VALUATION AND EXPECTED RETURN

Alex Rivas
Investment Analyst, Global Asset Allocation Team

FEBRUARY 2019

Valuation can be one of the best indicators of future returns, and Robert Shiller's classic Cyclically Adjusted P/E (CAPE) ratio is a popular measure of valuation in the equity markets. High CAPE values have historically corresponded to high prices (per earnings), signaling an expensive market which may be overheated and vulnerable to a correction. Conversely, low levels of CAPE signal a cheap market with assets at bargain prices and a potential runway for upward moves. Do the current high levels of CAPE call for gloomy times ahead? We review Shiller's valuation approach and introduce an alternative to help answer this question.

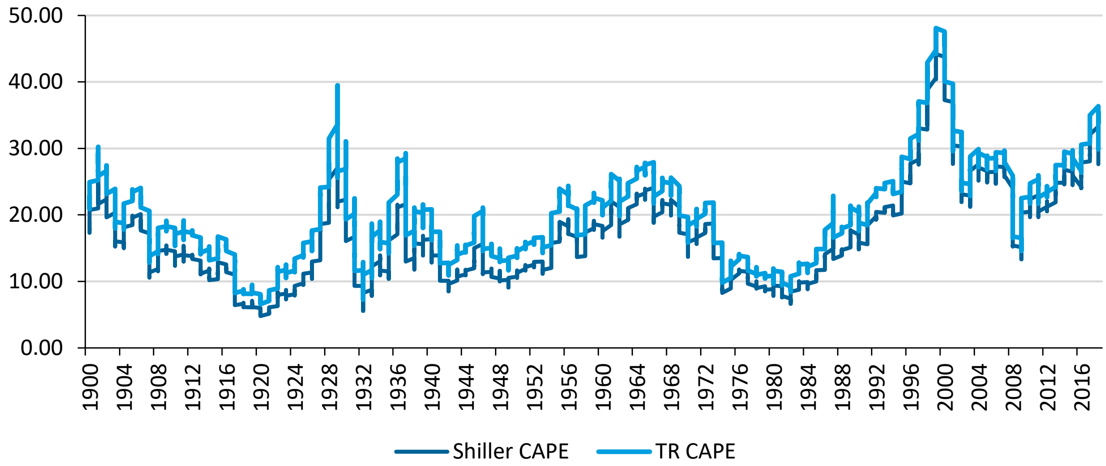
Classic Cape Ratio and Its Recent Update

Shiller first introduced his CAPE ratio as an improved measure of valuation. Prior to its introduction PE ratios were generally based on the trailing 12-months of earnings and so susceptible to a brief period of earning volatility. Shiller sought to smooth out earnings fluctuations by expanding his lookback on earnings to 10-years. By averaging the historical earnings in the denominator, the CAPE ratio aims to smooth variations across business cycles. Specifically, CAPE is computed using the latest price (P) and the median level of earnings over the past 10-years (E). In other words, valuation is determined by comparing a company's current market price to its inflation-adjusted historical earnings record. In presenting his new approach, Shiller was able to demonstrate that 10-year CAPE was correlated to equity returns over the following 20 years.

In 2018, Shiller introduced an alternative version of CAPE: Total Return CAPE (TR CAPE). This ratio aimed to incorporate recent changes in corporate payout policy in which firms increasingly used share repurchases rather than issuing dividends. In the TR CAPE approach, dividends are reinvested into the price index and EPS (earnings per share) is scaled appropriately.

Note in exhibit 1 below that Shiller's Total Return CAPE commonly has a higher valuation than his classic CAPE.

Exhibit 1: Historical S&P 500 Index P/E Ratios



Source: Columbia Threadneedle Investments as of December 31, 2018 based on S&P 500 Index data.

An alternative to Shiller's classic CAPE ratio

In our own work, we employ a measure of CAPE that uses a slightly shorter 7-year window when evaluating the median earnings in the PE ratio. Using the shorter period of earnings data creates a faster moving signal; while Shiller showed his 10-year CAPE was correlated to 20-year forward returns, we believe that the 7-year period may be better for forecasting shorter duration forward returns. Additionally, the 7-year look-back appears to fit better across business cycles, which the National Bureau of Economics estimates last about 70 months on average (since 1945).

