

SEP 2025

S&P 500 CAPE Ratio Analysis

Current Signals & Historical Patterns

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What is the CAPE Ratio?

The Broader Context

On September 23, 2025, during a speech in Providence, Rhode Island, Federal Reserve (“Fed”) Chairman Jerome Powell was asked about the Fed's view of financial market pricing.¹ He replied, “By many measures, for example, equity prices are fairly highly valued.” A few questions jumped out to us immediately after Powell’s speech:

- What did Chairman Powell mean by “fairly highly valued?”
- Where does the current market valuation sit within S&P’s historical valuation range?
- Does overvaluation lead to underperformance or negative performance over the short, medium, and long run?
- Does overvaluation mean that the market will collapse imminently?

What is the CAPE Ratio?

Before we judge the market to be overvalued or undervalued, we need to determine how to value the stock market. While there are many valuation models out there, the Cyclically Adjusted Price-to-Earnings ratio (CAPE, also known as the Shiller P/E)² is the most widely used—and often cited, including by the Fed—academic valuation methodology.

Developed by Robert Shiller, a Nobel laureate and economist at Yale University, the CAPE ratio is a valuation measure designed to smooth out the short-term volatility of corporate earnings and provide a clearer picture of how expensive or cheap the stock market is relative to its long-term returns. Specifically, CAPE is calculated as the ratio of the price of an index (in this case, the S&P500) to the inflation-adjusted average of earnings per share (EPS) over the preceding ten years.

Calculating the arithmetic mean of EPS over the last 10 years, the earnings used in CAPE help account for the effects of business cycles, temporary shocks, and so on, thereby producing a more reliable gauge of market valuation than the current year P/E ratio. Both prices and earnings are adjusted for inflation using the Consumer Price Index (CPI) to ensure comparability across time.

Mathematically, the adjustment works by scaling historical figures into today’s purchasing power. Consequently, the CAPE ratio highlights whether current valuations are stretched/depressed relative to historical context, and therefore offers investors a perspective on prospective long-term returns.

Current Signals

As of August 2025, the CAPE ratio for the S&P stands at ~40x. Based on historical data from 1871 to 2025, the average is 17.6 with a standard deviation of 7.4; the current valuation of the S&P 500 index is ~3.0 standard deviations above the historical mean. Today's valuation lies in the far right tail of history's distribution (99th percentile), a place rarely visited in the past 154 years.

CAPE Ratio vs. Time (1881~2025)



FIGURE 1. Data retrieved from shillerdata.com.²

At the same time, a ~40x CAPE³ (as of Sep 25) corresponds to an implied earnings yield of 2.5%. By contrast, the US 10-Year Treasury's yield is 4.2%⁴ (as of Sep 25). Equities' earnings yield is therefore only ~60% of the bond yield, despite the natural risk premium equities ordinarily command. Historically, such valuations have been associated with negative nominal returns on equity over the subsequent decade.



What does the Present say about the Future?

Historical Patterns

History may not repeat, but it does rhyme. In this section, we pose one question: What do absolute equity returns look like following periods of extreme CAPE readings in history?

To put this into perspective, we examine historical episodes when the CAPE ratio exceeds two standard deviations above its long-term mean ($\text{CAPE} > 17.6 + 7.4 \times 2 = 32.4$). Over the past 150 years, this threshold has only been breached a handful of times — in 1929, on the eve of the Great Depression, during the late 1990s dot-com bubble, briefly in the post-COVID surge of 2021, and again today.

Our study shows mixed signals for one- and five-year returns, in part because valuations can remain elevated for extended periods of time, as they did during the dot-com bubble in the late 90s. Nevertheless, negative 10-year forward returns were consistently observed across all episodes. History suggests that today's elevated CAPE ratio of ~40x may carry similarly adverse implications for long-term returns.

History suggests that today's elevated CAPE ratio of ~40x may carry similarly adverse implications for long-term returns. We understand that the current composition of the S&P 500 is vastly different from that of the past, primarily driven by the heavy weighting of technology companies, which tend to carry a higher P/E multiple. However, an argument can be made that the composition of the S&P 500 has always changed with time. To be clear, this is not a call for a market collapse. The data does not tell us when the market will turn. It only reveals that the probability of negative 10-year returns from here will be high.

The major peaks in the CAPE ratio, highlighted in Figure 2 (labels A~C), demonstrate this pattern through the lens of future stock market returns over the 10 years that follow.

