Source | Model Presentation

doublehes1d

1 Description

Double Heston is the model with stochastic variance and stochastic "variance of variance":

$$\begin{aligned}
\frac{dS(t)}{S(t)} &= \sqrt{V(t)}dW^s(t), \quad S(0) = S; \\
dV(t) &= \kappa(V'(t) - V(t))dt + \sigma_1\sqrt{V(t)}dW^1(t)), \quad V(0) = z_1, \\
dV'(t) &= c(z_3 - V'(t))dt + \sigma_2\sqrt{V'(t)}dW^1(t)), \quad V'(0) = z_2,
\end{aligned}$$

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

$$< W^s, W^1 >= \rho_1, \quad < W^s, W^2 >= \rho_2, \quad < W^1, W^2 >= \rho.$$

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 Sigma;
  VAR Rho;
  VAR Sigma0V;
  VAR MeanReversionV;
  VAR LongRunVarianceV;
  VAR SigmaV;
  VAR RhoSV2;
  VAR RhoVV;
} TYPEMOD;

#endif
```