

Forecasting Equity Returns Using the CAPE Ratio



Q1 2020 - Robert J. Shiller, Laurence Black

Executive Summary

The objective of this paper is to provide long-term estimated 10-year total returns for benchmark equity markets spanning the United States, Japan and Europe. This paper uses the principles of the CAPE Ratio developed by Robert Shiller and John Campbell in the late 1980s for forecasting the 10-year returns.¹

Key Quarterly Findings

We update our long-term 10-year benchmark equity returns in this forecast paper. Equity returns for the major markets have been exceptionally strong in 2019 with the US returns at 31.5%, Europe at 24.6% in local currency and Japan at 20% in local currency. As a result, CAPE Ratios have risen across the board.

Higher CAPE Ratios indicate lower future returns; however, nominal expected returns are still expected to be positive. There is a higher degree of differentiation in the expected returns across the regions because of the different CAPE Ratios. We favor diversification, remind readers of recency bias, and note that persistently high returns in the same markets cannot be expected in the long term, as markets do tend to mean revert – by this we mean return to the average.

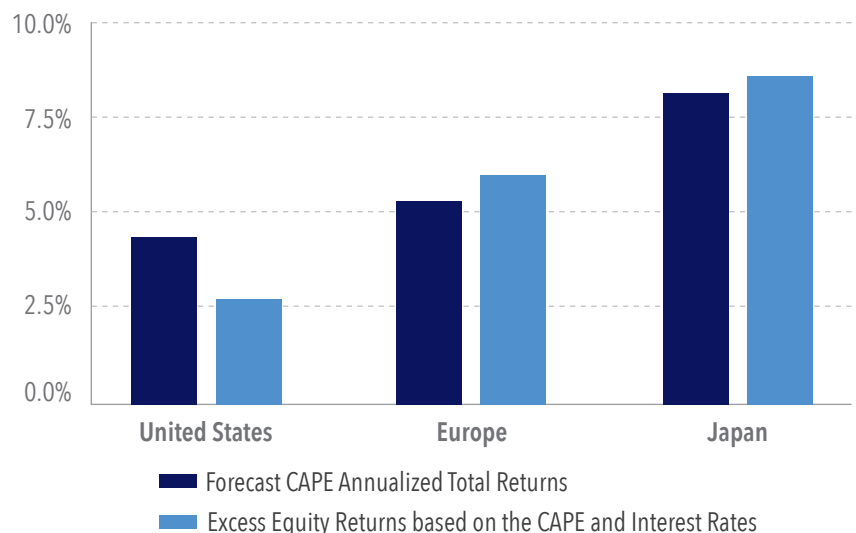
The United States has seen a series of strong equity returns in recent years, and based on the S&P 500 Index, we expect annualized total nominal returns of 4.3%. This is in the same range as the last quarter. We forecast benchmark annualized total returns for Japan based on the MSCI Japan Index of 8.1%, and Europe annualized total returns of 5.2% based on the MSCI Europe Index. Returns are in local currencies. Both Europe and Japan have higher expected return numbers than those of the United States, although they are lower than the last quarter due to the strong equity market returns and a decline in inflation expectations in these markets.

As of December 2019, the United States had a higher CAPE Ratio of 30.3 than Japan and Europe at 21.7 and 22.2, respectively. Note that the CAPE Ratio history for Japan includes the Japanese bubble period in the late 1980s; thus, when using the currently lower Japanese CAPE Ratio, the forecasted returns may be elevated as the sample includes this bubble period. We do believe that investing in value indices may earn higher long-term returns, if the value premium outperforms benchmarks.

It can be said with some justification that long-term interest rate yields are more expensive than equity markets. To address the low yields and their impact on equity returns, we forecast excess real equity returns over real bond returns. We do this by considering both the CAPE Ratio and the level of interest rates. We find that expected local currency excess returns for equities over bonds are at 2.8% for the United States, 8.5% for Japan and 5.9% for Europe. Note both Japan and Europe have negative yields.

The graph to the right highlights our 10-year annualized total return forecasts using the CAPE Ratio, and excess equity returns (over bonds) for the three key regions we cover.

Long Term 10-Year Equity Return Forecasts²



Source:

1) John Y. Campbell and Robert J. Shiller, "Stock Prices, Earnings and Expected Dividends," Journal of Finance, 43:3, 661-76, July 1988.

2) Data sources: Robert Shiller online data, MSCI and OECD.

