

Variance Risk in Aggregate Stock Returns and Time-Varying Return Predictability

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ABSTRACT

This paper introduces a new out-of-sample forecasting methodology for asset returns using the variance risk premium (VRP). While Bollerslev, Tauchen, and Zhou (2009) demonstrate that the VRP predicts market returns up to six months, I show that the out-of-sample performance is comparably weak. In contrast, my new approach produces an out-of-sample forecast that is both highly statistically and economically significant. Specifically, I find a monthly out-of-sample R-squared of 8% and a trading strategy that produces a 0.1 gain in the annual Sharpe ratio. This new approach is motivated by the ‘beta representation,’ which implies that the market risk premium is related to the price of variance risk by the exposure to variance risk (beta). Hence, empirically, when the slope of the contemporaneous regression of market returns on variance innovation is larger, future returns are more sharply related to the current VRP. Also, when variance shocks explain a greater fraction of market returns, the predictions are more accurate. Furthermore, these results are extendable to the cross-section of exchange rates. The VRP of the S&P 500 Index only predicts returns of currencies that are highly correlated with changes in market variance. For those currencies, the new methodology offers considerable improvements in out-of-sample performance. These results suggest that the variance risk exposure is a key factor that determines whether and how returns are predictable by the VRP.

JEL classification: G10, G11, G12, G15 and G17.

Keywords: Variance Risk Premium, Leverage Effect, Return Predictability, Beta Representation

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