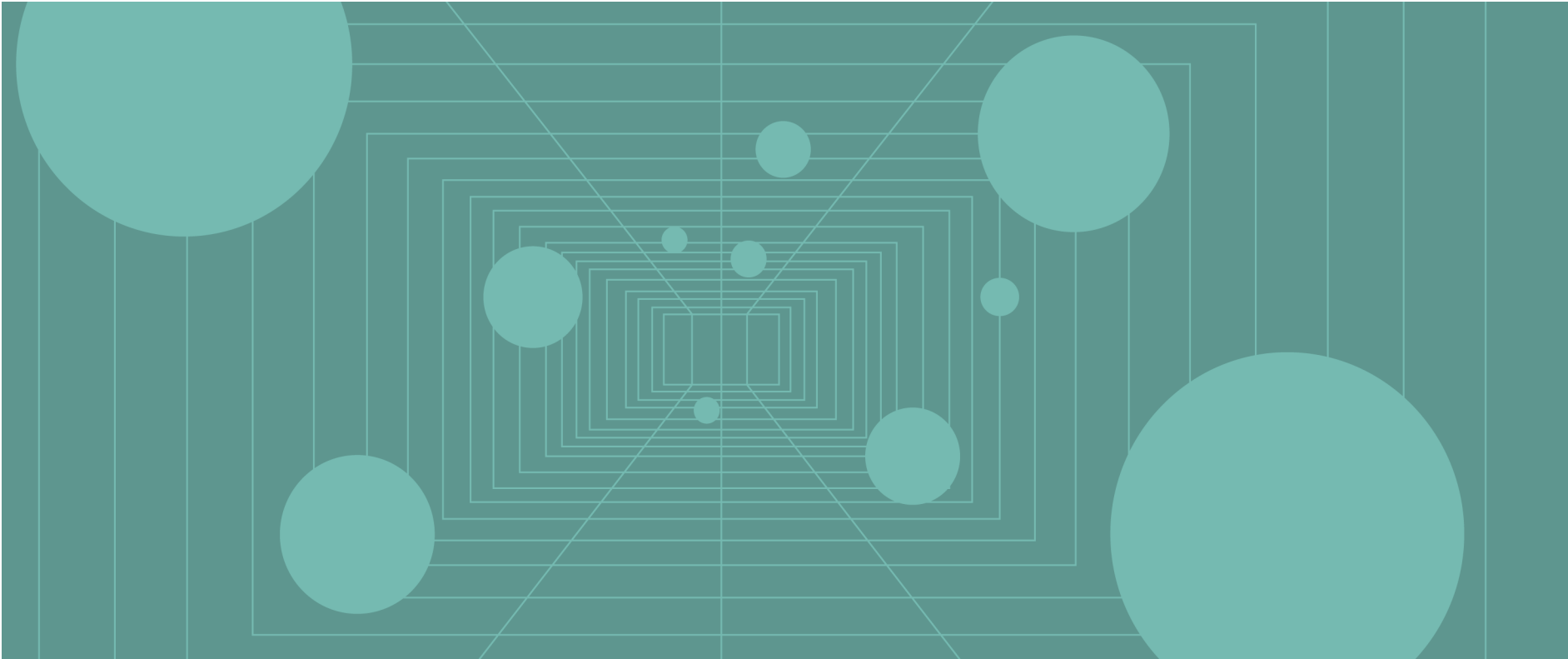


DECADES OF DATA: UNITED KINGDOM

1900–2021



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.
- **UK equities (18.3%) rebounded in 2021 on strong earnings growth as inflation rates surged to multi-decade highs.** UK equity performance in 2021 ranked in the 72nd percentile of calendar year returns since 1900. But, despite the relatively strong return, UK shares failed to retake their pre-COVID-19 pandemic peak reached in January 2020. Global price inflation was a prominent market theme in 2021, and the United Kingdom was no exception. Consumer price inflation accelerated to 5.4% year-over-year by December, the highest rate since 1992. The inflationary spike resulted from a strong demand recovery in the aftermath of the COVID-19-induced recession and its related supply constraints. Resurgent consumer prices have bucked their long-term downtrend since the high inflation environment of the late 1970s/early 1980s. In fact, December's inflation reading was three times as high as its trailing ten-year average. This reversal from longer-term trends was nearly unprecedented and the most extreme since 1975 when the UK Retail Price Index hit year-over-year rates of more than 20%.
- **Recent UK equity returns have struggled to keep up with their long-term average.** Investors in UK equities have earned a nominal average annual compound return (AACR) of 7.7% over the past ten years. For the full period analyzed (1900–2021), UK equities have posted a nominal AACR of 8.6%. However, timing mattered: monthly rolling ten-year AACRs reached their highest point this cycle in February 2019 at 11.2%, which was the strongest ten-year return period since the period ending March 2002. The February peak coincided with the ten-year horizon when the largest declines during the global financial crisis (GFC) fell out of the data set, beginning in March 2009 when the FTSE® All-Share Index hit its bottom. 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. Above-average performance proved to be short-lived, however, as trailing ten-year returns for UK equities have been below their long-term average since August 2019.

Executive Summary (continued)

- **Equities are most likely to outpace inflation over long-term periods, generating positive inflation-adjusted returns at the lower end of the returns range.** Over rolling 50-year periods, real AACRs for UK stocks ranged from 2.0% to 8.2%, whereas the range for benchmark government bonds (-1.8% to 3.5%) and cash (-1.1% to 2.0%) indicated greater potential for diminished purchasing power over certain periods. Equities, however, never lost out to inflation over the very long term. Inflation in the United Kingdom has averaged 3.7% annually, roughly in line with other developed economies. Benchmark UK government bonds and cash produced full-period AACRs of 5.0% and 4.5%, respectively, since 1900, which is a significantly narrower spread vis-à-vis inflation relative to stocks versus inflation. Interestingly, UK government bonds had a lower minimum real return over the very long term relative to cash, likely a result of greater duration risk inherent in bonds versus cash.
- **Over the long term, UK equity investors have a high probability of being compensated for the additional risk of holding stocks.** Since 1900, UK equity returns exceeded bond returns during 72% of all five-year periods, 76% of all ten-year periods, and 93% of all 25-year periods (calculated on a nominal basis using rolling monthly data). While equities tend to outperform in the long term, since 1900, there have been periods of underperformance over rolling five-year periods, as volatile equities are prone to larger drawdowns than bonds. Such periods are a reminder of the ballast fixed income allocations have provided to portfolios in terms of diversification, though today's historically low-yield environment has challenged this conventional wisdom.
- **Earnings growth and dividend reinvestment, respectively, are the primary contributors to equity total return over time, while valuation mean reversion diminishes the impact of multiple rerating.** 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. In the two calendar years of the current decade, earnings have expanded, as strong earnings growth in 2021 outweighed a steep decline in 2020, leading to valuation multiple contraction. Dividend reinvestment's contribution to UK equity performance has been more stable relative to the United States, but has declined somewhat over time as share buybacks have become more prominent. In the past two decades, dividend reinvestment averaged 3.6% versus 4.7% in the roughly four-decade period from 1960 to 2001. Over the full historical period, dividend reinvestment averaged 4.4%.

Executive Summary (continued)

- **Starting valuations are a useful indicator for long-term (10+ years) subsequent equity returns, but the relationship is weaker over shorter time horizons.** 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 Kingdom has explained 74% of the variation in subsequent ten-year real returns, a moderately strong yet imperfect guide to future returns. At December 31, 2021, UK equity valuations ended in the 24th percentile of historical observations, and from this valuation decile, the median subsequent ten-year real return for UK equities has been about 9% 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.** UK equities provide a fitting example. Since mid-2008, valuations have been below the 50th percentile 98% of the time, based on our CAPCE ratio distribution dating back to the late 1970s. 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 UK 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.
- **Equity dividend yields are not as useful as normalized valuations when it comes to predicting subsequent performance, but starting dividend yields are consistent with the expected relative direction of future returns.** In the United Kingdom, 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 15th percentile of the historical distribution, where subsequent real ten-year returns historically have been about 6% annualized. Dividend yields fail to capture the whole picture, however, as many other factors influence equity market returns. 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 the 1960s, UK companies managed to maintain a net positive average dividend growth rate during recessions. While earnings growth is more sensitive to the economic cycle, dividends provide a relatively stable tailwind to total returns.

Executive Summary (continued)

- **Subsequent nominal ten-year UK bond returns generally track the starting yield, displaying a tighter fit since the 1960s.** With bond yields near historical lows in the United Kingdom, the outlook for future returns is decidedly low. In July 2020, UK ten-year gilt yields fell to their lowest levels on record and ended 2021 at just 0.97%. There is no comparable period of such low yield levels in the United Kingdom, but if the strong correlation between starting yields and subsequent performance observed since the 1960s (correlation coefficient = 0.98) is a guide, UK bond returns are very likely to be well below average in the ensuing ten years. Also, even low inflation could erode UK bond returns in real terms. While falling yields have been a boon for UK bond investors for the past 40+ years, with UK gilts returning 9.9% annualized since 1974, today's low-yield environment may cap future returns. Such low yields today mean investors may need to consider other avenues for defensive portfolio diversification.
- **The relationship between the level of UK gilt yields and equity market valuations in the United Kingdom is unclear.** Many have argued in recent years that high equity valuations, particularly in the United States, are justified (or at least in part explained) by low Treasury yields. The reasoning is fairly straightforward; when discount rates fall, the present value of future cash flows increases, thus pushing up valuations. However, this is not the case for UK equities. Despite a sustained gilt yield decline since the GFC, UK equity valuations have struggled to rise above their historical median. In fact, since 1979, ten-year UK gilt yields have explained only 7% of the variation in equity market valuations. The UK equity market's composition—namely outsized exposure to value-oriented financials and natural resources-linked stocks—may help explain the depressed valuations in the post-crisis period. While there is a slightly negative relationship between gilt yields and equity market valuations overall, gilt yields have little explanatory power relative to equity market valuations. Given the historical evidence, 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.

Executive Summary (continued)

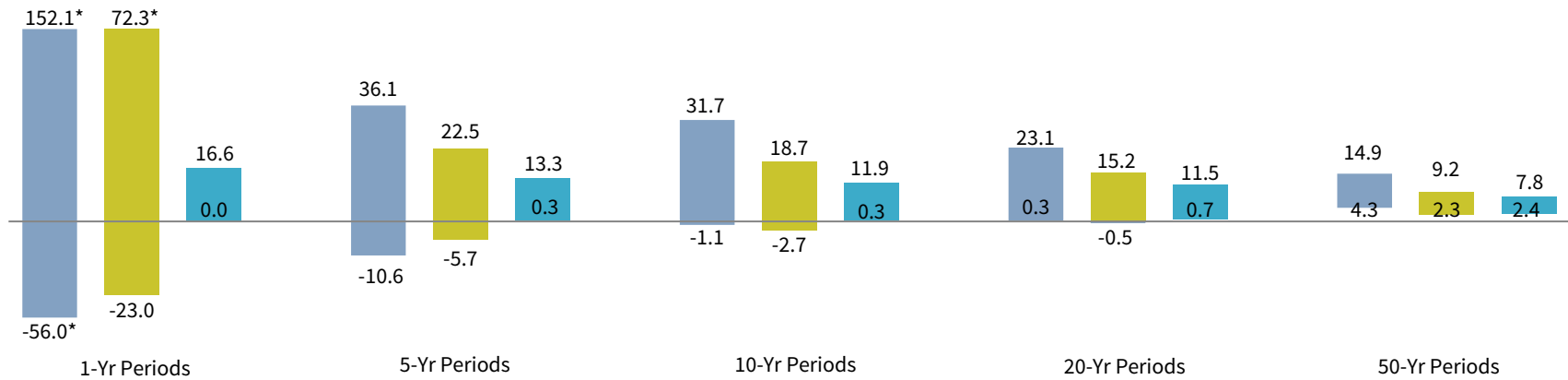
- **The relationship between asset prices and inflation is complex and nuanced.** Due in part to the extraordinary amount of fiscal and monetary stimulus extended in response to the COVID-19 crisis and global supply chain disruptions, inflation has risen to multi-decade highs. Based on the historical record, UK equities fare best with inflation at moderate levels, exhibiting limited downside over rolling three-year periods when inflation ranges from 2.9% to 4.4%. However, the highest inflationary periods have created a volatile environment for stocks, with equities experiencing the lowest, but also highest, rolling three-year returns during top decile inflationary periods. In nominal terms, median bond performance remains positive during periods of high inflation, as higher yield levels historically have helped offset any capital losses as bond prices fall. However, bond markets do suffer in real terms during the highest bouts of inflation when price levels increase 5% annualized or more. Equities and bonds generate stronger results during environments of decelerating inflation, whereas real assets categories, such as natural resources equities and commodities, fare better during periods of accelerating inflation.

