

Help

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#include "vasicek1d_std.h"

/*Zero Coupon Bond*/
static int zcb_vasicek1d(double r0,double k, double t,
    double sigma,double theta,double T,double *price)
{
    double A,B;

    /*A,B coefficient*/
    B=(1./k)*(1.-exp(-k*(T-t)));
    A=exp((theta-SQR(sigma)/(2.*SQR(k)))*(B-T+t)-(SQR(sigma)/
        (4.*k))*SQR(B));

    /*Price*/
    *price=A*exp(-B*r0);

    return OK;
}

int CALC(CF_ZCBond)(void *Opt,void *Mod,PricingMethod *Met)
{
    TYPEOPT* ptOpt=(TYPEOPT*)Opt;
    TYPEMOD* ptMod=(TYPEMOD*)Mod;

    return zcb_vasicek1d(ptMod->r0.Val.V_PDOUBLE,ptMod->k.Val
        .V_DOUBLE,ptMod->T.Val.V_DATE,ptMod->Sigma.Val.V_PDOUBLE,
        ptMod->theta.Val.V_PDOUBLE,ptOpt->BMaturity.Val.V_DATE,&(
        Met->Res[0].Val.V_DOUBLE));
}

static int CHK_OPT(CF_ZCBond)(void *Opt, void *Mod)
{
    return strcmp( ((Option*)Opt)->Name,"ZeroCouponBond");
}

static int MET(Init)(PricingMethod *Met,Option *Opt)
{
    if ( Met->init == 0)
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    {
        Met->init=1;
    }

    return OK;
}

PricingMethod MET(CF_ZCBond)=
{
    "CF_Vasicek1d_ZCBond",
    {{ " ", PREMIA_NULLTYPE, {0}, FORBID }},
    CALC(CF_ZCBond),
    {{ "Price", DOUBLE, {100}, FORBID }, { " ", PREMIA_NULLTYPE, {0},
        FORBID }},
    CHK_OPT(CF_ZCBond),
    CHK_ok,
    MET(Init)
} ;
```

References