

Help

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#if defined(PremiaCurrentVersion) && PremiaCurrentVersion <
    (2007+2) //The "#else" part of the code will be freely av
    ailable after the (year of creation of this file + 2)
#else

#ifndef TreeLRS1D_H_INCLUDED
#define TreeLRS1D_H_INCLUDED

#include "pnl/pnl_vector.h"
#include "math/read_market_zc/InitialYieldCurve.h"

//*****TreeLRS1D structure*****
///
typedef struct TreeLRS1D
{
    double Tf;           // Final time of the tree, dt=Tf/Ng
    rid
    int Ngrid;           // Number of time step in the Tre
    eLRS1D

    PnlVect *t;          // Time step grid, from t[0] to T[
    Ngrid].

    PnlVect *phi;

} TreeLRS1D;

//***** Datas specific to Hull and White *****
*****///
typedef struct ModelLRS1D
{
    double Sigma;
    double Rho;
    double Kappa;
    double Lambda;

} ModelLRS1D;

//***** Fonctions relatives a la construction de l'arbr
e *****///

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int SetTimegridCapLRS1D(TreeLRS1D *Meth, int NtY, double
    current_date, double T0, double S0, double periodicity);

//Construction of the time grid
int SetTimegridZCbondLRS1D(TreeLRS1D *Meth, int n, double
    current_date, double T, double S);

// Construction of the time grid
int SetTimegridLRS1D(TreeLRS1D *Meth, int n, double
    current_date, double T);

void SetTreeLRS1D(TreeLRS1D *Meth, ModellRS1D *ModelParam,
    ZCMarketData *ZCMarket);

double r_to_y(ModelLRS1D *ModelParam, double r);

double y_to_r(ModelLRS1D *ModelParam, double y);

/*Compute m, mean of  $Y=\log(r/\sigma)$ */
double mean(double time, double Y, double Phi, ZCMarketData
    *ZCMarket, ModellRS1D *ModelParam);

void probabilities(double date, double y_ij, double phi_ij,
    double lambda, double sqrt_delta_t, ModellRS1D *ModelPar
    am, ZCMarketData *ZCMarket, PnlVect *proba_from_ij);

int indice(int i, int h);
double phi_value(TreeLRS1D *Meth, int i, int h, int j); //
    i>1 , j=0,1,2
double Interpolation(TreeLRS1D *Meth, int i, int h, PnlVec
    t *OptionPriceVect2, double phi_star);
double MeanPrice(TreeLRS1D *Meth, int i, int h, PnlVect *
    OptionPriceVect2);
int number_phi_in_box(int i, int h);
int index_tree(int i, int h, int j);

int indiceTimeLRS1D(TreeLRS1D *Meth, double s); // To locat
    e the date s inf the tree. t[indiceTimeLRS1D(s)-1]< s <= t[
    indiceTimeLRS1D(s)]

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int DeleteTimegridLRS1D(struct TreeLRS1D *Meth);

int DeleteTreeLRS1D(struct TreeLRS1D *Meth);

#endif // HW2DTREE_H_INCLUDED
#endif //PremiaCurrentVersion
```

References