

Appendix A

Functions catalogue

Table A.1: R functions dealing with options and time series

Function name	Arguments	Purpose
bsm_call	$\{S(0), T, k, r, \sigma\}$	Compute the BSM price of an option
mjd_call	$\{S(0), T, k, r, \lambda, \mu, \delta\sigma\}$	Compute the Merton price of an option
hsv_call	$\{S(0), T, k, r, V(0), \theta, \kappa, \sigma, \rho\}$	Compute the heston price of an option
bsm_delta	$\{S(0), T, k, r, \sigma\}$	Compute the BSM delta of an option
mjd_delta	$\{S(0), T, k, r, \lambda, \mu, \delta\sigma\}$	Compute the Merton delta of an option
hsv_delta	$\{S(0), T, k, r, V(0), \theta, \kappa, \sigma, \rho\}$	Compute the heston delta of an option
bsm_gamma	$\{S(0), T, k, r, \sigma\}$	Compute the BSM gamma of an option
mjd_gamma	$\{S(0), T, k, r, \lambda, \mu, \delta\sigma\}$	Compute the Merton gamma of an option
hsv_gamma	$\{S(0), T, k, r, V(0), \theta, \kappa, \sigma, \rho\}$	Compute the heston gamma of an option
bsm_theta	$\{S(0), T, k, r, \sigma\}$	Compute the BSM theta of an option
mjd_theta	$\{S(0), T, k, r, \lambda, \mu, \delta\sigma\}$	Compute the Merton theta of an option
hsv_theta	$\{S(0), T, k, r, V(0), \theta, \kappa, \sigma, \rho\}$	Compute the heston theta of an option
bsm_ts	$\{S(0), T, \sigma, \alpha, dt\}$	Simulate BSM time series (GBM)
mjd_ts	$\{S(0), T, \sigma, \alpha, \lambda, \mu, \delta dt\}$	Simulate MJD time series
hsv_ts	$\{S(0), T, V(0), \alpha, \rho, \kappa, \theta, \sigma, dt\}$	Simulate HSV time series