

Dynamic Asset Allocation when Returns Follow a Stochastic Volatility, Jump-Diffusion Process

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This paper considers a robust portfolio rule in continuous-time under uncertainty. A robust control approach is used to characterize and solve the optimal portfolio strategies when asset returns follow a stochastic volatility, jump-diffusion process and investor is considered with a recursive preference over consumption and terminal wealth. As a result, we find that the optimal portfolio allocation depends not only on the intertemporal relation between risk and return, but also on the trade-off between uncertainty and return. The calibrations and simulations indicate that the effects of jumps and stochastic volatility on the portfolio decisions are inherently linked to their impacts on the conditional moments of the asset return. The additional sources of uncertainty due to stochastic volatility and jumps, however, dramatically reduce the portfolio allocation. Eventually, in addition to the risk aversion, the sources of uncertainty, especially the random jumps make investor more pessimistic and therefore more hesitate to participate into the stock markets.

Keywords: dynamic asset allocation, stochastic volatility, jump-diffusion process (SVJD), robust decision-making.

JEL Classification: G12.

Reference:

Anderson, Hansen, Sargent, 2003, A quartet semi-groups for model specification, robustness, prices of risk, and model detection, *European Economic Association*, 1, 68-123.