Summary (continued)

- **Earnings growth and dividend reinvestment are the primary contributors to equity total return over time, while valuation multiple rerating is ultimately negligible due to mean reversion.** Earnings growth provided the highest degree of return contribution, on average, but can be highly volatile (especially during periods of economic decline) relative to the steady stream of reliable income provided by dividends. For the three years available in the current decade, earnings growth has accounted for the lion's share of the positive return, while valuation multiples have contracted. Dividend reinvestment's contribution has receded over time as share buybacks have become more pervasive. In the past three decades, dividend reinvestment averaged 2.3% versus 5.0% in the nine-decade period from 1900 to 1989. Over the full historical period, dividend reinvestment averaged 4.3%.
- **Starting valuations are a useful indicator for long-term (10+ years) subsequent equity returns.** Normalized valuations and subsequent returns have a stronger relationship over long time periods (e.g., ten-year subsequent returns), but starting valuations alone do not completely explain subsequent returns—many factors can influence equity performance. Since 1979, our cyclically adjusted price-to–cash earnings (CAPCE) ratio for the United States has explained 73% of the variation in subsequent ten-year real returns, a strong yet imperfect guide to future returns. As of December 31, 2022, US equity valuations ended in the top quintile of historical observations. When US equity valuations have been between the 75th and 90th percentiles, the median subsequent ten-year real return has been just 1.1% annualized.
- **High- or low-valuation environments alone are not a catalyst for market reversals and may persist for several years. Waiting for valuations to revert to mean can be an exercise in frustration.** US equities provide a fitting example; over the past 30 years, valuations have been above the 75th percentile 96% of the time, based on the Shiller P/E ratio distribution dating back to the 1880s. Low valuations provide what famed investment analyst Benjamin Graham called "a margin of safety." High valuations, on the other hand, typically price in lofty projections for the future, providing little room for error. Despite uncertainty regarding the timing of market reversals, the historical record for US equities is clear—periods of low valuations are followed by higher long-term subsequent returns, while periods of high valuations are followed by poorer long-term returns.

Executive Summary (continued)

- **Equity dividend yields are an important driver of equity total returns but are not a useful valuation indicator.** In the United States, higher starting dividend yields (i.e., lower equity prices relative to dividends) have typically been associated with higher subsequent ten-year returns relative to long-term averages. Dividend yields are currently in the 13th percentile of the historical distribution, where subsequent real ten-year returns historically have been about 5% annualized. Dividend yields fail to capture the whole picture, however, as US company stock buybacks are an increasingly popular source of shareholder return. While dividend yields fall short in terms of forecasting ability, the importance of dividend reinvestment as a driver of total return should not be understated. In fact, since 1900, US companies managed to maintain a positive dividend growth rate during recessions, on average, even as earnings contracted during these periods given their sensitivity to the economic cycle.
- **Subsequent nominal ten-year US bond returns closely track the starting yield, suggesting that yields are a reasonable proxy for forward return expectations.** Since hitting all-time lows in July 2020, US ten-year government bond yields have climbed more than 330 bps, ending 2022 at 3.88%, which has improved their forward return prospects. In fact, when yields historically were +/- 50 bps from today's starting levels, subsequent nominal ten-year AACRs notched a median of almost 4% annualized. Falling yields were a boon for US bond investors over the past 40 years, with US Treasuries returning 7.8% annualized from the early 1980s through 2021, but that paradigm reversed sharply in 2022. While bonds proved to be a poor diversifier, given their low yields heading into today's environment, future returns are likely to look better, given the steep backup in yields.

Executive Summary (continued)

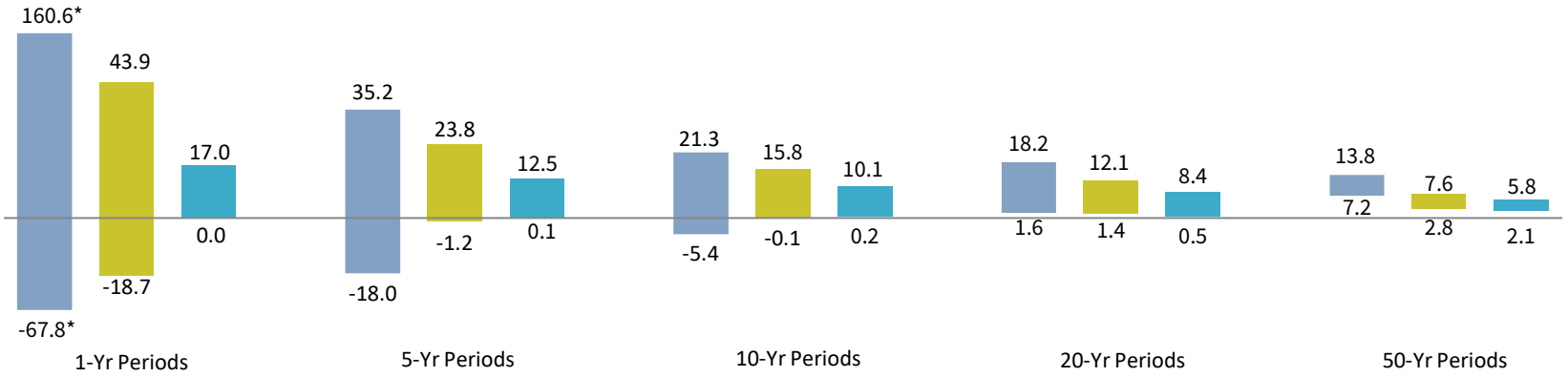
- **There is a distinct inverse relationship between the level of Treasury yields and equity market valuations in the United States.** Many have argued in recent years that high valuations for US stocks are justified (or at least in part explained) by the low level of Treasury yields. The reasoning is straightforward; when discount rates fall, the present value of future cash flows increases, thus pushing up valuations. However, Treasury yields do not tell the whole story. Since 1979, ten-year Treasury yields have explained only about 50% of the variation in equity market valuations. The relationship is not universal, however, and there are periods when equity valuations and yields have moved together. For example, in the early 2000s period preceding the GFC, there was a positive relationship, in that equity valuations and yields both increased. Given the possibility of differences across market environments, investors must consider the drivers of changes in interest rates, rather than their outright levels, and what impact such drivers may have on equity markets.
- **The relationship between asset prices and inflation is complex and nuanced.** While high inflation can erode nominal equity returns, the historical record shows that the deflationary environments can be the most challenging for equity performance. In nominal terms, bonds exhibit limited downside during periods of high inflation, as historically higher yield levels helped offset capital losses as bond prices fell. However, bond markets do suffer in real terms during the highest bouts of inflation when consumer price levels increase 5% annualized or more. Equities and bonds generate stronger results during decelerating inflationary environments, whereas real assets categories such as commodities, gold, and natural resources equities fare better during periods of accelerating inflation.

The range of investment returns narrows as holding periods increase

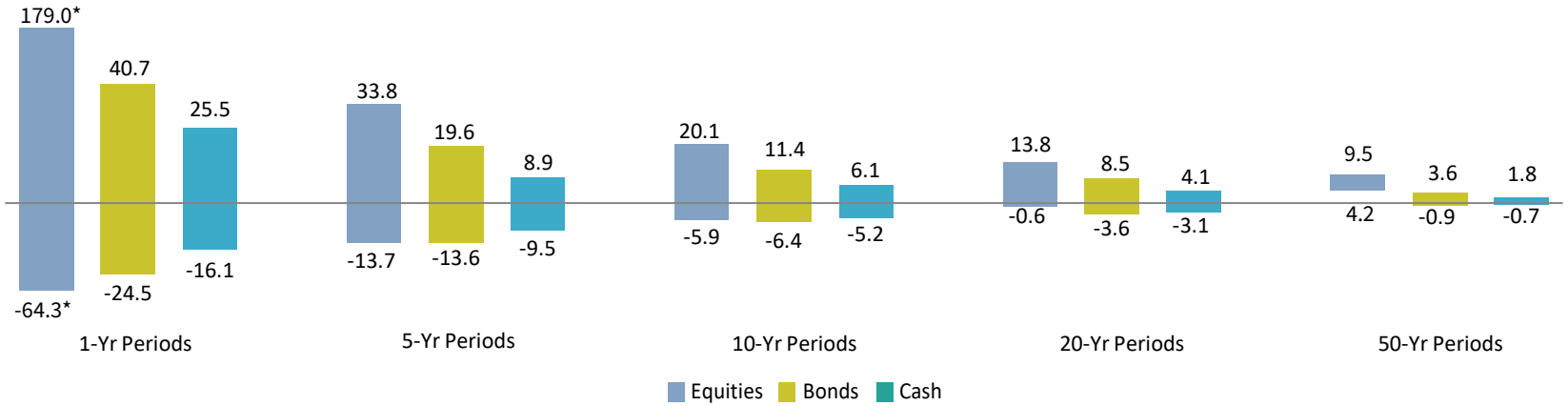
RANGE OF EQUITY, BOND, AND CASH RETURNS FOR VARIOUS ROLLING MONTHLY TIME HORIZONS

1900–2022 • Average Annual Compound Return (%)

Nominal Returns



Real Returns



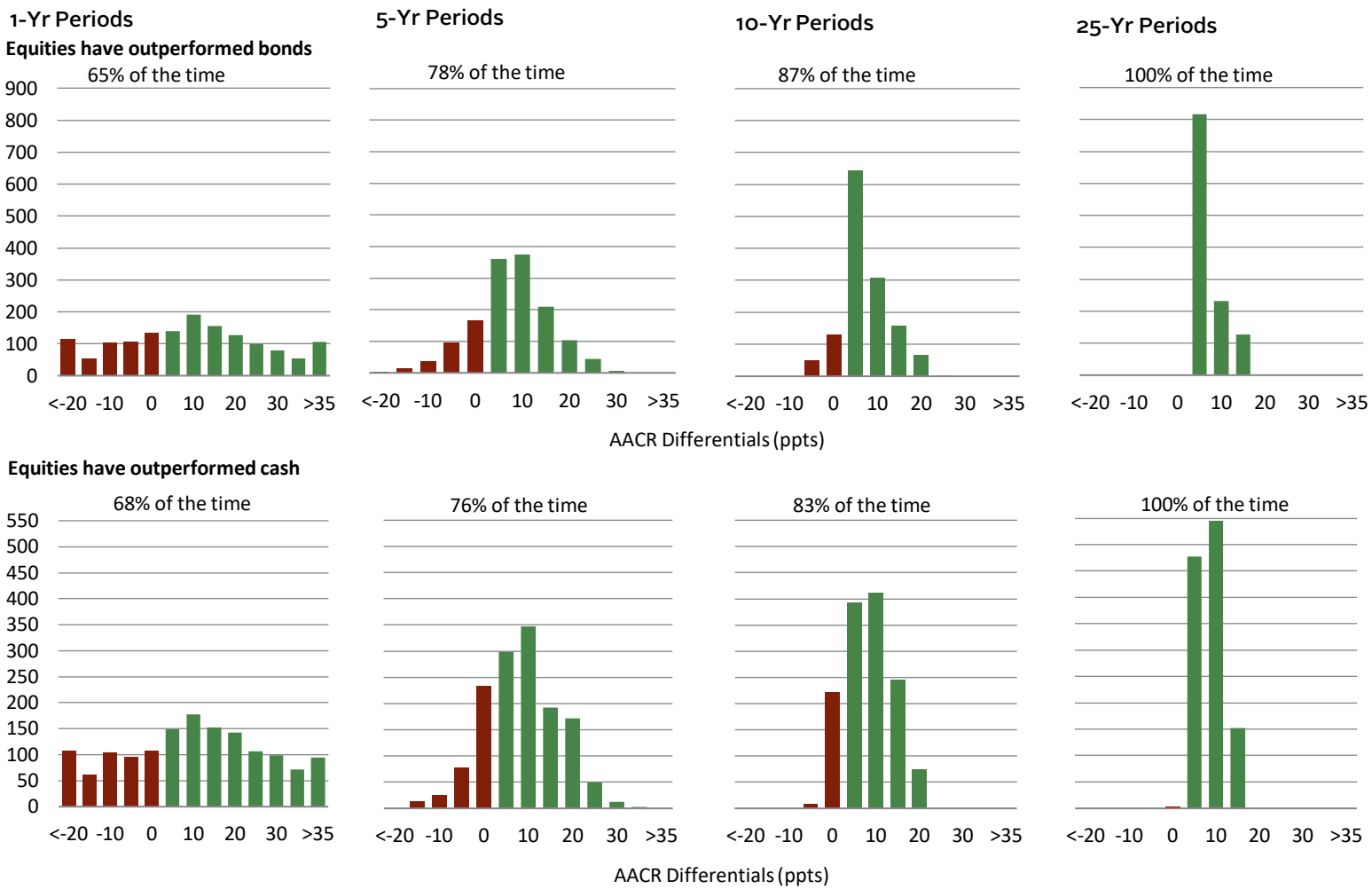
* Axis capped for scaling purposes.

Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.

