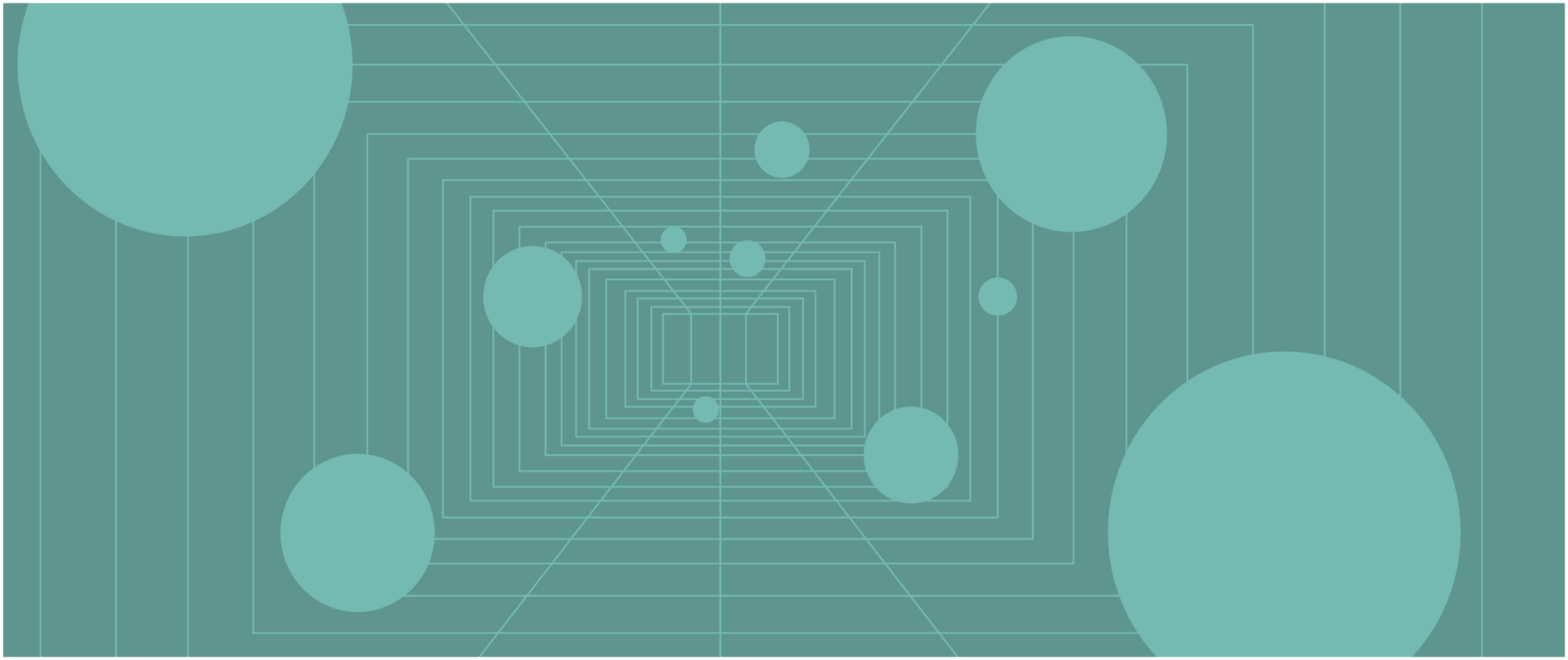
DECADES OF DATA: UNITED STATES

1900–2020



CAMBRIDGE ASSOCIATES

Executive Summary

- **The COVID-19 pandemic and lockdown measures imposed across the globe to combat the virus' spread caused historic declines in economic activity and sharp movements in asset prices during 2020.** In first quarter 2020, the S&P 500 Index declined 34% in only 23 trading days, sending market volatility to levels only observed in prior periods of market stress, such as the Great Depression, the Black Monday crash of 1987, and the Global Financial Crisis (GFC). While the drawdown's speed and associated market gyrations were extreme, the impending recovery was just as extraordinary. US stocks recovered their pre–COVID-19 peaks in only 126 trading days, significantly faster than the 483 days and 1,375 days it took stocks to recover from the 1987 crash and GFC, respectively. All told, US equities ended the year at an all-time high, returning 18.4%, as forward-looking market participants discounted a speedy return to economic normalcy amid significant monetary and fiscal accommodation and an unprecedented vaccine development effort.
- **The real economy also suffered unparalleled setbacks.** During the COVID-19 crisis, 22.4 million Americans lost their jobs in two months and the unemployment rate spiked to 14.8%, the highest since the Great Depression. By comparison, 8.7 million jobs were lost over 25 months during the GFC. Real GDP plummeted 31.4% annualized in second quarter 2020 as consumer expenditures fell 16.1% year-over-year in April; both were the largest declines on record. Manufacturing activity also toppled, with industrial production falling 16.3% year-over-year. Indeed, the economy has rebounded from the worst of the economic crisis, but unlike the equity market, many indicators remain well below their pre-pandemic levels.
- **There are many reasons why economic cycles can turn, including aggregate supply/demand shocks, financial market spillover to the real economy, and psychological factors.** The COVID-19 crisis is unique in that it created shocks on three fronts: supply, demand, and financial. Lockdown measures that imposed curbs on daily life impacted aggregate supply/demand, while lack of liquidity and seizing credit roiled financial markets. Even before the COVID-19 pandemic, there were signs the business cycle had grown overextended. Indeed, the expansionary period from June 2009 to February 2020 (128 months) was the longest on record. By late 2019, the labor market had tightened, with the unemployment rate reaching the lowest levels since the late 1960s. The Federal Reserve cut benchmark interest rates, reversing some of the 225 basis points (bps) of rate increases that began in late 2015. Additionally, the US yield curve—a consistent recession harbinger—inverted, signaling heightened risk of an economic slowdown.

Executive Summary (continued)

- **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.
- **The post-GFC period has seen stronger returns than over the very long term in the United States.** For the full period analyzed, investors in US equities (1900–2020) earned a 9.8% nominal average annual compound return (AACR), up 7 bps from 2019's full-period AACR. Over the past ten years, however, US equities have posted a nominal AACR of 13.9%. 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 ending January 2001. The February peak coincided with the ten-year look-back period when the largest declines during the GFC fell out of the data set, which begins in March 2009 when the S&P 500 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. 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 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 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 greater potential for diminished purchasing power over certain periods. However, equities never lost out to inflation over the very long term. Inflation in the United States has averaged 3.0% annually, among the lowest rates relative to other developed economies. Benchmark US government bonds and cash produced full-period AACRs of 4.7% and 3.8%, respectively, since 1900, which is a significantly narrower spread vis-à-vis inflation relative to stocks versus inflation. Interestingly, US 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.

Executive Summary (continued)

- **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 77% of all five-year periods, 86% 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, there have been sustained periods of underperformance over rolling five-year periods since 1900, 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 are the primary contributors to equity total return over time, while valuation mean reversion diminishes the impact of multiple expansion/contraction.** 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 2020, earnings growth contracted, meaning that valuation multiple expansion accounted for the lion's share of the positive return. Dividend reinvestment's contribution has receded in recent decades as US corporations have prioritized share buybacks. 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 (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 States has explained 77% of the variation in subsequent ten-year real returns, a moderately strong yet imperfect guide to future returns. At December 31, 2020, US equity valuations ended in the top decile of historical observations, and from these valuation levels, the median subsequent ten-year real return for US equities has been about -3% annualized.

Executive Summary (continued)

- **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 95% 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.

- **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 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 6th percentile of the historical distribution, where subsequent real ten-year returns historically have been about 1% 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 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.

- **Subsequent nominal ten-year US bond returns closely track the starting yield, and with bond yields at historical lows in the United States, the outlook for future returns is decidedly low.** In July 2020, US ten-year government bond yields fell to their lowest levels on record and ended the year at just 0.93%. The only comparable historical period for which we have subsequent return data is the mid-1940s, when bond yields bottomed out at just under 1.6%. Over the subsequent ten-year period, US bonds returned a paltry 1.0% annually in nominal terms, while inflation of about 4% annualized over the same period meant losses in real terms. Falling yields have been a boon for US bond investors for the past 30+ years, with US Treasuries returning 8.1% annualized since 1981. In today's low-yield environment, future returns are likely to be capped, and investors may need to consider other avenues for defensive portfolio diversification.

Executive Summary (continued)

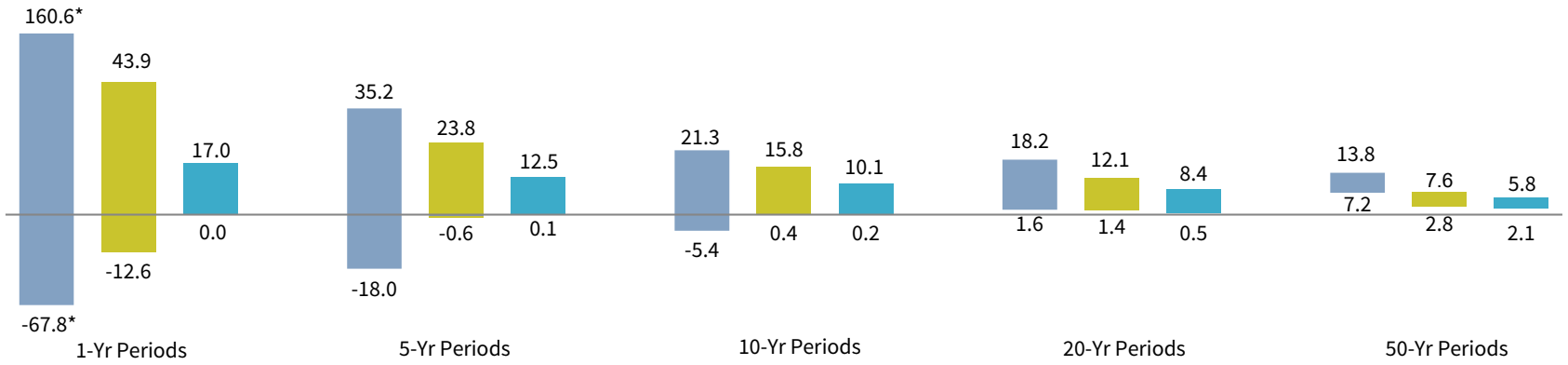
- **There is a distinct negative relationship between the level of Treasury yields and equity market valuations in the United States.** Many have argued in recent years that high valuations for US stocks are justified (or at least in part explained) by the low level of Treasury yields. The reasoning is fairly 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 nearly 50% of the variation in equity market valuations, but they do not account for the other half. This implies that investors must also be discounting hopeful expectations for the future and are willing to pay up for growth in today's low-growth environment. While the negative relationship exists as a whole, there can be periods when equity valuations and yields move together. For example, in the early 2000's 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.** Due to the extraordinary amount of fiscal and monetary stimulus extended in response to the COVID-19 crisis, asset markets have begun to price in expectations for inflation to rise, a dynamic commonly dubbed the "reflation trade." This level of policy accommodation has also led investors to begin considering the possibility that inflation could surprise to the upside, potentially to levels last seen during the late 1970s/early 1980s era. While high inflation can erode nominal equity returns, the historical record shows that the largest tail risk for equities lies at the other end of the spectrum during deflationary environments. In nominal terms, bonds exhibit limited downside during periods of high inflation, as higher yield levels help offset any capital losses as bond prices fall. However, bond markets do suffer in real terms during the highest bouts of inflation when consumer price levels increase 5% annualized or more.

The range of investment returns narrows as holding periods increase

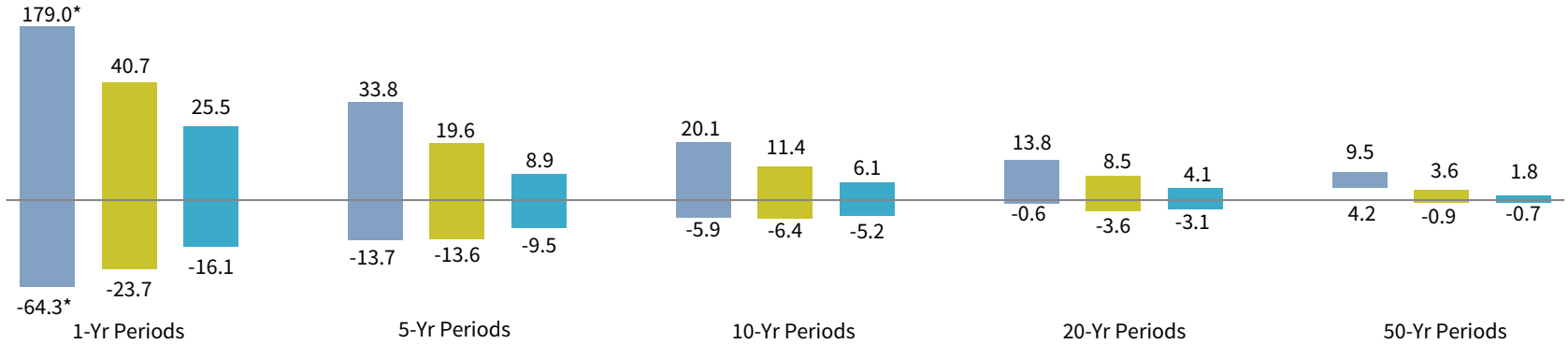
RANGE OF EQUITY, BOND, AND CASH RETURNS FOR VARIOUS ROLLING MONTHLY TIME HORIZONS

1900–2020 • Average Annual Compound Return (%)

Nominal Returns



Real Returns



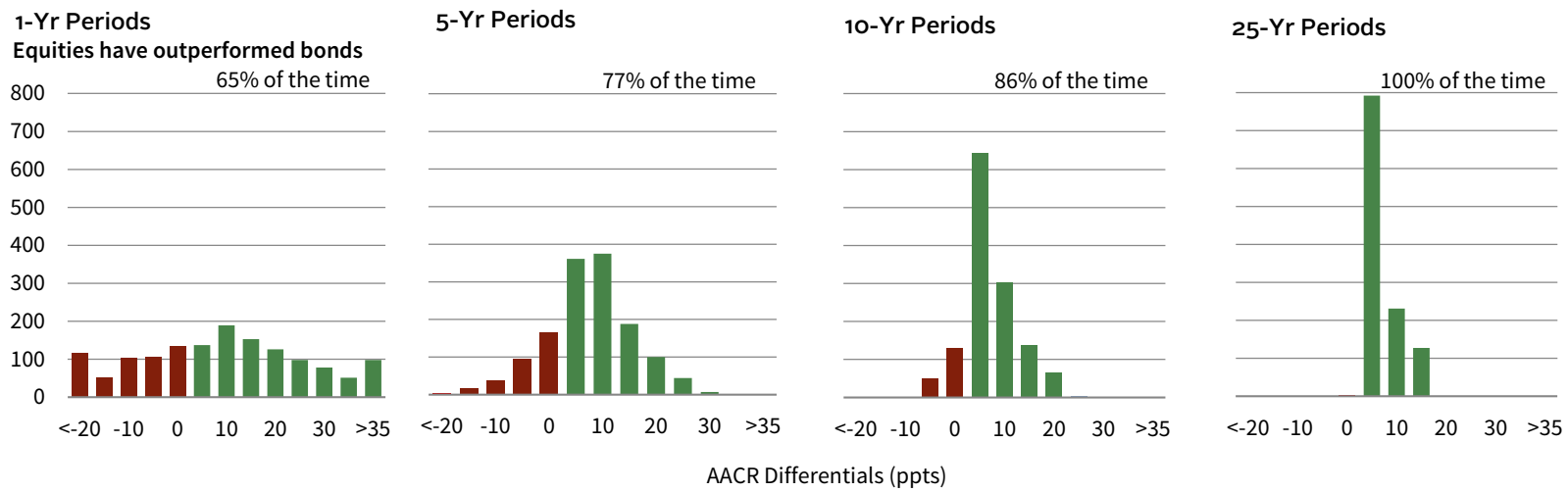
* Axis capped for scaling purposes.

