

blackkarasinski1d

1 Description

Black-Karasinski models [1] are defined by an EDS which describes the evolution of the spot rate $r(t)$:

$$d \ln r_t = (\theta_t - a \ln r_t) dt + \sigma dW(t), \quad r(0) = r_0$$

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

2 Code Implementation

```
#ifndef _BlackKarasinski1D_H
#define _BlackKarasinski1D_H

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

#define TYPEMOD BlackKarasinski1D

/*1D BlackKarasinski World*/
typedef struct TYPEMOD
{
    VAR T;
    VAR flat_flag;
    VAR r0;
    VAR a;
}
```

```
    VAR Sigma;  
} TYPEMOD;  
  
extern double MOD(GetYield)(TYPEMOD *pt);  
extern char *MOD(GetCurve)(TYPEMOD *pt);  
  
#endif
```

References

- [1] F.Black and P.Karasinski. Bond and option pricing when short rates are lognormal. *Financial Analyst Journal*, Juli-August:52–59, 1991. [1](#)