Modelling Long-range Financial Data

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The talk will be on the modelling of long-range financial assets as typified by the Standard and Poor's daily returns over 80 years. The basic model is $R(t) = \Sigma(t)Z(t)$ with Z a standard Gaussian white-noise process. The volatility $\Sigma(t)$ will be modelled non-parametrically by specifying a universal, honest and non-asymptotic α–approximation region and then regularizing within this region. The regularization chosen is to consider piecewise constant volatilities and then to minimize the number of intervals of constancy. This opens up the possibility of modelling the log-volatility by a stationary Gaussian process. Together with information on the sojourn times this makes it seem plausible that the daily returns of the Standard and Poor's index can indeed by modelled by a stationary process. This is in contrast to most analyses of the data which conclude that it is only locally stationary.

References

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