The range of investment returns narrows as holding periods increase

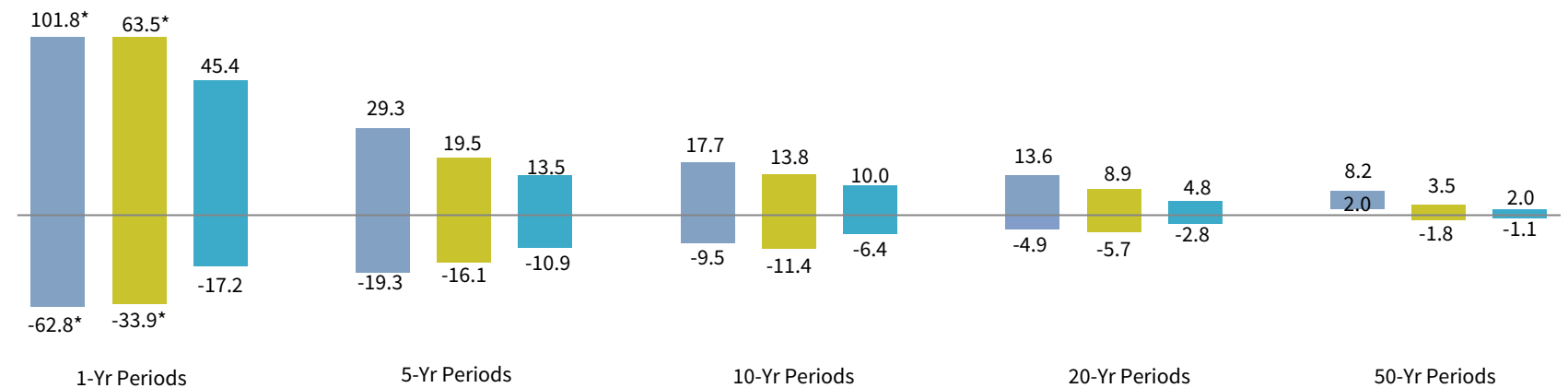
RANGE OF EQUITY, BOND, AND CASH RETURNS FOR VARIOUS ROLLING MONTHLY TIME HORIZONS

1900–2021 • Average Annual Compound Return (%)

Nominal Returns



Real Returns



■ Equities ■ Bonds ■ Cash

* Axis capped for scaling purposes.

Sources: FTSE International Limited, Global Financial Data, Inc., and Thomson Reuters Datastream.

Note: The one-year high real cash return of 45.4% occurred in 1921, and was caused primarily by severe deflation in the postwar period rather than high cash yields, which yielded an average of 5% during the year.

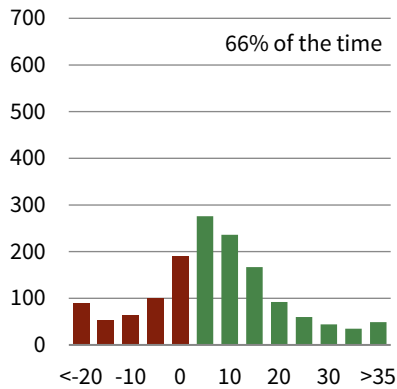
Equities outperform bonds and cash over the long term, but can underperform in the short run

EXCESS RETURNS OF EQUITIES OVER BONDS AND CASH

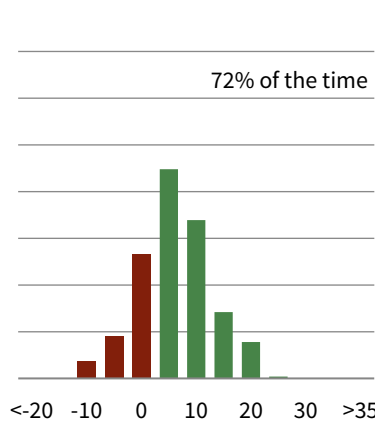
1900–2021 • Number of Rolling Monthly Periods

1-Yr Periods

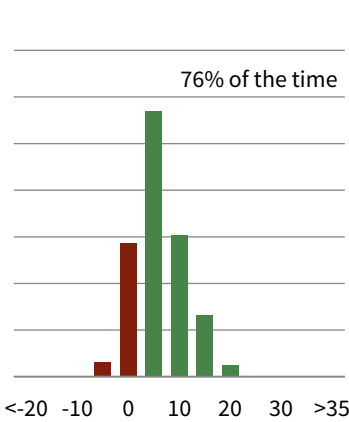
Equities have outperformed bonds



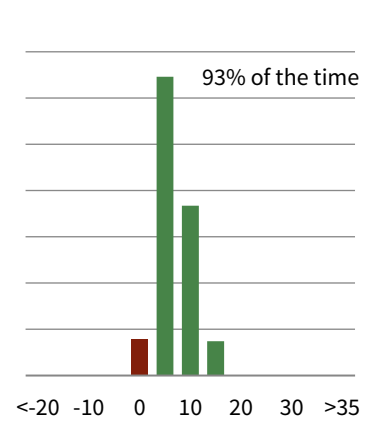
5-Yr Periods



10-Yr Periods

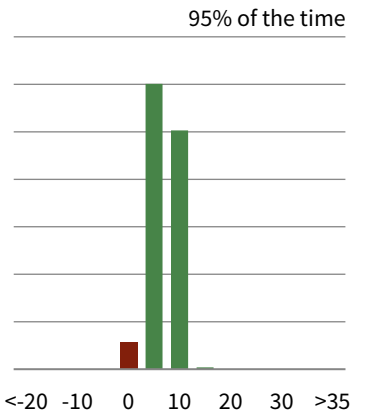
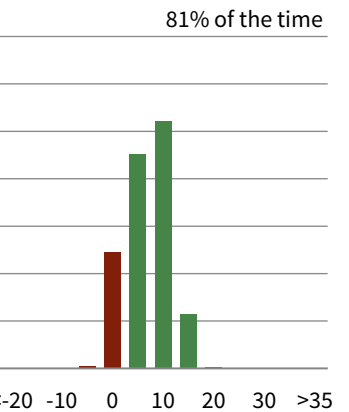
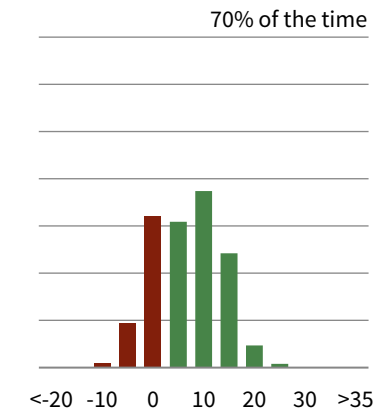
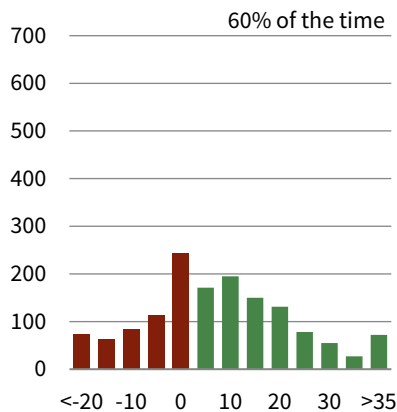


25-Yr Periods



ACR Differentials (ppts)

Equities have outperformed cash



ACR Differentials (ppts)

Sources: FTSE International Limited, Global Financial Data, Inc., 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.

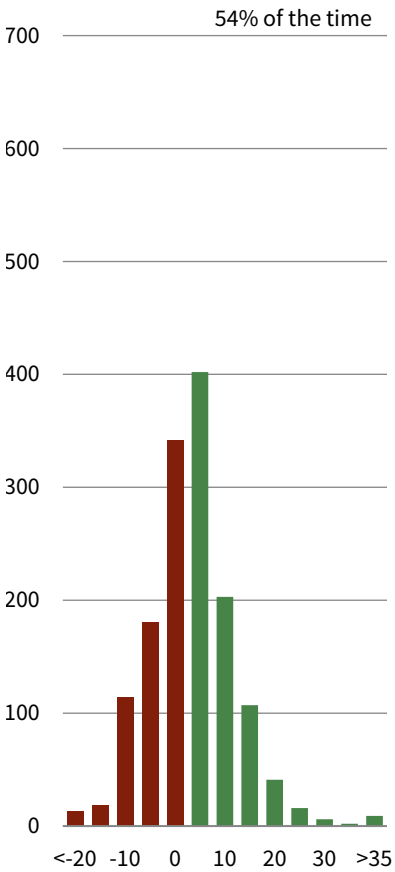
Bonds' outperformance over cash is inconsistent in the short and long term alike

EXCESS RETURNS OF BONDS OVER CASH

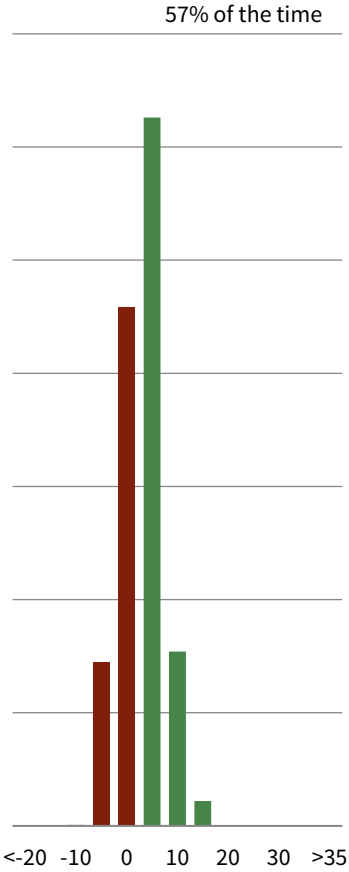
1900–2021 • Number of Rolling Monthly Periods

1-Yr Periods

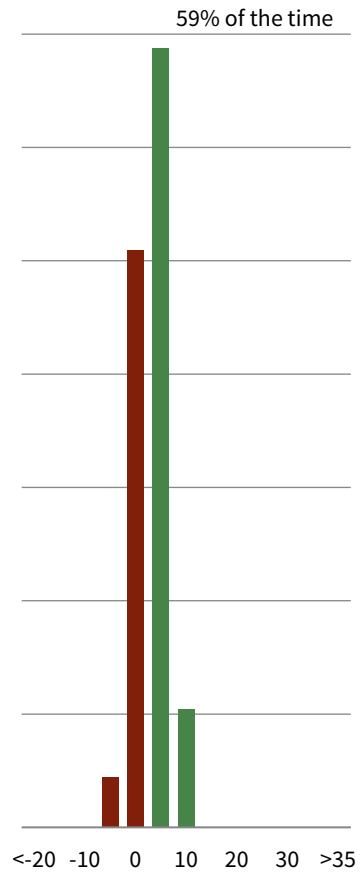
Bonds have outperformed cash



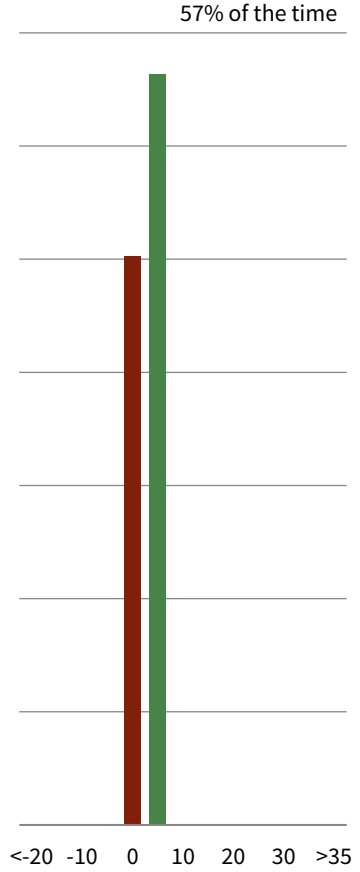
5-Yr Periods



10-Yr Periods



25-Yr Periods

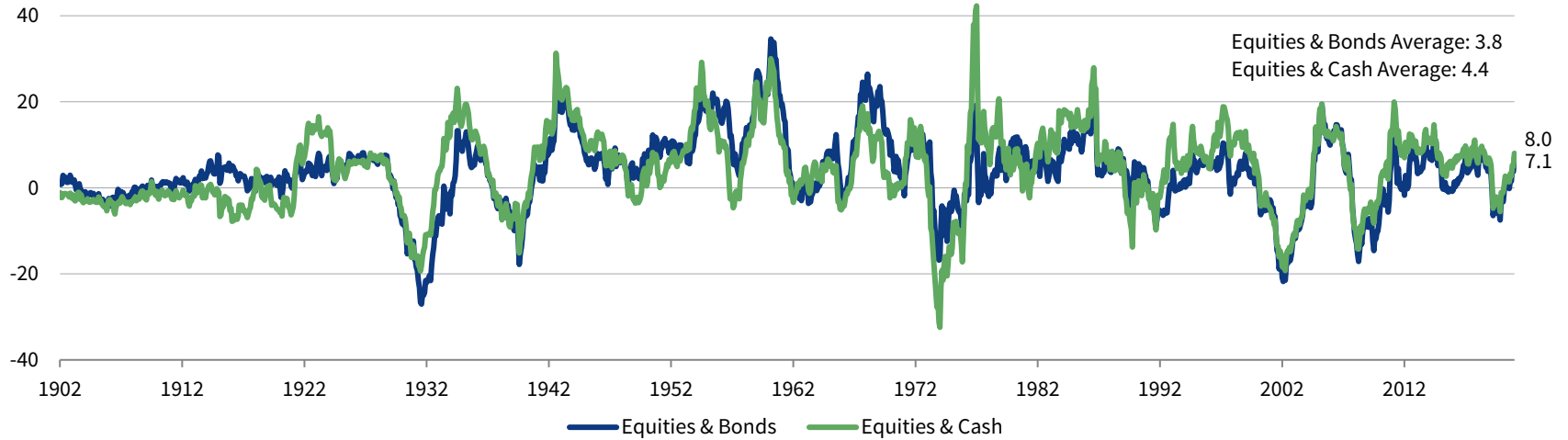


AACR Differentials (ppts)

