Help

```
#include "
href../../../mod/sg1d/sg1d_stdi/sg1d_stdi_h_src.pdfsg1d_stdi.h"
#include "
href../../../common/math/read_market_zc/InitialYieldCurve_h_src.pdfmath/read_mar
#include "
href../../../mod/sg1d/sg1d_stdi/QuadraticModel_h_src.pdfQuadraticModel.h"

//The "#else" part of the code will be freely available after the (year of creat
#if defined(PremiaCurrentVersion) && PremiaCurrentVersion < (2007+2)
int CALC(CF_FloorSG1D)(void *Opt, void *Mod, PricingMethod *Met)
{
  return AVAILABLE_IN_FULL_PREMIA;
}
static int CHK_OPT(CF_FloorSG1D)(void *Opt, void *Mod)
{
  return NONACTIVE;
}
#else

/// Floor price as a combination of ZC Put option prices
static int cf_cap_sg1d(int flat_flag, double r_t, char *curve, double beta, doub
{
  double sum, T, S, strike_call;
  int i, nb_payement;
  ZCMarketData ZCMarket;

  /* Flag to decide to read or not ZC bond datas in "initialyields.dat" */
  /* If P(0,T) not read then P(0,T)=exp(-r0*T) */
  if (flat_flag == 0)
    {
      ZCMarket.FlatOrMarket = 0;
      ZCMarket.Rate = r_t;
    }

  else
    {
      ZCMarket.FlatOrMarket = 1;
      ZCMarket.filename = curve;
      ReadMarketData(&ZCMarket);
```

```
      if (contract_maturity > GET(ZCMarket.tm, ZCMarket.Nvalue - 1))
        {
          printf("\ nError : time bigger than the last time value entered in ini
          exit(EXIT_FAILURE);
        }
    }


  strike_call =  1. / (1 + periodicity * K);
  nb_payement = (int)((contract_maturity - first_payement) / periodicity);

  /*Floor=Portfolio of zero-bond Put options*/
  sum = 0.;
  for (i = 0; i < nb_payement; i++)
    {
      T   = first_payement + (double)i * periodicity;
      S   = T + periodicity;

      sum  += zb_call_quad1d(&ZCMarket, beta, sigma, T, S, strike_call);
    }

  sum = Nominal * (1. + K * periodicity) * sum;

  /*Price*/
  *price = sum;

  DeleteZCMarketData(&ZCMarket);

  return OK;
}

int CALC(CF_FloorSG1D)(void *Opt, void *Mod, PricingMethod *Met)
{
  TYPEOPT *ptOpt = (TYPEOPT *)Opt;
  TYPEMOD *ptMod = (TYPEMOD *)Mod;

  return  cf_cap_sg1d(ptMod->flat_flag.Val.V_INT,
                      MOD(GetYield)(ptMod),
                      MOD(GetCurve)(ptMod),
                      ptMod->a.Val.V_DOUBLE,
```

```
                        ptMod->Sigma.Val.V_PDOUBLE,
                        ptOpt->Nominal.Val.V_PDOUBLE,
                        ptOpt->FixedRate.Val.V_PDOUBLE,
                        ptOpt->ResetPeriod.Val.V_DATE,
                        ptOpt->FirstResetDate.Val.V_DATE - ptMod->T.Val.V_DATE,
                        ptOpt->BMaturity.Val.V_DATE - ptMod->T.Val.V_DATE,
                        &(Met->Res[0].Val.V_DOUBLE));
}
static int CHK_OPT(CF_FloorSG1D)(void *Opt, void *Mod)
{
  return strcmp(((Option *)Opt)->Name, "Floor");
}
#endif //PremiaCurrentVersion



static int MET(Init)(PricingMethod *Met, Option *Opt)
{
  if (Met->init == 0)
    {
      Met->init = 1;
      Met->HelpFilenameHint = "cf_quadratic1d_cap";
    }

  return OK;
}

PricingMethod MET(CF_FloorSG1D) =
{
  "CF_SquareGaussian1d_Floor",
  {{" ", PREMIA_NULLTYPE, {0}, FORBID}},
  CALC(CF_FloorSG1D),
  {{"Price", DOUBLE, {100}, FORBID}, {" ", PREMIA_NULLTYPE, {0}, FORBID}},
  CHK_OPT(CF_FloorSG1D),
  CHK_ok,
  MET(Init)
} ;
```