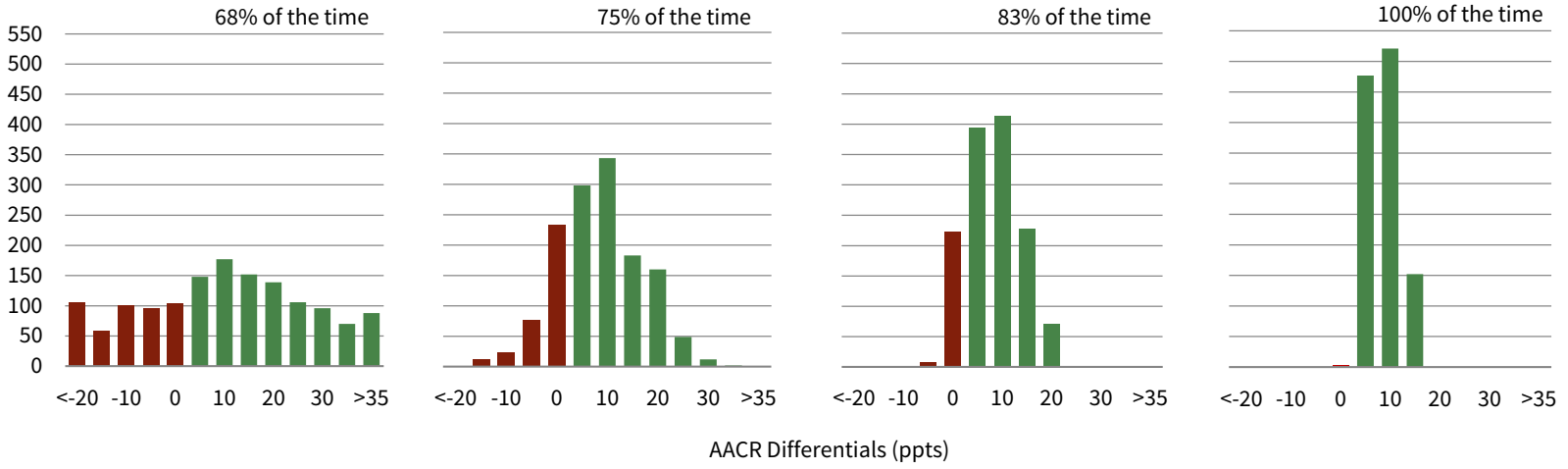
Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.

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

EXCESS RETURNS OF EQUITIES OVER BONDS AND CASH

1900–2020 • Number of Rolling Monthly Periods





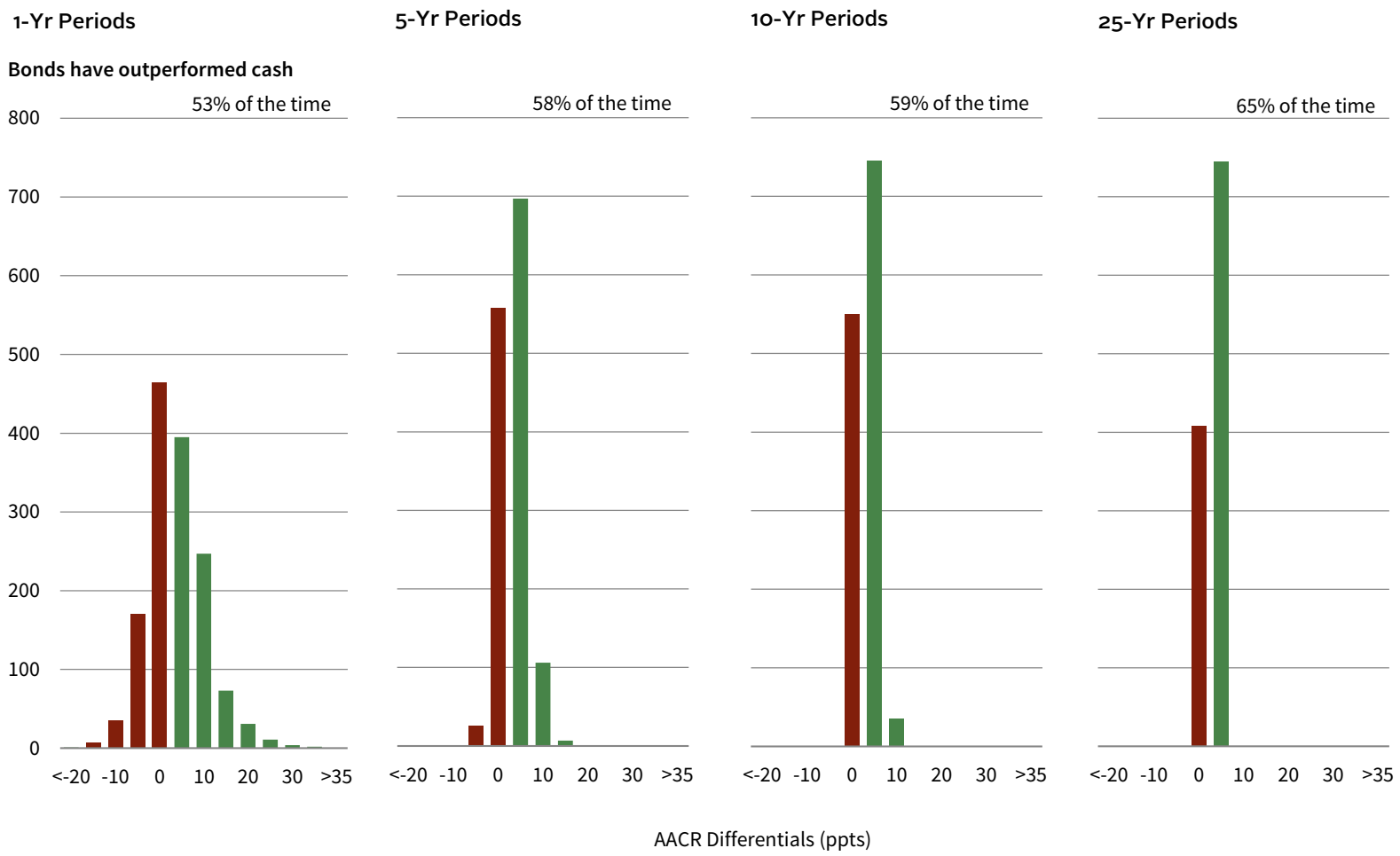
Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.

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 relatively inconsistent in the short and long term alike

EXCESS RETURNS OF BONDS OVER CASH

1900–2020 • Number of Rolling Monthly Periods



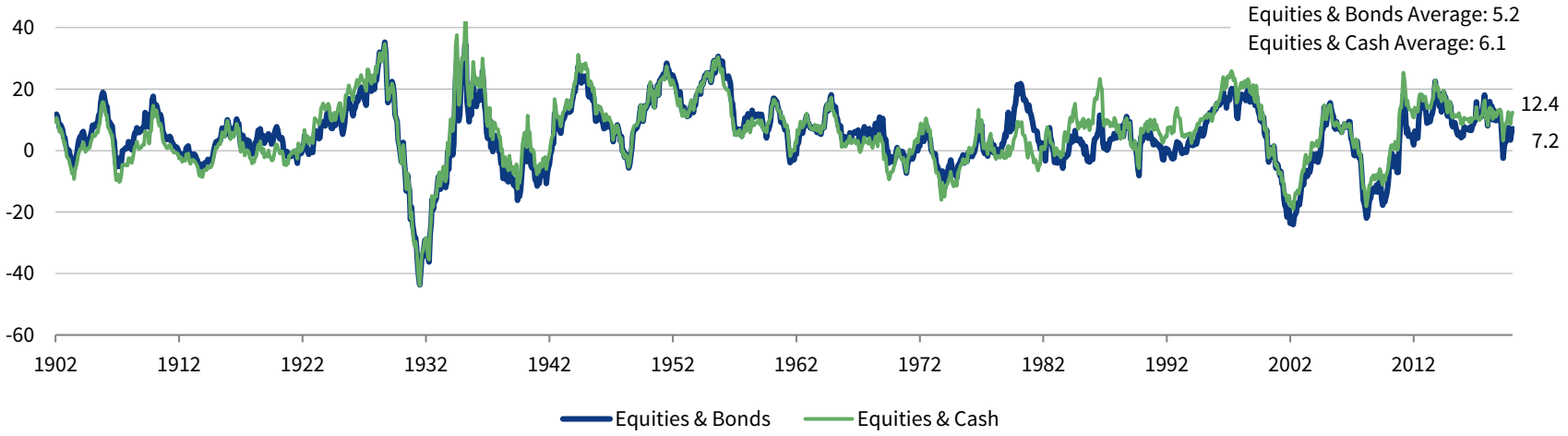
Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.

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

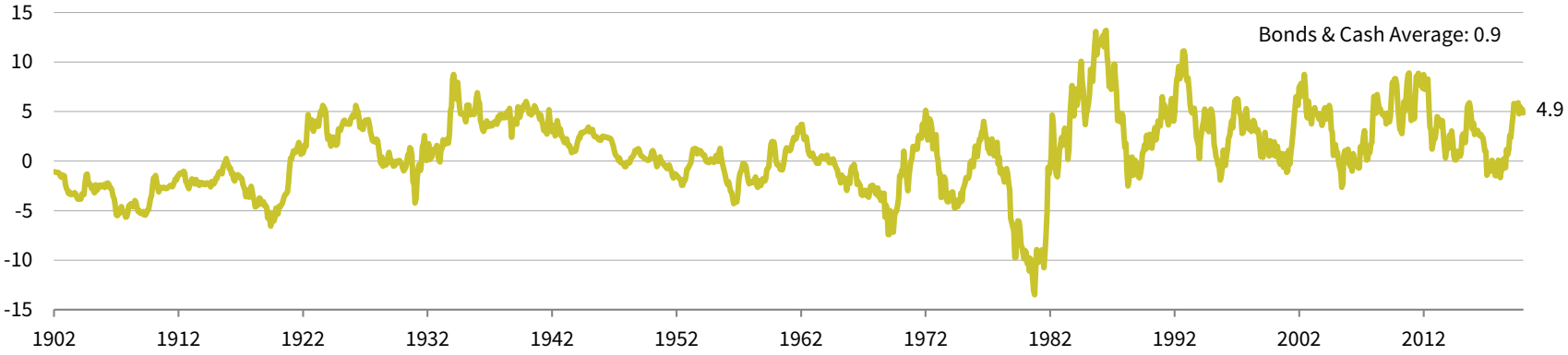
AACR OF ROLLING MONTHLY 3-YR RETURN DIFFERENTIAL BETWEEN EQUITY, BONDS, AND CASH RETURNS

1902–2020 • Percent (%)



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

1902–2020 • Percent (%)

