Quarterly Review and Outlook Using the CAPE Ratio

Q4 2025 – **Robert J. Shiller and Laurence Black**

Vendor Financing Returns!

This quarter has been all about the AI narrative driven by U.S. technology stocks, amidst all this excitement about the U.S., Europe and Japan have been overlooked. The seemingly unstoppable "AI narrative," continues to dominate investor sentiment globally. Yet, by quarter's end a few doubts began to emerge whether we are experiencing an AI bubble due to circular vendor financing schemes.[1]

Currently, U.S. Earnings Per Share (EPS) growth is concentrated in the technology sector, which remains remarkably strong. However, history offers a cautionary tale: past technology booms produced only a handful of long-term winners. Economist Carlota Perez[2] has chronicled how periods of speculative exuberance, which she calls "Frenzies," typically occur in the early stages of major technological revolutions. These episodes produce dramatic gains for a few companies but severe losses for many others.

For example, during the 1920s "radio frenzy," shares of the Radio Corporation of America (RCA) skyrocketed, acquiring Victor Talking Machines, another Dow 30 company in the same sector in 1929. Yet by 1936, RCA's share price had declined by 98%. More recently, in the late 1990s, the so-called "Four Horsemen"[3] of the tech world, Dell, Intel, Microsoft, and Cisco, were viewed as the leaders of a new economy, much like today's "Magnificent 7." (Cisco was also involved in vendor financing in 1999.) However, as we know, only Microsoft really continues to thrive at scale today. Anytime a group of stocks gets a name or becomes a meme, this is a sign of, at least temporarily, a strong narrative, as in the late 1990's and today.

Artificial intelligence does indeed have the potential to transform the economy and deliver significant productivity improvements, but such benefits may take time to materialize. Evidence remains mixed: an MIT report[4] released in August noted that only 5% of firms using AI tools reported substantial benefits to date. Meanwhile, Morgan Stanley estimates that AI-related companies will spend $3 trillion on infrastructure by 2029.[5] To put this into perspective, this figure is more than 7% of U.S. GDP.[6] For comparison, at the height of the dot-com boom in 1999, the combined expenditure of the "Four Horsemen" totaled 4% of GDP.

The Financial Times described this $3 trillion investment as "absolutely immense,"[5] raising concerns about potential over-allocation of capital. To assess whether stock prices are overvalued in such an environment, tools like the CAPE ratio (Cyclically Adjusted Price-to-Earnings ratio) can provide valuable insights. The CAPE ratio compares a company's stock price to its inflation-adjusted earnings averaged over a 10-year period, offering a long-term perspective on valuation.

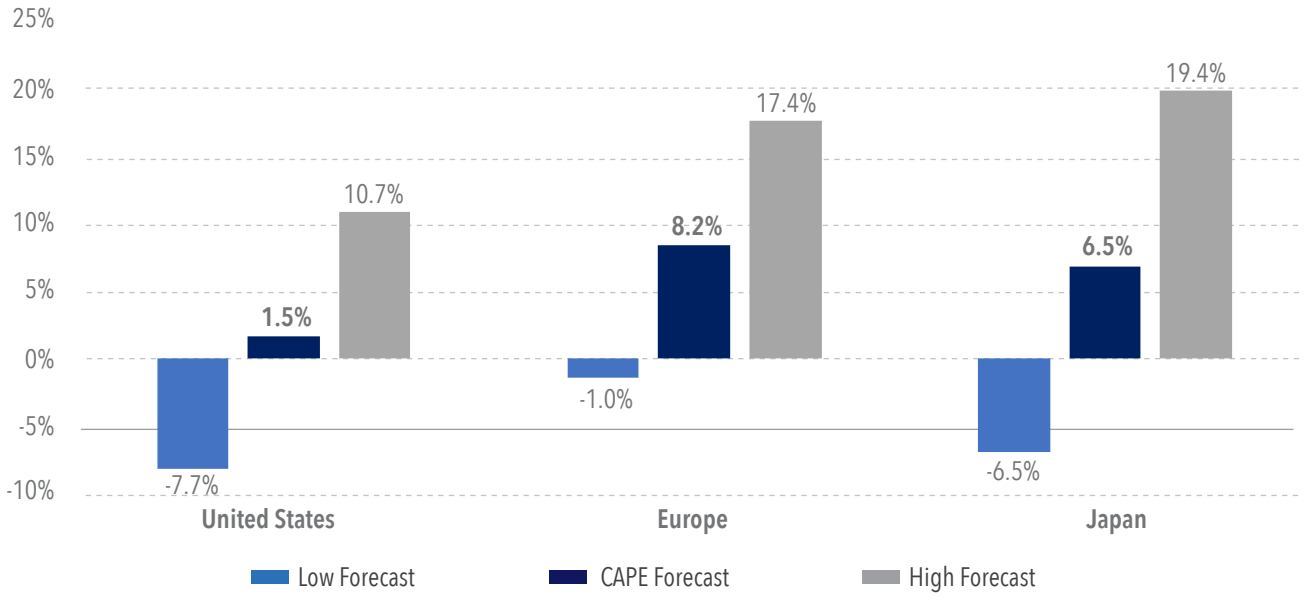
The S&P 500® recorded a strong quarter, advancing more than 8%, for year-to-date (YTD) return of 14%. However, this surge has stretched valuations, with the CAPE ratio standing at 39.5, its second-highest level since 1881. Europe and Japan have seen YTD returns in dollars of over 27% and 22% respectively, their CAPE ratios are 21.4 and 25.1. With these ratios in mind, it makes sense to be broadly diversified, and a prudent investor may have an allocation to cash.