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

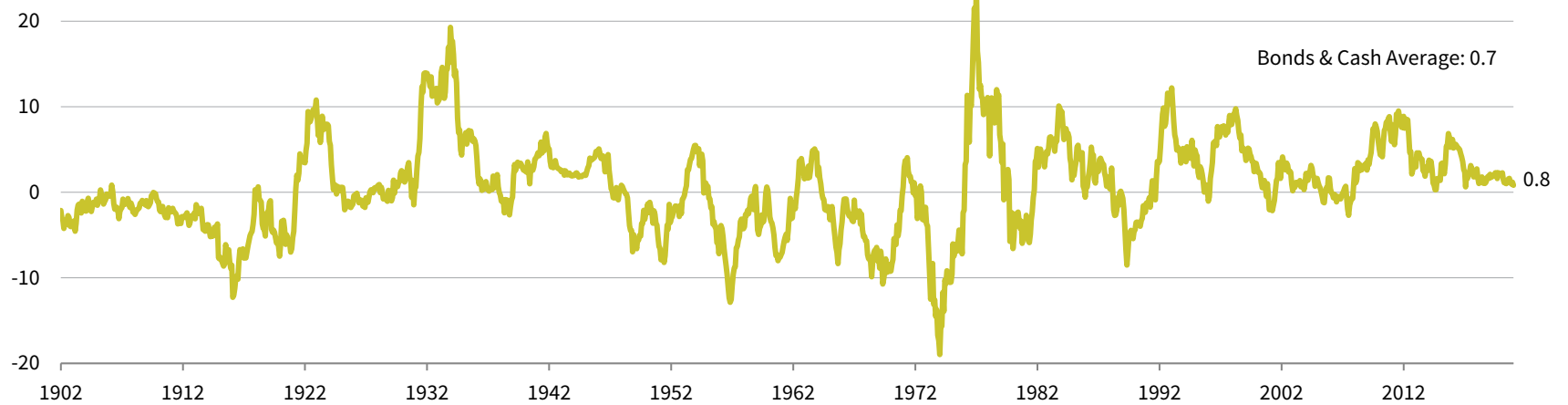
AACR OF ROLLING MONTHLY 3-YR RETURN DIFFERENTIAL BETWEEN EQUITY, BONDS, AND CASH RETURNS

1902–2021 • Percent (%)



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

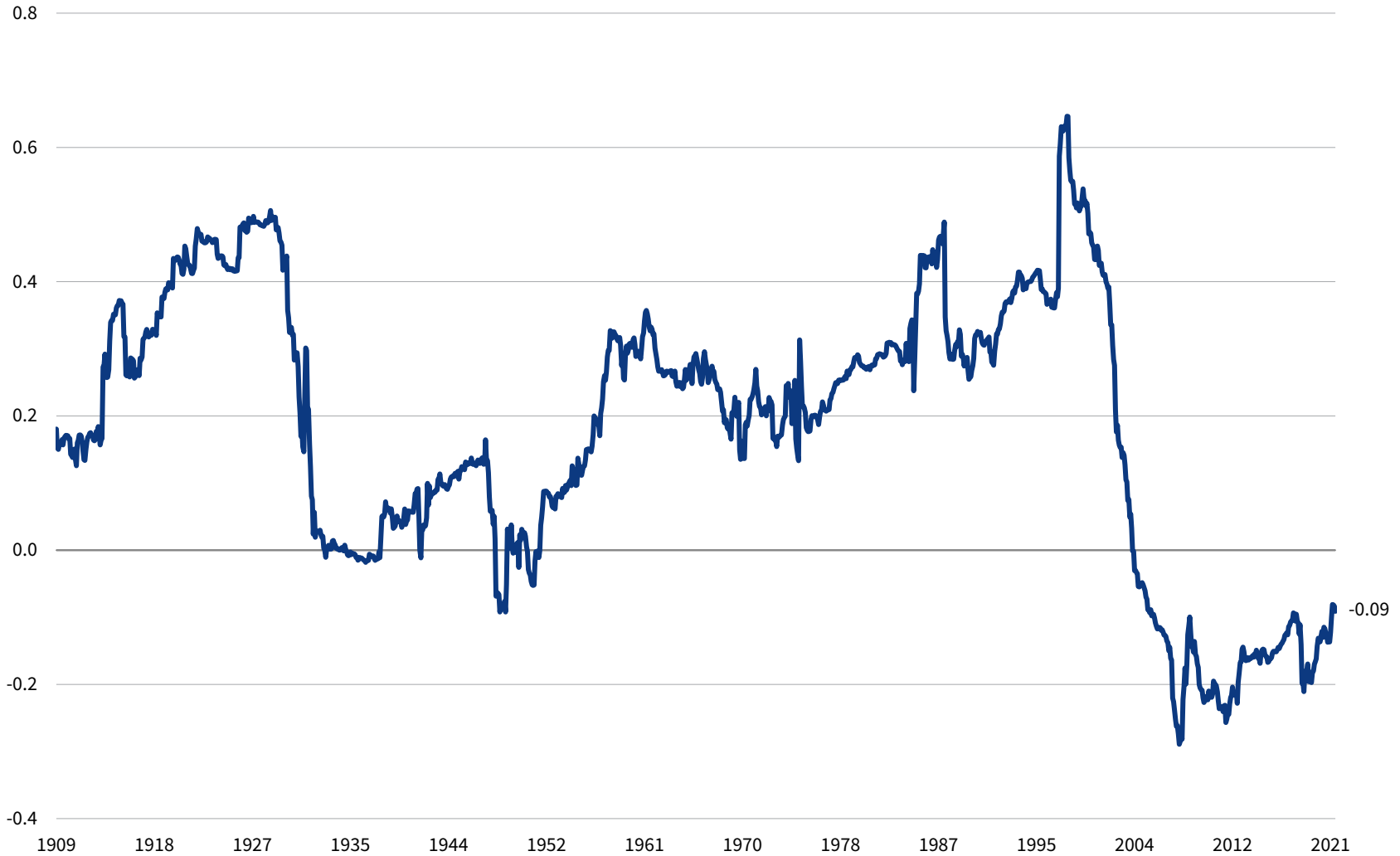
1902–2021 • Percent (%)



Stock and bond correlation currently near historically low levels

ROLLING 10-YR CORRELATIONS OF STOCK AND BOND RETURNS

December 31, 1909 – December 31, 2021 • Correlation Coefficient

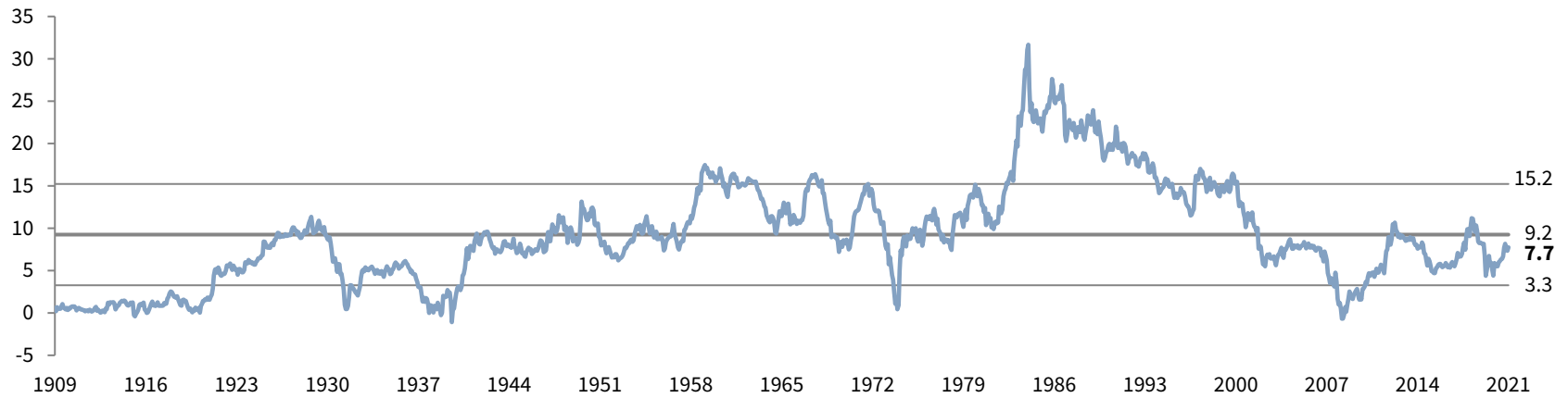


Real equity performance tends to cycle about the long-term average

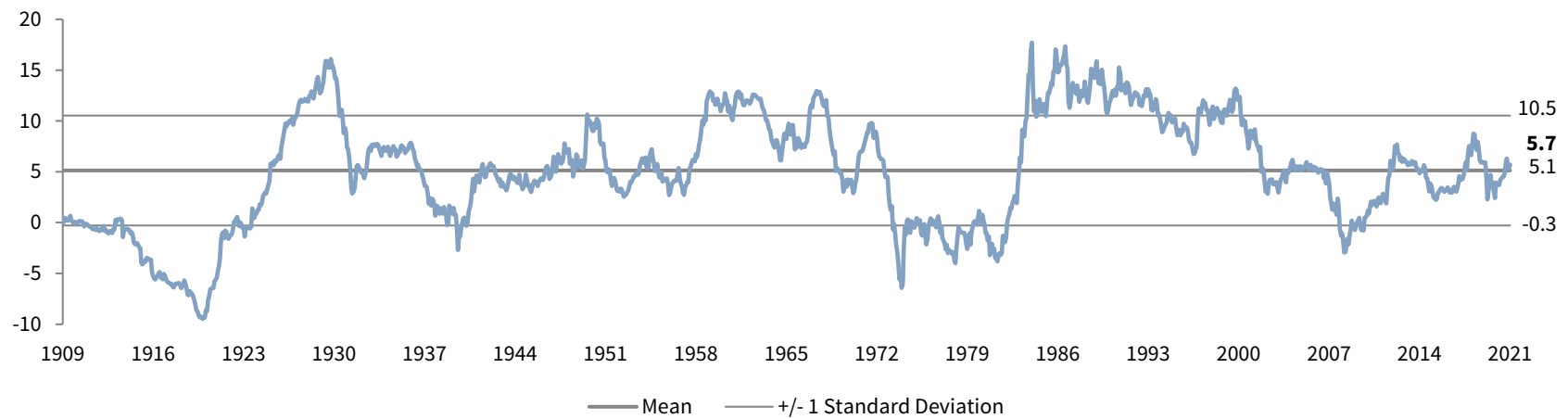
ROLLING MONTHLY EQUITY TOTAL RETURN 10-YR AACR

1909–2021 • Percent (%)

Nominal Returns



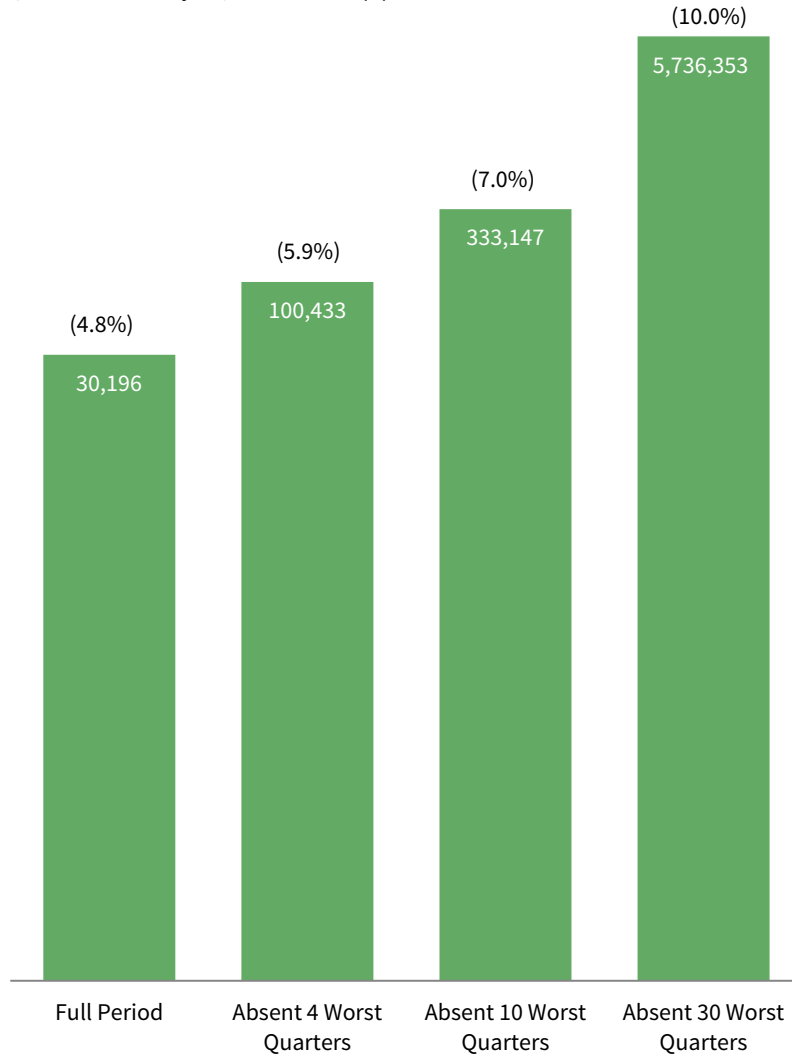
Real Returns



Attempting to time the market is a risky proposition

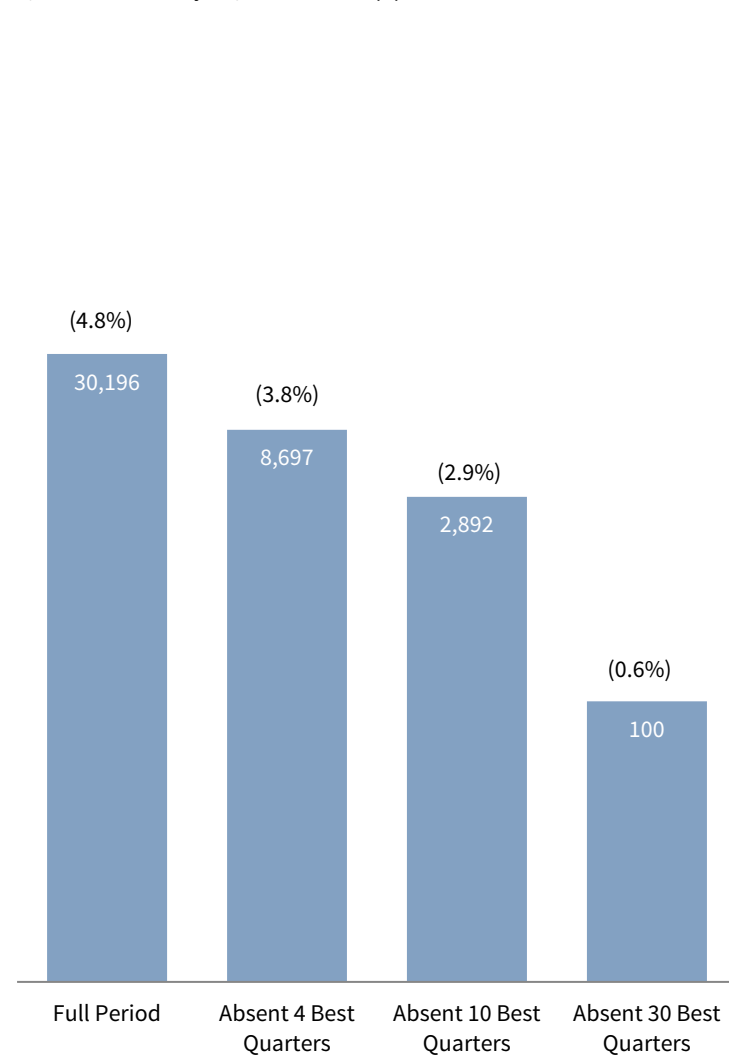
CUMULATIVE REAL WEALTH ABSENT WORST QUARTERS

