Source | Model Presentation

# timehes1d

## 1 Description

This model is given by,

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

where $W^1$ and $W^2$ are two correlated brownian motions with $d < W^1, W^2 >_t = \rho_t dt$, and $k$ is constant and $\theta_t$ and $\sigma_t$ and $\rho_t$ 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
```