Equities outperform bonds and cash over the long term, but can underperform in the short run

EXCESS RETURNS OF EQUITIES OVER BONDS AND CASH

1900–2022 • Number of Rolling Monthly Periods

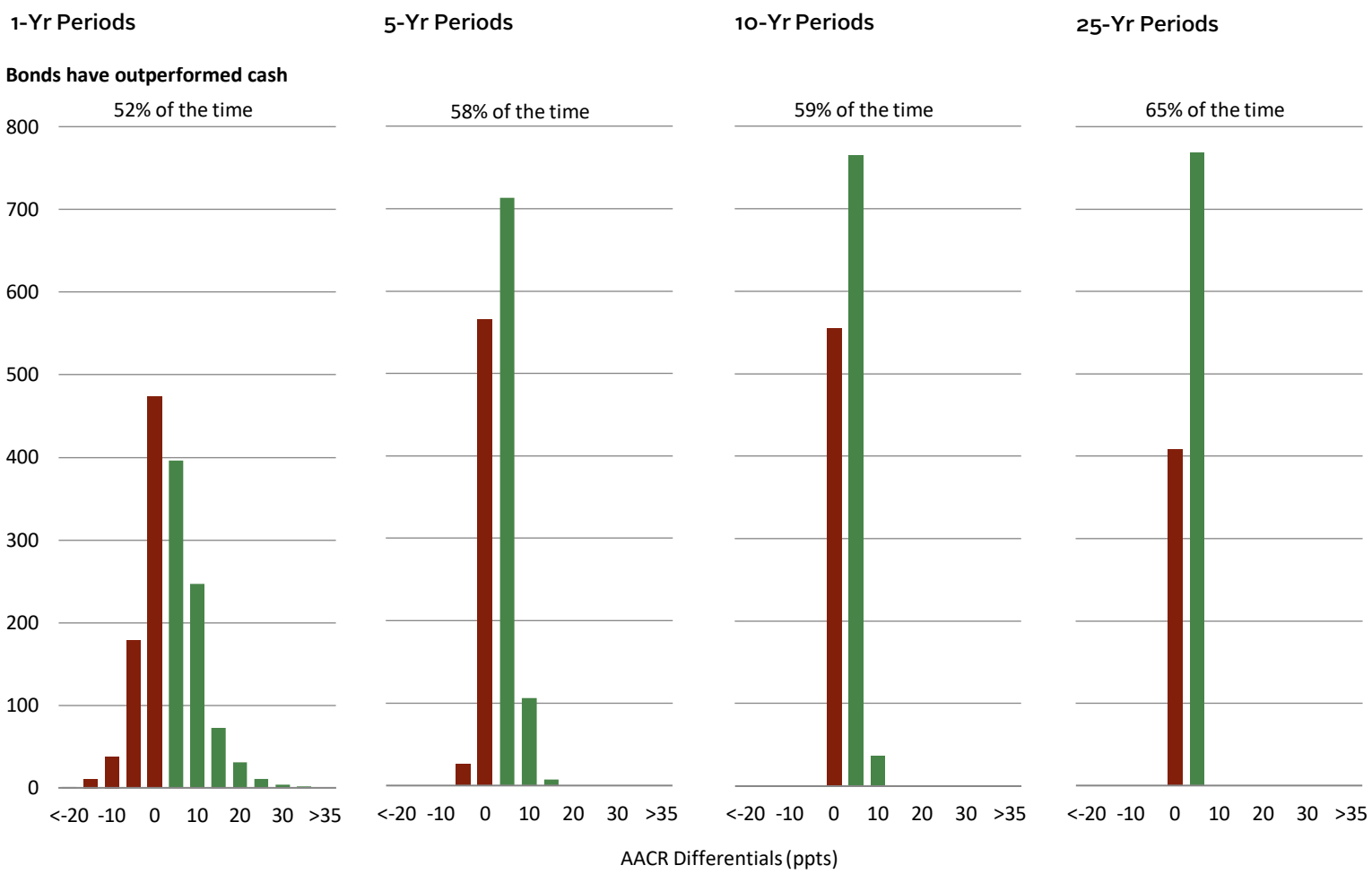


Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.
Notes: Buckets represent ranges of 5 percentage points each with the label denoting the high end of the range, inclusive. For example, the "0" bucket corresponds to the number of rolling monthly periods in which the excess return of equities over bonds/cash was greater than -5 but equal to or less than zero.

Bonds' outperformance over cash is inconsistent over the short and long term alike

EXCESS RETURNS OF BONDS OVER CASH

1900–2022 • Number of Rolling Monthly Periods

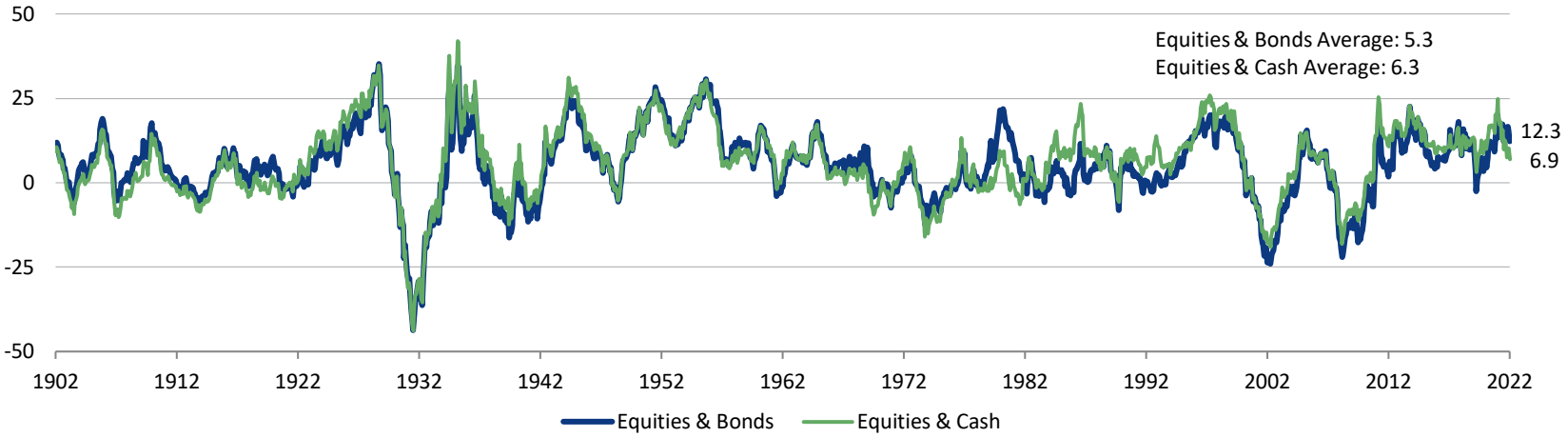


Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.
Notes: Buckets represent ranges of 5 percentage points each with the label denoting the high end of the range, inclusive. For example, the "0" bucket corresponds to the number of rolling monthly periods in which the excess return of bonds over cash was greater than -5 but equal to or less than zero.

Equities outperform bonds and cash by a wide margin; bonds outperform cash to a lesser degree

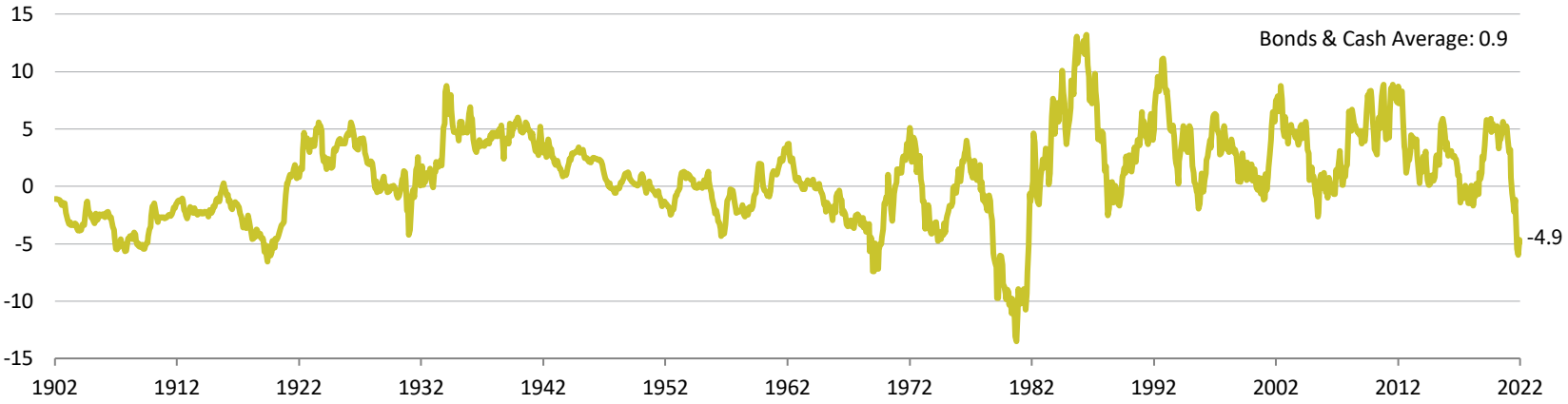
AACR OF ROLLING MONTHLY 3-YR RETURN DIFFERENTIAL BETWEEN EQUITY, BONDS, AND CASH RETURNS

1902–2022 • Percent (%)



AACR OF ROLLING MONTHLY 3-YR RETURN DIFFERENTIAL BETWEEN BONDS AND CASH RETURNS

1902–2022 • Percent (%)

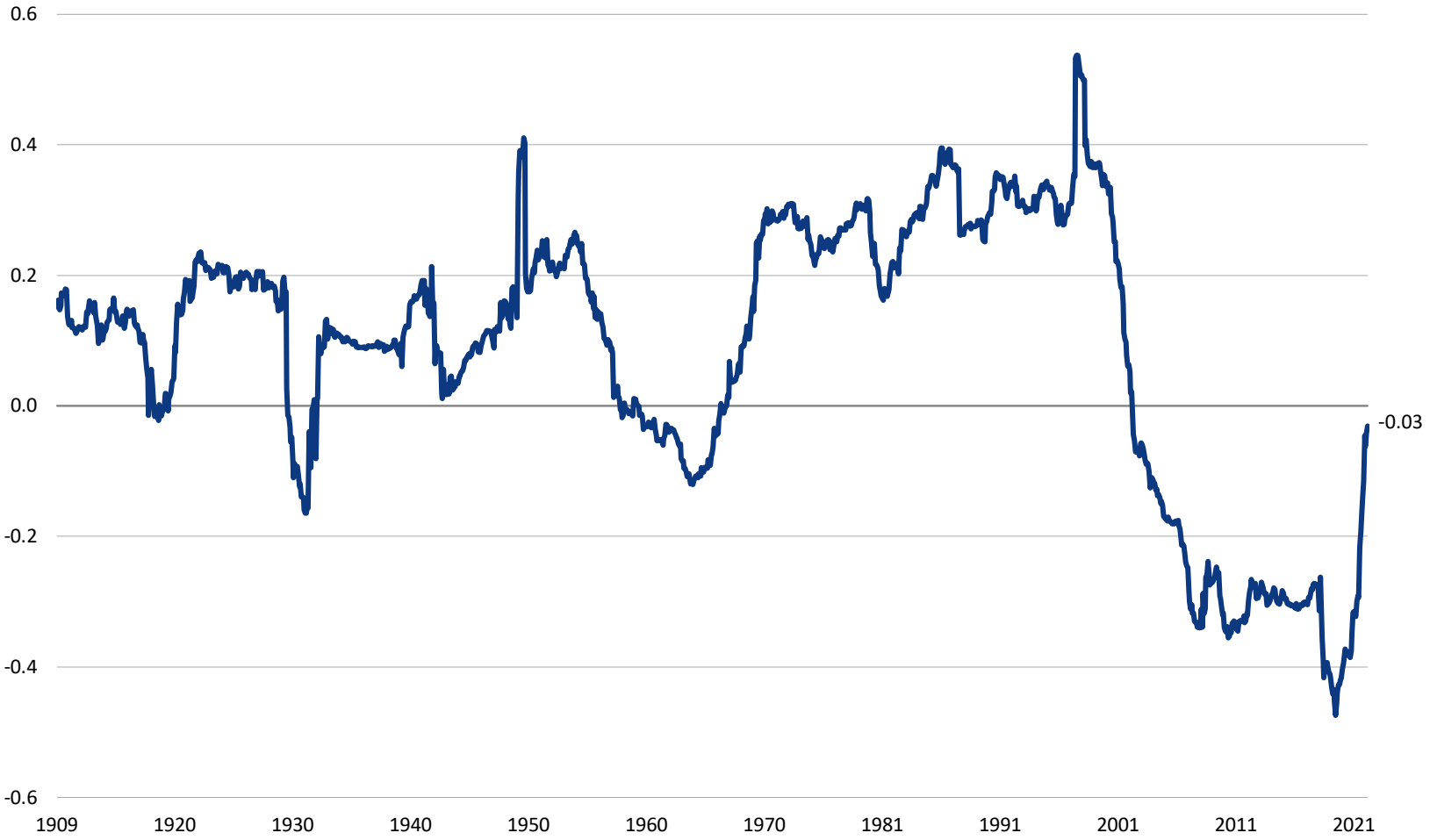


Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.

