Help

```
#include  "bs1d_pad.h"

static int Fixed_CallLookback_ConzeWiswanathan(double s, double s_max, double k,
    double divid, double sigma, double *ptprice, double *ptdelta)
{
  double  b, sigmasqrt, a1, a2, esp, disc;

  if (s_max < s)
    {
      *ptprice = 0.;
      *ptdelta = 0.;
    }
  else
    {
      b = r - divid;
      sigmasqrt = sigma * sqrt(t);
      esp = 2.*b / SQR(sigma);
      disc = exp(-r * t);

      if (k > s_max)
        {
          a1 = (log(s / k) + (b + SQR(sigma) / 2.) * t) / sigmasqrt;
          a2 = a1 - sigmasqrt;
          if (b == 0)
            {
              *ptprice = s * disc * (1. + SQR(sigma) * t / 2. + log(s / k)) * cd
                         s * disc * sigmasqrt * pnl_normal_density(a1) - k * dis

              *ptdelta = disc * cdf_nor(a1) * (2. + SQR(sigma) * t / 2. + log(s
                         disc * pnl_normal_density(a1) * (1. + SQR(sigma) * t) /
                         disc * (k / s) * pnl_normal_density(a2) / sigmasqrt;
            }
          else
            {
              *ptprice = s * exp(-divid * t) * cdf_nor(a1) - k * exp(-r * t) * c
                         s * exp(-r * t) * (SQR(sigma) / (2.*b)) *
                         (-pow(s / k, -esp) * cdf_nor(a1 - (2.*b / sigma) * sqrt

              *ptdelta = exp(-divid * t) * cdf_nor(a1) * (1. + SQR(sigma) / (2.*
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                        exp(-divid * t) * pnl_normal_density(a1) / (sigma * sqr
                        exp(-r * t) * (k / s) * pnl_normal_density(a2) / sigmas
                        exp(-r * t) * pow(s / k, -esp) * cdf_nor(a1 - 2.*(b / s
            }
        }
      else
        {
          a1 = (log(s / s_max) + (b + SQR(sigma) / 2.) * t) / sigmasqrt;
          a2 = a1 - sigmasqrt;
          if (b == 0)
            {
              *ptprice = disc * (s_max - k) + s * disc * (1. + SQR(sigma) * t /
                        s * disc * sigmasqrt * pnl_normal_density(a1) - s_max *

              *ptdelta = disc * cdf_nor(a1) * (2. + SQR(sigma) * t / 2. + log(s
                        disc * pnl_normal_density(a1) * (1. + SQR(sigma) * t) /
                        disc * (s_max / s) * pnl_normal_density(a2) / sigmasqrt
            }
          else
            {

              *ptprice = exp(-r * t) * (s_max - k) + s * exp(-divid * t) * cdf_n
                        s_max * exp(-r * t) * cdf_nor(a2) +
                        s * exp(-r * t) * (SQR(sigma) / (2.*b)) *
                        (-pow(s / s_max, -esp) * cdf_nor(a1 - (2.*b / sigma) *

              *ptdelta = exp(-divid * t) * cdf_nor(a1) * (1. + SQR(sigma) / (2.*
                        exp(-divid * t) * pnl_normal_density(a1) / (sigma * sqr
                        exp(-r * t) * (s_max / s) * pnl_normal_density(a2) / si
                        exp(-r * t) * pow(s / s_max, -esp) * cdf_nor(a1 - 2.*(b
            }
        }
    }


  return OK;
}

int CALC(CF_Fixed_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 Fixed_CallLookback_ConzeWiswanathan(ptMod->S0.Val.V_PDOUBLE,
         (ptOpt->PathDep.Val.V_NUMFUNC_2)->Par[4].Val.V_PDOUBLE,
         (ptOpt->PayOff.Val.V_NUMFUNC_2)->Par[0].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));
}

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

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

  return OK;
}

PricingMethod MET(CF_Fixed_CallLookBack) =
{
  "CF_Fixed_CallLookBack",
  {{" ", PREMIA_NULLTYPE, {0}, FORBID}},
  CALC(CF_Fixed_CallLookBack),
  {{"Price", DOUBLE, {100}, FORBID}, {"Delta", DOUBLE, {100}, FORBID} , {" ", PR
  CHK_OPT(CF_Fixed_CallLookBack),
  CHK_ok ,
  MET(Init)
```

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} ;
```