



Q4 2023

Driving with the Rear-View Mirror

Will we see a repeat of the past decade of U.S. equity returns?

Executive Summary

U.S. equities enjoyed a banner decade through the end of the second quarter of 2023.¹ Can they do it again?

In this note, I decompose U.S. equity market excess-of-cash returns into four components—dividend yield, real earnings growth, multiple expansion, and the real return on cash—to analyze what assumptions investors need to have about the next ten years to expect a repeat of the past decade, or even historically average performance.

¹ U.S. Equities refers to the S&P 500 and cash to the ICE BofA Merrill Lynch U.S. 3-Month Treasury Bill throughout (both gross of any fees). Please refer to the end of this piece for index definitions. Past performance is not a guarantee of future performance.

Jordan Brooks
Principal

Thank you to Cliff Asness, Noah Feilbogen, Bill Goulding, Antti Ilmanen, Kevin Infante, Thomas Maloney, Nick McQuinn, and Daniel Villalon for helpful comments, discussions, and analysis.

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Introduction

U.S. equities recently completed a majestic ten-year run, with the S&P 500 outperforming cash by 11.9% per year between July 1, 2013 and June 30, 2023.

To be sure, the ride was not always smooth. The market realized sizable drawdowns in 2015, 2018, 2020, and, most recently, in 2022 when elevated inflation and aggressive monetary policy-tightening led to a 17% selloff. By the end of the second quarter of 2023, however, the market had recovered most of its losses and was back to trading near all-time highs.

There are reasons for both optimism and pessimism about future U.S. equity market performance. Pessimists can point to rich valuations (both absolute and relative to other markets), above-target inflation and tightening financial conditions due to restrictive monetary policy, and exceptionally elevated macroeconomic uncertainty.² On the other hand, optimism about the prospect of a painless disinflation has increased over the past year. And this, along with euphoria over the potential impact of artificial intelligence on corporate earnings, has given some investors hope that the best is yet to come for U.S. stocks.

I offer no near-term prognostication in this note. Instead, I seek to shed light on two questions:

1. How exceptional was U.S. equity market performance over the last decade?
2. What would it take for equities to deliver similar excess-of-cash returns over the next decade, or even to deliver long-run average returns?

The latter is the critical question. In order to make prudent investment decisions, investors must have realistic expectations about future excess-of-cash equity market returns.³

Using a simple return decomposition, I show a repeat of the past decade's equity market performance would require a heroic set of assumptions: both extraordinary real earnings growth and all-time-high valuations. While this outcome is not impossible, it is an implausible baseline assumption. I further show given low current dividend yields and positive real cash rates, even historically average equity market performance would likely require price-earnings multiples to expand from already rich valuation levels.

² See Brooks (2023): <https://www.aqr.com/Insights/Research/White-Papers/Certainly-Uncertain>.

³ In terms of asset allocation, what matters is expected excess-of-cash returns, not total returns. Expected total returns matter more broadly, but asset allocation decisions only act directly on excess returns. See Huss et al (2017): <https://www.aqr.com/Insights/Research/Journal-Article/Asset-Allocation-in-a-Low-Yield-Environment>

Decomposing Stock Market Returns

Throughout this note, I make use of a simple return decomposition.⁴ The excess-of-cash return on the stock market can be broken down into the difference in two components: the real (inflation-adjusted) return on the market minus the real return on cash:

$$\text{Excess of cash return} = \text{Real stock market return} - \text{Real cash return}$$

The real stock market return can be further decomposed into three sources: the dividend yield earned, the growth rate of real earnings per share (“real earnings growth”), and capital gains or losses associated with the price-earnings ratio richening or cheapening (“multiple expansion/contraction”). Importantly, this is an identity, not a theory. It holds *exactly* ex-post; it is simply an accounting exercise.

Putting all the pieces together:

$$\text{Excess of cash return} = \text{Dividend yield} + \text{Real earnings growth} + \text{Multiple expansion} - \text{Real cash return}$$

Using this return decomposition, we can both understand the sources of excess-of-cash returns over the past ten years as well as assess what would need to transpire to see similar performance in the coming decade. I begin with the past.

