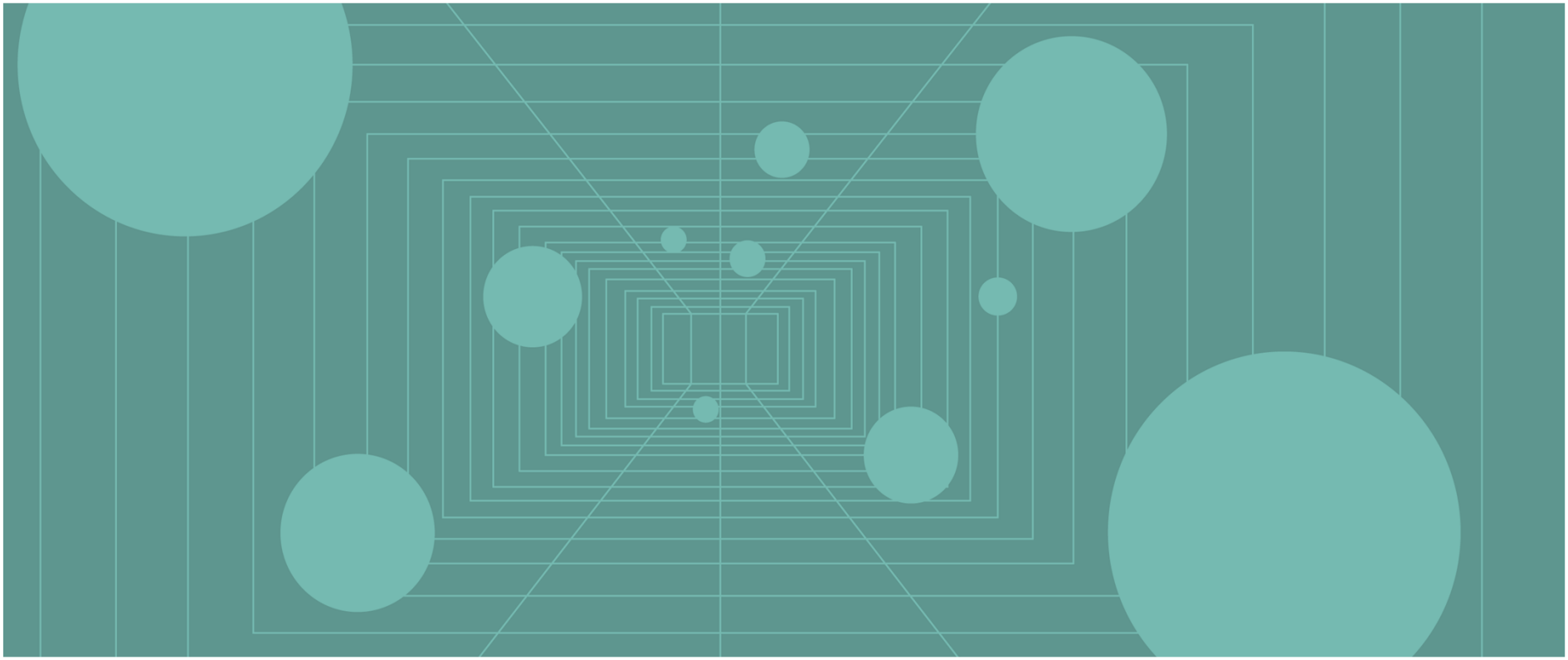
DECADES OF DATA: UNITED KINGDOM

1900–2019



CAMBRIDGE ASSOCIATES

Executive Summary

- **Basing investment decisions on the extrapolation of capital market 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 (19.2%) advanced in 2019, in contrast to negative performance in 2018. Still, UK stocks ended the year 3% below all-time highs set in May 2018.** UK shares gained the most since calendar year 2013, with 2019's performance ranking in the 72nd percentile of historical calendar year returns. Such strong performance for UK stocks is not necessarily uncommon. In fact, UK shares gained 19% or more in 34 out of 120 calendar years since 1900, more than one quarter of the time. Additionally, UK stocks earned double-digit returns in 58 calendar years over that same timespan, nearly half of the time. Investors might reasonably expect a market pullback in the subsequent year following such strong returns; however, the data show that strong performance can continue. In fact, in the initial calendar year following 19%+ market gains, the FTSE® All-Share Index posted double-digit positive returns in 20 out of 33 years, while only declining in six of those years, with an overall subsequent calendar year average of about 14%.
- **In the decade closed at the end of 2019, UK equities posted returns slightly below their average over the very long term.** Investors in UK equities have earned a nominal average annual compound return (AACR) of 8.1% over the past ten years. For the full period analyzed, UK equities (1900–2019) have posted a nominal AACR of 8.7%. 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.

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 a low of 2.0% to a high of 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 5.1% and 4.6%, 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 94% 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 sustained 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 provide to portfolios in terms of diversification.

- **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 vary significantly from decade to decade relative to the steady stream of reliable income provided by dividends. In the decade closed at the end of 2019, contributions from earnings growth exceeded that of dividend reinvestment, while multiple contraction detracted from performance. Earnings growth in the most recent decade was the strongest since the decade ended 1989, while multiple derating detracted from returns for the second consecutive decade. Dividend reinvestment's contribution to UK equity performance has been more stable relative to the United States, but has declined somewhat over time. In the past two decades, dividend reinvestment averaged 3.5% versus 5.0% in the four-decade period from 1960–99. Over the full historical period, dividend reinvestment averaged 4.4%.

Executive Summary (continued)

- **Starting valuations are a useful indicator for long-term (ten+ 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 80% of the variation in subsequent ten-year real returns, a moderately strong yet imperfect guide to future returns. At December 31, 2019, UK equity valuations ended in the 37th percentile of historical observations, and from this valuation decile the median subsequent ten-year real return for UK equities has been nearly 8% per annum.
- **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.** 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 53rd percentile of the historical distribution, where subsequent real ten-year returns historically have been about 7% from this decile. Dividend yields fail to capture the whole picture, however, as many other factors influence equity market returns.

Executive Summary (continued)

- **Subsequent nominal ten-year UK bond returns generally track the starting yield, displaying a tighter fit since the 1960s.** UK bond yields remained near historical lows in the United Kingdom at the end of 2019, implying that the outlook for future long-term returns is low. In August 2019, UK ten-year government bond yields fell to their lowest month-end levels on record (0.48%) and ended the year at 0.83%. 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 = 0.97) is a guide, UK bonds are very likely to be well below average in the ensuing ten years. And, low but positive 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 10.3% since 1974, today's low-yield environment may cap future returns.

- **Although rising interest rates are commonly viewed as detrimental to equity prices, this is not necessarily the case**—the drivers of change in interest rates, rather than their outright levels or the amount of changes in the rates, are what impact equity returns. Stocks can rise amid rising bond yields if such yields reflect improving growth conditions or increasing consumer confidence. In addition, a weak, albeit positive, statistical relationship exists between short-term interest rates and subsequent ten-year returns in the United Kingdom, counter to what one would expect. The relationship deteriorates, however, when the high inflationary and bond yield environment of the late 1970s/early 1980s is excluded, as equities gained strongly in the subsequent ten-year period on moderating inflation and falling interest rates. Still, we have very few data points on subsequent equity performance from such low of starting interest rate levels.

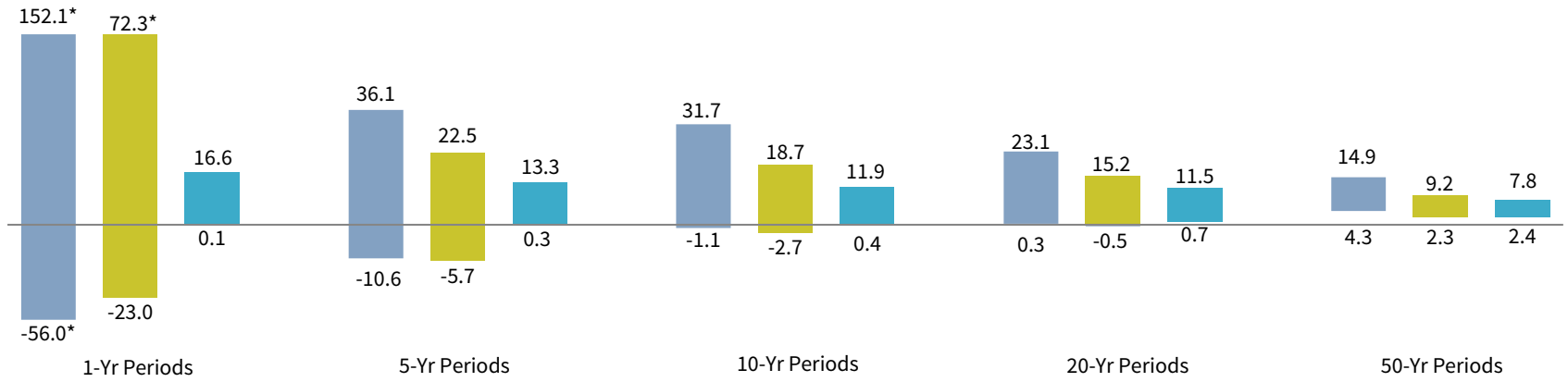
- **The UK economy has enjoyed a sustained expansion since the Great Recession.** But fundamental equity market indicators, including earnings per share (EPS) and return on equity (ROE), have not necessarily benefited from the overall economy's growth. Real EPS levels have yet to retake their pre-GFC peak set in December 2007 and remain more than 30% below such levels as of December 31, 2019, while ROE has remained stubbornly below its long-term median since 2014. The UK equity market's outsized exposure to financials and natural resources–linked stocks may explain part of the weak fundamental outcomes. The UK yield curve (ten-year/three-month yield spread) tends to invert prior to economic downturns, but the timing and lead times can be inconsistent. However, the curve has flattened since the end of the last recession and inverted along with the US yield curve in 2019.

The range of investment returns narrows as holding periods increase

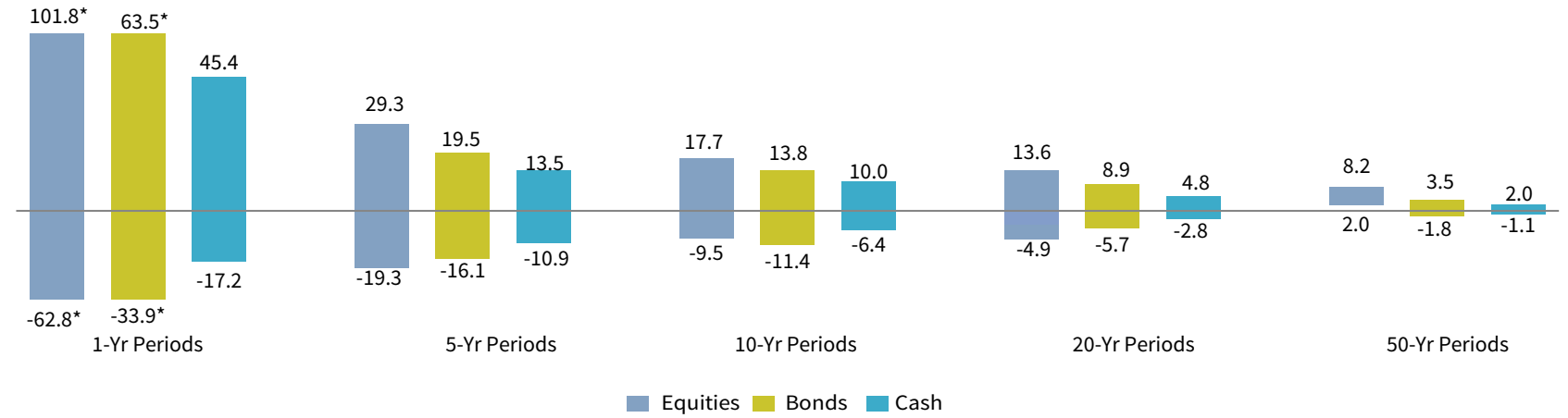
RANGE OF EQUITY, BOND, AND CASH RETURNS FOR VARIOUS ROLLING MONTHLY TIME HORIZONS

1900–2019 • Average Annual Compound Return (%)

Nominal Returns



Real Returns



* Axis capped for scaling purposes.

