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#include "
href../../mod/lmm_heston1d/lmm_heston1d_h_src.pdf lmm_heston1d.h"
#include "
href../../common/chk_h_src.pdf chk.h"
#include "
href../../mod/hes1d/hes1d_pad/model_h_src.pdf model.h"

extern char *path_sep;

static PremiaEnumMember nbfacthes_members[] =
{
    {"1:Flat Volatility", 1},
    {"2:Second Volatility factor:  $1./\sqrt{0.04+0.00075*t}$  * (0.01 - 0.05*exp(-0.1*
    { NULL, NULLINT}
};

static DEFINE_ENUM(nbfacthes, nbfacthes_members);

static int MOD(Init)(Model *model)
{
    TYPEMOD *pt = (TYPEMOD *) (model->TypeModel);

    if (model->init == 0)
    {
        model->init = 1;
        model->nvar = 0;

        pt->T.Vname = "Current Date";
        pt->T.Vtype = DATE;
        pt->T.Val.V_DATE = 0.0;
        pt->T.Viter = ALLOW;
        model->nvar++;

        pt->NbFactors.Vname = "Number of Factors";
        pt->NbFactors.Vtype = ENUM;
        pt->NbFactors.Val.V_ENUM.value = 1;
        pt->NbFactors.Val.V_ENUM.members = &nbfacthes;
        pt->NbFactors.Viter = ALLOW;
        model->nvar++;
    }
}
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pt->l0.Vname = "Flat Initial Libor Rates";
pt->l0.Vtype = PDOUBLE;
pt->l0.Val.V_PDOUBLE = 0.05;
pt->l0.Viter = ALLOW;
model->nvar++;

pt->Sigma.Vname = "Flat Volatility Libor Rates ";
pt->Sigma.Vtype = PDOUBLE;
pt->Sigma.Val.V_PDOUBLE = 0.2;
pt->Sigma.Viter = ALLOW;
model->nvar++;

pt->Sigma0.Vname = "Current Variance";
pt->Sigma0.Vtype = DOUBLE;
pt->Sigma0.Val.V_DOUBLE = 1.0;
pt->Sigma0.Viter = ALLOW;
model->nvar++;

pt->MeanReversion.Vname = "Mean Reversion";
pt->MeanReversion.Vtype = DOUBLE;
pt->MeanReversion.Val.V_DOUBLE = 1.;
pt->MeanReversion.Viter = ALLOW;
model->nvar++;

pt->LongRunVariance.Vname = "Long-Run Variance";
pt->LongRunVariance.Vtype = DOUBLE;
pt->LongRunVariance.Val.V_DOUBLE = 1.;
pt->LongRunVariance.Viter = ALLOW;
model->nvar++;

pt->Sigma2.Vname = "Volatility of Volatility";
pt->Sigma2.Vtype = DOUBLE;
pt->Sigma2.Val.V_DOUBLE = 0.6;
pt->Sigma2.Viter = ALLOW;
model->nvar++;

pt->Rho1.Vname = "Rho 1";
pt->Rho1.Vtype = DOUBLE;
pt->Rho1.Val.V_DOUBLE = 0.5;
pt->Rho1.Viter = ALLOW;

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model->nvar++;

pt->Rho2.Vname = "Rho 2: Only in the Second Factor Case";
pt->Rho2.Vtype = DOUBLE;
pt->Rho2.Val.V_DOUBLE = 0.2;
pt->Rho2.Viter = ALLOW;
model->nvar++;

}
return OK;
}
TYPEMOD LMM_HESTON1d;
MAKEMOD(LMM_HESTON1d);

```