Using a 7-year CAPE, we can see (in exhibit 2) that 2018 ended at a level of 25.6, which is at the 59th percentile (looking back over the past 40 years) v. the 81st percentile derived from more classic methods of calculation; a much lower measure of relative valuation is derived using the alternative calculation methodology.

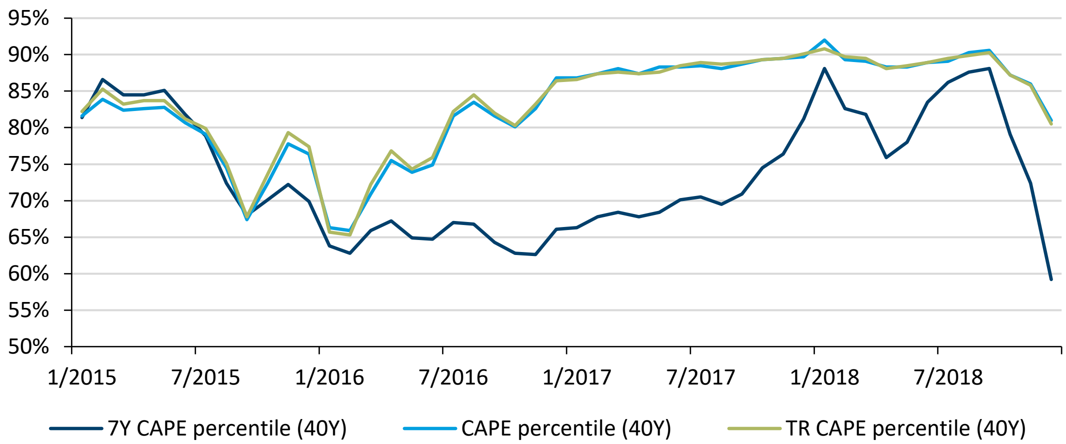
Exhibit 2: CAPE Valuation Varies by Methodology

Valuation Measure	12/31/2018 level	12/31 Percentile Rank
7Y CAPE	25.6	59%
10Y CAPE	27.6	81%
TR CAPE	29.8	81%

Source: Columbia Threadneedle Investments as of December 31, 2018 based on S&P 500 Index data for the period 12/31/1978 – 12/31/2018.

By all measures, CAPE fell at the end of 2018, but the 7-year calculation was significantly lower in the fourth quarter relative to its prior 2018 performance (exhibit 3). This is due to the fact that the 7-year number no longer includes the global financial crisis – an example of the modified methodology's "faster" signal.

Exhibit 3: 7-Year CAPE Valuation Was Significantly Lower Than Traditional Methodologies in 2018



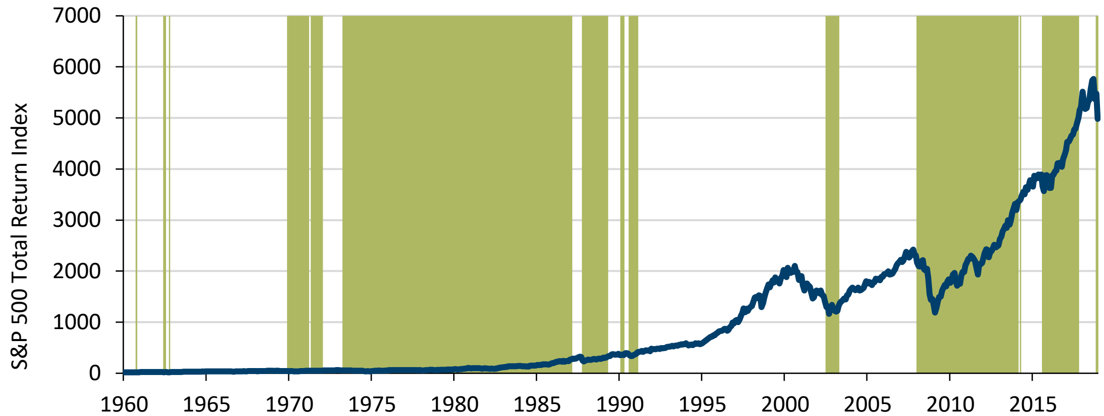
Source: Columbia Threadneedle Investments as of December 31, 2018 based on S&P 500 Index data for the period 12/31/1978 – 12/31/2018.

