# Package 'convertbonds'

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**Type** Package

**Title** Use the Given Parameters to Calculate the European Option Value

**Version** 0.1.0

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**Description** Calculate the theoretical value of convertible bonds by given parameters, including B-S theory and Monte Carlo method.

**Imports** stats

**License** GPL-2

**Encoding** UTF-8

**RoxygenNote** 7.2.3

**NeedsCompilation** no

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## R topics documented:

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| black_schiles | *Black Schiles Model function Calculating Function Using the Black-Schiles Option Pricing Model* |

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### Description

Black Schiles Model function Calculating Function Using the Black-Schiles Option Pricing Model

### Usage

```
black_schiles(
  mode = 1,
  current_price,
  stock_price,
  conver_price,
  stock_var,
  time,
  interest_rate,
  netdebt_value
)
```

### Arguments

| | |
|---|---|
| mode | Two calculation methods, respectively 1 and 2 |
| current_price | Current price of convertible bonds |
| stock_price | Positive stock price |
| conver_price | Conversion price |
| stock_var | Standard deviation of annualized rate of return for underlying stocks |
| time | Expiration time (annualized remaining period) |
| interest_rate | Risk-free continuous compound interest rate |
| netdebt_value | Pure debt value |

### Value

Option value per share(numeric)

### Examples

```
result<-black_schiles(mode=1,current_price=122.82,
 stock_price=5.9,conver_price=5.43,stock_var=0.2616,time=1.353,
 interest_rate=0.018482, netdebt_value=104.05)
```

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| monte_carlo | *Monte Carlo simulation function Predicting Theoretical Value of Options per Share Using Monte Carlo Simulations* |

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### Description

Monte Carlo simulation function Predicting Theoretical Value of Options per Share Using Monte Carlo Simulations

### Usage

```
monte_carlo(I, M, S_0, K, Time, r, sigma)
```

### Arguments

| | |
|---|---|
| I | number ofsimulation |
| M | number of time steps |
| S_0 | The initial price of the underlying stock |
| K | Exercise price (conversion price) |
| Time | Simulate paths over time intervals |
| r | risk free rate |
| sigma | Volatility (Standard Deviation of Return) |

### Value

No return value, called for side effects

### Examples

```
monte_carlo(I=10000,M=50,S_0=5.9,K=5.43,T=1.353,r=0.018482,sigma=0.2616)
```

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| option_value | *Option_value functuon Calculate the four value comparisons:Option value of convertible bond,Theoretical value of convertible bonds (pure bond value + option value),The difference between the theoretical price of convertible bonds and the current price,The ratio of the difference between the theoretical price of convertible bonds and the current price* |

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### Description

Option_value functuon Calculate the four value comparisons:Option value of convertible bond,Theoretical value of convertible bonds (pure bond value + option value),The difference between the theoretical price of convertible bonds and the current price,The ratio of the difference between the theoretical price of convertible bonds and the current price

## Usage

```
option_value(value_per, current_price, conver_price, netdebt_value)
```

## Arguments

| | |
|---|---|
| value_per | Option value per share(numeric) |
| current_price | Current price of convertible bonds |
| conver_price | Conversion price |
| netdebt_value | Pure debt value |

## Value

No return value, called for side effects

## Examples

```
option_value( value_per=1.02,current_price=122.82,conver_price=5.43,netdebt_value=104.05 )
```

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