1900–2021 • January 1, 1900 = 1 • AACR (%) in Parentheses



CUMULATIVE REAL WEALTH ABSENT BEST QUARTERS

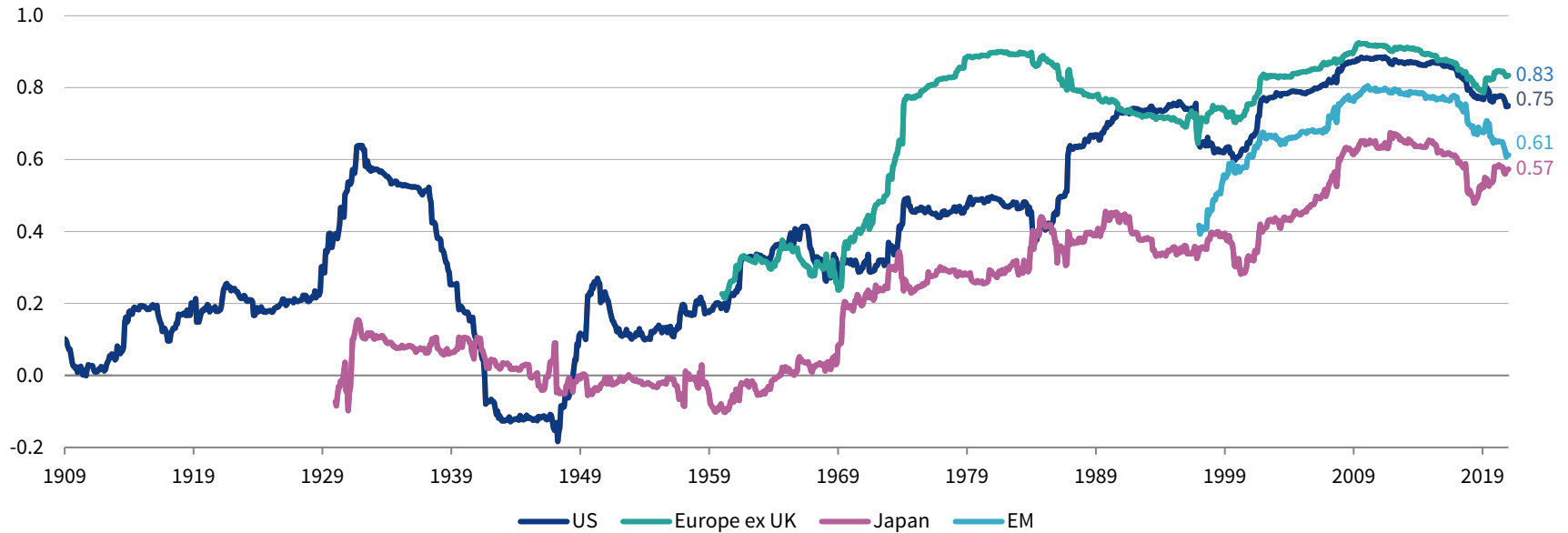
1900–2021 • January 1, 1900 = 1 • AACR (%) in Parentheses



UK equity market correlations with other regions increased in recent decades

ROLLING 10-YR CORRELATIONS: UK EQUITY VS GLOBAL PEERS

December 31, 1909 – December 31, 2021 • Correlation Coefficient



CORRELATION MATRIX

January 31, 1900 – December 31, 1959

	UK	US	Japan
UK	1.00		
US	0.20	1.00	
Japan	-0.01	-0.03	1.00

CORRELATION MATRIX

January 31, 1960 – December 31, 2021

	UK	US	Europe ex UK	Japan	EM
UK	1.00				
US	0.59	1.00			
Europe ex UK	0.73	0.68	1.00		
Japan	0.36	0.41	0.48	1.00	
EM	0.63	0.67	0.63	0.50	1.00

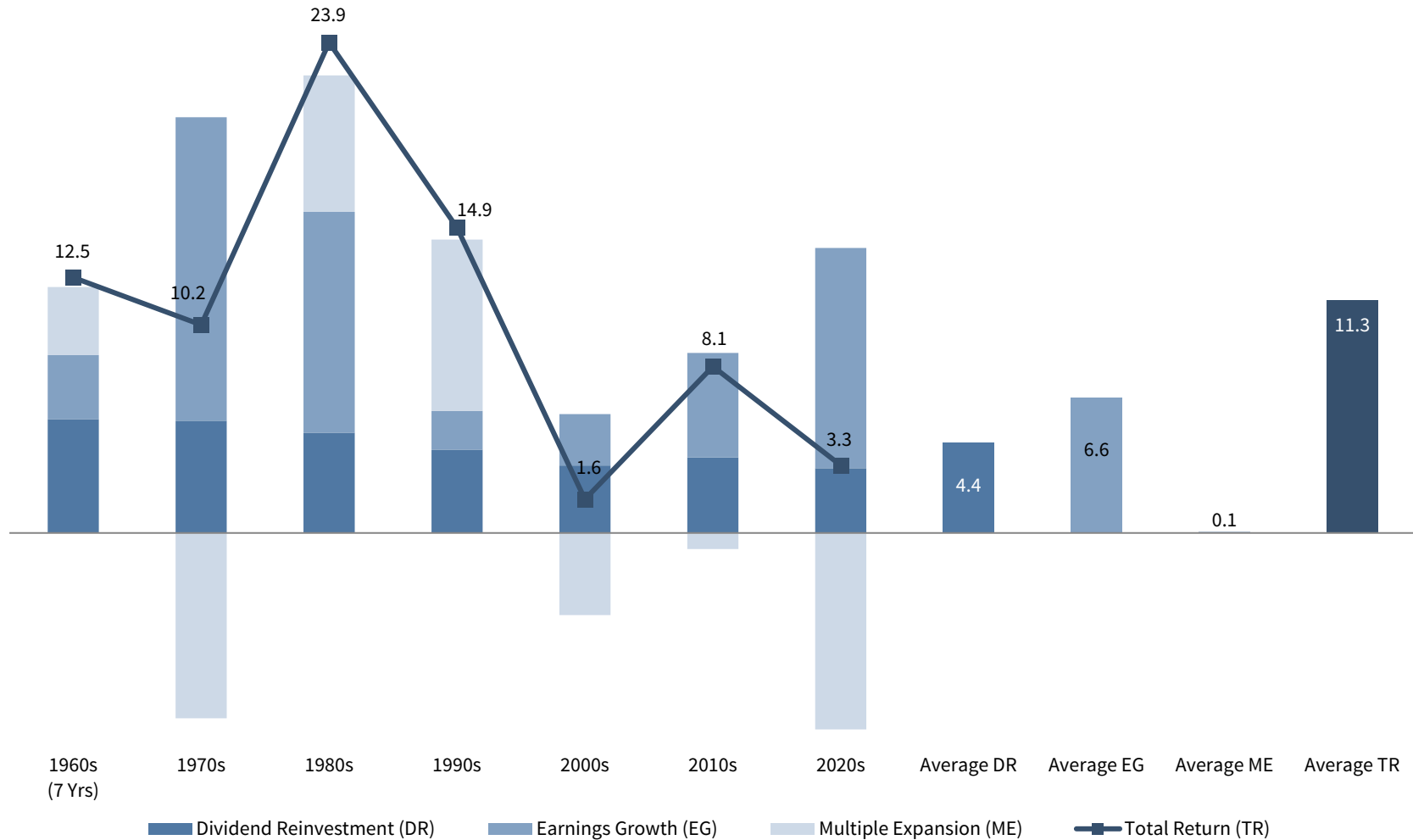
Sources: FTSE International Limited, Global Financial Data, Inc., MSCI Inc., Standard & Poor's, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.

Notes: Data for the UK and US begin on January 31, 1900. Data for Japan begin on January 31, 1921. Data for Europe ex UK begin on January 31, 1951. 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 valuation multiple rerating vary over time; dividends are more stable

BREAKDOWN OF TOTAL RETURN AACR OVER TIME

1963–2021 • Percent (%)



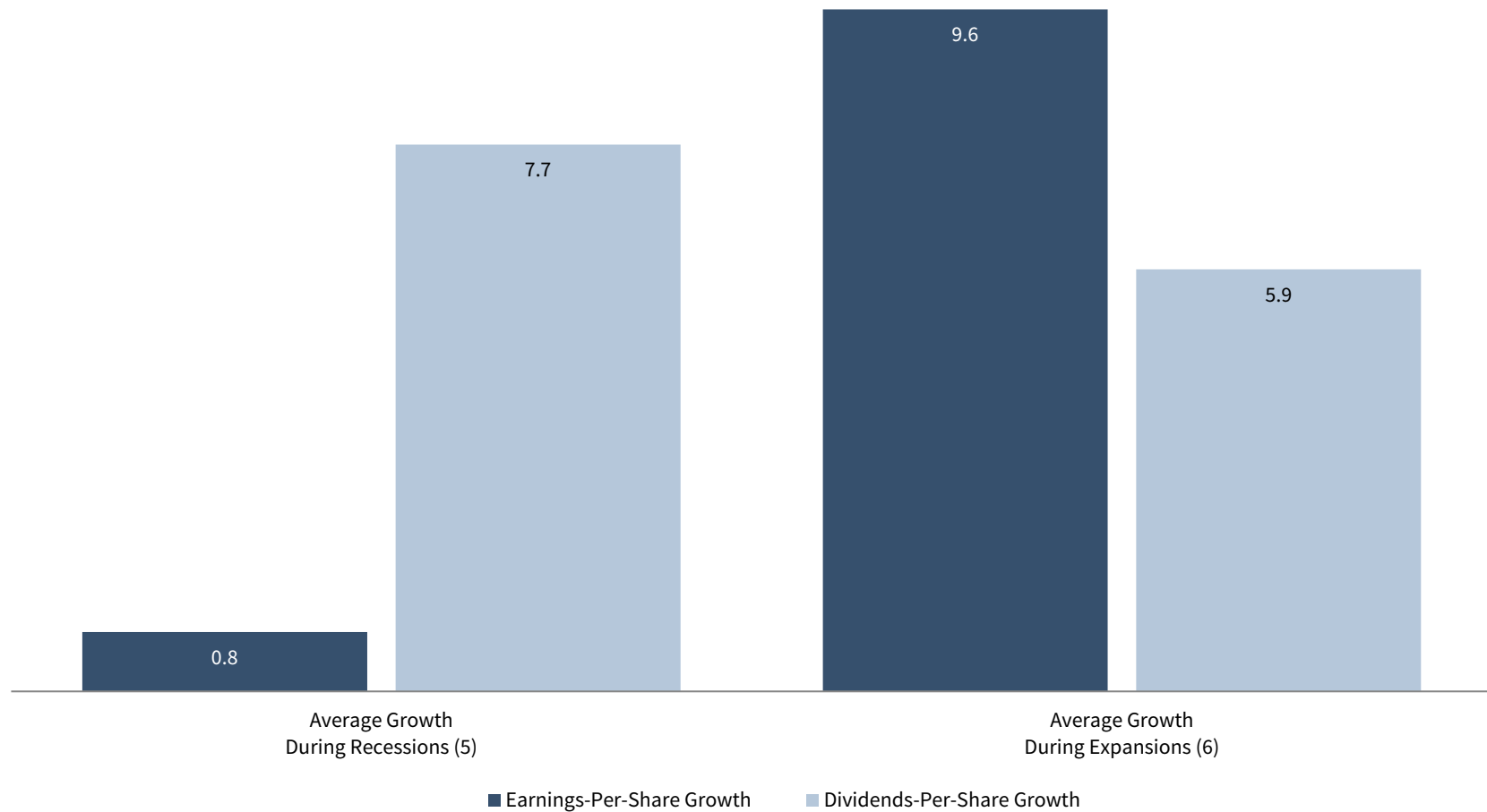
Sources: FTSE International Limited, Global Financial Data, Inc., and Thomson Reuters Datastream.