Stock-bond correlation has increased rapidly, due in part to sharply higher inflation rates

ROLLING 10-YR CORRELATIONS OF STOCK AND BOND RETURNS

December 31, 1909 – December 31, 2022 • Correlation Coefficient

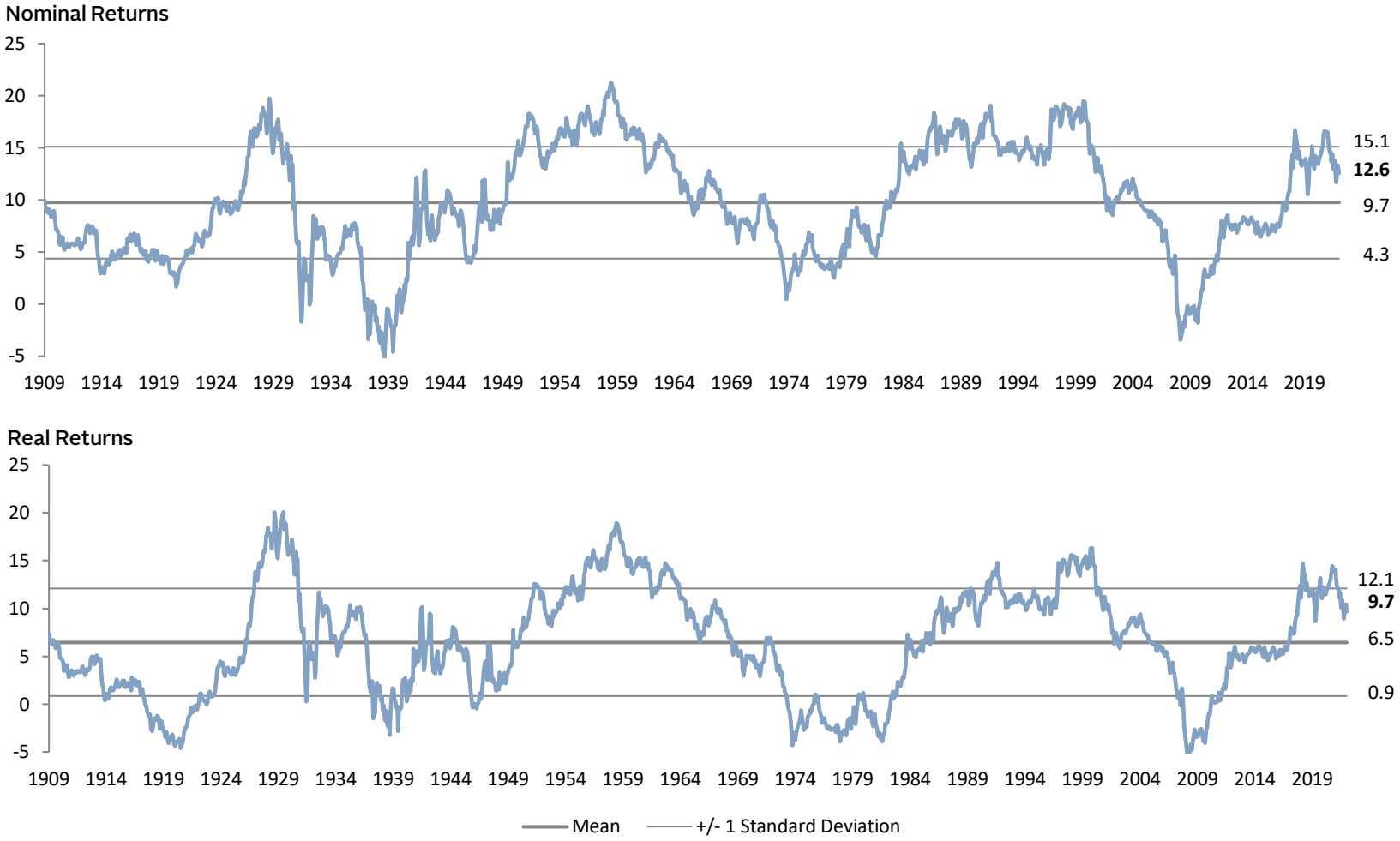


Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.
Notes: Data begin on January 31, 1900. All return data are monthly.

Equity performance tends to cycle about long-term averages

ROLLING MONTHLY EQUITY TOTAL RETURN 10-YR AACR

1909–2022 • Percent (%)

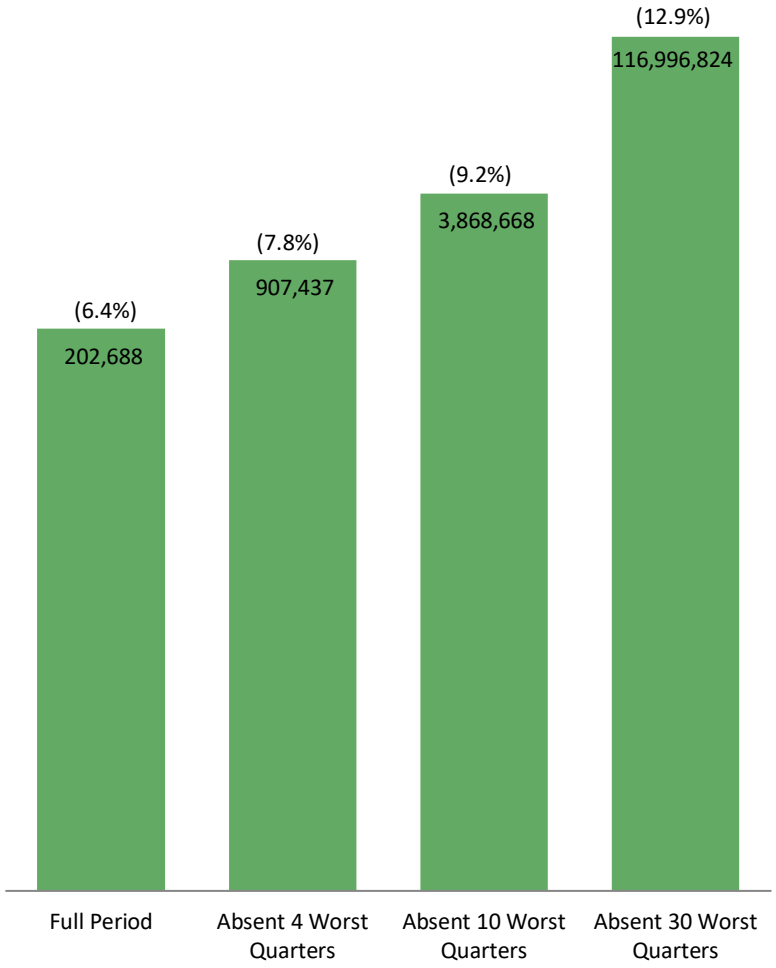


Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.

Attempting to time the market is a risky proposition

CUMULATIVE REAL WEALTH ABSENT WORST QUARTERS

1900–2022 • January 1, 1900 = 1 • AACR (%) in Parentheses



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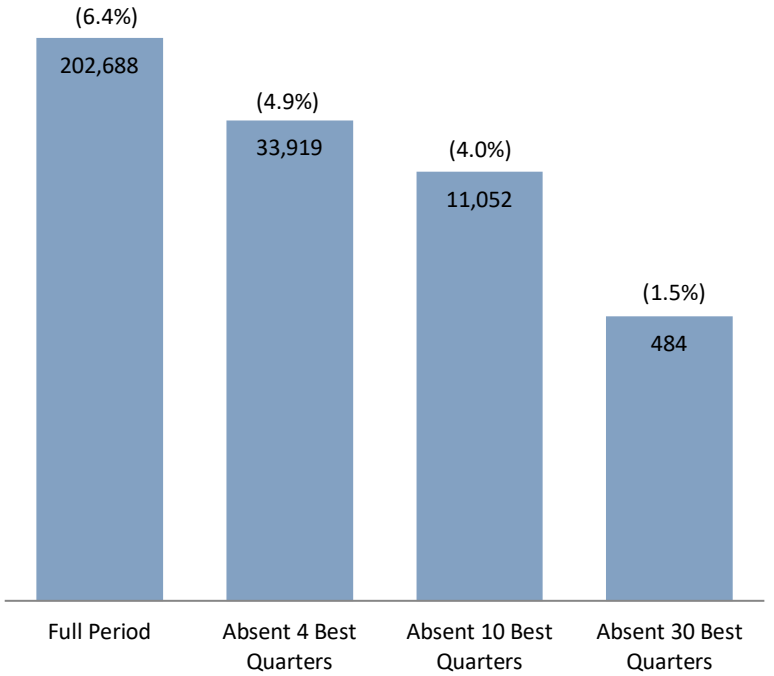
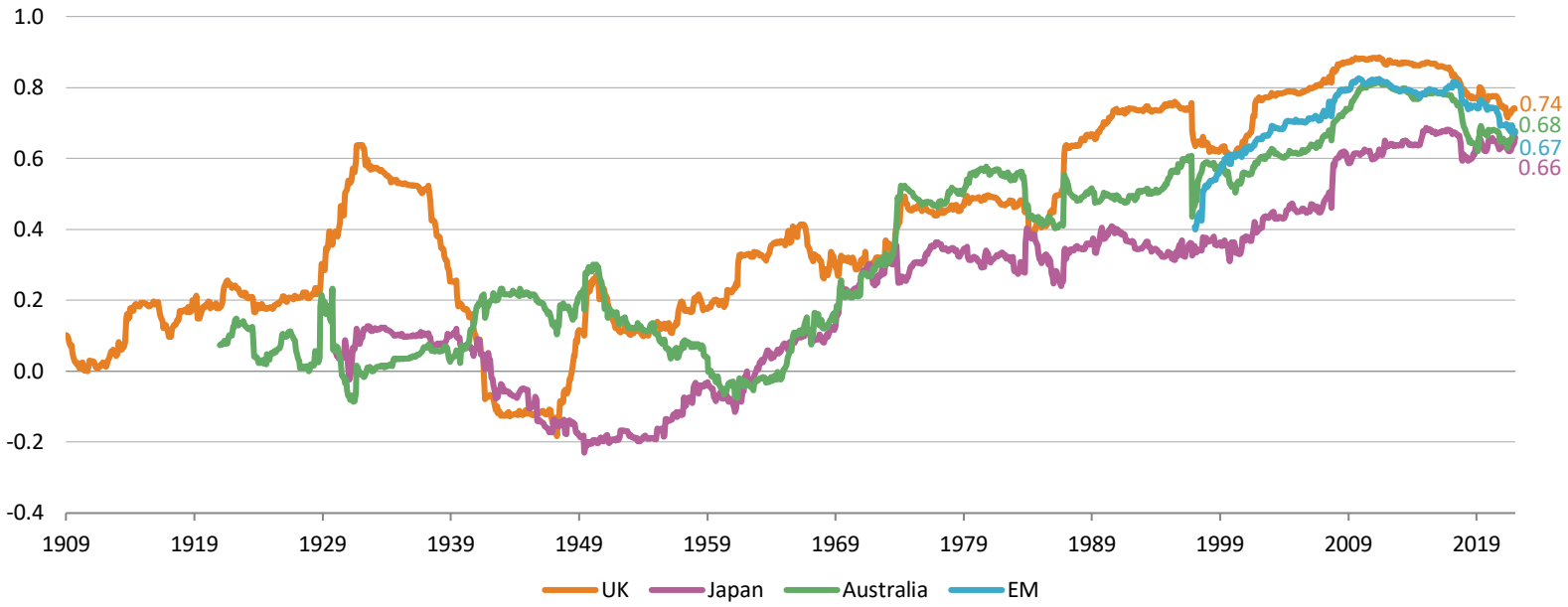


Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.
Note: Cumulative real wealth is shown on a logarithmic scale.

US equity market correlations with other regions increased in recent decades

ROLLING 10-YR CORRELATIONS: US EQUITY VS GLOBAL PEERS

December 31, 1909 – December 31, 2022 • Correlation Coefficient



CORRELATION MATRIX

January 31, 1900 – December 31, 1969

	US	UK	Japan	Australia
US	1.00			
UK	0.20	1.00		
Japan	-0.02	0.01	1.00	
Australia	0.08	0.24	0.02	1.00

CORRELATION MATRIX

January 31, 1970 – December 31, 2022

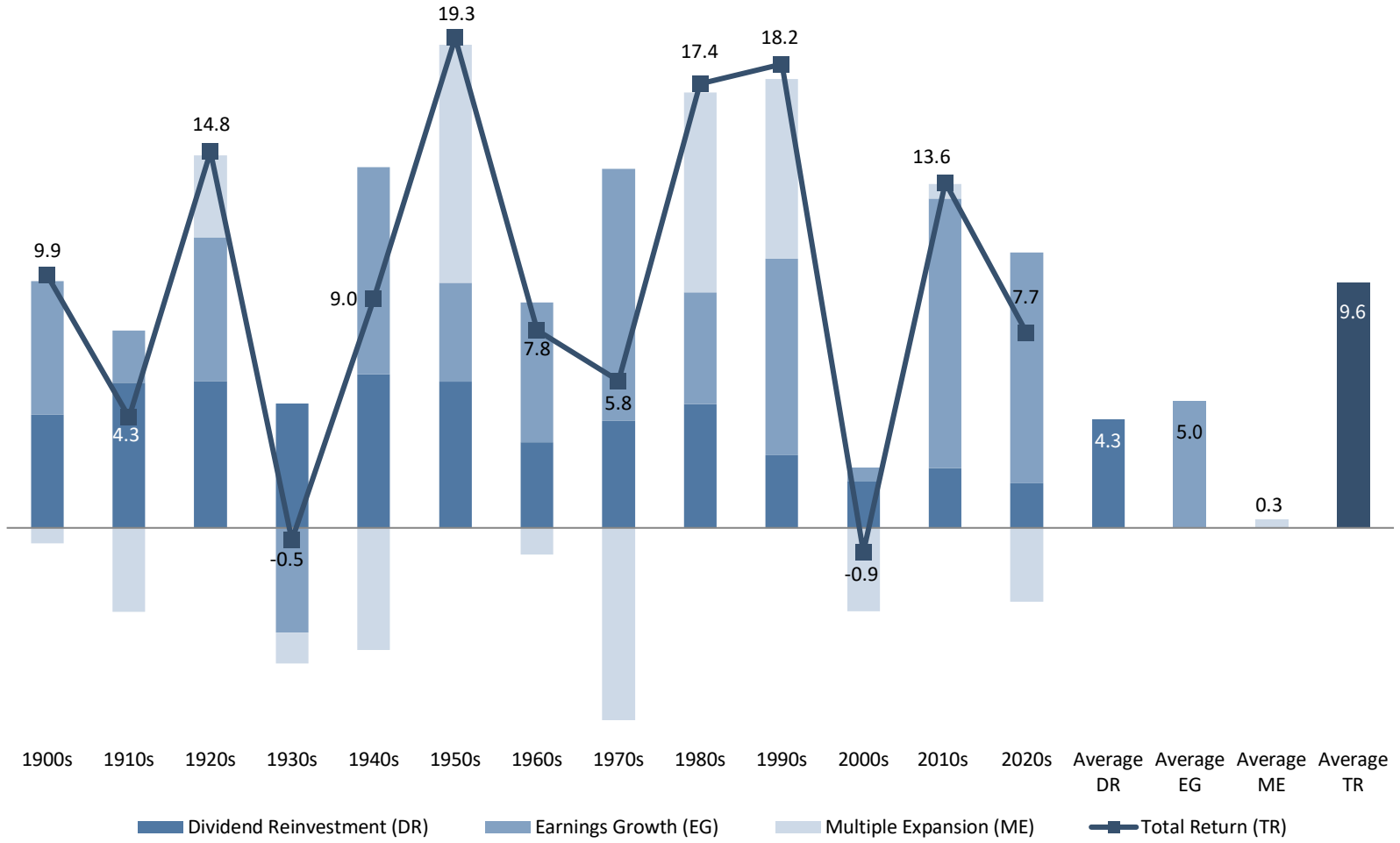
	US	UK	Japan	Australia	EM
US	1.00				
UK	0.62	1.00			
Japan	0.46	0.40	1.00		
Australia	0.57	0.54	0.36	1.00	
EM	0.66	0.63	0.50	0.59	1.00

Sources: FTSE International Limited, Global Financial Data, Inc, MSCI Inc., Standard & Poor's, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: Data for the US and UK begin on January 31, 1900. Data for Australia begin on January 31, 1912. Data for Japan begin on January 31, 1921. Data for EM begin on January 31, 1988. All return data are monthly. EM returns are in USD terms. All other returns are in local currency.

