Help

```
#include "merhes1d_vol.h"

#if defined(PremiaCurrentVersion) && PremiaCurrentVersion <
     (2010+2) //The "#else" part of the code will be freely av
    ailable after the (year of creation of this file + 2)
static int CHK_OPT(CF_MERHES_VARIANCESWAP)(void *Opt, void
    *Mod)
{
  return NONACTIVE;
}
int CALC(CF_MERHES_VARIANCESWAP)(void *Opt,void *Mod,Prici
    ngMethod *Met)
{
return AVAILABLE_IN_FULL_PREMIA;
}
#else

/*////////////////////////////////////////*/

static int cf_merhes_varswap(  double sigma0,double ka,
    double theta,double sigma2,
      double rhow,double r, double divid,double T,
    double Strike,
                         double gamma, double nu, double de
    lta,  double Spot, double *fairval, double *Price)
  {
  double val, kk;
  double pvfactor=exp(-r*T);

   kk = ka*T;

 val = theta + (sigma0 - theta)*(1.0 - exp(-kk))/kk + gam
    ma*(nu*nu + delta*delta);

  *fairval= sqrt(val)*100.0;

  *Price= pvfactor*(val*10000.0-Strike*Strike);
  return OK;
```

```
}


int CALC(CF_MERHES_VARIANCESWAP)(void *Opt,void *Mod,
  PricingMethod *Met)
{
  TYPEOPT* ptOpt=(TYPEOPT*)Opt;
  TYPEMOD* ptMod=(TYPEMOD*)Mod;
  double r, divid, strike, spot;
  NumFunc_1 *p;

  r=log(1.+ptMod->R.Val.V_DOUBLE/100.);
  divid=log(1.+ptMod->Divid.Val.V_DOUBLE/100.);
  p=ptOpt->PayOff.Val.V_NUMFUNC_1;
  strike=p->Par[0].Val.V_DOUBLE;
  spot=ptMod->S0.Val.V_DOUBLE;

  return cf_merhes_varswap(
    ptMod->Sigma0.Val.V_PDOUBLE
    ,ptMod->MeanReversion.hal.V_PDOUBLE,
    ptMod->LongRunVariance.Val.V_PDOUBLE,
    ptMod->Sigma.Val.V_PDOUBLE,
    ptMod->Rho.Val.V_PDOUBLE,
    r,divid,
    ptOpt->Maturity.Val.V_DATE-ptMod->T.Val.V_DATE,
    strike,
    ptMod->Lambda.Val.V_PDOUBLE,
    ptMod->Mean.Val.V_DOUBLE,
    ptMod->Variance.Val.V_PDOUBLE, spot,
    &(Met->Res[0].Val.V_DOUBLE)/*FAIRVAL*/,
    &(Met->Res[1].Val.V_DOUBLE)/*PRICE*/);

}

static int CHK_OPT(CF_MERHES_VARIANCESWAP)(void *Opt, voi
  d *Mod)


{
  if ((strcmp( ((Option*)Opt)->Name,"VarianceSwap")==0 ))
    return OK;
```

```
    return WRONG;
  }

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

    return OK;
  }

  PricingMethod MET(CF_MERHES_VARIANCESWAP)=
  {
    "CF_MERHES_VARIANCESWAP",
    {   {" ",PREMIA_NULLTYPE,{0},FORBID}},
    CALC(CF_MERHES_VARIANCESWAP),
    {   {"Fair strike in annual volatility points",DOUBLE,{
    100},FORBID},
        {"Price in 10000 variance points",DOUBLE,{100},FORB
    ID},
        {" ",PREMIA_NULLTYPE,{0},FORBID}},
    CHK_OPT(CF_MERHES_VARIANCESWAP),
    CHK_ok ,
    MET(Init)
  } ;

  /*////////////////////////////////////*/
```

References