How Good Was the Last Decade?

Over the last decade, the excess-of-cash return on the S&P 500 averaged 11.9% per year. Relative to history, this is an exceptional outcome—well above the 90th percentile of rolling ten-year performance across global developed equity markets since January 1, 1950. The risk-adjusted return, or Sharpe ratio

(excess return per unit of volatility), of the market over this period was 0.82, nearly double the postwar average for global developed equity markets. **Exhibit 1** compares the recent performance of the S&P 500 to a variety of other asset classes and investment strategies.

4 For more information on this decomposition, please see Ferreira and Santa-Clara (2008), and Ilmanen (2022).

Exhibit 1: U.S. Equities Outpaced Most Major Markets over the Past Decade

July 1, 2013 – June 30, 2023

	S&P 500	MSCI World ex. U.S.	MSCI World	Barclays Global Aggregate Hedged	Global 60/40	Bloomberg Comm.	SG Trend	HFRI Risk Parity 10 Vol	HFRI Fund of Funds Composite
Excess Return	11.9%	4.4%	8.5%	1.1%	5.8%	-2.0%	4.7%	2.5%	2.4%
Volatility	15.0%	15.0%	14.7%	3.6%	9.4%	14.2%	11.5%	8.7%	5.0%
Sharpe Ratio	0.82	0.36	0.63	0.33	0.64	-0.07	0.45	0.32	0.50

Source: AQR, Bloomberg. Excess returns are the average annualized geometric total return of each index in excess of the average annualized geometric return of U.S. T-Bills over the same period. Sharpe ratios are calculated using arithmetic excess returns. Global 60/40 is 60% MSCI World, 40% Barclays Global Aggregate Hedged. Bloomberg Comm. is short for Bloomberg Commodities. All indices are gross of fees and of transaction costs except SG Trend, HFR Risk Parity, and HFRI Fund of Funds which are reported net. Past performance is not a reliable indicator of future performance.

Non-U.S. developed equities (MSCI World ex U.S.) fared meaningfully worse than the U.S., returning roughly 4.4%, below their postwar average of 5.2%.⁵ MSCI World (of which the U.S. comprises roughly 60%) of course fared better. The canonical Global 60/40 portfolio returned 5.8% and posted an impressive 0.64 Sharpe ratio (since volatilities can be very different, it is important to look at risk-adjusted returns when comparing performance across asset classes and investment strategies)—again, with U.S. equities as the primary driver of performance.

Moving to other asset classes, the Global Aggregate bond index realized a Sharpe ratio of 0.33, while commodity performance was marginally negative over the decade (though they did provide strong diversification in 2022). Turning to alternative strategies, the HFRI Risk Parity Index underperformed its long-term average (since its inception in 2003, it has realized a 0.55 Sharpe ratio), but still posted gains. The SG Trend Index and the HFRI Fund of Funds Composite realized relatively strong risk-adjusted returns, beating international developed equities by a meaningful margin. But U.S. equities

lapped the field, especially the large growth stocks which dominate the S&P 500 (e.g., the “Magnificent Seven”).

The excess return decomposition sheds light on what drove the exceptional performance of U.S. equities over the past decade. **Exhibit 2** provides a graphical breakdown.⁶ Dividend yields accounted for around 2.1%. Real earnings growth was extremely strong relative to history and contributed an incremental 4.5%. Equities richened considerably over this period, and multiple expansion contributed an additional 3.6%, as the cyclically-adjusted price-earnings ratio (CAPE) rose from 24 to 30. The tailwind from richening valuations is in the top third of any 10-year richening we’ve seen for the U.S. in over a century. Adding these three components brings us to a 10.2% real total return on equities.

