Futures returns display a very noisy behavior. As the example in the graph shows, it is difficult to detect any structure in the direction of change.
The autocorrelations of futures returns display the characteristic behavior of a process with no memory. Most of the sample values, 95% or more, fall inside the 95% confidence bands constructed under the null of an uncorrelated process.
Futures volatility series display an unmistakable memory structure, with long nonperiodic waves characteristic of a long-memory process. Periods of high volatility are likely to be followed by periods of high volatility and periods of low volatility by periods of low volatility.
The series of futures volatilities display significant positive autocorrelations at high lags with a slow hyperbolic decay characteristic of long-memory processes. Even at lags of order 200, most autocorrelations are significant and positive. The graph shows the theoretical autocorrelation function given by the LMSV model (the smooth line) superimposed on the sample estimates. There is a remarkable consonance between the model and the sample values.