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RESEARCH

CAPE Fear: Should Investors Be Concerned With Market Valuations?

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Investors often look for signals indicating whether it's a good time to get into or out of the market. Market valuation measures, such as the cyclically adjusted price-to-earnings (CAPE) ratio[1] of Campbell and Shiller (1998), are frequently portrayed as indicators to assess whether the stock market's expected return has increased or decreased. Despite the attention market valuation measures continue to receive, we do not observe compelling evidence these indicators are useful for investors' asset allocation decisions.

WHAT'S IN A VALUATION RATIO

Theoretical and empirical research has documented that valuation ratios have information about differences in expected returns across stocks. For example, we observe a value premium when sorting stocks on price-to-book ratios. Ample evidence suggests emphasizing stocks with low price-to-book ratios has been a reliable approach for investors seeking outperformance vs. the market over the long haul.[2]

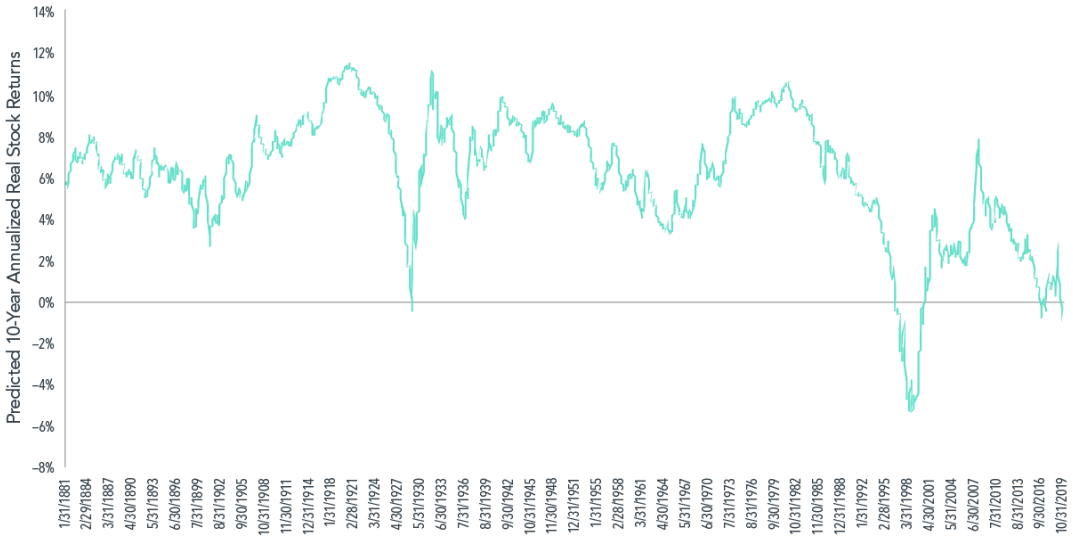
So, if differences in valuation ratios are useful in identifying differences in expected returns across stocks, why are they not useful for timing the equity premium? To answer this, we can start with what price changes convey. A stock's price represents the value of a company's expected future cash flows discounted back to the present. So low valuations can result from low expectations of future cash flows, high discount rates, or a mix of the two.

If the market's aggregate price-to-book level increases due to a decrease in discount rates, the implication is lower expected returns going forward. However, it's not possible to cleanly isolate cash flow and discount rate effects from the data. This poses a major challenge to identifying changes in expected returns using valuation measures.

Despite this hurdle, some studies assert that long-horizon returns are predictable based on current market valuations. One such valuation measure, the CAPE ratio, has historically been negatively correlated with stock market returns. For example, a regression of 10-year US real stock returns on the CAPE ratio using data from 1871–2020 produces a slope coefficient of –0.004. This implies a 0.04% drop in the expected 10-year real return for every 0.1 increase in the CAPE ratio.

Exhibit 1 shows the CAPE's 10-year real return prediction[3] through time, from 1871 through 2020. Recent fanfare around market valuations would seem to be merited by the current CAPE level, which portends a negative annualized real return for the next decade. But the CAPE's negative return prediction as of January 2018 is off to a rough start considering the first 3.5 years (through June 2021) delivered an annualized real return of 11.75%.[4]

Exhibit 1
Anyone's Guess
CAPE ratio and predicted 10-year real stock return, 1871–2020



Past performance, including hypothetical performance, is no guarantee of future results.

The predicted 10-Year annualized real stock return is estimated from the regression intercept (α) and slope coefficient (β) of past 10-year annualized real returns on the CAPE ratio. Regression results are based on rolling 10-year windows using monthly data. Rolling multiyear periods overlap. The sample period is January 1871 to December 2020. Data for regressions of real returns on CAPE ratio are from Robert Shiller's website, available at ***www.econ.yale.edu/~shiller/data.htm.***

While actual returns are uncertain, it is unlikely the expected return of the stock market can be negative. Investors bear greater risk for holding equities than fixed income and must demand a premium for doing so. Market valuations, therefore, may be used by investors to make asset allocation changes when this premium has become relatively high or low. But even this application is questionable. Experiments linking valuations and market returns typically test variation in *realized* equity premiums. Investment decisions, on the other hand, should be made using *expected* equity premiums, and stock returns are simply too volatile to precisely estimate expected premiums from realized premiums.

