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From Risk-On to Risk-Off: The role of VIX and VVIX In Shaping Equity Market Behavior

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Abstract

Recent observations in asset market pricing reveal anomalies in the relationship between return and risk. This paper explores the potential role of uncertainty as a missing factor that could clarify this relationship. Unlike risk, which is quantifiable, uncertainty is often perceived as unmeasurable, making its effects on market behavior challenging to identify. To address this, we use the VVIX index as a proxy for uncertainty to analyze U.S. equity returns from 2007 to 2024 which includes two turbulent periods: the global financial crisis and the COVID-19 pandemic. Employing a Vector Autoregression (VAR) model, our analysis yields significant results for both periods and the broader timeframe from 2007 to 2024. Additional statistical tests suggest that the VVIX may serve as a predictor for equity returns, as reflected by the SPY ETF. Our findings indicate that both risk and uncertainty jointly influence market sentiment and equity returns. Specifically, when both risk and uncertainty are high, a risk-off sentiment prevails, whereas when both are low, a risk-on sentiment is observed.

Keywords: risk, uncertainty, ambiguity, equity returns, asset pricing, modern portfolio theory