Note: Figures will not sum exactly to total return calculation due to the effect of combining cross terms.

UK equities have managed to grow dividend payouts during recessions and expansions alike

EPS AND DIVIDENDS PER SHARE YEAR-OVER-YEAR CHANGE

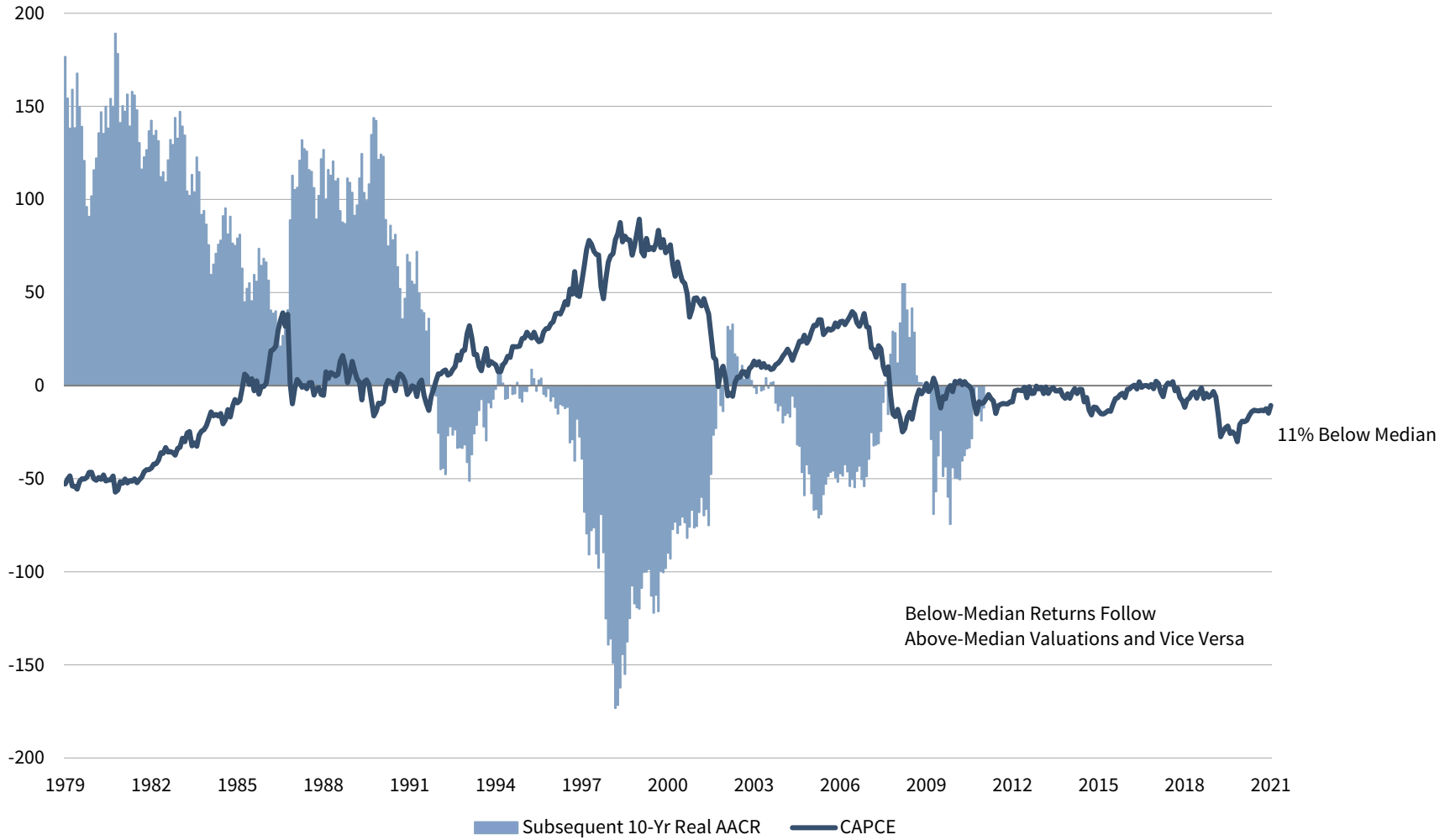
1962–2021 • Percent (%)



Elevated starting valuations portend weak subsequent returns and vice versa

SUBSEQUENT REAL 10-YR AACRS AND CYCLICALLY ADJUSTED PRICE-TO-CASH EARNINGS RATIOS

December 31, 1979 – December 31, 2021 • Shown as Percent Above/Below Respective Long-Term Median (%)



Sources: MSCI Inc. and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.

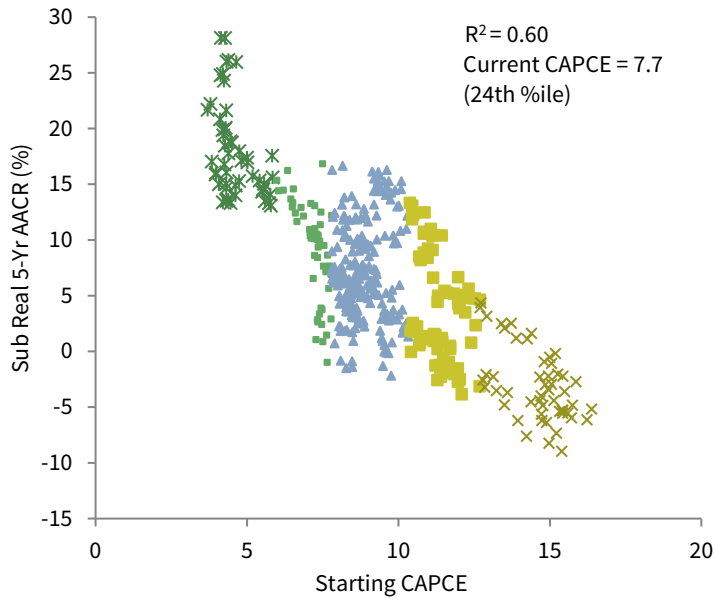
Notes: Chart shows percent above/below median for returns and valuations. Line shows point-in-time cyclically adjusted price-to-cash earnings (CAPCE) ratios. Bars are based on monthly data and show subsequent rolling ten-year real average annual compound returns (AACRs) as a percentage above/below the long-term median ten-year real return of 5.1% since 1979. For example, the first data point shows that the real AACR for the period 1980–89 was 176.6% above the median ten-year real return.

Starting valuations are a useful guide in setting long-term return expectations

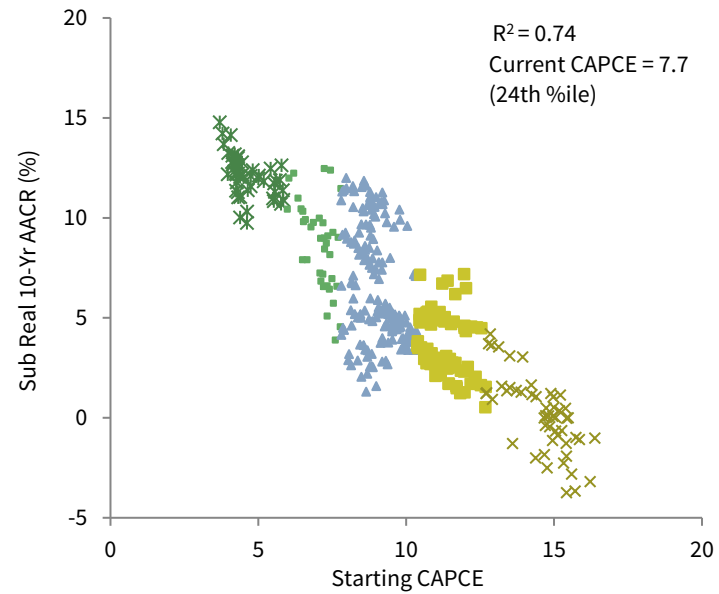
RELATIONSHIP BETWEEN CYCLICALLY ADJUSTED PRICE-TO-CASH EARNINGS RATIOS AND SUBSEQUENT REAL 5- AND 10-YR AACRS

December 31, 1979 – December 31, 2021

Initial Valuation and Subsequent 5-Yr AACR



Initial Valuation and Subsequent 10-Yr AACR

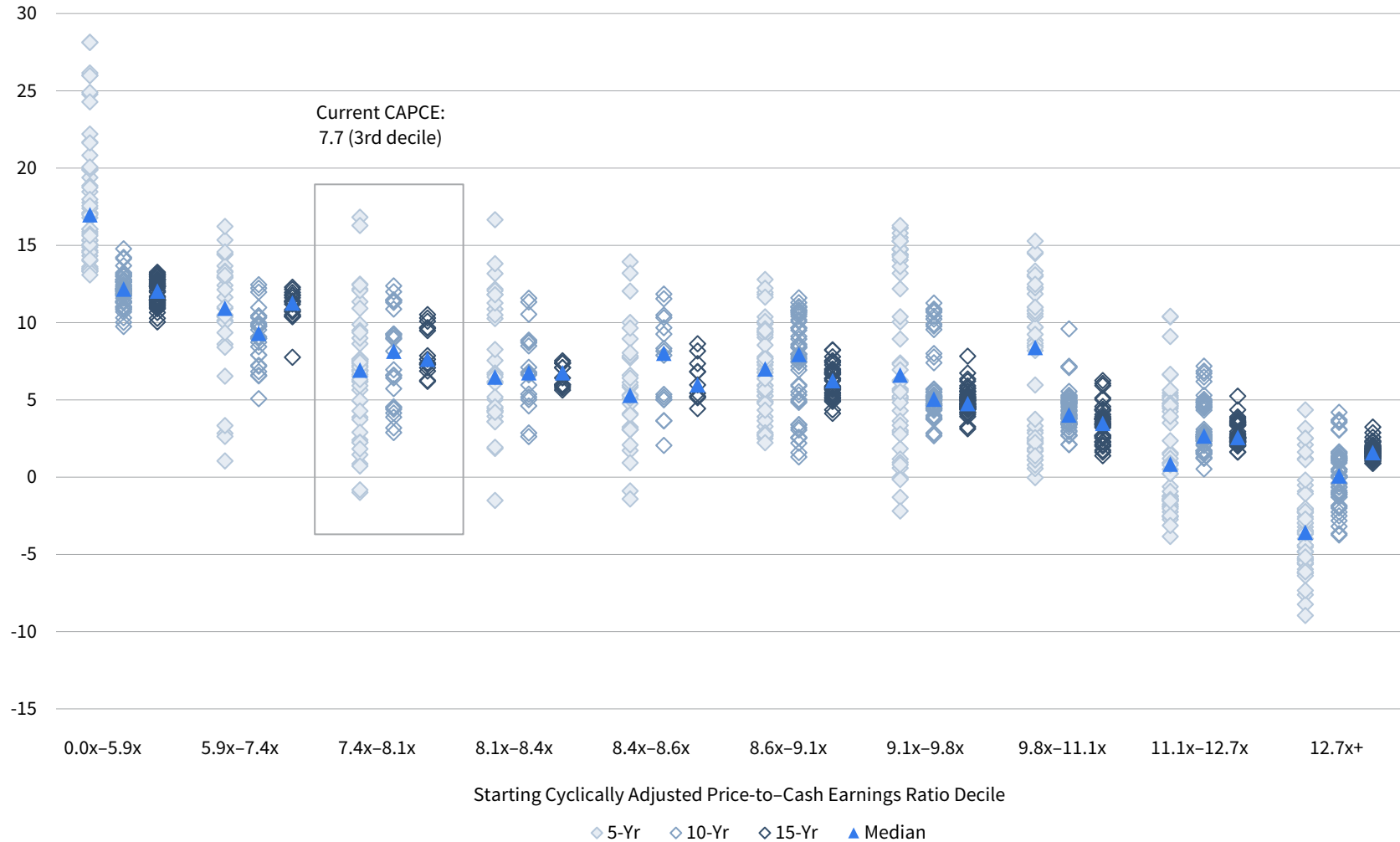


P/CE Ratio Percentile	Starting Cyclically Adjusted Price-to-Cash Earnings Ratio			Subsequent Real 5-Yr AACR (%)			Starting Cyclically Adjusted Price-to-Cash Earnings Ratio			Subsequent Real 10-Yr AACR (%)		
	Median	High	Low	Median	High	Low	Median	High	Low	Median	High	Low
0-10	4.4	5.8	3.7	17.0	28.1	13.1	4.4	5.8	3.7	12.2	14.8	9.7
10-25	7.3	7.8	6.0	10.1	16.8	-1.0	7.2	7.8	6.0	9.0	12.5	3.9
25-75	8.8	10.4	7.8	6.5	16.7	-2.2	9.0	10.4	7.8	5.3	12.0	1.3
75-90	11.4	12.7	10.4	1.8	13.3	-3.8	11.4	12.7	10.4	3.0	7.2	0.5
90-100	14.8	16.4	12.7	-3.5	4.4	-9.0	14.8	16.4	12.7	0.1	4.2	-3.7
Overall	8.8	16.4	3.7	6.3	28.1	-9.0	9.2	16.4	3.7	5.1	14.8	-3.7

Starting normalized valuations are more meaningful as holding periods increase

DISTRIBUTION OF SUBSEQUENT REAL RETURNS FROM STARTING NORMALIZED VALUATION DECILES

December 31, 1979 – December 31, 2021 • Subsequent Real Return AACR (%)

