A S S E T A L L O C A T I O N

Robust Dynamic Asset Allocation With Model Misspecification

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Working Paper

This paper derives the optimal dynamic trading strategy when the investor's model of alpha-decay is misspecified. This robust trading strategy can be computed easily by solving a standard linear quadratic Gaussian dynamic programming problem.

The robust strategy down-weights more persistent signals relative to less-persistent signals, and down-weights signals with high innovation variance. In essence, the strategy puts less weight on signals for which misspecification will hurt the investor the most.

Intuitively, the robust strategy puts a lower bound on the value function, such that it guarantees a certain (risk-adjusted) profit for a certain amount of misspecification. In contrast to the standard single-period robust optimization procedures, the robust control solution presented here takes into account dynamic misspecification of the model.

The author applies the robust dynamic strategy to a standard momentum signal. Across four asset classes including industry indices, international stock indices, commodities, and currencies, the robust strategy generates a higher alpha than a standard rank-weighted momentum strategy.

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