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Model Selection in Regime-switching Models of Various Types

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Simulated asset returns are used in many areas of actuarial science. For example, life insurers use them to price annuities, life insurance, and investment guarantees. The quality of those simulations has come under increased scrutiny during the current financial crisis. When simulating the asset process, properly choosing which model or models to use, and accounting for your uncertainty in that choice is essential. We investigate how to best choose a model from a flexible set of regime-switching models where the individual regimes are not constrained to be from the same distributional family.