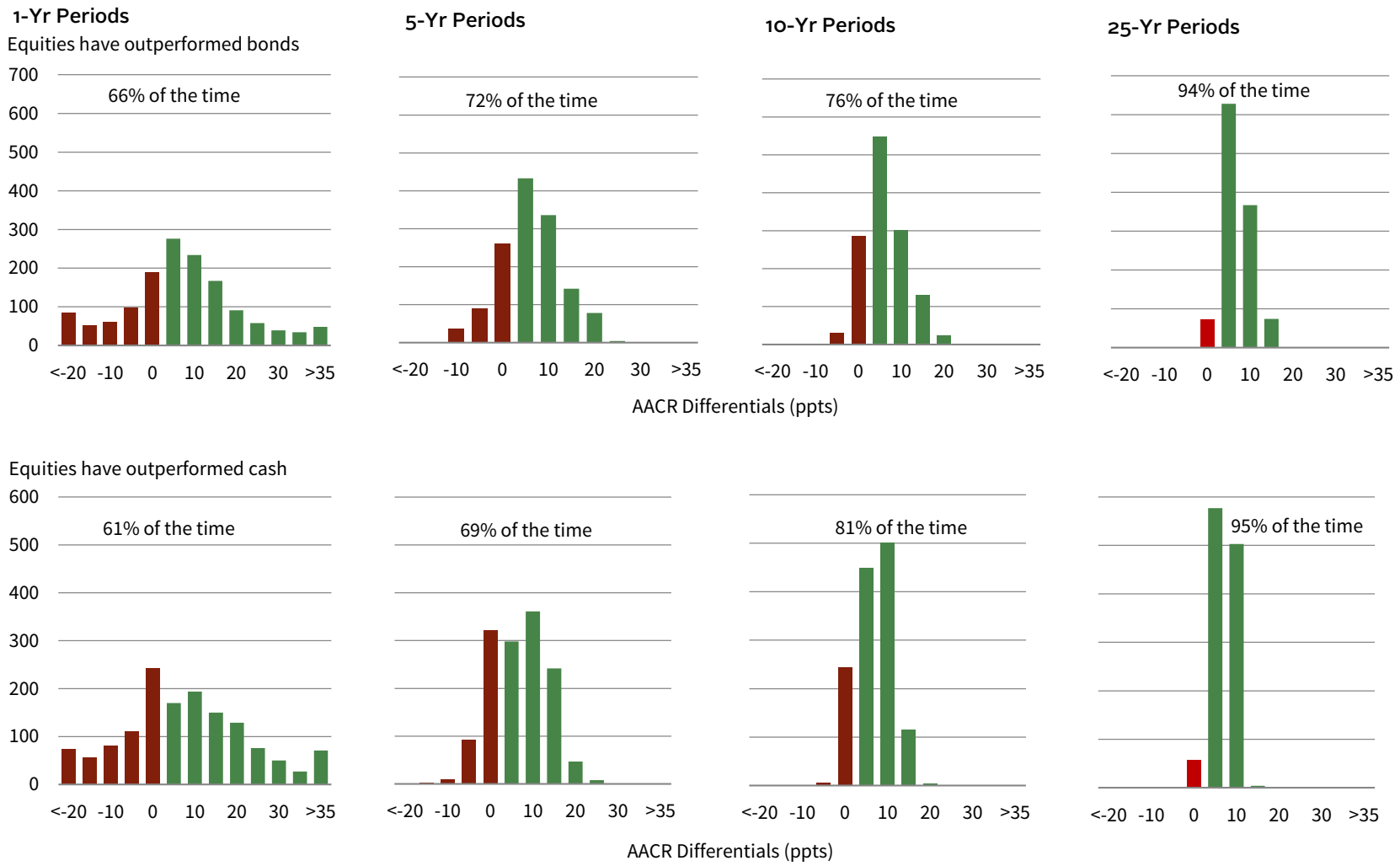
Sources: FTSE International Limited, Global Financial Data, Inc., and Thomson Reuters Datastream.

Note: The one-year high real cash return of 45.4% occurred in 1921 and was caused primarily by severe deflation in the post-war 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

1900–2019 • Number of Rolling Monthly Periods



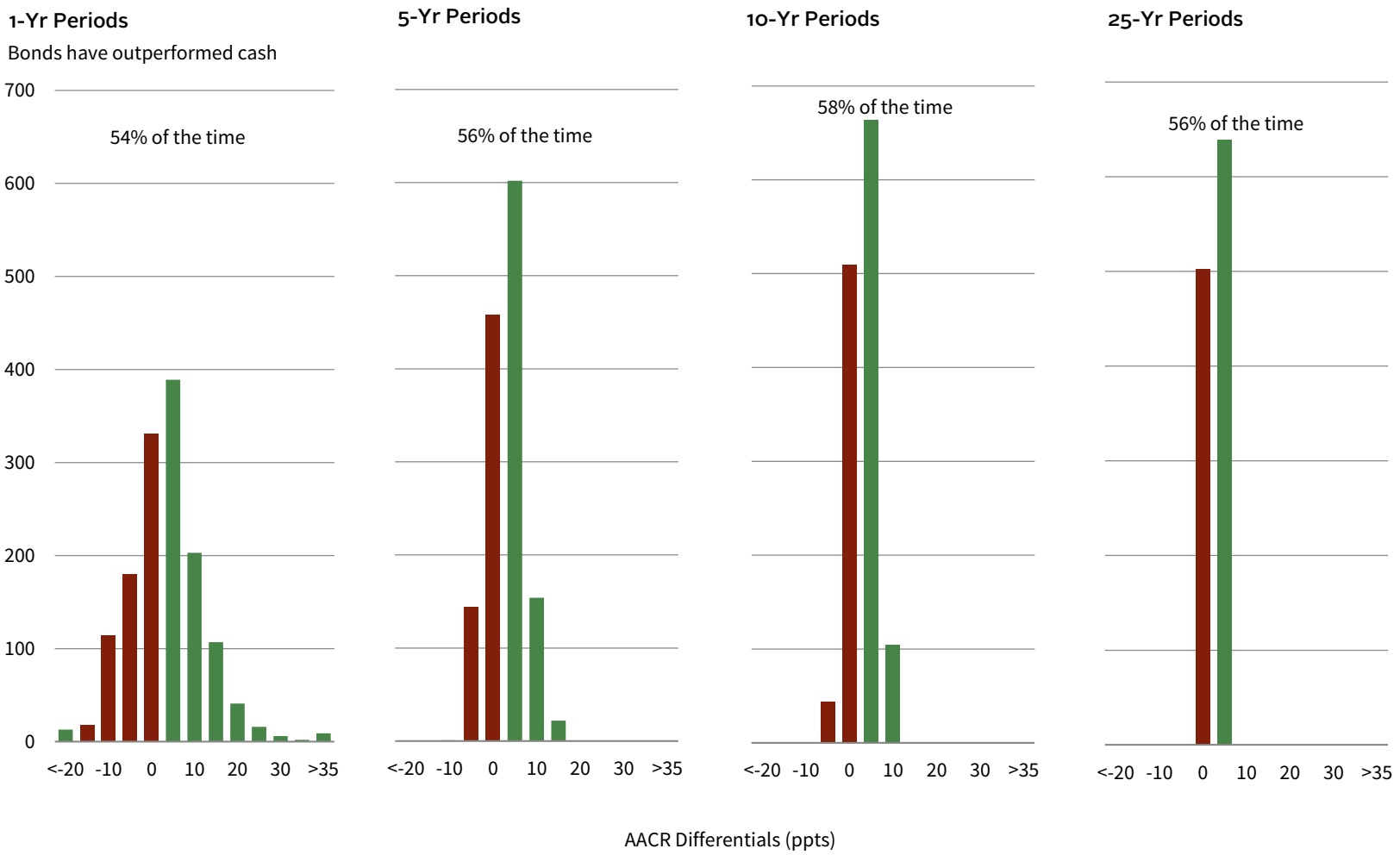
Sources: FTSE International Limited, Global Financial Data, Inc., and Thomson Reuters Datastream.

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

1900–2019 • Number of Rolling Monthly Periods



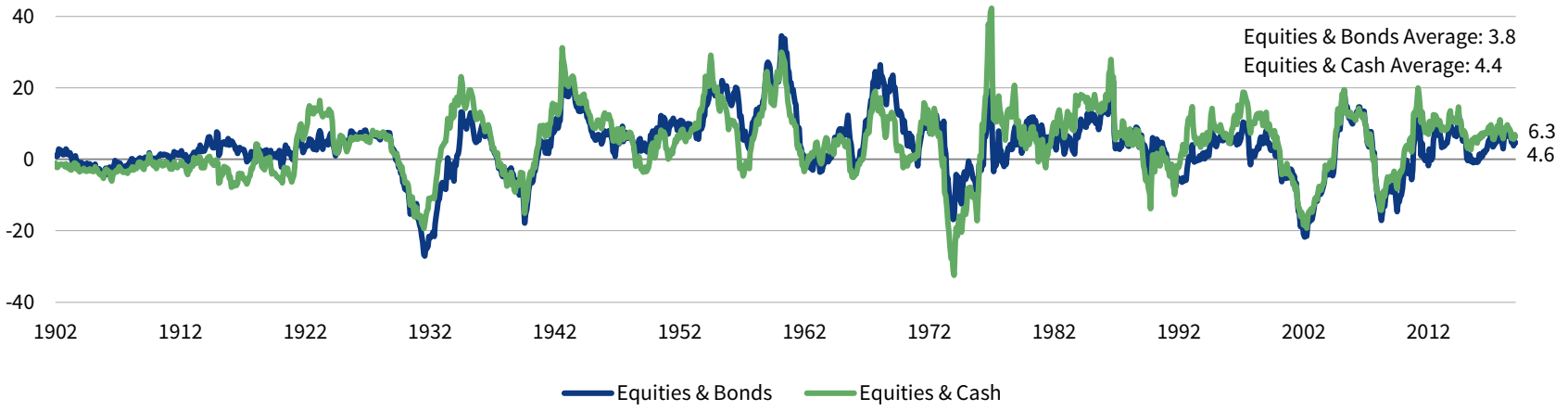
Sources: Global Financial Data, Inc. and Thomson Reuters Datastream.

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 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

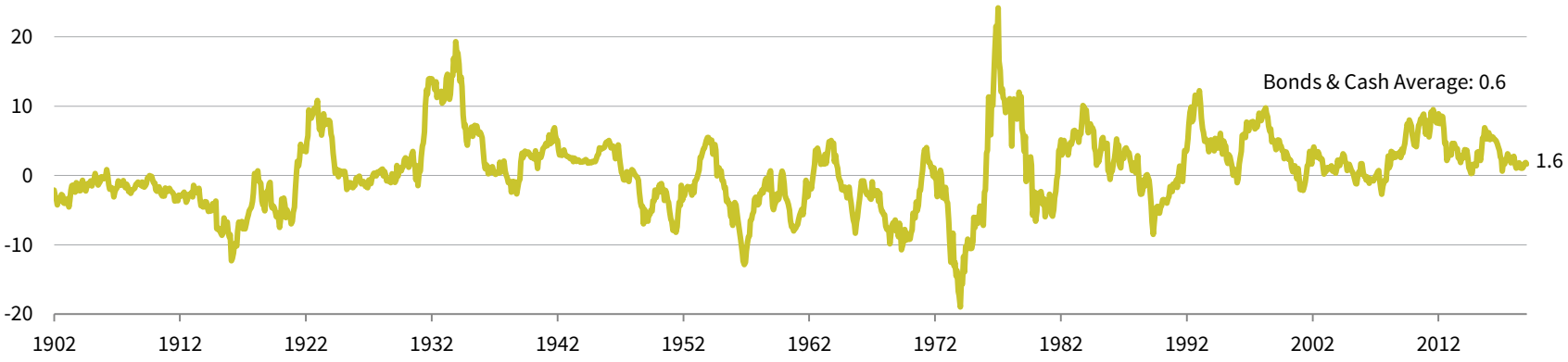
AACR OF ROLLING MONTHLY 3-YR RETURN DIFFERENTIAL BETWEEN EQUITY, BOND, AND CASH RETURNS

