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Title: Portfolios and Risk Premia for the Long Run

Abstract:

The problems of portfolio choice and derivatives pricing are studied in an incomplete market with several risky assets, with investment opportunities driven by, and partially correlated with, economic factors following an ergodic diffusion.

For CRRA utility from terminal wealth, long-run optimal portfolios and their implied risk-premia are derived explicitly in terms of the principal eigenfunction of the generator of the factor process. The principal eigenvalue represents the maximal utility growth rate, and sharp bounds on the finite-horizon performance of long-run strategies are provided.

The calculation of the eigenvector-eigenvalue pair is reduced to the solution of a linear ODE in the case of several assets with one economic factor. Several factors lead to a quasilinear PDE, which can be solved explicitly in special cases.