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Value at Risk and Expected Stock Returns

Turan G. Bali & Nusret Cakici

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Abstract

Stock size, liquidity, and value at risk (VAR) can explain the cross-sectional variation in expected returns, but market beta and total volatility have almost no power to capture the cross rong positive t investm tional regressi t the empirica 5 size/book-to-marke er the characte controlled for.

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Using monthly and annual regressions, we provide evidence that size, liquidity, and VAR could capture the cross-sectional variation in expected returns of NYSE, Amex, and Nasdaq stocks for the period January 1963 to December 2001. Furthermore, we show that market beta and total volatility have almost no power to explain average stock returns at the individual-stock level. We also compared the relative performance of size, beta, and VAR in explaining the cross-sectional variation in portfolio returns. The results show that all the risk factors considered in the article can capture the cross-sectional differences in portfolio returns but that VAR has the best performance in terms of R^2 values. The strong positive relationship between stock (or portfolio) returns and VAR turns out to be robust over various investment horizons and loss-probability levels.

In addition to using cross-sectional regressions in an asset-pricing framework, we also used time-series regressions to evaluate the empirical performance of VAR at the portfolio level. To mimic the risk factor in returns related to VAR, we devised an alternative factor, HVARL, the difference between the simple average of the high-VAR portfolio returns and the low-VAR portfolio returns. Using 25 portfolios, we investigated the relative performance of total volatility, VAR, and liquidity in terms of their ability to capture time-series variation in stock returns. When we regressed monthly returns for a stock portfolio on the returns for portfolios based on market return, company size, the book-to-market ratio, liquidity, and VAR, we found that VAR can capture substantial time-series variation in stock returns and provide additional explanatory power even after the
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markets during ordinary periods. Neither the variance nor the standard deviation,

however, can yield an accurate characterization of actual portfolio risk during highly volatile periods. Therefore, the set of mean–variance-efficient portfolios may lead to an inefficient strategy for maximizing expected portfolio return while minimizing risk. Our findings suggest a new approach to optimal portfolio selection in a VAR framework. A mean–VAR approach can be introduced to allocate financial assets by maximizing the expected value of some utility function approximated by the expected return and VAR of the portfolio, as well as the investor's aversion to VAR.

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