The Wilkie model for financial assets

Background

To the understand financial risk of pension fund investing, we need stochastic asset models that apply over long time horizons. The perhaps most recognized one in actuarial science is due to David Wilkie, who did a huge job in analysing historical data from the twentieth century. A large portion of his model is presented (in re-written form) in Sections 5 and 6 in the chapter on stochastic assets models.

Objective:

You are to present the Wilkie model in a critical light and illustrate its use.

Material:

Principally Section 5 from Chapter 13: "Stochastic asset models". A Wilkie simulation program in R is available on request.

Main points:

The presentation (45 minutes) should cover

- The variables of the model and how they are related.
- How the model is simulated
- Mean annual returns for the assets and their correlation matrix
- The same for real returns
- Ten year returns (both real and nominal) of
  - a pure equity portfolio
  - a pure money market portfolio with a mixture of short and long bonds.