Markets: Valuation Highs and Cautious Forecasts

The U.S. market remains elevated, as it did last quarter and now the S&P 500® sits around 6,700. The S&P 500® CAPE ratio is now 39.5, the second highest in history after the Dotcom Bubble, and our expected nominal (not adjusted for inflation) annual growth over the next decade has dropped to just 1.5%. We continue to advocate for diversification across regions and asset classes, and why we believe holding some reserves in cash and some investment in low CAPE sectors, remains, not only prudent, but wise. Forecasts for Europe and Japan are 8.2% and 6.5%, with CAPE ratios of 21.4 and 25.1 respectively, but with considerable uncertainty.

Key Findings: Our Forecasts based on the CAPE Ratio

Note these forecasts are in local currencies in nominal returns. We show a range for a 95% prediction interval indicating our uncertainty around these forecasts. We use conventional tools to forecast expected returns, however financial markets are very unpredictable, making forecasting an inherently difficult task. In addition, unforeseen events provide another layer of difficulty and can impact our forecasts in both a positive and a negative manner.



A Note About Forecasting

These forecasts represent annualized long-term projections over a 10-year horizon, designed to guide investors to make strategic decisions about equity allocations. They are not intended for those looking to time the markets or seek short- to medium-term predictions, as short-term forecasts are inherently unreliable. Instead, these projections provide nominal total annualized returns in local currencies and are presented as a guide only. The forecasts make no attempt to judge the impact of one-of-a-kind factors like COVID-19, political changes, or monetary policy changes, not because these are not potentially important, but because we are not able to quantify them without guesswork. We also show ranges here (95% prediction intervals) to give some indication of the uncertainty around our forecasts. The reader must bear in mind that prediction intervals are hampered by the fundamental unpredictability of future events, which is unquantifiable. For example, some would argue that the upper bound for the ten-year annualized return for Japan in the preceding table is too high, based on their knowledge that the investors in Japan have learned their lesson from the 1980s-1990s and will not overprice markets to such an extent again. However, it is impossible to be sure one way or the other whether this "knowledge" is correct since it relies on human judgment and relies on subjective interpretations of how people might think and act in the future.