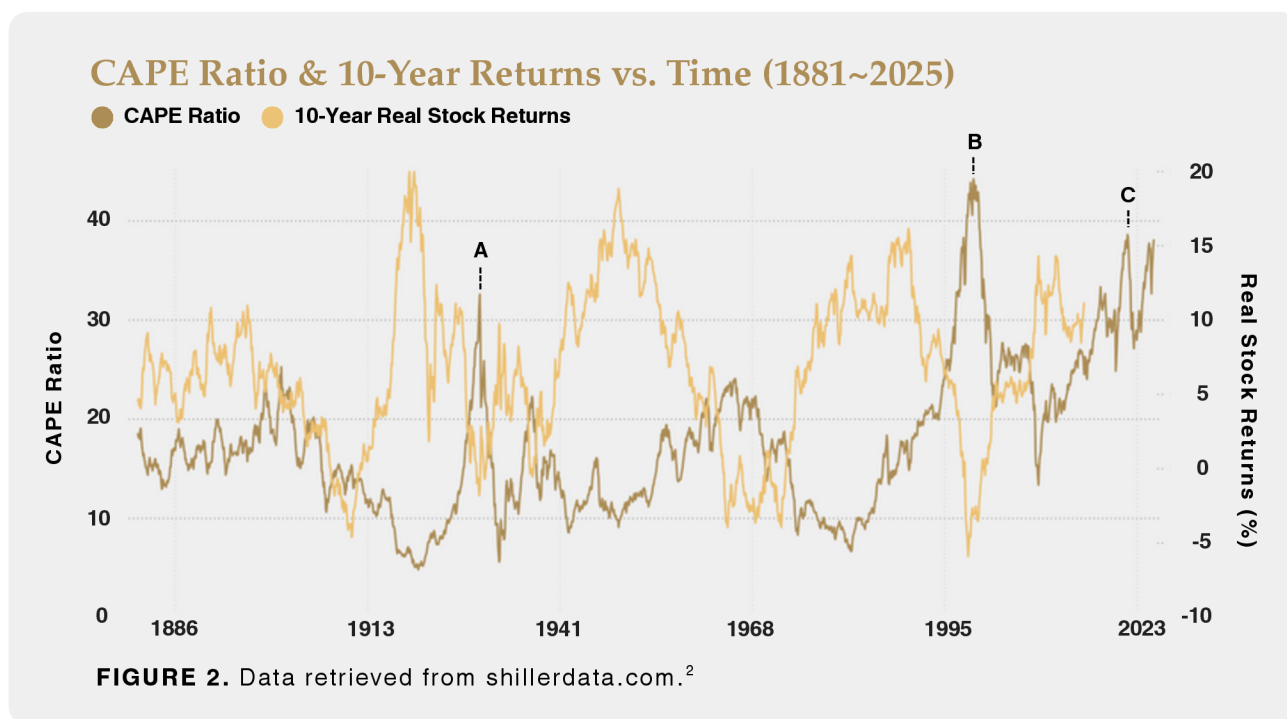


The Relationship between the CAPE Ratio & Returns

Looking at the monthly data from 1881–2015, only about 12% of all months in history were followed by negative 10-year real returns. Yet when the CAPE ratio was above 32.4, that rate surged to about 70% (32 out of 46 cases).

To test the strength of this relationship, we applied a binomial test to ask: “If the true probability of negative returns was 12%, what are the odds of observing 32 negatives returned out of 46 purely by chance?” The result, 1.2×10^{-19} , is effectively zero. In other words, when the CAPE ratio reaches an elevated level, the likelihood of negative 10-year returns increases dramatically.

That being said, there are valid concerns regarding the limited sample size (46) in which CAPE was greater than 32.4, and how each instance corresponded to one of only two time periods (periods A & B, no data yet for period C). On the other hand, even as the CAPE ratio’s arithmetic mean rose by 85% from 14.6 (1926~1986) to 27.1 (1997~2016), the binomial test held true to $\alpha \sim 10^{-19}$, which is telling of the strength of correlation.



Label	Peak CAPE	1-Year Return	5-Year Return	10-Year Return
A (1929.09)	32.6	-27.80%	-13.20%	-1.40%
B (1999.12)	44.2	-8.80%	-4.37%	-3.20%
C (2021.11)	38.6	-20.40%	–	–

TABLE 1. Data retrieved from shillerdata.com.²

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Closing Remarks

The S&P 500's current CAPE ratio underscores the extent of today's stretched market valuations. At ~40x, it now stands closer to three standard deviations above its long-term average, a condition that has almost invariably preceded weak or negative equity returns over the ensuing decade.

It is important to emphasize, however, that markets can remain expensive for extended periods, and short-term gains are not incompatible with high CAPE ratios. The signal provided by CAPE is probabilistic in nature, meaning it frames the long-term outlook and points to a materially higher risk of declines over a 10-year horizon. In this sense, CAPE serves less as a forecast of imminent correction and more as a historically grounded framework for assessing prospective returns.

If you would like to learn more about how we approach equities, private credit, and related topics, please feel free to reach out to us at IR@unityinvestments.com.

This is Life, Compounded. $A = P \left(1 + \frac{r}{n}\right)^{nt}$



References

[1] Powell, J. H. (2025, September 23). Speech by Chair Powell on the economic outlook. Board of Governors of the Federal Reserve System.
<https://www.federalreserve.gov/newsevents/speech/powell20250923a.htm>

[2] Shiller, R. J. (n.d.). ShillerData. <http://www.shillerdata.com>

[3] Multpl. (n.d.). Shiller PE Ratio. <https://www.multpl.com/shiller-pe>

[4] U.S. Department of the Treasury. (n.d.). Daily Treasury yield curve rates, 2025 [Data table].
https://home.treasury.gov/resource-center/data-chart-center/interest-rates/TextView?type=daily_treasury_yield_curve&field_tdr_date_value=2025

Appendix

1. Binomial Test (Data retrieved from shillerdata.com²)

To assess whether periods of elevated CAPE ratios are statistically associated with negative subsequent 10-year real stock returns, we have employed a binomial test. We explore the two possible states: negative correlations versus no relation at all.