1902–2019 • Percent (%)



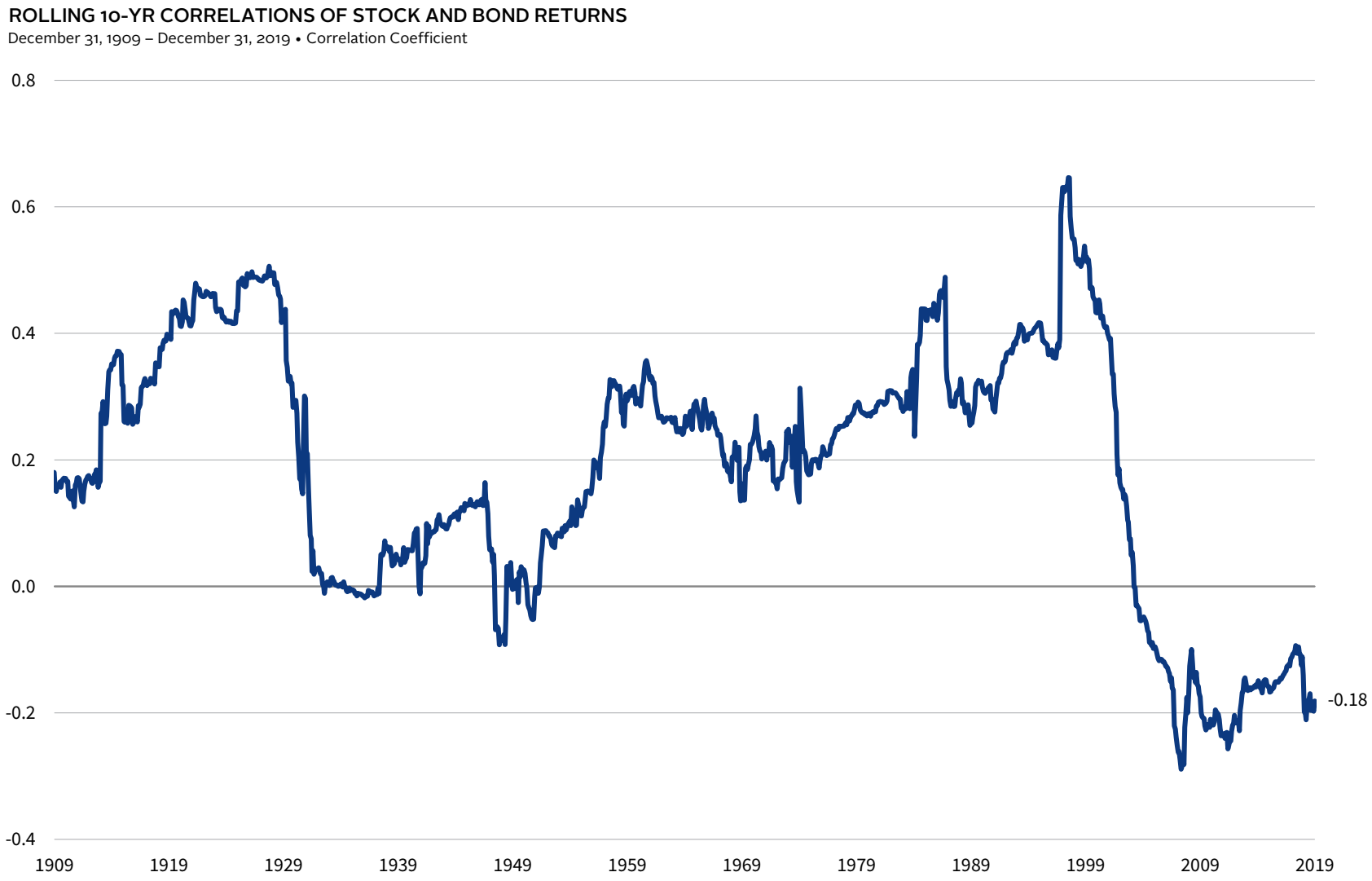
AACR OF ROLLING MONTHLY 3-YR RETURN DIFFERENTIAL BETWEEN BOND AND CASH RETURNS

1902–2019 • Percent (%)



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

Stock and bond correlation remains near historical lows

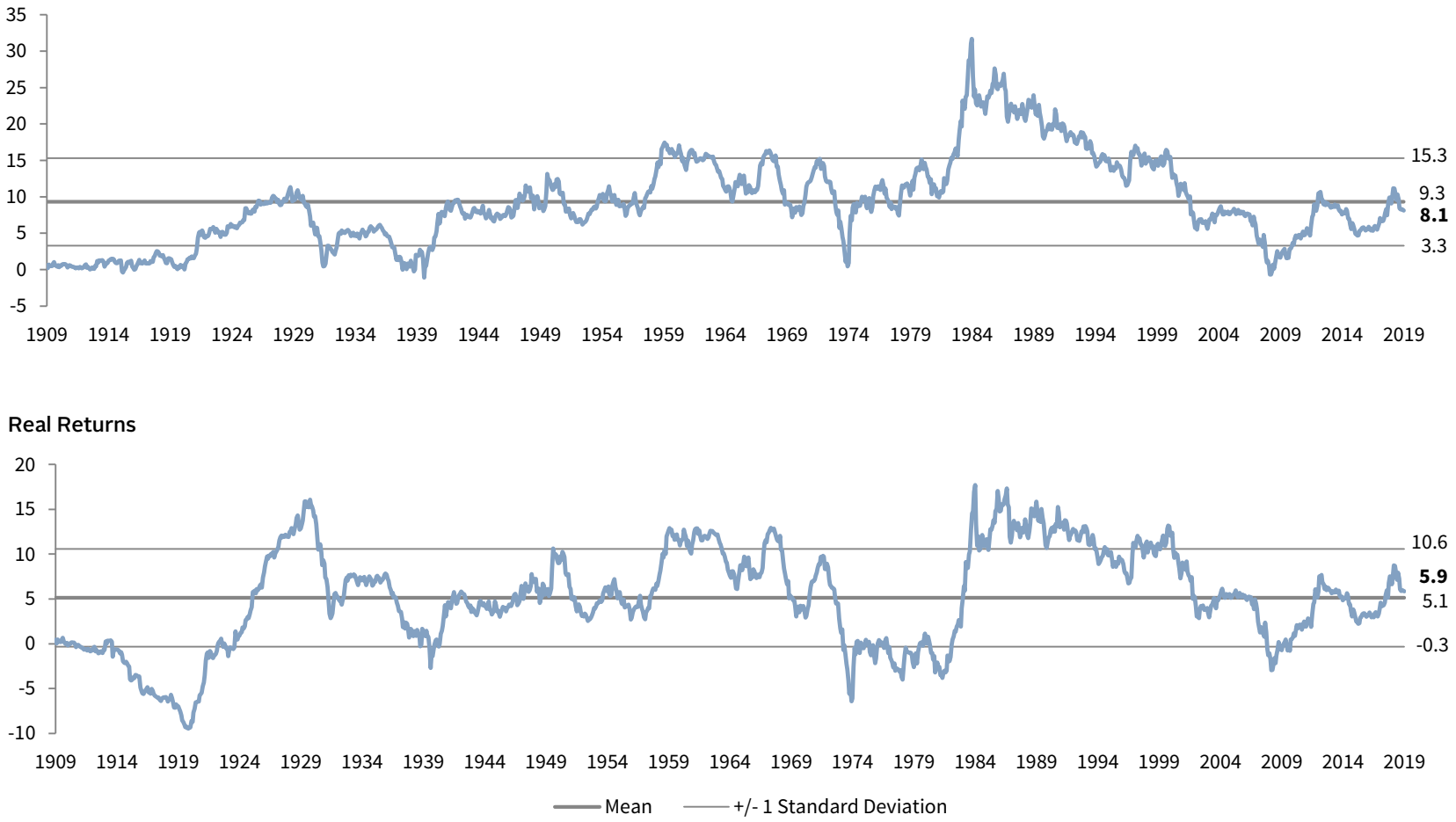


Sources: FTSE International Limited, Global Financial Data, Inc., and Thomson Reuters Datastream.
Notes: Data begin on January 31, 1900. All return data are monthly.

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

ROLLING MONTHLY EQUITY TOTAL RETURN 10-YR AACR

1909–2019 • Percent (%)

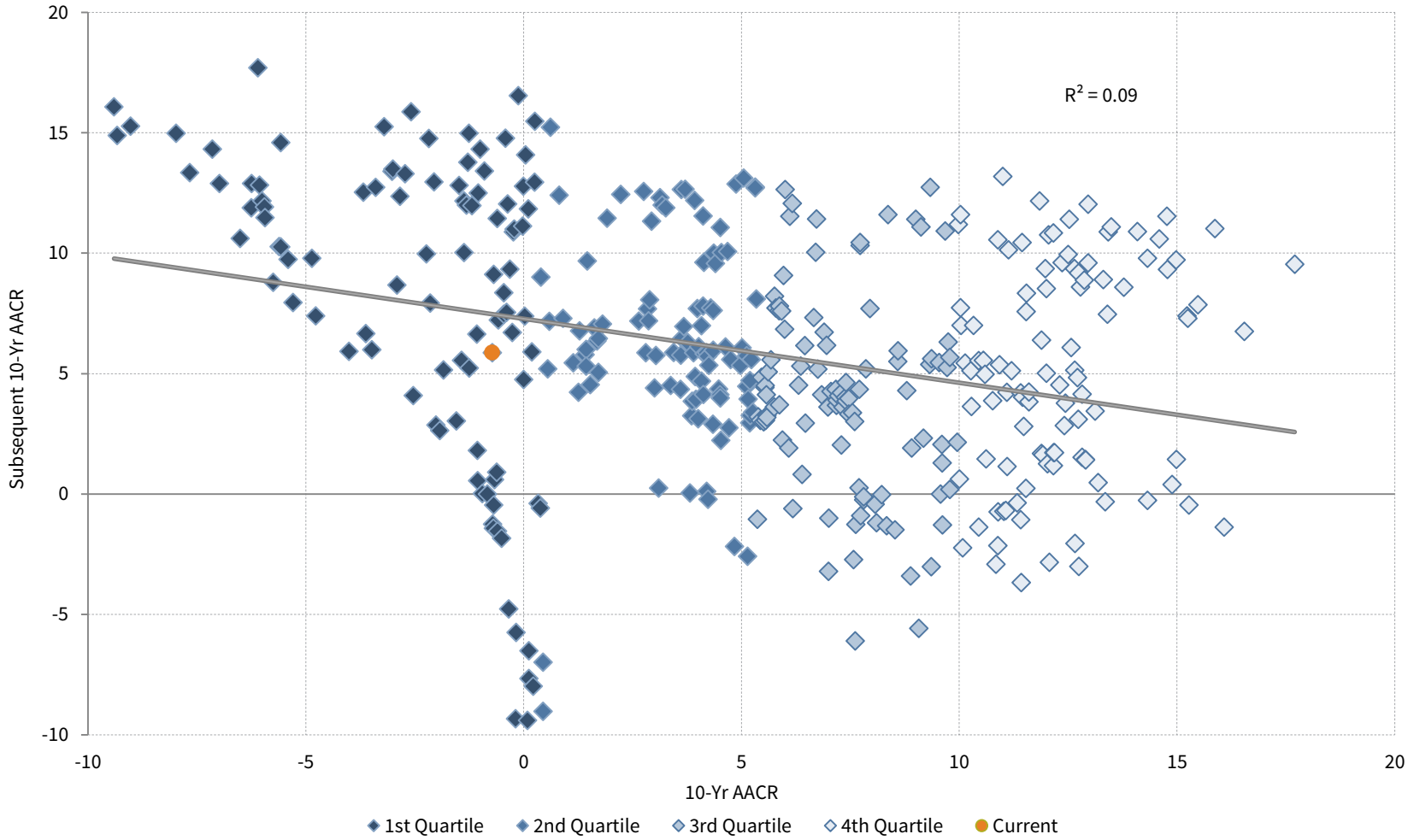


Sources: FTSE International Limited, Global Financial Data, Inc., and Thomson Reuters Datastream.