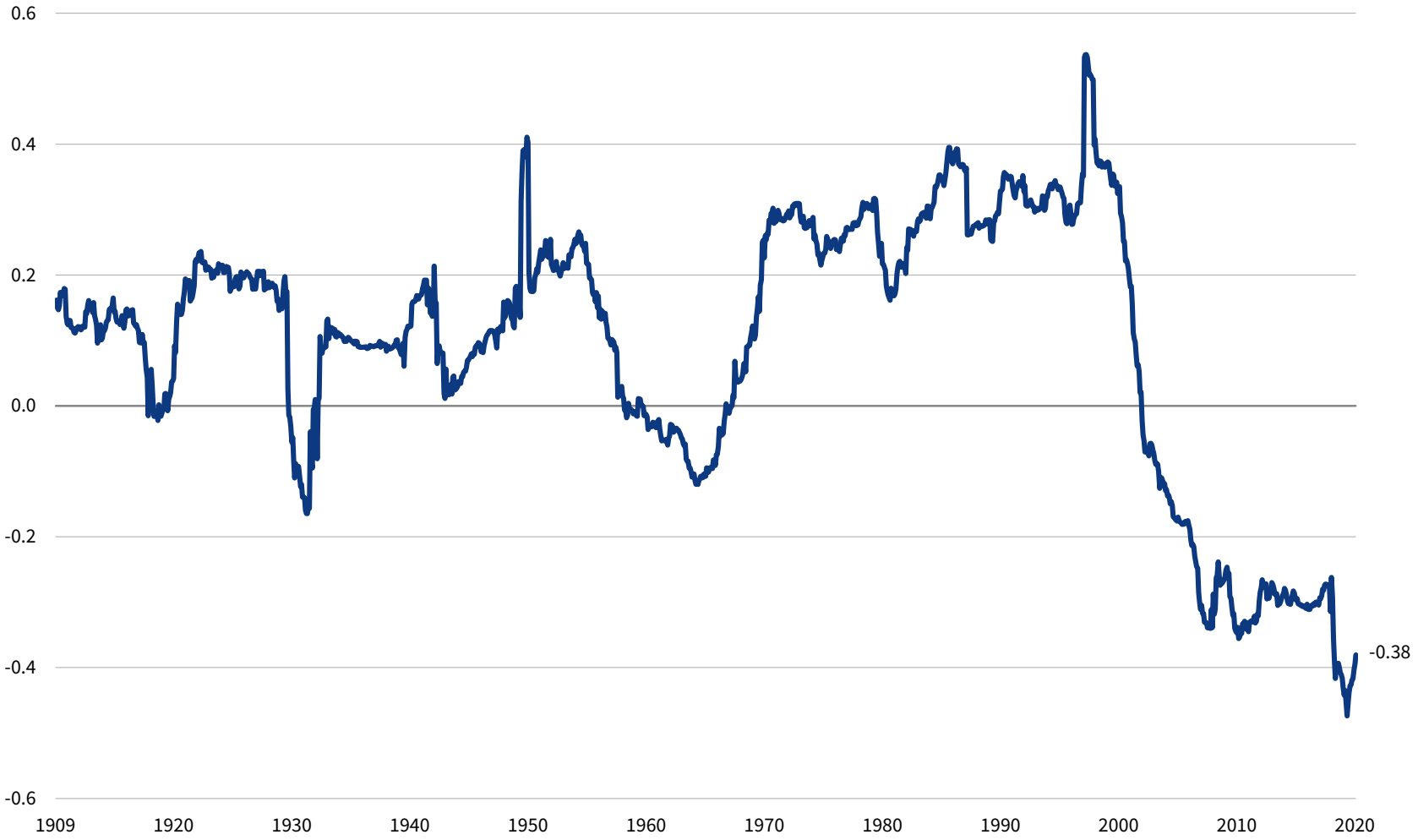


Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.

Stock and bond correlation is currently at historically low levels

ROLLING 10-YR CORRELATIONS OF STOCK AND BOND RETURNS

December 31, 1909 – December 31, 2020 • Correlation Coefficient



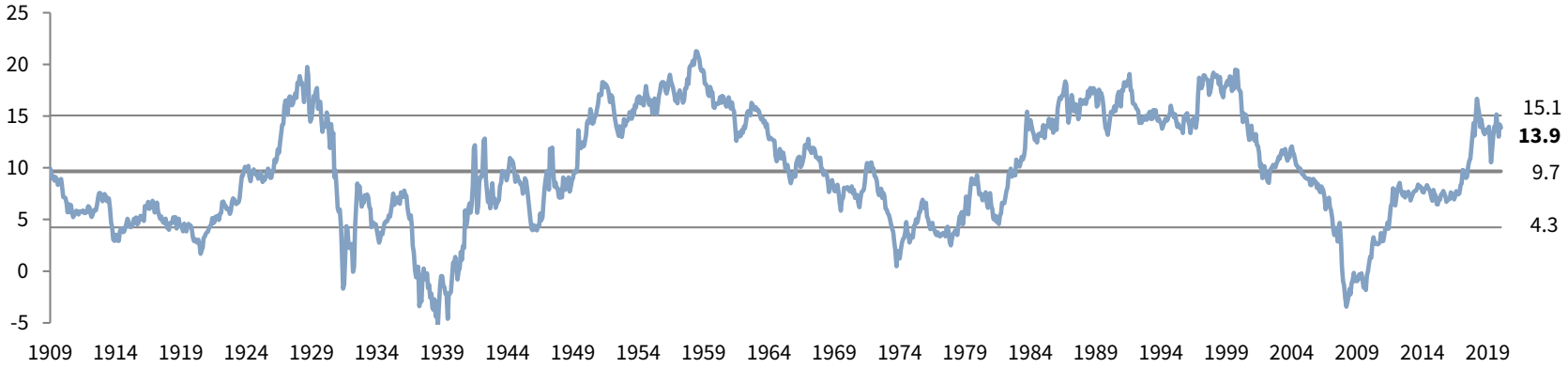
Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.
Notes: Data begin on January 31, 1900. All return data are monthly.

Equity performance tends to cycle about long-term averages

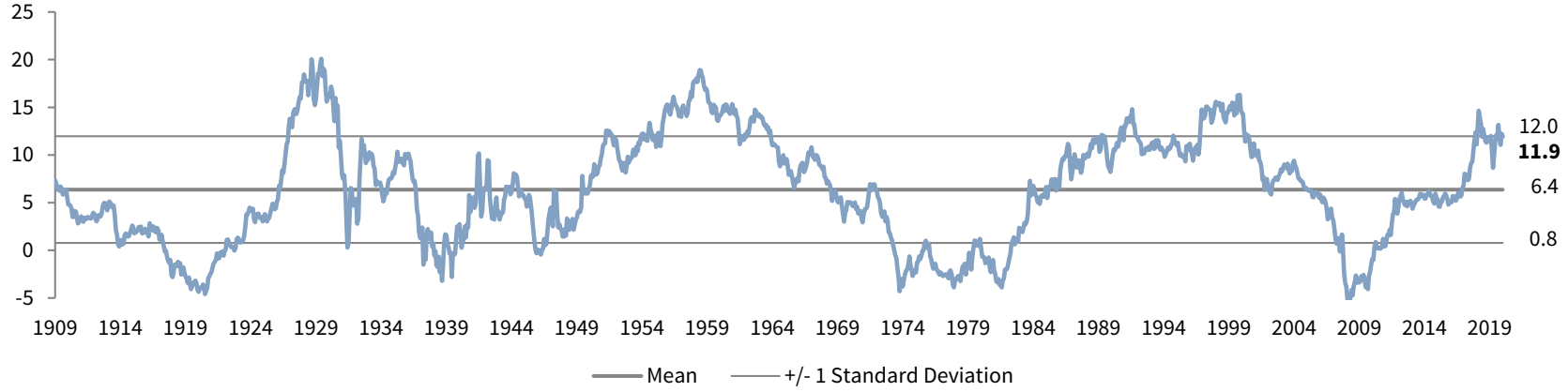
ROLLING MONTHLY EQUITY TOTAL RETURN 10-YR AACR

1909–2020 • Percent (%)

Nominal Returns



Real Returns

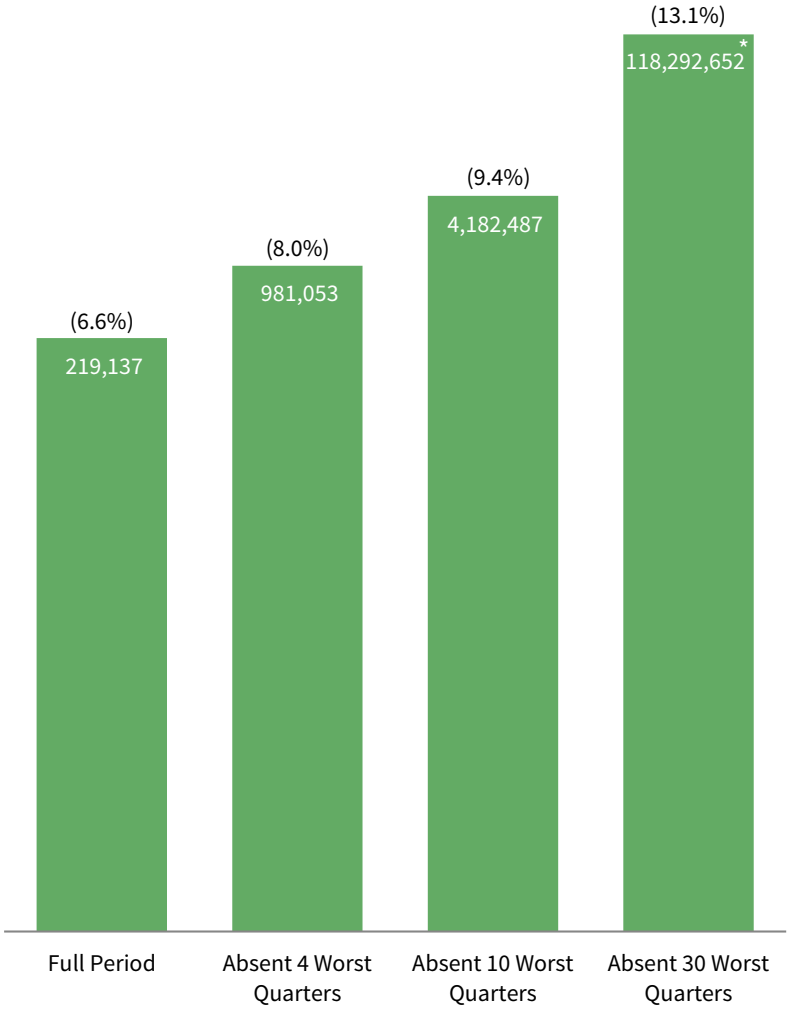


Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.

Attempting to time the market carries significant risk

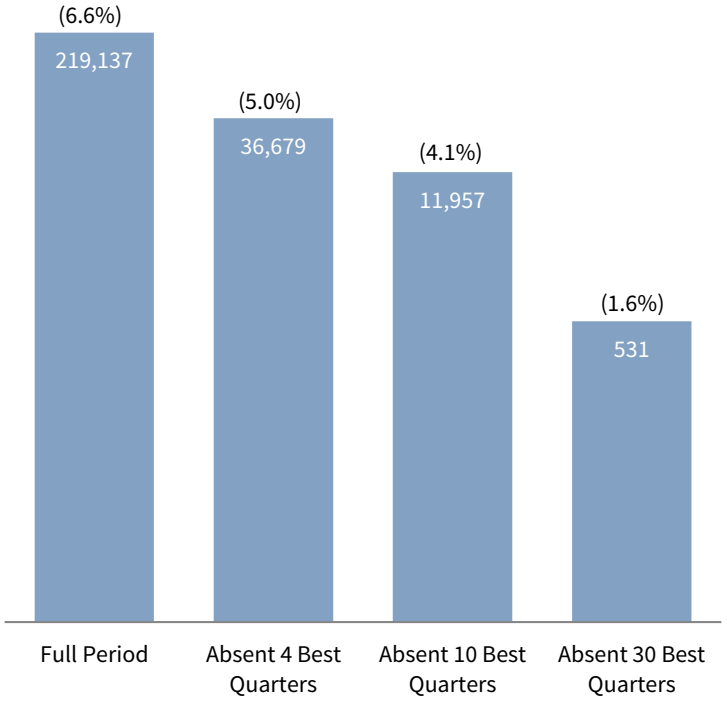
CUMULATIVE REAL WEALTH ABSENT WORST QUARTERS

1900–2020 • January 1, 1900 = 1 • AACR (%) in Parentheses



CUMULATIVE REAL WEALTH ABSENT BEST QUARTERS

1900–2020 • January 1, 1900 = 1 • AACR (%) in Parentheses



* Axis capped for scaling purposes.

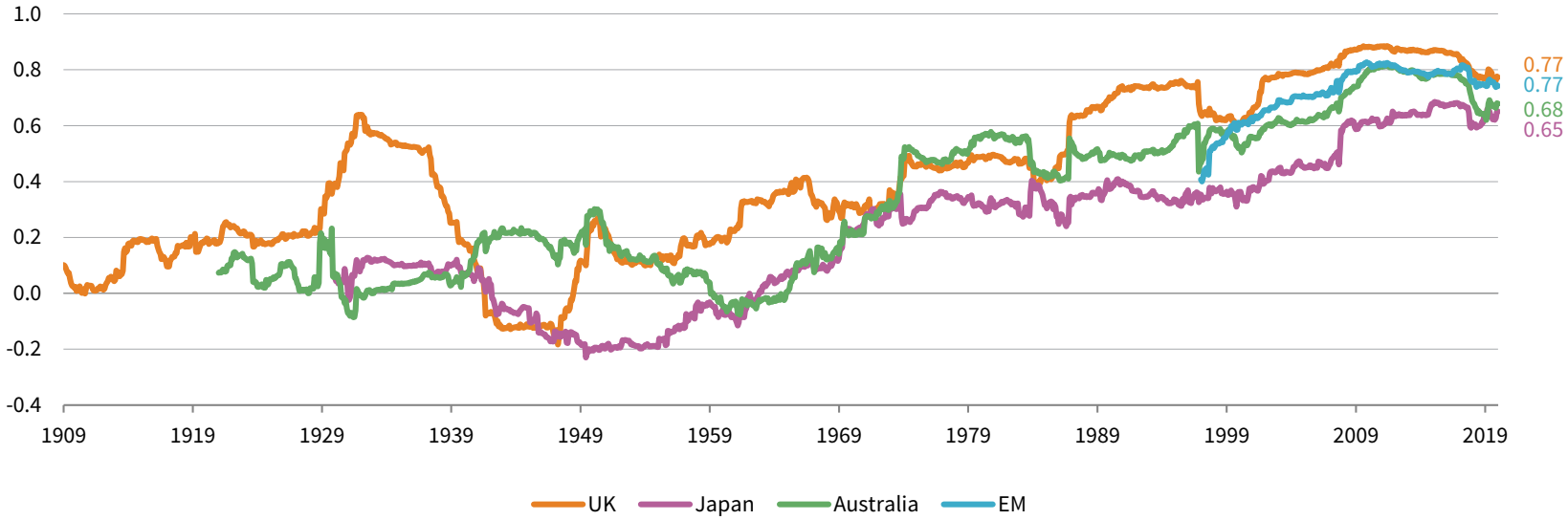
Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Reuters Datastream.

