Source | Model Presentation

mer1d

1 Description

The underlying asset price evolves according to the Merton model, that is:

$$\begin{cases} S_{T-t} = s \\ \frac{dS_u}{S_{u^-}} = (r - \lambda \mathbb{E}U_1 - d)du + \sigma dB_u + d(\sum_{j=1}^{N_u} U_j), \end{cases} \tag{1}$$

where $(B_u)_{t\geq 0}$ is a Brownian motion, $(N_u)_{u\geq 0}$ is a Poisson process with deterministic jump intensity λ, $(U_u)_{j\geq 1}$ is a sequence of positive, independent stochastic variables and σ is a constant

2 Code Implementation

```
#ifndef _MER1D_H
#define _MER1D_H

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

#define TYPEMOD MER1D

/*1D Merton World*/
typedef struct TYPEMOD
{
  VAR T;
  VAR S0;
  VAR Mu;
```

```
  VAR Sigma;
  VAR Divid;
  VAR R;
  VAR Lambda;
  VAR Mean;
  VAR Variance;
} TYPEMOD;

#endif
```