Weak but slightly inverse relationship between past and future performance

RELATIONSHIP BETWEEN ROLLING QUARTERLY 10-YR EQUITY REAL AACR AND SUBSEQUENT 10-YR EQUITY REAL AACR

1900–2019 • Percent (%)

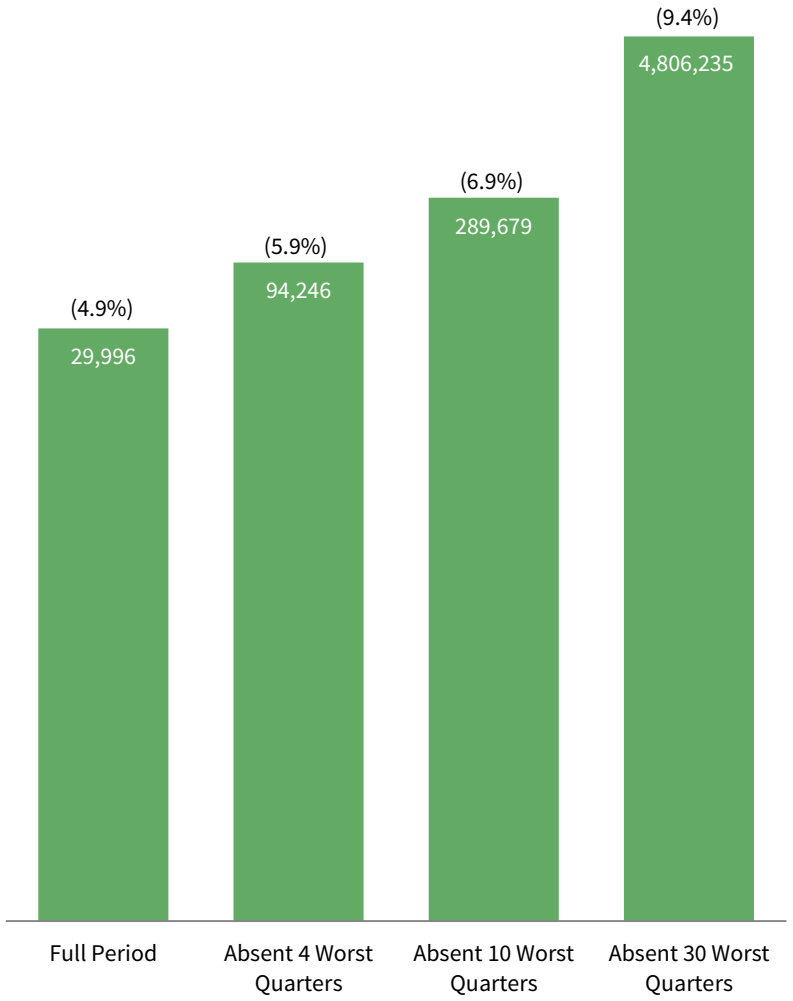


Sources: FTSE International Limited, Global Financial Data, Inc., and Thomson Reuters Datastream.

Attempting to time the market carries significant risk

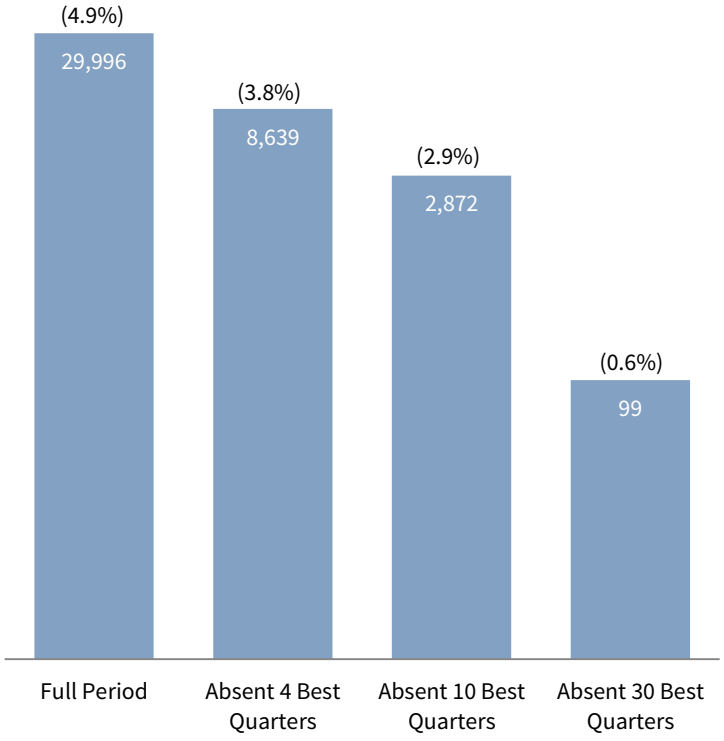
CUMULATIVE REAL WEALTH ABSENT WORST QUARTERS

1900–2019 • January 1, 1900 = 100 • AACR (%) in Parentheses



CUMULATIVE REAL WEALTH ABSENT BEST QUARTERS

1900–2019 • January 1, 1900 = 100 • AACR (%) in Parentheses

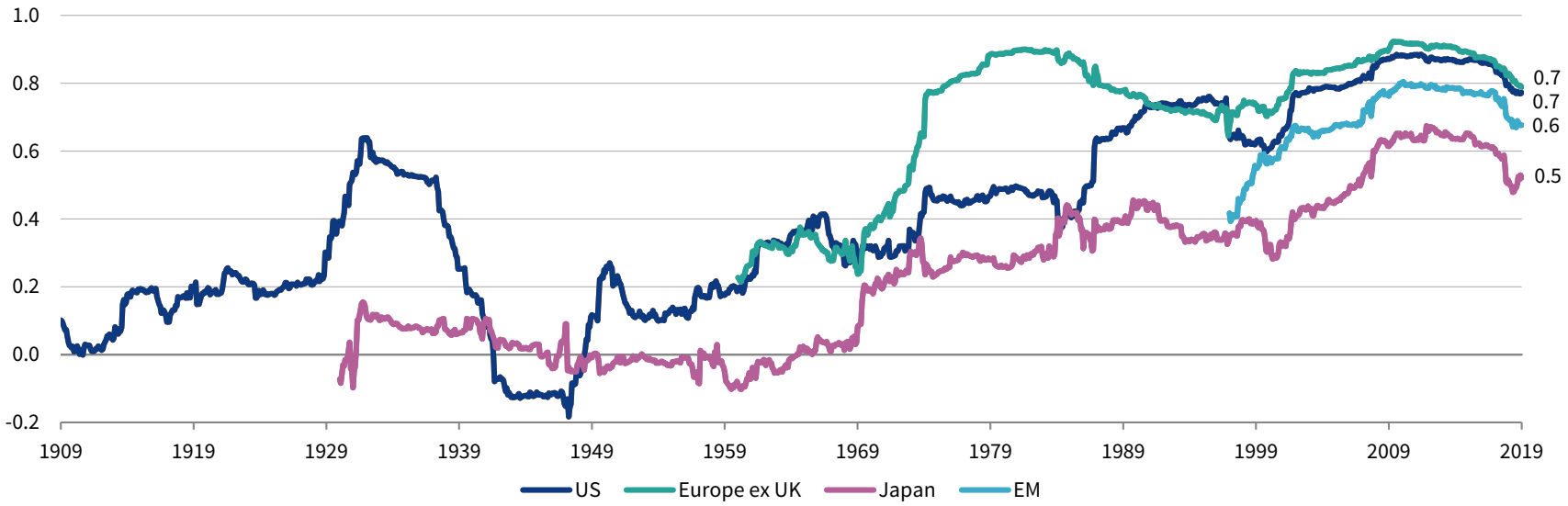


Sources: FTSE International Limited, Global Financial Data, Inc., and Thomson Reuters Datastream.
Note: Cumulative real wealth is shown on a logarithmic scale.

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, 2019 • 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

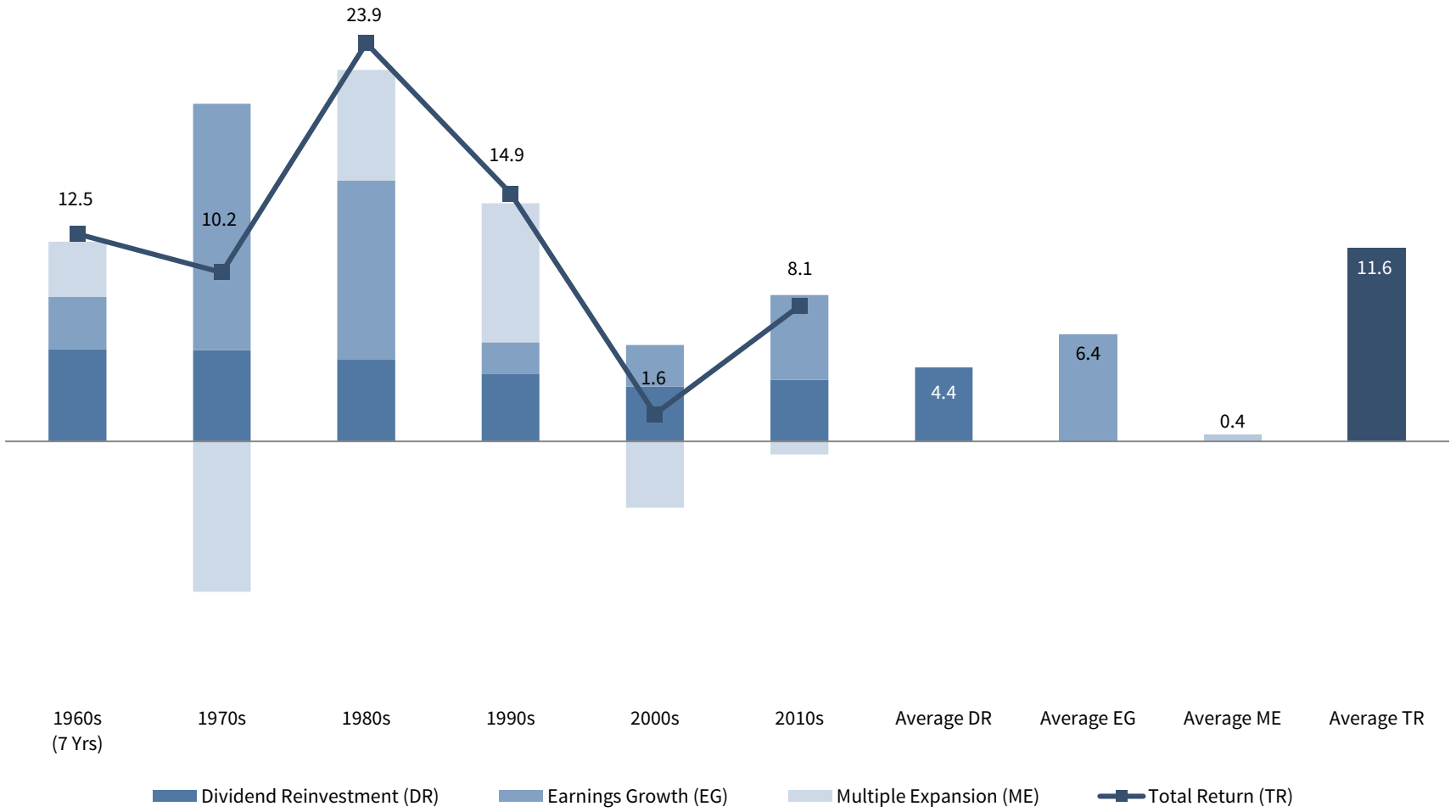
January 31, 1960 – December 31, 2019

	UK	US	Europe ex UK	Japan	EM
UK	1.00				
US	0.58	1.00			
Europe ex UK	0.72	0.66	1.00		
Japan	0.35	0.40	0.47	1.00	
EM	0.62	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.

