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```
#include "bs1d_pad.h"

static int Floating_CallLookback_GoldmanSosinGat
to(double s, double s_min, double t, double r,
double divid,
double sigma, double *
ptprice, double *ptdelta)
{
double b,sigmasqrt,a1,a2,esp,discount;

if (s_min > s)
{
*ptprice=0.;
*ptdelta=0.;
}
else
{
b=r-divid;
sigmasqrt=sigma*sqrt(t);
a1=(log(s/s_min)+ (b+SQR(sigma)/2.)*t)/si
gmasqrt;
a2=a1-sigmasqrt;
esp=2.*b/SQR(sigma);
discount=exp(-r*t);

if (b == 0.)
{
*ptprice = discount*(s*N(a1) - s_min*N(a2
)) +
s*discount*(sigmasqrt*nd(a1) -
N(-a1)*(SQR(sigma)*t/2.+log(s/s_min)));

*ptdelta = discount*N(a1)*(2.+SQR(sigma)*
t/2.+log(s/s_min)) -
discount*(1.+SQR(sigma)*t/2.+
log(s/s_min)) +
discount*sigmasqrt*nd(a1);

}
else
```

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        {
            *ptprice=s*exp(-divid*t)*N(a1)-s_min*exp(
-r*t)*N(a2)+
                s*exp(-r*t)*(SQR(sigma)/(2.*b))*
                (pow(s/s_min,-esp)*N(-a1+(2.*b/sigma)
*sqrt(t))-exp(b*t)*N(-a1));

            *ptdelta=exp(-divid*t)*N(a1)*(1.+SQR(sig
ma)/(2.*b))+
                exp(-divid*t)*nd(a1)/(sigma*sqrt(t))-
exp(-r*t)*(s_min/s)*nd(a2)/sigmasqrt
                -exp(-divid*t)*SQR(sigma)/(2.*
b)+
                exp(-r*t)*pow(s/s_min,-esp)*N(-a1+2.*
(b/sigma)*sqrt(t))*(SQR(sigma)/(2.*b)-1.);
        }
    }
    return OK;
}

int CALC(CF_Floating_CallLookBack)(void*Opt,void
*Mod,PricingMethod *Met)
{
    TYPEOPT* ptOpt=( TYPEOPT*)Opt;
    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 Floating_CallLookback_GoldmanSosinGat
to(ptMod->S0.Val.V_PDOUBLE,
    (ptOpt->PathDep.Val.V_NUMFUNC_2)->Par[4].
Val.V_PDOUBLE,ptOpt->Maturity.Val.V_DATE-ptMod->T.
Val.V_DATE,
    r,divid,ptMod->Sigma.Val.V_PDOUBLE,&(Met->
Res[0].Val.V_DOUBLE),&(Met->Res[1].Val.V_DOUBLE))
;
}

```

```
int CHK_OPT(CF_Floating_CallLookBack)(void *Opt,
void *Mod)
{
return strcmp( ((Option*)Opt)->Name,"
LookBackCallFloatingEuro");
}

static int MET(Init)(PricingMethod *Met)
{
return OK;
}

PricingMethod MET(CF_Floating_CallLookBack)=
{
"CF_Floating_CallLookBack",
{{" ",END,0,FORBID}}},
CALC(CF_Floating_CallLookBack),
{{"Price",DOUBLE,100,FORBID},{ "Delta",
DOUBLE,100,FORBID} },{" ",END,0,FORBID}},
CHK_OPT(CF_Floating_CallLookBack),
CHK_ok,
MET(Init)
};
```

References