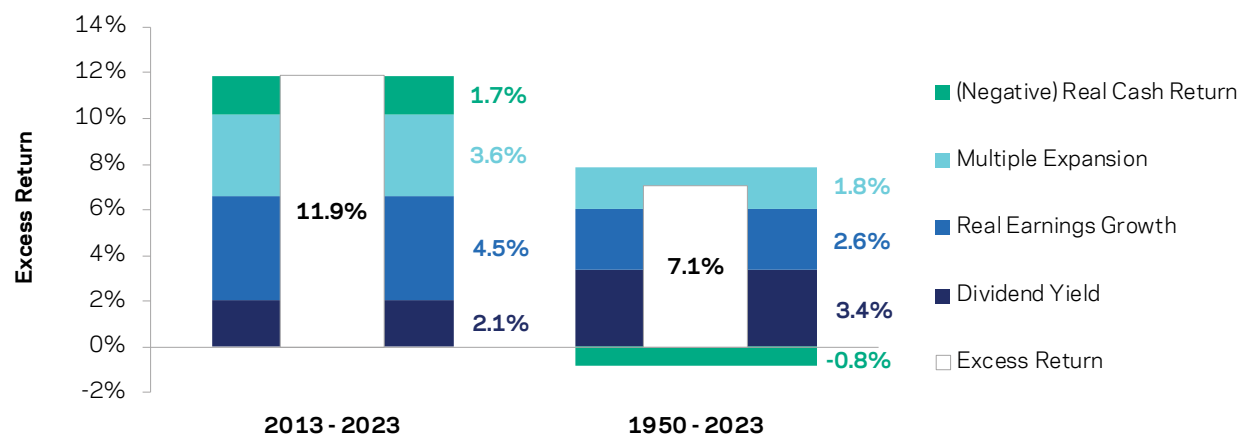
Where did the additional 1.7% excess-of-cash return come from? It came from *negative* real returns on cash. With the Federal Reserve holding interest rates exceptionally low over this period, simply putting money in an asset that kept up with inflation outpaced investing in Treasury bills by almost 2%.

5 Asness, Ilmanen, and Villalón (2023) document that the exceptional performance of U.S. equities relative to other global markets was primarily driven by relative valuation changes.

6 Stock price, dividends per share, and earnings per share data are from Robert Shiller’s website (<http://www.econ.yale.edu/~shiller/data.htm>).

Exhibit 2: U.S. Equity Return Decomposition, Past 10 Years and Long-Term Historical

January 1, 1950 - June 30, 2023



Source: AQR, Robert Shiller's Data Library. U.S. Equities is the S&P 500 and cash is U.S. 3-Month Treasury Bills. All returns are gross of fees. We use the methodology defined in the body of this note to decompose the trailing 10-year equity excess return into the dividend, earnings growth, multiple expansion, and real cash return components. Past performance is not a guarantee of future performance.

To summarize, equity performance over the past ten years was the result of historically strong real earnings growth, richening

valuations that saw investors paying higher prices per dollar of earnings, and exceptionally low (indeed quite negative) real interest rates.⁷

What Would It Take for a Repeat Performance?

The beauty of the return decomposition is that it forces us to rationalize our expectations in a disciplined way. If investors expect a repeat of performance over the next decade—if the 2023 market recovery is a sign the best is yet to come—what must come to pass? Let's take it term by term.

Real return on cash: The real return on cash was a material tailwind for equity excess returns over the past decade, as policymakers

held interest rates meaningfully below inflation through much of the period. That certainly isn't the case now. With the federal funds rate currently between 5.25% and 5.5%, *real* cash rates—i.e., Treasury bill rates net of expected inflation—are north of 2%,⁸ a far cry from the -1.7% we saw over the past decade.⁹

What real cash rate should we assume for the next decade? Fortunately, we have guidance from the Federal Reserve. According to the

⁷ The greater use of buybacks in recent decades may have shifted the total return composition toward lower dividend yield and higher EPS growth, without changing the total return. This shift may have contributed to the observed difference between the past decade and the longer history in **Exhibit 2**.

⁸ As of November 13, 2023, the 3-month Treasury bill yield is 5.4% and the one-quarter-ahead core PCE inflation forecast from the Survey of Professional Forecasters is 2.7%, implying a current real cash rate of 2.7%.