Earnings growth and dividend reinvestment drive equity market returns in the long run

BREAKDOWN OF TOTAL RETURN AACR OVER TIME

1900–2022 • Percent (%)

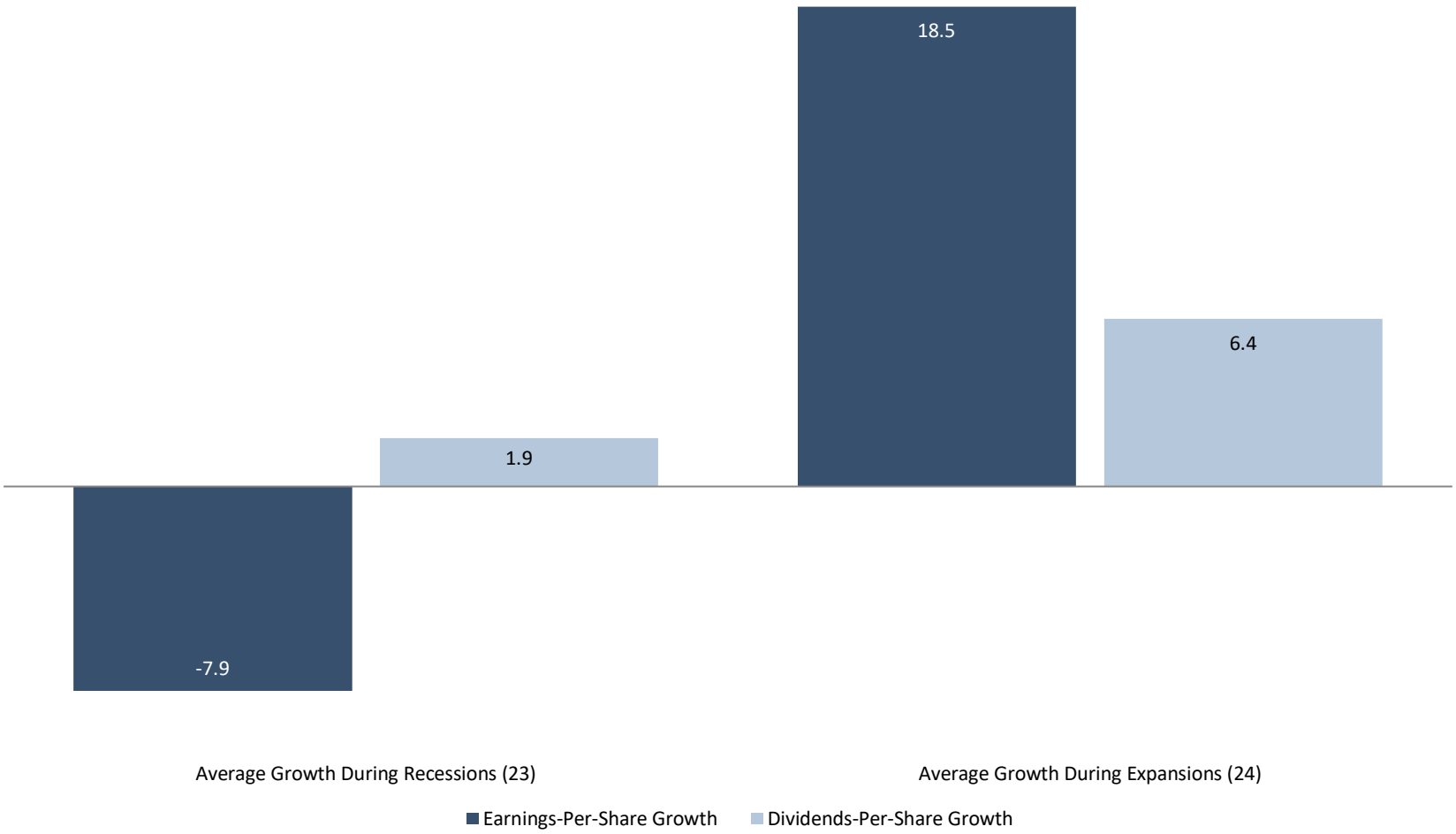


Sources: Global Financial Data, Inc., Standard & Poor's, and The Wall Street Journal.
Note: Figures will not sum exactly to total return calculation because of combining cross terms.

US companies have managed to grow dividend payouts even during recessions, on average

S&P 500 EARNINGS PER SHARE AND DIVIDENDS PER SHARE YEAR-OVER-YEAR CHANGE

1900–2022 • Percent (%)

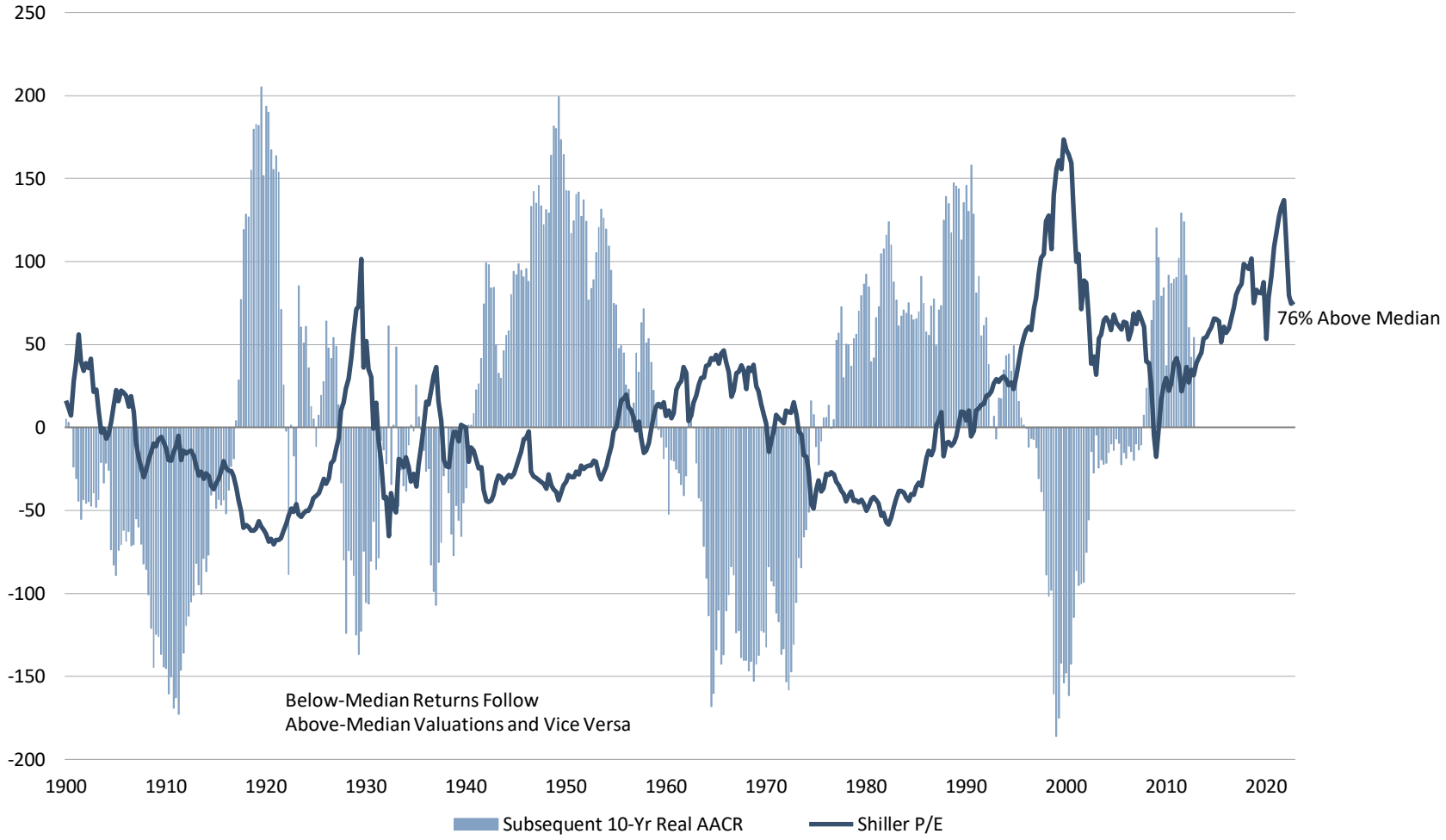


Sources: National Bureau of Economic Research, Ned Davis Research, Inc., Standard & Poor's, and The Wall Street Journal.
Notes: Recessions and expansions defined by NBER cycle peak-to-trough dates. Numbers in parentheses indicate the number of recessions and expansions experienced over the period.

Elevated starting valuations portend weak subsequent returns and vice versa

SHILLER P/E RATIOS AND SUBSEQUENT REAL 10-YR AACRS

First Quarter 1900 – Fourth Quarter 2022 • Shown as Percent Above/Below Respective Long-Term Median (%)



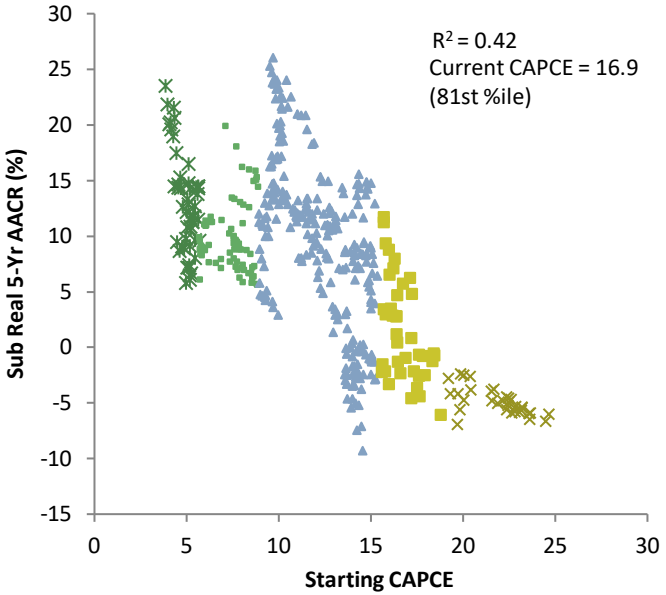
Sources: Robert J. Shiller, Standard & Poor's, Thomson Reuters Datastream, and US Department of Labor - Bureau of Labor Statistics.
Notes: Chart shows percent above/below median for returns and valuations. Line shows point-in-time normalized real price-earnings (P/E) ratios. Normalized real P/E ratios for the S&P 500 Index are calculated by dividing the inflation-adjusted index value by the rolling ten-year average of inflation-adjusted earnings. Bars are based on quarterly data and show subsequent rolling ten-year real average annual compound returns (AACRs) as a percentage above/below the long-term median ten-year real return of 6.3% since 1900. For example, the first data point shows that the real AACR for the period 1900–09 was 5.1% above the median ten-year real return.

