

Package ‘fBonds’

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Title Rmetrics - Pricing and Evaluating Bonds

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Description It implements the Nelson-Siegel and the Nelson-Siegel-Svensson term structures.

Depends R (>= 2.15.1), timeDate, timeSeries, fBasics

Imports graphics, stats

Suggests RUnit

LazyData yes

License GPL (>= 2)

URL <http://www.rmetrics.org>

NeedsCompilation no

Repository CRAN

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fBonds-package	<i>Pricing and Evaluating Bonds</i>
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Description

The Rmetrics "fBonds" package is a collection of functions for pricing and evaluating bonds and to compute term structures.

Details

```

Package:   \tab fBonds\cr
Type:     \tab Package\cr
Version:  \tab R 3.0.1\cr
Date:     \tab 2014\cr
License:  \tab GPL Version 2 or later\cr
Copyright: \tab (c) 1999-2014 Rmetrics Association\cr
URL:      \tab \url{https://www.rmetrics.org}

```

1 Introduction

This section provides functions to valuate Bonds and to calculate term structures.

2 Term Structure Calculation

This section provides two functions for term structure modelling based on the Nelson-Siegel, and on the Svensson approach.

```

NelsonSiegel  models Nelson-Siegel Term Structure
Svensson      models Nelson-Siegel-Svensson Term Structure

```

About Rmetrics

The fBonds Rmetrics package is written for educational support in teaching "Computational Finance and Financial Engineering" and licensed under the GPL.

TermStructure *Term Structure Modelling*

Description

A collection and description of functions for term structure modelling.

The functions are:

NelsonSiegel	Nelson-Siegel Term Structure,
Svensson	Nelson-Siegel-Svensson Term Structure.

Usage

```
NelsonSiegel(rate, maturity, doplot = TRUE)
```

```
Svensson(rate, maturity, doplot = TRUE)
```

Arguments

doplot	a logical. Should a plot be displayed?
maturity	a numeric vector of maturities on an annual scale.
rate	a numeric vector of forward rates.

Value

a list object with entries returned from the optimization function `nlsminb`.

References

McCulloch J. H. (1990); *US Term Structure Data: 1946-87*, Handbook of Monetary Economics, Friedman B.M. and Hahn F.H. (eds.), Elsevier Science.

McCulloch J. H. and Kwon, H.C. (1993); *US Term Structure Data: 1947-1991*, Working Paper No. 93-6, Department of Economics, Ohio State University.

Zivot E., Wang J.; *Modeling Financial Time Series with S-Plus*.

Examples

```
Yield = c(
0.04984, 0.05283, 0.05549, 0.05777, 0.05961, 0.06102, 0.06216, 0.06314,
0.06403,
0.06488, 0.06568, 0.06644, 0.06717, 0.06786, 0.06852, 0.06913, 0.06969,
0.07020,
0.07134, 0.07205, 0.07339, 0.07500, 0.07710, 0.07860, 0.08011, 0.08114,
0.08194,
0.08274, 0.08355, 0.08434, 0.08512, 0.08588, 0.08662, 0.08731, 0.08794,
0.08851,
0.08900, 0.08939, 0.08967, 0.08980, 0.08976, 0.08954, 0.08910, 0.08843,
```

```
0.08748,  
0.08626, 0.08474, 0.08291)
```

```
Maturity = c(  
  0.083, 0.167, 0.250, 0.333, 0.417, 0.500, 0.583, 0.667,  
  0.750, 0.833,  
  0.917, 1.000, 1.083, 1.167, 1.250, 1.333, 1.417, 1.500,  
  1.750, 2.000,  
  2.500, 3.000, 4.000, 5.000, 6.000, 7.000, 8.000, 9.000, 10.000,  
  11.000,  
  12.000, 13.000, 14.000, 15.000, 16.000, 17.000, 18.000, 19.000, 20.000,  
  21.000,  
  22.000, 23.000, 24.000, 25.000, 26.000, 27.000, 28.000, 29.000)
```

```
NelsonSiegel(Yield, Maturity)
```

```
par(mfrow = c(2, 2))  
Svensson(Yield, Maturity)
```

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