

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

/// {file cdsmkt.h
/// {brief CDS_NoCorr_MarketData class
/// {author M. Ciuca (MathFi, ENPC)
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    tware license
//
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#ifndef _CDSMKT_H
#define _CDSMKT_H

#include "cirpp.h"
#include "numint.h"
#include "base.h"

// forward declaration
struct DateCreal;

class PConstShortRate
{
public:
    PConstShortRate(string inputFileName, string outputFileN
        ame = "");
    PConstShortRate(vector<double> &RatesMat, vector<double>
        &Rates);
    double ComputeShortRate(double t) const;
    double ComputeZC(double t) const;
    double f0_t(double t) const;
private:
    vector<DateCreal> _curveZC;
    vector<DateCreal> _pConstShortRate;
    string _inputFileName;
    int _dim;
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    void ReadData(string fileName);
    void ReadData(vector<double> &pMat, vector<double> &pRates);
};

struct DateCreal
{
    //public:
    double date;
    double r;
    DateCreal(double _date = 0, double _r = 1):
        date(_date), r(_r)
    {
        if ((date < 0) || (r <= 0))
        {
            throw logic_error("DateCreal Constructor: Incorrect
            input data!");
        }
    }
};

class CDS_NoCorr_MarketData
{
public:
    CDS_NoCorr_MarketData(double Z, vector<double> &timesT,
                          string inputIntensity,
                          string inputZC);

    CDS_NoCorr_MarketData(vector<double> &intensityMat, vector<double> &intensityRates,
                          vector<double> &RatesMat, vector<double> &Rates,
                          double maturity, double period,
                          double recovery);

    double CdsRate()

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{
    return CdsRate(_timesT[_timesT.size() - 1], _periodN);
}
double CdsRate(double &paymentLeg, double &defaultLeg)
{
    return CdsRate(_timesT[_timesT.size() - 1], _periodN,
        paymentLeg, defaultLeg);
}
double CdsRate(double T, int noTi);
double CdsRate(double T, int noTi, double &paymentLeg,
    double &defaultLeg);
double CdsRate(double T, int noTi, double &I1, double &I2
    , double &S);

double MarketZC(double t) const
{
    return _pConstShortRate.ComputeZC(t);
}
double CDS(double T, int noTi, double Rf);

double DP(double t) const
{
    return 1 - exp(-IntegralPLin(t));
}
double GetMaturity()
{
    return _timesT[_timesT.size() - 1];
}
private:
    double _Z;
    vector<DateRate> _pLinIntensity;
    vector<DateRate> _curveZC;
    int _periodN;
    vector<double> _timesT;
    double I1;
    double I2;
    double S;
    PConstShortRate _pConstShortRate;
    void ReadData(vector<DateRate> &data, string fileName);
    void ReadData(vector<DateRate> &data,
        vector<double> &pMat, vector<double> &pRa

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tes);  
void Write(vector<DateRate> &data, string outputFileName)  
;  
double IntegralPLin(double t) const;  
double ComputeIntensity(double t) const;  
  
double f1(double u);  
double f2(double u);  
double f_Sum(int n0, int n) const;  
  
NumInt<CDS_NoCorr_MarketData> numInt;  
};  
  
#endif  
  
#endif //PremiaCurrentVersion
```

References