History implies current valuations may challenge real US equity returns over the next decade

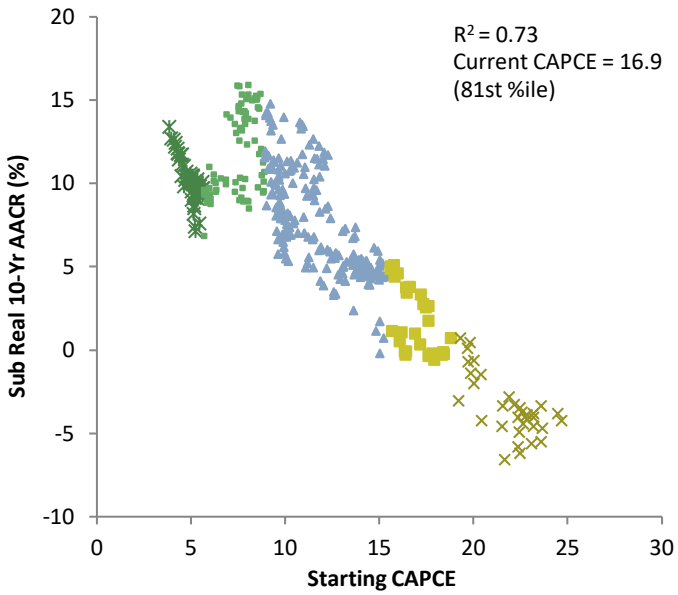
RELATIONSHIP BETWEEN CYCLICALLY ADJUSTED PRICE-TO–CASH EARNINGS RATIOS AND SUBSEQUENT REAL AACRS

December 31, 1979 – December 31, 2022

Initial Valuation and Subsequent 5-Yr AACR



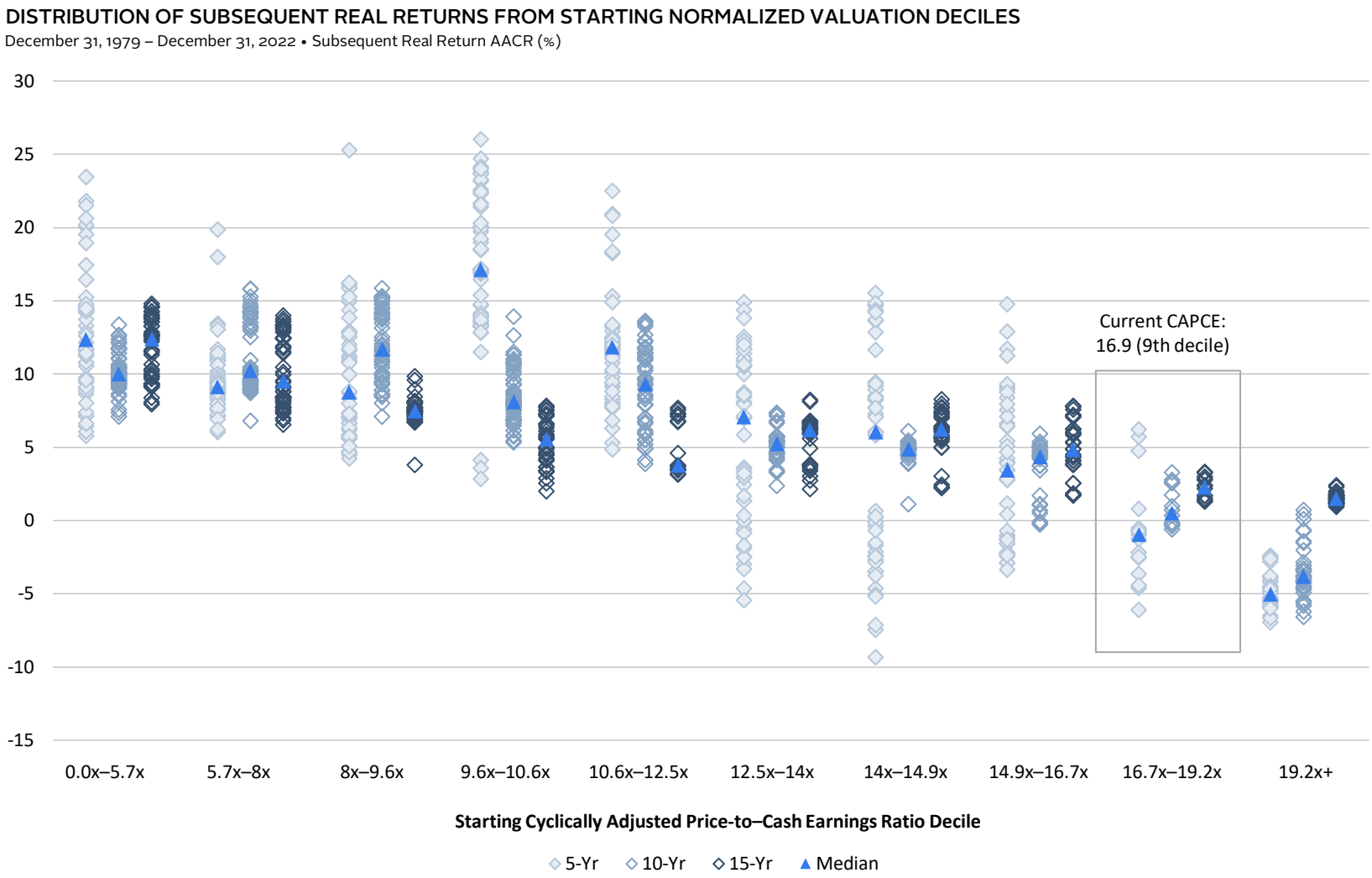
Initial Valuation and Subsequent 10-Yr AACR



CAPCE Percentile	Starting Period Cyclically Adjusted Price-to–Cash Earnings Ratio			Subsequent Real 5-Yr AACR (%)			Starting Period Cyclically Adjusted Price-to–Cash Earnings Ratio			Subsequent Real 10-Yr AACR (%)		
	Median	High	Low	Median	High	Low	Median	High	Low	Median	High	Low
0–10	5.1	5.7	3.9	12.4	23.5	5.8	5.1	5.7	3.9	10.0	13.4	7.1
10–25	7.7	8.9	5.7	9.1	19.9	5.6	7.7	8.9	5.7	11.0	15.9	6.8
25–75	12.4	15.6	8.9	10.1	26.0	-9.3	11.6	15.6	8.9	6.9	14.8	-0.2
75–90	16.4	18.8	15.6	0.4	11.7	-6.1	16.8	18.8	15.6	1.1	5.1	-0.6
90–100	22.4	24.7	19.2	-5.0	-2.4	-7.0	22.4	24.7	19.2	-3.8	0.7	-6.6
Overall	**11.5**	**24.7**	**3.9**	**8.9**	**26.0**	**-9.3**	**10.2**	**24.7**	**3.9**	**8.5**	**15.9**	**-6.6**

Sources: MSCI Inc. and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: Data are monthly. The last full five-year period was January 1, 2018, to December 31, 2022, and the last full ten-year period was January 1, 2013, to December 31, 2022.

Starting normalized valuations are more meaningful as holding periods increase



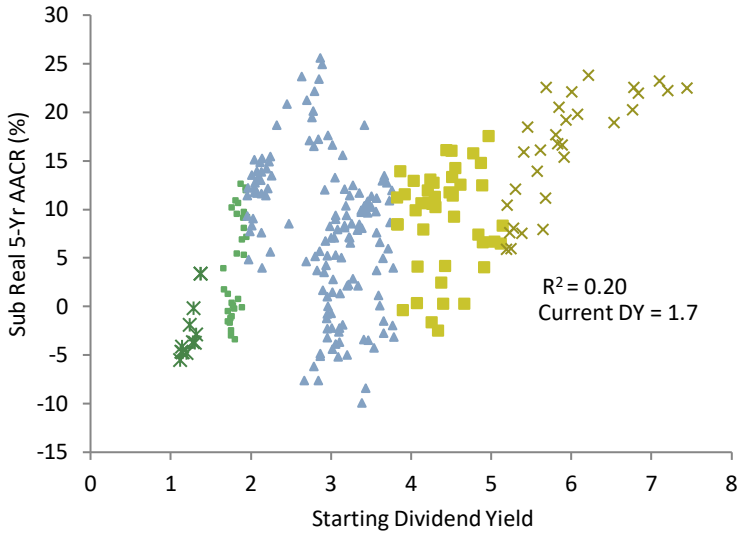
Sources: MSCI Inc. and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: Data are monthly. The last full five-year period was January 1, 2018, to December 31, 2022, the last full ten-year period was January 1, 2013, to December 31, 2022, and the last full 15-year period was January 1, 2008, to December 31, 2022.

Dividend yield is a key driver of return, but the relationship with subsequent returns is weak

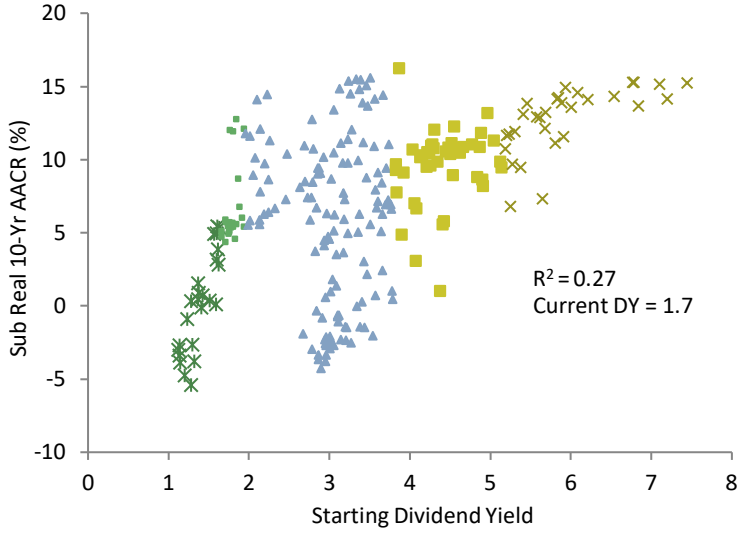
RELATIONSHIP BETWEEN DIVIDEND YIELDS AND SUBSEQUENT REAL AACRS

Fourth Quarter 1950 – Fourth Quarter 2022

Dividend Yield and Subsequent 5-YR AACR



Dividend Yield and Subsequent 10-YR AACR



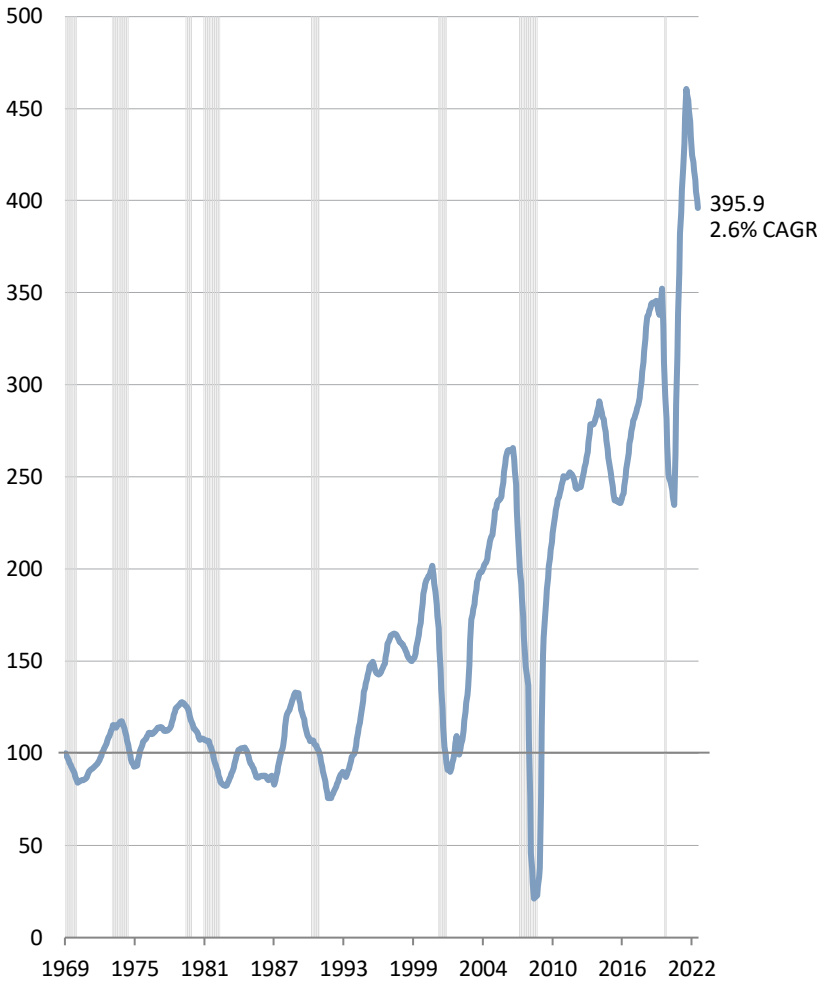
Dividend Yield Percentile	Starting Period Dividend Yield (%)			Subsequent Real 5-Yr AACR (%)			Starting Period Dividend Yield (%)			Subsequent Real 10-Yr AACR (%)		
	Median	High	Low	Median	High	Low	Median	High	Low	Median	High	Low
0–10	1.3	1.4	1.1	-3.7	3.4	-5.5	1.4	1.6	1.1	0.3	5.4	-5.4
10–25	1.8	2.0	1.7	3.9	12.6	-3.4	1.8	1.9	1.7	5.6	12.7	4.4
25–75	3.0	3.8	2.0	8.3	25.6	-9.9	3.1	3.8	2.0	6.4	15.6	-4.3
75–90	4.4	5.1	3.8	10.5	17.5	-2.4	4.4	5.1	3.8	10.3	16.3	1.0
90–100	5.8	7.4	5.2	17.2	23.8	5.9	5.8	7.4	5.2	13.4	15.3	6.8
Overall	**3.1**	**7.4**	**1.1**	**8.2**	**25.6**	**-9.9**	**3.2**	**7.4**	**1.1**	**7.3**	**16.3**	**-5.4**

Sources: Global Financial Data, Inc., Standard & Poor's, Thomson Reuters Datastream, US Department of Labor - Bureau of Labor Statistics, and The Wall Street Journal.
Notes: Data are quarterly. The last full five-year period was first quarter 2018 through fourth quarter 2022. The last full ten-year period was first quarter 2013 through fourth quarter 2022. Outliers are not shown on graph but are included in R2.

