

## **Financial markets with a memory**

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We present general conditions for the weak convergence of a discrete-time additive scheme to a stochastic process with memory in the space  $D[0, T]$ . Then we investigate the convergence of the related multiplicative scheme to a process that can be interpreted as an asset price with memory. As an example, we study an additive scheme that converges to fractional Brownian motion, which is based on the Cholesky decomposition of its covariance matrix. The second example is a scheme converging to the Riemann–Liouville fractional Brownian motion. The multiplicative counterparts for these two schemes are also considered. As an auxiliary result of independent interest, we obtain sufficient conditions for monotonicity along diagonals in the Cholesky decomposition of the covariance matrix of a stationary Gaussian process.