

Package ‘BCC1997’

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Type Package

Title Calculation of Option Prices Based on a Universal Solution

Version 0.1.1

Author Haoran Zhang

Maintainer Haoran Zhang <hzz0017@auburn.edu>

Description Calculates the prices of European options based on the universal solution provided by Bakshi, Cao and Chen (1997) <doi:10.1111/j.1540-6261.1997.tb02749.x>. This solution considers stochastic volatility, stochastic interest and random jumps. Please cite their work if this package is used.

Depends R (>= 3.1.0)

Imports stats

Encoding UTF-8

LazyData true

RoxygenNote 6.0.1

License GPL (>= 2)

NeedsCompilation no

Repository CRAN

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R topics documented:

| | |
|---------------|---|
| BCC | 2 |
| Index | 4 |

Description

This is a function to calculate the prices of European options based on the universal solution provided by Bakshi, Cao and Chen (1997) <doi:10.1111/j.1540-6261.1997.tb02749.x>. This solution takes stochastic volatility, stochastic interest and random jumps into consideration. Please cite their work if this package is used.

Usage

```
BCC(kappav, kappar, thetav, thetar, sigmav, sigmar, muj, sigmaj, rho, lambda,
    S0, K, V0, R0, t)
```

Arguments

| | |
|--------|---|
| kappav | Speed of convergence on variance |
| kappar | Speed of convergence on risk free rate |
| thetav | Long-term variance |
| thetar | Long-term risk free rate |
| sigmav | Volatility of variance |
| sigmar | Volatility of risk free rate |
| muj | Jump size |
| sigmaj | Volatility of jumps |
| rho | Correlation between underlying price and variance |
| lambda | Jump intensity |
| S0 | Initial/Current underlying price |
| K | Strike price |
| V0 | Initial/Current variance |
| R0 | Initial/Current risk free rate |
| t | Time to maturity |

Value

Call: return the price of the European call option

Put: return the price of the European put option

Note

Please notice each parameter has its "reasonable range". e.g. volatilities cannot be zero or smaller than zero, please input 0.0000001 when they are zero.

Examples

BCC(kappav=0, kappar=0, thetav=0, thetar=0, sigmav=0.0000001, sigmar=0.0000001, muj=0,
sigmaj=0.0000001, rho=0, lambda=0, S0=100, K=100, V0=0.04, R0=0.01, t=1)

BCC(kappav=0.5, kappar=0, thetav=0.025, thetar=0, sigmav=0.09, sigmar=0.0000001, muj=0,
sigmaj=0.0000001, rho=0.1, lambda=0, S0=100, K=100, V0=0.04, R0=0.01, t=1)

Index

BCC, [2](#)