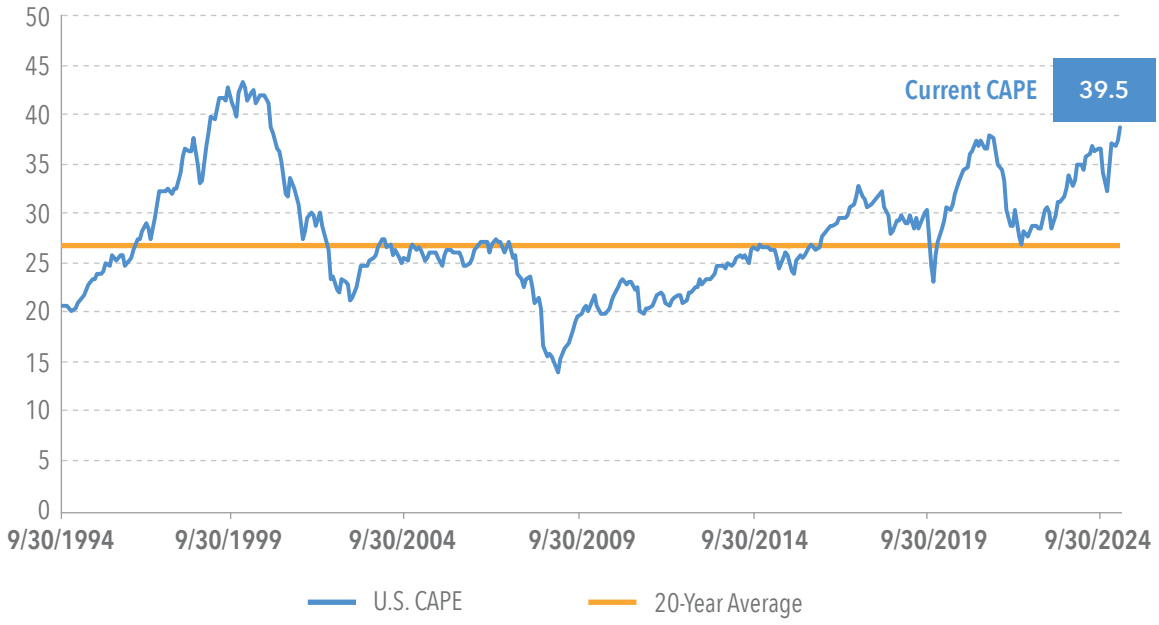
United States – Forecasts Based on the S&P 500® Index

The CAPE Ratio for the United States is 39.5 and the expected 10-year annualized nominal total return is 1.5%. Returns for the S&P 500® Price Return Index are expected to be around -0.5%, here we subtract the average historical dividends of 2%. We also show ranges for U.S. returns. Professor Shiller created a series of value-based indices with Barclays, namely the Shiller Barclays CAPE® Family of Indices, which seek to identify undervalued sectors or stocks using the CAPE Ratio. These indices aim to earn a long-term value premium. While past performance is not guaranteed, if an investor purchased a value-based index and held this for the long term, they may generate higher returns than forecast if the value factor performs well.

UNITED STATES FORECAST RETURNS	EXPECTED ANNUALIZED RETURNS
Expected Nominal Total Returns* (S&P 500 Total Return Index)	1.5%
Upper Range of Expected Nominal Total Returns* (95% Confidence Level)	10.7%
Lower Range of Expected Nominal Total Returns* (95% Confidence Level)	-7.7%
Approximate Expected Nominal Price Returns* (S&P 500 Price Return Index)	-0.5%

*using the CAPE Ratio

U.S. Historical CAPE Ratio



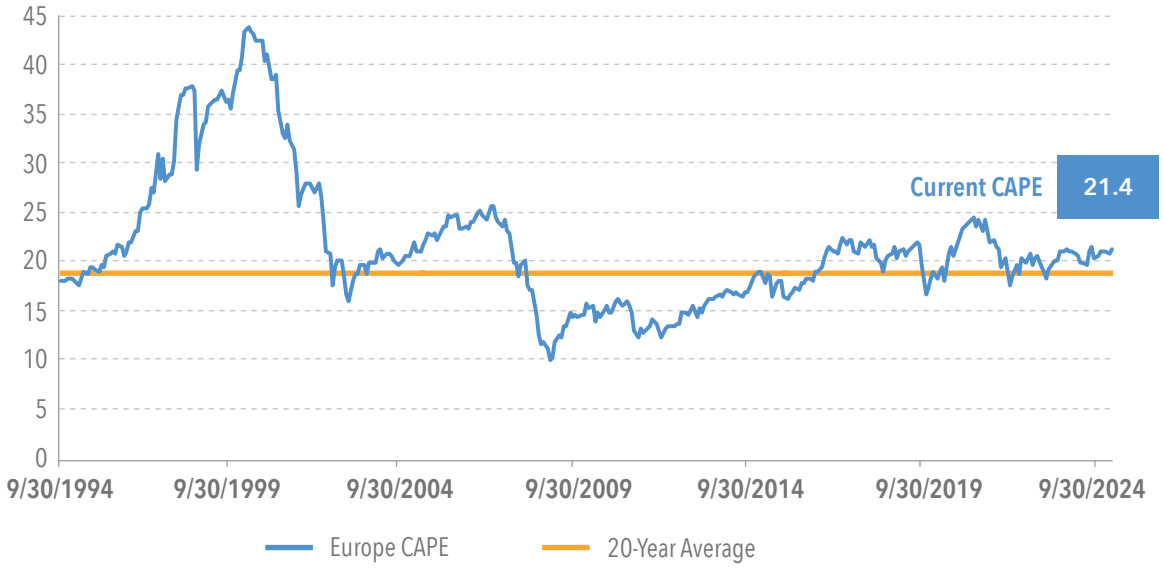
Europe – Forecasts Based on the MSCI Europe Index