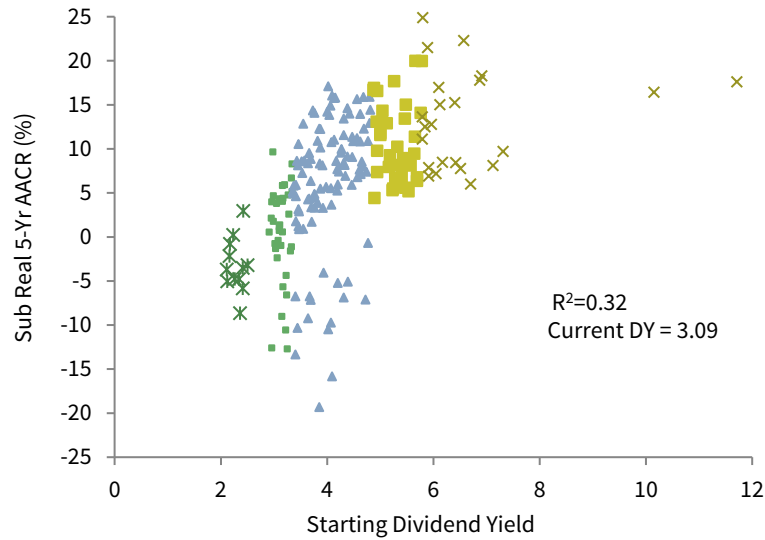


Dividend yields exhibit positive relationship with subsequent returns, but statistical fit is weak

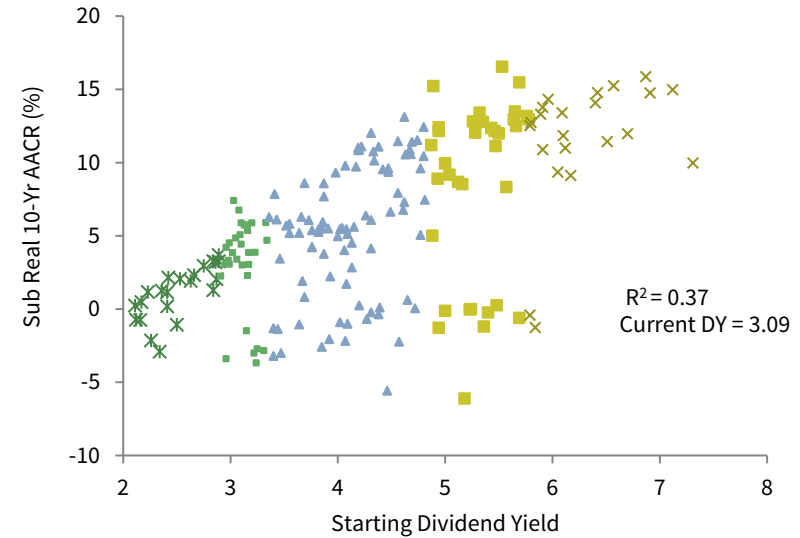
RELATIONSHIP BETWEEN DIVIDEND YIELDS AND SUBSEQUENT REAL AACRS

Second Quarter 1962 – Fourth Quarter 2021

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	2.3	2.5	2.1	-3.6	2.9	-8.7	2.5	2.9	2.1	1.3	3.7	-2.9
10-25	3.2	3.3	2.9	1.1	9.6	-12.7	3.1	3.3	2.9	3.9	7.4	-3.7
25-75	4.0	4.8	3.4	7.7	17.1	-19.3	4.1	4.8	3.4	5.6	13.1	-5.6
75-90	5.3	5.8	4.9	9.8	27.1	4.4	5.3	5.8	4.9	11.2	16.5	-6.1
90-100	6.1	11.7	5.8	13.2	29.1	6.0	6.1	11.7	5.8	13.0	17.7	-1.3
Overall	4.0	11.7	2.1	6.8	29.1	-19.3	4.2	11.7	2.1	5.5	17.7	-6.1

Sources: FTSE International Limited, Global Financial Data, Inc., and Thomson Reuters Datastream.

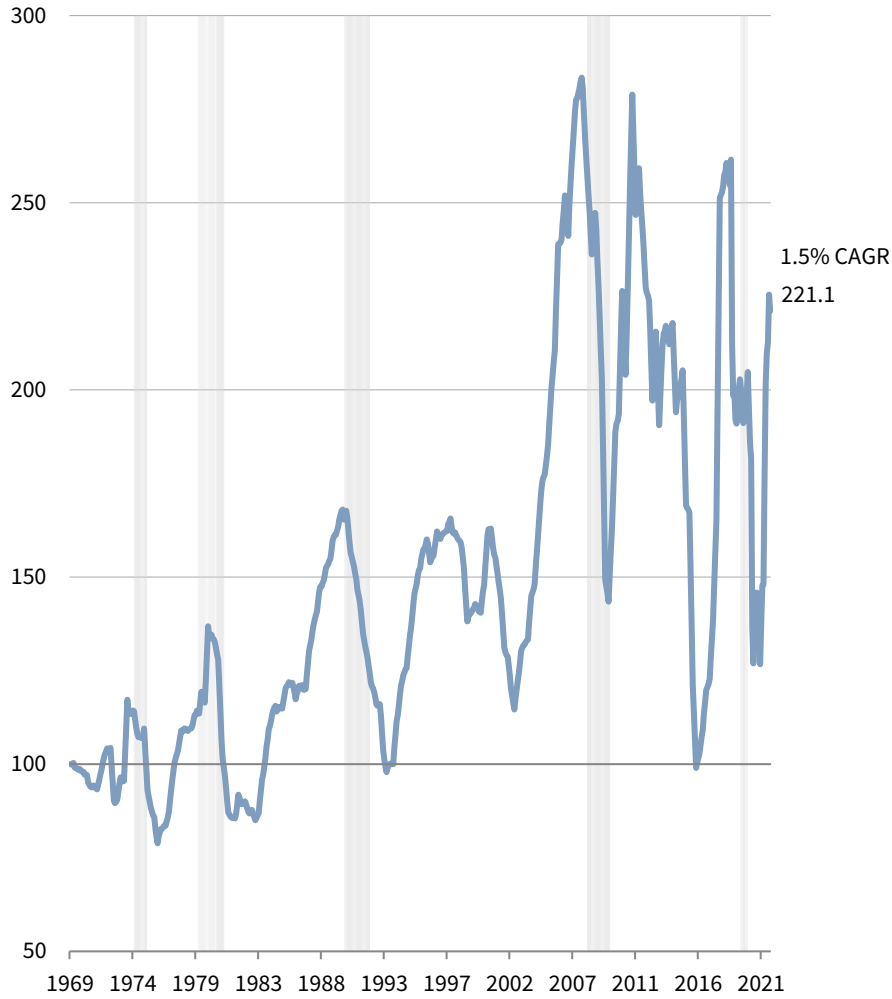
Notes: Data are quarterly. The last full five-year period was first quarter 2017 through fourth quarter 2021. The last full ten-year period was first quarter 2012 through fourth quarter 2021.

Outliers are not shown on graph but are included in R².

UK equity earnings have not surpassed 2007 peak levels as return on equity has deteriorated

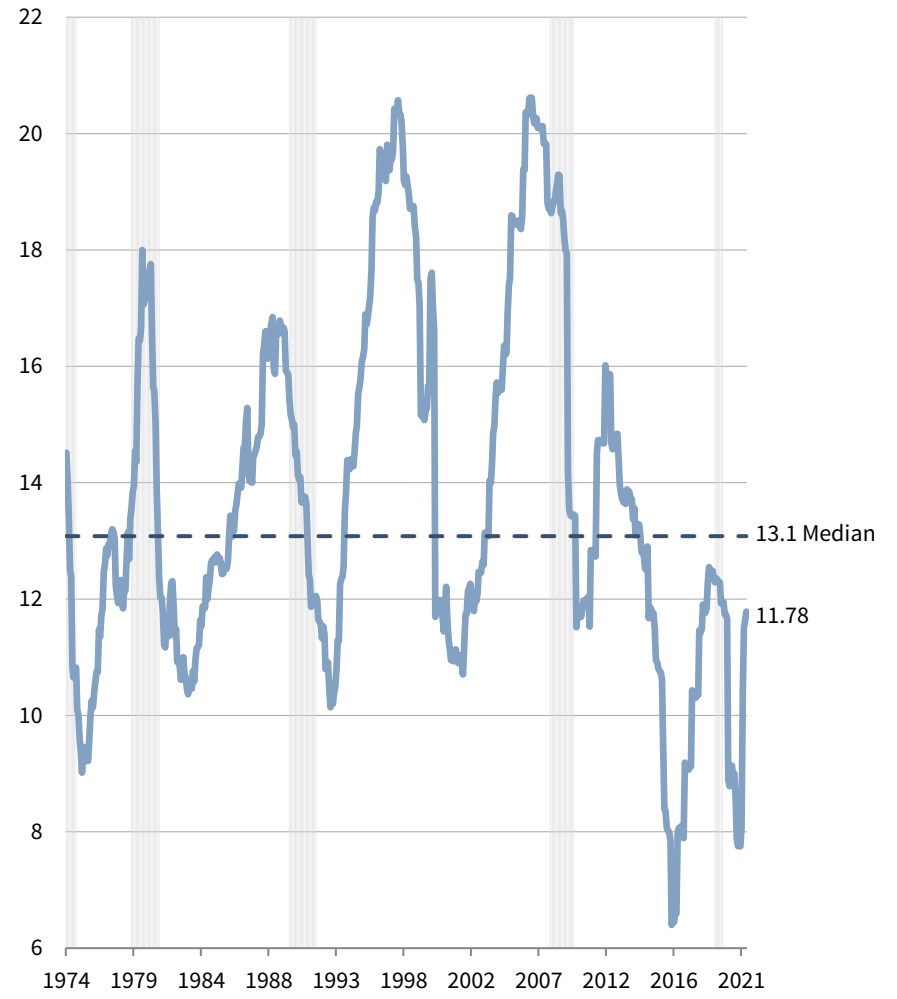
REAL EARNINGS PER SHARE OVER TIME

December 31, 1969 – December 31, 2021 • December 31, 1969 = 100



RETURN ON EQUITY

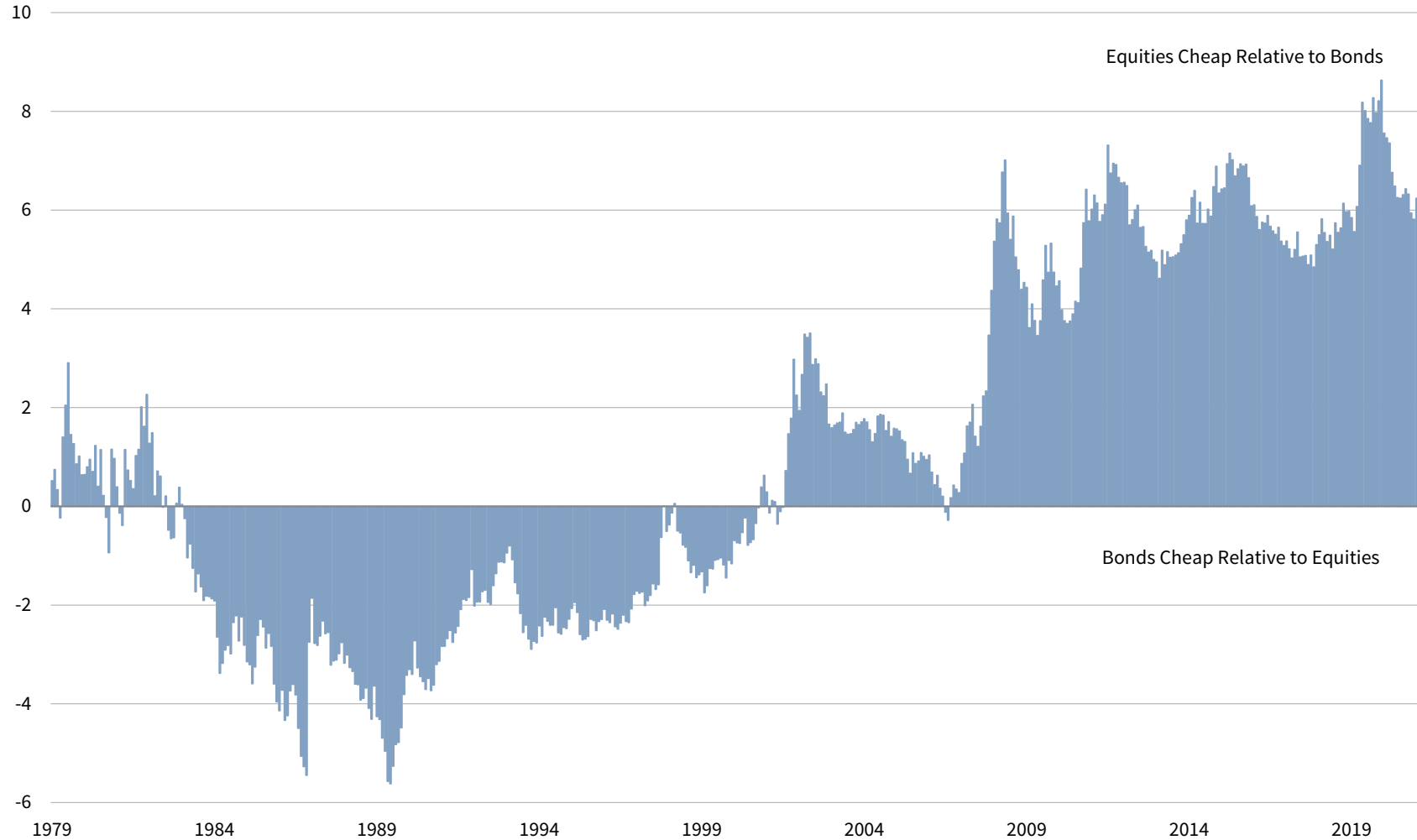
December 31, 1974 – December 31, 2021 • Percent (%)