Corporate earnings trend higher over the long term but draw down sharply during recessions

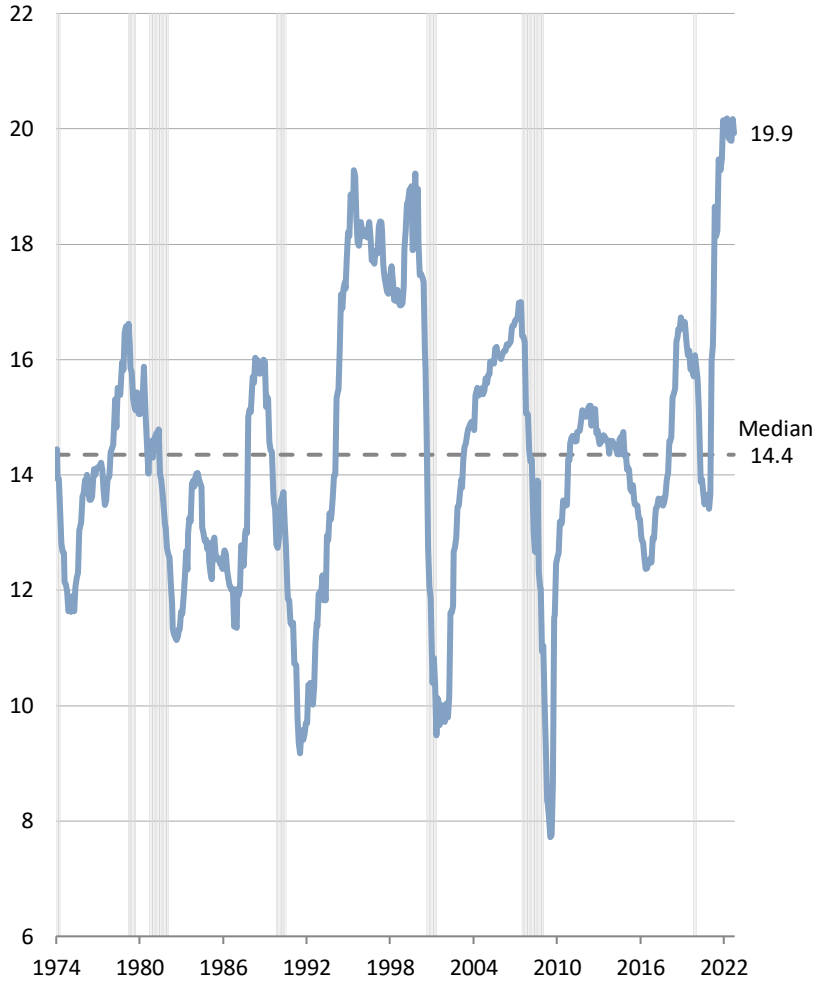
REAL EARNINGS PER SHARE OVER TIME

December 31, 1969 – December 31, 2022 • December 31, 1969 = 100



RETURN ON EQUITY

December 31, 1974 – December 31, 2022 • Percent (%)

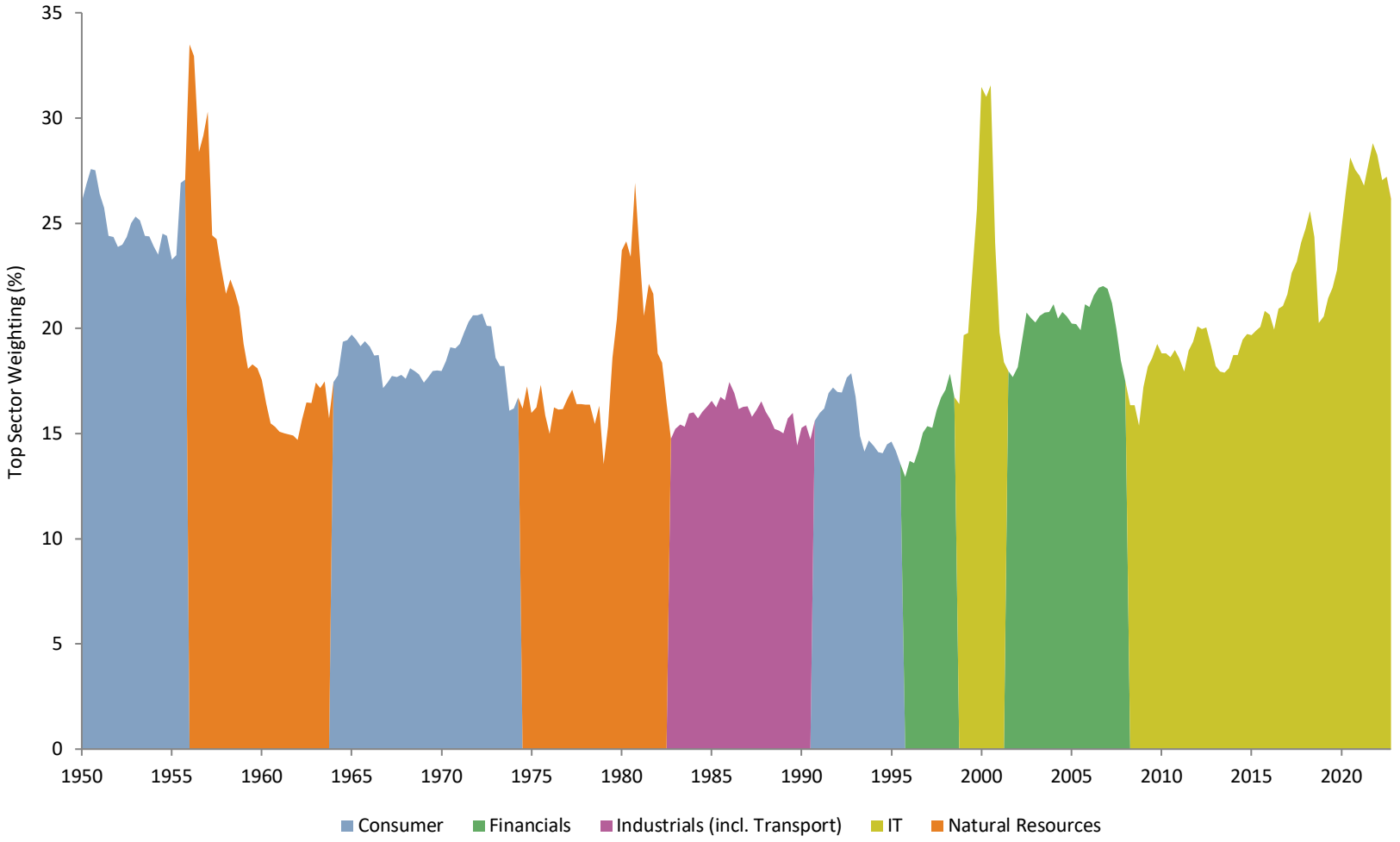


Sources: MSCI Inc., Standard & Poor's, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.
Note: Real earnings per share is based on the S&P 500 Index and return on equity is based on the MSCI US Index.

The largest sectors typically represent around 20% of the US equity market

S&P 500 INDEX LARGEST SECTORS BY MARKET CAPITALIZATION

First Quarter 1950 – Fourth Quarter 2022 • Index Weight (%)

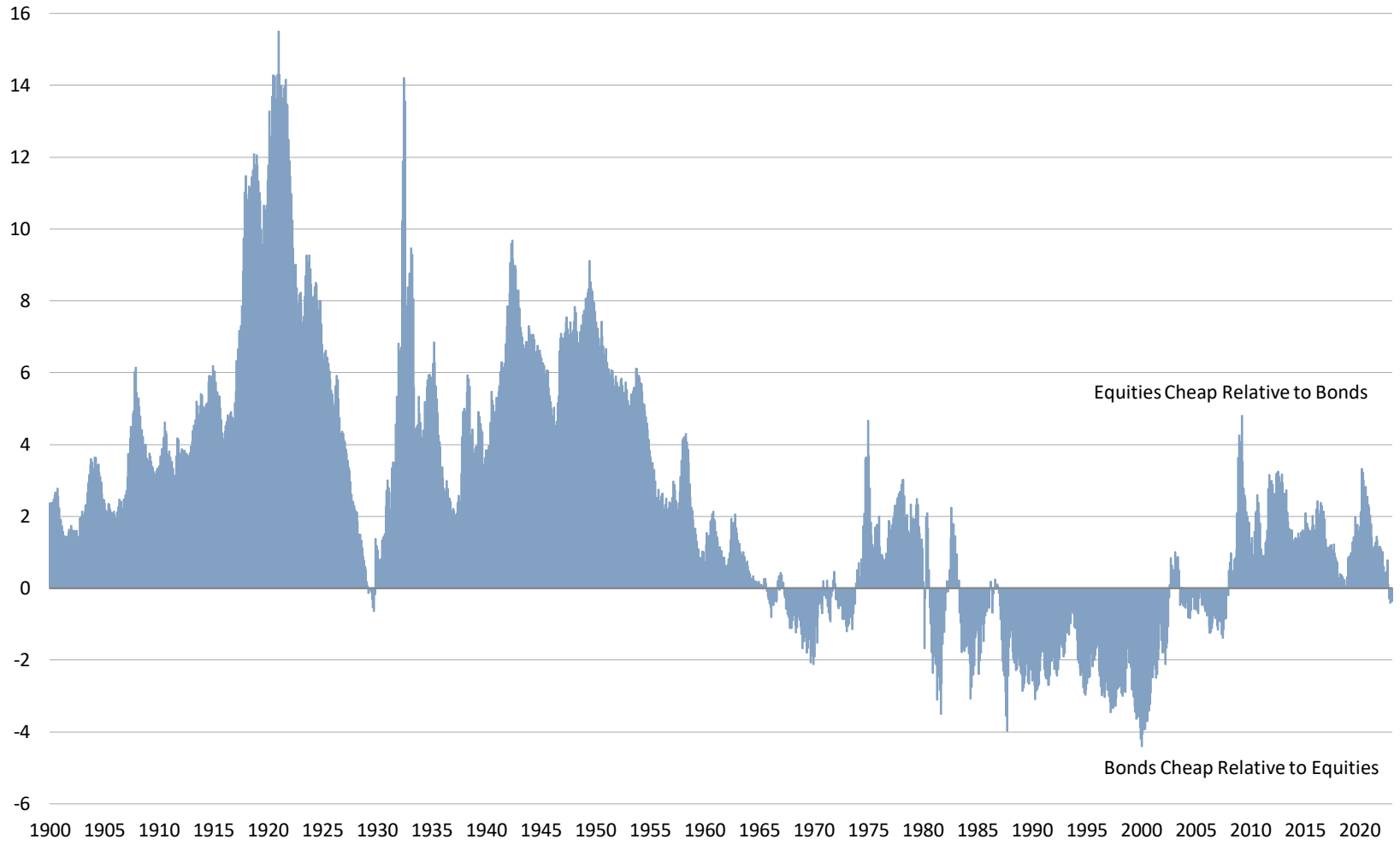


Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.
Notes: The chart shows the GICS® sector with the highest weight in the index at each point in time, based on quarterly average market cap weight. A sector must maintain the highest quarterly average weight for four consecutive quarters to be included. Consumer includes Consumer Staples and Consumer Discretionary. Additionally, Natural Resources includes Energy and Materials.

The relationship between equity and bond valuations has shifted over time

SHILLER EARNINGS YIELDS VERSUS 10-YR BOND YIELDS

1900–2022

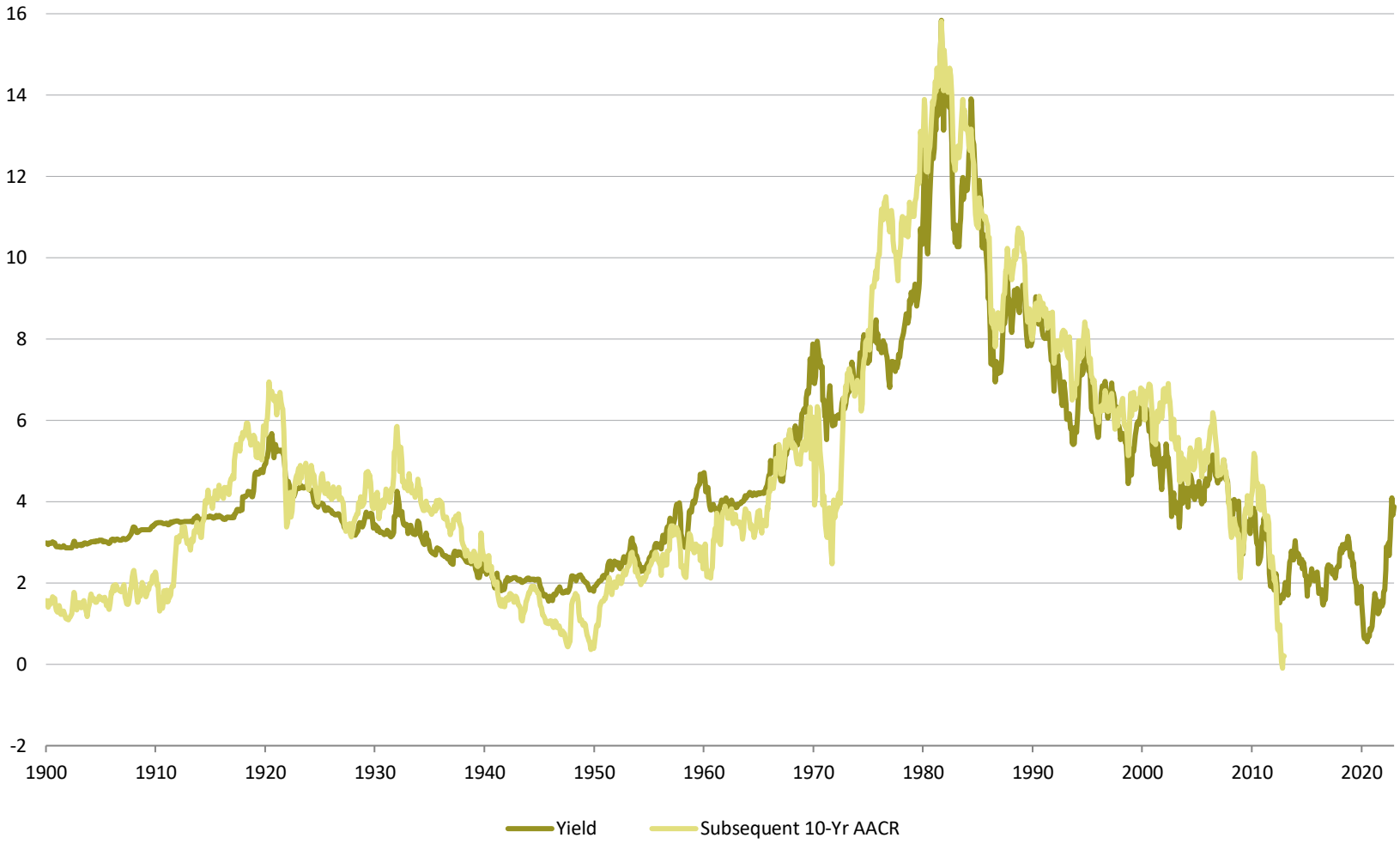


Sources: Global Financial Data, Inc., Robert J. Shiller, and Standard & Poor's.
Notes: Data are monthly. Chart shows the spread between the normalized earnings yields and ten-year bond yields calculated as earnings yield minus bond yield. Normalized earnings yields are based on the Shiller P/E ratio.