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, 2020 • 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

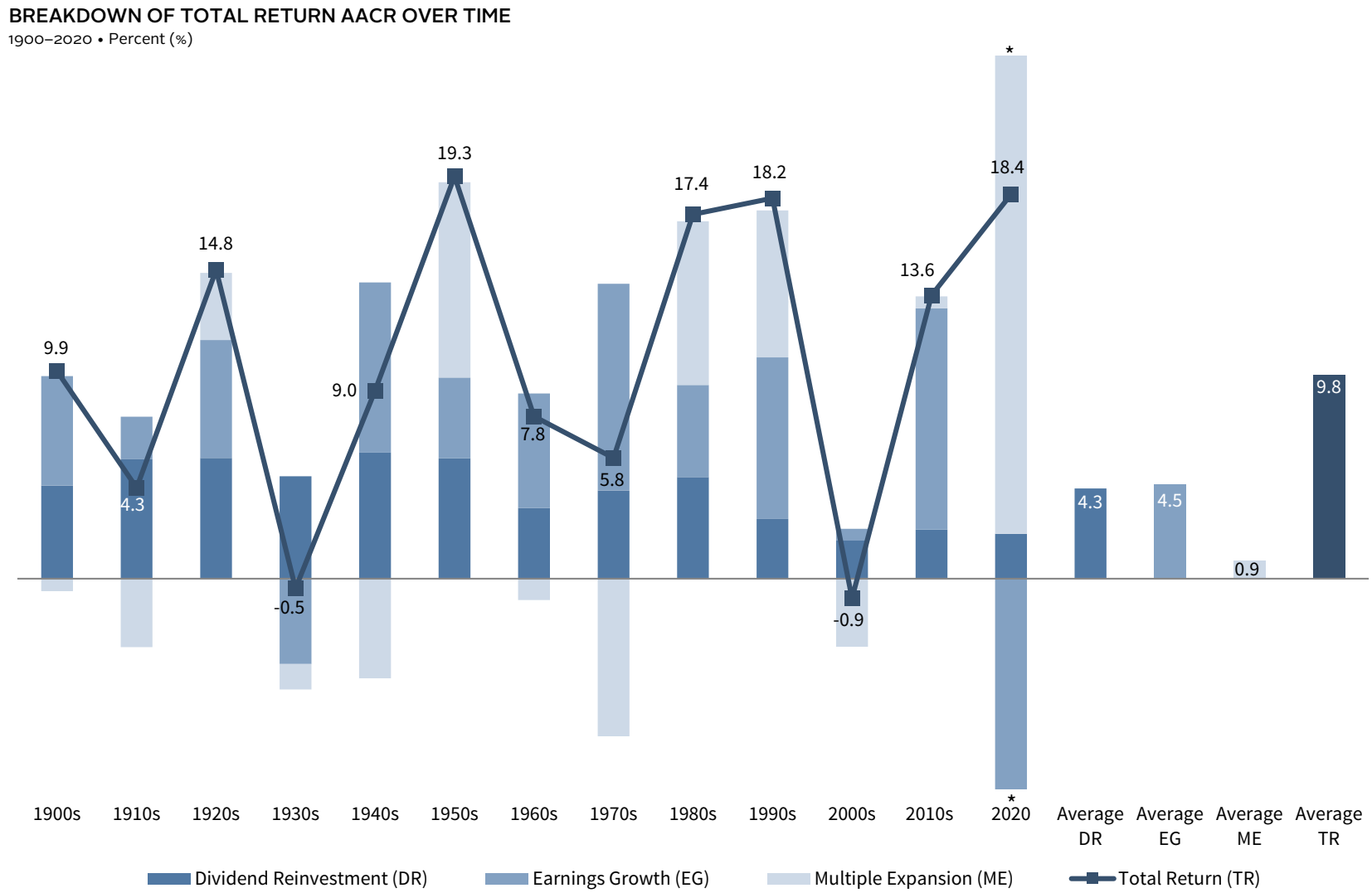
CORRELATION MATRIX

January 31, 1970 – December 31, 2020

	US	UK	Japan	Australia	EM
US	1.00				
UK	0.62	1.00			
Japan	0.45	0.40	1.00		
Australia	0.57	0.53	0.36	1.00	
EM	0.67	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 valuation multiple re-rating vary over time; dividends are more stable



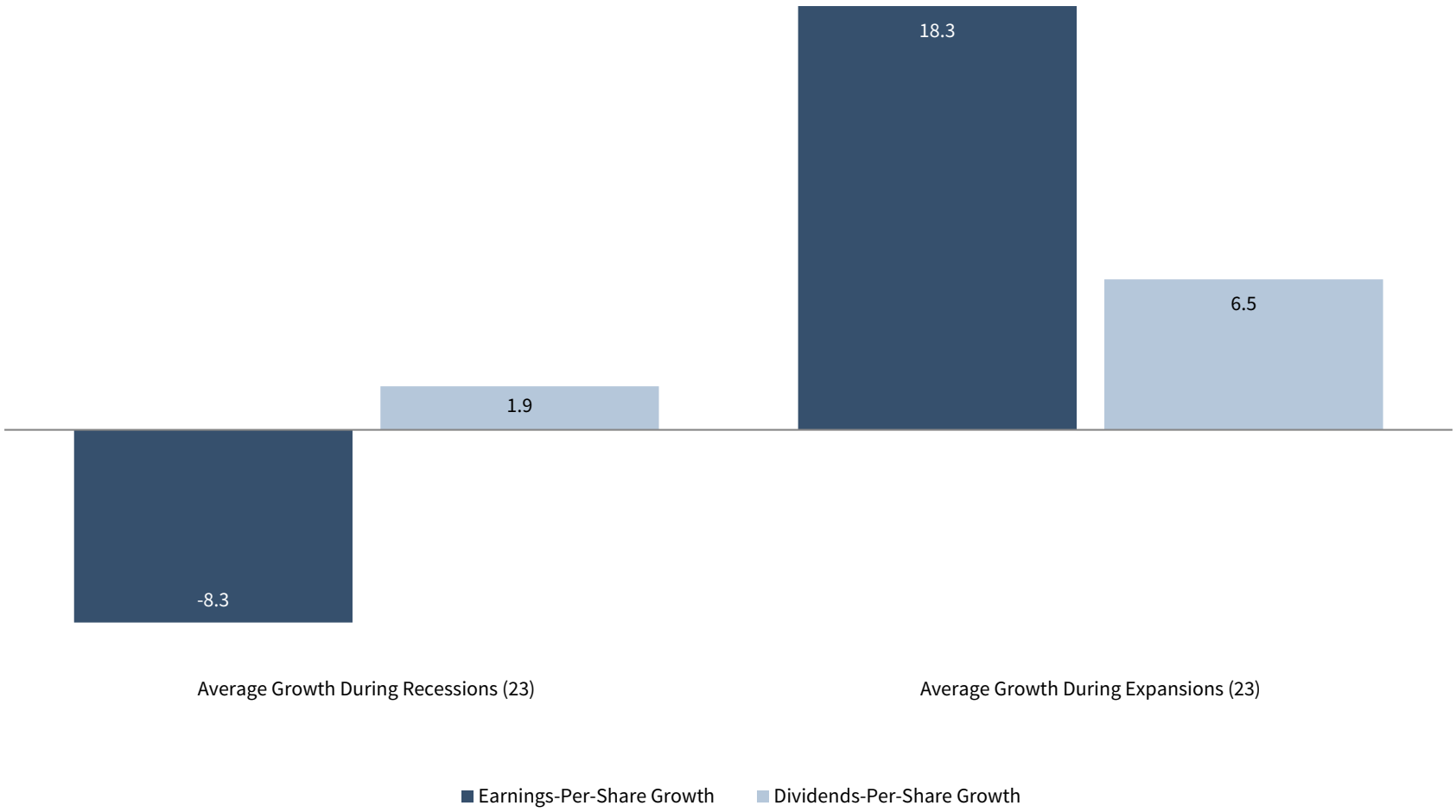
* The y-axis of the graph is capped at -10 and 25 for scaling purposes. The 2020 values for earnings growth and multiple expansion are -31.9% and 70.7%, respectively.

Sources: Global Financial Data, Inc., Standard & Poor's, and *The Wall Street Journal.*

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

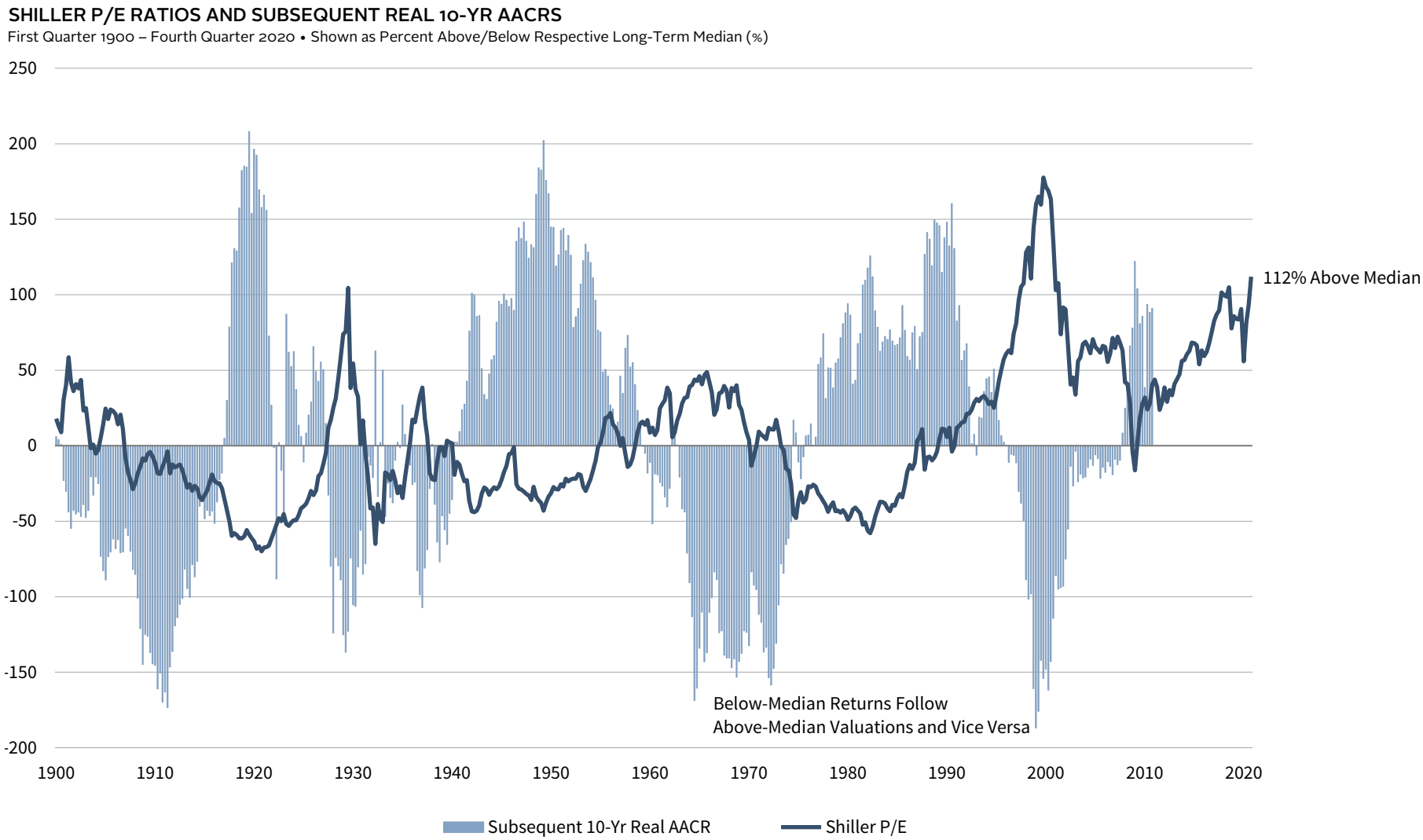
US companies have managed to grow dividend payouts even during recessions, on average

S&P 500 EARNINGS PER SHARE AND DIVIDENDS PER SHARE YEAR-OVER-YEAR CHANGE
1900–2020 • 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



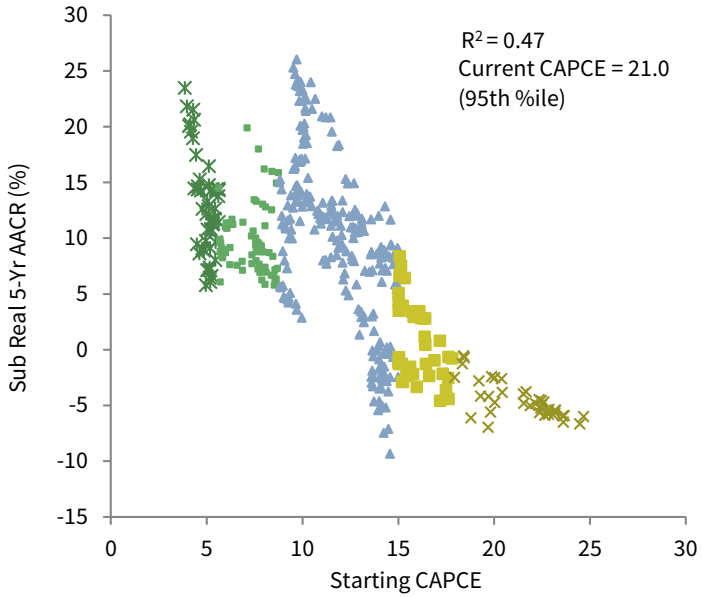
Sources: Robert J. Shiller, Standard & Poor's, Thomson Reuters Datastream, and US Department of Labor - Bureau of Labor Statistics.
Notes: Chart shows percent above/below median for returns and valuations. Line shows point-in-time normalized real price-earnings (P/E) ratios. Normalized real P/E ratios 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 6.2% since 1900. For example, the first data point shows that the real AACR for the period 1900–09 was 6.1% above the median ten-year real return.