From 1881~2015, 193/1617 months have seen negative 10-year real stock returns. Of the months where $CAPE > 32.4$ (mean + 2stdev), 32/46 have seen negative returns.

Null hypothesis, $H_0: p = p_0$, Probability of negative 10-year returns after ' $CAPE > A$ ' is the same as historical probability

Alternative Hypothesis, $H_1: p > p_0$, Probability of negative returns is higher when $CAPE > A$

1 = negative return, 0 = non-negative return.

$P(X \geq k \mid n, p_0) = \sum_{i=k}^n \binom{n}{i} p_0^i (1-p_0)^{n-i}$

- n = number of cases when $CAPE > A = 46$
- k = number of those cases with a negative 10-year return = 32
- p_0 baseline probability of negative returns across historical data = $193/1617 = 0.119$
- A = mean + 2stdev = 32.4

$\therefore P(X \geq 32 \mid 46, 0.119) = 1.2 \times 10^{-19} \rightarrow \text{reject } H_0$

$P < \alpha$ until the 10^{-18} significance level, which directs us to a strong rejection of the null hypothesis. This means that, according to our alternative hypothesis, it is safe to assume a higher probability of negative returns when CAPE is greater than 32.4.

2. Additional Indicators

2A. CAPE vs. Moving Average

Figure 4 illustrates the behaviour of the 1-, 5-, and 10-year returns over time, highlighting (shaded zones) the periods when the CAPE ratio exceeded its 40-year moving average by more than 1.5 standard deviations that were identified in Figure 3. When the CAPE ratio exceeded just 1.5 standard deviations from the moving average, returns were negative across the board. This data reveals that during the aforesaid intervals, lucrative short-term gains (1-year) can obscure the broader reality; long-term performance over 10 years tends to be far less favourable.

CAPE Ratio & Moving Average vs. Time (1921~2025)

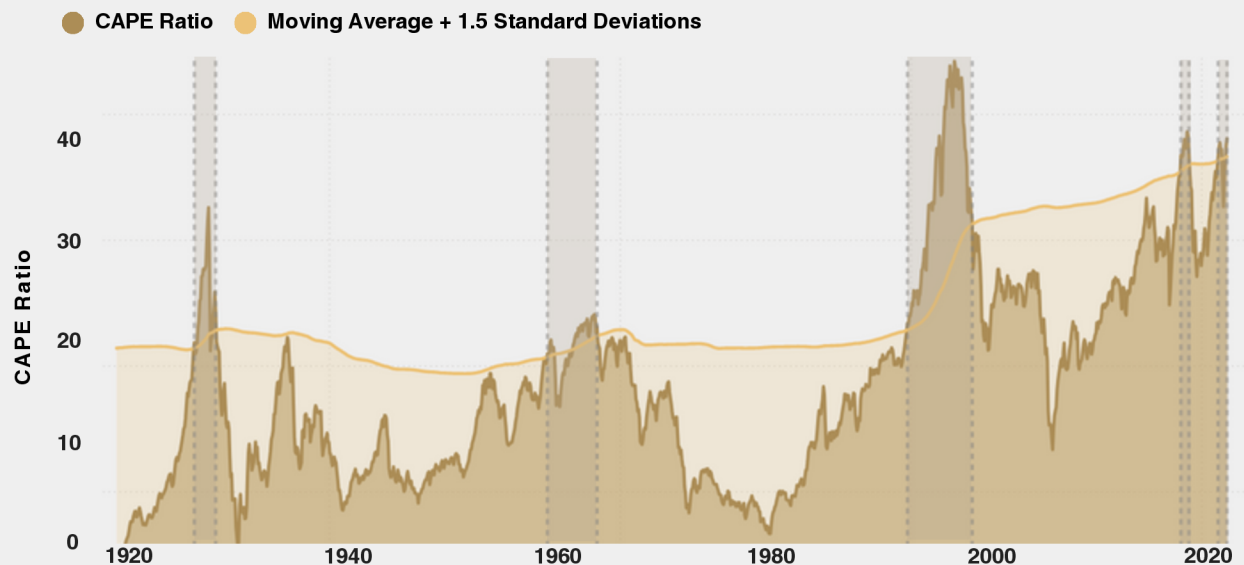
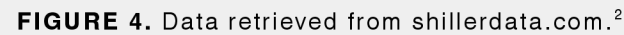


FIGURE 3. Data retrieved from shillerdata.com.²

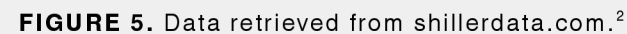
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● 1-Year ● 5-Year ● 10-Year



The

● CAPE Ratio ● TR CAPE Ratio



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