

timehes1d

1 Description

This model is given by,

$$\begin{aligned}dS_t &= rS_t dt + \sqrt{v_t}S_t dW_t^1, \\dv_t &= k(\theta_t - v_t)dt + \sigma_t\sqrt{v_t}dW_t^2,\end{aligned}$$

where W^1 and W^2 are two correlated brownian motions with $d\langle W^1, W^2 \rangle_t = \rho_t dt$, and k is constant and θ_t and σ_t and ρ_t are piecewise constants functions.

2 Code Implementation

```
#ifndef _TIMEHES1D_H
#define _TIMEHES1D_H

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

#define TYPEMOD TIMEHES1D

/*1D TIME DEPENDENT HESTON World*/

typedef struct TYPEMOD
{
    VAR T;
    VAR S0;
    VAR Divid;
    VAR R;
    VAR Sigma0;
```

```
VAR MeanReversion;  
VAR TimeDepParameters;  
VAR TimeStep;  
} TYPEMOD;
```

```
#endif
```