History implies current starting valuations may pose a challenge for future real US equity returns

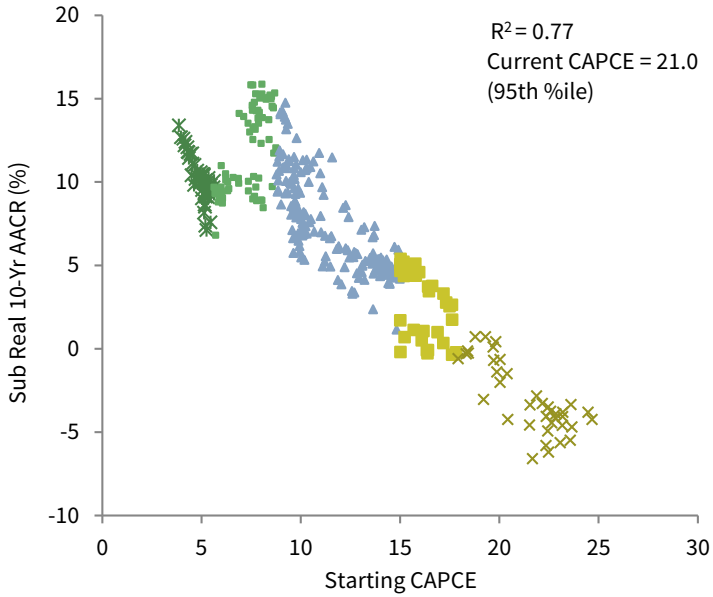
RELATIONSHIP BETWEEN CYCLICALLY ADJUSTED PRICE-TO–CASH EARNINGS RATIOS AND SUBSEQUENT REAL AACRS

December 31, 1979 – December 31, 2020

Initial Valuation and Subsequent 5-Yr AACR



Initial Valuation and Subsequent 10-Yr AACR

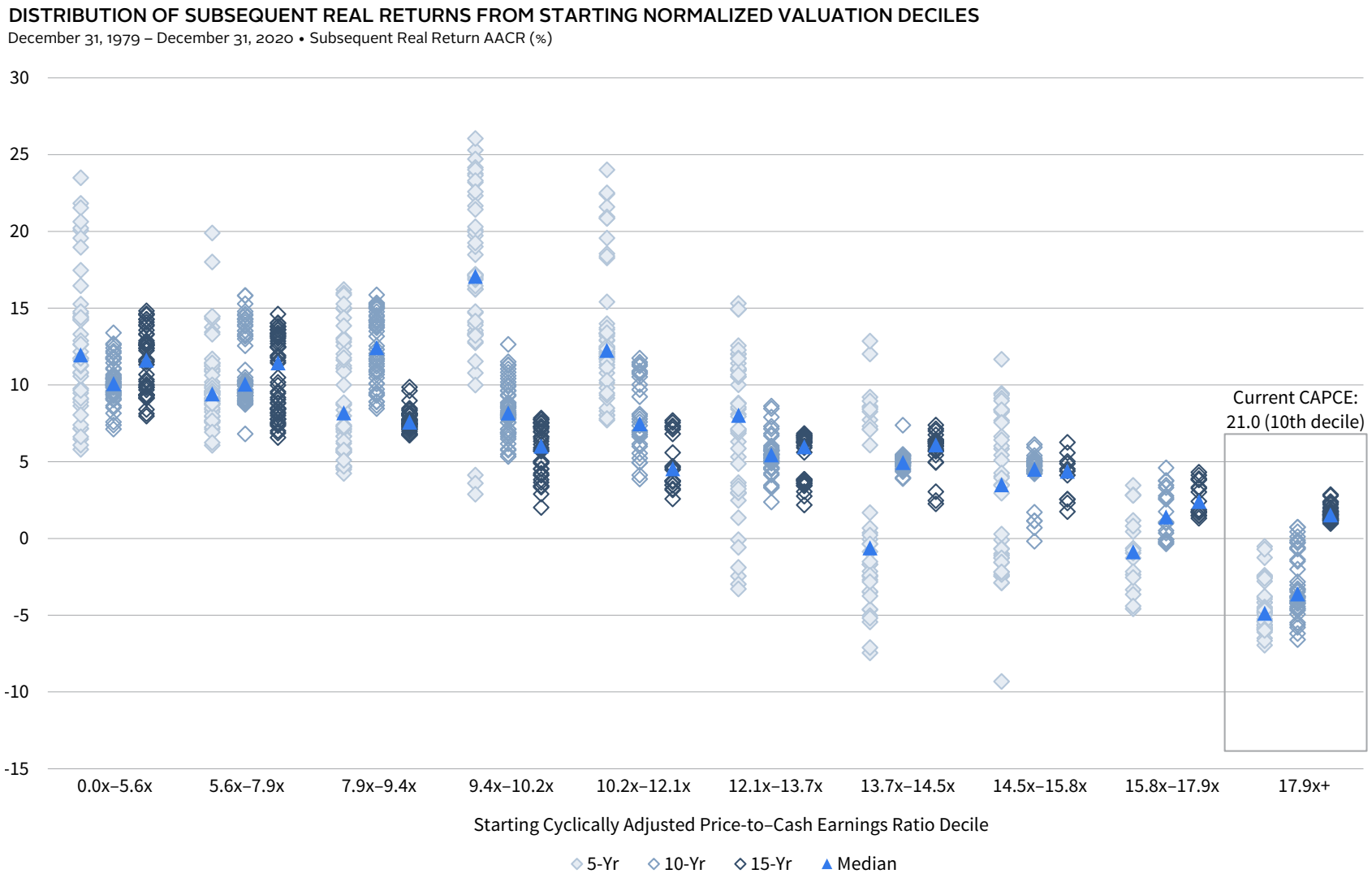


CAPCE Percentile	Starting Period Cyclically Adjusted Price-to–Cash Earnings Ratio			Subsequent Real 5-Yr AACR (%)			Starting Period Cyclically Adjusted Price-to–Cash Earnings Ratio			Subsequent Real 10-Yr AACR (%)		
	Median	High	Low	Median	High	Low	Median	High	Low	Median	High	Low
0–10	5.1	5.6	3.9	12.4	23.5	5.8	5.1	5.6	3.9	10.1	13.4	7.1
10–25	7.6	8.8	5.6	9.1	19.9	5.8	7.6	8.8	5.6	11.7	15.9	6.8
25–75	11.8	15.0	8.8	10.3	26.0	-9.3	11.1	15.0	8.8	6.8	14.8	1.1
75–90	15.8	17.8	15.0	-0.8	8.4	-4.6	16.0	17.8	15.0	3.3	5.4	-0.4
90–100	22.0	24.7	17.9	-4.9	-0.5	-7.0	22.0	24.7	17.9	-3.6	0.7	-6.6
Overall	**11.1**	**24.7**	**3.9**	**8.8**	**26.0**	**-9.3**	**10.1**	**24.7**	**3.9**	**8.0**	**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, 2016, to December 31, 2020, and the last full ten-year period was January 1, 2011, to December 31, 2020.

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.

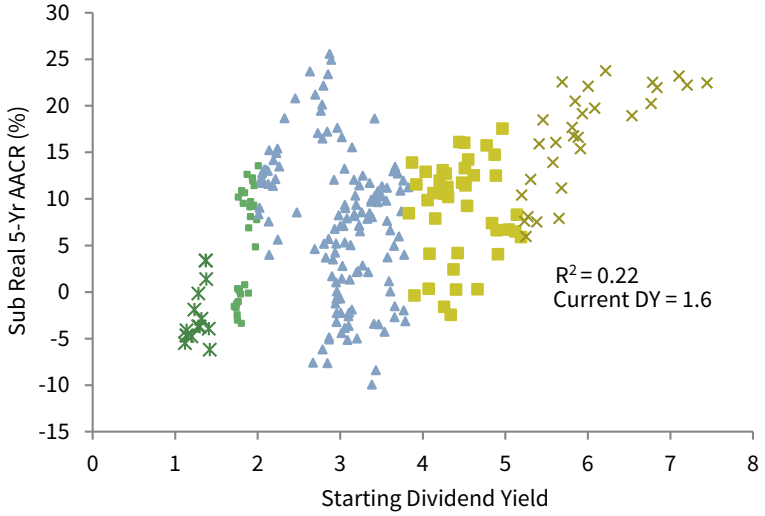
Notes: Data are monthly. The last full five-year period was January 1, 2016, to December 31, 2020, the last full ten-year period was January 1, 2011, to December 31, 2020, and the last full 15-year period was January 1, 2006, to December 31, 2020.

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

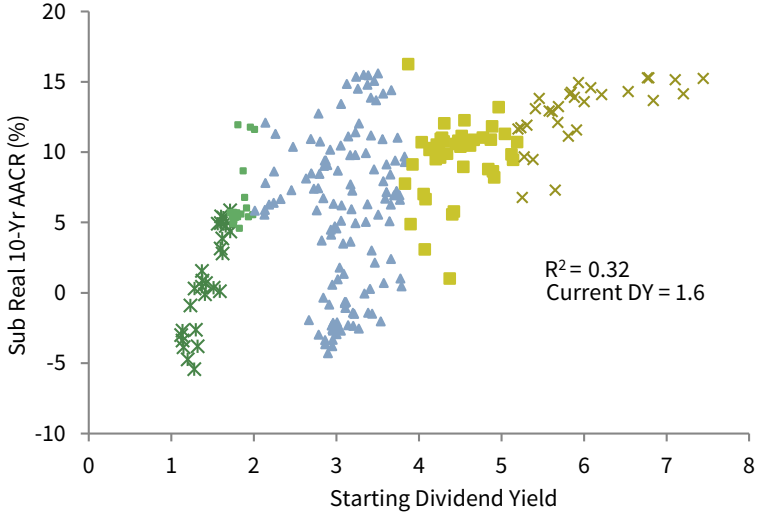
RELATIONSHIP BETWEEN DIVIDEND YIELDS AND SUBSEQUENT REAL AACRS

Fourth Quarter 1950 – Fourth Quarter 2020

Dividend Yield and Subsequent 5-YR AACR



Dividend Yield and Subsequent 10-YR AACR



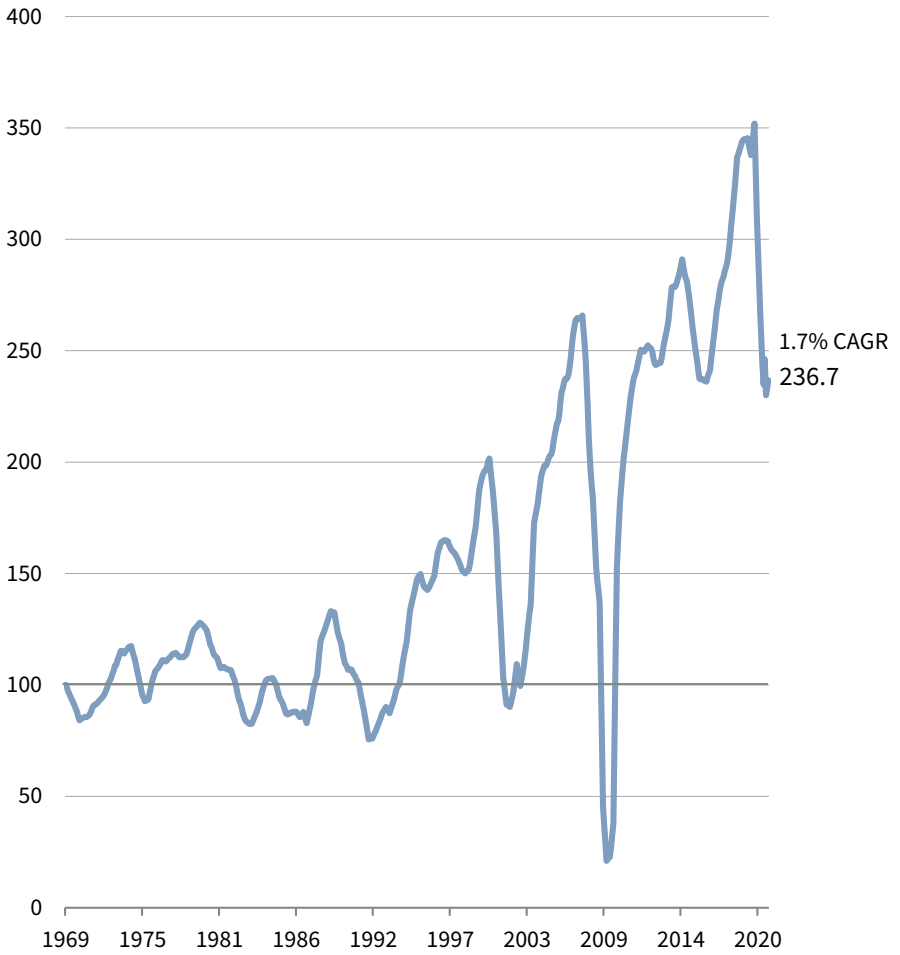
Dividend Yield Percentile	Starting Period Dividend Yield (%)			Subsequent Real 5-Yr AACR (%)			Starting Period Dividend Yield (%)			Subsequent Real 10-Yr AACR (%)		
	Median	High	Low	Median	High	Low	Median	High	Low	Median	High	Low
0–10	1.3	1.4	1.1	-3.7	3.4	-6.2	1.4	1.7	1.1	0.6	5.9	-5.4
10–25	1.8	2.0	1.7	7.8	13.5	-3.4	1.8	2.0	1.7	5.6	11.9	4.6
25–75	3.1	3.8	2.0	8.2	25.6	-9.9	3.1	3.8	2.0	6.3	15.6	-4.3
75–90	4.4	5.2	3.8	10.4	17.5	-2.4	4.4	5.2	3.8	10.4	16.3	1.0
90–100	5.8	7.4	5.2	17.7	23.8	6.0	5.8	7.4	5.2	13.6	15.3	6.8
Overall	**3.0**	**7.4**	**1.1**	**8.1**	**25.6**	**-9.9**	**3.0**	**7.4**	**1.1**	**7.0**	**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 2016 through fourth quarter 2020. The last full ten-year period was first quarter 2011 through fourth quarter 2020.
Outliers are not shown on graph, but are included in R^2.