Starting bond yields are a reasonable barometer for prospective nominal returns

RELATIONSHIP BETWEEN TREASURY BOND YIELDS AND SUBSEQUENT 10-YR AACRS

1900–2022 • Percent (%)



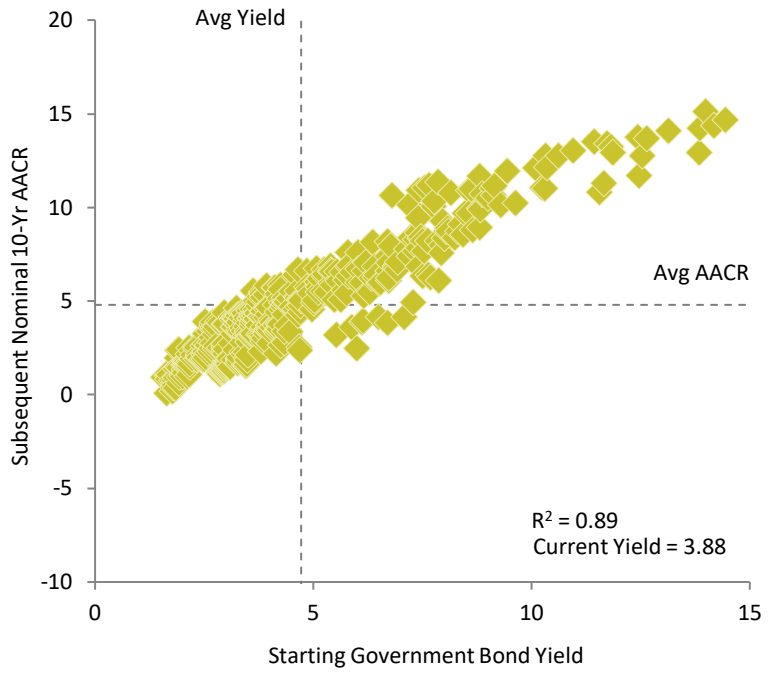
Source: Global Financial Data, Inc.
Notes: Data are monthly. The last full ten-year period was January 1, 2013, to December 31, 2022.

The starting yield-subsequent return relationship is weaker when accounting for inflation

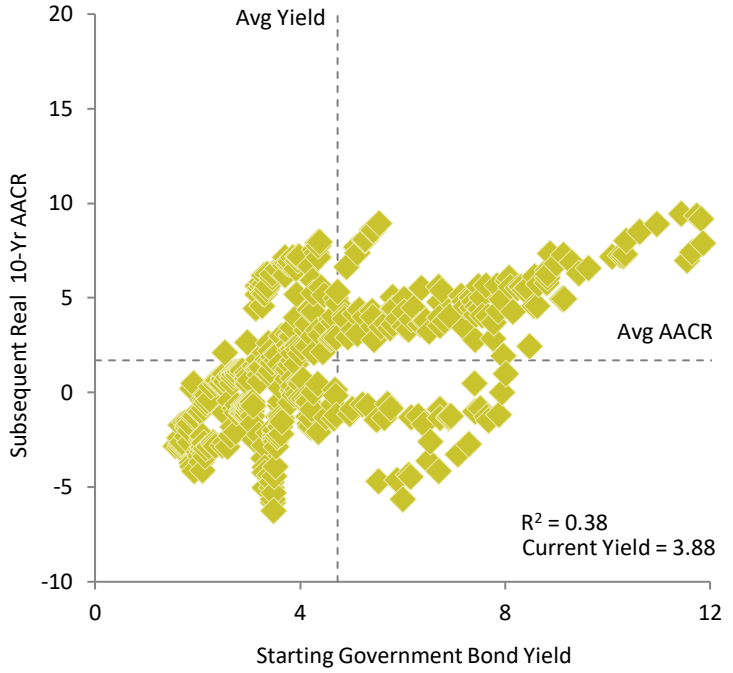
RELATIONSHIP BETWEEN GOVERNMENT BOND YIELDS AND SUBSEQUENT 10-YR AACRS

1900–2022 • Percent (%)

Nominal Returns



Real Returns



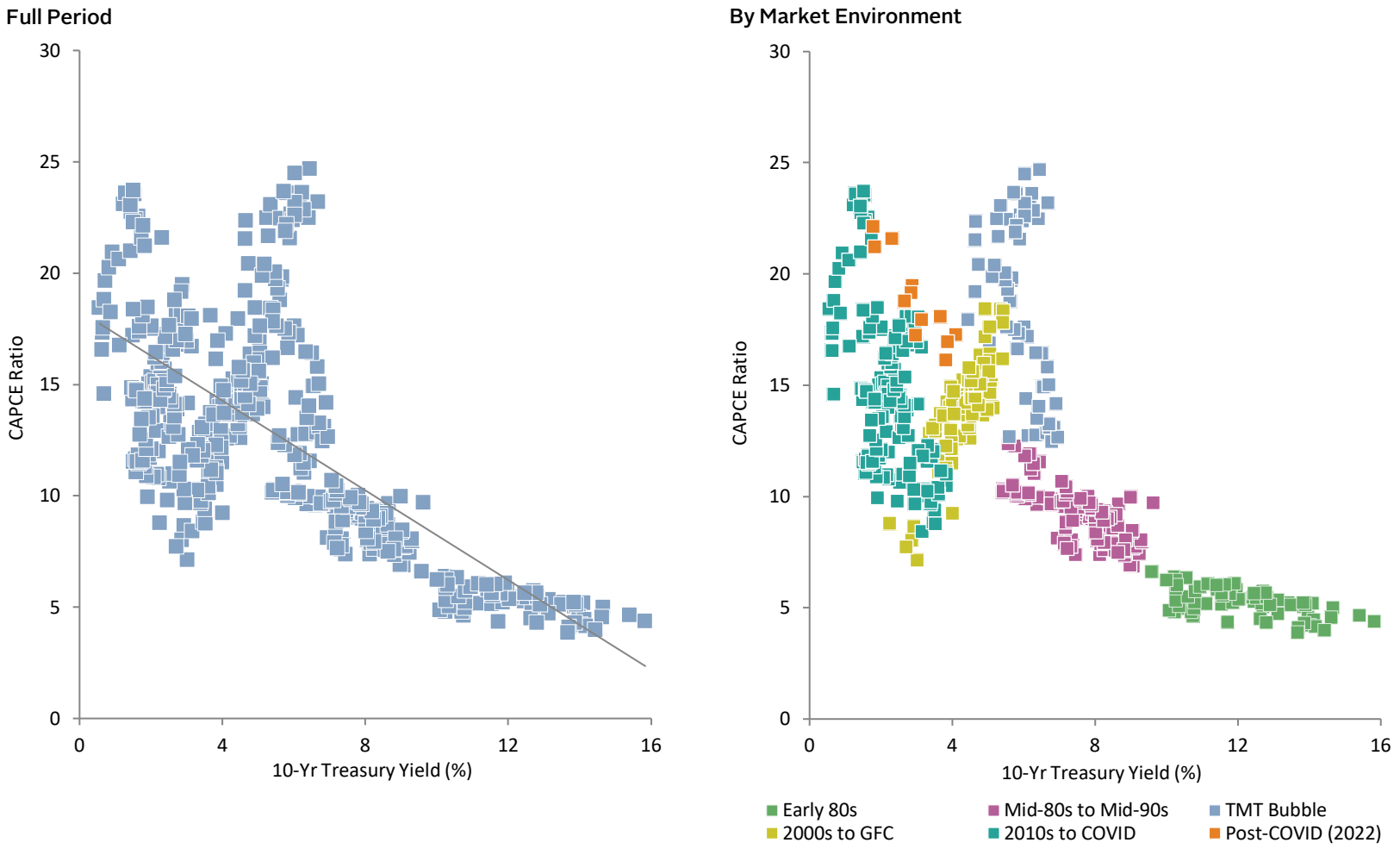
Yield Quartiles	Starting Period Government Bond Yields			Subsequent Nominal 10-Yr AACR (%)				Starting Period Government Bond Yields			Subsequent Real 10-Yr AACR (%)			
	Mean	High	Low	Mean	High	Low	Std Dev	Mean	High	Low	Mean	High	Low	Std Dev
First	2.38	2.98	1.57	1.95	4.38	0.07	0.93	2.38	2.98	1.57	-1.04	2.65	-4.14	1.57
Second	3.43	3.85	2.98	3.34	5.55	1.47	1.14	3.43	3.85	2.98	0.81	7.15	-6.26	3.58
Third	4.63	5.90	3.85	4.83	7.60	2.22	1.23	4.63	5.90	3.85	2.75	8.93	-4.70	3.12
Fourth	8.48	15.84	6.00	9.10	15.82	2.48	2.83	8.48	15.84	6.00	4.23	11.43	-5.65	3.77
Overall	**4.73**	**15.84**	**1.57**	**4.80**	**15.82**	**0.07**	**3.18**	**4.73**	**15.84**	**1.57**	**1.69**	**11.43**	**-6.26**	**3.70**

Sources: Global Financial Data, Inc. and Thomson Reuters Datastream.
Notes: Data are quarterly. The last full ten-year period was first quarter 2013 through fourth quarter 2022.

Low (high) US Treasury yields are generally associated with higher (lower) equity valuations

RELATIONSHIP BETWEEN EQUITY VALUATIONS AND 10-YR TREASURY YIELDS

December 31, 1979 – December 31, 2022

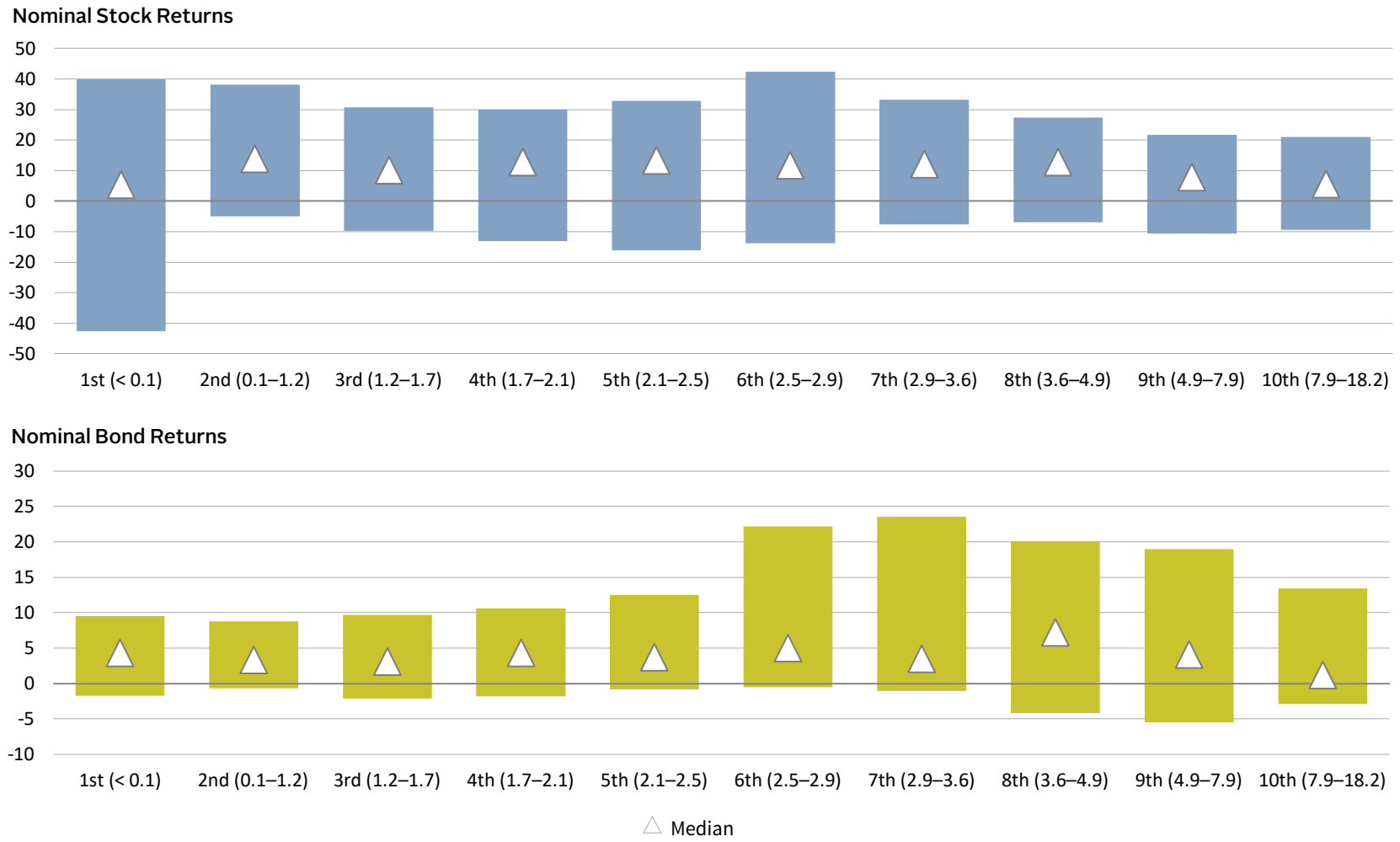


Sources: Federal Reserve, MSCI Inc., and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: "TMT Bubble" refers to the late-1990s period of rising equity prices, particularly for internet-related companies. This period is also commonly referred to as the dot-com bubble. TMT stands for technology, media, and telecommunications. Data are monthly.

