Source | Model Presentation

bsdisdiv1d

1 Description

We consider a market model in which the risky asset pays a dividend at some given dates. Let $0 < t_1 < \ldots, t_n \leq T$ be the dividend payment dates. We assume that only fixed dividends are payed (there is no proportional payment). Let S denote the underlying asset, then for all $1 \leq i \leq n$

$$S_{t_i} = S_{t_i^-} - D_i$$

Between two payment dates, S is governed by the Black-Scholes model

$$dS_t = S_t(rdt + \sigma dB_t), \quad S_0 = s_0, \tag{1}$$

where $(B_t)_{0 \leq t \leq T}$ is a standard Brownian motion, under the risk neutral measure. The non negative constant r is the instantaneous interest rate and σ is the volatility of the risky asset.

2 Code Implementation

```
#ifndef _BSDISDIV1D_H
#define _BSDISDIV1D_H
#include "optype.h"
#include "var.h"

#define TYPEMOD BSDISDIV1D

/*1D BlackScholes World with Discrete Dividends*/
typedef struct TYPEMOD{
  VAR Size;
  VAR T;
```

```
  VAR S0;
  VAR R;
  VAR Mu;
  VAR Sigma;
  VAR Amounts;
  VAR Dates;
} TYPEMOD;


#endif
```