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doublehes1d

1 Description

Double Heston is the model with stochastic variance and stochastic “variance of variance”:

$$\begin{cases} \frac{dS_t}{S_t} = (r - \delta)dt + \sum_{j=1}^2 \sqrt{V_t^j} \left(\rho_j dW_t^j + \sqrt{1 - \rho_1^2} dB_t^1 \right) \\ dV_t^j = b_j(\theta_j - V_t^j)dt + \sigma_j \sqrt{V_t^j} dW_t^j \end{cases} \quad j = 1, 2 \quad (1)$$

where W^s , W^1 and W^2 are correlated Wiener processes with correlation parameters

$$\langle W^s, W^1 \rangle = \rho_1, \quad \langle W^s, W^2 \rangle = \rho_2, \quad \langle W^1, W^2 \rangle = 0.$$

2 Code Implementation

```
#ifndef _DOUBLEHES1D_H
#define _DOUBLEHES1D_H

#include "optype.h"
#include "var.h"

#define TYPEMOD DOUBLEHES1D

/* DOUBLEHES1D World */
typedef struct TYPEMOD
{
    VAR T;
    VAR S0;
    VAR Divid;
    VAR R;
```

```
VAR Sigma0;  
VAR MeanReversion;  
VAR LongRunVariance;  
VAR Sigma;  
VAR Sigma0V;  
VAR MeanReversionV;  
VAR LongRunVarianceV;  
VAR SigmaV;  
VAR Rho;  
VAR RhoSV2;  
//VAR RhoVV;  
} TYPEMOD;  
  
#endif
```