To demonstrate the level of noise in realized returns, take, for example, the US equity premium,[5] which averaged a robust 8.7% per year from 1927 to 2020. However, the standard error of this average was 2.1%. This implies the true expected premium probably falls somewhere between 4.5% and 12.9%. Observed equity premiums within that range, even if differing from the long-term average, would not support a hypothesis that the equity premium had changed. So, while expected stock returns likely do vary through time, it is doubtful we can reliably tell from the data.

WHAT'S IN IT FOR INVESTORS?

Even if we cast aside reservations about estimating expected returns,[6] there remains the question of how relevant long-term equity premium estimates are to investors making asset allocation decisions at shorter intervals. In this context, it is not enough for an indicator, such as the CAPE ratio, to be correlated with future returns; it must explain enough of the variation in future returns to enable market timing at a success rate greater than a simple coin flip (50%).

Davis (2015) examines this issue by first establishing the threshold for explanatory power in returns required to attain sufficiently high success rates in market timing. Through a series of bootstrap simulations, Davis finds that an R^2 of 90% from a regression of 10-year returns on a timing rule that dynamically adjusts asset allocations on an annual basis produces a success rate of just 52%. By comparison, a regression of 10-year US real stock returns on the CAPE ratio[7] using data from 1871– 2020 produces an R^2 of just 29%, which according to Davis (2015) implies a market timing signal with about an 18% chance of outperforming a buy-and-hold approach! Further studies on timing with valuation ratios[8] paint a pessimistic picture for investors, and market timing based on these signals may increase return volatility and add unnecessary uncertainty to an investor's experience.[9]

A CAUTIONARY TALE

Estimating an asset's expected return is a difficult task—sufficiently difficult that Merton (1980) says, "to estimate the expected return on the market is to embark on a fool's errand." Whether the effort is a worthwhile endeavor depends on what an investor chooses to do with the information.

Overall, the evidence does not support making asset allocation decisions based on return forecasts. Increasing performance through market timing requires forecasting when the equity premium will be negative. Of course, in equilibrium, the expected equity premium should always be positive. Evaluated through this lens, investors are likely best served by maintaining an asset allocation consistent with their goals, needs, and risk tolerance, rather than forecasting returns.

Where estimates of expected returns may be useful is in evaluating progress toward financial goals. Capital market assumptions commonly serve as inputs when simulating the range of future outcomes for one's current portfolio. Adjusting the assumed equity return based on current market valuations may provide investors additional insights for the purposes of financial planning decisions. For example, if one assumes today's portfolio will grow at a lower rate because the current CAPE ratio is relatively high, increasing one's savings rate may improve the odds of reaching a future wealth goal.

Market valuation ratios are, therefore, analogous to sundials: They're fine as a rough gauge for the passage of time, but using one as an oven timer may leave you with an inedible casserole.

1. The CAPE ratio is calculated by taking the average of earnings for the past 10 years, adjusted for inflation.
2. See, for example, Fama and French (2015 and 2017).
3. The return prediction is computed as the intercept from the regression plus the slope coefficient multiplied by the CAPE ratio value at each point in time.
4. Annualized real return calculated as the return on the S&P 500 net of change in CPI from January 2018 to June 2021. Data sources from Robert Shiller's website:http://www.econ.yale.edu/~shiller/data.htm
5. Defined as the return difference between the Fama/French Total US Market Index and one-month Treasury bills. Returns provided by Ken French, available at mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html
6. See, for example, Boudoukh, Richardson, and Whitelaw (2008) and Welch and Goyal (2008).
7. Data for regression of real returns on CAPE ratios are from Robert Shiller's website, available at www.econ.yale.edu/~shiller/data.htm
8. Dai (2016).
9. Schneller (2017).

GLOSSARY

Asset allocation: The apportionment distribution of assets across various asset classes, often tailored to meet an investor's objectives while considering risk tolerance and investment horizon.

Bootstrap simulations: A bootstrap simulation is a method of analysis that can be used to approximate the probability of certain outcomes by running multiple trial runs, called bootstrapped samples, using historical returns.

Discount rates: The internal rate of return required such that the present value of expected future cash flows earned from a security is equivalent to its current market price.

Equity premium: The return difference between stocks and short-term bills.

Expected return: The percentage increase in value a person may anticipate from an investment based on the level of risk associated with the investment, calculated as the mean value of the probability distribution of possible returns.

Price-to-book ratio: The ratio of a firm's market value to its book value, where market value is computed as price multiplied by shares outstanding and book value is the value of stockholder's equity as reported on a company's balance sheet.

R-squared (R^2): The proportion of the variation in one variable that is explained by another variable.

Real return: The rate of return on an investment after adjusting for inflation.

Standard error: A measure of precision for an estimated value, equivalent to the standard deviation divided by the square root of the number of observations used to compute the estimate.

Value premium: The return difference between stocks with low relative prices (value) and stocks with high relative prices (growth).

INDEX DESCRIPTIONS

Fama/French Total US Market Research Index: January 1927 – December 2020: Fama/French Total US Market Research Factor + One-Month US Treasury Bills. Source: Ken French website. Results shown during periods prior to each index's index inception date do not represent actual returns of the respective index. Other periods selected may have different results, including losses. Backtested index performance is hypothetical and is provided for informational purposes only to indicate historical performance had the index been calculated over the relevant time periods. Backtested performance results assume the reinvestment of dividends and capital gains. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Eugene Fama and Ken French are members of the Board of Directors of the general partner of, and provide consulting services to, Dimensional Fund Advisors LP.

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