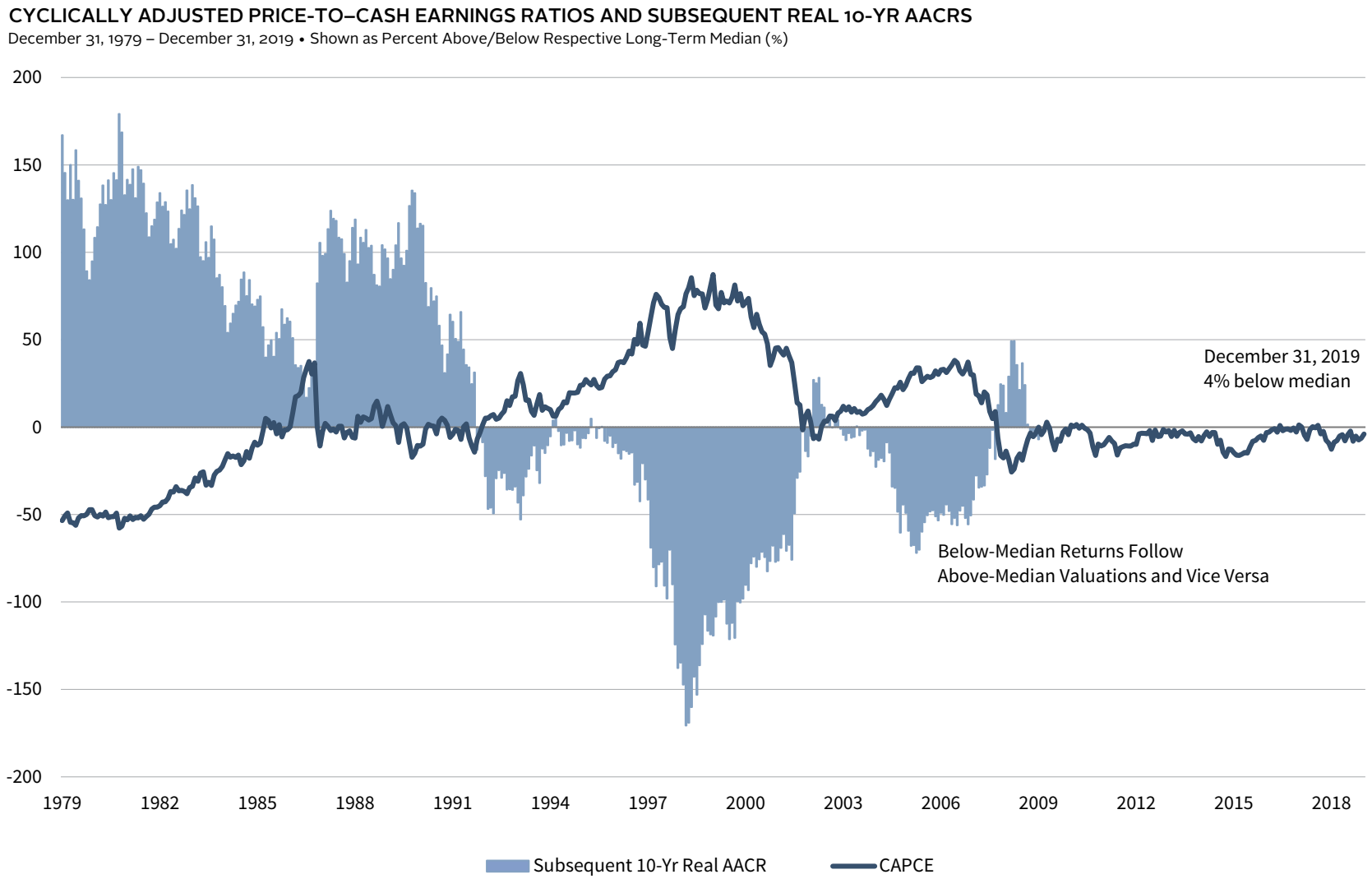
Earnings growth and valuation multiple rerating vary over time; dividends are more stable

BREAKDOWN OF TOTAL RETURN AACR OVER TIME
1963–2019 • 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.

High valuations imply weak subsequent returns and vice versa



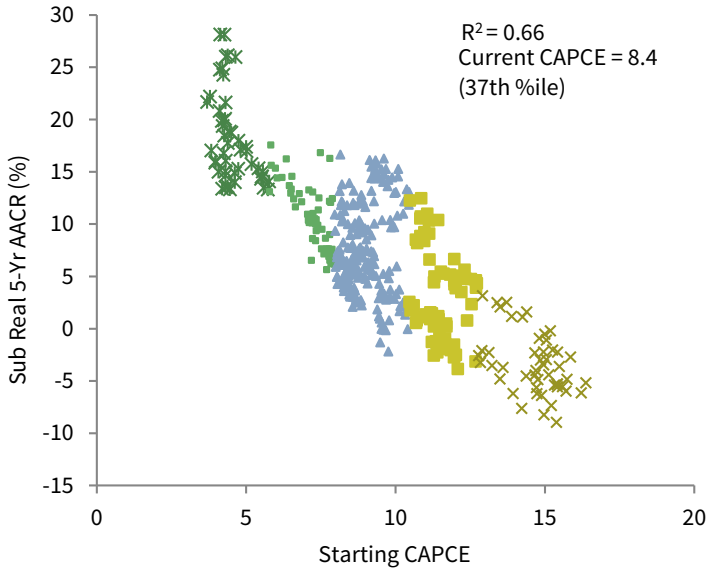
Sources: MSCI Inc. and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: Chart shows percent above/below median for returns and valuations. Line shows point-in-time cyclically adjusted price-to–cash earnings (CAPCE) ratios. Bars are based on monthly 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 5.3% since 1979. For example, the first data point shows that the real AACR for the period 1979–88 was 167.0% above the median ten-year real return.

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

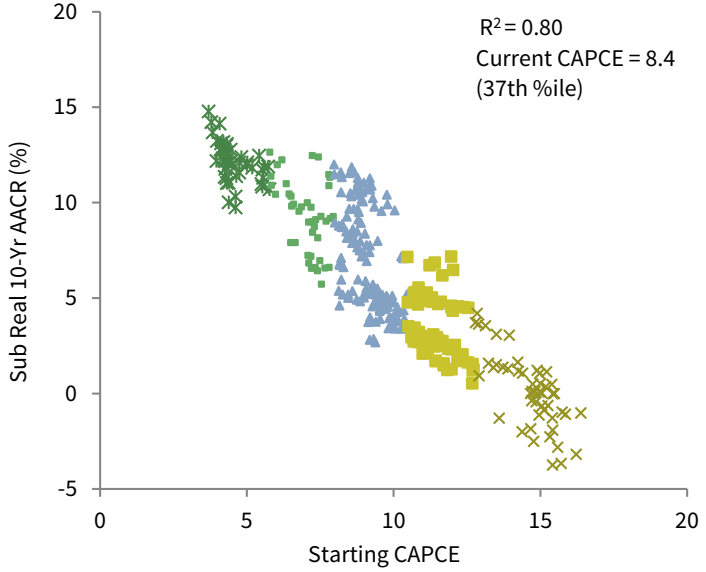
RELATIONSHIP BETWEEN CYCLICALLY ADJUSTED PRICE-TO-CASH EARNINGS RATIOS AND SUBSEQUENT REAL 5- AND 10-YR AACRS

December 31, 1979 – December 31, 2019

Initial Valuation and Subsequent 5-Yr AACR



Initial Valuation and Subsequent 10-Yr AACR

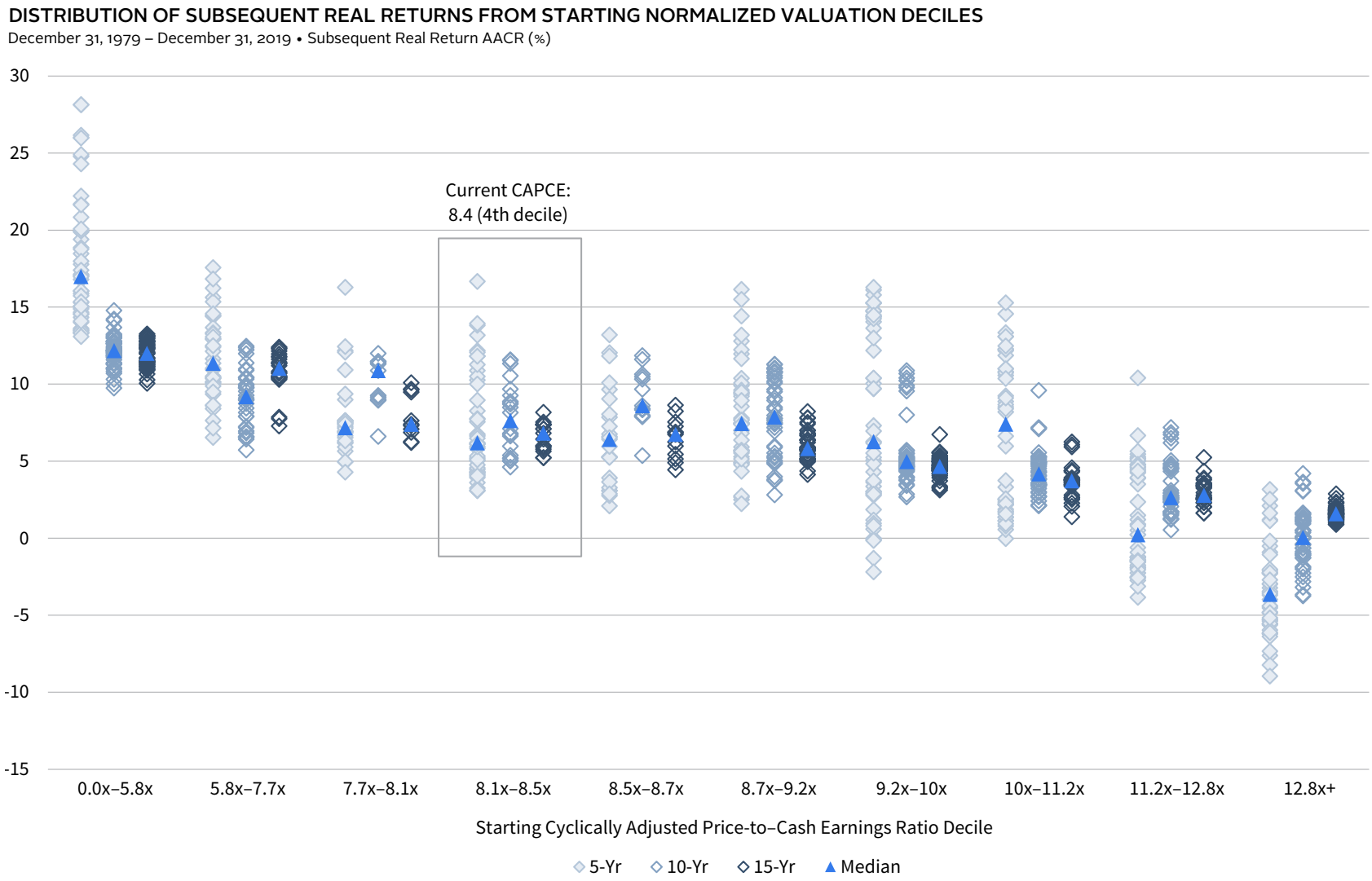


P/CE Ratio Percentile	Starting Cyclically Adjusted Price-to-Cash Earnings Ratio			Subsequent Real 5-Yr AACR (%)			Starting Cyclically Adjusted Price-to-Cash Earnings Ratio			Subsequent Real 10-Yr AACR (%)		
	Median	High	Low	Median	High	Low	Median	High	Low	Median	High	Low
0–10	4.3	5.8	3.7	17.0	28.1	13.3	4.3	5.8	3.7	12.2	14.8	9.7
10–25	7.4	8.0	5.8	10.4	17.6	5.6	7.2	8.0	5.8	9.3	12.6	5.7
25–75	8.9	10.5	8.0	6.7	16.7	-2.2	9.2	10.5	8.0	5.5	12.0	2.7
75–90	11.4	12.7	10.5	1.7	12.5	-3.8	11.4	12.7	10.5	2.8	7.2	0.5
90–100	14.8	16.4	12.8	-3.6	3.2	-9.0	14.8	16.4	12.8	0.1	4.2	-3.7
Overall	**9.0**	**16.4**	**3.7**	**6.7**	**28.1**	**-9.0**	**9.4**	**16.4**	**3.7**	**5.3**	**14.8**	**-3.7**

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, 2015, to December 31, 2019, and the last full ten-year period was January 1, 2010, to December 31, 2019.