UK equities have been more attractive than bonds in the post-GFC period on a valuation basis

SHILLER EARNINGS YIELDS VERSUS 10-YR BOND YIELDS

1979–2021



Subsequent nominal bond returns closely track their starting yield

RELATIONSHIP BETWEEN GOVERNMENT BOND YIELDS AND SUBSEQUENT 10-YR AACRS

1900–2021 • Percent (%)

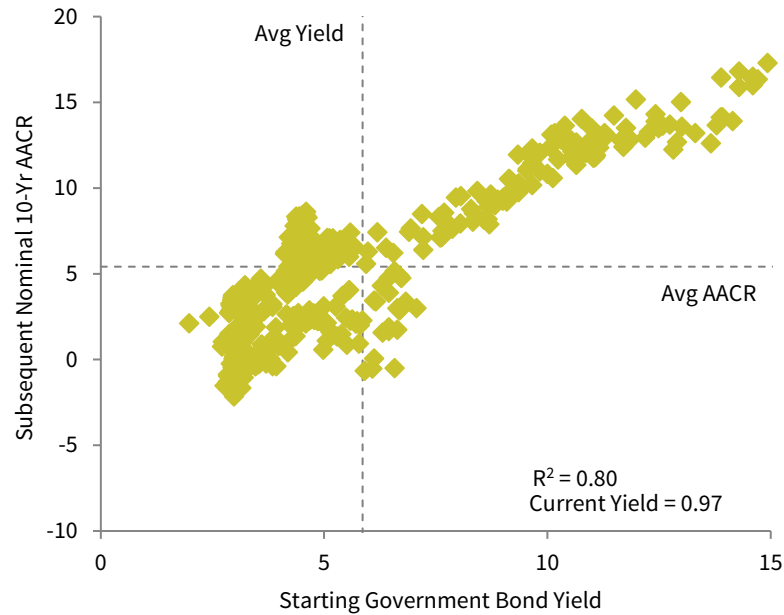


The starting yield-subsequent return relationship is weaker when accounting for inflation

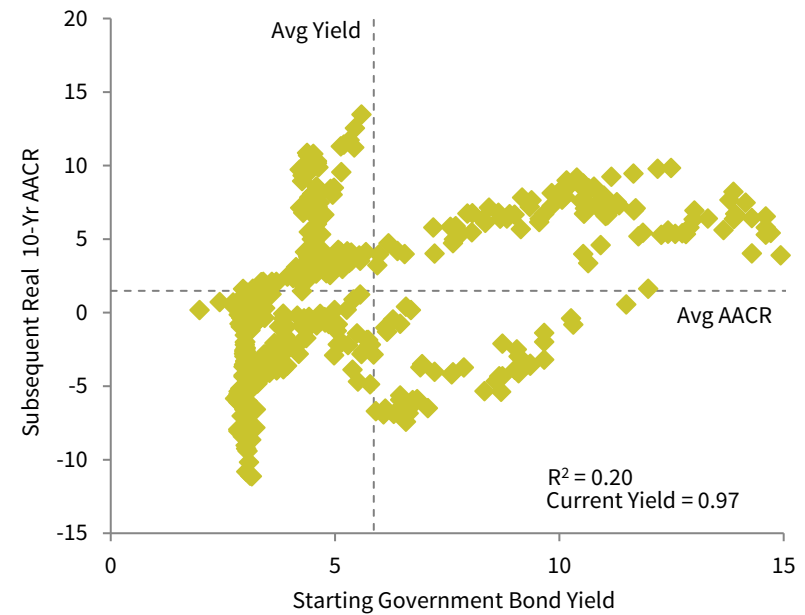
RELATIONSHIP BETWEEN GOVERNMENT BOND YIELDS AND SUBSEQUENT 10-YR AACRS

1900–2021 • Percent (%)

Nominal Returns



Real Returns



Yield	Starting Period			Subsequent Nominal			
	Government Bond Yields			10-Yr AACR (%)			
Quartiles	Mean	High	Low	Mean	High	Low	Std Dev
First	3.00	3.24	1.98	0.79	4.34	-2.15	1.68
Second	4.03	4.56	3.26	4.12	8.41	-0.57	2.61
Third	5.50	7.60	4.56	4.71	8.62	-0.66	2.32
Fourth	10.93	17.24	7.63	12.05	18.72	7.15	2.55
Overall	5.86	17.24	1.98	5.42	18.72	-2.15	4.72

Yield	Starting Period			Subsequent Real			
	Government Bond Yields			10-Yr AACR (%)			
Quartiles	Mean	High	Low	Mean	High	Low	Std Dev
First	3.00	3.24	1.98	-2.91	1.62	-11.13	3.39
Second	4.03	4.56	3.26	2.19	10.86	-4.82	4.69
Third	5.50	7.60	4.56	1.78	13.47	-7.41	5.17
Fourth	10.93	17.24	7.63	4.86	9.84	-5.38	4.13
Overall	5.86	17.24	1.98	1.48	13.47	-11.13	5.20

Source: Global Financial Data, Inc.

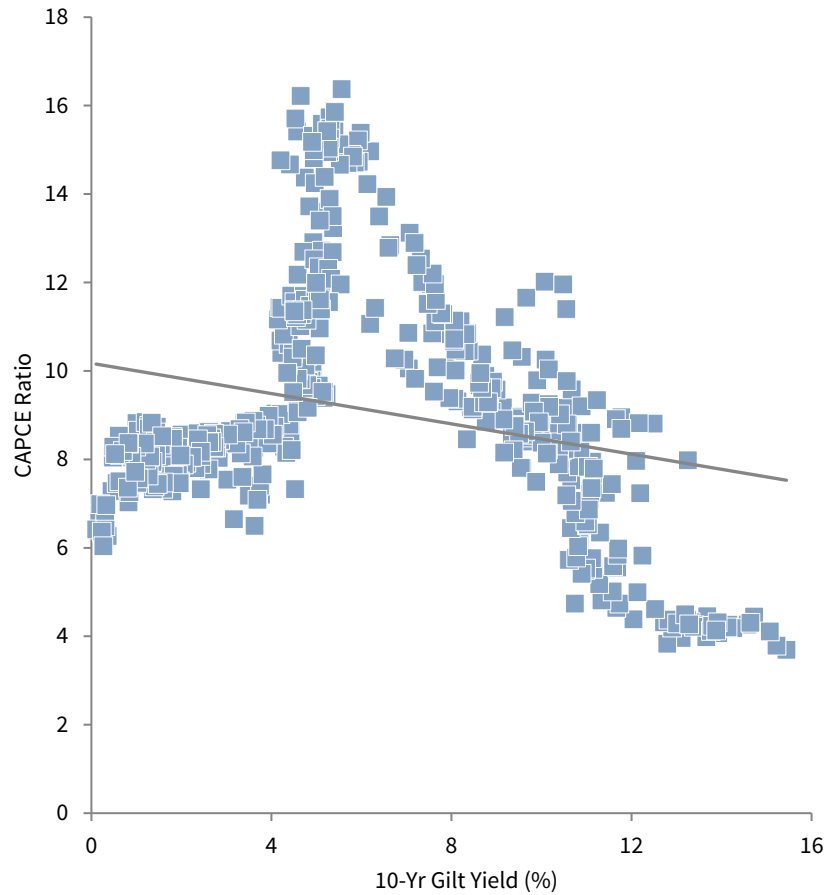
Notes: Data are quarterly. The last full ten-year period was first quarter 2012 through fourth quarter 2021.

Recent low gilt yields have not led to higher equity valuations for UK markets

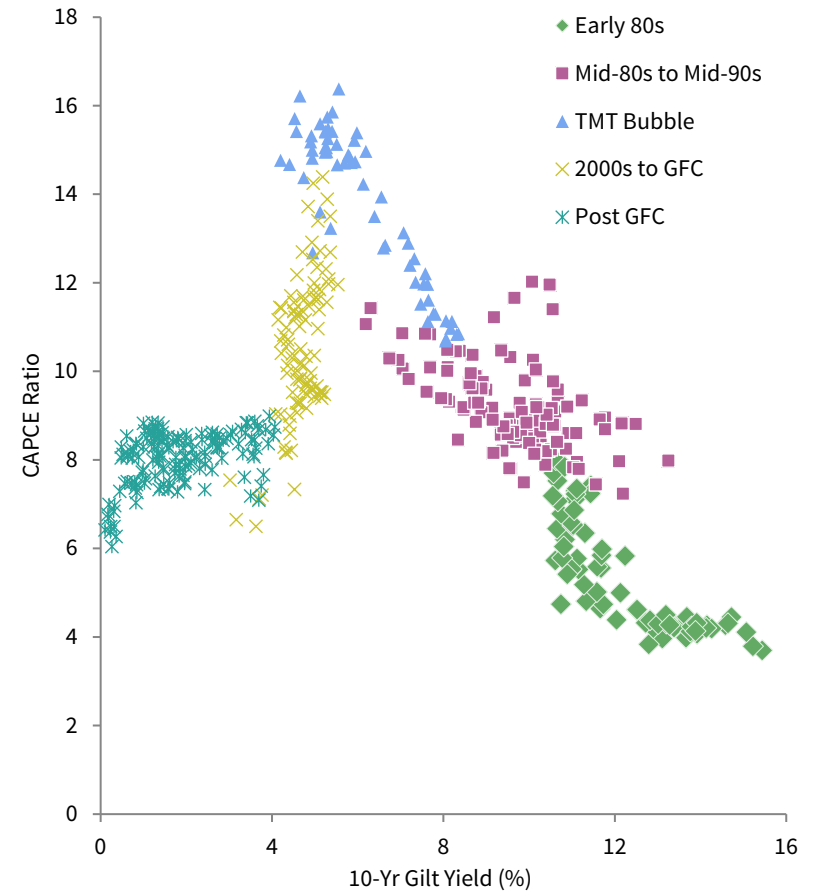
RELATIONSHIP BETWEEN EQUITY VALUATIONS AND 10-YR GILT YIELDS

December 31, 1979 – December 31, 2021

Full Period



By Market Environment



Sources: Global Financial Data, Inc., MSCI Inc, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.

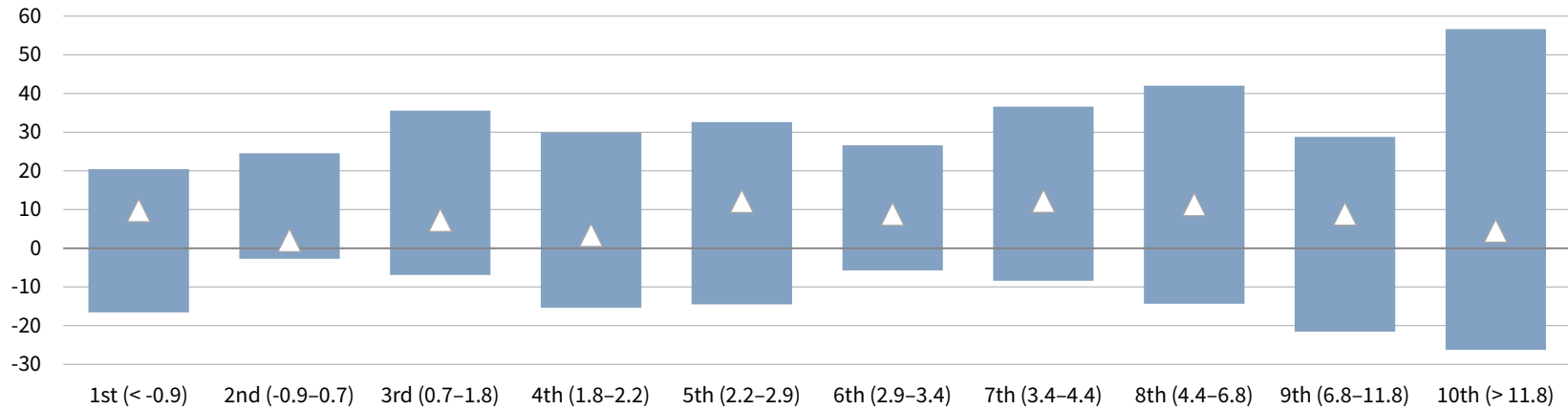
Notes: "TMT Bubble" refers to the late-1990s period of rising equity prices, particularly for internet-related companies. This period is also commonly referred to as the "dot-com" bubble. TMT stands for technology, media, and telecommunications. Data are monthly.