The Forecasts

These are long term forecasts with a horizon of 10 years. These forecasts are intended to provide a framework and guide investors around strategic equity allocations. They are not intended for those seeking to time markets or obtain short- to medium-term returns, as short-term forecasts are unreliable and difficult to forecast. The forecasts are presented as real local, total annualized returns and are presented as a guide only.

United States - Forecasts Based on the S&P 500 Index

The CAPE Ratio for the United States is 30.3 and remains somewhat elevated compared with historical levels, but it is nowhere near its peak in the early 2000 Nasdaq bubble of 44. The CAPE Ratio is used as the key input for the forecasting methods. The expected 10-year annualized total returns are 4.4% as of the end of this quarter and this is similar to the last quarter. Price returns for the S&P 500 are again expected to be in the 2.3% range; here we subtract the average dividends over the last 10 years. As noted earlier, interest rates are extremely low, and this should be considered in the forecasts. We do this by examining excess equity returns over bonds and regressing on both the CAPE Ratio and the level of interest rates. With this approach we find that the expected 10-year excess equity returns over bonds are 2.8%.

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 expect higher returns than forecast if value factor performs.

UNITED STATES FORECAST RETURNS

EXPECTED RETURNS

Forecast Total Return	4.4%
Forecast Price Return	2.3%
Forecast Excess Return (Equity over Bonds)	2.8%

Historical CAPE Ratio - United States:



Europe - Forecasts Based on the MSCI Europe Index

The CAPE Ratio for Europe is 22.2 and is around the average range seen over the last three decades. The CAPE Ratio is used as the key input for the forecasting methods.

The expected 10-year annualized local total return is 5.2% as of the end of this quarter when the CAPE Ratio is used. Price returns for the MSCI European Price Return Index are forecast to just be 1.8%, when we subtract the current dividend yield and assume this holds true for the next 10 years.

As some key interest rates are negative in Europe, again this should be considered in the forecasts, and we have incorporated this fact. We find that the expected local 10-year excess equity returns over bonds are 5.9%. A value-based index such as the Shiller Barclays CAPE Family of Indices may expect higher returns than forecast if the value factor performs and if the index is held over the long term.

EUROPE FORECAST RETURNS

EXPECTED RETURNS

Forecast Total Return	5.2%
Forecast Price Return	1.8%
Forecast Excess Return (Equity over Bonds)	5.9%

Historical CAPE Ratio - Europe:



Japan - Forecasts Based on the MSCI Japan Index

The CAPE Ratio for Japan is 21.7 and is somewhat lower than the average levels seen over the last three decades; note this period includes the expansionary period that Japan experienced in the late 1980s. As usual, the CAPE Ratio is used as the key input for the forecasting methods.

The expected 10-year annualized local total return is 8.2% as of the end of this quarter. Local price returns for the MSCI Japan Price Return Index are forecast to be 5.9% when we subtract the current dividend yield and assume this holds true for the next 10 years.

As in Europe, key interest rates are negative in Japan, and we find that expected 10-year local excess equity returns over bonds are 8.5% when forecasting on both the CAPE Ratio and interest rates. A value-based index such as the Shiller Barclays CAPE Family of Indices may expect higher returns than forecast if the value factor performs and if the index is held over the long term.

JAPAN FORECAST RETURNS

EXPECTED RETURNS

Forecast Total Return	8.2%
Forecast Price Return	5.9%
Forecast Excess Return (Equity over Bonds)	8.5%

Historical CAPE Ratio - Japan:



Approach to Forecasting

We outline our approach to forecasting in this section. Firstly, we predict expected returns based on the CAPE Ratio, as developed by Robert J Shiller and Jonathan Campbell in their seminal paper "Stock Prices, Earnings and Expected Dividends." To generate the forecast, we take the prevailing CAPE level and regress this against long term data sets and project returns based on the line of best fit.

Given that interest rates are usually low by historical standards, we also produce another forecast of excess equity returns over bonds where we account for real excess equity returns, the CAPE Ratio as well as the prevailing level of interest rates. We do this by generating a time series of 10-year excess equity returns by subtracting real equity 10-year total returns from 10-year real bond returns. We then consider both the CAPE Ratio and the level of interest rates in our regressions to account for the current low interest rates. Some commentary has noted that higher CAPE Ratios may be justified by low rates. Given the low level of interest rates, this is an important facet to consider.

Professor Shiller noted that returns are influenced both by the CAPE and by an estimated real long-term interest rate in the 3rd Edition of Irrational Exuberance.

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