

[Help](#)

```
#include "
href../../mod/bs1d/bs1d_stda/bs1d_stda_h_src.pdfstda.h"
#include "
href../../common/error_msg_h_src.pdferror_msg.h"
#include "premia_obj.h"

static NumFunc_1 put =
{
    Put,
    {"Strike", PDOUBLE, {100}, FORBID, UNSETABLE}, {" ", PREMIA_NULLTYPE, {0}, FO
    CHK_call
};

static TYPEOPT GMWB =
{
    /*PayOff*/ {"Payoff", NUMFUNC_1, {0}, FORBID, UNSETABLE},
    /*EuOrAm*/ {"Euro", BOOL, {AMER}, FORBID, UNSETABLE},
    /*Maturity*/ {"Maturity", DATE, {0}, ALLOW, SETABLE},
    /*DeemedContribution*/ {"Deemed Contribution", PDOUBLE, {0}, IRRELEVANT, UNSE
    /*InitialAge*/ {"Initial Age", PDOUBLE, {0}, FORBID, UNSETABLE},
    /*Premium*/ {"Premium", PDOUBLE, {0}, IRRELEVANT, UNSETABLE},
    /*MinimumGuaranteed*/ {"MinimumGuaranteed", PDOUBLE, {0}, IRRELEVANT, UNSETABL
    /*Number of Monitoring Dates*/ {"Number of Monitoring Dates", PINT, {0}, ALL
    /*Alpha*/ {"Alpha", RGDOUBLE, {0}, FORBID, UNSETABLE},
    /*Alpha_m*/ {"Alpha_m", RGDOUBLE, {0}, ALLOW, SETABLE},
    /*MultiplierCPPi*/ {"MultiplierCPPi", PDOUBLE, {0}, IRRELEVANT, UNSETABLE},
    /*Ratchet*/ {"Ratchet at the Monitoring Dates(Boolean)", BOOL, {0}, FORBID, UNS
    /*Gamma*/ {"Gamma", PDOUBLE, {0}, FORBID, UNSETABLE},
    /*Bonus B*/ {"Bonus", PDOUBLE, {0}, FORBID, UNSETABLE},
    /*WithdrawalRate G*/ {"WithdrawalRate", PDOUBLE, {0}, FORBID, UNSETABLE},
    /*Base case surrender charges*/ {"SurrenderCharges", PNLVECT, {0}, FORBID, SET
    /*Base case surrender Times*/ {"SurrenderTimes", PNLVECT, {0}, FORBID, SETABLE
    /*Mortality*/ {"MortalityData", FILENAME, {0}, FORBID, UNSETABLE},
    /*Maximum WithdrawalRate G*/ {"MaximumWithdrawalRate", PDOUBLE, {0}, ALLOW, SE

    /*Rateaccumulation*/ {"RateAccumulation", PDOUBLE, {0}, FORBID, UNSETABLE},
    /*PremiumPercentage*/ {"PremiumPercentage", PDOUBLE, {0}, FORBID, UNSETABLE}
    /*RollUpRate*/ {"CompoundRollUpRate", PDOUBLE, {0}, FORBID, UNSETABLE},
    /*ForceOfMortality*/ {"ForceOfMortality", PDOUBLE, {0}, FORBID, UNSETABLE},
```

```

    /*TermCertainAnnuitiyMaturity*/ {"TermCertainAnnuitiyMaturity", DATE, {0},FORB
};

```

```

static int OPT(Init)(Option *opt, Model *mod)
{

```

```

    TYPEOPT *pt = (TYPEOPT *) (opt->TypeOpt);

```

```

    if (opt->init == 0)
    {

```

```

        opt->init = 1;

```

```

        opt->nvar = 24;

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        opt->nvar_setable = 6;

```

```

        pt->PayOff.Val.V_NUMFUNC_1 = &put;

```

```

    pt->SurrenderCharges.Val.V_PNLVECT = NULL;

```

```

    pt->SurrenderTimes.Val.V_PNLVECT = NULL;

```

```

        (pt->Maturity).Val.V_DATE = 10;

```

```

        (pt->MaximumWithdrawalRate).Val.V_PDOUBLE = 10;

```

```

        (pt->NumberOfMonitoringDates).Val.V_PINT = 10;

```

```

    (pt->Alpha_m).Val.V_RGDOUBLE = 0.01;

```

```

    /* SurrenderCharges */

```

```

    if ((pt->SurrenderCharges).Val.V_PNLVECT == NULL)
    {

```

```

        double SurrenderCharges[7] = {0.08, 0.07, 0.06, 0.05, 0.04, 0.03,0.};

```

```

        if ((pt->SurrenderCharges.Val.V_PNLVECT =
            pnl_vect_create_from_ptr(7, SurrenderCharges)) == NULL)
            return WRONG;
    }

```

```

    /* SurrenderTimes */

```

```

    if ((pt->SurrenderTimes).Val.V_PNLVECT == NULL)
    {

```

```

        double SurrenderTimes[7] = {1.999, 2.999, 3.999, 4.999, 5.999, 6.999,1

```

```

        if ((pt->SurrenderTimes.Val.V_PNLVECT =
            pnl_vect_create_from_ptr(7, SurrenderTimes)) == NULL)
            return WRONG;
    }

```

```
    }  
    return OK;  
}  
  
MAKEOPT(GMWB);
```