

[Help](#)

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#include "
href../../mod/bsld/bsld_stda/bsld_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}, FORBID, UNSETABLE}, {"CHK_call", PDOUBLE, {0}, FORBID, UNSETABLE}
};

static TYPEOPT GLWB =
{
    /*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, UNSETABLE},
    /*InitialAge*/ {"Initial Age", PDOUBLE, {0}, ALLOW, SETABLE},
    /*Premium*/ {"Premium", PDOUBLE, {0}, IRRELEVANT, UNSETABLE},
    /*MinimumGuaranteed*/ {"MinimumGuaranteed", PDOUBLE, {0}, IRRELEVANT, UNSETABLE},
    /*Number of Monitoring Dates*/ {"Number of Monitoring Dates", PINT, {0}, IRRELEVANT, UNSETABLE},
    /*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}, ALLOW, SETABLE},
    /*Gamma*/ {"Gamma", PDOUBLE, {0}, ALLOW, SETABLE},
    /*Bonus B*/ {"Bonus", PDOUBLE, {0}, ALLOW, SETABLE},
    /*WithdrawalRate G*/ {"WithdrawalRate", PDOUBLE, {0}, ALLOW, SETABLE},
    /*Base case surrender charges*/ {"SurrenderCharges", PNLVECT, {0}, FORBID, SETTABLE},
    /*Base case surrender Times*/ {"SurrenderTimes", PNLVECT, {0}, FORBID, SETTABLE},

    /*Mortality*/ {"MortalityData", FILENAME, {0}, FORBID, SETTABLE},
    /*Maximum WithdrawlRate G*/ {"MaximumWithdrawlRate", PDOUBLE, {0}, FORBID, UNSETABLE},
    /*RateAccumulation*/ {"RateAccumulation", PDOUBLE, {0}, FORBID, UNSETABLE},
    /*PremiumPercentage*/ {"PremiumPercentage", PDOUBLE, {0}, FORBID, UNSETABLE},
    /*RollUpRate*/ {"CompoundRollUpRate", PDOUBLE, {0}, FORBID, UNSETABLE},
    /*ForceOfMortality*/ {"ForceOfMortality", PDOUBLE, {0}, FORBID, UNSETABLE},
}
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    /*TermCertainAnnuitiyMaturity*/ {"TermCertainAnnuitiyMaturity", DATE, {0},FORB
};

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static int OPT(Init)(Option *opt, Model *mod)
{
    TYPEOPT *pt = (TYPEOPT *) (opt->TypeOpt);

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    if (opt->init == 0)
    {
        opt->init = 1;
        opt->nvar = 24;
        opt->nvar_setable = 9;

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        (pt->Maturity).Val.V_DATE = 56;
        (pt->Alpha_m).Val.V_RGDOUBLE = 0.0;
        (pt->InitialAge).Val.V_PDOUBLE = 65;
        (pt->Ratchet).Val.V_BOOL = 0;
        (pt->Gamma).Val.V_PDOUBLE = 1;
        (pt->WithdrawalRate).Val.V_PDOUBLE = 0.05;
        (pt->Bonus).Val.V_PDOUBLE = 0.05;
        pt->MortalityData.Val.V_FILENAME = NULL;
        pt->SurrenderCharges.Val.V_PNLVECT = NULL;
        pt->SurrenderTimes.Val.V_PNLVECT = NULL;

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

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    if ((pt->SurrenderCharges).Val.V_PNLVECT == NULL)
    {
        double SurrenderCharges[6] = {0.05, 0.04, 0.03, 0.02, 0.01, 0.0};
        if ((pt->SurrenderCharges.Val.V_PNLVECT =
            pnl_vect_create_from_ptr(6, SurrenderCharges)) == NULL)
            return WRONG;
    }

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    /* SurrenderTimes */
    if ((pt->SurrenderTimes).Val.V_PNLVECT == NULL)
    {
        double SurrenderTimes[6] = {1., 2., 3., 4., 5., 6.};
        if ((pt->SurrenderTimes.Val.V_PNLVECT =

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        pnl_vect_create_from_ptr(6, SurrenderTimes)) == NULL)
    return WRONG;
}

/*Mortality Data*/
if (pt->MortalityData.Val.V_FILENAME == NULL)
{
    if ((pt->MortalityData.Val.V_FILENAME = malloc(sizeof(char) * MAX_PATH))
        return MEMORY_ALLOCATION_FAILURE;
    sprintf(pt->MortalityData.Val.V_FILENAME, "%s%smortalityDAV2004R.dat",
}

return OK;
}

MAKEOPT(GLWB);

```