Real earnings are volatile but trend higher over time; return on equity cycles around its median

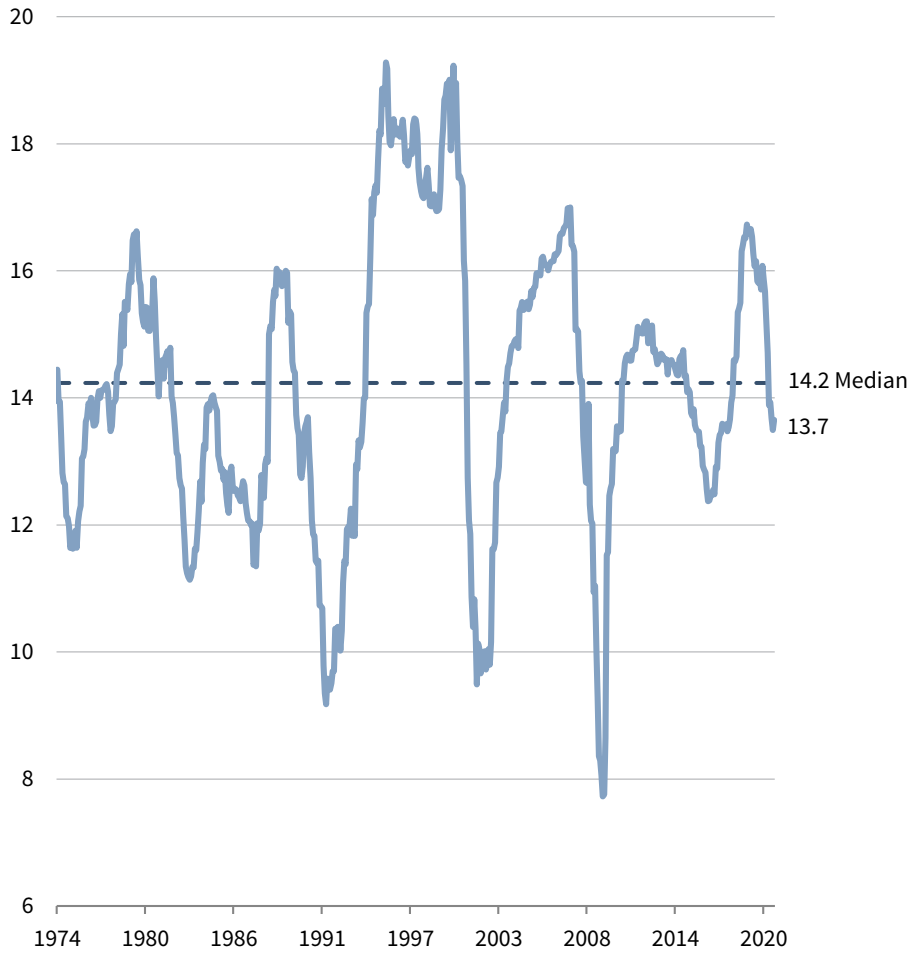
REAL EARNINGS PER SHARE OVER TIME

December 31, 1969 – December 31, 2020 • December 31, 1969 = 100



RETURN ON EQUITY

December 31, 1974 – December 31, 2020 • Percent (%)



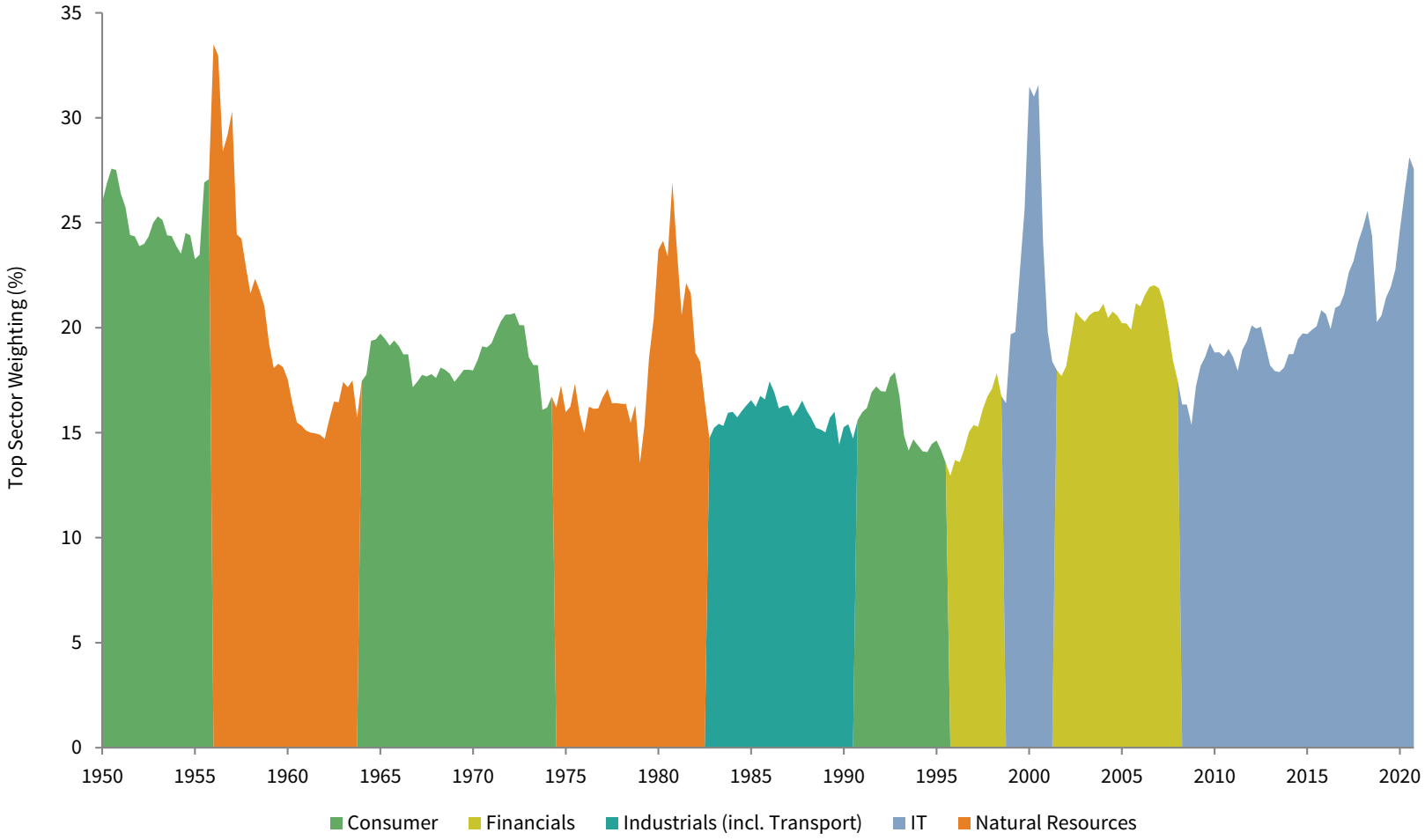
Sources: MSCI Inc., Standard & Poor's, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.

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

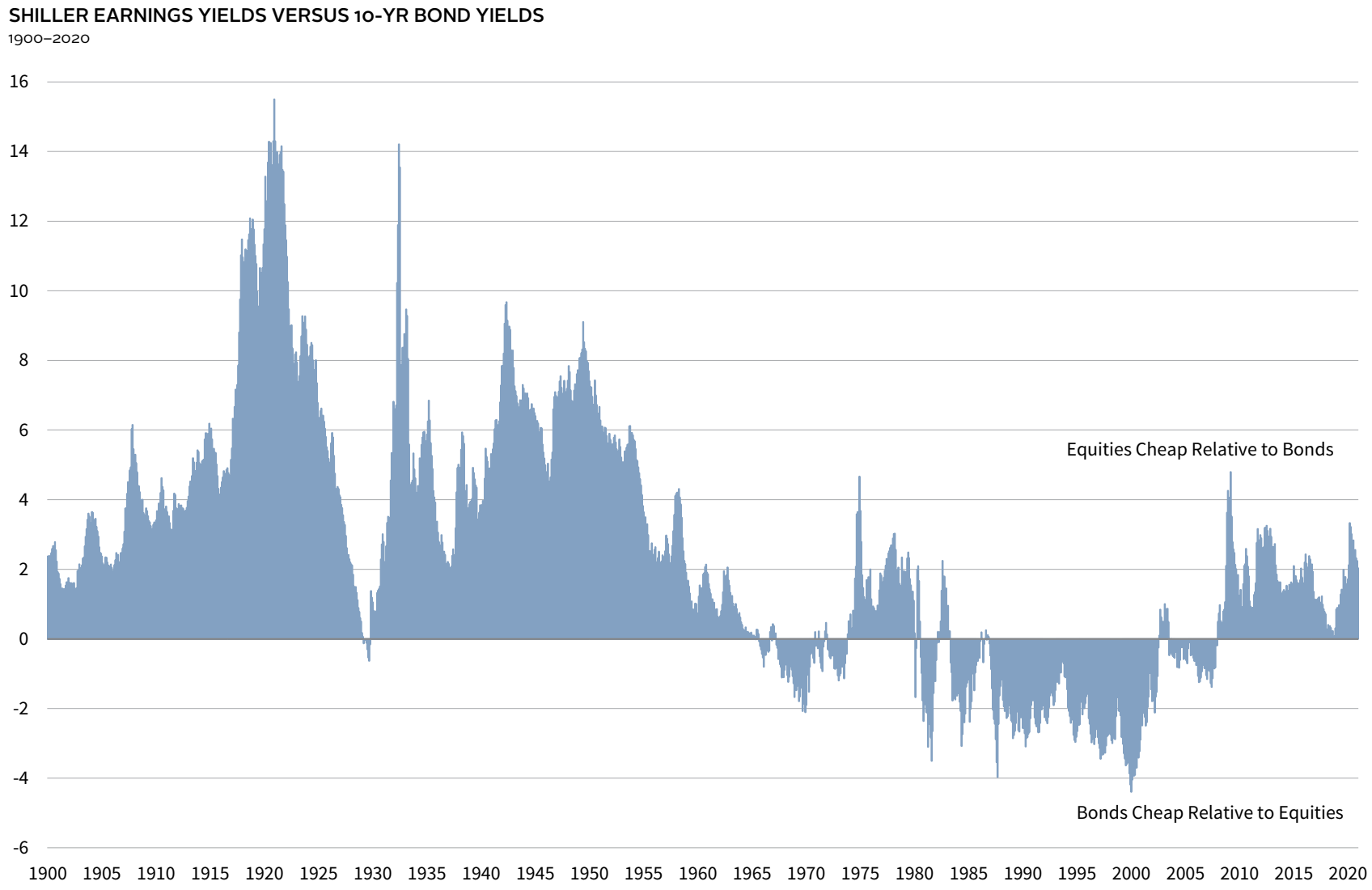
First Quarter 1950 – Fourth Quarter 2020 • Index Weight (%)



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.

Relationship between equity and bond valuations has shifted over time



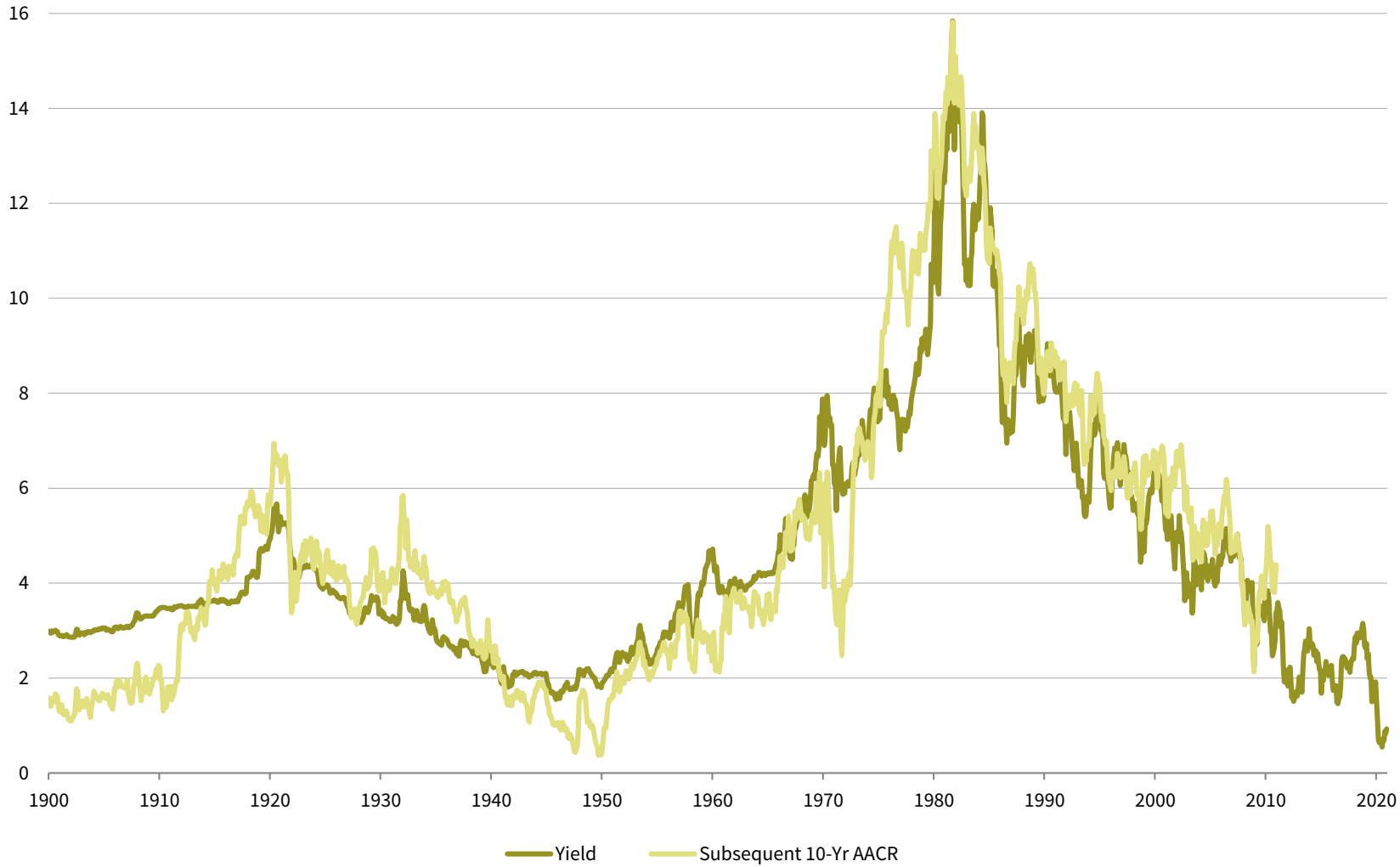
Sources: Global Financial Data, Inc., Robert J. Shiller, and Standard & Poor's.