⁹ The shift from a low cash rate decade-plus period to a higher-rate environment has also compressed prospective risk and illiquidity premia across a variety of investments, raising the relative attractiveness of bonds and long-short strategies whose expected total returns tend to rise (approximately) one-for-one with the level of cash rates. Our [2023 Issue 3 Alternative Thinking](#) contrasts performance in past low- and high-rate environments and finds realized performance does indeed correlate with cash rate-driven variation in risk premia.

latest Summary of Economic Projections,¹⁰ the median estimate of the equilibrium real funds rate (often called “r-star”) by FOMC members is 0.5%. Let’s use that as our best guess of real cash returns over the next decade.¹¹

If real cash returns average 0.5% per year, then hitting an 11.9% excess-of-cash return requires a real equity market total return of 12.4%.

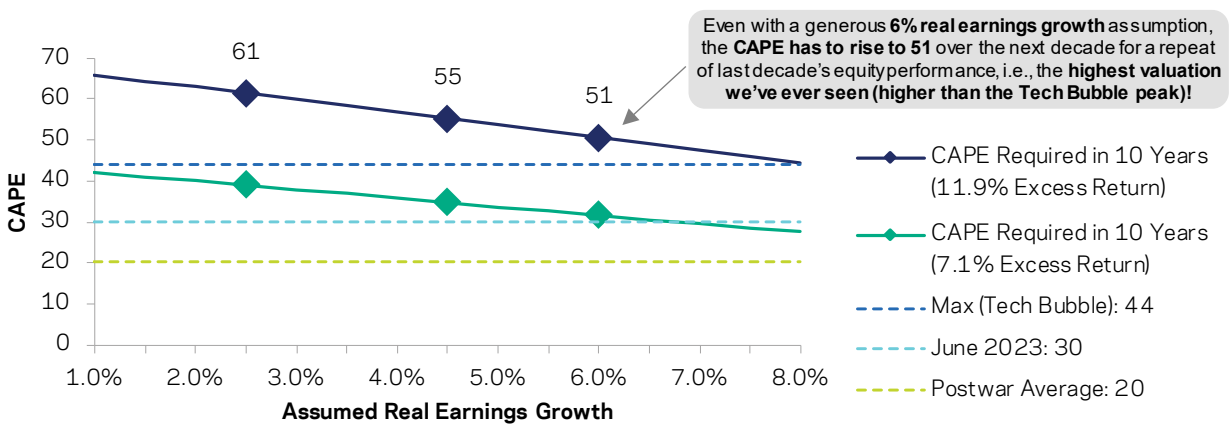
Dividend yield: The current dividend yield is 1.5%.¹² That leaves 12.4% - 1.5% = 10.9% to be explained by a combination of real earnings growth and multiple expansion.

Real earnings growth and multiple expansion:

The dividend yield is observable¹³ and we can fairly-reasonably estimate real interest rates, at least to within a percentage point or two. The remaining return must come from real earnings growth and multiple expansion. Intuitively, the lower (higher) real earnings growth, the more (less) valuations must richen. Exhibit 3 plots the combination of real earnings growth and terminal (i.e., June 30, 2033) CAPE ratios required to match last decade’s return. In even the most extreme real earning scenarios, stock market valuations would need to pop to all-time highs, levels meaningfully higher than the Tech Bubble peak.

Exhibit 3: CAPE Required in 10 Years To Achieve 11.9% Excess Return (under Different Real Earnings Growth Assumptions)

Next Ten Years



Source: AQR, Robert Shiller’s Data Library. Data from 1/1/1950 to 6/30/2023. For illustrative purposes only.

10 <https://www.federalreserve.gov/monetarypolicy/files/fomcprojt20230920.pdf>

11 This is unquestionably a low-end estimate, but I want to be as aggressive in my assumptions as possible. First, cash rates are presently much higher and are likely to remain so for some time as inflation remains persistently above target levels (I know markets don’t like it, but the unfortunate reality of inflation is that it tends to be quite persistent and typically requires softening in demand, via tight monetary policy, to normalize). Second, while 0.5% is the median projection of FOMC members, the minimum is 0.4%, and the range is 0.4% - 1.8%. The committee’s estimates of r-star are therefore skewed higher. Third, financial markets appear to be pricing a higher level of r-star (long-horizon forward linker yields are well north of 1%). Finally, model-based estimates of r-star tend to be higher. For example, the model of Laubach and Williams (2003) maintained by the Federal Reserve Bank of New York currently estimates r-star at 1.2%. Higher real interest rates imply even greater real total returns for equities to hit the excess return target.