How Investors Can Use the CAPE Ratio in the Allocation Process

Although Shiller himself has been adamant that the CAPE ratio is not intended as a tool for timing entry and exit into the markets or as an indicator of an impending equity market crashes, many equity pullbacks have followed periods of high CAPE values. Robert Shiller said in 2014, regarding high levels of CAPE that "the CAPE was never intended to indicate timing on when to buy and sell… the market could remain at [high] valuations for years. But given that this is an "unusual period," investors should be asking questions."

Investors commonly use relative levels of CAPE to forecast the price fragility of the market. A drop (or correction) in CAPE is usually driven by drops in price (the numerator). Because we are assuming CAPE is mean reverting, a high CAPE could call for a contraction (i.e., a correction in CAPE and prices). For example, an investor may set valuations above the 75th percentile to represent expensive market conditions and those below the 75th percentile as normal or cheap market conditions. Using this premise, we show the cumulative performance of the S&P 500 index in periods of low/moderate valuation (shaded in green) and periods of high valuation (exhibit 4).

Exhibit 4: S&P 500 Cumulative Return During Valuation Regimes



Source: Columbia Threadneedle Investments as of December 31, 2018

A summary of stock and bond returns in these two regimes is presented in exhibit 5. On average, stocks perform 2x better in periods of low/moderate valuation vs periods of high valuation (using the top 25% as the divider).

Exhibit 5: Average Returns During Valuation Regimes

CAPE 7-year Percentile	Average returns		Median Duration (Months)
	U. S. Stocks	U. S. Bonds	
≥75% (≥ 28.2)	8.30%	6.70%	7
<75% (< 28.2)	17.10%	8.10%	41

Source: Columbia Threadneedle Investments as of December 31, 2018. U.S. Stocks are represented by the S&P 500 index. U.S. Bonds are represented by the Bloomberg/Barclays US Aggregate index. Based on data for the period 12/31/1978 – 12/31/2018.

To review the relationship between CAPE ratios and expected returns in more detail, a simple quintile study can be performed. Here, levels of CAPE for the 1960-2018 period are split amongst 5 groups (<20%, 20-40%, 40-60%, 60-80%, >80%). Exhibit 6 highlights the inverse relationship between CAPE levels and expected one-year returns for US stocks and bonds. Note that the expected one-year return for stocks does not necessarily crash at the highest quintile, but they do see their worst returns at high valuations; equally of note, bonds tend to outperform stocks during periods of the highest CAPE ratios.

Exhibit 6: Expected One-Year Return During Valuation Regimes

CAPE 7 Year Percentile Ranges (Levels)	Expected One-Year Return	
	Stocks	Bonds
80% - 100% (> 28.8)	3.10%	6.30%
60% -80% (25.7 - 28.8)	7.60%	4.30%
40% - 60% (21.7 - 25.7)	7.80%	7.40%
20% - 40% (16.2 - 21.7)	13.10%	8.70%
0% - 20% (≤ 11.14)	18.70%	11.80%

Source: Columbia Threadneedle Investments as of December 31, 2018. Stocks are represented by the S&P 500 index. U.S. Bonds are represented by the Bloomberg/Barclays US Aggregate index. Based on data for the period 12/31/1978 – 12/31/2018.

The relationship between valuations and returns can also be seen in international markets.

Exhibit 7: Expected One-Year Return During Valuation Regimes

CAPE 7-year Percentile Ranges (Levels)	Expected One-Year Returns			
	U.S. Stocks	U.S. Bonds	Global Stocks	Global Bonds
80% - 100% (> 28.8)	3.10%	6.30%	2.90%	4.90%
60% -80% (25.7 - 28.8)	7.60%	4.30%	5.80%	4.90%
40% - 60% (21.7 - 25.7)	7.80%	7.40%	5.00%	7.60%
20% - 40% (16.2 - 21.7)	13.10%	8.70%	14.80%	9.90%
0% - 20% (≤ 11.14)	18.70%	11.80%	15.10%	10.20%

Source: Columbia Threadneedle Investments as of December 31, 2018. US Stocks are represented using the S&P 500 total return index. US Bonds are represented using the Bloomberg/Barclays US Aggregate index. Global Stocks are represented using the MSCI All Country World index (ACWI) Global Bonds are represented using the Bloomberg/Barclays Global Aggregate index. Based on data for the period 12/31/1978 – 12/31/2018.