Median nominal equity returns are weakest at deflationary and inflationary extremes; high yields insulate nominal bond returns amid periods of high inflation

ROLLING 3-YR NOMINAL STOCK AND BOND RETURNS BY INFLATION DECILE

1902–2022 • AACR (%)



Sources: Global Financial Data, Inc., Standard & Poor's, Thomson Reuters Datastream, and US Department of Labor - Bureau of Labor Statistics.
Note: X-axis data in parentheses are inflation ranges by decile.

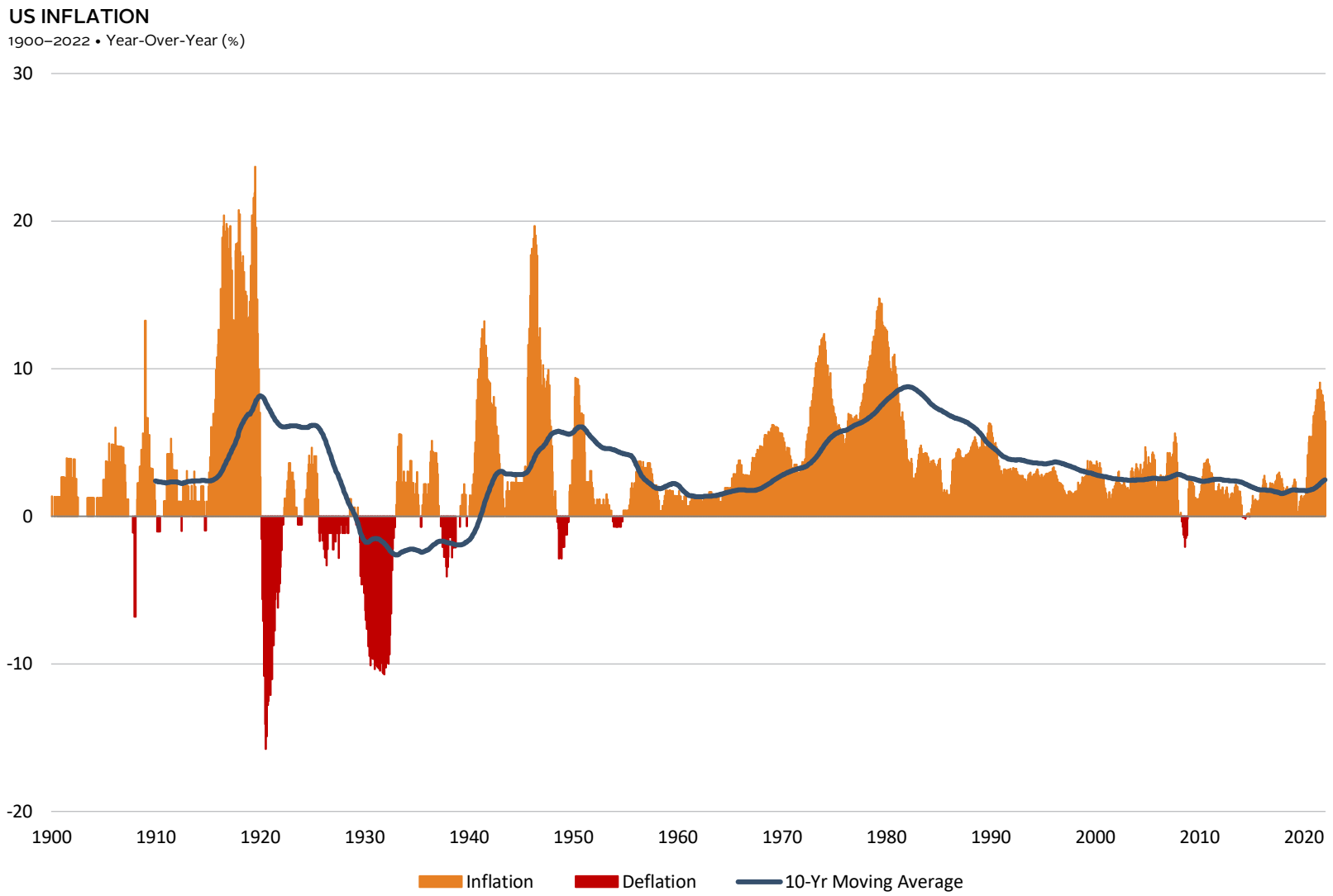
Inflation significantly erodes bond returns in real terms

ROLLING 3-YR REAL STOCK AND BOND RETURNS BY INFLATION DECILE

1902–2022 • AACR (%)

Sources: Global Financial Data, Inc., Standard & Poor's, Thomson Reuters Datastream, and US Department of Labor - Bureau of Labor Statistics.
Note: X-axis data in parentheses are inflation ranges by decile.

US inflation spiked in 2022 but has reached higher levels over the long-term history

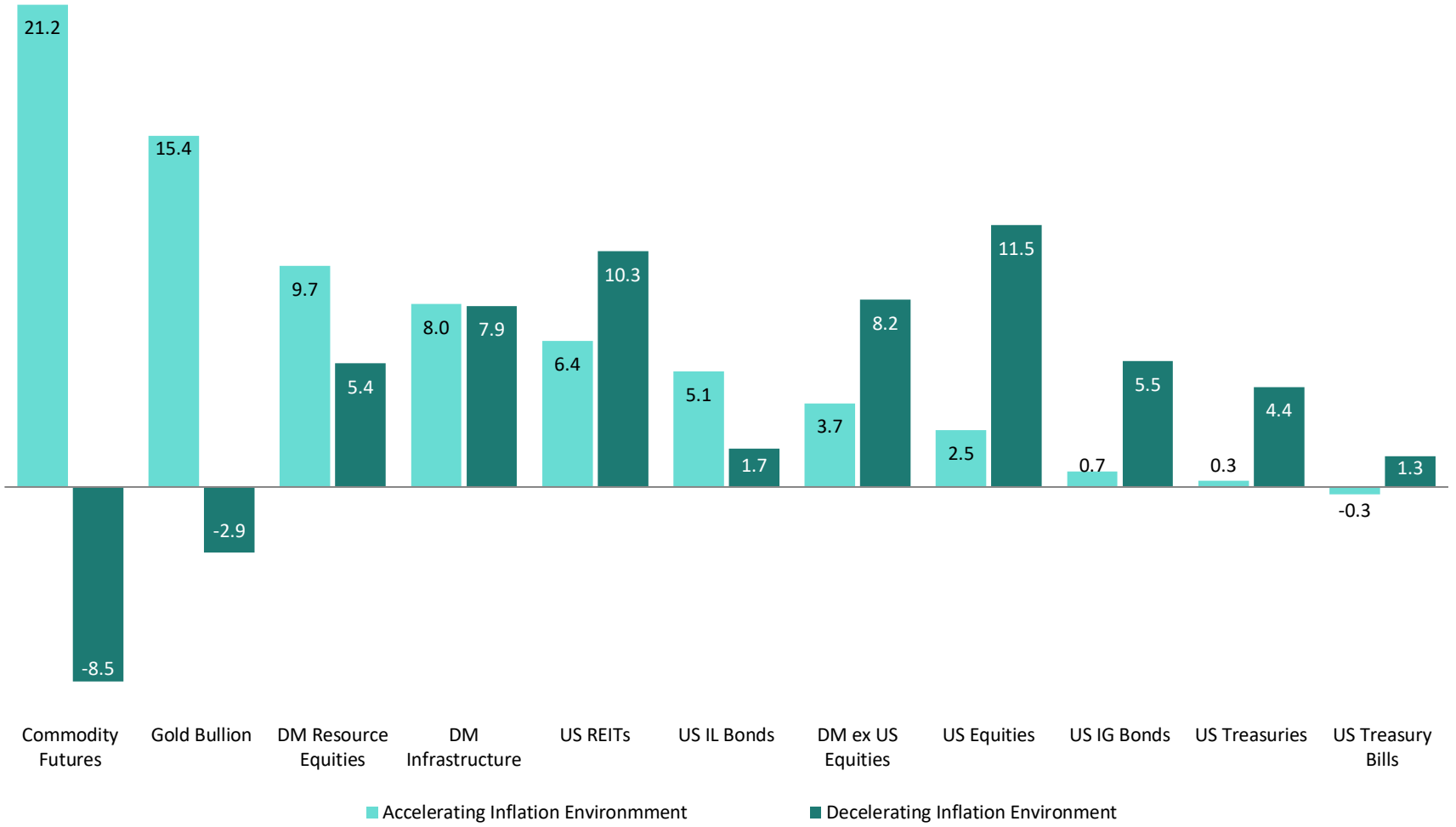


Sources: Global Financial Data, Inc. and Thomson Reuters Datastream.
Notes: Data are monthly. Moving average begins ten years after the first monthly observation.

US equities and bonds enjoy stronger returns in decelerating inflation environments

REAL RETURNS ACROSS DIFFERENT INFLATIONARY ENVIRONMENTS

1973–2022 • Percent (%)



Sources: Bloomberg Index Services Limited, Federal Reserve, FTSE International Limited, London Bullion Market Association, MSCI Inc., National Association of Real Estate Investment Trusts, Standard & Poor's, Thomson Reuters Datastream, and US Bureau of Labor Statistics. MSCI data provided "as is" without any express or implied warranties.
Notes: An accelerating (decelerating) inflation environment is when the annual change in the inflation rate is positive (negative). Returns are adjusted by inflation and are arithmetic averages across environments.

Asset class leadership has been varied during past Federal Reserve tightening cycles

BOND & EQUITY RETURNS DURING PERIODS WHEN TARGET FED FUNDS RATE INCREASED BY 100 BPS OR MORE

As of December 31, 2022

Period of ≥100 bps Target Fed Rate Increase			Months	Target Fed Funds Rate Change (bps)	Cumulative Return (%)					
					T-Bills	10-Yr US Govt Bonds	Global ex US Bonds	DM ex US Equities	EM Equities	S&P 500
7/1/1971	to	10/31/1971	4	150	1.6	8.6	8.8	-3.6	NA	-4.5
3/1/1972	to	6/30/1974	28	700	16.4	4.3	-2.2	4.6	NA	-13.2
8/1/1977	to	3/31/1980	32	1,175	25.0	-8.7	38.6	51.2	NA	18.4
10/1/1980	to	2/28/1981	5	650	5.7	-3.5	20.9	-2.4	NA	6.6
5/1/1981	to	6/30/1981	2	350	2.6	3.7	-9.2	-3.5	NA	-0.4
2/1/1982	to	4/30/1982	3	200	3.5	5.1	-0.8	-6.5	NA	-1.7
3/1/1984	to	8/31/1984	6	206	5.4	2.3	-5.7	-2.5	NA	8.9
3/1/1988	to	5/31/1989	15	331	9.8	8.6	-5.8	13.2	79.6	25.3
2/1/1994	to	6/30/1995	17	300	7.0	6.5	26.7	2.0	-12.0	17.8
6/1/1999	to	12/31/2000	19	175	9.3	14.3	-0.7	10.2	-8.1	3.3
6/1/2004	to	8/31/2007	39	425	12.9	17.0	15.8	83.7	173.1	39.6
12/1/2015	to	7/31/2019	44	225	4.6	10.8	17.2	21.9	39.3	54.4
3/1/2022	to	Present	10	425	1.4	-14.8	-19.2	-8.9	-16.0	-11.0

Sources: Federal Reserve, FTSE Fixed Income LLC, Global Financial Data, Inc., MSCI Inc., Standard & Poor's, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: Global ex US Bond returns reflect the Global Financial Data Developed Countries x/USA Government Bond GDP-weighted Index from July 1, 1971, to December 31, 1984, and the FTSE WGBI ex US thereafter. DM ex US Equity returns reflect the MSCI World ex US Index and EM Equity returns reflect the MSCI EM Index. Shading represents the top-performing asset class in each rate-hiking period.

Graham Landrith, Mark Sintetos, and Ilona Vdovina also contributed to this report.