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fd_cryer

References

Input parameters:

- SpaceStepNumber N
- TimeStepNumber M

Output parameters:

- Price
- Delta

This is a direct method for solving LCP with tridiagonal Minkowski matrix.

/*Time Step/*
Define the time step $k = \dfrac{T}{N}$.

/*Space localisation/*
Define the integration domain $D = [-l, l]$ using inequality there.

/*Space Step/*
Define the space step $h = \dfrac{2l}{M}$.
At each time, we have to solve the linear complementarity problem cf. there

/*Peclet Condition*/
If $|r - \delta| / \sigma^2$ is not small, then a more stable finite difference approximation is used. there.

/*Lhs factor of implicit scheme/*
Initialize the matrix N issued from the totally implicit method there

/*Terminal value/*
Put the value of the payoff saved in *Obst* into a vector P which will be used to save the option value.

/*Finite difference Cycle/*
At any time step, described by the loop in the variable *TimeIndex*, we have to solve the linear complementarity problem

/*Algorithm of Cryer*/
Computation of the solution of LCP

$$\begin{cases} W = MZ + V \\ W \geq 0, \quad Z \geq 0 \\ (W, Z) = 0 \end{cases} \tag{1}$$

cf. there

/*Price*/

/*Delta*/

/*Memory Desallocation*/