Considering this data, is there an argument to made for employing valuations as a tool for determining exposures, despite Shiller's admonition? Certainly, a reliable indicator for a defensive equity/on-off approach would be enticing as investors consider higher volatility. Ultimately, however, we support Shiller's view that using CAPE for timing the market may be a bad idea. However, we see some value in the information CAPE provides and it may complement other indicators and signals and investor may use.

A common trading strategy involving CAPE valuations rotates between defensive equity sectors and non-defensive equity sectors, which tend to be stable or outperformers during periods of economic contraction, and pro-cyclical sectors, which tend to follow the ups and downs of the overall economy. Using the CAPE ratio, an investor may choose to rotate towards defensive stocks during periods of contractions and rotate towards pro-cyclical stocks otherwise. Applying a quintile study yields the results shown in exhibit 7. As noted, defensive stocks outperform pro-cyclical stocks during periods of highest valuation.

Exhibit 7: Expected Returns for Sectors Vary by CAPE Regime

CAPE 7-year Percentile Ranges (Levels)	Expected -Year Returns	
	Defensive Equity sectors	Cyclical Equity sectors
80% - 100% (> 28.8)	0.60%	-0.70%
60% -80% (25.7 - 28.8)	1.10%	4.90%
40% - 60% (21.7 - 25.7)	3.60%	10.10%
20% - 40% (16.2 - 21.7)	3.80%	14.70%
0% - 20% (≤ 11.14)	8.00%	32.20%

Source: Columbia Threadneedle Investments as of December 31, 2018. US stocks are represented by the S&P 500 index. Based on data for the period 12/31/1978 – 12/31/2018.

We believe that the comparison of 7-year CAPE and 1-year forward returns yields valuable observations, especially at the extremes. 7-year CAPE may help investors rotate between stocks and bonds, both domestic and internationally, and between sectors. CAPE alone (regardless of methodology) may not work as a timing tool, but the measure may help investors identify potentially dangerous times ahead. Looking at the 7-year CAPE, the Q4 2018 correction in US equity markets was significant in driving down valuation (down to the 59th percentile). Thus, based on valuation using a 7-year CAPE, equity markets still have room for prices to rise.

Past performance does not guarantee future results. It is not possible to invest in an index. Important note: Charts are for illustrative purposes only and is not intended to represent any investment product.

The illustrations here are not intended to be representative of the performance of any particular investment. Such information has inherent limitations and may not be indicative of future results. It is important to keep in mind that no formula, model or tool can in and of itself be used to determine which securities to buy or sell, or when to buy or sell them.

The views expressed are as of the date given, may change as market or other conditions change and may differ from views expressed by other Columbia Management Investment Advisers, LLC (CMIA) associates or affiliates. Actual investments or investment decisions made by CMIA and its affiliates, whether for its own account or on behalf of clients, may not necessarily reflect the views expressed. This information is not intended to provide investment advice and does not take into consideration individual investor circumstances. Investment decisions should always be made based on an investor's specific financial needs, objectives, goals, time horizon and risk tolerance. Asset classes described may not be suitable for all investors. Since economic and market conditions change frequently, there can be no assurance that the trends described here will continue or that any forecasts are accurate. Information provided by third parties is deemed to be reliable but may be derived using methodologies or techniques that are proprietary or specific to the third-party source.

This document and the information contained herein is for informational purposes only and should not be considered a solicitation or offer of any investment product or service to any person in any jurisdiction where such solicitation or offer would be unlawful.

columbiathreadneedle.com

Columbia Threadneedle Investments (Columbia Threadneedle) is the global brand name of the Columbia and Threadneedle group of companies.

Columbia Management Investment Advisers, LLC is an investment adviser registered with the U.S. Securities and Exchange Commission.