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.

Future nominal bond returns closely track starting yields; today, record-low yields are a headwind

RELATIONSHIP BETWEEN TREASURY BOND YIELDS AND SUBSEQUENT 10-YR AACRS

1900–2020 • Percent (%)



Source: Global Financial Data, Inc.

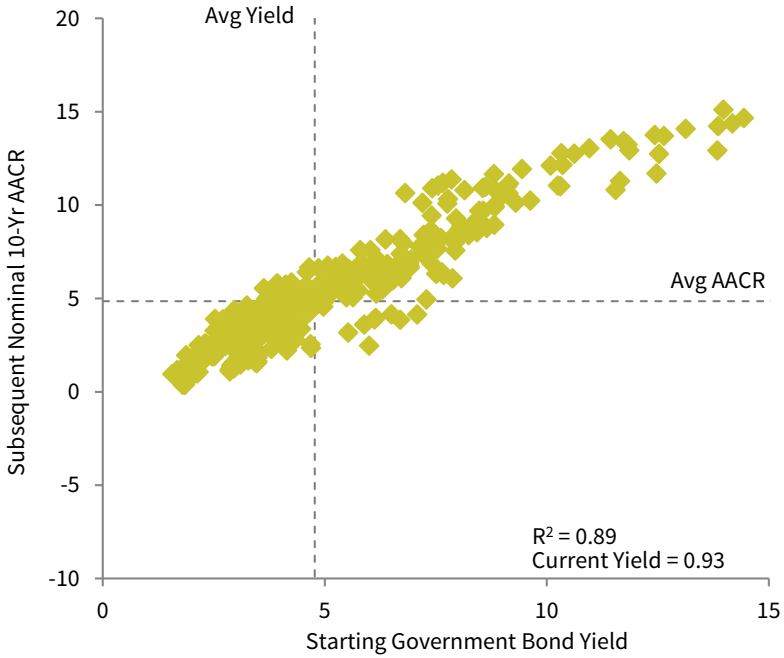
Notes: Data are monthly. The last full ten-year period was January 1, 2011, to December 31, 2020.

Starting yields are tightly related to nominal returns but less so to real performance

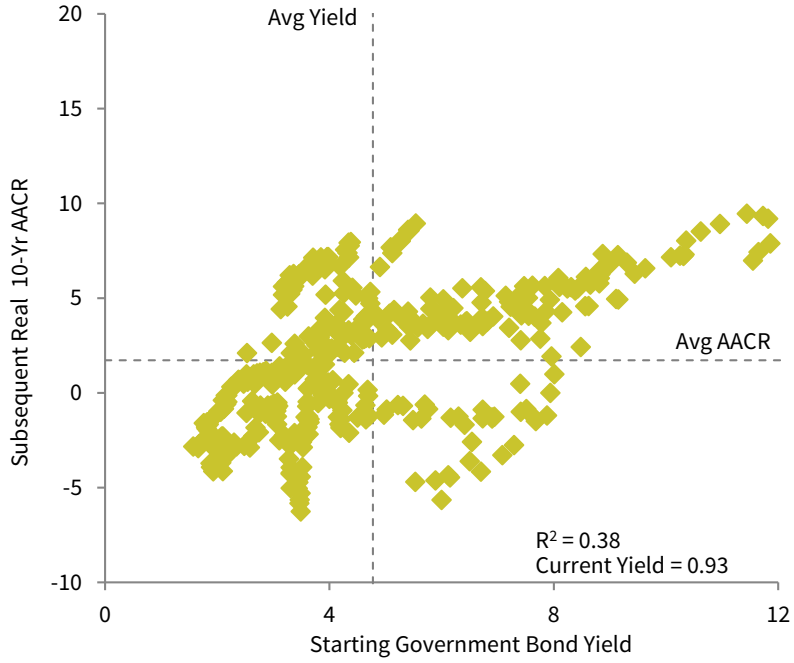
RELATIONSHIP BETWEEN GOVERNMENT BOND YIELDS AND SUBSEQUENT 10-YR AACRS

1900–2020 • Percent (%)

Nominal Returns



Real Returns



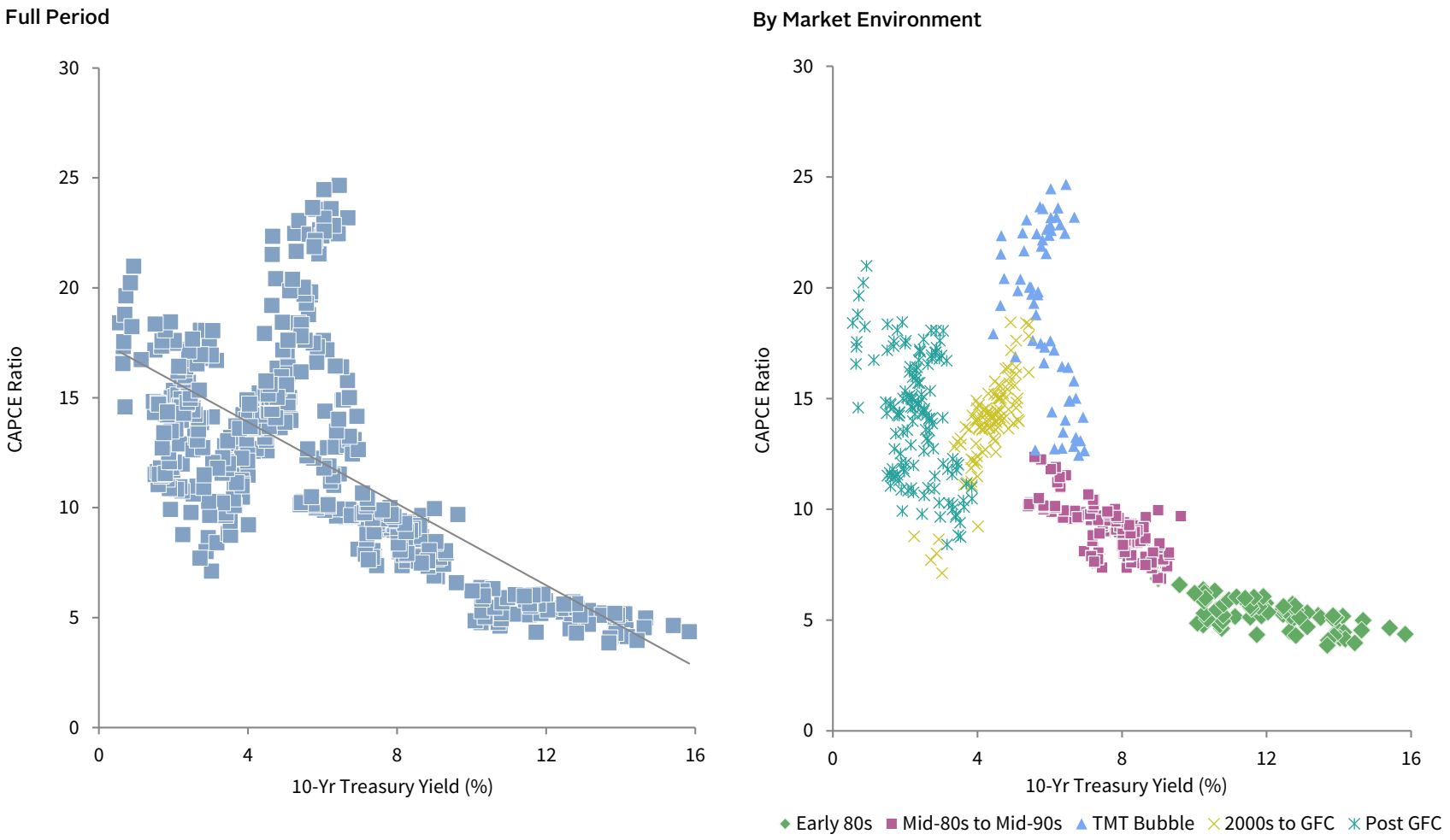
Yield Quartiles	Starting Period Government Bond Yields			Subsequent Nominal 10-Yr AACR (%)			
	Mean	High	Low	Mean	High	Low	Std Dev
First	2.43	3.01	1.57	2.00	4.38	0.37	0.91
Second	3.46	3.86	3.01	3.37	5.55	1.47	1.12
Third	4.68	6.03	3.86	4.88	7.60	2.22	1.25
Fourth	8.53	15.84	6.03	9.17	15.82	3.86	2.78
Overall	**4.77**	**15.84**	**1.57**	**4.86**	**15.82**	**0.37**	**3.18**

	Starting Period Government Bond Yields			Subsequent Real 10-Yr AACR (%)			
	Mean	High	Low	Mean	High	Low	Std Dev
First	2.43	3.01	1.57	-1.00	2.65	-4.14	1.58
Second	3.46	3.86	3.01	0.83	7.15	-6.26	3.61
Third	4.68	6.03	3.86	2.75	8.93	-5.65	3.24
Fourth	8.53	15.84	6.03	4.31	11.43	-4.46	3.69
Overall	**4.77**	**15.84**	**1.57**	**1.72**	**11.43**	**-6.26**	**3.72**

Sources: Global Financial Data, Inc. and Thomson Reuters Datastream.
Notes: Data are quarterly. The last full ten-year period was first quarter 2011 through fourth quarter 2020.

Lower Treasury yields are generally associated with higher equity valuations

RELATIONSHIP BETWEEN EQUITY VALUATIONS AND 10-YEAR TREASURY YIELDS
December 31, 1979 – December 31, 2020

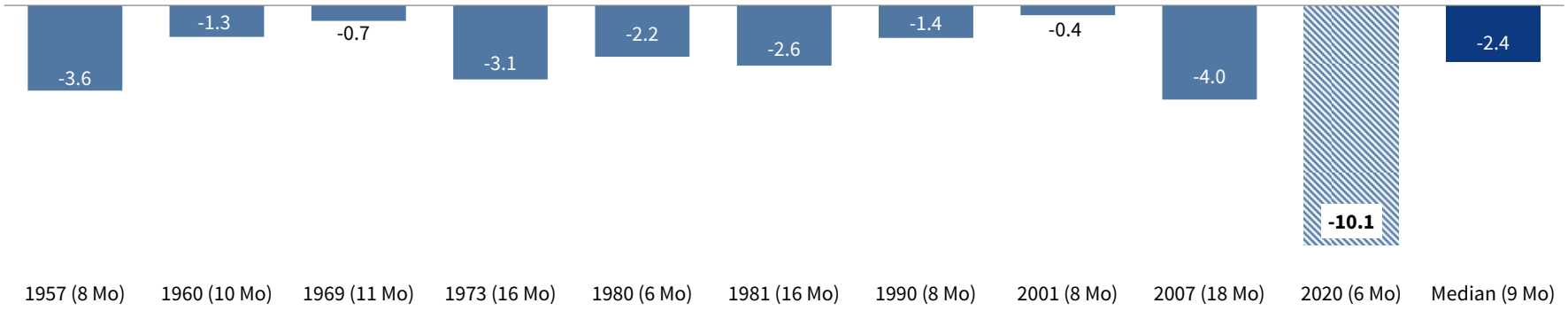


Sources: Federal Reserve, MSCI Inc., and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: "TMT Bubble" refers to the late-1990s period of rising equity prices, particularly for internet-related companies. This period is also commonly referred to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

The COVID-19–driven economic decline did not translate to a worse-than-average equity market outcome

