Bear Beta

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Overview

Investors naturally prefer to avoid the impact of poor market states and the accompanying portfolio drawdowns. Consequently, intuition and theory suggest that investors' preference for investments that do well during bear markets will be priced at a premium — outperforming during poor market states (and thus providing downside protection) comes at the cost of earning lower average returns over the long term. The authors seek to estimate this tradeoff. They test the performance of stocks over several market cycles and find that stocks that outperform during bear markets indeed also underperform on average over time. The authors identify a new priced risk factor, which they call the bear factor, that is able to predict stock sensitivity to future bear markets and that negatively relates to expected stock returns on average.

Investigation

The authors empirically examine the asset pricing implications of bear market risk using U.S. stocks from January 1996 through August 2015. While previous research has looked into downside risk and protection measures, the authors offer a unique way of measuring and capturing this idea. They first construct a measure of bear market risk using S&P 500 index put options. They then create a bear market portfolio that pays off ($1) when a bear market occurs, defined as a state in which the market excess return is at least 1.5 standard deviations below zero. The idea is to create a portfolio from tradeable securities that pays off in this undesirable state of the world. Since the portfolio is made up of tradeable assets, the price of this downside or bear portfolio can be measured and returns on it calculated. This is a nice feature because the prices reflect any change in the probability of a bear market occurring, whereas previous research would first focus on the existence of a bear market. Since the latter is rare and infrequent, but prices change continuously, this bear market portfolio approach should provide more reliable measures. Armed with the returns of this bear market portfolio, the authors are then able to estimate the sensitivity of individual stocks to bear market risk, what the authors call bear beta, and sort stocks into decile portfolios based on their respective bear beta.

In conducting their analysis, the authors find:

- The bear market portfolio generates, on average, a negative return and negative alpha relative to the CAPM and other standard factor models.
- The negative excess return to high bear beta stocks cannot be explained by standard factor exposures. Including market, book-to-market, size, momentum, illiquidity, profitability, and investment, has little impact on the results.
- Bear beta also appears to have predictive power beyond a one month horizon with the negative relation between the bear beta factor and future stock returns persisting for up to six months into the future.

Conclusions

Investors seek investments that protect on the downside, that is, assets that outperform during bear markets. Intuition and theory suggests that such investments will be priced at a premium — investors must compensate for their outperformance during poor market states by earning low average returns over a full market cycle. The authors empirically test this idea by examining the performance of a subset of stocks investors perceive as providing excess returns in bear market states (high bear beta stocks). Their analyses suggest that these high bear beta stocks, while outperforming when bear market risk increases, earn low average returns over the full test period. This negative relation between bear beta and expected stock returns remains strong after controlling for well-known stock factors such as value and momentum.

Furthermore, the negative relation between bear beta and future stock returns remains strong when the sample is restricted to liquid and large cap stocks, and the return predictability persists for at least six months into the future. Future analysis may consider the link between bear beta and other risk measures such as standard beta, the betting-against-beta factor, and other measures of downside risk.

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