

## Help

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extern "C" {
#include "kou1d_std.h"
}
#include<iostream>
#include<cmath>
#include"math/ap_kou_model/functions.h"

#if defined(PremiaCurrentVersion) && PremiaCurrentVersion < (2008+2) //The "#els
#else
static int Kou_EuAp(double S0, NumFunc_1 *P, double T, double r, double divid,
{
    double K, rebate;
    long double ksi, cst1, cst2, dcst1, dcst2;
    long double *x = new long double[8];

    ksi = p * lambdap / (lambdap - 1) + (1 - p) * lambdam / (lambdam + 1) - 1;
    K = P->Par[0].Val.V_DOUBLE;
    rebate = P->Par[1].Val.V_DOUBLE;
    x[0] = (r - divid) - sigma * sigma / 2 - lambda * ksi;
    x[1] = sigma;
    x[2] = lambda;
    x[3] = p;
    x[4] = lambdap;
    x[5] = lambdam;
    x[6] = log(K / S0);
    x[7] = T;
    cst1 = psiVN(x);
    dcst1 = -dpsiVN(x) / S0;
    /*Digit Case*/
    if ((P->Compute) == &Digit)
    {
        *ptprice = cst1 * exp(-r * T) * rebate;
        *ptdelta = dcst1 * exp(-r * T) * rebate;
        delete [] x;
        return OK;
    }
    /*Call Case*/
else
{
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    x[0] = (r - divid) + sigma * sigma / 2 - lambda * ksi;
    x[2] = lambda * (ksi + 1);
    x[3] = p * lambdap / ((1 + ksi) * (lambdap - 1));
    x[4] = lambdap - 1;
    x[5] = lambdam + 1;
    cst2 = psiVN(x);
    dcst2 = -dpsiVN(x) / S0;
    *ptprice = S0 * exp(-divid * T) * cst2 - K * exp(-r * T) * cst1;
    *ptdelta = exp(-divid * T) * cst2 - exp(-divid * T) * dcst2 + K * exp(-r *
    if ((P->Compute) == &Call)
    {
        delete [] x;
        return OK;
    }

    else if ((P->Compute) == &Put)
    {
        *ptprice += K * exp(-r * T) - S0 * exp(-divid * T);
        *ptdelta -= exp(-divid * T);
        delete [] x;
        return OK;
    }
}
return OK;
}
#endif //PremiaCurrentVersion

extern "C" {
#ifdef PremiaCurrentVersion && PremiaCurrentVersion < (2008+2) //The "#els
    static int CHK_OPT(AP_Kou_Eu)(void *Opt, void *Mod)
    {
        return NONACTIVE;
    }
    int CALC(AP_Kou_Eu)(void *Opt, void *Mod, PricingMethod *Met)
    {
        return AVAILABLE_IN_FULL_PREMIA;
    }
#else
    int CALC(AP_Kou_Eu)(void *Opt, void *Mod, PricingMethod *Met)
    {
        TYPEOPT *ptOpt = (TYPEOPT *)Opt;

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    TYPEMOD *ptMod = (TYPEMOD *)Mod;
    double r, divid;

    r = log(1. + ptMod->R.Val.V_DOUBLE / 100.);
    divid = log(1. + ptMod->Divid.Val.V_DOUBLE / 100.);

    return Kou_EuAp(ptMod->S0.Val.V_PDOUBLE, ptOpt->PayOff.Val.V_NUMFUNC_1, ptO
}

static int CHK_OPT(AP_Kou_Eu)(void *Opt, void *Mod)
{
    if ((strcmp(((Option *)Opt)->Name, "CallEuro") == 0) || (strcmp(((Option *)O
        return OK;

    return WRONG;
}

#endif //PremiaCurrentVersion
static int MET(Init)(PricingMethod *Met, Option *Opt)
{
    return OK;
}

PricingMethod MET(AP_Kou_Eu) =
{
    "AP_Kou_Eu",
    {" ", PREMIA_NULLTYPE, {0}, FORBID}},
    CALC(AP_Kou_Eu),
    {"Price", DOUBLE, {100}, FORBID}, {"Delta", DOUBLE, {100}, FORBID}, {" ", P
    CHK_OPT(AP_Kou_Eu),
    CHK_ok,
    MET(Init)
} ;
}

```