Source | Model | Option
| Model_Option | Help on ap methods | Archived Tests

ap_fixedasian_milevskyposner

Output parameters:

- Price
- Delta

Description: Fixed Asian options are priced with Milevsky-Posner method that uses the reciprocal gamma density fitting the first two moments of the arithmetic average.[1]
/*Scaling of the parameters*/
/* Computation of the first two moments */

/* Fit the parameters a,b of of reciprocal gamma */

/*Integrate, using the Laguerre quadrature, the payoff function of Put option */
/* Put Price */

Taking the Put price formula from [1].

/* Call Price from Parity*/

Simple calculuous give the call-put parity relationship

$C_{T,t}(K) = P_{T,t}(K) - K * \exp(-r * (T-t)) + S(t) * \exp(-r * (T-t)) * (\exp(-(r - divid) * (T-t)) - 1) * \frac{1}{(T-t)*(r-divid)}$
/*Delta for Put option*/

Here we derive the delta using the numerical integration

/*Delta for call option*/

We use again the call-put parity relation

$\Delta_C = \Delta_P + \exp(-r*(T-t))*(\exp(-(r-divid)*(T-t))-1)*\frac{1}{(T-t)*(r-divid)}$
/*Price*/
/*Delta */

References

[1] M.A.MILEVSKY S.E.POSNER. Asian options,the sum of lognormals and the reciprocal gamma distribution. *J.Of Financial and Quantitative Analysis*, 3:409–422, September 1998. 1