Starting normalized valuations are more meaningful as holding periods increase



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

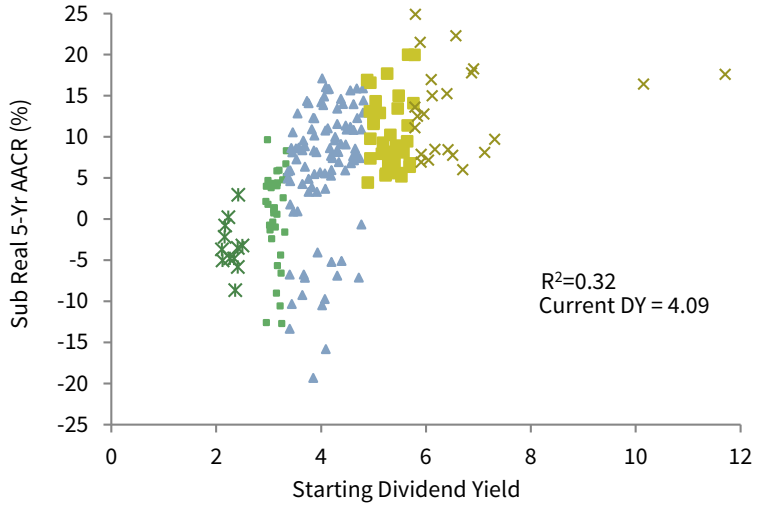
Notes: Data are monthly. The last full five-year period was January 1, 2015, to December 31, 2019, the last full ten-year period was January 1, 2010, to December 31, 2019, and the last full 15-year period was January 1, 2005, to December 31, 2019.

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

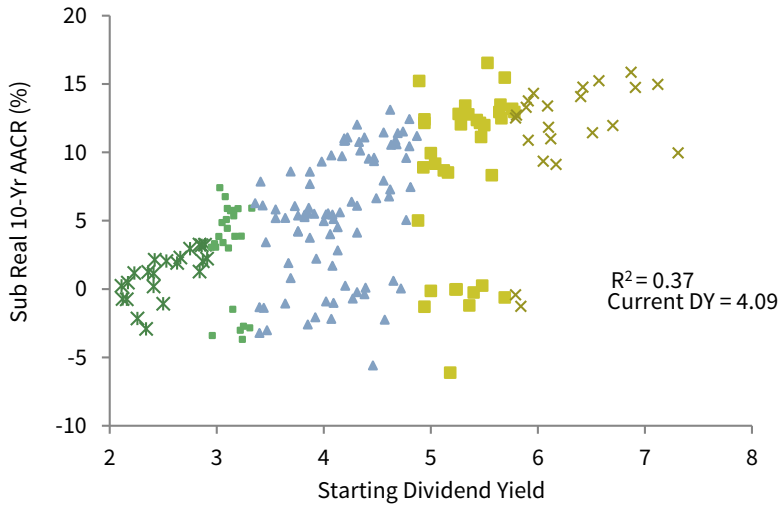
RELATIONSHIP BETWEEN DIVIDEND YIELDS AND SUBSEQUENT REAL AACRS

Second Quarter 1962 – Fourth Quarter 2019

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 (%)		
	Median	High	Low	Median	High	Low
0–10	2.3	2.5	2.1	-3.6	2.9	-8.7
10–25	3.2	3.4	3.0	1.6	9.6	-12.7
25–75	4.1	4.9	3.4	8.2	17.1	-19.3
75–90	5.3	5.8	4.9	9.6	27.1	4.4
90–100	6.1	11.7	5.8	13.2	29.1	6.0
Overall	**4.1**	**11.7**	**2.1**	**7.1**	**29.1**	**-19.3**

Dividend Yield Percentile	Starting Period Dividend Yield (%)			Subsequent Real 10-Yr AACR (%)		
	Median	High	Low	Median	High	Low
0–10	2.5	2.9	2.1	1.3	3.3	-2.9
10–25	3.1	3.3	3.0	3.9	7.4	-3.7
25–75	4.1	4.9	3.4	5.5	13.1	-5.6
75–90	5.3	5.8	4.9	11.6	16.5	-6.1
90–100	6.1	11.7	5.8	13.0	17.7	-1.3
Overall	**4.2**	**11.7**	**2.1**	**5.6**	**17.7**	**-6.1**

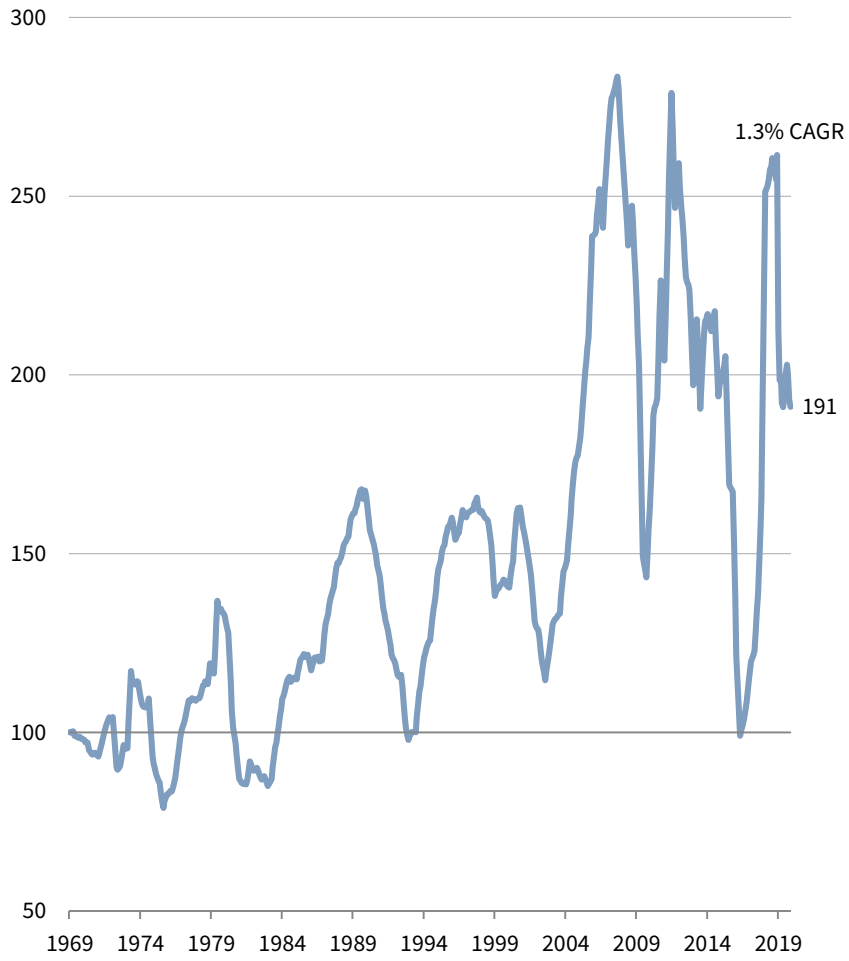
Sources: FTSE International Limited, Global Financial Data, Inc., and Thomson Reuters Datastream.

Notes: Data are quarterly. The last full five-year period was first quarter 2015 through fourth quarter 2019. The last full ten-year period was first quarter 2010 through fourth quarter 2019. Outliers are not shown on graph but are included in R^2.

Uptrend for UK earnings growth stalled post GFC as return on equity cratered and remained low

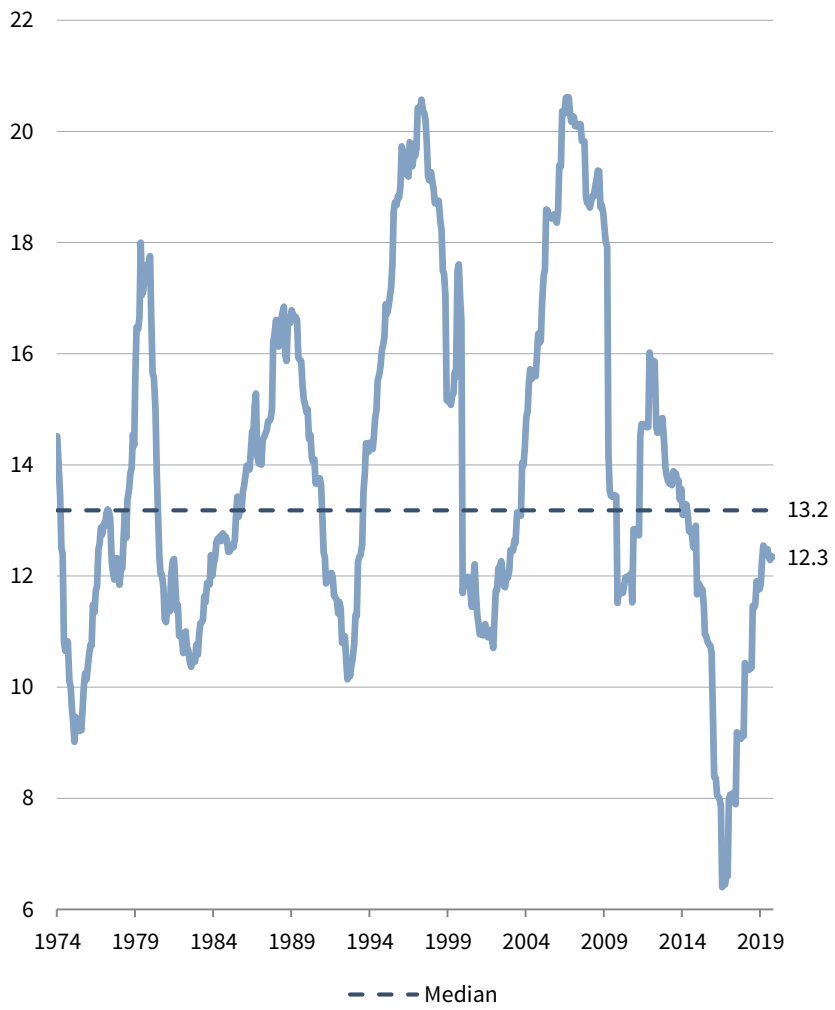
REAL EARNINGS PER SHARE OVER TIME

December 31, 1969 – December 31, 2019 • December 31, 1969 Cumulative Wealth = 100



RETURN ON EQUITY

December 31, 1974 – December 31, 2019 • Percent (%)