12 As of June 30, 2023. We assume the current dividend yield is the best predictor of the future (i.e., a random walk). Empirically, dividend yields have been persistent, and the random-walk assumption is a reasonable base case. If payout ratios are unchanged, assuming a higher future dividend yield would require multiples to contract from today’s level. Again, I make a conservative assumption. As I will show below, for equities to perform anywhere near the last decade, we need to observe multiple expansion over the next ten years. The average dividend yield under that scenario would actually be somewhat less than the current 1.5%.

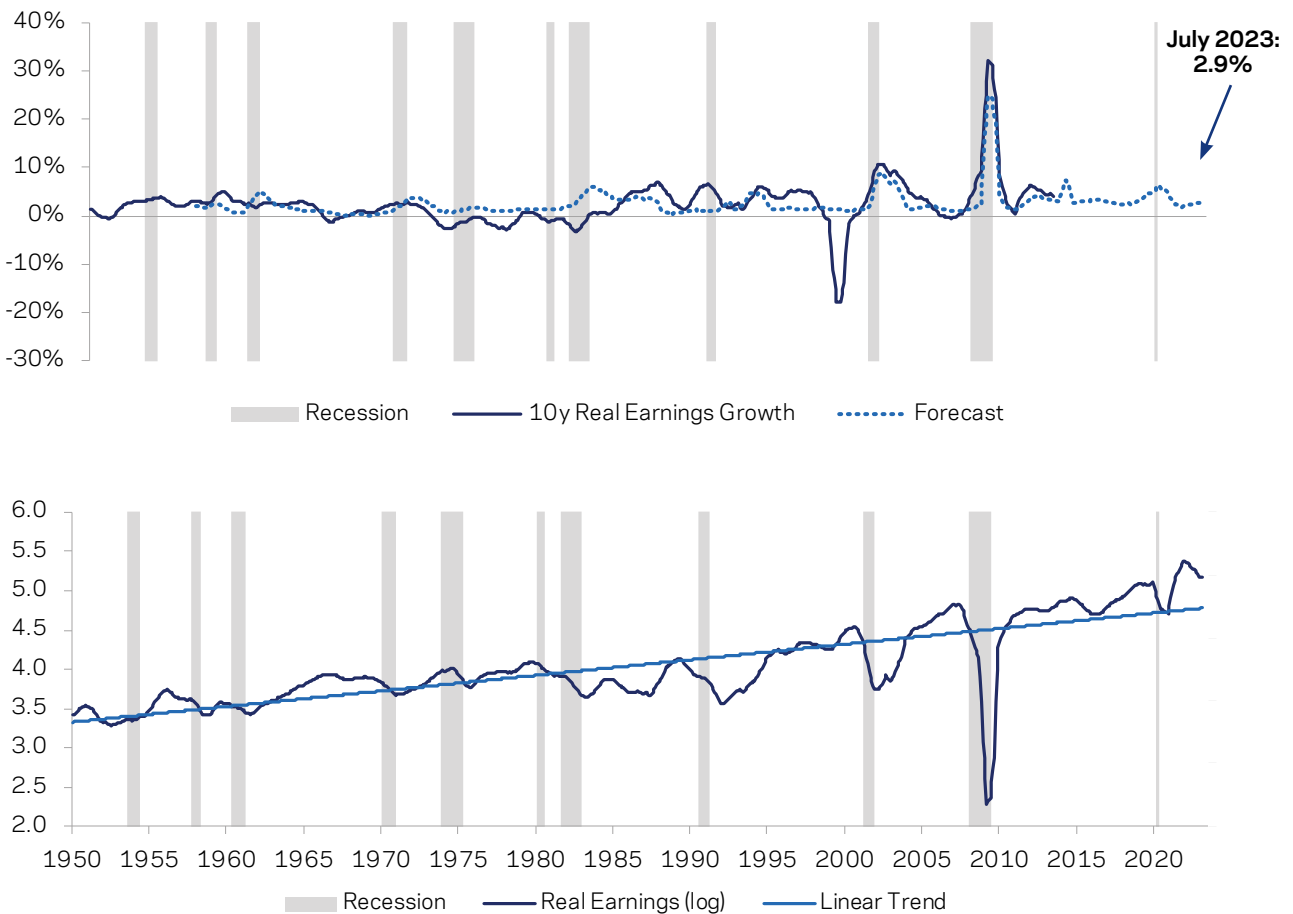
13 For the very detail oriented, what we care about is the geometric average dividend yield over the next decade, which, of course, is not observable. And since you need valuations to richen to hit 11.9% excess returns, the geometric average in that scenario will end up being even lower than 1.5%. Again, I am being as generous as possible in my assumptions.