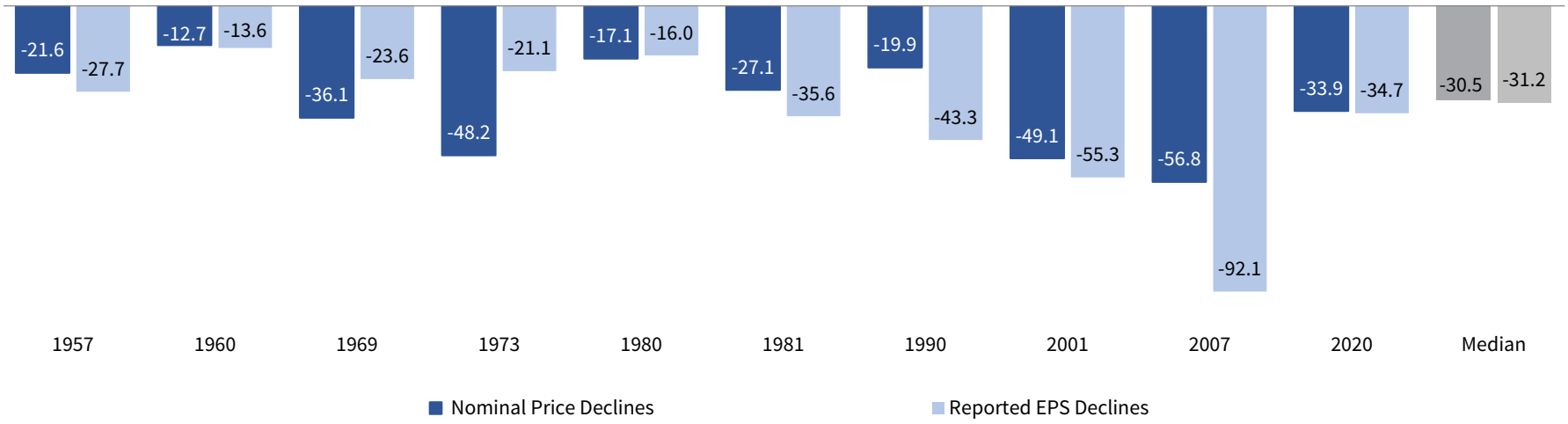
MAGNITUDE AND LENGTH OF US RECESSIONS

1957–2020



PEAK-TO-TROUGH DECLINE IN S&P 500 PRICES AND EARNINGS PER SHARE AROUND RECESSIONS

1957–2020



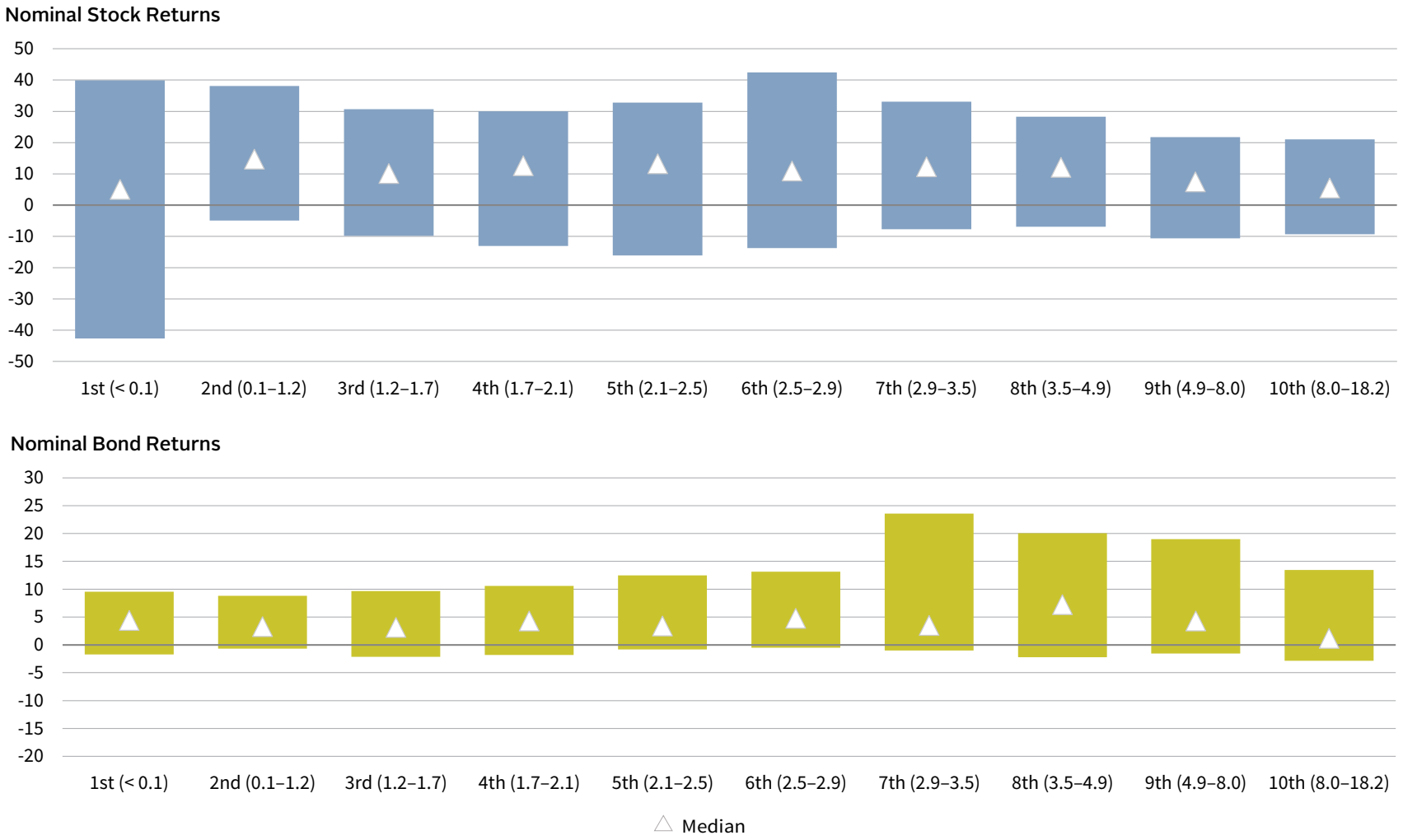
Sources: Goldman Sachs, National Bureau of Economic Research, Payden & Rygel, Robert J. Shiller, Standard & Poor's, Thomson Reuters Datastream, The Organisation for Economic Co-operation and Development, and US Department of Commerce - Bureau of Economic Analysis.

Notes: Recessions defined by National Bureau of Economic Research business cycle reference dates. The second quarter 2020 GDP trough is used for the most recent cycle, although the National Bureau of Economic Research has not officially released an end date for the recession. X-axis labels reflect the year recessions began. GDP data are quarterly, S&P 500 Index price data are daily, and S&P 500 Index real EPS data are monthly.

Deflation poses largest tail risk to equities; higher yields support bonds during inflationary bouts

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

1902–2020 • AACR (%)

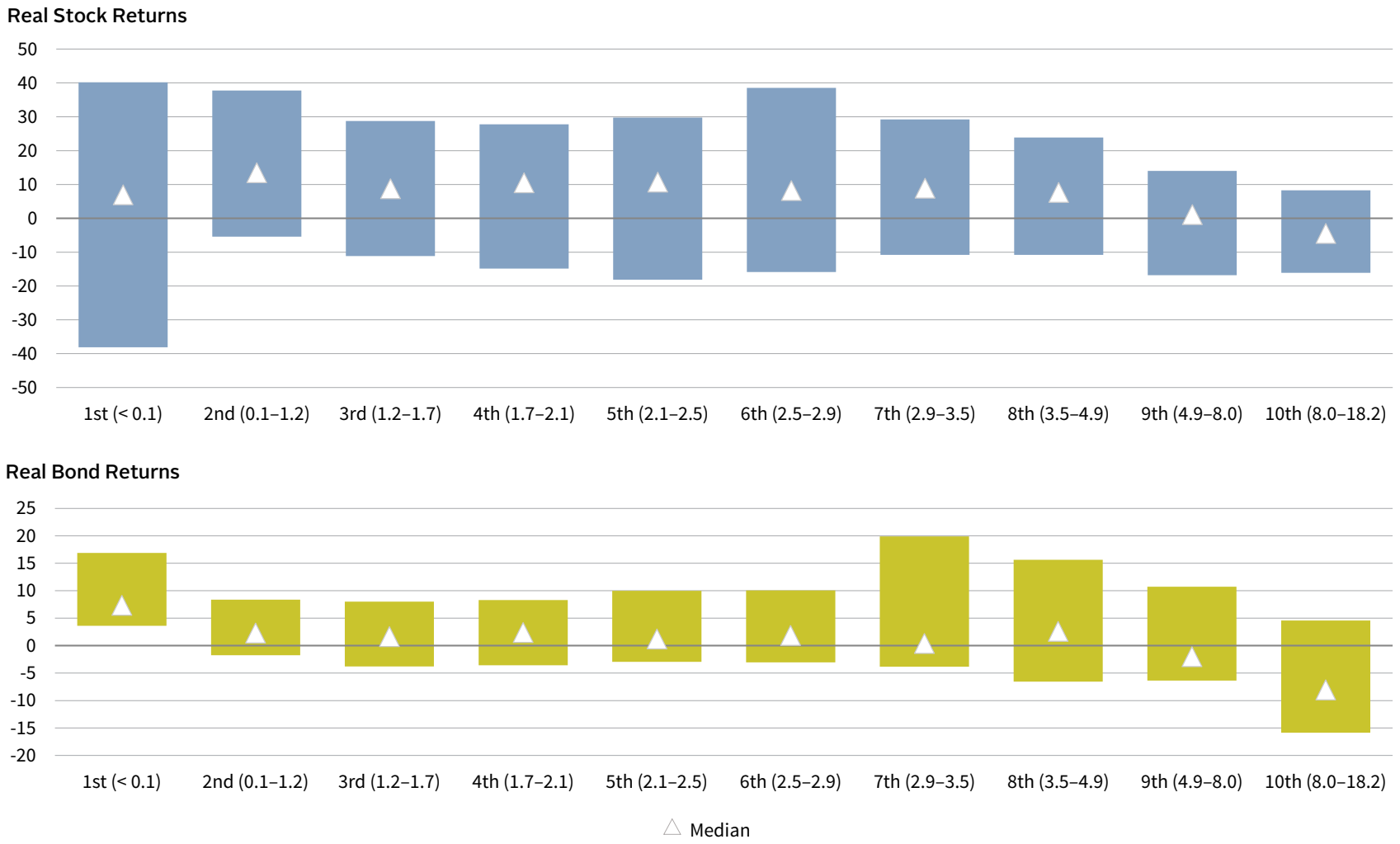


Sources: Global Financial Data, Inc., Standard & Poor's, Thomson Reuters Datastream, and US Department of Labor - Bureau of Labor Statistics.
Note: X-axis data in parentheses are inflation ranges by decile.

Median real returns for equities are similar across inflation regimes, save for the top two deciles

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

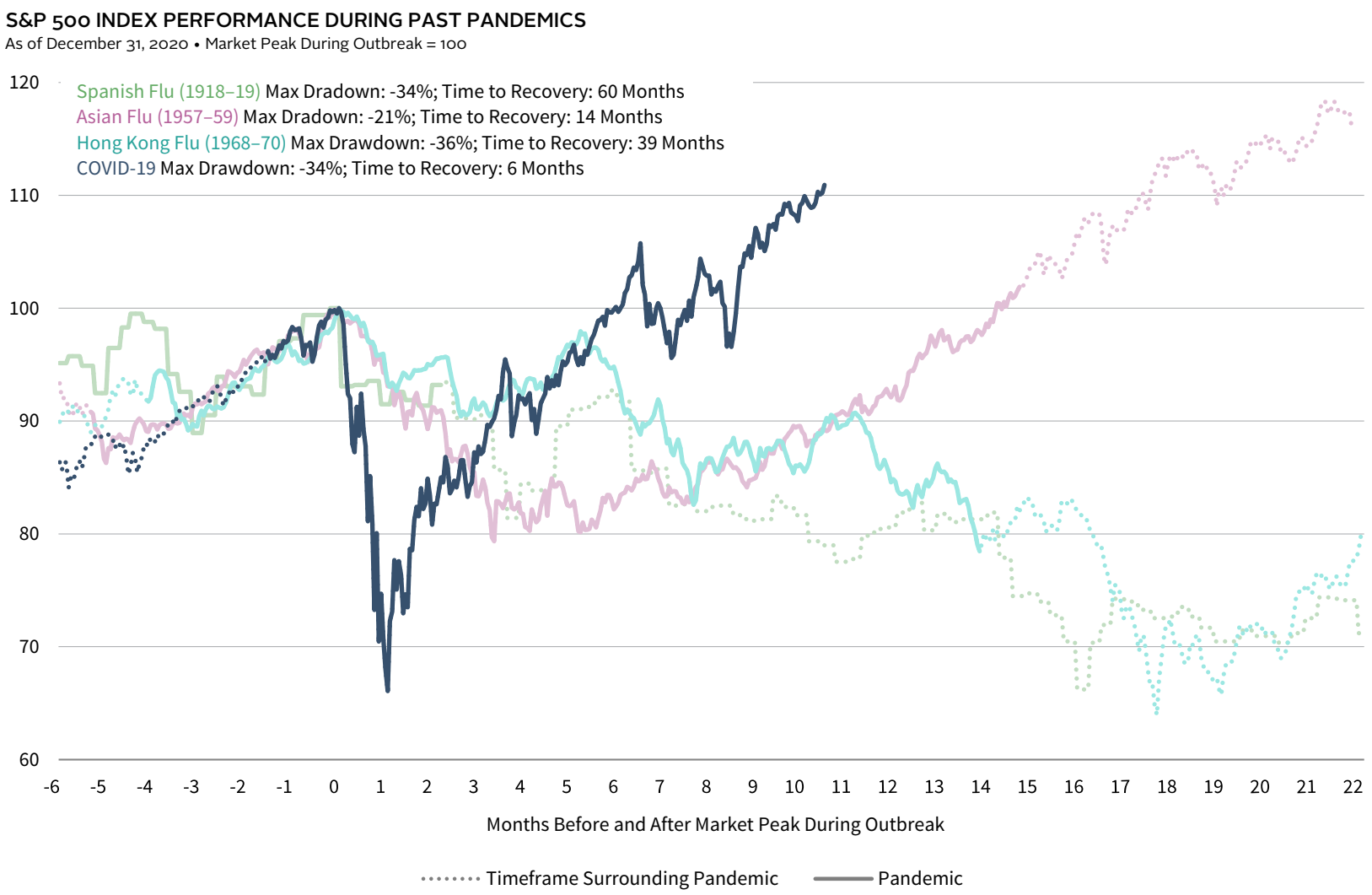
1902–2020 • AACR (%)



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.

COVID-19 equity drawdown magnitude was similar to past pandemics, but on accelerated timing



Sources: Global Financial Data, National Bureau of Economic Research, US Department of Health and Human Services – National Institutes of Health, and Standard & Poor's.
Notes: Performane data are based on daily price returns. Pandemic periods are defined by the National Institues of Health.

CAMBRIDGE ASSOCIATES

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