High inflation has historically created a volatile environment for equities and bonds alike

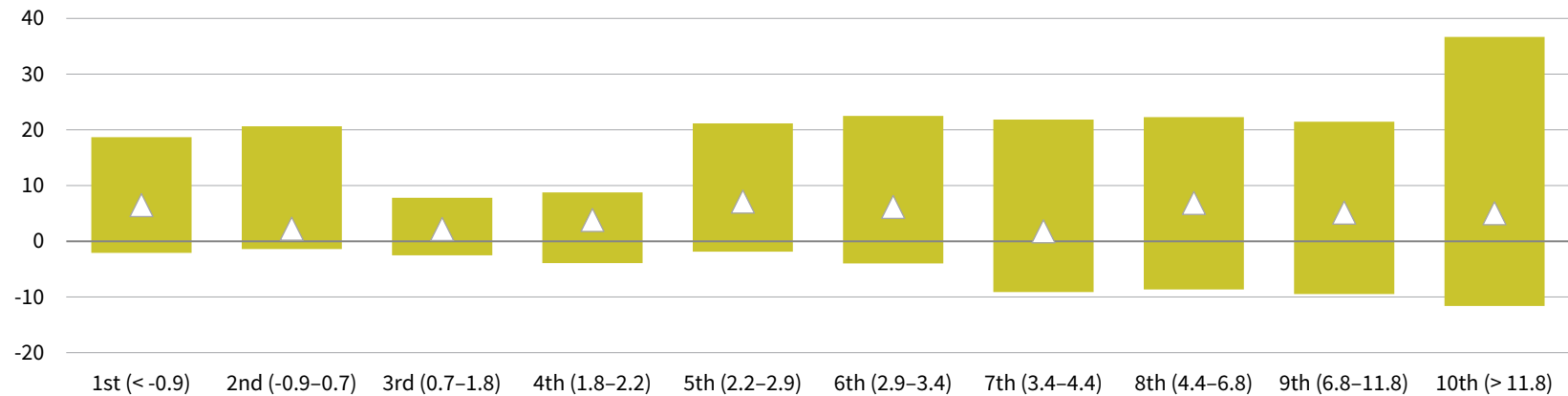
ROLLING 3-YR NOMINAL STOCK AND BOND RETURNS BY INFLATION DECILE

January 31, 1900 – December 31, 2021 • AACR (%)

Nominal Stock Returns



Nominal Bond Returns



△ Median

Sources: FTSE International Limited, Global Financial Data, Inc., and Thomson Reuters Datastream.

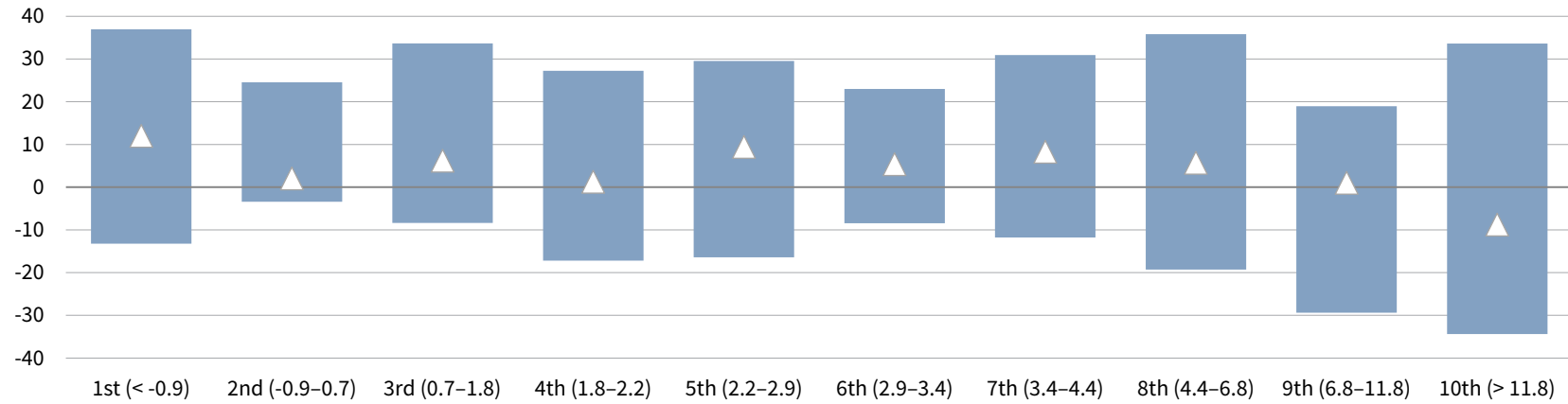
Note: X-axis data in parentheses are inflation ranges by decile.

High inflation significantly erodes equity and bond returns in real terms

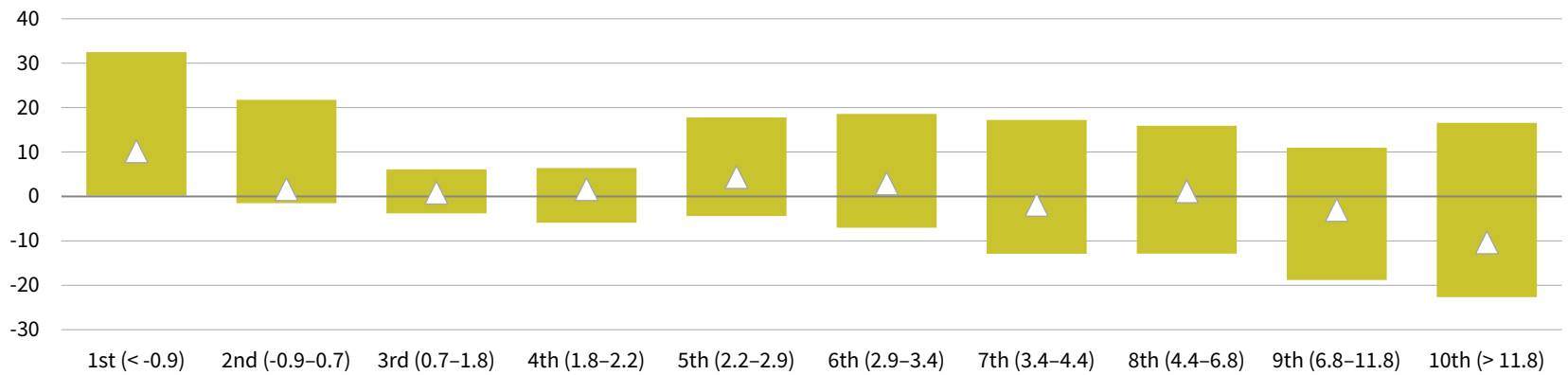
ROLLING 3-YR REAL STOCK AND BOND RETURNS BY INFLATION DECILE

January 31, 1900 – December 31, 2021 • AACR (%)

Real Stock Returns



Real Bond Returns

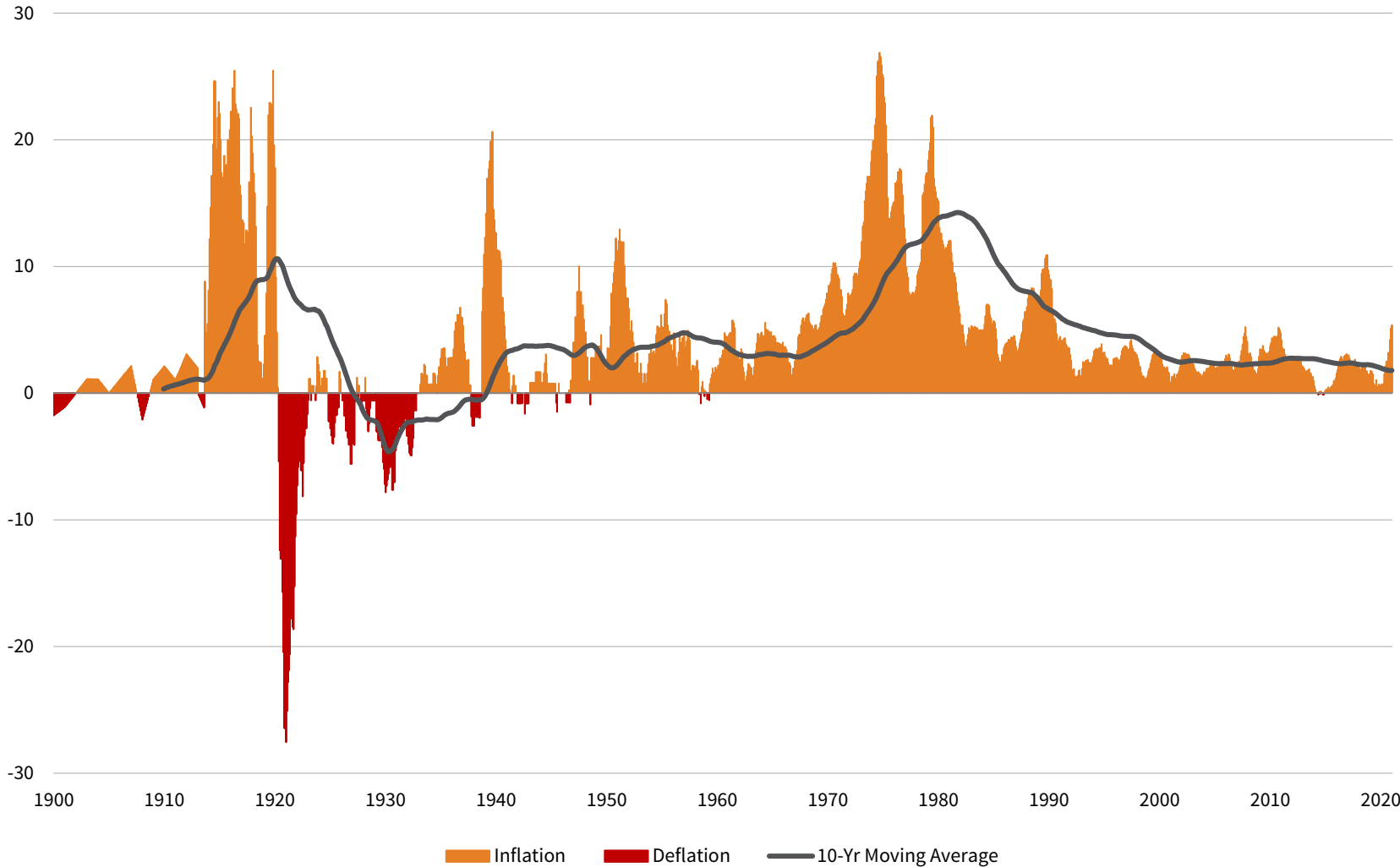


△ Median

UK inflation spiked in 2021 but has reached higher levels over its long-term history

UK INFLATION

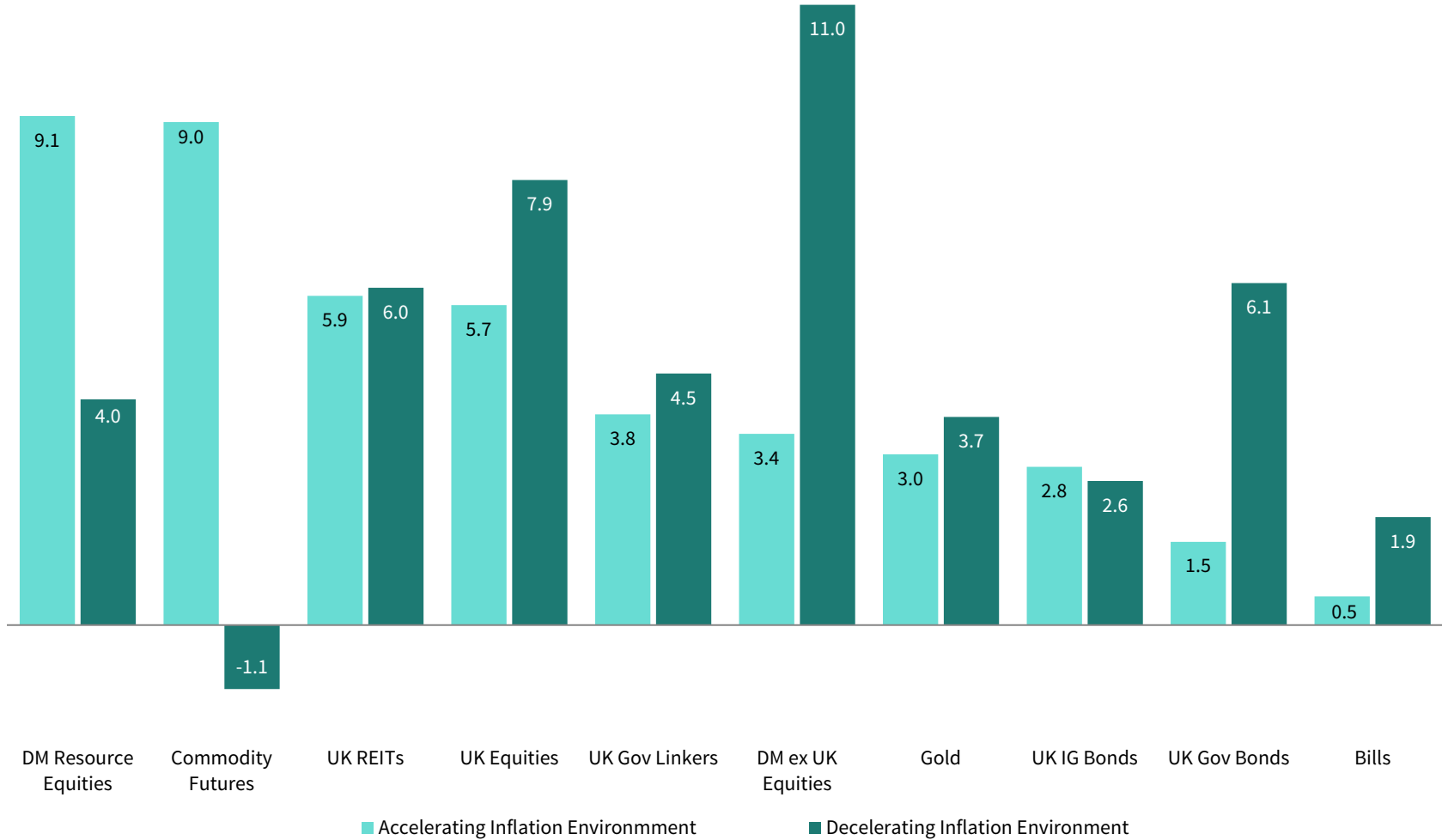
1900–2021 • Year-Over-Year (%)



UK equity and gilt returns are strongest in decelerating inflation environments

REAL RETURNS ACROSS DIFFERENT INFLATIONARY ENVIRONMENTS

1976–2021 • Percent (%)





Contributors to this report include Stuart Brown, Sean Duffin, Brendan Castleman, Ilona Vdovina, and Graham Landrith.

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