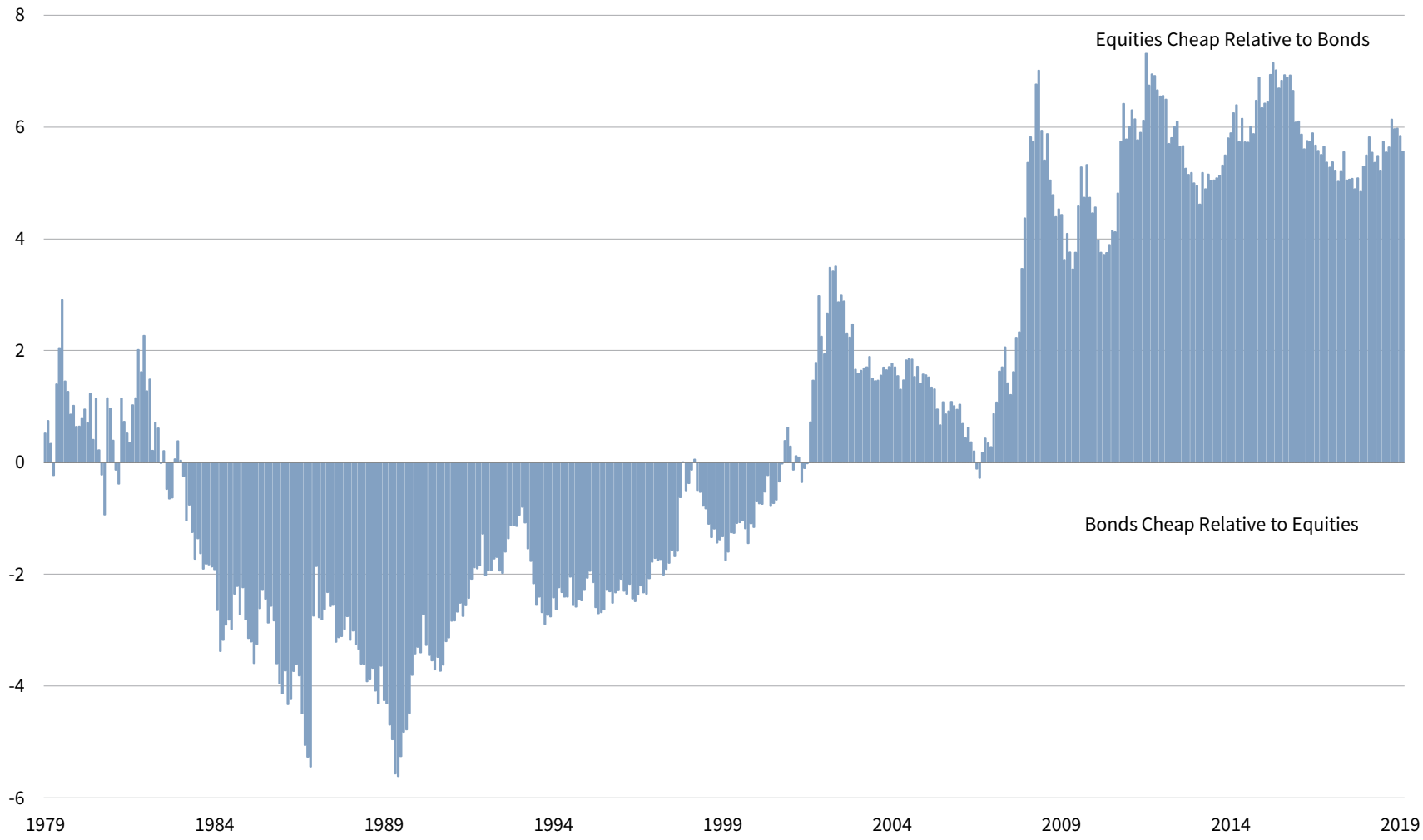
Sources: Frank International Limited, MSCI Inc., and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.

Note: Real earnings per share is based on the FTSE All-Share Index and return on equity is based on the MSCI UK Index.

Post-GFC low-yield environment has made equities more attractive to bonds

SHILLER EARNINGS YIELDS VERSUS 10-YR BOND YIELDS

1979–2019



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

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.

UK bond returns track starting yields, particularly since the 1960s

RELATIONSHIP BETWEEN GOVERNMENT BOND YIELDS AND SUBSEQUENT 10-YR AACRS

1900–2019 • Percent (%)

Source: Global Financial Data, Inc.

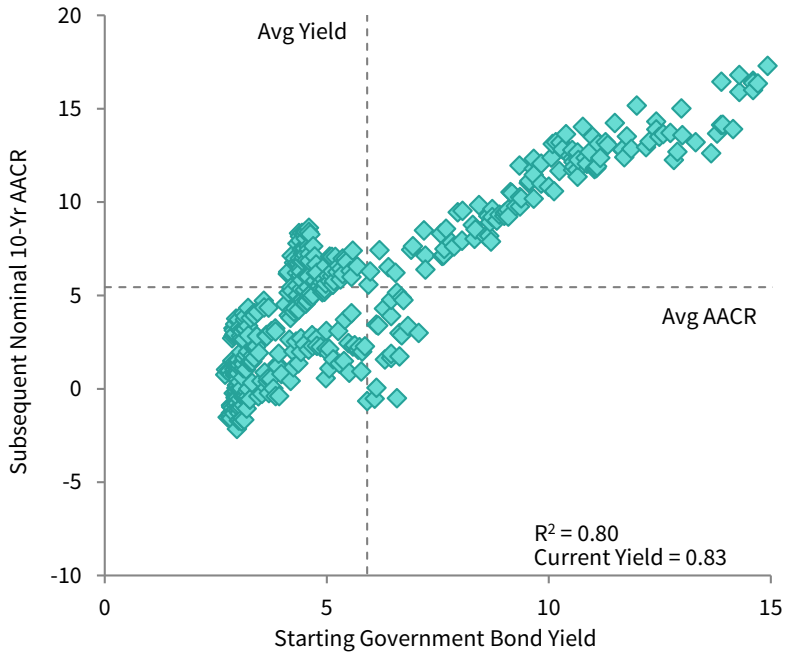
Notes: Data are monthly. The last full ten-year period was January 1, 2010, to December 31, 2019.

All-time low starting yields imply low subsequent nominal and real returns for bonds

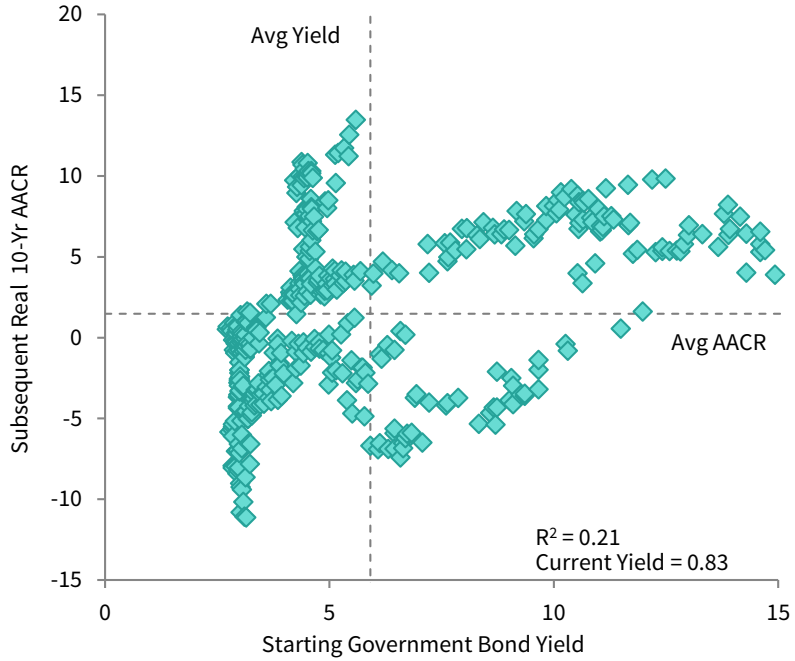
RELATIONSHIP BETWEEN GOVERNMENT BOND YIELDS AND SUBSEQUENT 10-YR AACRS

1900–2019 • Percent (%)

Nominal Returns



Real Returns



Yield Quartiles	Starting Period Government Bond Yields			Subsequent Nominal 10-Yr AACR (%)			
	Mean	High	Low	Mean	High	Low	Std Dev
First	3.02	3.26	2.71	0.74	4.34	-2.15	1.66
Second	4.08	4.59	3.27	4.22	8.41	-0.57	2.65
Third	5.57	7.63	4.59	4.71	8.62	-0.66	2.35
Fourth	10.99	17.24	7.65	12.14	18.72	7.50	2.49
Overall	**5.91**	**17.24**	**2.71**	**5.45**	**18.72**	**-2.15**	**4.76**

	Starting Period Government Bond Yields			Subsequent Real 10-Yr AACR (%)			
	Mean	High	Low	Mean	High	Low	Std Dev
First	3.02	3.26	2.71	-3.02	1.62	-11.13	3.37
Second	4.08	4.59	3.27	2.36	10.86	-4.82	4.74
Third	5.57	7.63	4.59	1.63	13.47	-7.41	5.19
Fourth	10.99	17.24	7.65	4.94	9.84	-5.38	4.08
Overall	**5.91**	**17.24**	**2.71**	**1.48**	**13.47**	**-11.13**	**5.24**

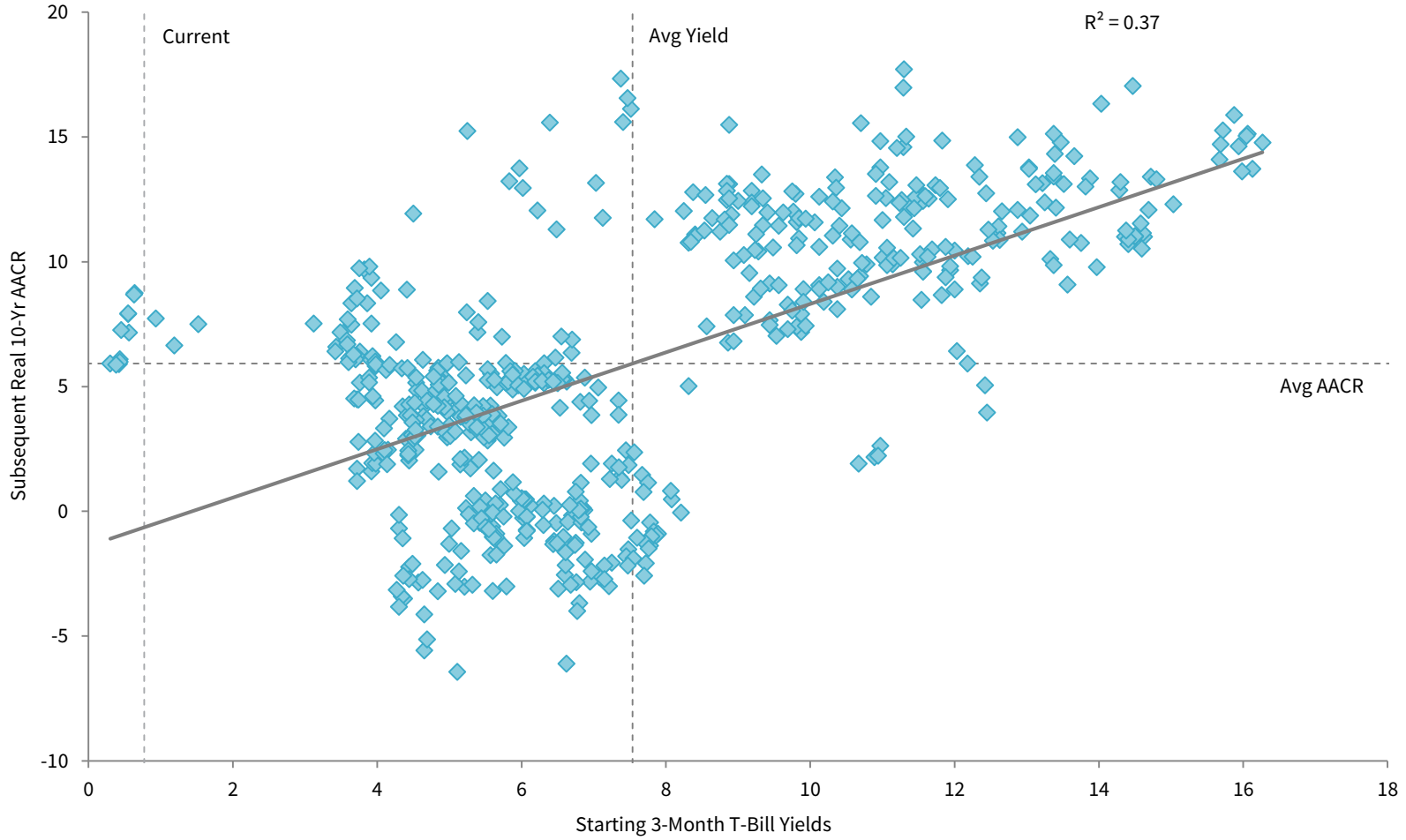
Source: Global Financial Data, Inc.

Notes: Data are quarterly. The last full ten-year period was first quarter 2010 through fourth quarter 2019.