The CAPE Ratio for Europe is 21.4 and the expected 10-year annualized nominal total return is 8.2% as of the end of this quarter. Price returns for the MSCI Europe Price Return Index are forecast to be around 5.2%, when we subtract the historical dividend yield and assume this holds true for the next 10 years. We also show ranges for European returns.

EUROPE FORECAST RETURNS	EXPECTED ANNUALIZED RETURNS
Expected Nominal Total Returns* (MSCI Europe Total Return Index)	8.2%
Upper Range of Expected Nominal Total Returns* (95% Confidence Level)	17.4%
Lower Range of Expected Nominal Total Returns* (95% Confidence Level)	-1.0%
Approximate Expected Nominal Price Returns (MSCI Europe Price Return Index)	5.2%

*using the CAPE Ratio

Europe Historical CAPE Ratio



Japan – Forecasts Based on the MSCI Japan Index

The CAPE Ratio for Japan is 25.1 and the expected 10-year annualized nominal total return with the CAPE Ratio is 6.5%. Price returns for the MSCI Japan Price Return Index are forecast to be 4.3%, again we subtract the historical dividend yield from Bloomberg and assume this holds for the next 10 years. We also show ranges for Japanese returns. Note our forecasts include the bubble period in Japan in the 1980's and this may overstate some of the numbers.

JAPAN FORECAST RETURNS	EXPECTED ANNUALIZED RETURNS
Expected Nominal Total Returns* (MSCI Japan Total Return Index)	6.5%
Upper Range of Expected Nominal Total Returns* (95% Confidence Level)	19.4%
Lower Range of Expected Nominal Total Returns * (95% Confidence Level)	-6.5%
Approximate Expected Nominal Price Returns (MSCI Japan Price Return Index)	4.3%

*using the CAPE Ratio

Japan Historical CAPE Ratio

Approach to Forecasting

We outline our approach to forecasting in this section. Firstly, we predict the nominal total returns based on the CAPE Ratio, as developed by Robert Shiller and John Campbell in their paper "Stock Prices, Earnings and Expected Dividends." To generate the forecast, we regress ten-year nominal returns on the prevailing CAPE level. We also show ranges for each country's forecasted returns to indicate the uncertainty around our forecasts.

Professor Shiller noted that returns are influenced both by the CAPE and an estimated long-term interest rate in the 3rd Edition of *Irrational Exuberance*. In the future, advancements in the science of narrative economics—leveraging digitized text and artificial intelligence to track how ideas spread among the public—may help refine prediction intervals. These tools may be able to create time series data to better understand how the public perceives various economic narratives. For example, they might analyze the widespread and politicized COVID-19 pandemic narrative, concerns about the prospects for world war, or the evolving discourse on climate change. By doing so, they could enhance forecasts of economic variables. At this juncture, however, we use the CAPE ratio suggesting overpricing or underpricing to help us quantify the impact of complex and evolving narratives to predict the markets.

Sources:

1. Fortune: Nvidia's $100 billion OpenAI investment raises eyebrows and a key question: How much of the AI boom is just Nvidia's cash being recycled? September 28, 2025
2. Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages, Carlota Perez, 2003, Edward Elger Publishing.
3. CNBC: The Four Horsemen of Tech: Part 1 Jim Cramer, August 2010
4. The GenAI Divide: State of AI in Business 2025, MIT, August 2025
5. Financial Times: Absolutely immense': the companies on the hook for the $3tn AI building boom August 14, 2025
6. St Louis Fed U.S. Technology Capex Spending, U.S. GDP.