To home in on plausible scenarios, let's have a closer look at real earnings growth. **Exhibit 4** plots real earnings (bottom panel) and ten-year average real earnings growth (top panel) over the postwar period. The average over this period is 2.6%, somewhat less than the 3% growth rate of U.S. real GDP. The 75th percentile is 4.1%, and the 90th percentile is 6.0%. We twice observed ten-year periods in which real earnings growth exceeded 10%, but both took place starting from the trough of recessions when the level of earnings was severely depressed—post-Tech Bubble and post-GFC—very different economic and market environments than what we see today.

Empirically, real earnings growth is fairly forecastable. It tends to exhibit mean reversion (strong past real earnings growth forecasts lower future real earnings growth) and is countercyclical (future real earnings growth tends to be higher when the economy is weaker and lower when it is stronger). The dashed line on the earnings growth chart in **Exhibit 4** (top panel) is a forecast from a simple statistical model that uses trailing real earnings growth and real GDP growth to forecast future ten-year real earnings. The forecast tracks realized real earnings growth reasonably well—realized and predicted earnings growth are around 0.7 correlated. This model currently produces a forecast of 2.9%, very close to the historical average.

Exhibit 4: Ten-Year Real Earnings Growth and Postwar Real Earnings

January 1, 1950 - June 30, 2023



Assuming 2.5% (roughly the postwar average) real earnings growth over the next decade, the CAPE would need to more than double from its current value of 30 to 61 in order for the stock market to post a repeat performance, nearly 40% higher than the Tech Bubble peak of 44.¹⁴

What if we make a more optimistic real earnings growth assumption than the postwar average?

Over the past decade, real earnings grew by around 4.5% per year. This was an exceptional outcome relative to postwar history. Indeed, the last 30+ years have been exceptional, with real earnings growth averaging 3.2% per year since 1989, compared to 1.8% between 1950 and 1989. There may, however, be headwinds looming on the horizon. In a recent Federal Reserve working paper, Smolyankysy (2023) finds that the difference in corporate profits between these two periods is *entirely* due to declining interest expenses and corporate tax rates. EBIT (earnings before subtracting interest and taxes) growth was only slightly lower between 1962 and 1989 than between 1989 and 2019 (2.2% vs. 2.4% per year). Since profit growth can only come from a combination of EBIT growth, a decline in interest expenses relative to EBIT, or a decline in effective corporate tax rates, interest and tax rates must *continue* to fall if they are to continue to mechanically boost corporate profit growth. An additional potential headwind for real earnings growth is the current economic backdrop of above-target inflation and contractionary monetary policy, which are likely to weigh on economic

conditions over time, as well as elevated global macroeconomic uncertainty.

To be sure, there are reasons for optimism as well. Advances in artificial intelligence may boost corporate profitability, as the internet did. Between 1985 (subsequent to the economic pain of the Volcker disinflation) and 2007 (prior to the onset of the GFC)—very generously chosen endpoints—average annualized 10-year real earnings growth was roughly 4.2% as productivity boomed and the internet fueled strong corporate earnings.¹⁵

Assuming real earnings grow by 4.5% per year over the next decade, the CAPE would still need to increase by over 80 percent from its current level of 30 to 55, 25% above its Tech Bubble peak of 44.