Higher cash yields associated with higher equity returns historically, but relationship is weak

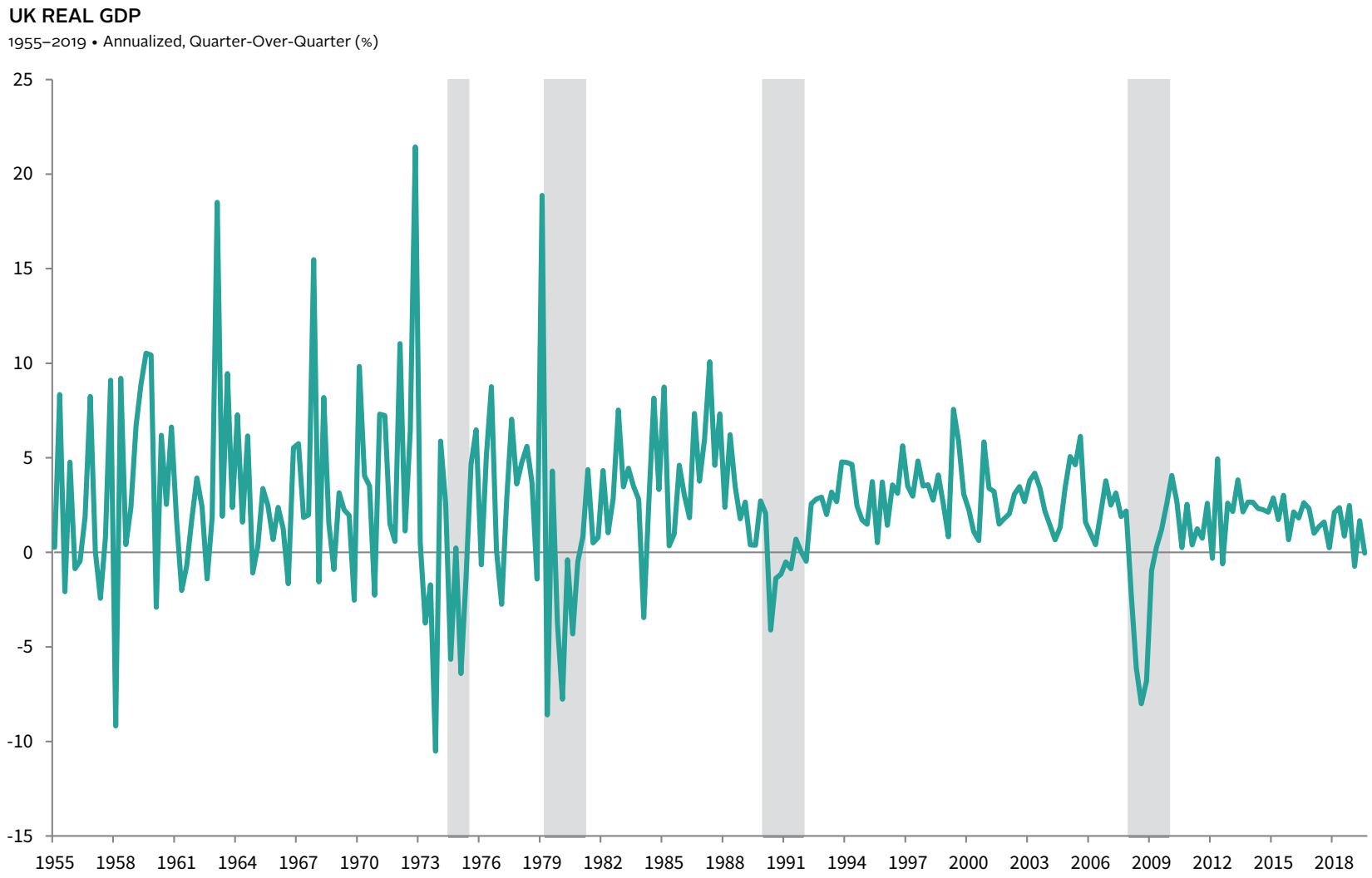
RELATIONSHIP BETWEEN TREASURY BILL YIELDS AND SUBSEQUENT REAL 10-YR EQUITY AACRS

January 31, 1960 – December 31, 2019 • Percent (%)



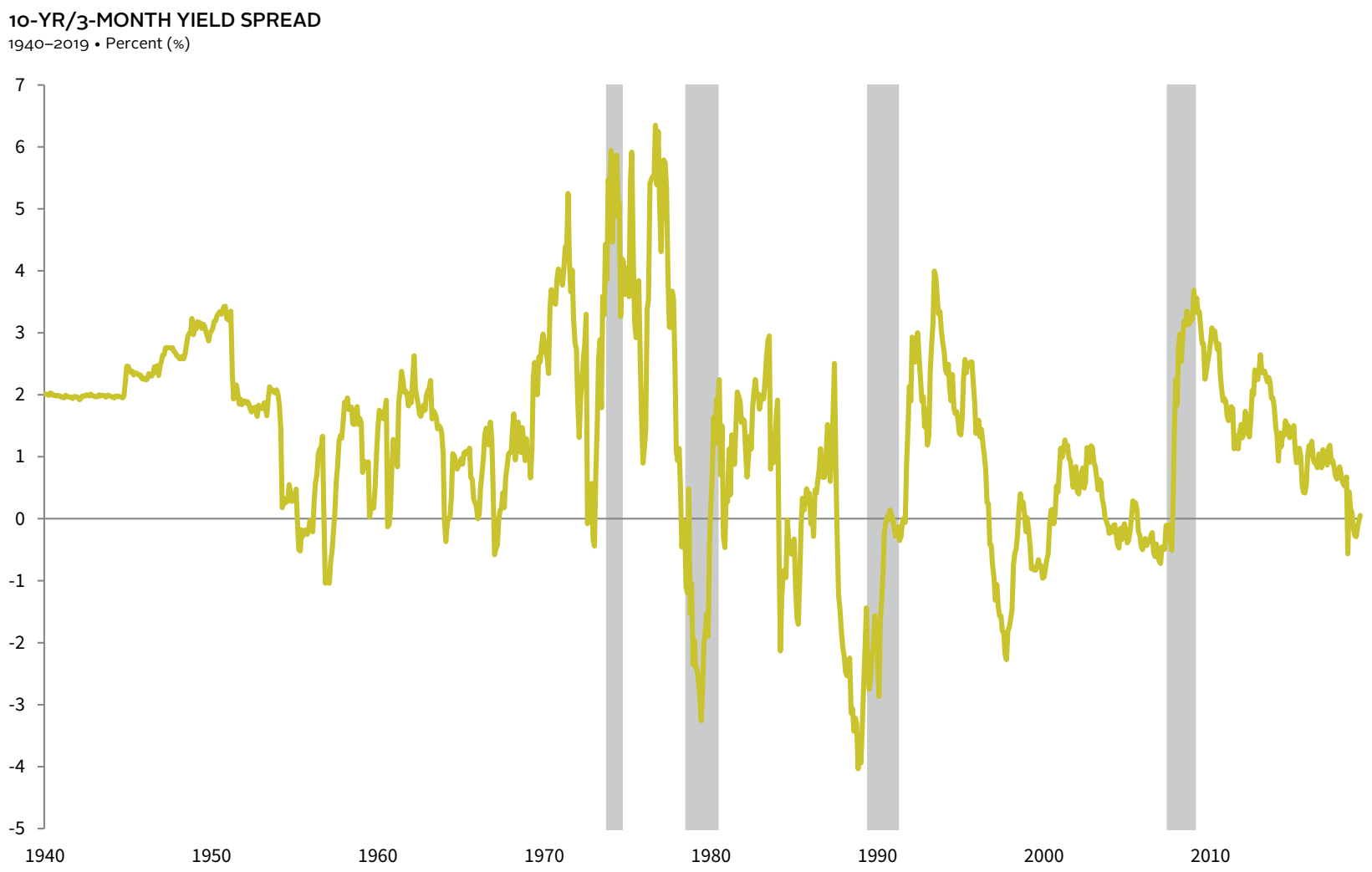
Sources: FTSE International Limited, Global Financial Data, Inc., and Thomson Reuters Datastream.
Notes: Data are monthly. The last full ten-year period was January 1, 2010, to December 31, 2019.

Current expansion's growth rate has been the weakest in the post-war period



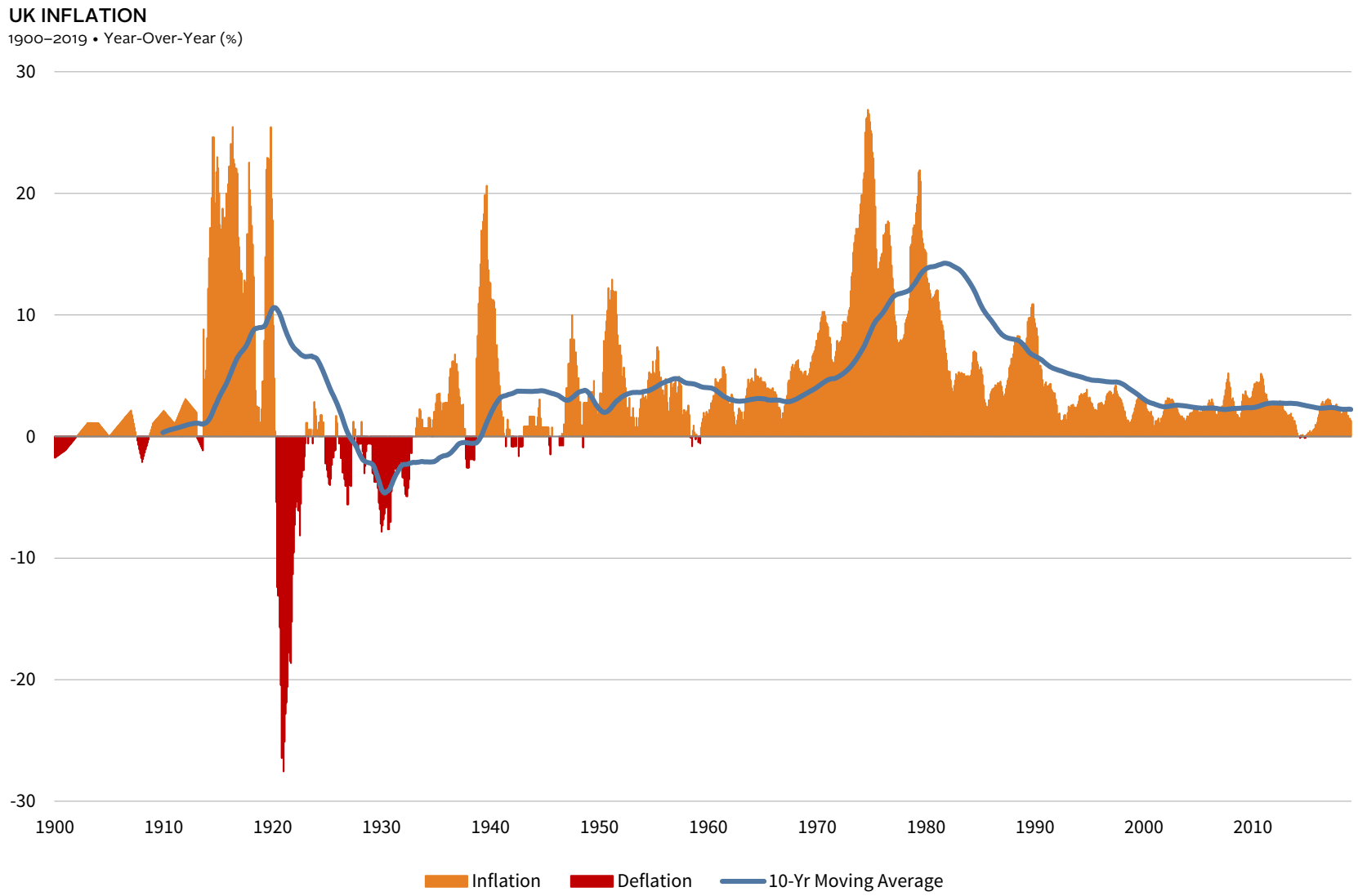
Sources: Economic Cycle Research Institute (ECRI), OECD, and UK Office for National Statistics.
Notes: Gray bars are recessions defined by ECRI business cycle peak-to-trough dates. UK data are preliminary. UK fourth quarter 2019 growth are based on OECD estimates.

UK yield curve tends to invert prior to economic recessions, but timing can be inconsistent



Sources: Economic Cycle Research Institute (ECRI) and Global Financial Data, Inc.
Notes: Gray bars are recessions defined by ECRI business cycle peak-to-trough dates. Data are monthly.

Inflation has stabilized and trended downwards in recent years relative to more volatile history



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

CAMBRIDGE ASSOCIATES

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