Source | Model Presentation

hullwhite1d

1 Description

Hull and White models [1] are defined by an EDS which describes the evolution of the spot rate $r(t)$:

$$\begin{cases} dx(t) = -a\,x(t)\,dt + \sigma\,dW(t), \quad x(0) = 0 \\ r(t) = x(t) + \phi(t). \end{cases}$$

Where the function ϕ is a deterministic function totally given by the market values of the zero coupon bonds.

2 Code Implementation

```
#ifndef _HullWhite1D_H
#define _HullWhite1D_H

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

#define TYPEMOD HullWhite1D

/*1D HULL-WHITE World*/
typedef struct TYPEMOD{
  VAR T;
  VAR flat_flag;
  VAR a;
  VAR Sigma;
```

```
} TYPEMOD;

extern double MOD(GetYield)(TYPEMOD *pt);

#endif
```

References

[1] J.Hull and A.WHITE. One factor interest rate models and the valuation of interest rate derivative securities. *Journal of Financial and Quantitative Analysis*, 28:235–254, 1993. 1