If we are even more optimistic and assume 6% real earnings growth, which is roughly the *best ever* outcome over a 10-year period during normal, non-recessionary times, the market would still need to trade at all-time-high valuations (CAPE of 51) to match the last decade's excess-of-cash performance.

Here is the rub: to forecast a repeat performance from equity markets, you must forecast earnings growth at levels unprecedented in a non-recession economy *and* the market to trade at its richest level ever at the end of the decade. While it's impossible to rule out this scenario, it is an implausible baseline assumption.

Perhaps seeing a repeat performance is asking too much. What would we need transpire

14 Here is one way to think about a CAPE of 61. $1/\text{CAPE}$, sometimes denoted CAEY or "cyclically-adjusted earnings yield," is a reasonable proxy for long-term expectations of real equity market returns. A CAPE of 61 implies equities are priced to deliver long-term real returns of $1/61 = 1.6\%$. In other words, to forecast a CAPE of 61 in ten years you would need to conclude investors will be satisfied holding equities with a 1.6% real expected return, or a 1.1% (subtracting the real cash rate) excess return, which is far below any plausible estimate of an equilibrium equity risk premium, and indeed is substantially lower than the historical risk premium on government bonds, let alone equities.

15 However this period was, in contrast with the present, a period of exceptionally low macroeconomic volatility dubbed "the great moderation."

for next decade's equity excess returns to match the *postwar average*? The green line in **Exhibit 3** shows the combinations of real earnings growth and terminal CAPE multiples consistent with 7.1% average excess returns. For all reasonable real earnings growth outcomes, multiples must continue to expand from already rich current levels. For example, if real earnings grow by 4.5% over the next

decade, the CAPE will need to richen from 30 to 35 for the market to realize average excess-of-cash performance. And if real earnings growth comes in at its historical average, the terminal CAPE would need to be close to 40. For the market to deliver even average performance over the next ten years requires both strong earnings growth and richening valuations.

Conclusion

Extrapolation is often imprudent, especially in financial markets where strong performance often tends to be associated with rich valuations. Stars must align in order to see an encore of last decade's equity market performance—exceptional real earnings growth and all-time high valuations, with investors likely paying at least 80% more per dollar of earnings than at present. This proposition is even more dubious against the current backdrop of elevated macro uncertainty, persistent inflation, and contractionary monetary policy.

Investors who are implicitly or explicitly relying on a repeat of the past decade or even on above-average equity market performance, such as those making reallocation decisions based on performance relative to equities, should take caution. The same is true even

for investors who have reduced their equity allocations in favor of illiquid alternatives. Equity beta is ubiquitous and even illiquid assets such as private equity and private credit ultimately depend on the same drivers of returns—how much real cash flows will grow, and how much investors are willing to pay for cash flows.

If we see a repeat of the past decade, hooray! In this scenario, there may be little harm in holding an allocation to lower beta and/or convex liquid alternatives, but also little benefit. If, however, equity performance is more in line with historical averages, or economic weakness and a return to more normal valuations cause equity markets to underperform, then truly diversifying alternatives are likely to be meaningfully more valuable to investors over the next decade.

Further Reading

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The **GFD Indices Developed World Return Index** approximates the MSCI World index using extended data back to the 1920s.

The **MSCI World ex U.S. Index** is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of 22 developed markets excluding the US.

The **Bloomberg Barclays Global Aggregate Index** is a market-weighted index of global government, government-related agencies, corporate and securitized fixed-income investments.

The **SG Trend Index** is a subset of the SG CTA Index and follows traders of trend following methodologies. The SG CTA Index is equal weighted, calculates the daily rate of return for a pool of CTAs selected from the larger managers that are open to new investment.

The **S&P 500 Index**, or Standard & Poor's 500 Index, is a market-capitalization-weighted index of 500 leading publicly traded companies in the U.S.

The **Bloomberg Commodity Index** is made up of 23 exchange-traded futures on physical commodities, representing 21 commodities which are weighted to account for economic significance and market liquidity.

The **HFRI Risk Parity 10 Vol Index** is designed to track the performance of risk parity funds with a volatility target of 10% or less. Risk Parity is an approach to investment portfolio management which focuses on allocation of risk, usually defined as volatility, rather than allocation of capital.

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